Lowry LANDFILL

Remedial Action and Operations and Maintenance Status Report January through June 2022

Lowry Landfill Superfund Site
Arapahoe County, Colorado

WASTE MANAGEMENT

September 30, 2022

PARSONS

DENVER
THE MILE HIGH CITY

REMEDIAL ACTION AND OPERATIONS & MAINTENANCE STATUS REPORT JANUARY THROUGH JUNE 2022 LOWRY LANDFILL SUPERFUND SITE

Prepared for:

CITY AND COUNTY OF DENVER
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SEPTEMBER 30, 2022

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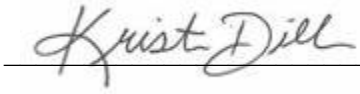
QA Manager:		Date:	9/26/22

TABLE OF CONTENTS

Page

LIST OF TABLES

No. **Title**

LIST OF FIGURES

LIST OF APPENDICES

No. **Title**

LIST OF APPENDICES (continued)

No. Title

LIST OF APPENDICES (continued)

No. Title

LIST OF ACRONYMS AND ABBREVIATIONS

%	Percent
Δh	Change in head
µg/L	Micrograms per liter
14X	1,4-Dioxane
3DVA	3-Dimensional Data Visualization and Analysis
5YRR	Five Year Review Report
amsl	Above mean sea level
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	Below ground surface
BTS	Biological Treatment System
°C	Degrees Centigrade
CD	Consent Decree
CDPHE	Colorado Department of Public Health and Environment
CFM	Chloroform
Chem Rec	Chemical recovery
CSE	Containment System Evaluation
CSM	Conceptual Site Model
cy	Cubic yards
d	Distance
DADS	Denver-Arapahoe Disposal Site
DBF	DADS Blower/Flare
DCA	Dichloroethane
DCE	Dichloroethene
Denver	City and County of Denver
DNAPL	Dense non-aqueous-phase liquid
DQA	Data Quality Assessment
DQO	Data quality objective
DVR	Data Validation Report
EB	Equipment blank
EBEW	East boundary extraction well
EMSI	Engineering Management Support, Inc.
ESW	East/South/West
EW	Extraction well
EWMP	Early Warning Monitoring Plan
ºF	Degrees Fahrenheit
Fm	Formation
FS3	Flare Station 3
Ft	Feet
ft/ft	Foot per foot
GAC	Granular activated carbon
GC	Gas chromatograph
gpd	Gallons per day

LIST OF ACRONYMS AND ABBREVIATIONS

gpm	Gallons per minute
GTEP	Gas-to-Energy Plant
GWMP	Groundwater Monitoring Plan
H	Hour
HMI	Human-machine interface
in wc	Inches of water column
IRA	Initial Response Action
IX	Ion exchange
L_c	Critical value
LBF	Lowry Blower/Flare
LCL	Lower confidence limit
LCS	Laboratory control sample
LEL	Lower explosive limit
LFG	Landfill gas
LNAPL	Light non-aqueous-phase liquid
M	Minute
MARLAP	Multi-Agency Radiological Laboratory Analytical Protocols
MB	Method blank
MDL	Method detection limit
Metro	Metro Wastewater Reclamation District (now Metro Water Recovery)
mg/L	Milligrams per liter
M-K	Mann-Kendall
mS/cm	micro-Siemens per centimeter
MS/MSD	Matrix spike/matrix spike duplicate
mV	Millivolt
NA	Not applicable
NAPL	Non-aqueous-phase liquid
NBBW	North Boundary Barrier Wall
ND	Non-detect/not detected
NGVD	National Geodetic Vertical Datum
NTES	North Toe Extraction System
NV	Not validated
O&M	Operations and maintenance
PARCC	Precision, accuracy, representativeness, comparability, completeness
PCE	Tetrachloroethene
PCR	Periodic Compliance Report
PID	Photo-ionization detector
PLC	Programmable logic controller
POC	Point of compliance
POTW	Publicly-owned treatment works
ppb	Parts per billion
PPE	Personal protective equipment
ppm	Parts per million
PS	Performance standard
psi	Pounds per square inch

LIST OF ACRONYMS AND ABBREVIATIONS

PWI	Potable water injection
QAPP	Quality Assurance Project Plan
RA	Remedial action
RAWP	Response Action Work Plan
RI	Remedial investigation
ROD	Record of Decision
RPD	Relative percent difference
RWST	Raw water storage tank
scfm	Standard cubic feet per minute
SDG	Sample delivery group
SIM	Selected Ion Monitoring
Site	Lowry Landfill Superfund Site
SOW	Statement of Work
Surr	Surrogate
SVOC	Semi-volatile organic compound
SWRA	Surface Water Removal Action
TB	Trip blank
TCA	Trichloroethane
TCE	Trichloroethene
TCHD	Tri County Health Department
TCLP	Toxicity characteristic leaching procedure
TDS	Total dissolved solids
TENORM	Technologically Enhanced Naturally Occurring Radioactive Material
THF	Tetrahydrofuran
THM	Trihalomethane
TM	Technical Memorandum
tpy	Tons per year
TSDF	Treatment, Storage and Disposal Facility
TSS	Total suspended solids
U	Non-detect
UCL	Upper confidence limit
UD	Unweathered Dawson formation
UPS	Uninterruptable power supply
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UV-Ox	Ultraviolet Oxidation
VFD	Variable frequency drive
VOC	Volatile organic compound
WAP	Water Augmentation Plan
WD	Weathered Dawson formation
WM	Waste Management
WMP	Waste Management Plan
WSDs	Work Settling Defendants
WTP	Water treatment plant

LOWRY LANDFILL

www.lowrylandfill.com

Executive Summary: Status of Operations, Maintenance and Remedial Actions

September30 , 2022

INTRODUCTION

The EPA has determined in the 2022 Five-Year Review (FYR) that the remedial activities at the Lowry Landfill Superfund site are protective of human health and the environment.

Completed in early 2022, the fifth FYR of the Site included the findings of several site inspections; interviews with the work settling defendants, local and state government officials and community members; and an assessment of all environmental data and found that the remedial components and institutional controls in place at the site are protective of human health and the environment.

The area around the site consists of ongoing landfilling operations as well as residential areas. While monitoring and other operations and maintenance activities are ongoing, institutional controls, including deed restrictions, water rights, zoning, and ordinances ensure nearby residential areas are not impacted by the site contamination.

As part of the WSDs ongoing commitment to transparency and community engagement, several outreach opportunities were provided. During this reporting period, the WSDs provided community outreach by participating in four meetings with the Lowry Landfill Community Advisory Group with three presentations given regarding the 2022 Five Year Review, Semiannual Status Report and results of the North End risk assessment .

Conclusions from the Fifth Five Year Review for Lowry

✔ **Shallow Groundwater and Subsurface Liquids/Deep Groundwater**
The groundwater remedy and the implemented contingency measures are functioning as intended by the decision documents. **Conclusion**: Remedy is protective of human health and the environment.

✓ A 1,4-dioxane groundwater plume extends north from the Site. The risk assessment determined the concentrations of 1,4-dioxane equate to a risk well within the acceptable risk range. Groundwater contamination from the Site is not affecting the residential areas north and east of the 1,4-dioxane plume.

✓ The NBBW was evaluated in the Containment System Evaluation and the results indicated that the NBBW is achieving hydraulic containment of groundwater.

✓ EPA recommended a discussion in the Status Reports regarding deep groundwater and vertical migration providing monitoring results and additional details to support the statement that vertical migration is not occurring and groundwater compliance wells are in compliance: **DONE**

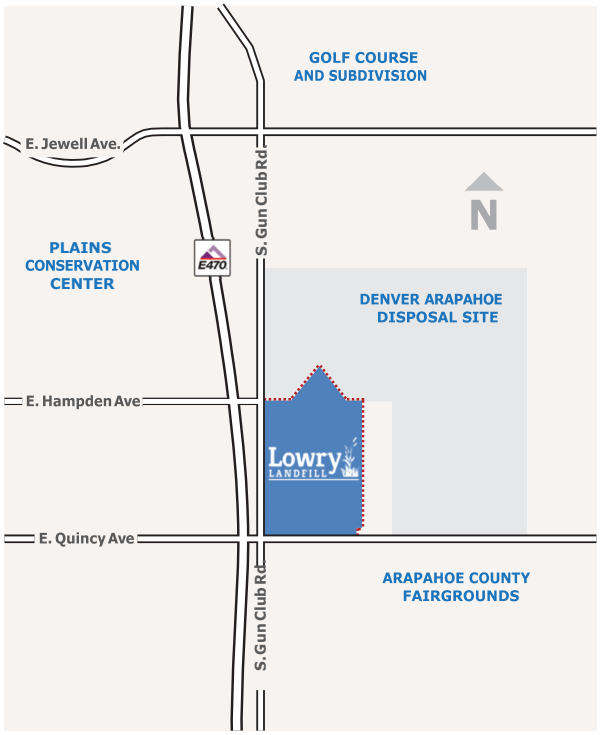
✓**Landfill Solids**
The remedy is functioning as intended by the decision documents. The remedy includes the landfill cover with monitoring, excavation of contaminated soil and drums, and NAPL recovery. **Conclusion**: Remedy is protective of human health and the environment.

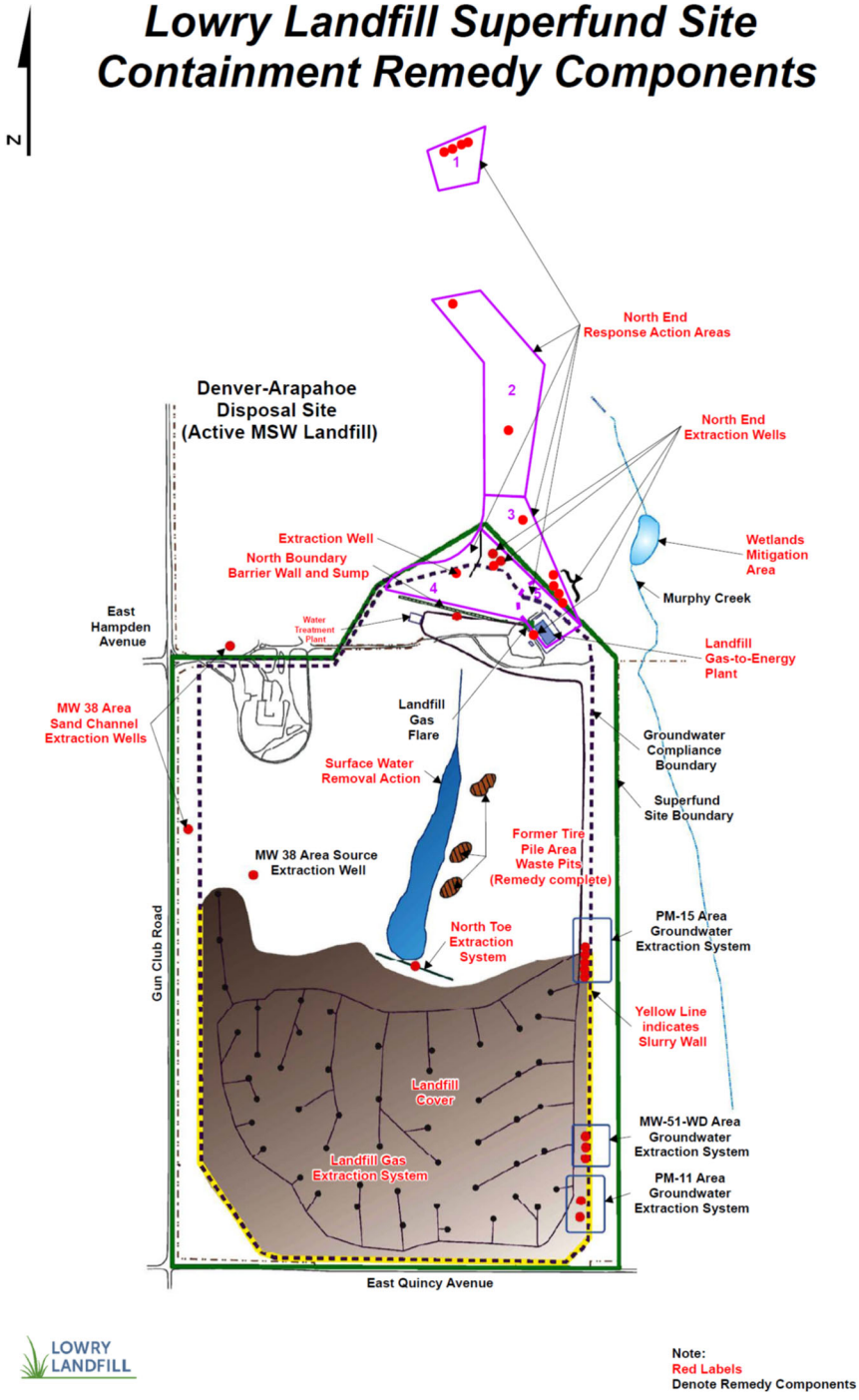
✓**Landfill Gas**
The remedy is functioning as intended by the decision documents. The treatment system is operating appropriately, and performance standards are being met. **Conclusion**: Remedy is protective of human health and the environment.

✓**Soils**
The remedy is functioning as intended by the decision documents. The No Further Action remedy consists of continued maintenance on the cover areas. Regular maintenance ensures the covers remain intact. **Conclusion**: Remedy is protective of human health and the environment.

✓**Surface Water and Sediment**
The remedy is functioning as intended by the decision documents. The No Further Action remedy consists of periodic surface water runoff monitoring and continued O&M of the SWRA and the NBBW. **Conclusion**: Remedy is protective of human health and the environment.

LOCATION & CONTAINMENT REMEDY MAPS





GROUNDWATER MONITORING

More than 500 monitoring wells extending into both shallow and deep aquifers have been installed within and outside the site to ensure the community is protected. Well inspections are a routine part of the monitoring program. Data shows that the monitoring system continues to be effective.

Groundwater remedy component effectiveness evaluations conducted in 2021 as part of the fourth five-year review determined that the remedial components are effective and achieve objectives. Specifically, the slurry wall – a vertical barrier wall made of clay that prevents groundwater flow – continues to effectively contain contamination inside the eastern, southern and western limits of the landfill as designed. The North Toe Extraction System, which collects and pumps water to the treatment plant at less than 1 gallon per minute, continues to capture the most contaminated groundwater emanating from the landfill. The 960-foot long North Boundary Barrier Wall (NBBW) located at the north end of the site is the most significant groundwater extraction feature, removing 6 to 10 gallons per minute, which effectively prevents contamination from migrating offsite. Finally, groundwater extraction in the northwest corner of the site, known as the MW38 area, captures contaminated groundwater flowing through this area and prevents offsite migration.

Vertical migration monitoring shows vertical migration wells are in compliance with groundwater performance standards and that contaminated groundwater has not migrated to the deeper aquifers.

There are 60 compliance wells in the network, which are monitored for 29 different chemicals. There are 52 wells in compliance or potentially in compliance, and 8 wells are out of compliance or potentially out of compliance for chemicals such as 1,4-dioxane, PCE, nitrate, and nitrite. The 8 wells that are out, or potentially out of, compliance are being addressed by continuing to pump contaminated water to the treatment plant, as discussed above. This method has proven to be effective at stopping groundwater flow in these areas and reducing the chemical concentrations.

FACTORS AFFECTING CONTAMINANTS IN GROUNDWATER

1,4-dioxane and the North End

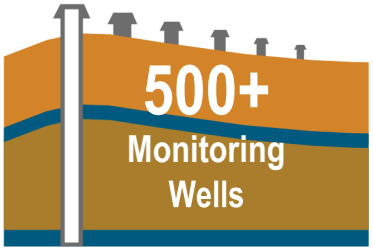
In 2005, the Colorado Water Quality Control Commission established a new groundwater standard for 1,4-dioxane. At that time, new technological advancements capable of detecting and measuring 1,4-dioxane at the new standards found 1,4-dioxane north of the site. That standard has been revised over the past 13 years, and the current standard is now 0.35 parts per billion (ppb). Current best available analytical technology is not able to reliably detect 1,4-dioxane at this concentration in site groundwater so a site-specific standard for Lowry Landfill is set at 0.9 ppb.

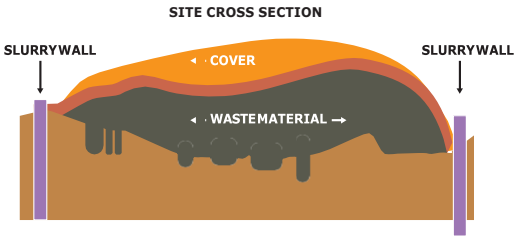
Numerous response action work plans have been implemented that have effectively reduced the extent of 1,4-dioxane in the North End Area, and

Water Treatment

1.5 million gallons per month

In compliance with discharge standards





1,4-dioxane

- Synthetic industrial chemical sometimes added to solvents to prolong their useful life
- Used in some consumer products such as cosmetics, deodorants, soaps, toothpaste, anti-freeze and paint

- Site groundwater standard = .9 ppb

there is a comprehensive monitoring program in place. Of the 37 current North End monitoring wells where trend analysis was performed, 86% are decreasing and 14% have no trend. The observed concentration declines in all areas shows the effectiveness of the ongoing response actions and demonstrates that groundwater quality in this area is improving. Data shows that the groundwater extraction response at the site continues to significantly decrease the 1,4-dioxane concentrations, as well as the width and length of the contamination to the north. An animation of the North End plume over time is available at www. lowrylandfillinfo.com. As stated in the 2022 Five Year Review, "Based on the results of the North End investigation, groundwater contamination from the Site is not affecting these residential areas." Furthermore, the report states, "There are no complete exposure pathways from 1,4-dioxane in shallow groundwater. Monitoring results indicate concentrations are decreasing or stable in most off-site wells. Monitoring and extraction will continue to reduce 1,4-dioxane concentrations and prevent migration of the plume to the north."

MW38 Sand Channel

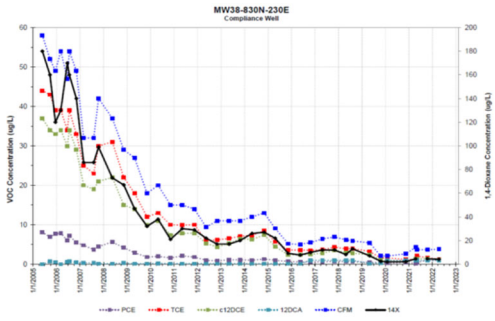
Remedial actions to contain groundwater and reduce contaminant concentrations in the sand channel have also been successful. Water is pumped out of the sand channel to maintain inward groundwater flow directions and prevent offsite migration of contaminants and the extracted water is sent to the treatment plant ensuring the surrounding groundwater is always flowing inward. Levels of 1,4-dioxane have been reduced by 98% since May 2005 in this area. Chloroform and trichloroethene concentrations have also been reduced by 93% and 97%, respectively. See graph at right.

Nitrate in the NBBW Area

One well is exceeding the nitrite and nitrate standards in an area where sewage sludge was historically land farmed to cultivate and enhance microbial degradation of the sludge. This well is located along the northern boundary of the Site. There does not appear to be a potential for significant off-Site migration of nitrate or nitrite at concentrations greater than the performance standard and monitoring is ongoing. Additionally, groundwater extraction from the North End wells further downgradient would capture any potential migration of these compounds if it were to occur.

WATER TREATMENT PLANT

The water treatment plant uses a natural biological process and advanced oxidation treatment to destroy more than 92% of the organic compounds coming into the plant. An ion-exchange system is used to reduce molybdenum by an average of 96%. The pretreated water is then discharged to a publicly owned wastewater treatment plant for further treatment. The on-site treatment plant removes all site chemicals to safe standards and leaves a minimal environmental footprint. It treats approximately 1.5 million gallons of contaminated groundwater every month. The data show the plant continues to operate as designed in compliance with discharge standards.



At Lowry

- Extraction and treatment continue to decrease concentrations.
- North End Area: 38 Wells

86% *show declining concentrations*

14% *remain flat*

- MW38 Channel:

98% *reduction of 1,4 dioxane since May 2005*

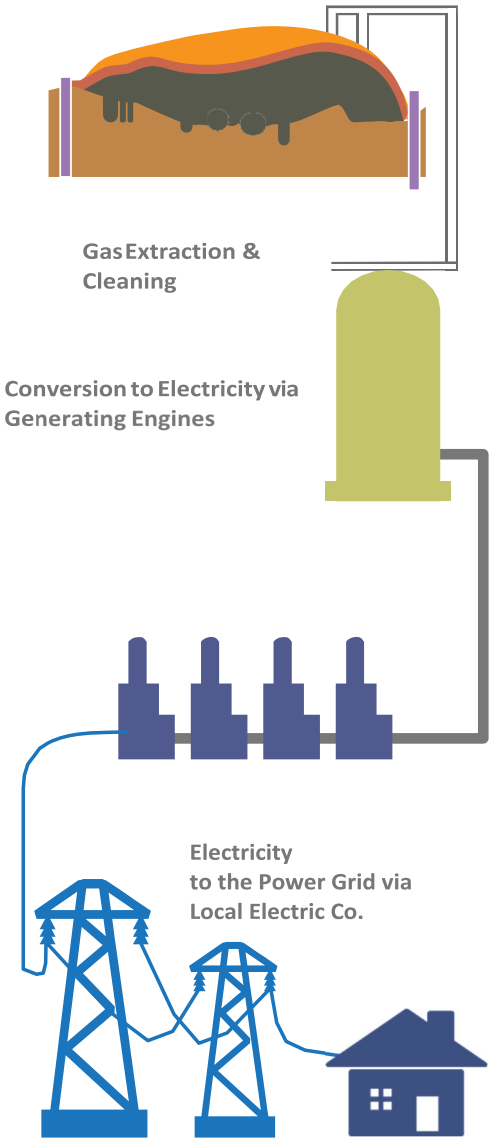
LANDFILL GAS REMEDY

Landfill gas—made up of methane, carbon dioxide, nitrogen and other gases—is created naturally by the biological decomposition of organic matter in landfills under low-oxygen conditions. The Site's landfill gas extraction, collection and treatment system continues to be effective and in compliance, including the gas-to-energy treatment plant, which removes roughly 5,000 tons of methane annually. This equates to removing more than 22,000 cars from the road each year. The on-site power plant, constructed in 2008, uses landfill gas to fuel four internal combustion engines that generate electricity for a local utility company. The electrical power generated is enough to supply 2,500 to 3,000 households.

LANDFILL COVER

The former landfill is covered by 4 to 12 feet of compacted clay and soil. The "cap" reduces infiltration of rain and snow into the soil, which minimizes further groundwater contamination. The cover continues to effectively drain rain and snow, keeping it from penetrating the soil. The cap is routinely monitored for any depressions that may form due to settlement that would cause rainwater to pond, among other issues. No cap settlement issues were identified in this report.

Gas to Energy Process



LOWRY LANDFILL

Visit the Lowry Landfill website for detailed information and contact information.
www.lowrylandfill.com

1.0 INTRODUCTION

This Remedial Action (RA) and Operations & Maintenance (O&M) Status Report was prepared on behalf of the City and County of Denver (Denver), Chemical Waste Management, Inc., and Waste Management of Colorado, Inc. (WM), collectively Work Settling Defendants (WSDs), pursuant to Subsection 2.1 of the Statement of Work (SOW) attached as Exhibit C to the Consent Decree (CD) entered by the U.S. District Court for the District of Colorado on 28 September 2005 (and reentered on 16 November 2005) in Civil Action No. 02-CV-01341-EWN-MJW regarding the Lowry Landfill Superfund Site (the Site).

No RA activities were performed during the reporting period.

O&M activities consisted of operations, maintenance, and monitoring associated with the Site Water Treatment Plant (WTP), groundwater, surface water, landfill gas (LFG), and landfill covers. These activities were performed in accordance with *Addendum 7, Operation and Maintenance Manual, Water Treatment Plant* (Parsons/Engineering Management Support, Inc [EMSI], 2021); *Revision 3, Operations and Maintenance Manual, Groundwater Extraction* (Parsons, 2021a); *Revision 2 Groundwater Monitoring Plan* (GWMP) (EMSI/Parsons, 2018); the *Stormwater Monitoring Plan* (EMSI, 2008a); *Revision 3, Operations and Maintenance Manual, LFG Remedy* (EMSI, 2021); *Revision 4, Updated Compliance Monitoring Plan LFG Remedy* (EMSI, 2020a); and the *Final Operations and Maintenance Manual, Covers and Stormwater* (EMSI, 2007a). In addition, groundwater extraction from North End and MW77 Area response actions and monitoring of North End groundwater were implemented in accordance with the *Revised North End Initial Response Action (IRA) Work Plan Addendum* (EMSI, 2008b) as conditionally approved by United States Environmental Protection Agency (USEPA) on March 24, 2008; the *North End Groundwater Monitoring Plan* (EMSI, 2007b); the *North End Groundwater Monitoring Plan Update No.2* (EMSI, 2020b); the *North End Groundwater Monitoring Plan Update No. 3* (Parsons, 2021b); the *Response Action Work Plan to Extract Additional Groundwater from Upgradient of MW77-WD* (EMSI, 2011); the *Response Action Workplan for the B-326-UD and B-313 Areas* (EMSI, 2013); and the *Revised Work Plan to Further Assess the North End 1,4-Dioxane Plume and Update Conceptual Model for North End Area* (EMSI, 2018a). The status of North End activities is described in Subsections 4.8 and 4.9.

1.1 Purpose and Scope

This report summarizes results of O&M activities performed from 01 January 2022 through 30 June 2022 (reporting period).

1.2 General Site Description

The Site is located in Section 6, Township 5 South, Range 65 West, and in the southern portion of Section 31, Township 4 South, Range 65 West in west central Arapahoe County, approximately 15 miles east of downtown Denver, Colorado. The Site occupies approximately 508 acres within an unnamed north-south trending valley located west of Murphy Creek and east of East Toll Gate Creek. The North End study area extends for approximately three miles north of the Site and is coincident with the unnamed creek and Murphy Creek drainages.

1.3 Report Organization

This report contains ten sections and seven appendices. The remainder of this report is organized as follows:

- Section 2 and Appendix A contain a summary of WTP operations and monitoring. Appendices F and G contain electronic analytical data packages and data validation reports (DVRs) for the WTP, the Data Quality Assessment (DQA), and the database. The database has been updated for routine database checks and should replace any previous versions still in use.
- Section 3 and Appendix B contain a summary of waste management activities, including: waste storage, treatment, disposal, and maintenance.
- Section 4 and Appendix C contain a summary of groundwater monitoring activities and evaluations of monitoring results, including: well inspections, sitewide groundwater level data, analytical results, and statistical evaluations. Appendices F and G contain electronic analytical data packages, DVRs, the DQA, and the database for groundwater. The database has been updated for routine database checks and should replace any previous versions still in use.
- Section 5 and Appendix D contain a summary of LFG monitoring, extraction, collection, and treatment activities performed during the reporting period, and an evaluation of gas monitoring results and collection system performance. Appendix G contains the database for landfill gas, the Gas-to-Energy Plant (GTEP), and flare gas.
- Section 6 contains a summary of stormwater sampling activities and results. Appendix G contains the database for storm and surface water.
- Section 7 and Appendix E present activities and results related to cover monitoring and maintenance.
- Section 8 presents the status of RA activities.
- Section 9 presents problems encountered and recommendations for each component of this Status Report.
- Section 10 presents the references cited in this report.

2.0 WATER TREATMENT PLANT

This section summarizes WTP O&M activities for the reporting period.

2.1 Operations and Maintenance

Operations of the WTP during the reporting period were limited to treatment of Site waters originating from the North Boundary Barrier Wall (NBBW), North Toe Extraction System (NTES) sump, east boundary extraction wells (EBEWs – PM-11, PM-15 and MW-51 areas), MW38 area extraction wells, on- and off-Site North End Response Action wells, the decontamination pad at the GTEP complex, LFG condensate, and miscellaneous sources such as well sampling purge waters and potable water used for plant wash-down. Following treatment, all of these waters were discharged to the publicly-owned treatment works (POTW) pipeline.

The treatment protocols, process monitoring, and effluent quality monitoring were performed in accordance with Industrial Discharge Permit No. 2360-6, effective January 5, 2020.

Throughout the reporting period, the WTP was discharging to the POTW 99 percent (%) of the calendar time. Downtime was caused by the reasons listed below, in order of decreasing significance. No discharge occurred during these downtimes.

- Granular activated carbon (GAC) changeout: Plant operations were stopped on January 10 while the lead and lag GAC vessels were changed out (scheduled – 3 hours and 22 minutes).
- Power interruption: Plant discharge stopped on June 29 for a power grid interruption for 1 hour and 22 minutes.
- Biological system programmable logic controller (PLC), uninterruptable power supply (UPS), and 24-volt power supply changeout: Plant operations were stopped on February 23 while the biological system PLC was powered down for UPS and 24 Volt power supply changeout (scheduled – 22 minutes).
- Routine O&M: Effluent pH probe calibration, quarterly POTW discharge line valve exercising and GAC vessel back-flushing (scheduled – all less than one day).
- Automatic shutdown tests of auto-alarm sensors and shutdown circuits (scheduled – all less than one day).
- Standard time adjustment to daylight savings time: Plant operations were stopped while the PLC and plant computers were adjusted to daylight savings time [March 14, 15 minutes].

All O&M activities were documented on checklists, in the daily operator logs, and/or electronic logs entered automatically into the WTP databases by the operating software. Completed daily operator logs and weekly checklists of pertinent information are provided in Appendix A-1.

2.1.1 NBBW System

As shown in Appendix A-2, groundwater elevations in the NBBW sump fluctuated between 5685.4 feet (ft) above mean sea level (amsl) and 5685.6 ft amsl. The average groundwater elevation was 5685.5 ft amsl, which is the set-point water level in the sump.

Throughout the reporting period, groundwater was extracted from the NBBW sump at an average rate of 6.3 gallons per minute (gpm) while pumping.

The significance of groundwater elevations at the extraction sump and in the overall vicinity of the NBBW system relative to hydraulic containment is evaluated in Subsection 4.5.3 of this report.

2.1.2 North End Extraction System

Extraction wells in the North End include on-Site wells located near the northern boundary of the Site and off-Site wells located north of the Site in Section 31 (Figure 4.34). North End on-Site and off-Site extracted groundwater was conveyed to the main WTP through dedicated North End pipelines. On-Site and off-Site North End groundwaters are introduced to the WTP at the feed surge tank where they are blended with pre-treated on-Site waters, treated by GAC, then discharged to the POTW pipeline. Rates of North End on-Site and off-Site groundwater extraction are presented in more detail in Subsection 4.8.

2.1.3 Liquid Volumes and Flow Rates

The following table summarizes the types, flow rates, and volumes of waters treated during the reporting period.

Water Source	Average Flow Rates (gpm)	Total Volume (gallons)
NBBW Water [total of volume sent directly to WTP plus volume temporarily routed to raw water storage tanks (RWSTs)]	6.3	1,650,039
MW38 area (includes automatic pumping from the sand channel wells and the source-control well)	1.9 (calendar)	486,239
NTES Water	0.5 (calendar)	128,994
LFG Condensate from Tank 530 (treated in WTP from January 1 through June 30, 2022)	0.02 (calendar)	4,533
PM-11 Area	NA[a/]	48,953
MW51 Area	NA	65,641
PM-15 Area	NA	4,657
Decontamination Water and Precipitation	NA	1,034
North End On-Site Water[b/]	14.0 (calendar)	3,656,484
North End Off-Site Water[b/]	8.6 (calendar)	2,238,252
Potable Water [for plant wash-down, pipeline flushing and Gas Chromatographs (GCs)]	NA	21,360
Total Influent[c/]	31.8 (calendar)	8,306,186
Discharge to POTW[c/]	32.0 (calendar)	8,328,352

calendar - timeframe used to derive average flow rate. For example, total volume during the reporting period (gallons) divided by number of calendar-minutes during the reporting period equals average flow rate in gpm.

a/ Not applicable – batch transfer to RWSTs, feed surge tank, or clear well, then treatment in WTP.

b/ See Subsection 4.8 for extraction rates from individual North End wells.

c/ The difference between the total influent volume and the volume discharged to the POTW is accounted for in total tank storage capacity associated with the WTP (including temporary storage in external tanks) and in measurement error of the totalizers. Totalizer error is as much as +/-0.5% on each totalizer (10

totalizers are used to generate the volumes above). For example, the effluent totalizer range of error is +/- 41,642 gallons over the reporting period.

WTP influent volumes dropped substantially from last reporting period (approximately 825,00 gallons overall). Most influent sources displayed a drop in volume especially the North End on-Site wells that displayed a 1.9 gpm drop in their overall extraction rate over last period and the NBBW extraction rate that dropped 0.8 gpm. Precipitation for the reporting period was approximately 4 inches less than the first half of 2021, consequently, there is less recharge of the groundwater than in 2021. This is supported by the dry area in the NBBW containment zone that expanded considerably compared to last period (Figure 4.17).

2.1.4 pH System

During the reporting period, the pH of WTP effluent was measured every minute at the last pH monitoring probe in the plant (probe pH-740 located in the effluent surge tank). Average, minimum, and maximum pH readings during plant operations for the reporting period are summarized below. These represent normal pH readings.

Month	Control pH Set-Point	Average pH Reading	Minimum pH Reading	Maximum pH Reading
January	7.0	6.8	6.5	7.2
February	7.0	6.9	6.7	7.1
March	7.0	6.8	6.6	7.2
April	7.0	6.8	6.7	7.1
May	7.0	6.8	6.7	7.1
June	7.0	6.8	6.7	7.1

2.1.5 Removal of Volatile Organic Compounds

Removal of volatile organic compounds (VOCs) within the WTP is accomplished by biological treatment, UV-Oxidation (UV-Ox), and GAC. Biological treatment occurred in the Biological Treatment System (BTS) when treating a blend of approximately 6% NTES water, 21% MW38 area groundwater, 5% LFG condensate (when processing), and 68% softened water from the chemical precipitation process. The operating temperature of the BTS was maintained at 23.5 degrees Centigrade (°C).

While the BTS remained the primary process for VOC removal this reporting period, a parallel slip-stream of approximately 7.5 to 8.3 gpm of softened, non-NTES water was treated with UV-Ox to increase BTS removal efficiencies and biosolids handling by increasing the retention time within the BTS. The longer retention time in the BTS also allowed for increased flow from the MW38 Source well through the BTS.

The on-line GCs monitor eight target VOCs at least once per day for real-time monitoring at TP-3350 (BTS effluent) and TP-730 (UV-Ox effluent). The following compounds are monitored:

- 1,1-Dichloroethene (DCE)
- trans-1,2-DCE
- 1,1-Dichloroethane (DCA)
- Chloroform (CFM)
- Tetrahydrofuran (THF)
- Benzene
- 1,2-DCA
- 1,4-Dioxane

GC monitoring of GAC efficiencies at TP-710, TP-740, and TP-750 occurs once per week. Due to the large volume of data produced by the three GCs, those data are not included here but are available upon request.

Destruction efficiencies of the VOC compounds that have exceeded their discharge limits in **plant influent** in at least one sampling event since monitoring began are calculated below. Although the permit no longer includes discharge limits for these compounds (except 1,4-dioxane), they are routinely monitored in plant influent per the *Updated Early Warning Monitoring Plan* (EWMP) (EMSI, 2008c) and in plant effluent per the discharge permit (Metro Wastewater Reclamation District [Metro], 2020)]. Approximate destruction efficiencies for these compounds for the WTP as a whole are summarized below. These destruction efficiencies were calculated based on differences between mass loading to the plant from all influent streams and mass remaining in plant effluent.

Organic Destruction Efficiencies across Entire WTP

Compound	Average Efficiency (%) January through June 2022
1,1-DCE	97%
1,2-DCA	71%
1,4-dioxane	97%
Benzene	100%
Vinyl Chloride	NC*

* Influent and effluent concentrations were not detected. Efficiency not calculated

Analytical results from MP-001 (plant effluent, Appendix A-4.1.1 and A-4.1.2) and influent composite sampling (Appendix A-4.2.1 and A-4.2.2) indicate that some breakthrough of target compounds through GAC contactors occurred during the reporting period (as shown in the table above). 1,4-Dioxane, 1,1-DCE and 1,2-DCA showed breakthrough over the reporting period. 1,1-DCE and 1,2-DCA have no permit limit. 1,4-Dioxane breakthrough concentrations were less than 85% of the discharge limit at all times (85% criterion is used as a trigger level to change out carbon, per Section 3.11 of the WTP O&M Manual). Note: GAC is not intended to remove 1,4-dioxane so 100% reduction is not expected.

2.1.6 Sludge Production

During the reporting period, approximately 25 cubic yards (cy) of dry sludge was produced and placed into a lined roll-off box located adjacent to the WTP. Fifteen cy of the sludge were disposed at the Denver Arapaho Disposal Site (DADS) in May in accordance with the *Updated Waste Management Plan* (WMP) (EMSI, 2020c). The remaining sludge will be disposed of in the second half of 2022. The non-hazardous waste manifests for the sludge are presented in Appendix B-2. Analytical results for radiological and toxicity characteristic leaching procedure (TCLP) preparation with analyses of the sludge are presented in Appendix A-3. Analytical and screening results confirmed the sludge remains a non-hazardous, solid waste.

WTP sludge was also sampled for technologically enhanced naturally occurring radioactive material (TENORM) according to 6 CCR 1007-1 Part 20. The goal of the regulation is to determine if naturally occurring radioactive material concentrations are increased by, or as a result of, past or present human practices i.e., the processes within the WTP. The sludge was sampled in triplicate for Radium-226, Radium-228, Polonium-210, and Lead-210 (Appendix A-3). All sample results were below the exemption limit (5 pCi/g for each isotope) therefore Lowry WTP sludge material does not contain concentrations of TENORM above the exemption limit for disposal in landfills.

2.1.7 Maintenance and Calibration

Routine servicing and maintenance of plant equipment included the following:

- Serviced liquid transfer pumps, chemical feed pumps, and mixers;
- Quarterly bag filter inspections;
- Replenished chemical storage totes;
- Added and mixed chemical polymer;
- Serviced the HMR-30 mixing, flocculation, settling, and clear-well chambers;
- Serviced the sludge thickener and holding tanks;
- Serviced the plate and frame filter press;
- Back-flushed the GAC contactors to prevent fines accumulation and hydraulic packing of the carbon;
- Serviced air compressors (Ingersoll Rand);
- Cleaned pump strainers;
- Serviced BTS air blowers; and
- Quarterly UV-Ox unit inspection and test run (when on standby).

Routine maintenance and calibration of plant instrumentation included the following:

- Daily cleaning of pH probe at TP-315;
- Weekly calibration (and cleaning as necessary) of pH probes at TP-315, TP-365, TP-670, and TP-740;
- Weekly cleaning and monthly calibration of pH probes in the BTS;

- Weekly servicing, data backup, and calibration of on-line GCs;
- Weekly data backup and archiving of WTP operating database; and
- Monthly calibration of lower explosive limit (LEL) meter (LEL-740).

On March 7, 2022, the 23-year-old PLC of the Rayox UV-Oxidation unit failed to power up after it was powered down for a scheduled 3,000-hour UV lamp change-out. A change-out of the PLC was begun on March 14, 2022 because of its age and earlier indications that the internal power supply of the PLC was failing. Industrial contractor Browns Hill Engineering & Controls began work on the PLC change-out including a rewrite of the control programming software to enable the new replacement PLC to be used. Plant operations continued at a reduced capacity while UV-Ox unit was inoperable. The balance of untreated water was sent to the BTS and onsite storage until March 23, 2022, when the UV-Ox PLC programing and physical changeout to a new PLC was completed. With the plant treatment capacity returned to normal, the approximate 50,000 gallons of untreated stored raw water was then processed over the next six days.

All maintenance and calibration activities were documented on checklists and in the daily operator logs provided in Appendix A-1.

2.2 Monitoring

2.2.1 Summary of Activities

Compliance monitoring during the reporting period consisted of sampling WTP effluent (MP-001) per the discharge permit (Metro, 2020). Other monitoring included sampling the molybdenum ion exchange (IX) system to measure efficiencies; performance monitoring of the BTS; and Early Warning monitoring per the *Updated Early Warning Monitoring Plan* (EMSI, 2008c) to measure performance of the WTP treatment systems.

2.2.1.1 WTP Effluent Compliance Monitoring

All WTP effluent (MP-001) analytical results for the reporting period were reported in monthly Periodic Compliance Reports (PCRs) that are submitted to Metro, Aurora, USEPA, Colorado Department of Public Health and Environment (CDPHE), and Tri County Health Department (TCHD). Analytical results for MP-001 monitoring are reported in Appendix A-4.1.

2.2.1.2 Ion Exchange Monitoring for Molybdenum

Performance monitoring for the molybdenum IX treatment system included weekly monitoring (while pumping) of MW113-EW-1 influent at plant sampling port TP-170 plus multiple sample ports located within the IX treatment system. The IX treatment system is used to manage the molybdenum in the WTP effluent (MP-001). The rate of extraction at MW113-EW-1 at the beginning of the period was approximately 2 gpm. A steady decline in extraction rate continued throughout the period while the groundwater level remained at the base of the MW113-EW-1 well screen. The extraction rate was approximately 1.7 gpm by the end of the period. A high percentage of molybdenum continues to be efficiently removed by the IX system as the molybdenum concentration entering the IX treatment system remained relatively stable throughout the period.

2.2.1.3 BTS Performance Monitoring

Performance monitoring of the BTS involved collection of samples for 1,4-dioxane, VOCs, total phosphorus, total volatile suspended solids, nitrate, and nitrite. Analytical

results are used to measure organic loading, biomass and efficiency of the biological system. BTS performance monitoring data may be found in the Access© database in Appendix G.

2.2.1.4 Early Warning Monitoring

Early Warning monitoring for this reporting period involved monthly and yearly sampling of WTP influent according to the EWMP (EMSI, 2008c) and *Metro Letter of Understanding* (EMSI, 2015). Influent samples from TP-110 (RWSTs), TP-120 (NBBW), TP-150 (North End on-Site and NBBW-IW-3), TP-170 (MW113 Area), TP-160 (North End off-Site and MW77 area) and TP-3310 (BTS influent) were collected for analysis of VOCs, 1,4-dioxane, nonylphenol, and molybdenum (Appendices A-4.2.1 through A-4.2.4). Composite samples were collected for metals and SVOCs (Appendix A-4.2.5).

2.2.2 Sampling

WTP effluent (MP-001) and Early Warning influent samples were collected according to the schedule and analytical protocol presented in Table 2.1. A sampling schedule for the next reporting period for MP-001 and Early Warning is also provided in the table.

Performance monitoring for the BTS and molybdenum in the IX system was performed weekly. Appendix F-1 lists the samples collected for performance and compliance monitoring and Appendix F-2 contains the data packages from the laboratories.

2.2.3 Laboratory Analyses

Eurofins/TestAmerica (Denver) analyzed the samples collected from the WTP for non-radiological parameters. Eberline Services (Oak Ridge, Tennessee) analyzed the radiological samples. Analytical data packages and DVRs for the reporting period are presented in Appendix F-2.

2.2.4 Data Validation

All effluent (MP-001) sample results were validated according to USEPA *National Functional Guidelines for Organic and Inorganic Data Review* (USEPA, 1994a and b as amended) and by SW-846 guidelines specific to the method or as directed by USEPA. All radionuclide results that were less than the critical value (L_C) were qualified as non-detects (U). Radionuclides were validated according to the guidelines and criteria specified in the *Multi-Agency Radiological Laboratory Analytical Protocols* (MARLAP) *Manual* (USEPA, 2004).

Validation is complete for all January through June 2022 compliance sampling events. All compliance data packages were received with no major quality issues except for recurring matrix spike failure of benzidine due to the inadequacy of method 625 to extract this compound without oxidative losses. This problem is discussed in more detail in the DQA report (Appendix F-3). Performance and Early Warning samples are not validated.

2.2.5 Monitoring Results

Compliance, Early Warning, and performance monitoring for the WTP were performed in this period as detailed below.

2.2.5.1 Compliance Monitoring

WTP effluent (sample port MP-001) was sampled according to the schedule in Section E.1 of the discharge permit (Metro, 2020) and results are presented in Appendix A-4.1. All

validated results from WTP effluent sample port MP-001 were below the industrial wastewater discharge permit limits.

2.2.5.2 Early Warning Monitoring

The Updated EWMP (EMSI, 2008c) requires annual sampling for a comprehensive list of parameters from Section E.1 of the discharge permit per the *Metro Letter of Understanding* (EMSI, 2015). Any compound in the **influent** whose concentration exceeds the discharge limit requires periodic follow-up sampling to monitor for statistical trends. An annual influent sampling event for the parameters listed below is required to determine if influent concentrations are less than discharge limits.

- VOCs (E624) (including 1,4-dioxane),
- 1,4-dioxane (8260B Selected Ion Monitoring [SIM])
- Semi-Volatile Organic Compounds (SVOCs) (E625),
- Metals (E200.7 and E200.8),
- Mercury (E245.1),
- Nonylphenol (D7065),
- Gross Alpha/Beta (E900.0),
- Radium-226 and Total Radium (SM 7500-RA-B)
- Radium-228 (EPA-RA-05),
- Plutonium-238, -239, -240 (EPA 600/7-79-081), and
- Americium-241 (ER110 LANL).

The annual influent sampling event was performed on April 4, 2022 and indicated 1,4-dioxane was the only **influent** compound exceeding its **discharge** limit. Consequently, this compound was selected as a compound of concern for monthly influent monitoring. Grab samples were collected and analyzed for 1,4-dioxane to monitor the concentration in each influent source. Influent sampling involved collecting grab samples from each of seven sources (RWSTs, NBBW, MW38, North End on-Site water, North End off-Site water, MW113 water, and BTS influent) and compositing the results based on flow-weighted percentages. VOCs are sampled quarterly and molybdenum is sampled monthly for performance monitoring. Appendix A-4.2 presents the individual results for each influent grab, the percentage of total flow, and the flow-weighted total concentrations for VOCs (A-4.2.1), 1,4-dioxane (A-4.2.2), and molybdenum (A-4.2.3). Appendix A-4.2.4 presents the composite concentrations of radionuclides and Appendix A-4.2.5 presents composite concentrations of metals and SVOCs.

As mentioned above, 1,4-dioxane exceeded the discharge limit in the influent. Statistical trending analyses (Sen's test) for 1,4-dioxane is presented in Appendix A-4.2.2.2. Trend analyses for molybdenum and radionuclides were also performed (Appendices A-4.2.3.2 and A-4.2.4.2, respectively). There were no statistically significant increasing trends for these analytes. The WTP can readily treat 1,4-dioxane to below discharge limits. Molybdenum treatability is discussed in Section 2.3.

2.2.5.3 Performance Monitoring

Performance monitoring results for molybdenum and BTS testing may be found in the database in Appendix G.

2.3 Treatability

As discussed in Section 2.2.1.2, an IX system for molybdenum removal from MW113-EW-1 groundwater was brought online to manage the molybdenum in the WTP effluent (MP-001). At 1.7 gpm to 1.9 gpm extraction rates, influent molybdenum concentrations to the IX system ranged between 4,500 and 7,400 micrograms per liter (µg/L) and discharge from the IX treatment system ranged from 150 to 320 µg/L during the reporting period which is below the permit discharge limit of 430 µg/L. A discussion of MW113-EW-1 extraction rate and mass removal is discussed in Section 4.5.3.

3.0 WASTE MANAGEMENT

Waste management activities during the reporting period were performed in accordance with the *Updated Waste Management Plan* (EMSI, 2020c) and are described below.

3.1 Drill Cuttings and Well Abandonment Wastes

No drill cuttings or well abandonment wastes were generated during the reporting period.

3.2 NTES Recovery Wastes

Non-liquid wastes were generated by activities at the NTES totaling less than one drum of non-liquid waste, personal protective equipment (PPE), absorbent pads, and paper. The partially filled drum of non-liquid waste is temporarily stored in a satellite accumulation area at the NTES.

No liquid skimming wastes were generated from the NTES during the reporting period. Partially filled drums of liquid waste are temporarily stored in satellite accumulation areas at the NTES and will be disposed when the drums are full.

Decontamination liquids and solids that originate from NTES activities are managed as a potentially hazardous substance. No decontamination liquids or solids were generated during the reporting period.

3.3 Treatment Plant Wastes

WTP waste typically consists of spent carbon, chemical precipitation sludge, general trash, and PPE.

Approximately 8,750 pounds of spent liquid-phase GAC from treatment of Site water was manifested and shipped off-Site to Clean Harbors' Kimball, Nebraska incinerator in April 2022. A uniform hazardous waste manifest is provided in Appendix B-2.

Approximately 25 cy of dry chemical precipitation sludge was produced and placed into a lined roll-off box next to the WTP. Approximately 15 cy of the sludge were disposed at DADS in May 2022 (Appendix B-1). The non-hazardous waste manifests for this shipment is presented in Appendix B-2.

Trash and PPE that were visually clean were managed as non-hazardous debris and accumulated in the roll-off adjacent to the WTP. No trash was disposed of during the reporting period.

3.4 Decontamination Pad Wastes

Approximately 1034 gallons of decontamination liquids from the decontamination pad sump were transported to and pumped into the RWSTs for processing through the WTP. This liquid was generated by storm events and decontamination activities. No decontamination solids were generated or disposed during the reporting period.

3.5 Site Monitoring Waste

Purge liquids from groundwater sampling were transported to and pumped into the WTP wet well for processing through the WTP.

4.0 GROUNDWATER MONITORING

This section summarizes groundwater characterization, compliance, and effectiveness activities conducted during the first half of 2022.

4.1 Well Inspections, Maintenance, Installation and Development

Well inspections, maintenance, installation, and development activities performed during the reporting period are discussed below.

4.1.1 Well Inspections and Maintenance

Well inspections are completed as a routine part of the monitoring program. The general condition of each well and any necessary repairs are recorded in a comment field on the water level measurement form and electronically transferred to a separate data table stored in the Site database. The following items were identified:

Location	Comments	State of Repair
MW38-840S-325E	Needs new pad due to landfill cover repairs in that area	Well pad replacement on hold, awaiting cover repair
NTES-EW-2	Well needs repair as the well casing is settling into the ground and the well lid does not close anymore, removal of section of casing will be required, locked at J plug to maintain well security.	To be repaired
MPZ-13	Needs new label	To be repaired
B-504A	Needs new label	To be repaired
MW145-WD	Needs new label	To be repaired
MW38-1363N-180W	Needs new label	To be repaired
NTES-EW3	Needs new label	To be repaired
MW66-WD	No well cap - well cap was removed to be able to close well. Well completion is locked to maintain well security.	To be repaired

Due to schedule and weather limitations some of these repairs were delayed and will be performed in the next reporting period.

4.1.2 Well Installation and Development

No new wells were installed, and no existing wells were abandoned during this reporting period, as indicated on Table 4.1.

4.2 Sitewide Groundwater Elevations

Groundwater elevations were measured in both the first and second quarters of 2022. Due to the number of water elevations recorded, Table 4.2 presents only one record for

each location per quarter, with measurements taken in January and April 2022. Water level measurements were recorded on a PC tablet containing water level data from previous quarters. Data entry screens prompted the field technician to recheck the measurement if the reading was <0.25 or >0.25 ft from the previous quarter's measurement as a QC check. Data from the tablet were then downloaded to a desktop computer and appended to the main database.

Hydrographs for the majority of the wells/piezometers in which water levels were gauged are presented in Appendix C-2. Due to the density of monitoring wells in the MW38 area, hydrographs were developed only for representative wells in that portion of the Site.

Discussion of potentiometric surfaces for the alluvium/weathered Dawson (WD), unweathered Dawson (UD), upper Denver, and lignite layer formations are presented in the following subsections. Lateral and vertical hydraulic gradients are also discussed (Subsection 4.2.5).

4.2.1 Alluvium/Weathered Dawson Formation Groundwater Elevations

The sitewide alluvium/weathered Dawson groundwater potentiometric surfaces for the first and second quarters of 2022 are shown on Figures 4.1 and 4.2, respectively. Groundwater at the Site occurs under water table conditions within the alluvial deposits along the Unnamed Creek drainage and within the weathered portion of the Dawson Formation (Fm.). Groundwater generally occurs at relatively shallow depths beneath drainages and at greater depths beneath topographic highs. The depth to groundwater in the alluvium and weathered Dawson ranges from approximately 3.5 ft below ground surface (bgs) in the detention basin along the T1 transect and MW132-WD in Section 31, to greater than 49 ft bgs along the unnamed creek drainage in the NBBW area (B-326-WD), to approximately 64 ft bgs in the southwestern corner of the Site (RDPZ-102 area). The depth to groundwater has increased in areas of groundwater extraction such as the MW38 area where pumping in the MW38 sand channel has lowered the water table at the southern end of the sand channel (at pumping well MW38-170S-140W) by approximately 10.7 ft below the original static level, and by about 20 ft below the original water table at the northern sand-channel pumping well (MW38-1028N-256E). Continued groundwater extraction and cessation of potable water injection at the NBBW has contributed to declining groundwater elevations in the NBBW area as demonstrated by the absence of saturated weathered Dawson at B-305WD, B-307, B-311, B-312, B-318, B-319, B-319-25S, B-319-26W, B-319-50S, B-319-50W, B-319-75S, B-323-WD, GW-109, NBBW-IW-1, MW-1000, PTP-14, PTP-15, PTP-15S, PTP-16, PTP-17S, PTP-18, PTP-19, PTP-20, PTP-20S, PTP-22S, TR-1, and U-701-WD during this reporting period.

In general, groundwater associated with the alluvium and weathered Dawson moves from south to north beneath the Site (Figures 4.1 and 4.2). However, the direction of groundwater movement may deviate locally near drainages and ridgelines as a consequence of the movement of groundwater away from topographic ridges; convergent flow toward drainages; variations in stratigraphy such as depositional sand channels; and/or groundwater extraction and voluntary actions. Groundwater extraction from wells along the perimeter slurry wall (PM-11, PM-15, and MW51-WD areas), NTES, NBBW, and MW38 channel areas also influences local potentiometric surfaces as discussed in Subsections 4.5.1 through 4.5.4, respectively. Details of pumping from the MW38, PM-11, PM-15, and MW51-WD areas are also discussed in Subsection 4.6. Pumping for

response actions in the North End, NBBW, and GTEP areas are discussed in Subsections 4.8. and 4.9.

In some instances, water level data from some wells were not used for potentiometric surface interpretations. For example, the water level for MW38-320N-305E was not used because the sandy zone in the screened interval is deeper and does not correlate to sandy zones screened in nearby wells. A similar situation occurs at MW38-1373N-180W. Cross Section H-H' in the *Final MW38 Area Pilot Test Report* (Parsons, 2005; Figure 2.10) shows there is no saturated weathered Dawson sand that correlates to the MW38 channel sand.

Overall, the lateral hydraulic gradient within the alluvium/weathered Dawson beneath the Site is approximately 0.021 foot per foot (ft/ft) directed generally to the north-northeast (between PM-8I and A-115 [change in head, $\Delta h = 119.01$ ft; distance, $d = 5580$ ft] in April 2022). The depth to groundwater, groundwater flow directions, and lateral hydraulic gradients observed during this reporting period are similar to those recorded in previous reporting periods.

4.2.2 Unweathered Dawson Formation Groundwater Elevations

The sitewide unweathered Dawson groundwater potentiometric surfaces for the first and second quarters of 2022 are shown on Figures 4.3 and 4.4, respectively. The depth to the unweathered Dawson potentiometric surface ranges from approximately 19 ft bgs in the NBBW area (B-306) and along the unnamed creek drainage, to approximately 79 ft bgs in the MW38 area (MW38-410N-180W), to approximately 92 ft below the landfill mass (B-708). In general, the groundwater gradient associated with the unweathered Dawson trends from south-southwest to north-northeast beneath the Site. The lateral hydraulic gradient within the unweathered Dawson beneath the Site is approximately 0.017 ft/ft directed generally to the northeast (between PM-6X-UD and MW-EW-2LC [$\Delta h = 97.29$ ft; $d = 5{,}720$ ft]) (using April 2022 water levels). The depths to groundwater, groundwater flow direction, and lateral hydraulic gradient observed during the first half of 2022 in the unweathered Dawson are similar to those recorded in previous reporting periods.

Examination of hydrographs (Appendix C-2) for several wells along the western boundary of the Site indicates groundwater levels that are not stable due to slow recovery since installation development or from sample purging. Similarly, the hydrograph for MW37-UD in the NBBW area (Appendix C-2) shows a steadily increasing trend through January 2020 from a sampling event that occurred in January 2005. Groundwater in the well now appears to be in equilibrium with the unweathered Dawson. This slow recovery is not uncommon for a well completed in claystone. In addition, well MW-1 shows a steadily increasing (rising) trend since 1982 probably due to the low hydraulic properties of the screened interval, while other wells (MW-2 and MW-3) show no trend. For these reasons, groundwater levels measured at MW-1 and MW-2 were not used to interpret the potentiometric surfaces shown on Figures 4.3 or 4.4, as noted on the figures. The groundwater elevation for MW-3 was honored for contouring but may not be completely representative due to long screen intervals.

Several well pairs exist with both wells screened in the unweathered Dawson. The water level in MW38-1064N-655E is utilized for the potentiometric surface, but the level in MW38-1064N-660E is not honored because the sand unit in the shallower well (MW38-1064N-655E) is more closely related stratigraphically to adjacent wells than the sand unit in the deeper MW38-1064N-660E well. The weathered and unweathered sand units in the

MW38-1064N area are interpreted to be part of the west to east trending "C"-sand (see *Final Remedial Investigation Report for the Shallow Groundwater and Subsurface Liquids and Deep Groundwater Operable Units [Harding Lawson Associates, 1992]*; Section 4.3.2.2.1, Channel Deposits within the Dawson Formation, p. 4-28). The potentiometric "trough" trending east-northeast from MW38-410N-180W is interpreted to be a result of this stratigraphic condition. Similarly, wells B-712-UD and B-712-LD, situated near the east end of the NTES, are both completed in the unweathered Dawson. However, only B-712-UD was honored for contouring the unweathered potentiometric surface because it is screened in the uppermost sandstone unit of the unweathered Dawson, which is the criterion used for contour-well selection, whereas B-712-LD is screened in a lower portion of the unweathered Dawson.

4.2.3 Upper Denver Groundwater Elevations

Potentiometric data from monitoring wells screened in the upper Denver are shown on Figures 4.5 and 4.6 for the January and April 2022 measurements, respectively. It should be recognized that the design criteria for constructing wells in the upper Denver was to set the screen in the first clean sand (i.e., minimal fines) below the clay separation unit. Because of geologic heterogeneity, the screen intervals are not always completed at the same stratigraphic level. As a result, the potentiometric contours shown on Figures 4.5 and 4.6 should be considered approximate, as variations in the elevations of screen intervals (shown on the figures) can introduce potentiometric variability. Stabilized water levels from the first half of 2022 are consistent with those measured in previous reporting periods.

The potentiometric level in monitoring well MW112-DEN, located in the southwest corner of the Site, has been slowly rising, consistent with the rest of the Denver Basin, since its installation in June 2005. However, interpretation of the potentiometric levels continues to suggest a northeast trending potentiometric trough. This well is screened in a thick, coarse-grained, porous sand unit. The hydraulic gradient along the trough is relatively flat (0.0047 ft/ft between MW112-DEN and MW71-DENR [Δh = 27.95 ft; d = 5,975 ft]) (using April 2022 water levels).

4.2.4 Lignite Layer Groundwater Elevations

Figures 4.7 and 4.8 show the locations of the 12 wells completed in the Lignite layer and their potentiometric levels for January and April 2022, respectively. The levels indicate that the potentiometric surface is nearly flat with a very low hydraulic gradient of 0.00128 ft/ft between B-506 and MW71-LIG (Δh = 6.61 ft; d = 5,160 ft) (using April 2022 water levels) to the east-northeast, similar to previous reporting periods. Hydrographs of lignite wells GW-120, GW-121, GW-122, and C-702Q1 (Appendix C-2) installed at least 30 years ago indicate that the potentiometric surface of the lignite layer had gradually and steadily dropped 13 to 22 ft, until mid-2006 when the levels stabilized or even rebounded by approximately one to two feet.

Unlike the Upper Denver, the elevation and stratigraphy of the lignite layer is fairly consistent and predictable across the Site. Except for B-506, all lignite wells are screened across the full saturated thickness of this layer. Monitoring well B-506, located hydraulically upgradient southwest of the Site, has a 40-foot screen that spans the lignite layer and the underlying shale and sandstones of the Lower Denver hydrostratigraphic unit. Consequently, the potentiometric data from this well should be used with caution. Nonetheless, taken as a whole, the potentiometric contours illustrated on Figures 4.7 and 4.8 may be viewed with a relatively high degree of confidence.

4.2.5 Vertical Hydraulic Gradients

Vertical hydraulic gradients between the weathered and unweathered Dawson hydrostratigraphic units were calculated by dividing the head difference between the midpoints of the saturated well screens associated with weathered and unweathered Dawson well pairs. To the extent that they are available, measured water levels and calculated vertical gradients are summarized in Table 4.3.

Upward hydraulic gradients, indicated by positive values (pink highlight) on Table 4.3, occur in 24% of the well pairs (not including well pairs where the WD was dry) during the second quarter 2022.

Areas of upward potential occur around the NBBW groundwater extraction trench and the GTEP extraction well where groundwater is extracted from the weathered Dawson. Other areas with upward gradients are in the vicinity of the PM-15 and MW51 pumping systems where groundwater extraction has lowered the weathered Dawson potentiometric surface. Downward potential occurs along the MW38 sand channel.

The upward and downward vertical gradient directions observed during the first half of 2022 are generally consistent with those previously observed. However, as extraction from the NBBW and GTEP areas continue, additional wells in these areas may become dry.

4.3 Groundwater Sampling

Table 4.4 and Figures 4.9 and 4.10 present the 71 compliance, North End Monitoring, effectiveness, and investigation monitoring wells and 113 samples collected during the reporting period. One sample was from an upper Denver well, 103 samples were from weathered Dawson wells, and 8 samples were from unweathered Dawson wells with one sample from an unweathered Denver well. Table 4.4 presents the wells sampled during the reporting period and their classifications, i.e., compliance (18 wells), compliance/effectiveness (7 wells), effectiveness (5 wells), North End Monitoring (34 wells), and investigation (7 wells). Water bearing units, sampling dates, and frequency of sampling are also included in the table. The table also shows sampling scheduled for the next two quarters in conformance with the updated GWMP and North End GWMP. Table 4.5 presents a summary of detected constituents at each location.

4.3.1 Laboratory Analyses

Analyte lists for groundwater compliance and performance monitoring are presented below.

Classification	Analytical Methods	Analytes
Compliance, Vertical Migration, and NTES, NBBW & MW38 Effectiveness	8260B 8260SIM 6010B 300.0A	(25) VOCs 1,4-Dioxane (2) Dissolved metals Nitrate and Nitrite
Perimeter Effectiveness	8260B 8260SIM	(4) VOCs 1,4-Dioxane
North End Monitoring/Investigation	8260SIM	1,4-Dioxane
MW77 Response Action	8260B 8260SIM 300.0A	1,1-DCE (VOCs) 1,4-Dioxane Nitrate

Classification	Analytical Methods	Analytes
B-313/B-326-UD Response	8260SIM	1,4-Dioxane
Action	300.0A	Nitrate
Molybdenum Investigation	6010B	Molybdenum

Indicator chemicals for the compliance wells are listed below:

- 1,1,1-Trichloroethane
- 1,1,2,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- 1,1-Dichloroethane
- 1,1-Dichloroethene
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- 1,4-Dioxane
- Acetone
- Arsenic
- Benzene
- Bromodichloromethane
- Bromoform
- Cadmium
- Carbon Tetrachloride
- Chlorobenzene
- Chloroform
- cis-1,2-Dichloroethene
- Dibromochloromethane
- Ethylbenzene
- Methylene Chloride
- Naphthalene
- Nitrogen, Nitrate
- Nitrogen, Nitrite
- Tetrachloroethene
- Toluene
- Trans-1,2-Dichloroethene
- Trichloroethene
- Vinyl Chloride

Perimeter effectiveness wells are sampled for 1,1,1-trichloroethane (TCA), 1,1-DCA, trichloroethene (TCE), and tetrachloroethene (PCE) plus low-level 1,4-dioxane. Wells in the NBBW, NTES and MW38 areas are being sampled for all the compliance analytes listed above in the event that indicator chemicals for effectiveness need to be determined.

Sample and data tracking information including the dates of sample collection, sample delivery group (SDG) number, laboratory, and validation reference, are summarized in Appendix F-1. Analytical data packages and DVRs for the reporting period are presented in Appendix F-2. The DQA report is presented in Appendix F-3. The analytical database is presented in Appendix G.

4.3.2 Data Validation

Validation results are presented in the DQA report in Appendix F-3. Data quality was acceptable, and no major issues were encountered.

4.4 Compliance Evaluation

This subsection presents an assessment of compliance with groundwater performance standards along the point of compliance (POC). Sixty monitoring wells are included in the compliance monitoring network (EMSI/Parsons, 2018). Compliance evaluations are performed using the procedures set forth in Appendix C of the updated GWMP (EMSI/Parsons, 2018).

4.4.1 Procedures Used to Assess Compliance

Compliance with groundwater performance standards is assessed at each compliance well for each chemical identified in the updated GWMP as an "indicator of compliance" (listed in Section 4.3.1). Evaluation of compliance at a well is performed by comparing the 90% upper confidence limit (UCL) and, if necessary, the 90% lower confidence limit (LCL) of the chemical concentration in groundwater to its performance standard. A well

is statistically in compliance if the 90% UCL is less than its performance standard and a well is out of compliance if the 90% LCL is greater than its performance standard. If the performance standard lies within the confidence interval (i.e., between the UCL and LCL), it is unknown whether the well is in or out of compliance. In some cases (i.e., where a trend is present in the data), a determination may be made as to potentially in or out of compliance based on empirical evidence such as concentration and trend (see Step 9 of Section 7.3.1 of the revised GWMP (EMSI/Parsons, 2018).

The data evaluation procedures consist of a number of statistical tests (Mann-Kendall [M-K] trend analysis, outlier test, goodness-of-fit test, regression analysis, and calculation of UCLs) which are performed using USEPA's ProUCL software package (version 5.2) or manually in the case of regression analysis. In order to minimize the impact of potential temporal trends, calculation of the 90% LCL and 90% UCL is based on the results of the ten most recent sampling events (with the additional caveat that only samples obtained no more frequently than quarterly intervals will be considered in the identification of the ten most recent sample results). The UCL and LCL are then used to evaluate compliance with the groundwater performance standards. The data evaluation procedures described in the updated GWMP (EMSI/Parsons, 2018) result in calculation of long term (ten most recent events) average concentrations as well as the upper and lower confidence limits. A summary of the data used for the evaluation procedures is presented in Appendix C-3.1.

The sampling results for each compliance monitoring well for each indicator chemical with a reported result greater than the performance standard are analyzed using the M-K test for the presence of temporal trends. If no trend is present, the UCL and mean are determined using the ProUCL software. If an increasing or decreasing trend is determined to be present, compliance is evaluated using linear regression to estimate the mean value and the 90% upper and lower confidence levels for the most recent sample date. This result is a mean value for the most recent sampling date and is not the same as, and should not be confused with, an overall arithmetic or geometric mean of all sampling results.

At least four sample results are necessary to evaluate the long-term average, UCL, and LCL concentrations in a well relative to performance standards. At least four samples have been collected from each well and analyzed for all the 29 indicator chemicals of compliance.

4.4.2 Results of Compliance Evaluations

Tabular and graphical summaries of the results of the compliance monitoring evaluations are presented in Table 4.6 and on Figure 4.11, respectively. Complete copies of the results of the statistical evaluations are contained in Appendix C-3.

Based on the statistical tests, water quality for one or more compliance monitoring parameters at six of the 60 compliance monitoring locations exceeded performance standards (Table 4.6). The locations and the parameters found to exceed performance standards consist of the following:

Well	Compound
B-326-UD	1,4-Dioxane
B-326-WD	1,4-Dioxane
BM-11X-100N	Tetrachloroethene
MW38-830N-230E	1,4-Dioxane
MW62-WDR	1,4-Dioxane

Well	Compound
MW62-WDR	Nitrite
MW62-WDR	Nitrate
MW77-WD	1,4-Dioxane

Statistically-based compliance determinations could not be made for some indicator chemicals in the following monitoring wells although subjective determinations may be possible, and are discussed below:

Well	Compound
B-313	1,4-Dioxane
B-313	Nitrate
B-326-UD	Nitrate
BM-11X-100N	Trichloroethene
BM-15N6	Nitrate
GW-109	1,4-Dioxane
GW-109	Chloroform
GW-109	Bromodichloromethane
MW23-C-SD	1,4-Dioxane
MW38-830N-230E	Chloroform
MW106-UD	1,4-Dioxane

B-313 1,4-Dioxane and Nitrate: The water levels in this well have dropped to the point that there was not enough water available to collect a sample from this well since 11/16/21. Consequently, a formal statistical-based compliance determination could not be made because insufficient volume was available for sampling. Because the measured water level is below the base of the screened interval after well purging, the well is considered to essentially be dry and B-313 is considered to be in compliance for 1,4-dioxane. WSDs consider this to be a temporary condition and will continue monitoring at B-313 and collect samples for laboratory analyses if and when sufficient water is present in this well.

B-326-UD Nitrate: A statistically-based compliance determination could not be made for nitrate in B-326-UD because the data displayed a decreasing trend and the requirements for use of linear regression to estimate the confidence limits were not met. Procedures to be used when this condition occurs are included in Step 9 of Section 7.3.1 of the updated GWMP (EMSI/Parsons, 2018). B-326-UD is considered to be potentially in compliance for nitrate because it had a decreasing trend and the last six results were less than the performance standard (28,000 µg/L) including the last two samples that did not contain detectable levels of nitrate. WSDs will continue monitoring at B-326-UD and attempt to determine compliance for this constituent.

BM-11X-100N TCE: A statistically-based compliance determination could not be made for TCE in BM-11X-100N because the groundwater performance standard for this chemical (5 µg/L) falls between the 90% UCL and the 90% LCL values. As per Step 8, Section 7.3.1 of the GWMP, no conclusion can be reached regarding compliance with the groundwater performance standard because the ten most recent results, which range from 3.6 to 5.7 µg/L, are all very near the groundwater performance standard (5 µg/L). WSDs will continue monitoring at BM-11X-100N and attempt to determine compliance for this constituent.

BM-15N6 Nitrate: A statistically-based compliance determination could not be made for nitrate in BM-15N6 because the data displayed a decreasing trend and the requirements for use of linear regression to estimate the confidence limits were not met. Procedures to

be used when this condition occurs are included in Step 9 of Section 7.3.1 of the updated GWMP (EMSI/Parsons, 2018). BM-15N6 is considered to be potentially out of compliance for nitrate because all results were greater than the performance standard (28000 µg/L). The last statistically-based compliance determination (second half 2020) determined that nitrate was out of compliance in this well. WSDs will continue monitoring at BM-15N6 and attempt to determine compliance for this constituent.

GW-109 1,4-Dioxane, Chloroform, and Bromodichloromethane: The water levels in this well have dropped to the point that there was not enough water available to collect a sample from this well since 6/1/20. Consequently, a formal statistical-based compliance determination could not be made for 1,4-dioxane, chloroform and bromodichloromethane; however, because the measured water level is below the base of the screened interval, the well is considered to be dry and GW-109 is considered to be in compliance. WSDs consider this to be a temporary condition and will continue monitoring at GW-109 and collect samples for laboratory analyses if and when sufficient water is present in this well.

MW23-C-SD 1,4-Dioxane: A compliance determination could not be made for 1,4-dioxane in MW23-C-SD because 90% of the results were not detected. The single detected value of 1.4 µg/L (9/15/20) is an outlier, but data validation could not find a reason to exclude this value from the statistics. If the outlier value is removed and replaced with an earlier value (0.5 U, 9/15/05) to have ten results, all ten results are not detected; therefore, the well would be in compliance with the performance standard for 1,4-dioxane. A confirmation sample was collected in 1st quarter 2021 that did not contain a detectable level of 1,4-dioxane [method detection limit (MDL) = 0.09 µg/L]. Although formal statistical testing could not be performed, this well is considered to be potentially in compliance with the 1,4-dioxane standard based on the preponderance of non-detect results from this well and because the single detect was not confirmed by a sample collected in first quarter 2021 (0.9 U µg/L).

MW38-830N-230E Chloroform: A statistically-based compliance determination could not be made for chloroform in MW38-830N-230E because the data displayed a decreasing trend and the requirements for use of linear regression to estimate the confidence limits were not met. Procedures to be used when this condition occurs are included in Step 9 of Section 7.3.1 of the updated GWMP (EMSI/Parsons, 2018). Because the trend is decreasing but 70% of the concentrations were above the performance standard, no potential compliance determination could be made. WSDs will continue monitoring at MW38-830N-230E and attempt to determine its statistical compliance.

MW106-UD 1,4-Dioxane: A statistically-based compliance determination could not be made for 1,4-dioxane in MW106-UD because 90% of the results were not detected. The single detected value of 6.5 µg/L (2/28/07) is an outlier, but data validation could not find a reason to exclude this value from the statistics. If the outlier value is removed and replaced with an earlier value (0.5 U, 7/21/06) to have ten results, all ten results are not detected; therefore, the well would be in compliance with the performance standard for 1,4-dioxane. Although formal statistical testing could not be performed, this well is considered to be potentially in compliance with the 1,4-dioxane standard based on the preponderance of non-detect results from this well.

The eight wells determined to be statistically out of compliance or potentially out of compliance are summarized below. Recommendations relative to non-compliance with performance standards at these locations follow the summary.

Well	Compound	Compliance Decision	Trend
B-326-UD	1,4-Dioxane	Out of compliance	Decreasing

Well	Compound	Compliance Decision	Trend
B-326-WD	1,4-Dioxane	Out of compliance	No trend
BM-11X-100N	PCE	Out of compliance	No trend
BM-15N6	Nitrate	Potentially Out of compliance	Decreasing
MW62-WDR	1,4-Dioxane	Out of compliance	Decreasing
MW62-WDR	Nitrate	Out of compliance	No trend
MW62-WDR	Nitrite	Out of compliance	No trend
MW77-WD	1,4-Dioxane	Out of compliance	No trend
MW38-830N-230E	1,4-Dioxane	Out of compliance	No trend

The above compliance determination summary list is the same as that from the second half of 2021, with exception of four wells: well B-313 1,4-dioxane and nitrate were previously out of compliance but are now in compliance because the well is essentially dry; MW38-830N-230E 1,4-dioxane was previously potentially out of compliance and is now out of compliance; MW38-830N-230E chloroform was previously potentially out of compliance and now compliance cannot be determined; well MW62-WDR, which was out of compliance but is now determined to be potentially out of compliance for nitrite. Wells can change their compliance determination from one reporting period to the next because the 10 most-recent sample dataset moves over time and new data are always being incorporated. If the data are trending or fluctuating over time as some of these wells are, the compliance statistics will also change.

Based on the current findings, the necessity and scope of potential corrective actions for the seven monitoring locations identified above are assessed below in accordance with the procedures established in the updated GWMP.

4.4.2.1 1,4-Dioxane in the NBBW Area

Based on the results of the statistical tests, 1,4-dioxane occurs in excess or potentially in excess of its performance standard in four NBBW-area compliance monitoring wells (B-326-UD, B-326-WD, MW62-WDR, and MW77-WD) (Figure 4.11).

In accordance with the Response Action Work Plan (RAWP) in the B-326-UD and B-313 areas (EMSI, 2013), the WSDs initiated groundwater extraction from well B-321 in the area of compliance well B-313 in June 2013 to address occurrences of nitrate and 1,4-dioxane in well B-313. Because of this pumping, B-313 is now essentially dry and is in compliance.

With regard to B-326-UD, groundwater extraction has been ongoing from nearby unweathered Dawson well MW113-UD since July 11, 2013 in accordance with the same RAWP. Groundwater extraction at MW113-UD along with groundwater extraction from adjacent weathered zone wells MW113-WD and MW113-EW-1 which began in 2007, resulted in a long-term downward trend in the water level in B-326-UD over the period from 2007 through 2018. Cessation of potable water injection in October 2018, resulted in a further significant decline in water levels in this well (approximately 22 feet between October 2018 through June 2022) and development of a steep cone of depression in the unweathered zone potentiometric surface around the MW113-UD extraction well and B-326-UD (see Figure 4.23). During this same timeframe (October 2018 through June 2022), concentrations of 1,4-dioxane increased slightly to 7.7 µg/L (2/12/20) then declined to 4.6

µg/L (4/14/22). Relationships between the groundwater level declines and 1,4-dioxane concentration changes were addressed in the Revised Final Cessation Report (EMSI/CDM-Smith, 2020a).

The presence of 1,4-dioxane in B-326-WD at concentrations greater than the groundwater performance standard was the basis for previous determinations that a Case 3 condition (the presence of an out-of-compliance condition with the potential for migration beyond the site boundary) exists in this area. To address this condition, the WSDs have been extracting groundwater from MW113-EW-1 (alluvial/weathered Dawson groundwater) and MW113-UD (unweathered Dawson groundwater) in accordance with USEPA-approved work plans.

The table below shows the changing concentrations of 1,4-dioxane in B-326-WD. These changes of 1,4-dioxane in B-326-WD most likely reflect the effect of extraction at nearby wells.

Well	Date	Conc (µg/L)
B-326-WD	2/12/2020	10
B-326-WD	5/28/2020	11
B-326-WD	8/26/2020	3.5
B-326-WD	11/23/2020	3.9
B-326-WD	2/3/2021	17
B-326-WD	6/1/2021	7.5
B-326-WD	8/30/2021	0.77 J
B-326-WD	10/12/2021	1.0
B-326-WD	2/8/2022	3.6
B-326-WD	4/14/2022	3.2

The changing concentrations of 1,4-dioxane in B-326-WD are believed to be affected by changes in groundwater extraction in nearby MW113-EW-1. With the continued absence of injection water, presumably this extraction well is pulling water from a different area when pumping, likely from the east, which contains lower levels of 1,4-dioxane. When extraction from MW113-EW-1 was temporarily suspended on November 4, 2020 and restarted on January 27, 2021 to allow for treatment of water contained in temporary storage tanks, 1,4-dioxane concentration in B-326-WD increased to 17 µg/L as measured on February 3, 2021. This may be the result of less flushing of residual 1,4-dioxane contained in the capillary fringe/vadose zone. After extraction of MW113-EW-1 resumed (March 11, 2021), the 1,4-dioxane concentration in B-326-WD dropped to below the performance standard (0.9 µg/L) as measured in August 2021 (0.77 µg/L). The latest sampling results (February and April 2022) have rebounded to 3.6 ug/l and 3.2 µg/L, respectively. This rebound in concentration is indicative of the changes caused by nearby pumping as discussed above. The extraction rate in MW113-EW-1 decreased from 3 gpm in November 2021 to 1.7 gpm in April 2022.

Like B-326-UD, relationships between the groundwater level declines and changes in 1,4-dioxane concentrations in well B-326-WD were addressed in the Revised Final Cessation Report (EMSI/CDM-Smith, 2020a). The WSDs will continue to monitor both the 1,4-dioxane concentrations and the water level in these wells and continue to evaluate conditions in this area.

With regard to MW62-WDR and MW77-WD, a Case 3 condition exists in the vicinity of these wells. WSDs have implemented four RAWPs (EMSI, 2006a, 2007c, 2008b, and 2010a) to reduce the levels of 1,4-dioxane in these areas and are currently implementing the *Response Action Work Plan to Extract Additional Groundwater from Upgradient of MW77-WD* (EMSI, 2011) to bring these wells into compliance. Visually declining trends in 1,4-dioxane, 1,1-DCE, and nitrate are apparent in compliance well MW77-WD since the start of response action implementation in 2008. 1,4-Dioxane has decreased from 120 µg/L in May 2008 to 12 µg/L in April 2022. Similar trends are apparent for nitrate (160,000 µg/L to 13,000 µg/L) and 1,1-DCE (22 µg/L to 0.66 J µg/L) for the same sampling dates.

In MW62-WDR, 1,4-dioxane is out of compliance and exceeds the performance standard in all of the ten most recent samples (measured concentrations ranging from 2.9 µg/L to 4.2 µg/L) with a decreasing trend. Although the trend is decreasing, the slow decline indicates that 1,4-dioxane will potentially continue to be out of compliance in this well. The well lies within the zone of containment caused by groundwater extraction from the NBBW and Response Actions north and east of the NBBW (see Figures 4.16 and 4.17). Consequently, the exceedances may be a Case 2 condition, which require only long-term monitoring. As required by the Fourth Five-Year Review Report (5YRR) (USEPA, 2017), the WSDs conducted additional evaluations of the effectiveness of the NBBW containment system and the Response Actions in the NBBW area as part of the NBBW Containment System Evaluation (CSE) Plan (EMSI/CDM-Smith/Parsons, 2019). That evaluation (EMSI/CDM-Smith/Parsons, 2021) determined that the NBBW effectively contains flow of contaminated groundwater within the alluvium/weathered bedrock groundwater unit. Any residual 1,4-dioxane remaining north of the containment zone will be captured by ongoing Response Action pumping north of the containment zone.

4.4.2.2 Nitrate and Nitrite in the NBBW Area

Nitrate and nitrite are out of compliance in monitoring well MW62-WDR (Figure 4.11). This well is located along the northern boundary of the Site, in an area where sewage sludge was historically land farmed. Statistical testing of potential temporal trends in the results (Appendix C-3.2) indicates that there is no trend in the nitrate and nitrite concentrations in MW62-WDR. Based on the decision rules established in the GWMP, occurrences of nitrate and nitrite in this well may be classified as a Case 3 condition. As discussed below and in Subsection 4.9, response actions are being implemented in this area. Other wells located in Section 31 north of the NBBW area were previously sampled in 2006 and analyzed for nitrate, nitrite, and VOCs. These compounds were not detected at concentrations greater than performance standards in any of the wells located along unnamed creek, immediately upgradient of the confluence with Murphy Creek (MW115-WD, MW116-WD, MW117-WD, MW118-WD, MW119-WD, and MW120-WD), or in any of the DADS wells located along unnamed creek or Murphy Creek (MW02-AD, MW05-WD, MW07-AD, MW08-WD, MW09-WD, and MW80-WD). Wells located south of the Yale Avenue extension along the northern boundary of Section 31 (MW121-WDR, MW122-WDR, MW123-WD, MW124-WD, MW125-WD, MW126-WD, MW127-WD, MW129-WD, MW130-WD and MW131-WD) were sampled for VOCs and nitrate in 2006 and were resampled in 2016 as part of the *Work Plan to Sample North End Wells, Piezometers and Surface Water* (EMSI, 2016) or *Work Plan for 3DVA Synoptic Sampling Event* (EMSI, 2018b, as amended in EMSI, 2018c), and again no nitrate, nitrite, or VOCs were detected above performance standards in any of these wells. Based on these results, the extent of nitrate and nitrite exceedances has been determined to be limited to the area

immediately to the north of the NBBW (i.e., in the immediate vicinity of compliance monitoring well MW62-WDR). The well lies within the NBBW zone of containment on a groundwater divide created by extraction wells MW-113-EW-1 and MW-170-EW-1 depicted on Figures 4.16 and 4.17. The NBBW CSE (EMSI/CDM-Smith/Parsons, 2021) determined that the NBBW effectively contains flow of contaminated groundwater within the alluvium/weathered bedrock groundwater unit. Figure 3-4 of the CSE shows particle tracks emanating from this area are captured by either MW113-EW-1 to the north or by MW-170-EW-1 to the south..

Based on the results of the prior sampling, the analysis of the capture zones around MW62-WDR, and the limited area of nitrate exceedance, there does not appear to be a potential for significant off-Site migration of nitrate or nitrite at concentrations greater than the performance standard.

As discussed above, the WSDs prepared, implemented, and updated various RAWPs to address 1,4-dioxane occurrences east and downgradient of the NBBW. To the extent that the nitrate and nitrite occurrences do not result from a source in the immediate vicinity of these wells (i.e., impacts from prior land farming of sewage sludge in this area), implementation of response actions for 1,4-dioxane should also address nitrate occurrences in these areas. To the extent that the cause of the nitrate and nitrite occurrences in these wells is due to impacts from prior land farming of sewage sludge in this area, the response actions being undertaken in this area may or may not reduce their concentrations in groundwater. Nonetheless, groundwater extraction from North End wells further downgradient should capture any potential migration of nitrate and nitrite from the NBBW area if northern migration were to occur.

4.4.2.3 1,4-Dioxane MW38-830N-230E

1,4-dioxane concentrations in monitoring well MW38-830N-230E exceed the groundwater performance standard. The concentrations of 1,4-dioxane are showing no trend. This well is located along the POC at the north end of the MW38 channel. The hydraulic gradient within the channel at this location is to the north so migration of these chemicals crosses the POC. As part of the groundwater containment remedy for the Site, groundwater extraction is conducted from the MW38 channel at two locations, including a location approximately 200 ft north of well MW38-830N-230E, which is downgradient from and beyond the POC relative to the compliance monitoring well. Therefore, although 1,4-dioxane may migrate across the POC, impacted groundwater is hydraulically contained within, and removed from, the sand channel in the area immediately north of well MW38-830N-230E as depicted on Figures 4-24 and 4-25. Consequently, no action other than continued extraction from the MW38 channel and monitoring of the compliance well is required for these occurrences.

4.4.2.4 Nitrate in BM-15N6

Nitrate occurs in well BM-15N6 at concentrations greater than its performance standard. Statistical testing of potential temporal trends (Appendix C-3.2) indicates that there is a decreasing trend in nitrate concentrations in well BM-15N6. Each of the last 10 results for nitrate in this well are above the performance standard (28,000 µg/L). Therefore, although the trend is decreasing, the compound is considered potentially out of compliance in this well.

This well is located in an area where sewage sludge had historically been land-farmed. USEPA positioned the compliance boundary within the land farming area such that it straddles the land farming area. That, coupled with an absence of 1,4-dioxane and only low-level detections of VOCs below performance standards since 2003 in this well, would indicate the source of nitrates is not from landfill mass or waste pit contaminant migration; rather, it is likely from the past land farming activities inside and outside the compliance boundary. Groundwater sampling conducted in June 2017 and October 2018 indicated that nitrate has been observed in surrounding wells BM-15N2 (43,000 µg/L), BM-15NE1 (26,000 µg/L), BM-15N5 (68,000 µg/L), BM-15N1 (25,000 µg/L), BM-15I-15N (54,000 µg/L), BM-15I-50S (9,300 µg/L), and BM-15X-50S (38,000 µg/L).

The spatial randomness of nitrate detections in and around well BM-15N6 as compared to other compliance wells in this vicinity is similar to that observed near the NBBW where sewage sludge was land farmed. The randomness is likely attributable to a number of hydrogeochemical variables associated with the leaching, transport, and attenuation of nitrates that can differ significantly from location to location. Nitrate concentrations can also fluctuate with precipitation and rate of groundwater pumping from the PM-15 Area wells.

Because 1) the source of the nitrate in well BM-15N6 is most likely a result of sewage sludge land farming in this area, 2) the presence of active groundwater extraction in this area, and 3) the distance between this well and the Site boundary is approximately 200 feet, (see Figure 4.11), the occurrence of nitrate in well BM-15N6 is considered to be a Case 2 condition as defined in the GWMP (EMSI/Parsons, 2018). Consequently, no action other than continued groundwater monitoring is recommended.

4.4.2.5 BM-11X-100N Tetrachloroethene

PCE in BM-11X-100N is out of compliance with an no statistical trend. The ten most recent PCE concentrations in this well range from 4.6 µg/L to 7.2 µg/L with the most recent sample containing a PCE concentration of 4.9 µg/L (May 18, 2022). PCE levels appeared to slowly increase from October 2017 to November 2020 but have dropped in the last three sampling events. The variation in PCE concentrations appears to be related to changes in the water level in this well. Prior to the summer of 2015, the water level in this well was relatively stable ranging from approximately 5,790 to 5,795 ft amsl. Beginning in the summer of 2015, the water level in this well increased, peaking at a high of just over 5,800 ft amsl in July 2017. Since that time, the water level in this well has declined back below 5,791 ft amsl. Consequently, it is likely that the increase in PCE levels in this well may be the result of flushing of residual PCE contained in the capillary fringe/vadose zone. If this is the case, then the PCE level in this well should decline over time which has been observed in the most recent PCE results (7.2 µg/L in November 2020 to 4.9 µg/L in May 2022). The well is located outside of the perimeter slurry wall in an area where the hydraulic gradient across the slurry wall is inward due to groundwater extraction along the interior of the slurry wall, but with increasing distance away from the slurry wall the hydraulic gradient becomes outward to the northeast toward the Site boundary (Figures 4.1 and 4.2). Well MW50-WD, a weathered Dawson well positioned approximately 150 ft north of well BM-11X-150N and outside the slurry wall, has never contained PCE at concentrations above the method detection limit. Similarly, wells located further to the north and northeast have always been in compliance with the PCE groundwater performance standard (see Figure 4.11). The overall low concentration of PCE in well BM-11X-100N, in addition to an inward gradient across the wall at this location, and no or

very low PCE detections in groundwater to the north and northeast of the well indicate that the PCE occurrences in this area represent a Case 2 condition (little or no downward trend with a low potential for off-Site migration) as defined in the GWMP (EMSI/Parsons, 2018). The WSDs previously completed a Case 2 evaluation for this well (EMSI, 2006b). Results indicated that it is unlikely that the PCE occurrences above the performance standard in this area will migrate to the Site boundary. Rather, PCE occurrences in this area will likely attenuate naturally over time. Consequently, the recommended action is to continue monitoring.

4.5 Effectiveness Evaluation

Four components of the groundwater containment remedy (perimeter slurry wall, NTES, NBBW, and MW38 channel) are intended to provide hydraulic control and contaminant containment in the shallow (alluvium/weathered Dawson) groundwater at the Site. The effectiveness of these features is demonstrated either by hydraulic (water level) monitoring or water quality monitoring, in accordance with Sections 3.2, 4.2, 5.2, and 7.3 of the Revised GWMP (EMSI/Parsons, 2018). The effectiveness of these remedial components was assessed in detail in 2021 and continues to be monitored regularly (EMSI/Parsons, 2021a and b). The four components are discussed below.

4.5.1 Perimeter Slurry Wall

The primary criterion for assessment of the effectiveness of the perimeter slurry wall is the presence of an inward hydraulic gradient across the slurry wall. In the event an outward hydraulic gradient is determined to be present at a particular location along the wall, water quality data obtained from outside the wall are used to assess the effectiveness of the slurry wall at containing Site contaminants.

The presence of an inward hydraulic gradient is determined by reviewing the water level measurements from the weathered Dawson wells located in a paired configuration inside and outside of the perimeter slurry wall. Fifteen well pairs (PM-1 through PM-15) are used for this assessment. Results of the evaluations of the hydraulic gradients across the perimeter slurry wall are summarized in Table 4.7. Hydrographs for the fifteen well pairs are presented on Figure 4.12. A complete set of hydrographs along with results of statistical testing of the water level data are presented in Appendix C-4.1.

Water level data indicate the presence of inward hydraulic gradients across the perimeter slurry wall at eleven of the fifteen well pairs. Outward hydraulic gradients exist across the slurry wall along the southern part of the western portion of the wall in the PM-3 and PM-6 areas and along the northern part of the eastern portion of the slurry wall in the PM-14 area. The gradient calculation for the PM-13 well pair could not be performed because PM-13I was dry, likely due to purging associated with attempts to sample this well. This well was part of the 2018 Synoptic sampling event (EMSI, 2018b and 2018c) and was dewatered during purging before a sample could be collected. The last 15 attempts to measure the water level in PM-13I revealed no recharge at this well since the October 2018 sampling event. PM-13X has been intermittently dry since the 2018 synoptic sampling event.

Where the water level data indicate the presence of an outward gradient, the effectiveness of the perimeter slurry wall is assessed using water quality data for five indicator compounds (1,1,1-TCA, 1,1-DCA, TCE, PCE, and 1,4-dioxane) obtained from wells located outside of the slurry wall in these areas. The presence of no trend or

decreasing trend in water quality data indicates the slurry wall is effective at containing Site contaminants, while the presence of an increasing trend indicates the slurry wall may not be effectively containing Site contaminants.

In accordance with the updated GWMP, a minimum of four sample results is necessary to evaluate water quality trends for the effectiveness evaluation when inward gradients cannot be demonstrated (gradient data for each well is presented in Appendix C-4.1). For wells with 4 to 8 sample results (Appendix C-4.2), Sen's test is used to assess trends (Appendix C-4.3) for the compounds. A minimum of nine sample results is required to perform more rigorous statistical testing including calculation of Shewhart-CUSUM control limits (Appendix C-4.4). Sen's test is performed on the background data sets used to calculate the Shewhart-CUSUM control limits to verify that no temporal trends exist in the background data.

PM-3X has been sampled 37 times for VOCs and 10 times for 1,4-dioxane (Appendix C-4.2). 1,4-Dioxane has never been detected in this well. TCE, 1,1,1-TCA and 1,1-DCA have never been detected above their RLs in this well. PCE has been detected in this well at concentrations substantially below its groundwater performance standard of 5 µg/L. The background data set for 1,1,1-TCA and TCE includes 32 samples. The background data set for 1,1-DCA and PCE includes 12 and 20 samples, respectively. The data sets for 1,1-DCA and PCE were adjusted because they indicated trending data when the number of samples was increased in the baseline data set. No increasing trends were identified in the background data sets and the most recent results for 1,1,1-TCA, 1,1-DCA, 1,4-dioxane, TCE, and PCE are below the Shewhart-CUSUM control limit (Appendix C-4.4). These results indicate the slurry wall is effective at this location.

PM-6X has been sampled 39 times for VOCs and 10 times for 1,4-dioxane (Appendix C-4.2). None of the five indicator compounds have ever been detected in this well. These results indicate the slurry wall is effective in this area.

PM-13X has been sampled 38 times for VOCs and 10 times for 1,4-dioxane (Appendix C-4.2). 1,4-Dioxane has only been detected once in PM-13X (0.35J). It was not detected in the four most recent samples. The other four indicator VOCs have been detected in this well during each of these sampling events, but concentrations have always been less than performance standards. When the background VOC data set is set to more than 16 sampling events, 1,1,1-TCA shows a decreasing trend in the background data set. When the background VOC data set is set to more than 20 sampling events, 1,1-DCA shows a decreasing trend in the background data set. Therefore, it was necessary to revert to the prior background data for these compounds in order to not include trending data in the background data sets. PCE had no trend in the background set of 32 results. TCE had no trend in the background set of 36 results and 1,4-dioxane has no trend in the background set of eight samples. No increasing trends were identified in the background data sets and the 22 most recent results for 1,1,1-TCA, the 18 most recent results for 1,1-DCA, two most recent results for TCE and 1,4-dioxane, and the six most recent samples for PCE are below the Shewhart-CUSUM control limit (Appendix C-4.4). These results indicate the perimeter slurry wall is effective at this location.

PM-14X has been sampled 40 times for 1,1,1-TCA, 1,1-DCA, TCE, and PCE and 37 times for 1,4-dioxane (Appendix C-4.2). PCE has never been detected at this location. 1,4-Dioxane was detected once at a trace detect of 0.1 J µg/L (12/15/20). 1,1,1-TCA, 1,1-DCA, and TCE have been detected in this well at concentrations substantially below their

respective groundwater performance standards. When the background VOC data set is set to more than 24 sampling events, 1,1-DCA shows a decreasing trend in the background data set. Therefore, the background data set included 24 samples for 1,1-DCA. The most recent 16 samples for 1,1-DCA are below the Shewhart-CUSUM control limit. No increasing or decreasing trends in the background data set of 36 samples were identified for 1,1,1-TCA, TCE and PCE and the four most recent results for each compound are below the Shewhart-CUSUM control limit. 1,4-Dioxane background set is 32 samples with no trends and the five most recent samples are below the Shewhart-CUSUM control limit (Appendix C-4.4). Therefore, the analytical chemistry data indicate the perimeter slurry wall is effective at this location.

Based on evaluation of the water level and water quality data, the perimeter slurry wall is effective at containing contamination inside the eastern, southern, and western limits of the landfill footprint.

Effectiveness of the perimeter barrier wall (EMSI/Parsons, 2021a) surrounding the eastern, southern, and western sides of the Section 6 landfill at the Site was evaluated as it related to findings and recommendations in USEPA's Fourth 5YRR (USEPA, 2017). It was concluded that successful operation of the perimeter barrier wall in conjunction with operations of the other remedial components at the Site address the remedial action objectives for protection of human health and the environment.

4.5.2 North Toe Extraction System

Effectiveness of the NTES is demonstrated based on hydraulic monitoring alone if either of the following conditions occurs:

1. Pumping from the NTES results in continuous decline of trench water levels as demonstrated by the well hydrographs for MPZ-10R, NTES-180W, and MPZ-11; or
2. Trench water levels (as measured in MPZ-10R, NTES-180W, and MPZ-11) remain below the base of alluvium (elevation of 5,740 ft amsl).

Figure 4.13 shows the water level data from piezometers NTES-180W, MPZ-10R, MPZ-11 and the extraction sump, and indicates that trench water levels remained below the base of alluvium throughout the reporting period. This is displayed by the potentiometric surfaces for the alluvium/weathered Dawson in the NTES area (Figures 4.14 and 4.15 for the first and second quarters of 2022, respectively) showing convergent groundwater flow to the trench. As indicated by Figures 4.13, 4.14, and 4.15, the NTES is effective at capturing contaminated groundwater emanating from the toe of the landfill.

Effectiveness of the MW38 Area, NTES, and North End Response Actions, (EMSI/Parsons, 2021b) at the Site were evaluated as it related to findings and recommendations in USEPA's Fourth 5YRR (USEPA, 2017). The measure of effectiveness for the NTES prescribed in the GWMP is being met by ongoing groundwater extraction from NTES trench wells.

4.5.3 North Boundary Barrier Wall

The presence, location, and extent of the containment area created by the NBBW systems are defined by the weathered Dawson potentiometric surface in the NBBW area.

Figures 4.16 and 4.17 present the potentiometric surfaces for the alluvium/weathered Dawson in the NBBW area for the first and second quarters of 2022, respectively.

The NBBW zone of containment is highlighted in yellow on Figures 4.16 and 4.17. After potable water injection ceased on October 2, 2018, the water table between the NBBW and MW113 area has been flattening and a clear groundwater divide cannot be definitely demonstrated. Instead, a larger containment area north of the NBBW caused by cessation of potable water injection in conjunction with Response Action extraction has developed as shown on Figures 4.16 and 4.17 and has encompassed compliance wells B-313, GW-109, and B-326-WD, plus monitoring wells PTP-14, PTP-15, PTP-16, PTP-17S, PTP-18, PTP-19, PTP-20, and TR-1. Directions of groundwater flow into cones of depression within the enhanced Containment Zone are shown on both figures.

Extraction of groundwater north of the NBBW continued during the reporting period. The extraction rates (gpm) from the four extraction wells are shown below.

Well	**1/1 – 1/14//22**	**1/14 – 2/18/22**	**2/18 – 3/16/22**	**3/16 – 4/7/22**	**4/17 – 5/6/22**	**5/6- 6/10/22**	**6/10 – 6/30/22**
MW113-EW-1	2.0	1.9	1.8	1.7	1.7	1.7	1.7
B-321	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MW113-UD	0.02	0.01	0.02	0.02	0.02	0.02	0.02
NBBW-IW-3	0.0	0.0	0.0	0.00	0.0	0.0	0.0
Total Extraction	**2.02**	**1.91**	**1.82**	**1.72**	**1.72**	**1.72**	**1.72**

Fluctuations in groundwater levels and 1,4-dioxane concentrations were observed in most weathered and unweathered Dawson monitoring wells in the NBBW area. As the water levels declined in the area, from both seasonal water decline and cessation of injection, the ability of extraction wells to remove groundwater from the system was affected, as discussed below.

The saturated thickness (defined as the water present in a well between the top of the water column and bottom of the well screen) in MW113-EW-1 has decreased since cessation of potable water injection. Historically, this well was able to sustain extraction in the 3 to 4 gpm range. With decreasing saturated thicknesses, sustained yields from this well appear to stabilize at 1.7 gpm.

On November 18, 2019, total molybdenum was detected in WTP effluent above its permitted limit, which led to a temporary shut-down of the WTP. After sampling all waters entering the WTP, the source was determined to be from extraction well MW113-EW-1.

Flow from that well was decreased to 1 gpm on November 18, 2019 and the WTP was returned to service. Due to continued increases in molybdenum concentrations in that well, and to ensure no additional effluent exceedances occurred in WTP effluent, the extraction rate from MW113-EW-1 was reduced to 0.5 gpm, on June 16, 2020. On July 30, 2020 a recently installed packer in the well was adjusted to a depth of 5664 feet amsl and the extraction pump inlet was raised to 5664.5 feet amsl to increase groundwater extraction from the interval above the packer. The MW113-EW-1 extraction rate remained at 0.5 gpm

through November 3, 2020. Extraction from MW113-EW-1 was terminated on November 4, 2020 to allow the WTP to treat groundwater stored in a Baker tank prior to freezing weather. No additional extraction from MW113-EW-1 occurred between November 9, 2020 and January 26, 2021 to allow for the installation of the IX system. Extraction from MW113-EW-1 resumed on January 27, 2021 (extraction rate between 0.5 and 1 gpm) and was increased on March 11, 2021 to 2 gpm to increase mass removal. Because of decreasing water levels in NBBW area, the packer in MW113-EW-1 was removed on June 7, 2021. The extraction pump inlet was lowered to 6 inches above the bottom of MW113-EW-1's 5-foot sump and extraction resumed on June 8, 2021. An investigation of the extent and possible sources of elevated molybdenum in groundwater was presented in a Technical Memorandum, *Evaluation of Potential Sources of Elevated Molybdenum in Wells MW113-WD and MW113-EW-1* (EMSI/CDM-Smith, 2020b).

The evaluation found the source of molybdenum appears to be naturally-occurring, coincident with fine to coarse-grained sands and clay clasts, deposited at the top of the bedrock interface. Plausible sources are Pike's Peak Granite (primary source of Dawson Formation) and/or rhyolite from the Castle Rock Formation deposited as Eocene age alluvium. Molybdenum is not a compound of concern for the Site but is regulated in the WTP effluent by the Metro permit. On January 27, 2021, an IX treatment system was brought online to treat the molybdenum from well MW113-EW-1. Since January 27 the total molybdenum concentration has dropped from 17000 µg/L to 6400 µg/L (4/19/22). The decrease in concentration indicates that the source is limited and appears to be depleting.

Figure 4.18 shows water elevations at monitoring well MW113-WD and dissolved molybdenum concentrations in compliance wells B-326-WD and B-326-UD and monitoring wells MW113-EW-1, MW113-WD, MW113-UD, and MW113-LD. Extraction from MW113-EW-1 was increased to 4 gpm on August 19, 2021. The additional extraction from the weathered Dawson resulted in an increased rate of dewatering of the MW113 area as shown by a steepening of MW113-WD water elevations on Figure 4.18. Dissolved molybdenum concentrations gradually increased in MW113-WD until the well's water elevations flattened in mid-November. Following stabilization of water elevation, the dissolved molybdenum concentration has steadily increased through April 2022. Dissolved molybdenum concentrations appeared to stabilize between 30,000 and 35,000 µg/L for the remainder of the reporting period. Stabilization of both water elevation and groundwater extraction rate suggest the area has reached equilibration under the current precipitation conditions.

To continue, and possibly increase, removal of 1,4-dioxane mass from the MW113 and B-326 areas, former injection well NBBW-IW-3 was converted to an extraction well and groundwater extraction began at 2 gpm on May 25, 2020. Following additional modifications to the well and conveyance system, extraction was increased to 2.5 gpm on June 17, 2020. Groundwater extraction from NBBW-IW-3 ranged between 2.5 and 1.7 gpm until MW113-EW-1 extraction was increased on March 11, 2021. Following the increase in extraction at MW113-EW-1, NBBW-IW-3 became formation limited and the extraction rate decreased to 0.5 gpm. Varying extraction rates during this period are the result of pump cycling, groundwater sampling and mechanical improvements to the well or WTP. After September 2021, no water was available for extraction from NBBW-IW-3.

Figure 4.19 shows water elevations following cessation for extraction well and companion monitoring well pairs MW113-EW-1/MW113-WD and NBBW-IW-3/B-319. Since cessation began, water levels decreased while extracting at 3.7 gpm from well MW113-EW-1. When extraction was reduced to 1 gpm, water levels rebounded (raised) immediately and slowly approached a steady-state (not increasing or decreasing) over time. To increase mass removal, extraction was increased to 2 gpm on May 25, 2020 in NBBW-IW-3 and water levels rapidly declined. Review of the graph shows a steady and continuing water level decline following reduced extraction at 0.5 gpm in MW113-EW-1 and increased extraction to 2.5 gpm in NBBW-IW-3. Extraction from MW113-EW-1 was terminated on November 4, 2020 while extraction at NBBW-IW-3 became formation limited with an average extraction rate at 1.7 gpm. Increased extraction at MW113-EW-1 on March 11, 2021 resulted in decreased extraction at formation limited well NBBW-IW-3 at 0.5 gpm. Following this extraction modification, water level decreases were observed in B-319, MW113-WD and MW113-EW-1. From March 17, 2021 to August 19, 2021, the water level in MW113-WD decreased at an average rate of approximately 0.15 feet per week. MW113-EW-1 extraction was increased to 4 gpm resulting in a water level in MW113-WD decreasing at approximately 0.41 feet per week (August 19, 2021 through November 19, 2021). The extraction rate at MW113-EW-1 steadily decreased and slowly approached a steady-state of 1.7 gpm at the end of the reporting period. From January 4 to April 4, 2022, the water level in MW113-WD declined at a rate of 0.005 feet per week. As previously mentioned, stabilization of water elevation and groundwater extraction rate suggest the area has reached equilibrium (i.e., pumping rate and current precipitation conditions).

Future extraction rates will be dictated by the ability of the wells to maintain yield, balanced against the ability of the WTP to meet its discharge limit for molybdenum (see Section 2.2.1 - Summary of Activities and Section 2.3 - Treatability).

Figure 4.20 shows the effect of the remedial action implemented in this area on 1,4-dioxane concentrations. The graph shows overall declining 1,4-dioxane trends for compliance wells B-326-WD and B-326-UD and nearby extraction wells MW113-EW-1 and MW113-UD prior to cessation of potable water injection. Since cessation began, concentrations in the compliance wells have generally remained constant, while concentrations in the nearby extraction wells have generally increased. Following identification of MW113-EW-1 as the source of the elevated molybdenum concentrations in the WTP effluent, extraction from this well was decreased to 1 gpm on November 18, 2019. Following reduced groundwater extraction from this well, the 1,4-dioxane concentration decreased. Extraction from NBBW-IW-3 beginning on May 28, 2020 and modifications to extraction at MW113-EW-1 did not appear to have any effect on concentrations in compliance wells B-326-WD and B-326-UD. Concentrations of 1,4-dioxane in MW113-UD have increased since cessation of potable water and are generally similar to concentrations prior to the start of extraction at MW113-UD on September 27, 2011. It is antipicated that concentrations in both MW113-WD and MW113-UD will gradually decrease as residual 1,4-dioxane present in the weathered Dawson is removed.

Groundwater levels north of the NBBW have declined since cessation began as shown on Figure 4.19. Correlations among groundwater levels, pumping rates, and 1,4-dioxane

concentrations are further addressed in the *Revised Final Report on Pilot Test for Cessation of Potable Water Injection* (EMSI/CDM-Smith, 2020a).

As a result of cessation of injection, availability of water in B-321 is formation limited and the extraction rate is dictated by the groundwater flow rate into the well. Extraction at B-321 remained at 0.001 gpm until November 3, 2020 when extraction was stopped to allow groundwater to enter the well for the fourth quarter sampling event in 2020. Insufficient water entered the well for sampling. Following the attempted sampling, groundwater extraction from the well was no longer possible due to lack of enough water entering the well to allow pump cycling and no additional extraction has occurred since November 3, 2020. Lack of groundwater entering the well reflects continued dry conditions in this area until June 7, 2021 when the B-321 produced enough water to resume extraction and continued through October 14, 2021. Since mid-October 2021, B-321 has not produced enough water to extract. To the extent that seasonal precipitation events raise the groundwater table in this area, pumping will resume when sufficient groundwater is present in the well for extraction. Current conditions have not allowed pumping or sampling of B-321 and at this point it is not known if this is a temporary or long-term condition.

Figure 4.21 shows an overall declining 1,4-dioxane trend for compliance well B-313 prior to and following the start of cessation. It also shows the duration and rates of groundwater extraction from nearby extraction well B-321, and concentrations of 1,4-dioxane in the extraction well over time. As shown, between 2010 and the start of cessation in 2018, 1,4-dioxane concentrations in the extraction well varied between 16 and 45 µg/L, with no apparent trend. Since the start of cessation, 1,4-dioxane concentrations became more variable ranging between 8.3 and 97 µg/L again with no apparent trend. The increased variability is believed to be attributed to changes in the direction and rate of groundwater movement caused by cessation of potable water injection, changes in groundwater pumping rates, and changes in groundwater levels. The extraction rate from well B-321 is formation limited and dictated by groundwater availability, so that 1,4-dioxane concentration variability is anticipated to continue. Lack of groundwater entering B-321 reflects continued dry conditions at this area until June 7, 2021 when the B-321 produced enough water to resume extraction, albeit at less than 0.10 gpm for only four months. Since 3rd quarter 2020, 1,4-dioxane concentrations in compliance well B-313 stabilized to approximately 17 µg/L in November 2021. The well is now considered dry for sampling because insufficient water was available for sampling. Further discussion is provided in the Revised Final Cessation Report (EMSI/CDM-Smith, 2020a).

Figures 4.22 and 4.23 show the potentiometric surfaces of the unweathered Dawson in the NBBW area. As shown, there appear to be two potentiometric lows, sloped from south to north beneath the eastern, and to a lesser extent, western side of the NBBW. Both lows correspond to the presence of sandstones within the unweathered Dawson in the vicinity of the NBBW. An evaluation of the nature and extent of these sandstones and their influence on groundwater flow conditions are further evaluated as part of the NBBW CSE (EMSI/CDM-Smith/Parsons, 2021).

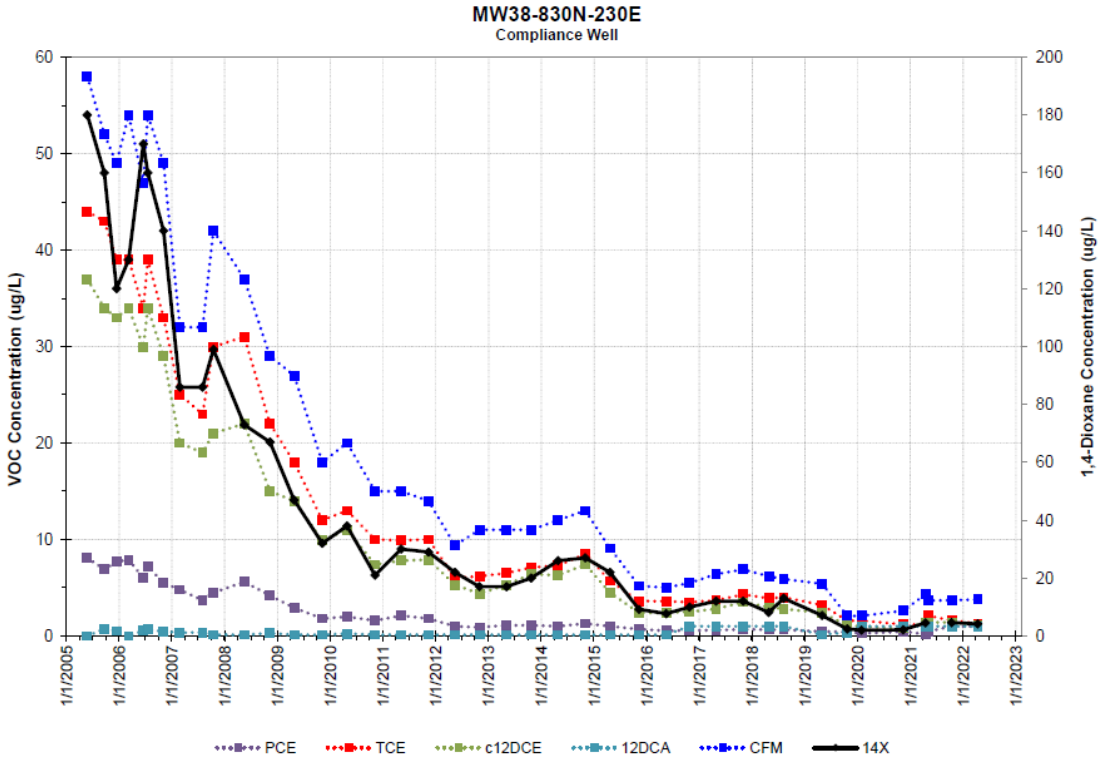
4.5.4 MW38 Channel

Groundwater extraction continued from wells MW38-170S-140E and MW38-1028N-256E located in the MW38 channel sand (Figures 4.24 and 4.25). Pumping from these two wells is performed to maintain an inward hydraulic gradient toward the sand channel. Pumping occurs on an intermittent basis because the sand channel has been essentially dewatered and it takes several days for sufficient water to accumulate in the areas of these two wells to activate pumping.

Hydraulic (water level) monitoring is used to demonstrate the effectiveness of the MW38 sand channel at containing groundwater in the MW38 area. These data were used to prepare potentiometric maps of the MW38 area (Figures 4.24 and 4.25). Review of these maps indicates the presence of convergent groundwater flow along the entire length of the MW38 channel, as indicated by the flow direction arrows on these two figures. The presence of convergent flow into the MW38 channel indicates that the channel effectively prevents shallow contaminated groundwater within the channel from migrating to the west, east, north, or south from the sand channel.

It should be noted that the northern extraction well (MW38-1028N-256E) is positioned 100 ft north of the Site boundary to take advantage of the thicker and deeper extent of porous channel sand at this location. As a result, groundwater quality from the compliance well (MW38-830N-230E), which is positioned within the sand channel near the Site boundary and south of MW38-1028N-256E, is representative of groundwater that will be extracted by extraction well MW38-1028N-256E and will not migrate beyond the sand channel.

The concentration time-series graph below shows that hydraulic gradient control pumping at channel wells MW38-170S-140W and MW38-1028N-256E and source control pumping at MW38-825N-445E have successfully reduced contaminant concentrations in MW38-830N-230E where the 1,4-dioxane concentration has declined by 97.7% in this compliance well.



PCE = Tetrachloroethene TCE = Trichloroethene c12DCE = cis-1,2-Dichloroethene

12DCA = 1,2-Dichloroethane CFM –=Chloroform 14X = 1,4-Dioxane

It should be noted that on December 11, 2019, a leak from DADS' buried potable water supply pipe was identified near MW38-500N-396E. Potable water is believed to have preferentially flowed along the pipeline bedding and was observed in the pipeline trench 50 feet east of MW38-680N-419E. From this area the pipeline heads eastward, parallel to the DADS main access road. The pipeline is located about 40 feet south of MW76-WD and MW75-WD. Potable water was observed daylighting between MW75-WD and MW74-WD. DADS repaired the leak in January 2020. By April 2020, the higher groundwater elevation at MW38-680N-419E observed in January 2020 had declined to within a few feet of historical water elevations. During the second half of 2021, water levels returned to historical water elevations.

Effectiveness of the MW38 Area, NTES, and North End Response Actions, (EMSI/Parsons, 2021b) at the Site were evaluated as it related to findings and recommendations in USEPA's Fourth 5YRR (USEPA, 2017). The measure of effectiveness for the MW38 area prescribed in GWMP is being met by ongoing groundwater extraction from the MW38 sand channel.

4.5.5 Vertical Migration Assessment in Deep Groundwater (OU6)

The presence of a downward component to the hydraulic gradient at the Site indicates that there is a potential for downward migration of contamination from source area(s) into the underlying unweathered Dawson and potentially the upper Denver and lignite layers (Table 4.3). Although there may be a downward component to the hydraulic gradient, this

downward component is wholly or partially offset by the lower permeability of the deeper bedrock units compared to that of the alluvium and weathered bedrock. This section describes the vertical migration assessment performed using data from four specific non-compliance program wells and a review of deep groundwater compliance wells that are monitored for compounds of concern.

4.5.5.1 Vertical Migration Wells

Monitoring of the 29 water quality parameters that are indicators of compliance with groundwater standards is performed in selected unweathered Dawson and upper Denver wells **inside of the POC**. Contaminant concentrations are monitored for trends and compared to performance standards to assess if contaminants are potentially migrating vertically. The goal for vertical migration monitoring is to show that groundwater contaminant concentrations will be below performance standards, and if present, will exhibit stable or decreasing concentration trends over time. These conditions would indicate no vertical migration of contamination is occurring.

Monitoring for potential vertical migration is separate and distinct from compliance monitoring and monitoring performed to demonstrate the effectiveness of the various remedy components. The purpose of monitoring for potential vertical migration is to allow for ongoing assessment of the well network and sampling frequency used for the deeper compliance monitoring wells at the Site. Water quality data obtained from the interior deeper monitoring wells will be used to identify any modifications to the compliance monitoring network and/or sampling frequencies for the deeper units, if any, that may be necessary to ensure detection of possible occurrences of contamination above performance standards in the deeper units that may be migrating towards either the horizontal or vertical POC.

Although not compliance wells, vertical migration wells (B-504A, B-712-LD, C-702P3, and GW-113) are subject to the same statistical tests used in Section 4.4.1 for comparison of UCLs and LCLs to performance standards. Upper Denver wells B-504A, C-702P3, and GW-113 are sampled every five years and unweathered Dawson well B-712-LD is sampled every two years. These wells were not sampled during the reporting period. The results and statistical analyses for these wells as previously reported in the second half 2021 Status Report are summarized below:

- For wells B-504A, C-702P3 and GW-113, the maximum concentrations for all compounds for each well were less than their respective performance standards; therefore, statistical analyses to determine the UCL and LCL for comparison to performance standards did not need to be performed (Appendix C-5.1).
- For well B-712-LD, the historical maximum concentrations of all compounds were also less than their respective performance standards except for one detect of 1,4-dioxane (0.95 µg/L) in 2007. The eight subsequent samples obtained from this well were all reported as not detected for 1,4-dioxane, down to a method detection limit (MDL) of 0.09 µg/L. A compliance determination could not be made for 1,4-dioxane because 90% of the results were not detected. The single detected value of 0.95 µg/L was determined to be an outlier (Appendix C-5.3). If the outlier is removed and replaced with an earlier value (0.5 U, 6/19/06) in order to have ten results, all ten results are not detected: therefore,

the well would be in compliance with the groundwater performance standard for 1,4-dioxane.

No significant increasing trends were identified for any of the indicator chemicals of compliance in any of these wells (Appendix C-5.2). Based on evaluation of the results obtained from the last sampling event, there is no evidence of vertical migration of contamination beneath and north of the landfill. The WSDs recommend no changes in the frequency of monitoring of the vertical migration wells.

4.5.5.2 Deep Groundwater Water Quality

Thirty-four deep wells (unweathered Dawson, Upper Denver, and Lignite layer) are part of the compliance monitoring network (EMSI/Parsons, 2018) and are sampled routinely for 29 compounds of concern. Although trace or low concentration detects of multiple compounds of concern have been detected over time, only three unweathered Dawson compliance wells have detections of compounds of concern at concentrations greater than performance standards.

- B-326-UD for 1,4-dioxane and nitrate,
- MW23-C-SD for 1,4-dioxane, and
- MW106-UD for 1,4-dioxane

Section 4.4 discusses compliance statistical testing for these wells and compounds and determined 1,4-dioxane in MW23-C-SD and MW106-UD were potentially in compliance due to the preponderance of nondetects and because each well had only one detect of 1,4-dioxane not confirmed by subsequent samples.

B-326-UD nitrate is potentially in compliance because it displays a decreasing trend and the last six results were less than the performance standard. The decrease in nitrate in the deeper monitoring well B-326-UD correlates with the declining water level observed post-cessation and could suggest a change in flow path with non-nitrate impacted water now being monitored by this well.

1,4-Dioxane is out of compliance in B-326-UD with a decreasing trend. This unweathered Dawson well is paired with B-326-WD allowing calculation of vertical gradients. There is an upward gradient at this location meaning that vertical migration in this area is currently upward. B-326-WD is also out of compliance for 1,4-dioxane although no trend is indicated. Water elevations in the B-326-WD/B-326-UD well pair generally mirror each other (Appendix C-2). As water levels in both wells declined following cessation, an upward vertical gradient developed at the end of May 2019 that continued through April 2022. Therefore, if vertical migration is occurring, the direction of migration is upward from the unweathered bedrock in the B-326 area as shown in Figure 4.26.

In contrast, vertical downward gradients were identified at other locations in the NBBW area. Each of the following well pairs displayed vertical gradients with a downward hydraulic gradient indicating a potential for downward migration of groundwater and contaminants; however, water quality monitoring has not detected the presence of site-related contaminants in the deeper well while at least one compound was out of compliance in the paired weathered Dawson well.

- **B-313/B-313-UD**: B-313 was out of compliance for 1,4-dioxane (17 µg/L on the last sampling date of 11/16/21) and nitrate (55000 µg/L, 8/12/21) although the well is now dry. 1,4-dioxane has never been detected in B-313-UD and nitrate has only been detected at 100 J µg/L (7/27/20).

- **MW62-WDR/MW62-UD**: MW62-WDR is out of compliance for 1,4-dioxane (2.9 µg/L, 4/19/22), nitrite (2,100 µg/L, 4/19/22), and nitrate (120,000 µg/L, 4/19/22). 1,4-dioxane has never been detected in MW62-UD and nitrate has only been detected once at 110 J µg/L. 1,4-Dioxane and nitrite have never been detected in MW62-DENR or MW62-LIG also. Nitrate has been detected in MW62-DENR ranging from 57 J (8/14/18) to 180 J µg/L (9/2/05).
- **MW77-WD/MW77-UD**: MW77-WD is out of compliance for 1,4-dioxane (112 µg/L, 4/18/22) and has only been detected once in MW77-UD at 0.38 J µg/L (8/20/18).

Outside of the NBBW area, there are two weathered Dawson compliance wells paired with unweathered wells that have detected compounds at concentrations above performance standards in the past; however, those compounds are not present or are present at low concentrations in their associated deeper unweathered Dawson well. GW-114A has a downward gradient and the well's last exceedance was methylene chloride at 12 µg/L (11/5/02). This chemical was not detected (reporting limit of 1 µg/L) in the associated deep well GW-108A (a compliance well) when this well last sampled on 8/19/20. MW74-WD has a downward gradient and the most recent exceedance is nitrate at 30,000 µg/L (5/17/17). Nitrate was not detected in the associated unweathered bedrock well (MW74-UD) the last time it was sampled on 8/6/20. Most unweathered Dawson wells that are located in a paired configuration with a weathered Dawson compliance well have never detected chemicals at levels above the performance standards.

The low or not detected concentrations in the deeper (unweathered Dawson) compliance wells in areas of downward vertical gradient where elevated concentrations of site-related chemicals are present in the paired weathered Dawson well indicate there is little or no downward migration of contaminants in this area.

In conclusion, with the exception of B-326-UD, monitoring of deeper groundwater at Lowry demonstrates that deeper groundwater meets the groundwater performance standards in compliance wells and that significant vertical migration of site contaminants is not occurring. 1,4-Dioxane in the B-326-UD area is out of compliance but located in an area where both weathered and unweathered Dawson groundwater are captured by groundwater extraction at MW113-EW-1 and MW113-UD and cessation. Overall, the evidence indicates that vertical migration of contaminants to deeper groundwater is not occurring.

4.6 Voluntary Actions – MW38 and Perimeter Systems

Voluntary measures are being implemented at the Site 1) for source control associated with the MW38 sand channel; 2) to induce inward hydraulic gradients across the perimeter slurry wall; and 3) to remove VOCs from groundwater outside the slurry wall. The systems are located in the following areas, starting on the west side and progressing counterclockwise around the Site:

- MW38-WD - groundwater extraction from an upgradient (source-control) well;
- PM-11 - groundwater extraction from two internal wells (gradient control);
- MW51-WD - groundwater extraction from three internal wells (gradient control) and air sparge at one well (VOC removal outside the wall); and

- PM-15 - groundwater extraction from six internal or northern wells (gradient control) and air sparge at one well (VOC removal outside the wall).

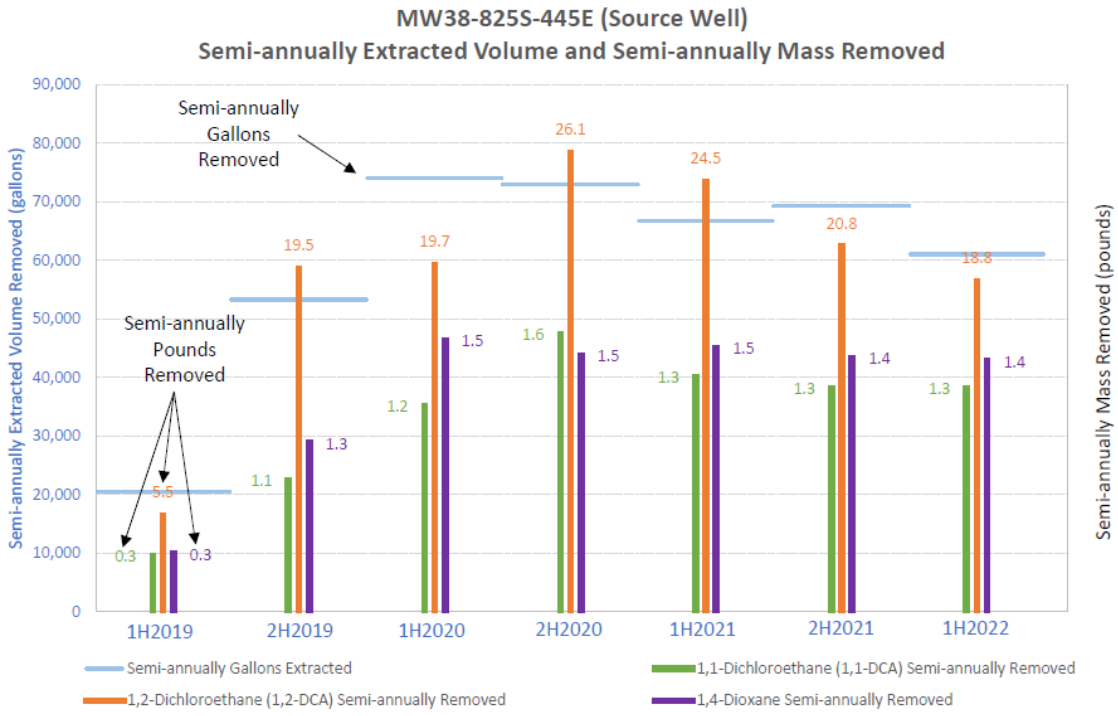
The status of each of these voluntary actions is discussed below.

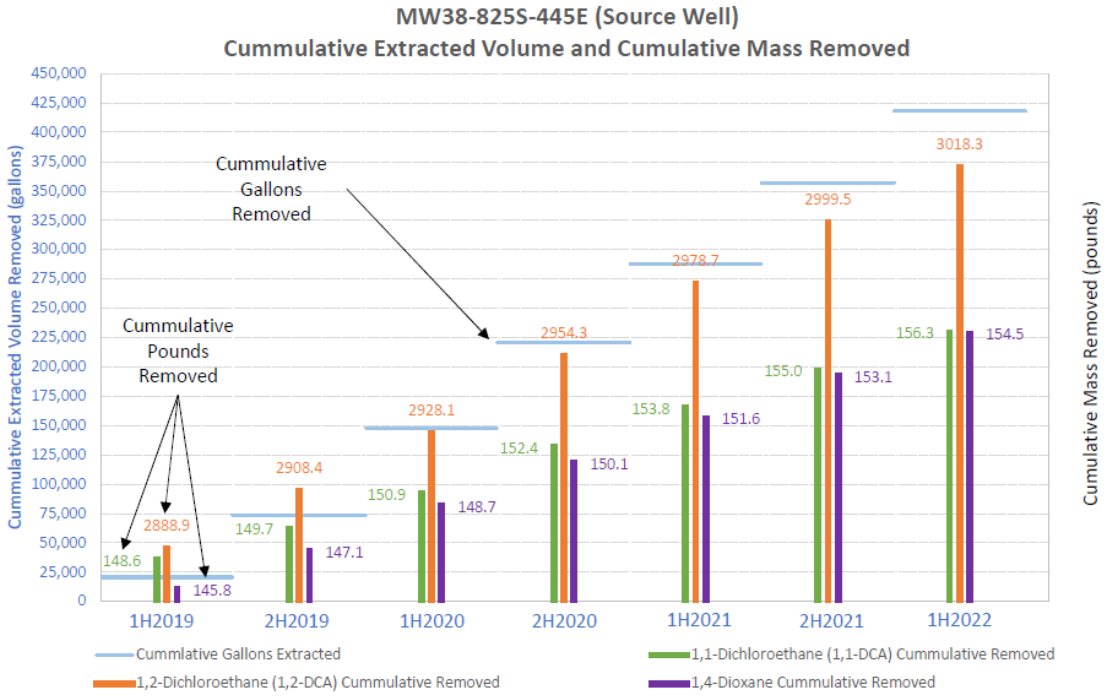
4.6.1 MW38 Source Control

Voluntary pumping of the source well (MW38-825S-445E) resumed in the first half of 2019 following completion of upgrades to the WTP and installation of the new POTW pipeline. In the first half of 2022, total extracted groundwater from the source well was 61,106 gallons and reflects six months of continuous pumping.

The primary constituents detected in the April 27, 2022 sample were 1,2-DCA at 37,000 µg/L; 1,1-DCA at 2,500 µg/L; and 1,4-dioxane at 2,800 µg/L. Continued extraction resulted in contaminant mass removal of 18.83 pounds of 1,2-DCA; 1.27 pounds of 1,1-DCA; and 1.42 pounds of 1,4-dioxane during the first half of 2022. Cumulative mass removed from this well since pumping began in October 2004 is 3,018.3 pounds of 1,2-DCA; 156.3 pounds of 1,1-DCA; and 154.5 pounds of 1,4-dioxane.

The source well time-series graphs below show volume of groundwater extracted and mass removed semi-annually for 1,1-DCA, 1,2-DCA, and 1,4-dioxane as well as cumulative volume and mass removed semi-annually. The response action at MW38-825S-445E has been successful at reducing contaminant mass in this area.





4.6.2 PM-11

Groundwater extraction from wells PM-11I and BM-11I-100N (see Figure 4.2) was conducted to induce an inward hydraulic gradient by lowering the water table inside the slurry wall relative to outside of the wall. The combined extraction rate from the two PM-11 area wells was 272 gallons per day (gpd). Approximately 48,953 gallons of water were transferred to the WTP during the reporting period. Well BM-11I-100N produces approximately 60% of the combined volume, which has remained fairly consistent over the past several years.

4.6.3 MW51-WD

Voluntary measures in the MW51-WD area (see Figure 4.2) include groundwater extraction from three interior wells and air sparging from one well outside the wall. Groundwater extraction has been on-going since February 2003 and air sparging has been intermittent since 2002. Both measures are discussed below.

4.6.3.1 Groundwater Extraction

Groundwater extraction continued from wells MW51I-WD-15N, MW51I-WD, and MW51I-WD-35S, which are all positioned inside the slurry wall. The cumulative first half of 2022 production from these three wells was 65,641 gallons or 365 gpd. Based on totalizer logs, approximately 72% was from well MW51I-WD-35S and 27% was from well MW51I-WD-15N. Less than one percent was from the middle extraction well MW51I-WD where only saturated clays are present.

4.6.3.2 Air Sparge

Air sparging from MW70-WD, which began in May 2002, was terminated in March 2013 because four quarterly sampling events following cessation of sparging confirmed no VOC detections above performance standards in this well. However, the concentration of PCE in MW70-WD increased to 5.1 µg/L on November 19, 2014, so air sparging was resumed on December 15, 2014. MW70-WD showed a decreased concentration of PCE (0.5 J µg/L) and TCE (0.26 J µg/L) in the May 14, 2020 groundwater sample and neither compound was detected in the groundwater sampled on December 8, 2020, May 27, 2021, November 9, 2021 or May 3, 2022. Compliance well MW60-WD, located downgradient from MW70-WD is also sampled semi-annually. Neither PCE nor TCE have been detected in MW60-WD since April 17, 2000.

4.6.4 PM-15

Voluntary measures in the PM-15 area (see Figures 4.27 and 4.28) included groundwater extraction from six wells and air sparging from one well. Groundwater extraction has been on-going since February 2000, and air sparging has been ongoing since June 2003. Both measures are discussed below.

4.6.4.1 Groundwater Extraction

Six extraction wells were pumped during the reporting period: five interior wells (PM-15I, BM-15I-25S, BM-15I-50S, BM-15I-100S, and BM-15I-150S) and one well positioned 15 ft north of the end of the slurry wall (BM-15I-15N). A total volume of 4,657 gallons or 25.5 gpd was transferred from PM-15 area storage tank to the RWST at the WTP during the first half of 2022. Based on totalizer logs, BM-15I-25S and BM-15I-15N produce the majority of the groundwater.

Groundwater extraction has maintained an inward hydraulic gradient across the northeast end of the slurry wall ranging from 0.27 ft/ft at the extraction pairs to 0.005 ft/ft at the non-extraction well pairs, as can be checked by comparison of paired wells on Figure 4.12, Figure 4.27, and Table 4.2. At non-extraction well pairs, the hydraulic gradient is small, but inward.

4.6.4.2 Air Sparge

Well BM-15N5 has been air sparged since June 2003 and throughout the reporting period to remove low-level residual VOCs from groundwater north of the slurry wall in the PM-15 area. The air sparge well BM-15N5 is positioned downgradient from PM-15X. Ongoing groundwater extraction from wells inside the slurry wall is inducing inward gradients across the wall that will further minimize the potential for migration of residual VOCs outside the wall.

4.7 NTES Area NAPL Skimming

During the reporting period, no light non-aqueous phase liquid (LNAPL) extraction was necessary from the sump riser, MPZ-10R or MPZ-11 based on monitoring of the thickness of the LNAPL layer. A measured product thickness of greater than six inches is used to trigger non-aqueous phase liquid (NAPL) extraction. The last LNAPL extraction from the NTES took place September 13, 2011.

Visual inspection of the groundwater pumped from the NTES to the WTP indicated no LNAPL or dense non-aqueous phase liquid (DNAPL) were present in the extracted groundwater, as there were no visible globules present in the pumped groundwater.

A discussion on the effectiveness and operations at the NTES was provided in Subsection 4.5.2.

4.8 North End Response Actions and Investigations

The following sections describe the monitoring and extraction response actions for the North End (land sections 31, 30, 19, 18, and 24) and progress made to date.

4.8.1 North End Monitoring Results

North End groundwater levels and groundwater quality were monitored during the reporting period in accordance with the *North End Groundwater Monitoring Plan* (EMSI, 2007b and updates EMSI, 2020b and Parsons, 2021b) (collectively, North End GWMP). Depths to groundwater are measured quarterly from all North End investigation wells installed in Section 31. Water levels in North End wells in Sections 30, 19, and 24 are measured semiannually during the first and third quarters of each year. Figures 4.29 and 4.30 show the potentiometric surface in Section 31 for January and April 2022, respectively. Although well control is sparse in Sections 19 and 30, Figure 4.31 shows the interpreted potentiometric surface in the vicinity of Murphy Creek Golf Course during January 2022.

Available nitrate and 1,4-dioxane analytical results from existing North End investigation wells are presented in Table 4.8. Table C-6.1 (Appendix C-6) presents all organic and nitrate data collected from the north end wells in the reporting period. Table C-6.2 (Appendix C-6) presents all organic and nitrate data collected in Area 3 during the reporting period. Section 31 1,4-dioxane concentrations are shown on Figures 4.32 and 4.33 for the first and second quarters of 2022, respectively. Section 31 wells are sampled quarterly. Figure 4.34 shows the spatial distribution of 1,4-dioxane in shallow groundwater in Sections 19 and 30 in the first quarter of 2022; wells are sampled semi-annually in this area. No data are available in Section 19 and 30 for the second quarter 2022.

Two private domestic wells located along East Jewel Avenue, have been sampled annually each spring (second quarter) since 2006 for 1,4-dioxane and were last sampled on June 7, 2022. The wells are perforated from depths of 357 to 600 ft bgs. Sampling of these wells is intended to provide assurances to the well owners that are proximal to the shallow groundwater plume that their drinking water does not contain 1,4-dioxane at concentrations above acceptable levels. Sampling of these wells is not for compliance monitoring purposes. 1,4-Dioxane has never been detected in either of these wells above an MDL of 0.5 µg/L (from March 28, 2006 through July 16, 2015), above an MDL of 0.15 µg/L (July 16, 2015 to May 23, 2019), or above an MDL of 0.09 µg/L (June 25, 2020 through the present day). The two domestic wells were sampled on May 19, 2021 for total dissolved solids, alkalinity, metals, VOCs, SVOCs, sulfate, chloride, nitrate, nitrite, and fecal coliform to update the assessment of groundwater quality in the wells and determine if shallow groundwater is potentially being drawn down into the well screens. Fecal coliform was not detected in the wells and groundwater geochemistry was similar to historical deep groundwater conditions. These results indicate that these wells are unlikely to draw shallow groundwater down into the well screens and that the groundwater being extracted by the wells is coming from the screened intervals (e.g., deeper than 350 feet bgs).

4.8.2 Groundwater Extraction in the North End, NBBW and GTEP Area

Groundwater was extracted from the four areas illustrated on Figures 4.32 and 4.33, and described below:

- In Area 1, groundwater extraction is ongoing at three wells (MW153-EW-1, MW154-EW-1, and MW155-EW-1) at a combined rate of between 7.1 and 7.5 gpm during the reporting period. Extraction from MW156-EW-1 was suspended on March 22, 2012 because the 1,4-dioxane concentration dropped to below the performance standard in effect at that time (5 µg/L). 1,4-Dioxane was detected at an estimated concentration of 0.45 J µg/L in MW156-EW-1 groundwater sampled on February 9, 2022 and at an estimated concentration of 0.6 J µg/L in the most recent groundwater sample collected on May 2, 2022.
- In Area 2, pumping from one well (MW160-WD) was conducted. Groundwater extraction from this well is limited by the formation and pumping was limited to 0.5 gpm. The most recent (second quarter 2022) 1,4-dioxane concentrations detected at this well and adjacent well MW132-WD were 2.9 µg/L and 10 µg/L, respectively – both above the current performance standard. No extraction occurred from MW118-WD (extraction suspended on 3/19/11). The most recent (May 9, 2022) 1,4-dioxane concentration in this well is 0.22 J µg/L.
- In Area 3 (MW77 area), three wells (MW102-WD, MW77-EW-1 and MW98-WD) were pumped at a combined rate of 0.68 to 1.09 gpm during the reporting period. Extraction was stopped at MW77-EW-2 on June 24, 2011 because the 1,4-dioxane concentration decreased to below the previous 5.0 µg/L performance standard. The most recent sample collected on April 28, 2022, 1,4-dioxane was not detected at an MDL of 0.09 µg/L in this well. Pumping was also suspended at MW114-WD on October 7, 2009 for the same reason. The most recent (May 9, 2022) concentration in this well is 0.89 J µg/L – slightly below the current performance standard. Pumping from well MW114-WD was not initiated during this reporting period because of its low concentration and low mass removal potential.
- Groundwater extraction in Area 4 (NBBW area) was discussed in Subsections 4.4.2.1 and 4.4.2.2 relative to compliance with groundwater standards and in effectiveness at reducing 1,4-dioxane and nitrate concentrations. WSDs will continue to optimize pumping from the weathered and unweathered Dawson wells in accordance with the RAWP protocols to meet the removal action objectives (Section 4.5.3).
- Area 5 (GTEP Area) activities are discussed in Subsection 4.9.

4.8.3 Progress from Response Actions and Investigations

Approximately 5.9 million gallons of groundwater were pumped from ten active North End response action wells during the reporting period. Based on the number of gallons pumped and the concentrations at each extraction well, approximately 352 grams (0.76 pounds) of 1,4-dioxane were removed during the reporting period as shown in Table 4.9. The cumulative volume removed since inception of the response actions is about 160.4 million gallons, with a cumulative mass removal of 9,950 grams (21.9 pounds) of 1,4-dioxane. Table 4.9 lists the groundwater volume removed and the 1,4-dioxane mass removed from each north end extraction well.

Trend analyses for the 35 of the 37 wells being monitored in the North End Area are illustrated in Figures 4.35 through 4.40. Additionally, trend analysis was performed on four compliance wells and presented in Appendix C-3.2. Two of these compliance wells are not listed in the North End GWMP Update No. 3 (Parsons, 2021b) but are included here (B-313 and MW77-WD) because they are good indicators of 1,4-dioxane mass removal occurring over time. B-313, B-321, and PTP-14 were dry or lacking enough water to sample during this reporting period so trend could not be determined.

All trend results are summarized in the table below. Of the 37 North End and compliance wells where trend analysis was performed, 32 (86%) are showing declining trends and 5 (14%) are showing no trends. PTP-12 previously had no trend but during the first half of 2022, developed a decreasing trend. PTP-14 presented an increasing trend for 1,4-dioxane through June 2020 but has been dry since that date and no analyses could be performed. B-313 and B-321 were decreasing in the last reporting period but lacked enough water to sample or were dry in first half 2022. The decreasing trends in all four Areas are evidence that the ongoing response actions are effective at removing mass from within Section 31.

Extraction well B-321 was last sampled on August 11, 2021, and showed an increasing trend in nitrate. This increase may be caused by variations in groundwater levels and/or flow directions in the vicinity of this extraction well resulting from cessation of potable water injection. B-321 was dry during the first half of 2022, and no analyses could be performed. Nearby well MW113-EW-1 that had no trend in the last reporting period had a decreasing trend for nitrate in first half 2022.

Results of 1,4-Dioxane and Nitrate Trend Analysis in North End Wells

Well	Trend[1/]	Extraction Well?	Well	Trend	Extraction Well?
1,4-Dioxane					
B-321	Dry	Yes	MW142-WD	Decreasing	No
B-326-UD*	Decreasing	No	MW144-WD	Decreasing	No
B-326-WD*	No trend	No	MW151-WD	Decreasing	No
MW05-WD	Decreasing	No	MW153-EW-1	Decreasing	Yes
MW102-WD	Decreasing	Yes	MW154-EW-1	Decreasing	Yes
MW103-WD	No Trend	No	MW155-EW-1	Decreasing	Yes
MW113-UD	Decreasing	Yes	MW156-EW-1	Decreasing	Yes
MW113-EW-1	Decreasing	Yes	MW156-WD	Decreasing	No
MW114-WD	Decreasing	Yes	MW157-WD	Decreasing	No
MW117-WD	Decreasing	No	MW160-WD	Decreasing	Yes
MW118-WD	Decreasing	Yes	MW176-DEN	No trend	No
MW121-WDR	Decreasing	No	MW179-UDEN	No trend	No
MW122-WDR	Decreasing	No	MW77-EW-1	Decreasing	Yes
MW123-WD	Decreasing	No	MW77-EW-2	Decreasing	Yes
MW124-WD	Decreasing	No	MW77-WD*	No trend	No
MW125-WD	Decreasing	No	MW98-WD	Decreasing	Yes
MW129-WD	Decreasing	No	PTP-12	Decreasing	No
MW132-WD	Decreasing	No	PTP-13	Decreasing	No
MW135-WD	Decreasing	No	PTP-14	Dry	No

Well	Trend[1/]	Extraction Well?	Well	Trend	Extraction Well?
MW141-WD	Decreasing	No	B-313*	Insufficient sample volume	No
Nitrate					
B-321	Dry	Yes	MW113-EW-1	Decreasing	Yes

1/ Trend for the compliance wells uses the last ten sampling events. Trend for all other wells uses all sampling events. Compliance wells are indicated by a *. Trend is determined by Mann-Kendall trend test for compliance wells only, remaining well trends determined by Sen's test. MW77-WD and B-313 are not North End Monitoring wells but are listed here for additional information only.

Figure 4.41 depicts the concentration trends spatially with the use of different colored dots to signify increasing, decreasing, and no trend. Inset graphs for wells MW103-WD and B-326-WD which exhibit no trend, are shown on the figure. B-326-WD is a compliance well with no trend over the last 10 samples. An inset on Figure 4.41 displays all data for B-326-WD to demonstrate how 1,4-dioxane has decreased over time. MW77-WD and B-313 had, or currently have, no trend also but display similar results as B-326-WD. MW179-UDEN has no trend but all data was not detected. Figure 4.41 shows the lateral extent of the 1,4-dioxane plume in Sections 31, 30, and 19.

The following table summarizes the status of each task specified in the ongoing RAWPs and Monitoring Plans.

Summary of Progress to Date

Revised North End IRA Work Plan Addendum (EMSI, 2008b)	**Status**
Continue pumping from extraction wells in Areas 1, 2, 3, and 4.	Ongoing.

Work Plans for Area 4 Response Action (EMSI, 2008b and 2010b)	**Status**
Extraction coupled with potable water injection upgradient of extraction well MW113-EW-1 is intended to mobilize and recover mass from this otherwise "stagnant zone" of groundwater contamination. Continue pumping from extraction well MW113-EW-1 as deemed appropriate to achieve objectives.	Potable water injection was discontinued on October 2, 2018. Extraction from MW113-EW-1 is ongoing. NBBW-IW-3 was converted to an extraction well and was initially pumping at a rate of about 2 gpm to enhance mass removal from this Area. Water levels continue to decrease in the area and NBBW-IW-3 has become formation limited resulting in an extraction rate of 0.5 gpm through the first half of 2021. Extraction rates continued to decline and the well became dry in September 2021.

Work Plans to Extract Additional Groundwater from Area 3 and 5 of the North End Response Action (EMSI, 2010a and 2011)	**Status**

Assess the presence (or absence) of a preferential pathway beneath the GTEP pad toward MW77-WD, the lateral limits of the pathway (if present), the direction and rate of groundwater movement, and potential yield from an extraction well. Design and install a new extraction well and collection system to best intercept the flow of contaminated groundwater toward MW77-WD.	Initial investigation work complete. Extraction from MW170-EW-1 is ongoing - see Subsection 4.9, below.

North End Groundwater Monitoring Plan and Update No. 3 (EMSI, 2007b and Parsons, 2021b)	**Status**
Assess results and modify plan as appropriate.	Ongoing. Quarterly and semiannual monitoring of North End wells will continue in accordance with *Update No. 3.*

Response Action Work Plan for B-326-UD and B-313 Area (EMSI, 2013)	**Status**
Extract groundwater from MW113-UD to remediate contamination in the vicinity of B-326-UD. Extract groundwater from B-321 to remediate contamination in the vicinity of B-313.	Ongoing. An unweathered Dawson monitoring well MW115-UD was sampled for 1,4-dioxane on August 20, 2013 and March 4, 2014. No 1,4-dioxane was detected in either sample. Groundwater extraction from wells MW113-UD and B-321 commenced in June and July 2013, respectively, in accordance with the RAWP. B-321 became dry and pumping was discontinued in October 2021.

Work Plan to Assess Northern Extent of 1,4-Dioxane in Shallow Groundwater (North of Well MW144-WD) (EMSI, 2014)	**Status**
Install four piezometers along western extension of Mississippi Avenue. Sample groundwater and collect confirmation samples. Recommend location for permanent sentry well. Install additional piezometers to delineate lateral extent if 1,4-dioxane concentrations are greater than the performance standard.	Piezometers NEPZ-100 through NEPZ-103 were installed and sampled for 1,4-dioxane. Initial and confirmation sampling results were less than the performance standard of 0.9 µg/L. A sentry well location was recommended.

Work Plan to Sample North End Wells, Piezometers, and Surface Water (EMSI, 2016)	**Status**

Sample existing monitoring wells, piezometers, and surface water stations for 1,4-dioxane, VOCs, metals, nitrate, and nitrite beginning at the Yale Avenue extension well transect and extending northward up to and including the recently-installed piezometers along Mississippi Avenue. In addition, one surface water sampling station (SW-3) is located south of the Yale Avenue extension.	Field investigation work complete. Analytical results have been validated and are consistent with previous sampling results.

Revision 1, Addendum to Work Plan to Assess Northern Extent of 1,4-Dioxane (EMSI, 2017)	**Status**
The second phase of the work to delineate lateral extent of 1,4-dioxane concentrations across the NEPZ transect involved extending the Mississippi transect to the east and west and sampling for 1,4-dioxane and VOCs. A location for a permanent sentry well was determined in accordance with the Work Plan.	Additional piezometers to the east and west were installed in 2nd half 2017. Based on assessment of geological and chemical results from the piezometers, a permanent sentry well was installed, developed, and ultimately added to the North End GWMP.

Work Plan to Cease Potable Water Injection at North Boundary Barrier Wall (EMSI, 2018d)	**Status**
Cease potable water injection to evaluate the effectiveness of the NBBW without Potable Water Injection (PWI), as directed by USEPA in the fourth five-year review (USEPA, 2017).	WSDs began baseline sampling in June 2018 and continued sampling and collection of water levels through the first half of 2020. The cessation pilot-test was terminated in July 2019.

Revised Work Plan to Further Assess the North End 1,4-Dioxane Plume (EMSI, 2018a)	**Status**
Assess the northern and vertical extent of the 1,4-dioxane plume and update the Conceptual Site Model (CSM) of the North End area. Work scope includes Installing six wells (shallow and deep), collecting samples, and performing slug tests.	The Work Plan was implemented in 2018 and 2019 and a final report was prepared in 2020. The final report was approved by USEPA in September 2020.

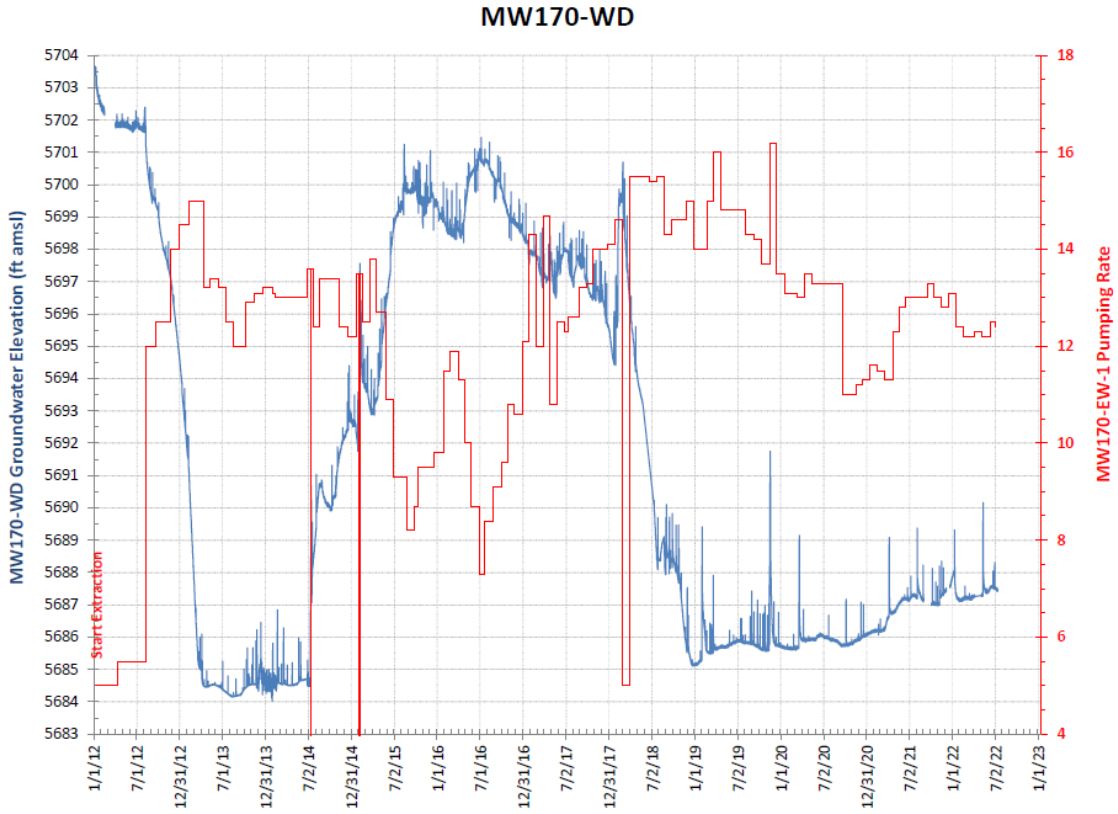
Effectiveness of the MW38 Area, NTES, and North End Response Actions, (EMSI/Parsons, 2021b) at the Site were evaluated as it related to findings and recommendations in USEPA's Fourth 5YRR (USEPA, 2017). Response Action objectives prescribed in work plans and notification documents for the North End are being met by ongoing groundwater extraction from the Response Actions and ongoing monitoring and sampling programs. System optimization is an ongoing component of operations and includes, but is not limited to, maximizing pumping from wells with the highest 1,4-

dioxane concentrations; and cyclical pumping from wells whose concentrations meet the performance standard then rebound to above the performance standard.

4.9 GTEP Area Response Actions

Pumping from the GTEP extraction well (MW170-EW-1, Figure 4.33, Area 5) was initiated on January 9, 2012 and continued throughout the reporting period. During this reporting period, the pumping rate ranged between 12.2 gpm and 13.1 gpm, with approximately 3.2 million gallons pumped during the period. Approximately 67.4 million gallons have been extracted since the start of pumping.

Figures 4.16 and 4.17 show the potentiometric surface configuration of the GTEP area during January and April 2022, respectively. In the center of the GTEP area, groundwater levels at MW170-WD (adjacent to extraction well MW170-EW-1) have been lowered by approximately 16 ft, compared to the January 2012 pre-pumping groundwater elevation of 5703.12 ft amsl. A hydrograph of MW170-WD (below) shows the correlation between pumping rate in MW170-EW-1 and water levels in MW170-WD.



Figures 4.16 and 4.17 indicate that a cone of depression beneath the GTEP area remained throughout the reporting period. The 360-degree capture zone continued to prevent contaminants from migrating toward MW77-WD and MW62-WDR. Pumping rates were sustained during this reporting period.

The inferred flow lines on Figure 4.17 indicate inward flow toward extraction well MW170-EW-1 from all directions. This hydraulic condition is meeting the specific response action objective of the RAWP (EMSI, 2011) "…to cease the potential seepage of contaminated groundwater from the sand channel toward well MW77-WD". The 1,4-dioxane concentration at compliance well MW77-WD has steadily decreased from 41 µg/L just prior to GTEP pumping to 12 µg/L on April 18, 2022. Baseline/initial and subsequent analytical results for all GTEP area wells are shown in Table 4.10. These results indicate that groundwater quality within and adjacent to the GTEP sand channel has improved since pumping began.

With regard to MW62-WDR, the well lies within the NBBW zone of containment shown on Figures 4.16 and 4.17. The NBBW CSE (EMSI/CDM-Smith/Parsons, 2021) determined that the NBBW effectively contains flow of contaminated groundwater within the alluvium/weathered bedrock groundwater unit. Any residual 1,4-dioxane remaining north of the containment zone will be captured by ongoing Response Action pumping north of the containment zone.

Statistical trend analyses of VOCs, 1,4-dioxane, and nitrate in well MW170-EW-1 are presented in Figure 4.42 and in the table below. 1,1-DCA, 1,1-DCE, 1,4-dioxane, PCE, and TCE showed statistically significant decreasing trends while cis-1,2-dichloroethene (cis-1,2-DCE) is showing an increasing trend; all other analytes were not trending.

Trends in MW170-EW-1

Compound	Trend
1,4-Dioxane	Decreasing
1,1-DCA	Decreasing
1,1-DCE	Decreasing
cis-1,2-DCE	Increasing
TCE	Decreasing
PCE	Decreasing

4.10 Permitted Well Inventory

In accordance with Section 5.4.3 of the GWMP, an inventory of permitted water wells is to be conducted every five years in accordance with the requirements of the Final Institutional Control Plan (Parsons, 2002). The last inventory performed for the Site was prepared in 2017 and presented in the *Remedial Action and Operations & Maintenance Status Report, January through June 2017, September 30, 2017*.

The scope of the water well inventory includes obtaining current records from the Colorado State Engineers Office of permitted water wells within ½ mile to the east, south and west of the Site, and 5 miles downgradient (north) of the Site (Figure 4.43). Downgradient is defined as within the Murphy Creek drainage basin to the north as shown on Figure 4.43. Table 4.11 presents a summary of relevant information related to the water supply and Aurora's monitoring wells completed in alluvium and/or weathered bedrock, to depths no deeper than 100 feet bgs located within the drainage basin. Appendix C-7 presents all wells within five miles of the Site.

5.0 LANDFILL GAS REMEDY

The current LFG extraction, collection and treatment system consists of the following components: 64 vertical gas extraction wells (EWs), header and lateral piping, three automatic and nine manual condensate traps, two flares, and the GTEP.

The original system began operation in October 1996. All LFG was treated by the Lowry Blower/Flare (LBF) station, which burned LFG in an enclosed flare. Since then, the system has been expanded to include additional extraction wells in both the Lowry and DADS landfills. Additional treatment devices have also been added to treat the combined gas flows from Lowry and DADS landfills.

The GTEP began operation in July 2008 and is a beneficial use treatment system that uses LFG to produce electricity. The DADS Blower/Flare (DBF) station, installed in 2010, burns LFG in an open flare. It began operation in August 2010.

In March 2015, the Lowry/DADS treatment system was updated with the installation of large capacity candlestick flare, referred to as Flare Station 3 (FS3). At that time, FS3 replaced the LBF station, which is currently decommissioned.

On June 4, 2019 the CDPHE approved a Title V Permit modification request to allow operation of the GTEP, DBF, and FS3 at full capacity, full time. The combined capacity of the three treatment units is approximately 3,800 standard cubic feet per minute (scfm). The modification was necessary to accommodate increasing gas volume generated from the DADS Section 32 landfill. This operational change is a departure from the previous routine of operating the DBF on an as needed basis only.

5.1 LFG Extraction, Collection, and Treatment System Operations

The current LFG extraction, collection and treatment system consists of vertical gas extraction wells and condensate traps and the GTEP and blower/flare stations.

5.1.1 Extraction Wells and Collection System

The Lowry LFG extraction and collection system was monitored monthly (Appendix D-1). Of the sixty-four EWs at Lowry, sixty-one were online and three were shut down due to lack of gas production. Adjustments were made to wellhead valves as needed to compensate for changing methane, oxygen, carbon dioxide, and balance gas levels. Gas temperatures at the extraction wells remained stable during the reporting period with no initial gas temperature exceeding 103 degrees Fahrenheit (°F).

5.1.1.1 Wellhead Vacuums

LFG extraction vacuums were monitored at both the wellhead and the collection system piping. Measurements and adjustments made to maintain system balance were recorded on the LFG Extraction Well Monitoring forms (summarized as Appendix D-1).

5.1.1.2 Wellhead Gas Quality

LFG quality measurements (including methane, carbon dioxide, oxygen, and balance gas [mostly nitrogen]) were collected monthly from the 64 EWs. The overall gas quality remained stable within the well field and at the GTEP, DBF, and FS3 stations, as shown in Appendices D-1 and D-2.

5.1.1.3 Collection Piping

The table below shows the LFG oxygen concentrations measured at the Lowry Header Pipe and at each treatment device during the reporting period.

LFG Oxygen Concentrations (% Volume)			
Sample Point	**Minimum**	**Average**	**Maximum**
Lowry Header Pipe	1.3	2.2	3.6
GTEP	0.0	0.6	1.4
DBF	0.0	0.6	1.3
FS3	0.0	0.7	1.3

Generally, oxygen readings up to 3% indicate integrity of the gas collection network. In one instance a hose was found to be split requiring repair. No other problems were encountered. Monitoring data are provided in Appendices D-2.1 through D-2.4.

5.1.1.4 Condensate Traps

Automatic condensate traps were inspected weekly. Pulse counter and totalizing flow meter readings were recorded on the Weekly Service Records on file at the WTP. Monthly automatic condensate volumes measured at the T505 flow meter in the WTP are summarized below:

Period	**Condensate Processed (Gallons)**
January	1,022
February	1,072
March	325
April	401
May	847
June	866
Total	**4,533**

The integrity of the automatic traps and conveyance line to the WTP was monitored approximately weekly for volume production and pressure changes. All inspections and testing were documented on WTP checklists and/or in the daily operator logs. Completed checklists are provided in Appendix A-1. No operational problems were observed.

Manual condensate traps were inspected monthly. All manual traps appeared to be collecting condensate. No condensate was removed from the manual traps during the reporting period.

5.1.1.5 Gas Collection System Maintenance

During the reporting period, minor maintenance was performed such as refreshing gas well ID markings.

5.1.2 GTEP and Blower/Flare Stations

During the reporting period, the GTEP, DBF, and FS3 stations provided treatment of extracted LFG. The GTEP, DBF, and FS3 operated for approximately 4,039 hours, 4,297 hours, and 4,097 hours, respectively.

During the reporting period, routine preventive maintenance such as fluid changes and engine overhauls were performed. The flow meter was found to be in good working order with only minor adjustments needed to maintain accurate flow readings.

While the DBF and FS3 stations were operating, flare temperature, flow rate, methane content, and maintenance activities were recorded and are discussed below. Similar data were collected for the GTEP in accordance with the *Modified Construction Permit No. 06AR1264* issued by the CDPHE Air Pollution Control Division. Those data are retained at the GTEP and are available for inspection by USEPA and CDPHE.

5.1.2.1 Flare Temperature

While combustion temperature was recorded, DBF and FS3 are open flares and not subject to combustion temperature requirements - only visual presence of a flame.

5.1.2.2 Gas Flow Rate

For the reporting period, the combined average LFG flow from both Lowry and DADS Landfills was approximately 2,709 scfm. The combined average LFG flow was calculated by first summing the volume of LFG consumed by the GTEP, DBF, and FS3 stations. The sum was then divided by the difference between the total time during the reporting period and the total time that no treatment device was operating. Volume data for each treatment device were collected by fixed instruments on the discharge side of the blower or compressor.

The Lowry well field contributed approximately 7.2% of this flow and 92.7% was contributed by the DADS well field, as described in the Daily Status Reports in Appendix D-2.5. For the reporting period, the average flows for Lowry and DADS were 195 and 2,514 scfm, respectively.

5.1.2.3 Methane Content

Methane content at the Lowry Header Pipe and at each treatment device was measured at least twice weekly when the treatment device was operating during regular business hours. The table below shows the LFG methane concentrations measured at the Lowry Header Pipe and at each treatment device during the reporting period.

LFG Methane Concentrations (% Volume)

Sample Point	Minimum	Average	Maximum
Lowry Header Pipe	23.4	29.4	37.3
GTEP	40.0	51.0	58.8
DBF	31.1	38.6	49.1
FS3	32.9	46.1	52.2

Monitoring data are provided in Appendices D-2.1 through D-2.4.

5.1.2.4 Blower/Flare Station Maintenance

Routine preventive maintenance such as blower rotations and lubrication were performed throughout the reporting period.

5.1.2.5 Additional Reporting Requirements

(1) Value and length of time for exceedance of parameter(s) being monitored. There were no events during the reporting period where vacuum was not observed at an extraction well.

In March 2013, a new operating procedure was approved for EWs-09, -10, and -23 due to oxygen concentrations exceeding 5.0%. The new operating procedure allows the wells to remain fully closed unless gas concentrations of greater than 30% methane and less than 2.0% oxygen are detected. The wells are temporarily opened to collect the gas readings each month. During the reporting period, EWs-09, -10, and -23 remained closed because they did not meet these operating criteria. The wells were turned on only to collect readings.

(2) Description and duration of all periods when the gas stream is diverted from the treatment device through a bypass line or the indication of bypass flow as specified under §60.756. There were no diversions during the reporting period.

(3) Description and duration of all periods when the treatment device was not operating for a period exceeding 1 hour and length of time the treatment device was not operating. There were seven occurrences when the treatment device was offline (total system shutdown) for one hour or more during the reporting period.

Treatment Device Shutdown Time

Date	Total Shutdown Time (hours)	Description
1/25/22	140.5	Compressor Replacement
2/17/22	2.5	Power interruption
2/24/22	4.8	Power interruption
3/4/22	5.8	Power interruption
4/10/22	6.3	General Maintenance
5/19/22	8.3	General Maintenance
6/30/22	8.1	General Maintenance

(4) All periods when the collection system was not operating in excess of 5 days. There were no periods where the collection system was not operational in excess of 5 days during the reporting period.

(5) The location of each exceedance of the 500 parts per million methane concentration as provided in §60.753(d) and the concentration recorded at each location for which an exceedance was recorded in the previous quarter. This requirement is not applicable to Lowry.

(6) The date of installation and the location of each well or collection system expansion added pursuant to paragraphs (a)(3), (b), and (c)(4) of §60.755. No collection system expansion activities occurred during the reporting period.

5.2 LFG Extraction, Collection, and Treatment System Monitoring

Monitoring activities during the reporting period consisted of collecting gas composition samples at the GTEP, DBF, and FS3 as well as POC probes as discussed in the following subsections.

5.2.1 Flare Sampling

Methane, carbon dioxide, oxygen, and balance gas monitoring at the Lowry header pipe, DBF and FS3 stations was performed at least once weekly during regular business hours while the treatment devices were operating and a technician was available. Results are summarized in Appendices D-2.1 through D-2.4. Monitored parameters were generally within normal historical ranges.

No other gas sampling was performed during the reporting period. No odor evaluation was performed at the flares during the reporting period.

5.2.2 GTEP Inlet Sampling

Methane, carbon dioxide, oxygen, and balance gas monitoring were performed at the GTEP at least twice weekly during regular business hours while the treatment device was operating, and a technician was available. A summary of GTEP monitoring results is provided in Appendix D-2. Monitored parameters were within normal historical ranges.

Inlet gas sampling was performed for heat and methane content during the reporting period (Appendix D-3). This annual sampling occurred on February 16, 2022 as required by the Construction Permit. No odor evaluation was performed at the GTEP during the reporting period.

5.2.3 GTEP Outlet Sampling

No outlet sampling at the GTEP exhaust was performed during the reporting period.

5.2.4 POC Probe Sampling

POC probe locations are shown in Figure 5.1. The last biennial sampling event for VOCs was performed in May 2021. POC probes were not sampled for VOCs this reporting period.

The POC probes were sampled quarterly for methane (Appendix D-4). All concentrations were below the methane performance standard of 5% by volume.

6.0 STORMWATER

The following subsections discuss performance monitoring of the Surface Water Removal Action (SWRA) and stormwater monitoring.

6.1 Surface Water Removal Action

As discussed in Subsection 4.2.1, the depth to groundwater within the alluvium/weathered Dawson beneath the SWRA (which extends between the NTES and WTP access road) is approximately 10 ft bgs. The SWRA blanket drain typically lies between two and four ft bgs. Consequently, the water table is beneath the base of the SWRA blanket drain, so clogging of the drain is not a concern.

6.2 Stormwater Monitoring

Annual stormwater sampling in accordance with the *Stormwater Monitoring Plan* (EMSI, 2008a) was not performed during the reporting period. Stormwater will be sampled in the next reporting period if sufficient flow is available to activate the stormwater sampler. The stormwater sampling location (SWMP-1) is shown on Figure 6.1.

6.2.1 Sampling

Stormwater sampling was not performed during this reporting period.

6.2.2 Stormwater Discharge Rate

A stormwater discharge rate was not estimated because sampling was not performed during this reporting period.

7.0 COVER MONITORING

Inspection and maintenance of the Site is required by the *Final Operations and Maintenance Manual, Covers and Stormwater* (EMSI, 2007a). Inspections are conducted to identify and repair problems arising from nuisance conditions, settlement, cover or ditch erosion, ditch sedimentation, and damage to security fences and gates. The following sections discuss the Site and buffer zone inspections and maintenance performed during this reporting period.

7.1 Landfill Cover

7.1.1 Site and Landfill Cover Inspection

A Site-wide inspection is required annually and after any event that may cause release of waste material. The following remedial components are inspected:

- The landfill prism;
- The traffic cap covering the East/South/West (ESW) slurry wall;
- The SWRA collection system cover (including surface features of the NTES trench);
- The waste pit area; and
- The stormwater conveyance ditches.

A formal inspection was conducted in June 2022 following an above normal rain event (Appendix E-1.1). Some minimal areas of shallow ponding on the cap, in and near roads was noted. The slow rain rate from this event did not create runoff with the potential to erode. Stormwater diversion ditches remain in very good condition.

7.1.2 Landfill Cover Maintenance Activities

Cover maintenance during the first half 2022 was performed to fill shallow areas noted as near flat or possibly low in the cover. Approximately 330 cy of clean topsoil was used to fill shallow areas with the greatest potential for ponding. Weed mitigation in the form of spot spraying was performed as necessary in accordance with the *Integrated Weed Management Plan for Lowry Landfill Superfund Site and Buffer Properties* (Parsons, 2009).

Due to a noticeable decline in the prairie dog population due to control measures performed in November 2020 in surrounding areas and within Section 6, mitigation was not required during the reporting period.

7.2 Buffer Zones

7.2.1 Buffer Zone Inspections

Formal quarterly inspections of the buffer zones surrounding the Site were conducted in January and April 2022 (Appendices E-2.1 and E-2.2, respectively). Inspections focused on the integrity of security fencing, removal of trash and debris, potential soil erosion, wildlife management, and noxious weed management. Items of concern included areas of damaged barbed wire fencing.

Inspection reports provide photographs of items of concern and their locations on a property map (Appendices E-2.1 and E-2.2).

7.2.2 Buffer Zone Maintenance Activities

Fence repairs and prairie dog mitigation in areas of concern were successfully performed during the reporting period.

8.0 REMEDIAL ACTION

Remedial actions have been completed for all remedy components except for groundwater, which has received Interim Completion for the groundwater monitoring program. Groundwater monitoring is continuing in accordance with the USEPA-approved GWMP (EMSI/Parsons, 2018).

9.0 PROBLEMS ENCOUNTERED, RECOMMENDATIONS, AND MASTER SCHEDULE

Problems and recommendations associated with ongoing O&M activities are presented in this section, as well as an updated Master Schedule for Site activities. The master schedule is presented as Figure 9.1.

9.1 Problems Encountered

The status of issues and recommendations identified in USEPA's Fourth Five Year Review is summarized below:

Issue Number	Recommendation	Status
1	Cease potable water injection and evaluate effectiveness of NBBW groundwater extraction system.	WSDs submitted the *Revised Final Report on Pilot Test for Cessation of Potable Water Injection* (EMSI/CDM-Smith, 2020a). USEPA approved the document on June 26, 2020. WSDs submitted the *NBBW Containment System Evaluation* (EMSI/CDM-Smith/Parsons, 2021). USEPA approved the document on October 11, 2021.
2	Increase capacity of WTP.	Completed on February 1, 2019.
3	Evaluate effectiveness of groundwater remedy components on-site and off-site and optimize, as necessary	Effectiveness Evaluations for the MW38 Area, NTES, North End Response Actions, and Perimeter Barrier Wall were prepared and USEPA approval was achieved in January 2021. WSDs submitted the *NBBW Containment System Evaluation* (EMSI/CDM-Smith/Parsons, 2021). USEPA approved the document on October 11, 2021.
4	Sample and analyze four wells located within and immediately adjacent to the 1,4-dioxane plume and implement appropriate remedial actions. Clarify if closure of abandoned wells was performed in accordance with Rule 16 of the 2CCR 402-2. Provide a Work Plan for detailing how potential at-risk-receptors will be	WSDs submitted the *Final Technical Memorandum, Identification and Sampling of Water Supply Wells Within and Immediately Adjacent to Off-Site 1,4-Dioxane Plume* (EMSI, 2020d). USEPA approved the document on June 26, 2020.

Issue Number	Recommendation	Status
	effectively identified and addressed.	
5 and 6	Add 1,4-dioxane to the COC list for groundwater remedy effectiveness monitoring and remove iron from the COC list for groundwater compliance monitoring.	WSDs submitted *Groundwater Monitoring Plan, Revision 2 (*EMSI/Parsons, 2018). USEPA approved the document on September 6, 2018.
7 and 9	Develop an updated map and conceptual site model of the off-site 1,4-dioxane plume. Evaluate need for and scope of additional monitoring and additional institutional controls for the plume area.	WSDs submitted *Technical Memorandum, Updated 1,4-Dioxane Plume Map and North End Conceptual Model, 2017 Five-Year Review Issues #7 and #9* (EMSI/CDM-Smith, 2020c). The memorandum included a Risk Summary prepared by USEPA that concluded the plume posed no unacceptable risk to human health. USEPA approved the document. WSDs also submitted *North End Groundwater Monitoring Plan – Update No.2* (EMSI, 2020b). USEPA approved the document on October 16, 2020. WSDs also submitted *North End Groundwater Monitoring Plan – Update No. 3* (Parsons, 2021b). USEPA approved the document on September 22, 2021. USEPA, with support and concurrence from CDPHE, TCHD, and WSDs, prepared a Conceptual Site Model Update document to augment the response to Item 7. The CSM Update was finalized October 12, 2021. USEPA determined that no additional institutional controls are necessary.
8	Reevaluate subsurface gas performance standards utilizing updated toxicity values and Site-specific input data.	WSDs submitted *Revision 3, Updated Compliance Monitoring Plan, Landfill Gas Remedy* (EMSI, 2018e). USEPA approved the document on August 2, 2018

All issues identified in the Fourth Five-Year Review have been addressed. USEPA's Fifth Five Year Review (USEPA, 2022) was approved on January 10, 2022 and states that all Operable Units are protective of human health and the environment.

With completion of the Fourth and Fifth Five Year Reviews the issues listed above are complete. No other problems were encountered during the reporting period that were not managed within the WTP standard operating procedures or that caused significant plant shutdowns beyond those reported in Section 2.0 of this document.

9.2 Recommendations

9.2.1 Recommendations for Slurry Wall Areas

Continue to monitor groundwater levels in all effectiveness monitoring well pairs. For well pairs that do not demonstrate inward gradients across the wall, collect water quality samples from the external well (PM-X series well) to assess the effectiveness of the perimeter slurry wall in these areas.

9.2.2 Recommendations for NTES, NBBW, and MW38 Areas

Continue to pump and treat groundwater from these areas. For the NTES, continue to operate the product skimming system when product thickness greater than six inches is observed in the trench.

9.2.3 Recommendations for Off-Site North End Response Actions

Continue to optimize ongoing groundwater extraction in off-Site Areas 1, 2, and 3 in accordance with their respective RAWPs. This may include increasing extraction rates, as discussed above.

9.2.4 Recommendations for Sitewide Monitoring Plan – Compliance Monitoring

As discussed in Subsections 4.4.2, seven monitoring locations were found to contain one or more compliance parameters in excess of a performance standard. The seven wells determined to be statistically out of compliance or potentially out of compliance are summarized below.

Well	Compound	Compliance Decision
B-326-UD	1,4-Dioxane	Out of Compliance
B-326-WD	1,4-Dioxane	Out of Compliance
BM-11X-100N	PCE	Out of Compliance
BM-15N6	Nitrate	Potentially Out of compliance
MW38-830N-230E	1,4-Dioxane	Out of Compliance
MW62-WDR	1,4-Dioxane	Out of Compliance
MW62-WDR	Nitrate	Out of Compliance
MW62-WDR	Nitrite	Out of Compliance
MW77-WD	1,4-Dioxane	Out of Compliance

Recommendations relative to non-compliance with performance standards at these locations are discussed in the following sections.

9.2.4.1 1,4-Dioxane in the NBBW Area

Based on the results of the statistical tests, 1,4-dioxane occurs in excess or potentially in excess of its performance standard in four NBBW-area compliance monitoring wells (B-326-UD, B-326-WD, MW62-WDR, and MW77-WD) (Figure 4.11).

The WSDs will continue to monitor both the 1,4-dioxane concentrations and the water level in these wells and continue to evaluate conditions in this area. Continued pumping from extraction wells MW113-EW-1, NBBW-IW-3, MW113-UD, B-321, MW170-EW-1, and MW-77 area wells is recommended if water is available. As of this reporting period NBBW-IW-3 and B-321 are dry.

With regard to the MW62-WDR area, this well lies within the zone of containment caused by groundwater extraction from the NBBW and Response Actions north and east of the NBBW (see Figures 4.16 and 4.17). Consequently, the exceedances may be a Case 2 condition, which requires only long-term monitoring. As required by the Fourth 5YRR (USEPA, 2017), the WSDs conducted additional evaluations of the effectiveness of the NBBW containment system and the Response Actions in the NBBW area as part of the CSE. That evaluation (EMSI/CDM-Smith/Parsons, 2021) determined that the NBBW effectively contains flow of contaminated groundwater within the alluvium/weathered bedrock groundwater unit. In the meantime, 1,4-dioxane that might have migrated north of the containment zone will be captured by ongoing Response Action pumping north of the containment zone.

9.2.4.2 Nitrate and Nitrite in the NBBW Area

Nitrate and nitrite are out of compliance in monitoring well MW62-WDR (Figure 4.11). This well is located along the northern boundary of the Site, in an area where sewage sludge was historically land farmed.

The extent of nitrate and nitrite exceedances has been determined to be limited to the eastern portion of the NBBW area (i.e., in the immediate vicinity of compliance monitoring well MW62-WDR). Therefore, there does not appear to be a potential for significant off-Site migration of nitrate or nitrite at concentrations greater than the performance standard.

To the extent that the nitrate and nitrite occurrences do not result from a source in the immediate vicinity of these wells (i.e., impacts from prior land farming of sewage sludge in this area), implementation of response actions for 1,4-dioxane should also address these compounds in this area. To the extent that the cause of the nitrate and nitrite occurrences in these wells is due to impacts from prior land farming of sewage sludge in this area, the response actions being undertaken in this area may or may not reduce their concentrations in groundwater. Nonetheless, groundwater extraction from North End wells further downgradient should capture any potential migration of nitrate and nitrite from the NBBW area if northern migration were to occur.

9.2.4.3 1,4-Dioxane in MW38-830N-230E

1,4-Dioxane concentrations in monitoring well MW38-830N-230E exceed their respective groundwater performance standards. The concentrations of 1,4-dioxane displayed no trend in this well. This well is located along the POC at the north end of the MW38 channel. The hydraulic gradient within the channel at this location is to the north so migration of 1,4-dioxane crosses the POC. As part of the groundwater containment remedy for the Site, groundwater extraction is conducted from the MW38 channel at two locations, including a location approximately 200 ft north of well MW38-830N-230E,

which is downgradient from and beyond the POC relative to the compliance monitoring well. Therefore, although 1,4-dioxane may migrate across the POC, impacted groundwater is hydraulically contained within the sand channel in the area immediately north of well MW38-830N-230E. No action other than continued extraction and monitoring of the compliance well is required for these occurrences.

9.2.4.4 Nitrate in BM-15N6

Nitrate occurs in well BM-15N6 at concentrations greater than its performance standard. Statistical testing indicates that there is a decreasing trend in nitrate concentrations in this well. As discussed in Subsection 4.4.2.4 of this report, this well is located in an area where sewage sludge had historically been land-farmed. USEPA positioned the compliance boundary within the land farming area such that it straddles the land farming area. That, coupled with an absence of 1,4-dioxane and only low-level detections of VOCs below performance standards since 2003 in this well, would indicate the source of nitrates is not from landfill mass or waste pit contaminant migration; rather, it is likely from the past land farming activities inside and outside the compliance boundary. Nitrate has been observed in surrounding wells BM-15N2 (43,000 µg/L), BM-15NE1 (26,000 µg/L), BM-15N5 (68,000 µg/L) and BM-15N1 (25,000 µg/L) (1st Half 2017) and BM-15I-15N (54000 µg/L), BM-15I-50S (9,300 µg/L), and BM-15X-50S (38,000 µg/L) (October 2018) The spatial randomness of nitrate detections in and around well BM-15N6 as compared to other compliance wells in this vicinity is similar to that observed near the NBBW where sewage sludge was land farmed.

Because 1) the source of the nitrate occurrences in well BM-15N6 is most likely a result of sewage sludge land farming in this area, 2) groundwater is actively being extracted from this area, and 3) the distance between this well and the Site boundary is approximately 200 feet, the occurrence of nitrate in well BM-15N6 is considered to be a Case 2 condition as defined in the GWMP (EMSI/Parsons, 2018). No action other than continued groundwater monitoring is recommended.

9.2.4.5 Tetrachloroethene in BM-11X-100N

PCE in BM-11X-100N is out of compliance with no trend. The ten most recent PCE concentrations in this well range from a low of 4.6 µg/L in October 2017 to a high of 7.2 µg/L (October 2020) with the most recent sample containing a PCE concentration of 4.9 µg/L (May 18, 2022). PCE levels appeared to slowly increase from October 2017 to November 2020 but have dropped in the last three sampling events. The variation in PCE concentrations appears to be related to changes in the water level in this well. Prior to the summer of 2015, the water level in this well was relatively stable ranging from approximately 5,790 to 5,795 ft amsl. Beginning in the summer of 2015, the water level in this well increased, peaking at a high of just over 5,800 ft amsl in July 2017. Since that time, the water level in this well has declined back below 5,791 ft amsl. Consequently, it is likely that the increase in PCE levels in this well may be the result of flushing of residual PCE contained in the capillary fringe/vadose zone. If this is the case, then the PCE level in this well should decline over time as evidenced by the drop in concentration of the most recent PCE result from 7.2 µg/L in November 2020 to 4.9 µg/L in May 2022.

The overall low concentration of PCE in well BM-11X-100N, in addition to an inward gradient across the wall at this location, and no or very low PCE detections in groundwater to the north and northeast of the well indicate that the PCE occurrences in this area

represent a Case 2 condition (little or no downward trend with a low potential for off-Site migration) as defined in the GWMP (EMSI/Parsons, 2018). The WSDs previously completed a Case 2 evaluation for this well (EMSI, 2006b). Results indicated that it is unlikely that the PCE occurrences above the performance standard in this area will migrate to the Site boundary. Rather, PCE occurrences in this area will likely attenuate naturally over time. Consequently, the recommended action is to continue monitoring.

9.2.5 Recommendations to Voluntary Actions

As discussed in Subsection 4.6 of this report, the following voluntary measures will continue to be implemented by the WSDs during the next reporting period:

1. Continue pumping of the MW38 Area source well (MW38-825S-445E).
2. Continue to operate groundwater extraction systems for gradient control in the PM-11, PM-15, and MW51 areas, as appropriate. In addition, continue to operate air sparging operations in the PM-15 and MW51 areas.
3. Continue to skim LNAPL from the surface of groundwater in the NTES trench, if present.
4. Continue to optimize removal of 1,4-dioxane within the WTP.

9.2.6 Recommendations to WTP Operations

A plan has been developed to upgrade WTP computers, software, alarm notification system and the main PLC to modern standards to enhance WTP processes and cyber security. The scope of the work also includes adding a link to the on-Site CenturyLink fiberoptic line to provide the bandwidth needed to support automatic cloud-based backups of critical plant data and files.

9.3 Schedule of Planned Activities

See Figure 9.1 Master Schedule for an update of planned activities.

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TABLE 2.1
WATER TREATMENT PLANT SAMPLING SCHEDULE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

	MP-001 (WTP Effluent)					Early Warning Influent (grab) TP-110, TP-120, TP-140, TP-150, TP-160, TP-170, TP3310	Early Warning Influent (grab) TP-110, TP-120, TP-140, TP-150, TP-160, TP-170, TP3310	Early Warning Influent (grab) TP-110, TP-120, TP-140, TP-150, TP-160, TP-170, TP3310	Early Warning Influent (composite)
Sampling Date	**Monthly 24-Hour Grabs[a/]**	**Monthly Composite[b/]**	**Quarterly 24-Hour Grabs[a/]**	**Quarterly Composite[a/]**	**Yearly Composite[a/]**	**Monthly**	**Quarterly[c/]**	**Yearly**	**Yearly[d/]**
January 3&4, 2022	X		X	X		X	X		
February 1&2, 2022	X	X	X (VOC Resample)	X (SVOC Resample)		X			
March 1&2, 2022	X	X		X (SVOC Resample)		X			
April 4&5, 2022	X		X	X	X	X	X	X	X
May 2&3, 2022	X	X				X			
May 9&10, 2022			X (Nonylphenol Resample)						
June 6, 7 2022	X	X				X			
July 2022	X		X	X		X	X		
August 2022	X	X				X			
September 2022	X	X				X			
October 2022	X		X	X		X	X		
November 2022	X	X				X			
December 2022	X	X				X			
Analytical Methods	1,4-Dioxane (8260 SIM) pH (pH-740 one time at start of 24 hours)	Molybdenum (200.8)	VOCs (EPA 624.1) Nonylphenols, Total (ASTM D7065_11)	SVOCs (EPA 625.1) Metals[e/] (200.8) Gross alpha/beta Plutonium-238,239,240 Americium-241 Radium - 226,228,Total	Metals[e/] (200.7, 200.8) Mercury (245.1)	1,4-Dioxane (8260 SIM) Molybdenum (200.8)	VOCs (EPA 624.1)	Nonylphenols Total (ASTM D7065_11)	SVOCs (EPA 625.1) Metals[f/] (200.7, 200.8) Mercury (7470) Gross alpha/beta Americium-241 Plutonium-238,239,240 Radium - 226,228,Total

a/ Individual compounds and frequency are listed in Industrial Discharge Permit No. 2360-6, issued by the Metro Wastewater Reclamation District (Metro), effective January 5, 2020 to January 4, 2025

b/ Monthly sampling of molybdenum performed for performance monitoring, not required by the Discharge Permit

c/ Equivalent to MP-001 VOC quarterly list

d/ Equivalent to MP-001 yearly list

e/ Quarterly Metals - Molybdenum, Zinc and Selenium

f/ Yearly Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Nickel and Silver

TABLE 4.1
SUMMARY OF DRILLING ACTIVITIES COMPLETED
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well/Boring ID	Date of Installation	Date Abandoned	Type[a/] of Well/Boring	Northing[b/]	Easting[b/]	Ground Surface Elevation	Measuring Point Elevation	Screened Interval	Total Depth
				(feet)	(feet)	(ft NGVD)[c/]	(ft NGVD)	(ft bgs)[d/]	(ft bgs)
Installed Wells									
None									
Abandoned Wells									
None									

a/ Type: BH = borehole, MW = monitoring well, TMW = temporary monitoring well, PZ = piezometer, EW = extraction well, MPE = multiphase extraction well

b/ Locations referenced to Modified State Plane Coordinate System (in feet).

c/ ft NGVD = elevation (in feet) referenced to the National Geodetic Vertical Datum of 1929.

d/ ft bgs = feet below ground surface.

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
A-102	1/4/2022	5,703.25	20.36	17.77	5,723.61	2.59	10.4-30.3	35	32	ALLUVIUM/WD
A-102	4/4/2022	5,704.11	19.5	16.91	5,723.61	2.59	10.4-30.3	35	32	ALLUVIUM/WD
A-115	1/3/2022	5,696.30	14.45	12.23	5,710.75	2.22	6.9-13.5	21	NE[f/], >21	ALLUVIUM/WD
A-115	4/4/2022	5,696.19	14.56	12.34	5,710.75	2.22	6.9-13.5	21	NE, >21	ALLUVIUM/WD
B-215-WD	1/3/2022	5,702.33	33.59	31.17	5,735.92	2.42	34-36	39	36.5	WD
B-215-WD	4/4/2022	5,702.53	33.39	30.97	5,735.92	2.42	34-36	39	36.5	WD
B-304	1/4/2022	5,696.41	30.38	29.79	5,726.79	0.59	24-34	39	37	WD
B-304	4/4/2022	5,693.98	32.81	32.22	5,726.79	0.59	24-34	39	37	WD
B-304-UD	1/4/2022	5,686.99	41.65	39.51	5,728.64	2.14	58-78	80	36.5	UNWD
B-304-UD	4/4/2022	5,686.59	42.05	39.91	5,728.64	2.14	58-78	80	36.5	UNWD
B-305R	1/3/2022	5,692.23	32.5	30.07	5,724.73	2.43	28-38	41	27	UNWD
B-305R	4/4/2022	5,691.92	32.81	30.38	5,724.73	2.43	28-38	41	27	UNWD
B-305WD	1/3/2022	Dry	Dry	Dry	5,723.77	1.87	13-23	28	23	WD
B-305WD	4/4/2022	Dry	Dry	Dry	5,723.77	1.87	13-23	28	23	WD
B-306	1/4/2022	5,689.78	19.79	16.92	5,709.57	2.87	28.5-38.5	43.5	22	UNWD
B-306	4/4/2022	5,689.83	19.74	16.87	5,709.57	2.87	28.5-38.5	43.5	22	UNWD
B-307	1/4/2022	Dry	Dry	Dry	5,708.83	1.34	15-20	22	NE, >22	WD
B-307	4/4/2022	Dry	Dry	Dry	5,708.83	1.34	15-20	22	NE, >22	WD
B-308	1/4/2022	5,691.75	30.81	28.75	5,722.56	2.06	23-33	37	33	WD
B-308	4/4/2022	5,690.65	31.91	29.85	5,722.56	2.06	23-33	37	33	WD
B-309	1/4/2022	5,686.98	29.43	26.52	5,716.41	2.91	17-27	31	26.5	WD
B-309	4/4/2022	5,686.84	29.57	26.66	5,716.41	2.91	17-27	31	26.5	WD
B-310	1/3/2022	5,687.44	29.71	27.36	5,717.15	2.35	21.5-31.5	34	31.3	WD
B-310	4/4/2022	5,687.21	29.94	27.59	5,717.15	2.35	21.5-31.5	34	31.3	WD
B-311	1/4/2022	Dry	Dry	Dry	5,718.56	2.66	18-23	25.7	23	WD
B-311	4/4/2022	Dry	Dry	Dry	5,718.56	2.66	18-23	25.7	23	WD
B-312	1/4/2022	Dry	Dry	Dry	5,711.24	2.64	21-31	35	31	WD
B-312	4/4/2022	Dry	Dry	Dry	5,711.24	2.64	21-31	35	31	WD
B-313	1/4/2022	5,688.50	27.42	24.9	5,715.92	2.52	20-27	30.1	26.5	WD
B-313	4/4/2022	5,687.00	28.92	26.4	5,715.92	2.52	20-27	30.1	26.5	WD
B-313-UD	1/4/2022	5,680.70	34.75	32.1	5,715.45	2.65	48-63	65	27	UNWD
B-313-UD	4/4/2022	5,680.55	34.9	32.25	5,715.45	2.65	48-63	65	27	UNWD
B-314	1/4/2022	5,696.23	45.9	43.37	5,742.13	2.53	32.5-47.5	51	47.5	WD
B-314	4/4/2022	5,696.21	45.92	43.39	5,742.13	2.53	32.5-47.5	51	47.5	WD
B-314-UD	1/4/2022	5,688.42	53.58	51.18	5,742.00	2.40	67-87	89	48.5	UNWD
B-314-UD	4/4/2022	5,688.27	53.73	51.33	5,742.00	2.40	67-87	89	48.5	UNWD
B-315	1/4/2022	5,696.76	41.2	38.64	5,737.96	2.56	28-43	46	43	WD
B-315	4/4/2022	5,696.84	41.12	38.56	5,737.96	2.56	28-43	46	43	WD
B-316	1/3/2022	5,695.27	23.39	20.83	5,718.66	2.56	20.5-30.5	34	30.5	WD
B-316	4/4/2022	5,694.73	23.93	21.37	5,718.66	2.56	20.5-30.5	34	30.5	WD
B-316-UD	1/3/2022	5,691.61	27.23	24.99	5,718.84	2.24	41-56	59	33	UNWD
B-316-UD	4/4/2022	5,691.75	27.09	24.85	5,718.84	2.24	41-56	59	33	UNWD
B-317	1/3/2022	5,690.32	20.5	17.98	5,710.82	2.52	18-24	28.1	24	WD
B-317	4/4/2022	5,689.90	20.92	18.4	5,710.82	2.52	18-24	28.1	24	WD
B-317-UD	1/3/2022	5,690.64	19.29	17.46	5,709.93	1.83	37-52	54.5	23.5	UNWD
B-317-UD	4/4/2022	5,690.58	19.35	17.52	5,709.93	1.83	37-52	54.5	23.5	UNWD
B-318	1/3/2022	Dry	Dry	Dry	5,728.49	2.59	18-25	28	25	WD
B-318	4/4/2022	Dry	Dry	Dry	5,728.49	2.59	18-25	28	25	WD
B-319	1/4/2022	Dry	Dry	Dry	5,713.40	2.80	21.5-41.5	44.1	42	WD
B-319	4/4/2022	Dry	Dry	Dry	5,713.40	2.80	21.5-41.5	44.1	42	WD
B-319-25S	1/4/2022	Dry	Dry	Dry	5,712.73	2.23	14-24	24	NE, >24	WD
B-319-25S	4/4/2022	Dry	Dry	Dry	5,712.73	2.23	14-24	24	NE, >24	WD
B-319-26W	1/4/2022	Dry	Dry	Dry	5,712.60	2.60	12.4-22.4	22.4	NE, >22.4	WD
B-319-26W	4/4/2022	Dry	Dry	Dry	5,712.60	2.60	12.4-22.4	22.4	NE, >22.4	WD
B-319-50S	1/4/2022	Dry	Dry	Dry	5,713.85	2.55	14-24	24	NE, >24	WD
B-319-50S	4/4/2022	Dry	Dry	Dry	5,713.85	2.55	14-24	24	NE, >24	WD
B-319-50W	1/4/2022	Dry	Dry	Dry	5,711.78	2.28	14-24	24	NE, >24	WD
B-319-50W	4/4/2022	Dry	Dry	Dry	5,711.78	2.28	14-24	24	NE, >24	WD
B-319-75S	1/4/2022	Dry	Dry	Dry	5,714.00	2.00	14-24	24	NE, >24	WD
B-319-75S	4/4/2022	Dry	Dry	Dry	5,714.00	2.00	14-24	24	NE, >24	WD
B-320	1/4/2022	5,692.29	30.73	28.31	5,723.02	2.42	19-34	38.5	34	WD
B-320	4/4/2022	5,690.49	32.53	30.11	5,723.02	2.42	19-34	38.5	34	WD
B-321	1/4/2022	Dry	28.84	27.05	5,712.89	1.79	12-27	30.5	27	WD
B-321	4/4/2022	Dry	29.49	27.7	5,712.89	1.79	12-27	30.5	27	WD
B-322	1/3/2022	5,688.35	31.59	28.81	5,719.94	2.78	15-30	33.5	30	WD
B-322	4/4/2022	5,688.22	31.72	28.94	5,719.94	2.78	15-30	33.5	30	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
B-323-WD	1/3/2022	Dry	Dry	Dry	5,732.01	2.01	23-33	35	33	WD
B-323-WD	4/4/2022	Dry	Dry	Dry	5,732.01	2.01	23-33	35	33	WD
B-324-WD	1/4/2022	5,700.80	34.21	30.7	5,735.01	3.51	28.5-43.5	46	43.5	WD
B-324-WD	4/4/2022	5,700.30	34.71	31.2	5,735.01	3.51	28.5-43.5	46	43.5	WD
B-325-WD	1/4/2022	5,695.92	38.04	35.38	5,733.96	2.66	29.5-39.5	43	39.5	WD
B-325-WD	4/4/2022	5,695.93	38.03	35.37	5,733.96	2.66	29.5-39.5	43	39.5	WD
B-326-UD	1/4/2022	5,667.71	46.75	44.09	5,714.46	2.66	60-80	83	48.5	UNWD
B-326-UD	4/4/2022	5,667.55	46.91	44.25	5,714.46	2.66	60-80	83	48.5	UNWD
B-326-WD	1/4/2022	5,663.80	49.78	47.6	5,713.58	2.18	24-49	51	49	WD
B-326-WD	4/4/2022	5,663.60	49.98	47.8	5,713.58	2.18	24-49	51	49	WD
B-327-UD	1/3/2022	5,691.75	31.78	29.75	5,723.53	2.03	50-65	67	19	UNWD
B-327-UD	4/4/2022	5,691.75	31.78	29.75	5,723.53	2.03	50-65	67	19	UNWD
B-327-WD	1/3/2022	5,694.51	28.88	26.39	5,723.39	2.49	18-28	30	28	WD
B-327-WD	4/4/2022	5,693.72	29.67	27.18	5,723.39	2.49	18-28	30	28	WD
B-502	1/19/2022	5,748.70	31.02	27.2	5,779.72	3.82	95-105	120	23	UNWD
B-502	4/12/2022	5,749.00	30.72	26.9	5,779.72	3.82	95-105	120	23	UNWD
B-504A	1/19/2022	5,717.34	34.84	34.46	5,752.18	0.38	105-125	126.5	36	UPPER DENVER
B-504A	4/12/2022	5,717.69	34.49	34.11	5,752.18	0.38	105-125	126.5	36	UPPER DENVER
B-506	1/6/2022	5,686.90	146.49	144.1	5,833.39	2.39	310-350	355	55	LIGNITE
B-506	4/8/2022	5,687.01	146.38	143.99	5,833.39	2.39	310-350	355	55	LIGNITE
B-518	1/13/2022	5,759.16	38.58	36.24	5,797.74	2.34	75-95	100	50	UNWD
B-518	4/7/2022	5,759.32	38.42	36.08	5,797.74	2.34	75-95	100	50	UNWD
B-519	1/6/2022	5,807.35	19.79	19.65	5,827.14	0.14	60-80	85	50	UNWD
B-519	4/8/2022	5,806.44	20.7	20.56	5,827.14	0.14	60-80	85	50	UNWD
B-520	1/6/2022	5,762.41	63.68	61.79	5,826.09	1.89	125-145	155	50	UPPER DENVER
B-520	4/8/2022	5,762.57	63.52	61.63	5,826.09	1.89	125-145	155	50	UPPER DENVER
B-706	1/6/2022	5,785.39	78.85	76.11	5,864.24	2.74	105-115	115	87.6	UNWD
B-706	4/8/2022	5,784.90	79.34	76.6	5,864.24	2.74	105-115	115	87.6	UNWD
B-708	1/6/2022	5,774.26	91.75	88.74	5,866.01	3.01	122-132	132	101	UNWD
B-708	4/8/2022	5,774.23	91.78	88.77	5,866.01	3.01	122-132	132	101	UNWD
B-712-25S-UD	1/19/2022	5,748.05	25.73	22.85	5,773.78	2.88	65-80	82	35.5	UNWD
B-712-25S-UD	4/12/2022	5,748.19	25.59	22.71	5,773.78	2.88	65-80	82	35.5	UNWD
B-712-LD	1/19/2022	5,741.18	31.68	29.22	5,772.86	2.46	100-115	119	36.5	UNWD
B-712-LD	4/12/2022	5,741.37	31.49	29.03	5,772.86	2.46	100-115	119	36.5	UNWD
B-712-UD	1/19/2022	5,747.70	24.84	22.6	5,772.54	2.24	56.5-71.5	74	36	UNWD
B-712-UD	4/12/2022	5,747.91	24.63	22.39	5,772.54	2.24	56.5-71.5	74	36	UNWD
BKGD-1WD	1/18/2022	5,842.55	32.63	30.4	5,875.18	2.23	44.5-54.5	55	54	WD
BKGD-1WD	4/11/2022	5,842.87	32.31	30.08	5,875.18	2.23	44.5-54.5	55	54	WD
BKGD-2UD	1/18/2022	5,801.36	50.14	48.19	5,851.50	1.95	58-68	68.5	47.6	UNWD
BKGD-2UD	4/11/2022	5,801.38	50.12	48.17	5,851.50	1.95	58-68	68.5	47.6	UNWD
BKGD-2WD	1/18/2022	5,840.76	10.66	8.76	5,851.42	1.90	33.6-48.6	48.6	47.6	WD
BKGD-2WD	4/11/2022	5,839.94	11.48	9.58	5,851.42	1.90	33.6-48.6	48.6	47.6	WD
BKGD-3UD	1/18/2022	5,785.75	56.42	54.36	5,842.17	2.06	94-104	105	70	UNWD
BKGD-3UD	4/11/2022	5,785.83	56.34	54.28	5,842.17	2.06	94-104	105	70	UNWD
BKGD-3WD	1/18/2022	5,785.14	57.44	54.51	5,842.58	2.93	55.5-70.5	71	70	WD
BKGD-3WD	4/11/2022	5,785.30	57.28	54.35	5,842.58	2.93	55.5-70.5	71	70	WD
BKGD-4UD	1/18/2022	5,822.84	28.86	26.8	5,851.70	2.06	60-75	75	30	UNWD
BKGD-4UD	4/11/2022	5,822.94	28.76	26.7	5,851.70	2.06	60-75	75	30	UNWD
BKGD-4WD	1/18/2022	5,832.32	19.57	17.32	5,851.89	2.25	21-30	31	30	WD
BKGD-4WD	4/11/2022	5,832.41	19.48	17.23	5,851.89	2.25	21-30	31	30	WD
BM-11I-100N	1/14/2022	5,773.76	43.42	40.42	5,817.18	3.00	18.5-50.5	56	50.5	WD
BM-11I-100N	4/7/2022	5,773.96	43.22	40.22	5,817.18	3.00	18.5-50.5	56	50.5	WD
BM-11I-100S	1/13/2022	5,797.15	25.08	22.58	5,822.23	2.50	19.2-51.2	57	51.2	WD
BM-11I-100S	4/7/2022	5,796.81	25.42	22.92	5,822.23	2.50	19.2-51.2	57	51.2	WD
BM-11I-150N	1/13/2022	5,789.84	26.07	23.96	5,815.91	2.11	17.5-47.5	54	46.5	WD
BM-11I-150N	4/7/2022	5,789.52	26.39	24.28	5,815.91	2.11	17.5-47.5	54	46.5	WD
BM-11I-200N	1/13/2022	5,790.54	24.41	21.82	5,814.95	2.59	19-44	49	44	WD
BM-11I-200N	4/7/2022	5,790.34	24.61	22.02	5,814.95	2.59	19-44	49	44	WD
BM-11I-50N	1/13/2022	5,791.99	27	24	5,818.99	3.00	17.5-47.5	53	47.5	WD
BM-11I-50N	4/7/2022	5,791.73	27.26	24.26	5,818.99	3.00	17.5-47.5	53	47.5	WD
BM-11I-50S	1/13/2022	5,794.31	27.25	24.25	5,821.56	3.00	18-48	53	47.7	WD
BM-11I-50S	4/7/2022	5,793.88	27.68	24.68	5,821.56	3.00	18-48	53	47.7	WD
BM-11X-100N	1/13/2022	5,791.46	24.05	21.55	5,815.51	2.50	19-46	50	46	WD
BM-11X-100N	4/7/2022	5,791.01	24.5	22	5,815.51	2.50	19-46	50	46	WD
BM-11X-100S	1/13/2022	5,803.06	16.69	14.19	5,819.75	2.50	18.5-48.5	53	47.5	WD
BM-11X-100S	4/7/2022	5,802.62	17.13	14.63	5,819.75	2.50	18.5-48.5	53	47.5	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
BM-11X-150N	1/13/2022	5,791.15	23.31	20.9	5,814.46	2.41	19.5-44.5	49.5	44.5	WD
BM-11X-150N	4/7/2022	5,790.64	23.82	21.41	5,814.46	2.41	19.5-44.5	49.5	44.5	WD
BM-11X-200N	1/13/2022	5,790.88	22.11	19.67	5,812.99	2.44	19.5-44.5	50.5	44.5	WD
BM-11X-200N	4/7/2022	5,790.38	22.61	20.17	5,812.99	2.44	19.5-44.5	50.5	44.5	WD
BM-11X-50N	1/13/2022	5,793.46	23.82	21.32	5,817.28	2.50	17-47	50	47.5	WD
BM-11X-50N	4/7/2022	5,792.89	24.39	21.89	5,817.28	2.50	17-47	50	47.5	WD
BM-11X-50S	1/13/2022	5,801.83	17.41	14.91	5,819.24	2.50	19-46	50	44.5	WD
BM-11X-50S	4/7/2022	5,801.45	17.79	15.29	5,819.24	2.50	19-46	50	44.5	WD
BM-15E1	1/13/2022	5,731.92	33.03	31.45	5,764.95	1.58	20-40	45	40	WD
BM-15E1	4/7/2022	5,731.74	33.21	31.63	5,764.95	1.58	20-40	45	40	WD
BM-15E2	1/13/2022	5,731.29	36.44	34.11	5,767.73	2.33	31-43	46.8	43	WD
BM-15E2	4/7/2022	5,731.14	36.59	34.26	5,767.73	2.33	31-43	46.8	43	WD
BM-15E3	1/13/2022	5,731.41	37.74	35.19	5,769.15	2.55	31.5-46.5	49.6	46.7	WD
BM-15E3	4/7/2022	5,731.32	37.83	35.28	5,769.15	2.55	31.5-46.5	49.6	46.7	WD
BM-15E4	1/13/2022	5,735.73	36.46	33.77	5,772.19	2.69	34-49	54	49	WD
BM-15E4	4/7/2022	5,735.21	36.98	34.29	5,772.19	2.69	34-49	54	49	WD
BM-15E5	1/13/2022	5,736.21	34.36	31.59	5,770.57	2.77	31.5-46.5	53	46.5	WD
BM-15E5	4/7/2022	5,735.58	34.99	32.22	5,770.57	2.77	31.5-46.5	53	46.5	WD
BM-15E6	1/13/2022	5,738.08	35.04	32.22	5,773.12	2.82	29.5-49.5	52.7	49.5	WD
BM-15E6	4/7/2022	5,737.98	35.14	32.32	5,773.12	2.82	29.5-49.5	52.7	49.5	WD
BM-15I-100S	1/14/2022	5,726.00	52.55	49.19	5,778.55	3.36	19-51	56.8	50.8	WD
BM-15I-100S	4/7/2022	5,726.15	52.4	49.04	5,778.55	3.36	19-51	56.8	50.8	WD
BM-15I-125S	1/13/2022	5,739.34	39.31	37.2	5,778.65	2.11	19.5-50.5	53	49.8	WD
BM-15I-125S	4/7/2022	5,739.41	39.24	37.13	5,778.65	2.11	19.5-50.5	53	49.8	WD
BM-15I-150S	1/14/2022	5,725.07	55.28	52.05	5,780.35	3.23	20.5-50.5	55.5	50.5	WD
BM-15I-150S	4/7/2022	5,725.34	55.01	51.78	5,780.35	3.23	20.5-50.5	55.5	50.5	WD
BM-15I-15N	1/14/2022	5,725.21	50.28	47.49	5,775.49	2.79	17-47	52	47	WD
BM-15I-15N	4/7/2022	5,725.23	50.26	47.47	5,775.49	2.79	17-47	52	47	WD
BM-15I-175S	1/13/2022	5,741.29	39.38	37.52	5,780.67	1.86	19-51	55	50.8	WD
BM-15I-175S	4/7/2022	5,741.36	39.31	37.45	5,780.67	1.86	19-51	55	50.8	WD
BM-15I-200S	1/13/2022	5,745.72	35.94	33.67	5,781.66	2.27	20-50	55.5	48.2	WD
BM-15I-200S	4/7/2022	5,745.84	35.82	33.55	5,781.66	2.27	20-50	55.5	48.2	WD
BM-15I-25S	1/14/2022	5,720.23	57.33	53.47	5,777.56	3.86	21-51	56	52	WD
BM-15I-25S	4/7/2022	5,720.48	57.08	53.22	5,777.56	3.86	21-51	56	52	WD
BM-15I-37.5S	1/13/2022	5,723.05	52.63	50.25	5,775.68	2.38	24-54	59	54	WD
BM-15I-37.5S	4/7/2022	5,723.03	52.65	50.27	5,775.68	2.38	24-54	59	54	WD
BM-15I-50S	1/14/2022	5,723.54	53.95	50.59	5,777.49	3.36	17.7-52.7	59	53	WD
BM-15I-50S	4/7/2022	5,723.67	53.82	50.46	5,777.49	3.36	17.7-52.7	59	53	WD
BM-15I-75S	1/13/2022	5,738.13	38.82	37.38	5,776.95	1.44	19-51	55	51	WD
BM-15I-75S	4/7/2022	5,738.15	38.8	37.36	5,776.95	1.44	19-51	55	51	WD
BM-15N1	1/13/2022	5,735.99	35.09	33.21	5,771.08	1.88	22.3-52.3	60	52.3	WD
BM-15N1	4/7/2022	5,735.43	35.65	33.77	5,771.08	1.88	22.3-52.3	60	52.3	WD
BM-15N2	1/13/2022	5,737.69	31.97	29.5	5,769.66	2.47	19-39	45	39.2	WD
BM-15N2	4/7/2022	5,736.96	32.7	30.23	5,769.66	2.47	19-39	45	39.2	WD
BM-15N3	1/13/2022	5,737.68	28.9	26.5	5,766.58	2.40	19.5-39.5	45	39.5	WD
BM-15N3	4/7/2022	5,737.13	29.45	27.05	5,766.58	2.40	19.5-39.5	45	39.5	WD
BM-15N4	1/13/2022	5,735.15	30.41	27.7	5,765.56	2.71	17-37	44	37	WD
BM-15N4	4/7/2022	5,734.74	30.82	28.11	5,765.56	2.71	17-37	44	37	WD
BM-15N5	1/13/2022	5,735.38	37.32	35.02	5,772.70	2.30	31-56	62	56	WD
BM-15N5	4/7/2022	5,735.06	37.64	35.34	5,772.70	2.30	31-56	62	56	WD
BM-15N6	1/13/2022	5,736.73	35.86	31.27	5,772.59	4.59	16-46	51	47	WD
BM-15N6	4/7/2022	5,736.24	36.35	31.76	5,772.59	4.59	16-46	51	47	WD
BM-15NE1	1/13/2022	5,729.97	34.23	31.73	5,764.20	2.50	17.5-42.5	45	42.5	WD
BM-15NE1	4/7/2022	5,729.78	34.42	31.92	5,764.20	2.50	17.5-42.5	45	42.5	WD
BM-15NE2	1/13/2022	5,729.23	32.38	30.76	5,761.61	1.62	19-39	42.8	39	WD
BM-15NE2	4/7/2022	5,729.15	32.46	30.84	5,761.61	1.62	19-39	42.8	39	WD
BM-15NW1	1/13/2022	5,753.01	19.55	18.23	5,772.56	1.32	12-22	47	43.8	WD
BM-15NW1	4/7/2022	5,752.74	19.82	18.5	5,772.56	1.32	12-22	47	43.8	WD
BM-15NW2	1/13/2022	5,752.64	20.53	17.23	5,773.17	3.30	22-32	34.5	NE, >34.5	WD
BM-15NW2	4/7/2022	5,752.31	20.86	17.56	5,773.17	3.30	22-32	34.5	NE, >34.5	WD
BM-15X-100S	1/13/2022	5,739.10	36.75	34.25	5,775.85	2.50	18.5-52.5	55	52.6	WD
BM-15X-100S	4/7/2022	5,738.95	36.9	34.4	5,775.85	2.50	18.5-52.5	55	52.6	WD
BM-15X-125S	1/13/2022	5,739.67	37.08	34.99	5,776.75	2.09	19-50	55	49.9	WD
BM-15X-125S	4/7/2022	5,739.65	37.1	35.01	5,776.75	2.09	19-50	55	49.9	WD
BM-15X-150S	1/13/2022	5,740.36	37.28	34.78	5,777.64	2.50	20-50	54	50	WD
BM-15X-150S	4/7/2022	5,740.44	37.2	34.7	5,777.64	2.50	20-50	54	50	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
BM-15X-175S	1/13/2022	5,742.30	36.65	34.56	5,778.95	2.09	19-50	53	49.9	WD
BM-15X-175S	4/7/2022	5,742.51	36.44	34.35	5,778.95	2.09	19-50	53	49.9	WD
BM-15X-200S	1/13/2022	5,743.62	36.7	34.22	5,780.32	2.48	19.5-51.5	54.5	51.5	WD
BM-15X-200S	4/7/2022	5,743.96	36.36	33.88	5,780.32	2.48	19.5-51.5	54.5	51.5	WD
BM-15X-37.5S	1/13/2022	5,735.96	38.56	35.94	5,774.52	2.62	25-55	60	55	WD
BM-15X-37.5S	4/7/2022	5,735.51	39.01	36.39	5,774.52	2.62	25-55	60	55	WD
BM-15X-50S	1/13/2022	5,737.70	36.91	34.41	5,774.61	2.50	19-51	54	51.4	WD
BM-15X-50S	4/7/2022	5,737.33	37.28	34.78	5,774.61	2.50	19-51	54	51.4	WD
BM-15X-75S	1/13/2022	5,738.70	35.64	33.94	5,774.34	1.70	19-51	55	51	WD
BM-15X-75S	4/7/2022	5,738.55	35.79	34.09	5,774.34	1.70	19-51	55	51	WD
BM-4I-100N	1/6/2022	5,793.17	43.22	40.47	5,836.39	2.75	34-54	60	53.7	WD
BM-4I-100N	4/8/2022	5,793.16	43.23	40.48	5,836.39	2.75	34-54	60	53.7	WD
BM-4I-100S	1/6/2022	5,793.56	43	40.64	5,836.56	2.36	34-49	55	48.6	WD
BM-4I-100S	4/8/2022	5,793.51	43.05	40.69	5,836.56	2.36	34-49	55	48.6	WD
BM-4I-10S	1/6/2022	5,793.48	42.88	40.62	5,836.36	2.26	34-54	59.5	53.5	WD
BM-4I-10S	4/8/2022	5,793.44	42.92	40.66	5,836.36	2.26	34-54	59.5	53.5	WD
BM-4I-50N	1/6/2022	5,793.47	42.5	39.8	5,835.97	2.70	32-47	52.5	46.8	WD
BM-4I-50N	4/8/2022	5,793.47	42.5	39.8	5,835.97	2.70	32-47	52.5	46.8	WD
BM-4I-50S	1/6/2022	5,793.38	43.95	40.92	5,837.33	3.03	30.5-50.5	56	50.2	WD
BM-4I-50S	4/8/2022	5,793.34	43.99	40.96	5,837.33	3.03	30.5-50.5	56	50.2	WD
BM-4X-100N	1/6/2022	5,794.00	42.09	39.37	5,836.09	2.72	31-51	54	50.6	WD
BM-4X-100N	4/8/2022	5,794.11	41.98	39.26	5,836.09	2.72	31-51	54	50.6	WD
BM-4X-100S	1/6/2022	5,793.44	43.24	41.23	5,836.68	2.01	34-49	53	48.7	WD
BM-4X-100S	4/8/2022	5,793.37	43.31	41.3	5,836.68	2.01	34-49	53	48.7	WD
BM-4X-10S	1/6/2022	5,793.42	43.35	40.88	5,836.77	2.47	33.5-56.5	59	56.3	WD
BM-4X-10S	4/8/2022	5,793.39	43.38	40.91	5,836.77	2.47	33.5-56.5	59	56.3	WD
BM-4X-40S	1/6/2022	5,785.76	50.91	48.54	5,836.67	2.37	68-83	87	52	UNWD
BM-4X-40S	4/8/2022	5,785.46	51.21	48.84	5,836.67	2.37	68-83	87	52	UNWD
BM-4X-50N	1/6/2022	5,793.59	42.86	40.04	5,836.45	2.82	34-49	54	49	WD
BM-4X-50N	4/8/2022	5,793.60	42.85	40.03	5,836.45	2.82	34-49	54	49	WD
BM-4X-50S	1/6/2022	5,793.81	43.31	40.69	5,837.12	2.62	32.5-52.5	55	52.5	WD
BM-4X-50S	4/8/2022	5,793.78	43.34	40.72	5,837.12	2.62	32.5-52.5	55	52.5	WD
BW-PZ-1	1/4/2022	5,692.78	31.69	29.53	5,724.47	2.16	23-33	33	33	WD
BW-PZ-1	4/4/2022	5,692.81	31.66	29.5	5,724.47	2.16	23-33	33	33	WD
BW-PZ-1LC	1/4/2022	5,688.11	37.07	34.64	5,725.18	2.43	43-53	53	33	UNWD
BW-PZ-1LC	4/4/2022	5,687.96	37.22	34.79	5,725.18	2.43	43-53	53	33	UNWD
C-702P1	1/19/2022	5,688.52	41.86	39.48	5,730.38	2.38	196-201	237	31.5	UPPER DENVER
C-702P1	4/12/2022	5,688.85	41.53	39.15	5,730.38	2.38	196-201	237	31.5	UPPER DENVER
C-702P3	1/19/2022	5,711.62	17.75	15.48	5,729.37	2.27	90-100	102	60	UPPER DENVER
C-702P3	4/12/2022	5,711.50	17.87	15.6	5,729.37	2.27	90-100	102	60	UPPER DENVER
C-702P4	1/19/2022	5,713.77	16.1	14.03	5,729.87	2.07	47-52	53	NE, >37	UNWD
C-702P4	4/12/2022	5,713.55	16.32	14.25	5,729.87	2.07	47-52	53	NE, >37	UNWD
C-702Q1	1/19/2022	5,677.92	53.84	51.18	5,731.76	2.66	219-229	230	35	LIGNITE
C-702Q1	4/12/2022	5,678.31	53.45	50.79	5,731.76	2.66	219-229	230	35	LIGNITE
C-702Q3	1/19/2022	5,713.09	18.05	15.81	5,731.14	2.24	30-35	36	32.5	WD
C-702Q3	4/12/2022	5,712.76	18.38	16.14	5,731.14	2.24	30-35	36	32.5	WD
EAST CLEANOUT	1/19/2022	5,734.53	32.58	NA[/g]	5,767.11	--	--	--	--	NO GEOLOGIC LOG
EAST CLEANOUT	4/12/2022	5,734.56	32.55	NA	5,767.11	--	--	--	--	NO GEOLOGIC LOG
GW-101	1/13/2022	5,729.08	49.92	48.62	5,779.00	1.30	78.6-98.6	98.9	42	UNWD
GW-101	4/7/2022	5,729.10	49.9	48.6	5,779.00	1.30	78.6-98.6	98.9	42	UNWD
GW-101-DEN	1/13/2022	5,720.58	59.96	57.46	5,780.54	2.50	134 - 148.6	154	50	UPPER DENVER
GW-101-DEN	4/7/2022	5,720.78	59.76	57.26	5,780.54	2.50	134 - 148.6	154	50	UPPER DENVER
GW-103	1/6/2022	5,739.64	58.64	49.66	5,798.28	8.98	136-155.9	157	40	UPPER DENVER
GW-103	4/8/2022	5,739.66	58.62	49.64	5,798.28	8.98	136-155.9	157	40	UPPER DENVER
GW-104	1/6/2022	5,751.76	48.8	39.14	5,800.56	9.66	44.4-69.3	69.5	36.3	UNWD
GW-104	4/8/2022	5,751.56	49	39.34	5,800.56	9.66	44.4-69.3	69.5	36.3	UNWD
GW-106	1/4/2022	5,716.08	22.76	21.32	5,738.84	1.44	24.5-49.5	50.8	43	WD
GW-106	4/4/2022	5,717.21	21.63	20.19	5,738.84	1.44	24.5-49.5	50.8	43	WD
GW-106-DEN	1/4/2022	5,711.57	27.99	25.43	5,739.56	2.56	100.6 - 125	135	43	UPPER DENVER
GW-106-DEN	4/4/2022	5,711.76	27.8	25.24	5,739.56	2.56	100.6 - 125	135	43	UPPER DENVER
GW-106-LIG	1/4/2022	5,690.90	49.88	46.9	5,740.78	2.98	235-250	258	43.4	LIGNITE
GW-106-LIG	4/4/2022	5,691.16	49.62	46.64	5,740.78	2.98	235-250	258	43.4	LIGNITE
GW-107A	1/3/2022	5,698.16	28.23	26.74	5,726.39	1.49	15-35	59	32	WD
GW-107A	4/4/2022	5,698.16	28.23	26.74	5,726.39	1.49	15-35	59	32	WD
GW-107UD	1/3/2022	5,699.22	28.23	26.41	5,727.45	1.82	48.5-58.5	58.5	31.6	UNWD
GW-107UD	4/4/2022	5,699.07	28.38	26.56	5,727.45	1.82	48.5-58.5	58.5	31.6	UNWD

TABLE 4.2
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
GW-107UDR	1/3/2022	5,680.94	46.35	44.06	5,727.29	2.29	47-62	64.5	34	UNWD
GW-107UDR	4/4/2022	5,683.12	44.17	41.88	5,727.29	2.29	47-62	64.5	34	UNWD
GW-108A	1/4/2022	5,687.29	45.2	42.51	5,732.49	2.69	52.6-87.6	99	42	UNWD
GW-108A	4/4/2022	5,687.08	45.41	42.72	5,732.49	2.69	52.6-87.6	99	42	UNWD
GW-109	1/4/2022	Dry	Dry	Dry	5,707.99	1.49	8.6-28.6	29	NE, >29	ALLUVIUM
GW-109	4/4/2022	Dry	Dry	Dry	5,707.99	1.49	8.6-28.6	29	NE, >29	ALLUVIUM
GW-112	1/19/2022	5,736.02	33.93	23.98	5,769.95	9.95	9.2-29.2	34.2	30.5	WD
GW-112	4/12/2022	5,736.10	33.85	23.9	5,769.95	9.95	9.2-29.2	34.2	30.5	WD
GW-113	1/19/2022	5,719.52	54.34	51.88	5,773.86	2.46	149.8-174.8	175.5	38	UPPER DENVER
GW-113	4/12/2022	5,719.77	54.09	51.63	5,773.86	2.46	149.8-174.8	175.5	38	UPPER DENVER
GW-114A	1/4/2022	5,695.75	36.55	34.55	5,732.30	2.00	29.5-39.5	40	NE, >40	WD
GW-114A	4/4/2022	5,695.78	36.52	34.52	5,732.30	2.00	29.5-39.5	40	NE, >40	WD
GW-120	1/19/2022	5,681.11	109.88	101.69	5,790.99	8.19	287.8-297.8	310	65	LIGNITE
GW-120	4/12/2022	5,681.51	109.48	101.29	5,790.99	8.19	287.8-297.8	310	65	LIGNITE
GW-121	1/19/2022	5,680.83	93.86	91.87	5,774.69	1.99	266.7-291.7	298	32	LIGNITE
GW-121	4/12/2022	5,681.41	93.28	91.29	5,774.69	1.99	266.7-291.7	298	32	LIGNITE
GW-122	1/13/2022	5,680.98	144.28	140.62	5,825.26	3.66	312.8-332.8	343	84	LIGNITE
GW-122	4/7/2022	5,681.35	143.91	140.25	5,825.26	3.66	312.8-332.8	343	84	LIGNITE
GW-POA1	1/18/2022	5,750.97	33.62	31.23	5,784.59	2.39	21.1-41.1	43.75	41.1	WD
GW-POA1	4/6/2022	5,751.02	33.57	31.18	5,784.59	2.39	21.1-41.1	43.75	41.1	WD
GW-POA-1N	1/18/2022	5,751.54	26.03	23.85	5,777.57	2.18	19.5-32	35	32.5	WD
GW-POA-1N	4/6/2022	5,751.59	25.98	23.8	5,777.57	2.18	19.5-32	35	32.5	WD
GW-POA-1NE	1/18/2022	5,749.26	23.82	21.18	5,773.08	2.08	17-32	34.5	32.6	WD
GW-POA-1NE	4/6/2022	5,748.88	24.2	21.56	5,773.08	2.08	17-32	34.5	32.6	WD
GW-POA2	1/19/2022	5,747.69	34.01	32.01	5,781.70	2.00	17.3-37.3	40.7	37.3	WD
GW-POA2	4/12/2022	5,747.74	33.96	31.96	5,781.70	2.00	17.3-37.3	40.7	37.3	WD
GW-POA3	1/19/2022	Dry	Dry	Dry	5,752.77	2.77	14.7-29.7	33	29.7	WD
GW-POA3	4/12/2022	Dry	Dry	Dry	5,752.77	2.77	14.7-29.7	33	29.7	WD
GW-POA4	1/19/2022	5,715.91	26.63	23.89	5,742.54	2.74	13.2-38.2	41.2	38.2	WD
GW-POA4	4/12/2022	5,715.82	26.72	23.98	5,742.54	2.74	13.2-38.2	41.2	38.2	WD
MNA-01	1/19/2022	5,737.75	23.9	21.15	5,761.65	2.75	15-35	37	33	WD
MNA-01	4/12/2022	5,737.62	24.03	21.28	5,761.65	2.75	15-35	37	33	WD
MNA-02	1/19/2022	5,739.37	19.96	17.43	5,759.33	2.53	12-32	34	32	WD
MNA-02	4/12/2022	5,739.03	20.3	17.77	5,759.33	2.53	12-32	34	32	WD
MNA-03	1/19/2022	5,739.39	18.64	15.91	5,758.03	2.73	10-35	37	35	WD
MNA-03	4/12/2022	5,739.19	18.84	16.11	5,758.03	2.73	10-35	37	35	WD
MNA-04	1/19/2022	5,739.13	17.5	14.77	5,756.63	2.73	14-34	39	34	WD
MNA-04	4/12/2022	5,738.93	17.7	14.97	5,756.63	2.73	14-34	39	34	WD
MNA-05	1/19/2022	5,738.25	16.43	14.15	5,754.68	2.28	9-34	37	34	WD
MNA-05	4/12/2022	5,738.08	16.6	14.32	5,754.68	2.28	9-34	37	34	WD
MNA-06	1/19/2022	5,743.00	22.39	19.7	5,765.39	2.69	13-28	30	28	WD
MNA-06	4/12/2022	5,742.39	23	20.31	5,765.39	2.69	13-28	30	28	WD
MNA-07	1/19/2022	5,743.06	22	19.54	5,765.06	2.46	17-37	39	37	WD
MNA-07	4/12/2022	5,742.98	22.08	19.62	5,765.06	2.46	17-37	39	37	WD
MNA-08	1/19/2022	5,722.06	17.59	15.24	5,739.65	2.35	12-32	34	32	WD
MNA-08	4/12/2022	5,721.95	17.7	15.35	5,739.65	2.35	12-32	34	32	WD
MNA-09	1/19/2022	5,716.76	16.68	13.84	5,733.44	2.84	8.5-38.5	41.5	38.5	WD
MNA-09	4/12/2022	5,716.78	16.66	13.82	5,733.44	2.84	8.5-38.5	41.5	38.5	WD
MNA-10	1/19/2022	5,713.02	14.93	12.18	5,727.95	2.75	9-34	39	34	WD
MNA-10	4/12/2022	5,712.90	15.05	12.3	5,727.95	2.75	9-34	39	34	WD
MNA-11	1/19/2022	5,706.69	18.03	15.01	5,724.72	3.02	9.5-29.5	33	29.5	WD
MNA-11	4/12/2022	5,706.59	18.13	15.11	5,724.72	3.02	9.5-29.5	33	29.5	WD
MNA-12	1/19/2022	5,704.20	15.69	13.1	5,719.89	2.59	8.5-28.5	31	28.5	WD
MNA-12	4/12/2022	5,704.10	15.79	13.2	5,719.89	2.59	8.5-28.5	31	28.5	WD
MNA-13	1/19/2022	5,698.57	18.44	16.33	5,717.01	2.11	10-25	29	25	WD
MNA-13	4/12/2022	5,698.48	18.53	16.42	5,717.01	2.11	10-25	29	25	WD
MPZ-1	1/19/2022	Dry	Dry	Dry	5,722.55	2.08	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-1	4/12/2022	Dry	Dry	Dry	5,722.55	2.08	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-10R	1/19/2022	5,729.31	33.34	32.29	5,762.65	1.05	16.8-36.8	37	NE, >	FILL
MPZ-10R	4/12/2022	5,728.27	34.38	33.33	5,762.65	1.05	16.8-36.8	37	NE, >	FILL
MPZ-11	1/19/2022	5,734.31	32.12	28.34	5,766.43	3.78	11-36	36	NE	FILL
MPZ-11	4/12/2022	5,734.33	32.1	28.32	5,766.43	3.78	11-36	36	NE	FILL
MPZ-12	1/19/2022	5,739.04	24.05	21.26	5,763.09	2.79	7-32	35	NE, >35	ALLUVIUM
MPZ-12	4/12/2022	5,738.77	24.32	21.53	5,763.09	2.79	7-32	35	NE, >35	ALLUVIUM
MPZ-13	1/19/2022	5,739.35	24	21.75	5,763.35	2.25	7.3-32.3	35	NE, >35	WD
MPZ-13	4/12/2022	5,738.95	24.4	22.15	5,763.35	2.25	7.3-32.3	35	NE, >35	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
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LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MPZ-2	1/19/2022	5,711.51	14.11	12	5,725.62	2.11	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-2	4/12/2022	5,711.41	14.21	12.1	5,725.62	2.11	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-3	1/19/2022	Dry	Dry	Dry	5,731.42	1.76	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-3	4/12/2022	Dry	Dry	Dry	5,731.42	1.76	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-4	1/19/2022	Dry	Dry	Dry	5,738.70	1.77	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-4	4/12/2022	Dry	Dry	Dry	5,738.70	1.77	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-5	1/19/2022	Dry	Dry	Dry	5,744.26	1.63	3.7-13.65	13.65	NE, >13.5	ALLUVIUM
MPZ-5	4/12/2022	Dry	Dry	Dry	5,744.26	1.63	3.7-13.65	13.65	NE, >13.5	ALLUVIUM
MPZ-6	1/19/2022	Dry	Dry	Dry	5,749.51	1.95	3.3-13.3	13.5	NE, >13.5	ALLUVIUM
MPZ-6	4/12/2022	Dry	Dry	Dry	5,749.51	1.95	3.3-13.3	13.5	NE, >13.5	ALLUVIUM
MPZ-7	1/19/2022	Dry	Dry	Dry	5,756.19	1.45	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-7	4/12/2022	Dry	Dry	Dry	5,756.19	1.45	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-8	1/19/2022	Dry	Dry	Dry	5,771.19	8.87	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-8	4/12/2022	Dry	Dry	Dry	5,771.19	8.87	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-9	1/19/2022	Dry	Dry	Dry	5,769.92	6.30	3.5-13.5	13.54	NE, >13.5	ALLUVIUM
MPZ-9	4/12/2022	Dry	Dry	Dry	5,769.92	6.30	3.5-13.5	13.54	NE, >13.5	ALLUVIUM
MW-1	1/18/2022	5,745.06	72.11	70.04	5,817.17	2.07	106-156	156	45	UNWD
MW-1	4/11/2022	5,745.25	71.92	69.85	5,817.17	2.07	106-156	156	45	UNWD
MW-1000	1/4/2022	Dry	Dry	Dry	5,717.68	2.34	18-28	28	26.5	WD
MW-1000	4/4/2022	Dry	Dry	Dry	5,717.68	2.34	18-28	28	26.5	WD
MW-1000LC	1/4/2022	5,685.84	31.53	29.1	5,717.37	2.43	37.5-47.5	47.5	26.5	UNWD
MW-1000LC	4/4/2022	5,685.69	31.68	29.25	5,717.37	2.43	37.5-47.5	47.5	26.5	UNWD
MW100-WD	1/3/2022	5,700.69	26.88	24.31	5,727.57	2.57	30-35	38.5	35	WD
MW100-WD	4/5/2022	5,700.81	26.76	24.19	5,727.57	2.57	30-35	38.5	35	WD
MW101-WD	1/3/2022	5,697.68	24.01	21.62	5,721.69	2.39	22.5-32.5	34	32	WD
MW101-WD	4/5/2022	5,697.79	23.9	21.51	5,721.69	2.39	22.5-32.5	34	32	WD
MW102-WD	1/3/2022	5,695.78	27.37	25.02	5,723.15	2.35	24-36	38.5	36	WD
MW102-WD	4/5/2022	5,695.84	27.31	24.96	5,723.15	2.35	24-36	38.5	36	WD
MW103-WD	1/3/2022	5,693.02	26.46	24.03	5,719.48	2.43	21.7 - 36.7	39	37	WD
MW103-WD	4/5/2022	5,693.12	26.36	23.93	5,719.48	2.43	21.7 - 36.7	39	37	WD
MW104-WD	1/3/2022	5,686.67	22.43	19.2	5,709.10	3.23	13.7 - 33.7	36	33.7	WD
MW104-WD	4/5/2022	5,686.87	22.23	19	5,709.10	3.23	13.7 - 33.7	36	33.7	WD
MW105-WD	1/13/2022	5,722.28	22.59	20.13	5,744.87	2.46	22 - 32	34.3	32	WD
MW105-WD	4/7/2022	5,722.61	22.26	19.8	5,744.87	2.46	22 - 32	34.3	32	WD
MW106-UD	1/13/2022	5,751.00	35.28	32.55	5,786.28	2.73	41 - 51	54	36	UNWD
MW106-UD	4/7/2022	5,750.86	35.42	32.69	5,786.28	2.73	41 - 51	54	36	UNWD
MW107-UD	1/13/2022	5,751.95	53.8	51.6	5,805.75	2.20	61.9 - 76.9	79.3	47	UNWD
MW107-UD	4/7/2022	5,751.94	53.81	51.61	5,805.75	2.20	61.9 - 76.9	79.3	47	UNWD
MW107-WD	1/13/2022	5,765.12	40.83	38.42	5,805.95	2.41	36 - 46	48.5	45	WD
MW107-WD	4/7/2022	5,764.93	41.02	38.61	5,805.95	2.41	36 - 46	48.5	45	WD
MW108-WD	1/6/2022	5,806.81	19.41	16.89	5,826.22	2.52	30 - 45	50	47.5	WD
MW108-WD	4/8/2022	5,805.92	20.3	17.78	5,826.22	2.52	30 - 45	50	47.5	WD
MW109-WD	1/6/2022	5,793.87	40.4	38.68	5,834.27	1.72	36 - 51	54	50.8	WD
MW109-WD	4/8/2022	5,793.92	40.35	38.63	5,834.27	1.72	36 - 51	54	50.8	WD
MW110-WD	1/6/2022	5,782.51	47.82	45.3	5,830.33	2.52	41.5 - 56.5	58.8	56.5	WD
MW110-WD	4/8/2022	5,782.33	48	45.48	5,830.33	2.52	41.5 - 56.5	58.8	56.5	WD
MW111-UD	1/6/2022	5,766.69	50.12	47.91	5,816.81	2.21	69 - 74	79.5	61	UNWD
MW111-UD	4/8/2022	5,766.79	50.02	47.81	5,816.81	2.21	69 - 74	79.5	61	UNWD
MW112-DEN	1/6/2022	5,737.86	105.15	102.66	5,843.01	2.49	174.6 - 204	209	50	UPPER DENVER
MW112-DEN	4/8/2022	5,737.90	105.11	102.62	5,843.01	2.49	174.6 - 204	209	50	UPPER DENVER
MW112-UD	1/6/2022	5,791.78	50.57	48.02	5,842.35	2.55	60 - 75	79	49	UNWD
MW112-UD	4/8/2022	5,791.54	50.81	48.26	5,842.35	2.55	60 - 75	79	49	UNWD
MW112-WD	1/6/2022	5,806.49	36.1	33.58	5,842.59	2.52	28.5 - 48.5	51	48.5	WD
MW112-WD	4/8/2022	5,805.79	36.8	34.28	5,842.59	2.52	28.5 - 48.5	51	48.5	WD
MW113-EW-1	1/4/2022	5,659.81	51.46	50.49	5,711.27	0.97	20-50	55.3	46	WD
MW113-EW-1	4/4/2022	5,659.69	51.58	50.61	5,711.27	0.97	20-50	55.3	46	WD
MW113-LD	1/4/2022	5,674.85	37.5	35.15	5,712.35	2.35	77.2-97.2	100	35.1	UNWD
MW113-LD	4/4/2022	5,675.06	37.29	34.94	5,712.35	2.35	77.2-97.2	100	35.1	UNWD
MW113-UD	1/4/2022	5,631.69	80.59	78.31	5,712.28	2.28	59-79	84	51.7	UNWD
MW113-UD	4/4/2022	5,631.69	80.59	78.31	5,712.28	2.28	59-79	84	51.7	UNWD
MW113-WD	1/4/2022	5,663.43	50.01	46.47	5,713.44	3.54	20-50	55	51.7	WD
MW113-WD	4/4/2022	5,663.36	50.08	46.54	5,713.44	3.54	20-50	55	51.7	WD
MW114-WD	1/3/2022	5,688.77	24.57	21.73	5,713.34	3.00	22-32	38	32	WD
MW114-WD	4/5/2022	5,688.90	24.44	21.6	5,713.34	3.00	22-32	38	32	WD
MW115-UD	1/3/2022	5,687.30	15.05	12.52	5,702.35	2.53	46.6-56.6	--	24	UNWD
MW115-UD	4/5/2022	5,687.47	14.88	12.35	5,702.35	2.53	46.6-56.6	--	24	UNWD

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MW115-WD	1/3/2022	5,687.21	21.16	13.82	5,708.37	2.25	11.3-26.3	30	26.3	WD
MW115-WD	4/5/2022	5,687.37	21	13.66	5,708.37	2.25	11.3-26.3	30	26.3	WD
MW116-WD	1/3/2022	5,687.43	27.04	24.39	5,714.47	2.65	24.9-39.9	45	39.9	WD
MW116-WD	4/5/2022	5,687.62	26.85	24.2	5,714.47	2.65	24.9-39.9	45	39.9	WD
MW117-WD	1/3/2022	5,685.87	14.45	12.03	5,700.32	2.42	10.5-30.5	33	30.5	WD
MW117-WD	4/5/2022	5,686.11	14.21	11.79	5,700.32	2.42	10.5-30.5	33	30.5	WD
MW118-UD	1/3/2022	5,687.38	17.78	15.22	5,705.16	2.56	62-77	80	34.9	UNWD
MW118-UD	4/5/2022	5,687.62	17.54	14.98	5,705.16	2.56	62-77	80	34.9	UNWD
MW118-WD	1/3/2022	5,685.05	20.29	17.69	5,705.34	2.60	20.1-35.1	37.5	35.1	WD
MW118-WD	4/5/2022	5,685.32	20.02	17.42	5,705.34	2.60	20.1-35.1	37.5	35.1	WD
MW119-WD	1/3/2022	5,688.05	16.18	14.35	5,704.23	1.83	18-28	31.5	29	WD
MW119-WD	4/5/2022	5,688.21	16.02	14.19	5,704.23	1.83	18-28	31.5	29	WD
MW120-WD	1/3/2022	5,686.93	15.24	12.97	5,702.17	2.27	18-28	32	30	WD
MW120-WD	4/5/2022	5,687.12	15.05	12.78	5,702.17	2.27	18-28	32	30	WD
MW121-WDR	1/5/2022	5,651.13	24.29	21.77	5,675.42	2.52	23.5-33.5	36	36.5	WD
MW121-WDR	4/11/2022	5,651.99	23.43	20.91	5,675.42	2.52	23.5-33.5	36	36.5	WD
MW122-WDR	1/5/2022	5,651.22	21.41	18.78	5,672.63	2.63	20.5-30.5	36	33	WD
MW122-WDR	4/11/2022	5,652.22	20.41	17.78	5,672.63	2.63	20.5-30.5	36	33	WD
MW123-WD	1/5/2022	5,651.48	20.56	17.82	5,672.04	2.74	22-32	36	33	WD
MW123-WD	4/11/2022	5,652.70	19.34	16.6	5,672.04	2.74	22-32	36	33	WD
MW124-WD	1/5/2022	5,651.74	20.29	18.06	5,672.03	2.23	23-33	39	34.5	WD
MW124-WD	4/11/2022	5,653.25	18.78	16.55	5,672.03	2.23	23-33	39	34.5	WD
MW125-WD	1/5/2022	5,652.51	20.39	17.19	5,672.90	3.20	22-32	37	36	WD
MW125-WD	4/11/2022	5,654.41	18.49	15.29	5,672.90	3.20	22-32	37	36	WD
MW126-WD	1/5/2022	5,653.20	19.95	17	5,673.15	2.95	20-30	34	33	WD
MW126-WD	4/11/2022	5,655.13	18.02	15.07	5,673.15	2.95	20-30	34	33	WD
MW127-WD	1/5/2022	5,653.73	18.63	16.27	5,672.36	2.36	20-30	34	32.5	WD
MW127-WD	4/11/2022	5,655.64	16.72	14.36	5,672.36	2.36	20-30	34	32.5	WD
MW129-WD	1/5/2022	5,649.24	21.87	19.56	5,671.11	2.31	20.8-30.5	34	31	WD
MW129-WD	4/11/2022	5,649.52	21.59	19.28	5,671.11	2.31	20.8-30.5	34	31	WD
MW130-WD	1/5/2022	5,649.23	23.8	21.57	5,673.03	2.23	21.3-31	37.5	32.4	WD
MW130-WD	4/11/2022	5,649.23	23.8	21.57	5,673.03	2.23	21.3-31	37.5	32.4	WD
MW131-WD	1/5/2022	5,649.56	26.69	24.74	5,676.25	1.95	23.3-33	36	34.3	WD
MW131-WD	4/11/2022	5,649.24	27.01	25.06	5,676.25	1.95	23.3-33	36	34.3	WD
MW132-WD	1/5/2022	5,674.55	4.09	1.75	5,678.64	2.34	4-14	24	21.5	WD
MW132-WD	4/11/2022	5,674.69	3.95	1.61	5,678.64	2.34	4-14	24	21.5	WD
MW133-WD	1/5/2022	5,635.71	12.89	12.79	5,648.60	0.10	14-24	27	24.5	WD
MW133-WD	4/11/2022	5,635.62	12.98	12.88	5,648.60	0.10	14-24	27	24.5	WD
MW134-WD	1/5/2022	5,637.26	19.31	16.84	5,656.57	2.47	15-30	33	30.5	WD
MW135-WD	1/5/2022	5,638.52	19.51	19.93	5,658.03	-0.42	18-38	41.5	39	WD
MW136-WD	1/5/2022	5,638.13	21.17	21.57	5,659.30	-0.40	21-46	49	46.5	WD
MW137-WD	1/5/2022	5,637.80	17.08	17.46	5,654.88	-0.38	21-41	44	39.5	WD
MW138-WD	1/5/2022	5,637.48	16.32	16.62	5,653.80	-0.30	19-39	43	39.5	WD
MW139-WD	1/5/2022	5,637.66	12.04	12.24	5,649.70	-0.20	17-37	44	39.8	WD
MW140-WD	1/5/2022	5,606.99	18.58	18.91	5,625.57	-0.33	21-36	44	42.5	WD
MW141-UDEN	1/5/2022	5,604.45	19.07	19.53	5,623.52	-0.46	57-77	79	37.5	UNWEATHERED DENVER
MW141-UDEN	4/11/2022	5,604.90	18.62	19.08	5,623.52	-0.46	57-77	79	37.5	UNWEATHERED DENVER
MW141-WD	1/5/2022	5,606.78	17.95	18.22	5,624.73	-0.27	21-31	44	42	WD
MW142-WD	1/5/2022	5,589.66	8.94	9.34	5,598.60	-0.40	10-20	34	33.5	WD
MW144-WD	1/5/2022	5,567.87	14.5	14.67	5,582.37	-0.17	16.5-31.5	36	35.5	WD
MW145-WD	1/5/2022	5,567.90	11.94	12.21	5,579.84	-0.27	13-38	40.9	38	WD
MW151-WD	1/5/2022	5,659.55	19.95	17.45	5,679.50	2.50	17-27	39	36.6	WD
MW151-WD	4/11/2022	5,662.42	17.08	14.58	5,679.50	2.50	17-27	39	36.6	WD
MW153-EW-1	1/5/2022	5,659.64	14.75	12.56	5,674.39	2.19	13-23	29.5	28.7	WD
MW153-EW-1	4/11/2022	5,662.91	11.48	9.29	5,674.39	2.19	13-23	29.5	28.7	WD
MW153-WD	1/5/2022	5,659.75	13.48	11.05	5,673.23	2.43	10-20	32	29.7	WD
MW153-WD	4/11/2022	5,663.01	10.22	7.79	5,673.23	2.43	10-20	32	29.7	WD
MW154-EW-1	1/5/2022	5,659.96	14.51	12.34	5,674.47	2.17	11.5-21.5	28	--	WD
MW154-EW-1	4/11/2022	5,663.27	11.2	9.03	5,674.47	2.17	11.5-21.5	28	--	WD
MW154-WD	1/5/2022	5,659.99	13.72	11.51	5,673.71	2.21	7-22	32	28.5	WD
MW154-WD	4/11/2022	5,663.31	10.4	8.19	5,673.71	2.21	7-22	32	28.5	WD
MW155-EW-1	1/5/2022	5,660.00	14.32	11.9	5,674.32	2.42	9.5-19.5	25	--	WD
MW155-EW-1	4/11/2022	5,663.37	10.95	8.53	5,674.32	2.42	9.5-19.5	25	--	WD
MW155-WD	1/5/2022	5,659.79	14.65	11.11	5,674.44	3.54	9-19	34	32.3	WD
MW155-WD	4/11/2022	5,663.32	11.12	7.58	5,674.44	3.54	9-19	34	32.3	WD
MW156-EW-1	1/5/2022	5,659.73	13.62	11.17	5,673.35	2.45	11-21	29	--	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MW156-EW-1	4/11/2022	5,663.32	10.03	7.58	5,673.35	2.45	11-21	29	--	WD
MW156-WD	1/5/2022	5,659.22	13.58	11.18	5,672.80	2.40	14-24	34	33	WD
MW156-WD	4/11/2022	5,663.00	9.8	7.4	5,672.80	2.40	14-24	34	33	WD
MW157-WD	1/5/2022	5,658.59	13.99	11.71	5,672.58	2.28	14-24	33.3	31.5	WD
MW157-WD	4/11/2022	5,662.31	10.27	7.99	5,672.58	2.28	14-24	33.3	31.5	WD
MW158-WD	1/5/2022	5,657.94	15.32	13.06	5,673.26	2.26	15-25	39	34	WD
MW158-WD	4/11/2022	5,660.88	12.38	10.12	5,673.26	2.26	15-25	39	34	WD
MW160-WD	1/5/2022	5,654.32	36.15	31.98	5,690.47	4.17	15-30	36	31	WD
MW160-WD	4/11/2022	5,654.33	36.14	31.97	5,690.47	4.17	15-30	36	31	WD
MW170-EW-1	1/3/2022	Dry	Dry	Dry	5,731.80	1.62	25-60	65	60	WD
MW170-EW-1	4/5/2022	5,676.38	55.42	53.8	5,731.80	1.62	25-60	65	60	WD
MW170-WD	1/3/2022	5,687.90	42.01	42.11	5,729.91	-0.10	20-55	58	55.5	WD
MW170-WD	4/5/2022	5,687.27	42.64	42.74	5,729.91	-0.10	20-55	58	55.5	WD
MW171-WD	1/3/2022	5,699.87	30.81	28.41	5,730.68	2.40	17.5-32.5	35	32.5	WD
MW171-WD	4/5/2022	5,700.20	30.48	28.08	5,730.68	2.40	17.5-32.5	35	32.5	WD
MW172-WD	1/3/2022	5,699.78	30.71	28.59	5,730.49	2.12	18-38	43	38	WD
MW172-WD	4/5/2022	5,699.86	30.63	28.51	5,730.49	2.12	18-38	43	38	WD
MW173-WD	1/3/2022	5,701.21	29.58	27.33	5,730.79	2.25	18-33	38	35.5	WD
MW173-WD	4/5/2022	5,701.29	29.5	27.25	5,730.79	2.25	18-33	38	35.5	WD
MW174-WD	1/3/2022	5,701.77	31.78	29.11	5,733.55	2.67	20.7-35.7	38	36	WD
MW174-WD	4/5/2022	5,701.87	31.68	29.01	5,733.55	2.67	20.7-35.7	38	36	WD
MW175-WD	1/3/2022	5,689.76	43.65	41.1	5,733.41	2.55	25.5-45.5	49	46	WD
MW175-WD	4/5/2022	5,689.11	44.3	41.75	5,733.41	2.55	25.5-45.5	49	46	WD
MW176-DEN	1/5/2022	5,558.02	16.11	16.44	5,574.13	-0.23	12-52	55	55	Upper Denver
MW176-DEN	4/11/2022	5,558.26	15.87	16.2	5,574.13	-0.23	12-52	55	55	Upper Denver
MW176-UDEN	1/5/2022	5,557.22	18	18.53	5,575.22	-0.53	74-94	109	51	UNWEATHERED DENVER
MW176-UDEN	4/11/2022	5,557.17	18.05	18.58	5,575.22	-0.53	74-94	109	51	UNWEATHERED DENVER
MW177-DEN	1/5/2022	5,568.71	13.49	13.93	5,582.20	-0.44	17.5-27.5	33	27.5	UPPER DENVER
MW177-DEN	4/11/2022	5,568.71	13.49	13.93	5,582.20	-0.44	17.5-27.5	33	27.5	UPPER DENVER
MW177-UDEN	1/5/2022	5,565.07	16.85	17.22	5,581.92	-0.37	47-62	69	27.5	UNWEATHERED DENVER
MW177-UDEN	4/11/2022	5,565.37	16.55	16.92	5,581.92	-0.37	47-62	69	27.5	UNWEATHERED DENVER
MW178-DEN	1/5/2022	5,559.60	17.89	18.25	5,577.49	-0.36	16-36	43	36	UPPER DENVER
MW178-DEN	4/11/2022	5,560.00	17.49	17.85	5,577.49	-0.36	16-36	43	36	UPPER DENVER
MW178-UDEN	1/5/2022	5,536.69	39.95	40.8	5,576.64	-0.85	67-97	99	36.5	UNWEATHERED DENVER
MW178-UDEN	4/11/2022	5,536.83	39.81	40.66	5,576.64	-0.85	67-97	99	36.5	UNWEATHERED DENVER
MW179-UDEN	1/5/2022	5,648.90	22.96	21.2	5,671.86	1.85	56-81	84	29	UNWEATHERED DENVER
MW179-UDEN	4/11/2022	5,648.72	23.14	21.38	5,671.86	1.85	56-81	84	29	UNWEATHERED DENVER
MW180-WD	1/5/2022	5,678.01	16.83	14.69	5,694.84	2.14	17-27	30	27	WD
MW180-WD	4/11/2022	5,678.20	16.64	14.5	5,694.84	2.14	17-27	30	27	WD
MW-2	1/18/2022	5,758.00	78.57	76.6	5,836.57	1.97	64-119	142	60	UNWD
MW-2	4/11/2022	5,758.17	78.4	76.43	5,836.57	1.97	64-119	142	60	UNWD
MW23-C-SD	1/3/2022	5,698.39	30.28	27.91	5,728.67	2.37	56-71	73	38	UNWD
MW23-C-SD	4/5/2022	5,698.48	30.19	27.82	5,728.67	2.37	56-71	73	38	UNWD
MW23-UPPER-C	1/3/2022	5,701.96	26.97	24.64	5,728.93	2.33	25-35	38	37	WD
MW23-UPPER-C	4/5/2022	5,702.08	26.85	24.52	5,728.93	2.33	25-35	38	37	WD
MW23-WD	1/3/2022	5,701.24	28.74	25.73	5,729.98	3.01	35-55	56.5	NE, >56.5	UNWD
MW23-WD	4/5/2022	5,701.40	28.58	25.57	5,729.98	3.01	35-55	56.5	NE, >56.5	UNWD
MW-3	1/18/2022	5,786.65	44.61	42.25	5,831.26	2.36	47-97	102	55	UNWD
MW-3	4/11/2022	5,787.00	44.26	41.9	5,831.26	2.36	47-97	102	55	UNWD
MW30-BU	1/13/2022	5,717.95	79	76.29	5,796.95	2.71	150-180	183	48	UPPER DENVER
MW30-BU	4/7/2022	5,718.09	78.86	76.15	5,796.95	2.71	150-180	183	48	UPPER DENVER
MW32-UD	1/6/2022	5,786.59	47.57	45.81	5,834.16	1.76	59.5-69.5	69.8	49	UNWD
MW32-UD	4/8/2022	5,786.26	47.9	46.14	5,834.16	1.76	59.5-69.5	69.8	49	UNWD
MW32-WD	1/6/2022	5,802.61	31.81	29.37	5,834.42	2.44	32.7 - 47.7	50	47.5	WD
MW32-WD	4/8/2022	5,801.40	33.02	30.58	5,834.42	2.44	32.7 - 47.7	50	47.5	WD
MW33-UD	1/6/2022	5,788.87	56.01	54.03	5,844.88	1.98	62.5-72.5	75	51.5	UNWD
MW33-UD	4/8/2022	5,788.78	56.1	54.12	5,844.88	1.98	62.5-72.5	75	51.5	UNWD
MW33-WDR	1/6/2022	Dry	Dry	Dry	5,844.27	1.97	31.5-43.2	--	50.6	WD
MW33-WDR	4/8/2022	Dry	Dry	Dry	5,844.27	1.97	31.5-43.2	--	50.6	WD
MW34-UD	1/6/2022	5,787.80	48.41	46	5,836.21	2.41	64-74	74	54.5	UNWD
MW34-UD	4/8/2022	5,787.66	48.55	46.14	5,836.21	2.41	64-74	74	54.5	UNWD
MW34-WDR	1/6/2022	5,790.93	45.29	42.57	5,836.22	2.72	43 - 53	56	53.5	WD
MW34-WDR	4/8/2022	5,790.70	45.52	42.8	5,836.22	2.72	43 - 53	56	53.5	WD
MW35-UD	1/6/2022	5,759.63	58.62	56.47	5,818.25	2.15	69.79	79	59	UNWD
MW35-UD	4/8/2022	5,759.53	58.72	56.57	5,818.25	2.15	69.79	79	59	UNWD
MW35-WDR	1/6/2022	5,778.85	39.14	36.45	5,817.99	2.69	36.7 - 56.7	59	58	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MW35-WDR	4/8/2022	5,778.74	39.25	36.56	5,817.99	2.69	36.7 - 56.7	59	58	WD
MW36-UD	1/6/2022	5,767.28	33.78	31.82	5,801.06	1.96	56.5-66.5	66.5	46.1	UNWD
MW36-UD	4/8/2022	5,767.24	33.82	31.86	5,801.06	1.96	56.5-66.5	66.5	46.1	UNWD
MW36-WDR	1/6/2022	5,771.29	29.92	27.51	5,801.21	2.41	30.5-42.5	48.6	42.5	WD
MW36-WDR	4/8/2022	5,770.93	30.28	27.87	5,801.21	2.41	30.5-42.5	48.6	42.5	WD
MW37-UD	1/3/2022	5,699.23	28.11	26.17	5,727.34	1.94	38-53	59	32.5	UNWD
MW37-UD	4/4/2022	5,699.27	28.07	26.13	5,727.34	1.94	38-53	59	32.5	UNWD
MW37-WD	1/3/2022	5,695.78	32.63	29.63	5,728.41	3.00	22-32	35	32	WD
MW37-WD	4/4/2022	5,695.72	32.69	29.69	5,728.41	3.00	22-32	35	32	WD
MW38-0N-140W	1/17/2022	5,745.87	62.01	59.73	5,807.88	2.28	48-63	79	63	WD
MW38-0N-140W	4/6/2022	5,745.63	62.25	59.97	5,807.88	2.28	48-63	79	63	WD
MW38-1005N-150E	1/17/2022	5,731.63	44.65	42.17	5,776.28	2.48	36.5-56.5	61.4	56.5	WD
MW38-1005N-150E	4/6/2022	5,730.51	45.77	43.29	5,776.28	2.48	36.5-56.5	61.4	56.5	WD
MW38-100N-200E	1/17/2022	5,747.39	43.63	41.11	5,791.02	2.52	33-48	50.5	48	WD
MW38-100N-200E	4/6/2022	5,747.30	43.72	41.2	5,791.02	2.52	33-48	50.5	48	WD
MW38-100N-53W	1/17/2022	Dry	Dry	Dry	5,804.53	2.03	48-58	69	58	WD
MW38-100N-53W	4/6/2022	Dry	Dry	Dry	5,804.53	2.03	48-58	69	58	WD
MW38-100N-60E	1/17/2022	5,736.53	61	58.47	5,797.53	2.53	40-60	64.5	61.5	WD
MW38-100N-60E	4/6/2022	5,736.50	61.03	58.5	5,797.53	2.53	40-60	64.5	61.5	WD
MW38-100S-140W	1/18/2022	Dry	Dry	Dry	5,807.35	1.55	48.5-68.5	74	68.5	WD
MW38-100S-140W	4/6/2022	Dry	Dry	Dry	5,807.35	1.55	48.5-68.5	74	68.5	WD
MW38-100S-195W	1/17/2022	Dry	Dry	Dry	5,807.22	-0.35	51-71	73.5	71	WD
MW38-100S-195W	4/6/2022	Dry	Dry	Dry	5,807.22	-0.35	51-71	73.5	71	WD
MW38-100S-200E	1/18/2022	5,748.53	43.53	41.07	5,792.06	2.46	34-49	51.5	49	WD
MW38-100S-200E	4/6/2022	5,748.44	43.62	41.16	5,792.06	2.46	34-49	51.5	49	WD
MW38-100S-53W	1/18/2022	Dry	Dry	Dry	5,806.51	3.71	46-66	79	66	WD
MW38-100S-53W	4/6/2022	Dry	Dry	Dry	5,806.51	3.71	46-66	79	66	WD
MW38-1028N-256E	1/17/2022	5,719.92	51.88	49.78	5,771.80	2.10	28-53	56	NE, > 56	WD
MW38-1028N-256E	4/6/2022	5,720.25	51.55	49.45	5,771.80	2.10	28-53	56	NE, > 56	WD
MW38-1064N-650E	1/17/2022	5,734.51	26.37	23.89	5,760.88	2.48	20-35	39	35	WD
MW38-1064N-650E	4/6/2022	5,733.24	27.64	25.16	5,760.88	2.48	20-35	39	35	WD
MW38-1064N-655E	1/17/2022	5,726.36	34.24	32.04	5,760.60	2.20	40-55	57.5	35.5	UNWD
MW38-1064N-655E	4/6/2022	5,725.76	34.84	32.64	5,760.60	2.20	40-55	57.5	35.5	UNWD
MW38-1064N-660E	1/17/2022	5,717.12	43.42	41.18	5,760.54	2.24	60-75	77.5	35	UNWD
MW38-1064N-660E	4/6/2022	5,717.43	43.11	40.87	5,760.54	2.24	60-75	77.5	35	UNWD
MW38-1095N-226E	1/17/2022	5,720.70	50.61	48.8	5,771.31	1.81	23-53	69	52.5	WD
MW38-1095N-226E	4/6/2022	5,720.80	50.51	48.7	5,771.31	1.81	23-53	69	52.5	WD
MW38-1100N-0E	1/17/2022	5,744.69	35.07	32.61	5,779.76	2.46	32-47	54	47	WD
MW38-1100N-0E	4/6/2022	5,743.91	35.85	33.39	5,779.76	2.46	32-47	54	47	WD
MW38-1100N-326E	1/17/2022	5,728.24	38.15	38.16	5,766.39	-0.01	34.5-49.5	52.5	49.5	WD
MW38-1100N-326E	4/6/2022	5,727.67	38.72	38.73	5,766.39	-0.01	34.5-49.5	52.5	49.5	WD
MW38-1120N-1000E	1/17/2022	5,716.45	33.76	33.05	5,750.21	0.71	50-70	72.5	44	UNWD
MW38-1120N-1000E	4/6/2022	5,716.84	33.37	32.66	5,750.21	0.71	50-70	72.5	44	UNWD
MW38-1175N-300E	1/17/2022	5,723.38	44.48	44.9	5,767.86	-0.42	25.5-45.5	48.5	45.5	WD
MW38-1175N-300E	4/6/2022	5,723.55	44.31	44.73	5,767.86	-0.42	25.5-45.5	48.5	45.5	WD
MW38-1175N-518E	1/17/2022	5,735.20	31.21	31.4	5,766.41	-0.19	25.5-45.5	48	45.5	WD
MW38-1175N-518E	4/6/2022	5,734.55	31.86	32.05	5,766.41	-0.19	25.5-45.5	48	45.5	WD
MW38-1200N-226E	1/17/2022	5,710.04	62.05	60.46	5,772.09	1.59	45-70	74	69.5	UNWD
MW38-1200N-226E	4/6/2022	5,709.73	62.36	60.77	5,772.09	1.59	45-70	74	69.5	UNWD
MW38-1363N-180W	1/17/2022	5,724.56	46.28	46.54	5,770.84	-0.26	70-90	94.5	58	UNWD
MW38-1363N-180W	4/6/2022	5,724.25	46.59	46.85	5,770.84	-0.26	70-90	94.5	58	UNWD
MW38-1373N-180W	1/17/2022	5,723.20	48.89	46.1	5,772.09	2.79	36-51	54	51	WD
MW38-1373N-180W	4/6/2022	5,723.09	49	46.21	5,772.09	2.79	36-51	54	51	WD
MW38-150S-320W	1/17/2022	5,759.75	53.85	51.35	5,813.60	2.50	47-57	59.5	57	WD
MW38-150S-320W	4/6/2022	5,759.70	53.9	51.4	5,813.60	2.50	47-57	59.5	57	WD
MW38-170S-140W	1/18/2022	5,735.13	71.63	69.37	5,806.76	2.26	58-73	78.5	74	WD
MW38-170S-140W	4/6/2022	5,735.47	71.29	69.03	5,806.76	2.26	58-73	78.5	74	WD
MW38-200N-425E	1/17/2022	5,731.43	49.42	47.27	5,780.85	2.15	33-58	69	40	UNWD
MW38-200N-425E	4/6/2022	5,730.88	49.97	47.82	5,780.85	2.15	33-58	69	40	UNWD
MW38-200N-60E	1/17/2022	5,736.83	58.59	56.07	5,795.42	2.52	38.5-58.5	61.6	58.5	WD
MW38-200N-60E	4/6/2022	5,736.77	58.65	56.13	5,795.42	2.52	38.5-58.5	61.6	58.5	WD
MW38-200S-140W	1/18/2022	5,735.96	70.6	68.34	5,806.56	2.26	53-73	77	72	WD
MW38-200S-140W	4/6/2022	5,736.19	70.37	68.11	5,806.56	2.26	53-73	77	72	WD
MW38-200S-180W	1/18/2022	5,736.22	71.94	70.08	5,808.16	1.86	55-75	78.8	75	WD
MW38-200S-180W	4/6/2022	5,736.42	71.74	69.88	5,808.16	1.86	55-75	78.8	75	WD
MW38-200S-195W	1/17/2022	5,736.41	70.18	70.66	5,806.59	-0.48	53-73	76.5	73	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MW38-200S-195W	4/6/2022	5,736.62	69.97	70.45	5,806.59	-0.48	53-73	76.5	73	WD
MW38-250S-160W	1/18/2022	5,743.35	62.96	60.35	5,806.31	2.61	51-63	68	63	WD
MW38-250S-160W	4/6/2022	5,743.35	62.96	60.35	5,806.31	2.61	51-63	68	63	WD
MW38-250S-320W	1/17/2022	5,759.62	54.77	52.28	5,814.39	2.49	45-60	64	60	WD
MW38-250S-320W	4/6/2022	5,759.60	54.79	52.3	5,814.39	2.49	45-60	64	60	WD
MW38-250S-50W	1/18/2022	Dry	Dry	Dry	5,803.99	3.09	34-49	54	49	WD
MW38-250S-50W	4/6/2022	Dry	Dry	Dry	5,803.99	3.09	34-49	54	49	WD
MW38-275S-195W	1/17/2022	5,738.08	67.85	68.02	5,805.93	-0.17	50-70	72.5	69	WD
MW38-275S-195W	4/6/2022	5,738.10	67.83	68	5,805.93	-0.17	50-70	72.5	69	WD
MW38-300S-180W	1/18/2022	5,745.39	62.25	59.41	5,807.64	2.84	56-61	64	61	WD
MW38-300S-180W	4/6/2022	5,745.35	62.29	59.45	5,807.64	2.84	56-61	64	61	WD
MW38-300S-315W	1/17/2022	5,745.06	68.83	66.64	5,813.89	2.19	53.7-68.7	87	68	WD
MW38-300S-315W	4/6/2022	5,745.03	68.86	66.67	5,813.89	2.19	53.7-68.7	87	68	WD
MW38-300S-60E	1/18/2022	5,748.44	47.68	45.96	5,796.12	1.72	40-50	58	50	WD
MW38-300S-60E	4/6/2022	5,748.31	47.81	46.09	5,796.12	1.72	40-50	58	50	WD
MW38-302S-50W	1/18/2022	5,744.00	58.68	56.2	5,802.68	2.48	50-70	79	55	UNWD
MW38-302S-50W	4/6/2022	5,744.10	58.58	56.1	5,802.68	2.48	50-70	79	55	UNWD
MW38-320N-305E	1/17/2022	5,729.03	55.16	52.07	5,784.19	3.09	40-55	64	NE, >64	WD
MW38-320N-305E	4/6/2022	5,728.94	55.25	52.16	5,784.19	3.09	40-55	64	NE, >64	WD
MW38-325S-195W	1/17/2022	5,746.55	58.88	59.04	5,805.43	-0.16	48.5-63.5	66	62.5	WD
MW38-325S-195W	4/6/2022	5,746.53	58.9	59.06	5,805.43	-0.16	48.5-63.5	66	62.5	WD
MW38-350N-175E	1/17/2022	5,739.08	49.5	46.52	5,788.58	2.98	27-47	49.5	47	WD
MW38-350N-175E	4/6/2022	5,739.08	49.5	46.52	5,788.58	2.98	27-47	49.5	47	WD
MW38-350S-200E	1/18/2022	5,748.68	40.56	38.12	5,789.24	2.44	37.5-44.5	53.8	44.5	WD
MW38-350S-200E	4/6/2022	5,748.64	40.6	38.16	5,789.24	2.44	37.5-44.5	53.8	44.5	WD
MW38-350S-320W	1/17/2022	5,747.64	66.52	64.06	5,814.16	2.46	54-74	77	74	WD
MW38-350S-320W	4/6/2022	5,747.41	66.75	64.29	5,814.16	2.46	54-74	77	74	WD
MW38-350S-50W	1/18/2022	5,747.80	54.25	51.7	5,802.05	2.55	36-56	58.5	57	WD
MW38-350S-50W	4/6/2022	5,747.77	54.28	51.73	5,802.05	2.55	36-56	58.5	57	WD
MW38-350S-60E	1/18/2022	5,748.35	47.89	45.35	5,796.24	2.54	33.5-53.5	57.2	53.5	WD
MW38-350S-60E	4/6/2022	5,748.29	47.95	45.41	5,796.24	2.54	33.5-53.5	57.2	53.5	WD
MW38-360N-405E	1/17/2022	Dry	Dry	Dry	5,779.52	2.44	40-55	59	49	WD/UNWD
MW38-360N-405E	4/6/2022	Dry	Dry	Dry	5,779.52	2.44	40-55	59	49	WD/UNWD
MW38-390S-60E	1/18/2022	5,748.40	46.53	44	5,794.93	2.53	30.5-50.5	73	50.5	WD
MW38-390S-60E	4/6/2022	5,748.35	46.58	44.05	5,794.93	2.53	30.5-50.5	73	50.5	WD
MW38-400N-100E	1/17/2022	5,738.64	50.3	47.96	5,788.94	2.34	40-55	62	55	WD
MW38-400N-100E	4/6/2022	5,738.42	50.52	48.18	5,788.94	2.34	40-55	62	55	WD
MW38-400N-180W	1/17/2022	5,756.42	42.34	39.18	5,798.76	3.16	41.5-56.5	59	57	WD
MW38-400N-180W	4/6/2022	5,755.86	42.9	39.74	5,798.76	3.16	41.5-56.5	59	57	WD
MW38-400N-240E	1/17/2022	5,738.60	46.11	43.4	5,784.71	2.71	31-46	49.2	46	WD
MW38-400N-240E	4/6/2022	5,738.48	46.23	43.52	5,784.71	2.71	31-46	49.2	46	WD
MW38-400N-300E	1/17/2022	5,718.05	65.06	62.55	5,783.11	2.51	65.6-85.6	89	45	UNWD
MW38-400N-300E	4/6/2022	5,718.28	64.83	62.32	5,783.11	2.51	65.6-85.6	89	45	UNWD
MW38-400S-0W	1/18/2022	5,747.99	50.81	47.71	5,798.80	3.10	37.5-51.5	54	51.7	WD
MW38-400S-0W	4/6/2022	5,747.97	50.83	47.73	5,798.80	3.10	37.5-51.5	54	51.7	WD
MW38-400S-140W	1/18/2022	5,747.37	57.04	54.63	5,804.41	2.41	38.5-58.5	61.5	58.5	WD
MW38-400S-140W	4/6/2022	5,747.34	57.07	54.66	5,804.41	2.41	38.5-58.5	61.5	58.5	WD
MW38-400S-195W	1/17/2022	5,746.98	57.4	57.32	5,804.38	0.08	43.5-58.5	64	58.5	WD
MW38-400S-195W	4/6/2022	5,746.96	57.42	57.34	5,804.38	0.08	43.5-58.5	64	58.5	WD
MW38-400S-320W	1/17/2022	5,747.97	65.63	63.33	5,813.60	2.30	59.5-74.5	87	74.2	WD
MW38-400S-320W	4/6/2022	5,747.68	65.92	63.62	5,813.60	2.30	59.5-74.5	87	74.2	WD
MW38-400S-50W	1/18/2022	5,747.73	53.49	51.37	5,801.22	2.12	42-57	59.5	57	WD
MW38-400S-50W	4/6/2022	5,747.70	53.52	51.4	5,801.22	2.12	42-57	59.5	57	WD
MW38-410N-180W	1/17/2022	5,717.88	79.53	76.82	5,797.41	2.71	71.5-91.5	94	56	UNWD
MW38-410N-180W	4/6/2022	5,718.23	79.18	76.47	5,797.41	2.71	71.5-91.5	94	56	UNWD
MW38-450S-200E	1/18/2022	5,748.66	40.73	37.94	5,789.39	2.79	45.5-48.5	48.8	45.5	WD/UNWD
MW38-450S-200E	4/6/2022	5,748.57	40.82	38.03	5,789.39	2.79	45.5-48.5	48.8	45.5	WD/UNWD
MW38-450S-320W	1/17/2022	5,750.96	61.79	59.14	5,812.75	2.65	50-70	73.2	70	WD
MW38-450S-320W	4/6/2022	5,750.47	62.28	59.63	5,812.75	2.65	50-70	73.2	70	WD
MW38-450S-60E	1/18/2022	5,748.91	45.33	42.89	5,794.24	2.44	31.5-51.5	54	52.5	WD
MW38-450S-60E	4/6/2022	5,748.82	45.42	42.98	5,794.24	2.44	31.5-51.5	54	52.5	WD
MW38-500N-396E	1/17/2022	5,740.14	34.95	32.36	5,775.09	2.59	24-39	44	40	WD
MW38-500N-396E	4/6/2022	5,739.80	35.29	32.7	5,775.09	2.59	24-39	44	40	WD
MW38-500S-320W	1/17/2022	5,751.11	60.5	58.39	5,811.61	2.11	55-70	87	69.3	WD
MW38-500S-320W	4/6/2022	5,750.63	60.98	58.87	5,811.61	2.11	55-70	87	69.3	WD
MW38-500S-50W	1/18/2022	5,749.78	51	48.39	5,800.78	2.61	36.5-51.5	54	51.5	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MW38-500S-50W	4/6/2022	5,749.69	51.09	48.48	5,800.78	2.61	36.5-51.5	54	51.5	WD
MW38-550S-200E	1/18/2022	5,750.77	35.3	32.83	5,786.07	2.47	34-49	54	44.5	WD
MW38-550S-200E	4/6/2022	5,750.71	35.36	32.89	5,786.07	2.47	34-49	54	44.5	WD
MW38-550S-320W	1/17/2022	5,751.83	58.86	56.87	5,810.69	1.99	58-68	72	68	WD
MW38-550S-320W	4/6/2022	5,751.39	59.3	57.31	5,810.69	1.99	58-68	72	68	WD
MW38-600N-250E	1/17/2022	5,738.42	38.56	36.08	5,776.98	2.48	27.5-42.5	45.1	42.5	WD
MW38-600N-250E	4/6/2022	5,738.15	38.83	36.35	5,776.98	2.48	27.5-42.5	45.1	42.5	WD
MW38-600S-320W	1/17/2022	5,752.57	58.29	55.83	5,810.86	2.46	52-62	69	61.5	WD
MW38-600S-320W	4/6/2022	5,752.14	58.72	56.26	5,810.86	2.46	52-62	69	61.5	WD
MW38-650S-200E	1/18/2022	5,751.00	35.54	31.8	5,786.54	3.74	42-47	53	47	WD
MW38-650S-200E	4/6/2022	5,750.95	35.59	31.85	5,786.54	3.74	42-47	53	47	WD
MW38-650S-400E	1/18/2022	5,750.82	26.11	23.78	5,776.93	2.33	16-36	38.5	36	WD
MW38-650S-400E	4/6/2022	5,750.84	26.09	23.76	5,776.93	2.33	16-36	38.5	36	WD
MW38-650S-50W	1/18/2022	5,752.17	48.24	45.73	5,800.41	2.51	35-55	58.5	55	WD
MW38-650S-50W	4/6/2022	5,751.90	48.51	46	5,800.41	2.51	35-55	58.5	55	WD
MW38-680N-419E	1/17/2022	5,744.51	27.75	25.61	5,772.26	2.14	25-40	43	40	WD
MW38-680N-419E	4/6/2022	5,745.31	26.95	24.81	5,772.26	2.14	25-40	43	40	WD
MW38-700S-320W	1/17/2022	5,766.04	44.44	41.56	5,810.48	2.88	54-59	64	58.9	WD
MW38-700S-320W	4/6/2022	5,765.76	44.72	41.84	5,810.48	2.88	54-59	64	58.9	WD
MW38-700S-400E	1/18/2022	5,750.83	26.43	24.07	5,777.26	2.36	20-35	38.3	35	WD
MW38-700S-400E	4/6/2022	5,750.85	26.41	24.05	5,777.26	2.36	20-35	38.3	35	WD
MW38-750S-400E	1/18/2022	5,750.83	26.89	24.87	5,777.72	2.02	18-33	37.4	33	WD
MW38-750S-400E	4/6/2022	5,750.92	26.8	24.78	5,777.72	2.02	18-33	37.4	33	WD
MW38-758N-277E	1/17/2022	5,738.12	33.26	30.78	5,771.38	2.48	24-36	49	36	WD
MW38-758N-277E	4/6/2022	5,737.86	33.52	31.04	5,771.38	2.48	24-36	49	36	WD
MW38-770S-60E	1/18/2022	5,761.40	32.02	29.5	5,793.42	2.52	25-45	48	45	WD
MW38-770S-60E	4/6/2022	5,761.14	32.28	29.76	5,793.42	2.52	25-45	48	45	WD
MW38-794N-383E	1/17/2022	5,744.33	28.07	25.63	5,772.40	2.44	25-40	42.5	40	WD
MW38-794N-383E	4/6/2022	5,745.60	26.8	24.36	5,772.40	2.44	25-40	42.5	40	WD
MW38-815S-445E	1/18/2022	5,750.98	29.33	26.54	5,780.31	2.79	21.7 - 36.7	38	36	WD
MW38-815S-445E	4/6/2022	5,751.04	29.27	26.48	5,780.31	2.79	21.7 - 36.7	38	36	WD
MW38-825S-445E	1/18/2022	5,750.90	30.24	26.7	5,781.14	3.54	26-36	41	36	WD
MW38-825S-445E	4/6/2022	5,750.96	30.18	26.64	5,781.14	3.54	26-36	41	36	WD
MW38-830N-230E	1/17/2022	5,738.05	35.52	33.93	5,773.57	1.59	28 - 38	43.4	40	WD
MW38-830N-230E	4/6/2022	5,737.78	35.79	34.2	5,773.57	1.59	28 - 38	43.4	40	WD
MW38-830S-380E	1/18/2022	5,751.03	29.04	26.87	5,780.07	2.17	17.5 - 32.5	34.8	33	WD
MW38-830S-380E	4/6/2022	5,751.07	29	26.83	5,780.07	2.17	17.5 - 32.5	34.8	33	WD
MW38-840S-325E	1/18/2022	5,752.77	27.66	25.16	5,780.43	2.50	19 - 34	39	36	WD
MW38-840S-325E	4/6/2022	5,752.73	27.7	25.2	5,780.43	2.50	19 - 34	39	36	WD
MW38-890S-385E	1/18/2022	5,751.67	31.98	29.38	5,783.65	2.60	21.3 - 36.3	39	37	WD
MW38-890S-385E	4/6/2022	5,751.57	32.08	29.48	5,783.65	2.60	21.3 - 36.3	39	37	WD
MW38-995N-228E	1/17/2022	5,720.72	53.7	50.98	5,774.42	2.72	24-64	74	64	WD
MW38-995N-228E	4/6/2022	5,720.97	53.45	50.73	5,774.42	2.72	24-64	74	64	WD
MW38-995N-300E	1/17/2022	5,720.72	50.69	48.18	5,771.41	2.51	27.5-57.5	60	57.5	WD
MW38-995N-300E	4/6/2022	5,721.01	50.4	47.89	5,771.41	2.51	27.5-57.5	60	57.5	WD
MW38-995N-375E	1/17/2022	5,732.96	35.93	32.74	5,768.89	3.19	29-49	51.5	49	WD
MW38-995N-375E	4/6/2022	5,731.90	36.99	33.8	5,768.89	3.19	29-49	51.5	49	WD
MW38-995N-475E	1/17/2022	5,734.80	25.68	26.2	5,760.48	-0.52	31-51	53.9	51	WD
MW38-995N-475E	4/6/2022	5,733.41	27.07	27.59	5,760.48	-0.52	31-51	53.9	51	WD
MW38-WD	1/18/2022	5,735.96	68.46	65.14	5,804.42	3.32	39.5-69.5	75	69.5	WD
MW38-WD	4/6/2022	5,736.04	68.38	65.06	5,804.42	3.32	39.5-69.5	75	69.5	WD
MW39I-WD	1/6/2022	5,772.75	32.93	30.15	5,805.68	2.78	31.1-41	48.8	41	WD
MW39I-WD	4/8/2022	5,772.61	33.07	30.29	5,805.68	2.78	31.1-41	48.8	41	WD
MW39-UD	1/6/2022	5,751.65	52.9	49.85	5,804.55	3.05	56-76	79	42.8	UNWD
MW39-UD	4/8/2022	5,751.55	53	49.95	5,804.55	3.05	56-76	79	42.8	UNWD
MW39-WD	1/6/2022	5,773.63	31.62	28.87	5,805.25	2.75	24.1-44.1	48.7	44.1	WD
MW39-WD	4/8/2022	5,773.48	31.77	29.02	5,805.25	2.75	24.1-44.1	48.7	44.1	WD
MW40-WD	1/6/2022	5,777.78	42.88	40.22	5,820.66	2.66	31.7-61.7	65	61.8	WD
MW40-WD	4/8/2022	5,777.61	43.05	40.39	5,820.66	2.66	31.7-61.7	65	61.8	WD
MW41-WD	1/6/2022	5,787.83	45.09	42.67	5,832.92	2.42	25.3-55.3	61	55.3	WD
MW41-WD	4/8/2022	5,787.79	45.13	42.71	5,832.92	2.42	25.3-55.3	61	55.3	WD
MW42-UD	1/6/2022	5,786.71	49.09	46.69	5,835.80	2.40	70-90	92.5	60	UNWD
MW42-UD	4/8/2022	5,786.56	49.24	46.84	5,835.80	2.40	70-90	92.5	60	UNWD
MW42-WD	1/6/2022	5,789.69	46.52	43.91	5,836.21	2.61	23.3-48.3	52	48.3	WD
MW42-WD	4/8/2022	5,789.30	46.91	44.3	5,836.21	2.61	23.3-48.3	52	48.3	WD
MW43-WD	1/6/2022	5,791.38	51.39	48.92	5,842.77	2.47	19.5-54.5	60.5	55.1	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MW43-WD	4/8/2022	5,790.79	51.98	49.51	5,842.77	2.47	19.5-54.5	60.5	55.1	WD
MW44-WD	1/6/2022	5,789.02	60.23	57.68	5,849.25	2.55	26.4-66.4	69.7	66.4	WD
MW44-WD	4/8/2022	5,788.87	60.38	57.83	5,849.25	2.55	26.4-66.4	69.7	66.4	WD
MW45-WD	1/6/2022	5,806.49	49.05	46.91	5,855.54	2.14	35-65	70	65	WD
MW45-WD	4/8/2022	5,804.90	50.64	48.5	5,855.54	2.14	35-65	70	65	WD
MW46-WD	1/6/2022	5,824.76	23.69	21.04	5,848.45	2.65	15-65	70	65	WD
MW46-WD	4/8/2022	5,824.00	24.45	21.8	5,848.45	2.65	15-65	70	65	WD
MW47-WD	1/6/2022	5,825.50	16.51	14	5,842.01	2.51	10-45	45.3	NE, >45.3	WD
MW47-WD	4/8/2022	5,824.84	17.17	14.66	5,842.01	2.51	10-45	45.3	NE, >45.3	WD
MW48-WD	1/6/2022	5,823.29	14.57	12.31	5,837.86	2.26	9.7-49.7	55	49.7	WD
MW48-WD	4/8/2022	5,822.71	15.15	12.89	5,837.86	2.26	9.7-49.7	55	49.7	WD
MW49-WD	1/6/2022	5,806.81	18.13	15.89	5,824.94	2.24	19-54	58.5	54	WD
MW49-WD	4/8/2022	5,805.92	19.02	16.78	5,824.94	2.24	19-54	58.5	54	WD
MW50-WD	1/13/2022	5,790.04	20.91	18.36	5,810.95	2.55	15.2-45.2	50	45.2	WD
MW50-WD	4/7/2022	5,789.45	21.5	18.95	5,810.95	2.55	15.2-45.2	50	45.2	WD
MW51-10S	1/13/2022	5,752.89	43.43	41.01	5,796.32	2.42	51-61	64	44	UNWD
MW51-10S	4/7/2022	5,752.87	43.45	41.03	5,796.32	2.42	51-61	64	44	UNWD
MW51I-WD	1/14/2022	5,751.63	46.4	43.37	5,798.03	3.03	34-44	49	44	WD
MW51I-WD	4/7/2022	5,751.63	46.4	43.37	5,798.03	3.03	34-44	49	44	WD
MW51I-WD-10S	1/13/2022	5,756.43	41.48	38.77	5,797.91	2.71	40.5-41.5	44	NE, >44	WD
MW51I-WD-10S	4/7/2022	5,756.42	41.49	38.78	5,797.91	2.71	40.5-41.5	44	NE, >44	WD
MW51I-WD-15N	1/14/2022	5,747.22	49.39	47.35	5,796.61	2.04	29-44	49	44	WD
MW51I-WD-15N	4/7/2022	5,747.14	49.47	47.43	5,796.61	2.04	29-44	49	44	WD
MW51I-WD-35S	1/14/2022	5,746.12	51.82	49.46	5,797.94	2.36	26-46	51	46	WD
MW51I-WD-35S	4/7/2022	5,745.90	52.04	49.68	5,797.94	2.36	26-46	51	46	WD
MW51I-WD-65N	1/13/2022	5,752.03	43.19	41.47	5,795.22	1.72	28.5-43.5	50.5	44	WD
MW51I-WD-65N	4/7/2022	5,752.00	43.22	41.5	5,795.22	1.72	28.5-43.5	50.5	44	WD
MW51I-WD-80S	1/13/2022	5,756.68	41.76	39.82	5,798.44	1.94	39-54	59	52	WD
MW51I-WD-80S	4/7/2022	5,756.59	41.85	39.91	5,798.44	1.94	39-54	59	52	WD
MW51-WD	1/13/2022	5,753.66	42.74	40.44	5,796.40	2.30	16.2-41.2	45.1	41.2	WD
MW51-WD	4/7/2022	5,753.67	42.73	40.43	5,796.40	2.30	16.2-41.2	45.1	41.2	WD
MW51X-WD-100S	1/13/2022	5,751.73	46.9	44.17	5,798.63	2.73	46.5-48.5	51	52	WD
MW51X-WD-100S	4/7/2022	5,751.71	46.92	44.19	5,798.63	2.73	46.5-48.5	51	52	WD
MW51X-WD-35S	1/13/2022	5,751.95	44.1	42.09	5,796.05	2.01	28-43	45.5	43.5	WD
MW51X-WD-35S	4/7/2022	5,751.94	44.11	42.1	5,796.05	2.01	28-43	45.5	43.5	WD
MW51X-WD-65N	1/13/2022	5,751.99	43.26	39.92	5,795.25	3.34	21-41	44.5	41	WD
MW51X-WD-65N	4/7/2022	5,751.94	43.31	39.97	5,795.25	3.34	21-41	44.5	41	WD
MW51X-WD-90S	1/13/2022	5,751.80	46.03	44.1	5,797.83	1.93	38-53	56.5	52	WD
MW51X-WD-90S	4/7/2022	5,751.78	46.05	44.12	5,797.83	1.93	38-53	56.5	52	WD
MW52-DEN	1/13/2022	5,728.65	54.88	52.77	5,783.53	2.11	155-175	180	45	UPPER DENVER
MW52-DEN	4/7/2022	5,728.88	54.65	52.54	5,783.53	2.11	155-175	180	45	UPPER DENVER
MW52-LIG	1/13/2022	5,680.75	102.79	99.95	5,783.54	2.84	285-300	307	45	LIGNITE
MW52-LIG	4/7/2022	5,680.89	102.65	99.81	5,783.54	2.84	285-300	307	45	LIGNITE
MW52-UD	1/13/2022	5,748.06	36.08	33.24	5,784.14	2.84	65-85	88	45	UNWD
MW52-UD	4/7/2022	5,748.23	35.91	33.07	5,784.14	2.84	65-85	88	45	UNWD
MW52-WD	1/13/2022	5,751.50	33.37	30.5	5,784.87	2.87	25-45	50	45	WD
MW52-WD	4/7/2022	5,751.24	33.63	30.76	5,784.87	2.87	25-45	50	45	WD
MW53-WD	1/13/2022	5,748.19	36.52	35.01	5,784.71	1.51	17.5-52.5	55.5	52.5	WD
MW53-WD	4/7/2022	5,748.26	36.45	34.94	5,784.71	1.51	17.5-52.5	55.5	52.5	WD
MW54-UDR	1/13/2022	5,719.58	26.29	23.82	5,745.87	2.47	54-64	67	37	UNWD
MW54-UDR	4/7/2022	5,719.62	26.25	23.78	5,745.87	2.47	54-64	67	37	UNWD
MW54-WD	1/13/2022	5,719.52	25.75	23.13	5,745.27	2.62	16.8-36.8	40	36.8	WD
MW54-WD	4/7/2022	5,719.78	25.49	22.87	5,745.27	2.62	16.8-36.8	40	36.8	WD
MW55-WD	1/17/2022	5,753.77	37.5	34.63	5,791.27	2.87	28.4-48.4	54	48.4	WD
MW55-WD	4/6/2022	5,753.36	37.91	35.04	5,791.27	2.87	28.4-48.4	54	48.4	WD
MW56-WD	1/18/2022	5,750.25	47.99	44.95	5,798.24	3.04	25-50	54	50	WD
MW56-WD	4/6/2022	5,750.21	48.03	44.99	5,798.24	3.04	25-50	54	50	WD
MW57-WD	1/18/2022	5,740.66	36.49	34.34	5,777.15	2.15	24-39	44	39	WD
MW57-WD	4/6/2022	5,740.72	36.43	34.28	5,777.15	2.15	24-39	44	39	WD
MW58-WD	1/17/2022	5,756.79	53.22	50.11	5,810.01	3.11	26-56	59	56	WD
MW58-WD	4/6/2022	5,756.70	53.31	50.2	5,810.01	3.11	26-56	59	56	WD
MW59-WD	1/17/2022	5,756.03	47.07	45.48	5,803.10	1.59	39.5-57	60	57	WD
MW59-WD	4/6/2022	5,755.76	47.34	45.75	5,803.10	1.59	39.5-57	60	57	WD
MW60-WD	1/13/2022	5,751.68	35.21	32.56	5,786.89	2.65	19-44	49	44	WD
MW60-WD	4/7/2022	5,751.60	35.29	32.64	5,786.89	2.65	19-44	49	44	WD
MW61-WD	1/13/2022	5,751.69	34.35	32.21	5,786.04	2.14	27-39	44	39	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MW61-WD	4/7/2022	5,751.63	34.41	32.27	5,786.04	2.14	27-39	44	39	WD
MW62-DENR	1/3/2022	5,698.32	30.03	28.03	5,728.35	2.00	124-144	149	35	UPPER DENVER
MW62-DENR	4/4/2022	5,698.33	30.02	28.02	5,728.35	2.00	124-144	149	35	UPPER DENVER
MW62-LIG	1/3/2022	5,674.36	52.94	51.24	5,727.30	1.70	208-223	227	30.5	LIGNITE
MW62-LIG	4/4/2022	5,674.61	52.69	50.99	5,727.30	1.70	208-223	227	30.5	LIGNITE
MW62-UD	1/3/2022	5,690.47	37.19	35.13	5,727.66	2.06	53.5-68.5	71	32	UNWD
MW62-UD	4/4/2022	5,690.47	37.19	35.13	5,727.66	2.06	53.5-68.5	71	32	UNWD
MW62-WDR	1/3/2022	5,697.10	31.15	28.83	5,728.25	2.32	20.4-30.4	33.5	30	WD
MW62-WDR	4/4/2022	5,696.89	31.36	29.04	5,728.25	2.32	20.4-30.4	33.5	30	WD
MW63-WD	1/6/2022	5,773.63	34.86	32.97	5,808.49	1.89	33-53	57.9	53	WD
MW63-WD	4/8/2022	5,773.38	35.11	33.22	5,808.49	1.89	33-53	57.9	53	WD
MW64-WD	1/6/2022	5,775.43	30.6	27.87	5,806.03	2.73	31-46	49	45.4	WD
MW64-WD	4/8/2022	5,775.18	30.85	28.12	5,806.03	2.73	31-46	49	45.4	WD
MW65-WD	1/6/2022	5,771.96	27.63	25.24	5,799.59	2.39	26-38	42	37.7	WD
MW65-WD	4/8/2022	5,771.65	27.94	25.55	5,799.59	2.39	26-38	42	37.7	WD
MW66-WD	1/13/2022	5,751.69	39.75	37.11	5,791.44	2.64	31.8-41.8	49	41	WD
MW66-WD	4/7/2022	5,751.65	39.79	37.15	5,791.44	2.64	31.8-41.8	49	41	WD
MW67-WD	1/6/2022	5,772.91	28.7	26.19	5,801.61	2.51	31-43	49	43	WD
MW67-WD	4/8/2022	5,772.72	28.89	26.38	5,801.61	2.51	31-43	49	43	WD
MW68-WD	1/6/2022	5,774.07	32.34	29.73	5,806.41	2.61	29-44	52.8	44	WD
MW68-WD	4/8/2022	5,773.94	32.47	29.86	5,806.41	2.61	29-44	52.8	44	WD
MW70-WD	1/13/2022	5,751.75	39.4	37.25	5,791.15	2.15	34.5-49.5	52.3	49	WD
MW70-WD	4/7/2022	5,751.67	39.48	37.33	5,791.15	2.15	34.5-49.5	52.3	49	WD
MW71-DENR	1/13/2022	5,709.86	23.05	20.59	5,732.91	2.46	102.1 -	130	41.5	UPPER DENVER
MW71-DENR	4/7/2022	5,709.95	22.96	20.5	5,732.91	2.46	102.1 -	130	41.5	UPPER DENVER
MW71-LIG	1/13/2022	5,680.11	52.58	49.89	5,732.69	2.69	208-223	228	33	LIGNITE
MW71-LIG	4/7/2022	5,680.40	52.29	49.6	5,732.69	2.69	208-223	228	33	LIGNITE
MW71-UD	1/13/2022	5,709.85	23.29	20.85	5,733.14	2.44	67.5-82.5	84	37	UNWD
MW71-UD	4/7/2022	5,710.01	23.13	20.69	5,733.14	2.44	67.5-82.5	84	37	UNWD
MW71-WD	1/13/2022	5,709.21	23.85	21.09	5,733.06	2.76	20.5-35.5	39.2	35.5	WD
MW71-WD	4/7/2022	5,709.36	23.7	20.94	5,733.06	2.76	20.5-35.5	39.2	35.5	WD
MW72-DEN	1/13/2022	5,716.15	40.58	38	5,756.73	2.58	109.4 - 124	128	42	UPPER DENVER
MW72-DEN	4/7/2022	5,716.23	40.5	37.92	5,756.73	2.58	109.4 - 124	128	42	UPPER DENVER
MW72-LIGR	1/13/2022	5,681.00	78.07	75.67	5,759.07	2.40	253-263	268	42	LIGNITE
MW72-LIGR	4/7/2022	5,681.35	77.72	75.32	5,759.07	2.40	253-263	268	42	LIGNITE
MW72-UD	1/13/2022	5,721.17	35.49	33.03	5,756.66	2.46	66-81	84	43	UNWD
MW72-UD	4/7/2022	5,721.22	35.44	32.98	5,756.66	2.46	66-81	84	43	UNWD
MW72-WD	1/13/2022	5,724.31	32.97	29.99	5,757.28	2.98	32.5-42.5	45	42.5	WD
MW72-WD	4/7/2022	5,724.22	33.06	30.08	5,757.28	2.98	32.5-42.5	45	42.5	WD
MW73-UD	1/4/2022	5,710.97	25.23	22.73	5,736.20	2.50	57.7-77.7	80	35	UNWD
MW73-UD	4/4/2022	5,711.22	24.98	22.48	5,736.20	2.50	57.7-77.7	80	35	UNWD
MW73-WD	1/4/2022	5,715.03	21.79	19.23	5,736.82	2.56	15.7-35.7	38	34.5	WD
MW73-WD	4/4/2022	5,716.12	20.7	18.14	5,736.82	2.56	15.7-35.7	38	34.5	WD
MW74-UD	1/17/2022	5,713.21	36.15	33.79	5,749.36	2.36	72.7-92.7	95	54	UNWD
MW74-UD	4/6/2022	5,713.30	36.06	33.7	5,749.36	2.36	72.7-92.7	95	54	UNWD
MW74-WD	1/17/2022	5,716.96	32.42	30.04	5,749.38	2.38	38-58	62	54	WD
MW74-WD	4/6/2022	5,717.18	32.2	29.82	5,749.38	2.38	38-58	62	54	WD
MW75-UD	1/17/2022	5,716.71	40.12	37.5	5,756.83	2.62	71.5-91.5	94	51	UNWD
MW75-UD	4/6/2022	5,717.43	39.4	36.78	5,756.83	2.62	71.5-91.5	94	51	UNWD
MW75-WD	1/17/2022	5,731.62	25.55	22.68	5,757.17	2.87	25-50	52.5	50	WD
MW75-WD	4/6/2022	5,730.41	26.76	23.89	5,757.17	2.87	25-50	52.5	50	WD
MW76-UD	1/17/2022	5,717.30	42.74	42.9	5,760.04	-0.16	60-80	83	34.5	UNWD
MW76-UD	4/6/2022	5,717.62	42.42	42.58	5,760.04	-0.16	60-80	83	34.5	UNWD
MW76-WD	1/17/2022	5,738.33	21.31	21.37	5,759.64	-0.06	20-35	38	34.5	WD
MW76-WD	4/6/2022	5,739.78	19.86	19.92	5,759.64	-0.06	20-35	38	34.5	WD
MW77-EW-1	1/3/2022	5,688.45	36.78	34.15	5,725.23	2.63	25-35	39	37.6	WD
MW77-EW-1	4/5/2022	5,687.99	37.24	34.61	5,725.23	2.63	25-35	39	37.6	WD
MW77-EW-2	1/3/2022	5,695.95	25.03	22.55	5,720.98	2.48	22-32	39	34.9	WD
MW77-EW-2	4/5/2022	5,696.03	24.95	22.47	5,720.98	2.48	22-32	39	34.9	WD
MW77-UD	1/3/2022	5,695.15	32.41	30.18	5,727.56	2.22	57-72	75	35	UNWD
MW77-UD	4/5/2022	5,695.19	32.37	30.14	5,727.56	2.22	57-72	75	35	UNWD
MW77-WD	1/3/2022	5,699.80	28.45	25.6	5,728.25	2.85	19.7-34.7	37	34.5	WD
MW77-WD	4/5/2022	5,700.18	28.07	25.22	5,728.25	2.85	19.7-34.7	37	34.5	WD
MW78-UD	1/13/2022	5,705.06	26.48	24.14	5,731.54	2.34	57-77	79.5	42.5	UNWD
MW78-UD	4/7/2022	5,704.98	26.56	24.22	5,731.54	2.34	57-77	79.5	42.5	UNWD
MW78-WD	1/13/2022	5,704.67	26.91	24.43	5,731.58	2.48	24-44	47.5	42.5	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
MW78-WD	4/7/2022	5,704.72	26.86	24.38	5,731.58	2.48	24-44	47.5	42.5	WD
MW79-UD	1/13/2022	5,712.35	14.95	12.65	5,727.30	2.30	52-72	75	35	UNWD
MW79-UD	4/7/2022	5,712.46	14.84	12.54	5,727.30	2.30	52-72	75	35	UNWD
MW79-WD	1/13/2022	5,712.82	15.21	12.38	5,728.03	2.83	20-35	38	35	WD
MW79-WD	4/7/2022	5,712.86	15.17	12.34	5,728.03	2.83	20-35	38	35	WD
MW90-UD	1/13/2022	5,730.89	29.06	25.81	5,759.95	3.25	44-64	66.5	41	UNWD
MW90-UD	4/7/2022	5,731.34	28.61	25.36	5,759.95	3.25	44-64	66.5	41	UNWD
MW90-WD	1/13/2022	5,730.89	29.16	26.21	5,760.05	2.95	26-41	43.5	41	WD
MW90-WD	4/7/2022	5,731.33	28.72	25.77	5,760.05	2.95	26-41	43.5	41	WD
MW91-UD	1/13/2022	5,715.94	19.9	17.66	5,735.84	2.24	60-80	82.5	31.5	UNWD
MW91-UD	4/7/2022	5,715.96	19.88	17.64	5,735.84	2.24	60-80	82.5	31.5	UNWD
MW91-WD	1/13/2022	5,717.11	18.48	16.49	5,735.59	1.99	21.5-31.5	34	31.5	WD
MW91-WD	4/7/2022	5,717.30	18.29	16.3	5,735.59	1.99	21.5-31.5	34	31.5	WD
MW92-WD	1/13/2022	5,723.52	24.49	21.88	5,748.01	2.61	19.5-39.5	42	39.5	WD
MW92-WD	4/7/2022	5,723.85	24.16	21.55	5,748.01	2.61	19.5-39.5	42	39.5	WD
MW93-UD	1/13/2022	5,730.98	26.39	23.82	5,757.37	2.57	42-62	75	35	UNWD
MW93-UD	4/7/2022	5,731.40	25.97	23.4	5,757.37	2.57	42-62	75	35	UNWD
MW93-WD	1/13/2022	5,729.02	28.46	25.98	5,757.48	2.48	15-35	37.5	35	WD
MW93-WD	4/7/2022	5,729.12	28.36	25.88	5,757.48	2.48	15-35	37.5	35	WD
MW97-WD	1/3/2022	5,698.07	29.59	26.73	5,727.66	2.86	29-31	34	30.5	WD
MW97-WD	4/5/2022	5,698.45	29.21	26.35	5,727.66	2.86	29-31	34	30.5	WD
MW98-WD	1/3/2022	5,691.05	34.68	32.35	5,725.73	2.33	25.5-33	36	33	WD
MW98-WD	4/5/2022	5,690.96	34.77	32.44	5,725.73	2.33	25.5-33	36	33	WD
MW99-WD	1/3/2022	5,699.60	25.9	23.4	5,725.50	2.50	25.5-33	35.5	31.5	WD
MW99-WD	4/5/2022	5,699.73	25.77	23.27	5,725.50	2.50	25.5-33	35.5	31.5	WD
MW-EW-1	1/3/2022	5,696.83	16.69	13.77	5,713.52	2.92	7.8-17.8	17.8	NE, >17.8	ALLUVIUM
MW-EW-1	4/4/2022	5,696.75	16.77	13.85	5,713.52	2.92	7.8-17.8	17.8	NE, >17.8	ALLUVIUM
MW-EW-1LC	1/3/2022	5,694.37	18.6	16.66	5,712.97	1.94	28-38	38.1	23	UNWD
MW-EW-1LC	4/4/2022	5,694.33	18.64	16.7	5,712.97	1.94	28-38	38.1	23	UNWD
MW-EW-1LCRA	1/3/2022	5,692.20	20.66	18.3	5,712.86	2.36	46.5-61.5	64	23	UNWD
MW-EW-1LCRA	4/4/2022	5,692.08	20.78	18.42	5,712.86	2.36	46.5-61.5	64	23	UNWD
MW-EW-2	1/3/2022	5,696.62	17.02	14	5,713.64	3.02	8-18	18	NE, >18	ALLUVIUM
MW-EW-2	4/4/2022	5,696.37	17.27	14.25	5,713.64	3.02	8-18	18	NE, >18	ALLUVIUM
MW-EW-2LC	1/3/2022	5,694.72	19.69	16.63	5,714.41	3.06	28-38	38	25	UNWD
MW-EW-2LC	4/4/2022	5,694.59	19.82	16.76	5,714.41	3.06	28-38	38	25	UNWD
MW-EW-2LCR	1/3/2022	5,694.60	21.34	18.4	5,715.94	2.94	46.5-56.5	59	24.5	UNWD
MW-EW-2LCR	4/4/2022	5,694.34	21.6	18.66	5,715.94	2.94	46.5-56.5	59	24.5	UNWD
NBBW-IW-1	1/4/2022	Dry	Dry	Dry	5,709.43	2.61	10-20	27.5	22	WD
NBBW-IW-1	4/4/2022	Dry	Dry	Dry	5,709.43	2.61	10-20	27.5	22	WD
NBBW-IW-2	1/4/2022	5,685.87	23.23	20.07	5,709.10	3.16	12-22	28	23	WD
NBBW-IW-2	4/4/2022	5,685.78	23.32	20.16	5,709.10	3.16	12-22	28	23	WD
NBBW-IW-3	1/4/2022	Dry	44.8	42.53	5,711.74	2.27	11-41	47	42	WD
NBBW-IW-3	4/4/2022	Dry	44.65	42.38	5,711.74	2.27	11-41	47	42	WD
NEPZ-097	1/5/2022	5,553.31	25.18	25.38	5,578.49	-0.20	23-43	47.3	43.5	UPPER DENVER
NEPZ-097	4/11/2022	5,553.40	25.09	25.29	5,578.49	-0.20	23-43	47.3	43.5	UPPER DENVER
NEPZ-098	1/5/2022	5,554.38	22.25	22.24	5,576.63	0.01	16-46	49.5	45.5	UPPER DENVER
NEPZ-098	4/11/2022	5,554.49	22.14	22.13	5,576.63	0.01	16-46	49.5	45.5	UPPER DENVER
NEPZ-099	1/5/2022	5,556.16	19.3	19.26	5,575.46	0.04	12.5-42.5	48.5	43.5	UPPER DENVER
NEPZ-099	4/11/2022	5,556.36	19.1	19.06	5,575.46	0.04	12.5-42.5	48.5	43.5	UPPER DENVER
NEPZ-101	1/5/2022	5,560.04	12.36	13.04	5,572.40	-0.68	19-44	49	43	UPPER DENVER
NEPZ-101	4/11/2022	5,560.27	12.13	12.81	5,572.40	-0.68	19-44	49	43	UPPER DENVER
NEPZ-102	1/5/2022	5,562.54	11.06	11.5	5,573.60	-0.44	27-42	49	43	UPPER DENVER
NEPZ-102	4/11/2022	5,562.74	10.86	11.3	5,573.60	-0.44	27-42	49	43	UPPER DENVER
NEPZ-103	1/5/2022	5,563.87	10.41	10.95	5,574.28	-0.54	24-44	46	43	UPPER DENVER
NEPZ-103	4/11/2022	5,564.10	10.18	10.72	5,574.28	-0.54	24-44	46	43	UPPER DENVER
NEPZ-104	1/5/2022	5,564.23	10.4	10.62	5,574.63	-0.22	14.8-29.8	33	29.5	UPPER DENVER
NEPZ-104	4/11/2022	5,564.42	10.21	10.43	5,574.63	-0.22	14.8-29.8	33	29.5	UPPER DENVER
NEPZ-105	1/5/2022	5,565.71	10.47	10.7	5,576.18	-0.23	11.8-26.8	29.8	27.2	UPPER DENVER
NEPZ-105	4/11/2022	5,565.80	10.38	10.61	5,576.18	-0.23	11.8-26.8	29.8	27.2	UPPER DENVER
NTES SUMP	1/19/2022	5,729.25	28.68	32.55	5,757.93	-3.87	--	--	--	
NTES SUMP	4/12/2022	5,729.30	28.63	32.5	5,757.93	-3.87	--	--	--	
NTES-180W	1/19/2022	5,729.82	35.81	33.69	5,765.63	2.12	15-35	40.5	36	Fill (tire shreds)
NTES-180W	4/12/2022	5,729.76	35.87	33.75	5,765.63	2.12	15-35	40.5	36	Fill (tire shreds)
NTES-EW1	1/19/2022	5,749.35	28.93	27.35	5,778.28	1.58	41-51	53.5	50.5	WD
NTES-EW1	4/12/2022	5,749.40	28.88	27.3	5,778.28	1.58	41-51	53.5	50.5	WD
NTES-EW2	1/19/2022	5,745.51	32.55	29.97	5,778.06	2.18	30-50	55	52	WD

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WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
NTES-EW2	4/12/2022	5,745.53	32.13	29.95	5,777.66	2.18	30-50	55	52	WD
NTES-EW3	1/19/2022	5,748.09	31.91	28.61	5,780.00	3.30	27.5-37.5	40	37.5	WD
NTES-EW3	4/12/2022	5,748.38	31.62	28.32	5,780.00	3.30	27.5-37.5	40	37.5	WD
PM-10I	1/6/2022	5,813.88	20.6	18.02	5,834.48	2.58	11.7-49.2	55.25	49.2	WD
PM-10I	4/8/2022	5,813.27	21.21	18.63	5,834.48	2.58	11.7-49.2	55.25	49.2	WD
PM-10X	1/6/2022	5,817.52	16.87	14.08	5,834.39	2.79	11.7-41.7	45.6	41.7	WD
PM-10X	4/8/2022	5,816.34	18.05	15.26	5,834.39	2.79	11.7-41.7	45.6	41.7	WD
PM-11I	1/14/2022	5,773.53	46.49	44.07	5,820.02	2.42	12.5-52.5	58.5	52.5	WD
PM-11I	4/7/2022	5,773.74	46.28	43.86	5,820.02	2.42	12.5-52.5	58.5	52.5	WD
PM-11X	1/13/2022	5,793.55	23.92	22.15	5,817.47	2.44	16-51	55	50.8	WD
PM-11X	4/7/2022	5,792.79	24.68	22.91	5,817.47	2.44	16-51	55	50.8	WD
PM-12I	1/13/2022	5,762.65	41.98	39.25	5,804.63	2.73	23.2-43.2	49.2	43.2	WD
PM-12I	4/7/2022	5,762.63	42	39.27	5,804.63	2.73	23.2-43.2	49.2	43.2	WD
PM-12X	1/13/2022	5,767.38	36.13	33.62	5,803.51	2.51	17-47	50	44	WD
PM-12X	4/7/2022	5,767.27	36.24	33.73	5,803.51	2.51	17-47	50	44	WD
PM-13I	1/13/2022	Dry	Dry	Dry	5,791.09	2.89	14.5-34.5	41	34.5	WD
PM-13I	4/7/2022	Dry	Dry	Dry	5,791.09	2.89	14.5-34.5	41	34.5	WD
PM-13X	1/13/2022	5,752.11	37.65	34.79	5,789.76	2.86	15-35	35	35	WD
PM-13X	4/7/2022	5,752.29	37.47	34.61	5,789.76	2.86	15-35	35	35	WD
PM-14I	1/13/2022	5,749.19	33.25	30.72	5,782.44	2.53	11.6-56.6	62	56.6	WD
PM-14I	4/7/2022	5,748.99	33.45	30.92	5,782.44	2.53	11.6-56.6	62	56.6	WD
PM-14ID	1/13/2022	5,750.77	32.97	30.88	5,783.74	2.09	44.5-54.5	64	54.5	WD
PM-14ID	4/7/2022	5,750.58	33.16	31.07	5,783.74	2.09	44.5-54.5	64	54.5	WD
PM-14X	1/13/2022	5,748.23	32.95	30.29	5,781.18	2.66	26.3-51.3	55	51.3	WD
PM-14X	4/7/2022	5,747.98	33.2	30.54	5,781.18	2.66	26.3-51.3	55	51.3	WD
PM-15I	1/14/2022	5,723.21	53.71	50.19	5,776.92	3.52	18.6-48.6	54	48.6	WD
PM-15I	4/7/2022	5,723.47	53.45	49.93	5,776.92	3.52	18.6-48.6	54	48.6	WD
PM-15I-UD	1/13/2022	5,735.46	39.93	37.24	5,775.39	2.69	57.5-77.5	80	53.10	UNWD
PM-15I-UD	4/7/2022	5,735.45	39.94	37.25	5,775.39	2.69	57.5-77.5	80	53.10	UNWD
PM-15W	1/13/2022	5,746.19	34.16	31.24	5,780.35	2.92	22-32	54	53	WD
PM-15W	4/7/2022	5,746.15	34.2	31.28	5,780.35	2.92	22-32	54	53	WD
PM-15WR	1/13/2022	5,739.57	40.28	38.04	5,779.85	2.24	25-55	58	55.7	WD
PM-15WR	4/7/2022	5,739.47	40.38	38.14	5,779.85	2.24	25-55	58	55.7	WD
PM-15X	1/13/2022	5,736.48	38.16	35.32	5,774.64	2.84	29.3-49.3	52.5	49.4	WD
PM-15X	4/7/2022	5,735.96	38.68	35.84	5,774.64	2.84	29.3-49.3	52.5	49.4	WD
PM-1I	1/18/2022	5,771.43	22.63	19.67	5,794.06	2.96	15.5-35.5	41	35.5	WD
PM-1I	4/6/2022	5,770.70	23.36	20.4	5,794.06	2.96	15.5-35.5	41	35.5	WD
PM-1X	1/18/2022	5,772.15	19.78	17.15	5,791.93	2.63	14.5-34.5	38	34.5	WD
PM-1X	4/6/2022	5,771.33	20.6	17.97	5,791.93	2.63	14.5-34.5	38	34.5	WD
PM-2I	1/6/2022	5,770.00	46.9	44.1	5,816.90	2.80	30.2-65.2	71	65.2	WD
PM-2I	4/8/2022	5,769.82	47.08	44.28	5,816.90	2.80	30.2-65.2	71	65.2	WD
PM-2X	1/6/2022	5,777.02	38.2	36.08	5,815.22	2.12	28-63	68	63	WD
PM-2X	4/8/2022	5,776.84	38.38	36.26	5,815.22	2.12	28-63	68	63	WD
PM-3I	1/6/2022	5,778.74	48.8	46.16	5,827.54	2.64	29-64	70	64	WD
PM-3I	4/8/2022	5,778.46	49.08	46.44	5,827.54	2.64	29-64	70	64	WD
PM-3X	1/6/2022	5,778.39	48.63	46.11	5,827.02	2.52	28-68	71	68	WD
PM-3X	4/8/2022	5,778.29	48.73	46.21	5,827.02	2.52	28-68	71	68	WD
PM-4EW1	1/6/2022	5,794.55	43.39	40.75	5,837.94	2.64	32-45	48	45	WD
PM-4EW1	4/8/2022	5,794.51	43.43	40.79	5,837.94	2.64	32-45	48	45	WD
PM-4EW2	1/6/2022	5,794.50	43.42	40.8	5,837.92	2.62	45-52	54.5	52	WD
PM-4EW2	4/8/2022	5,794.48	43.44	40.82	5,837.92	2.62	45-52	54.5	52	WD
PM-4I	1/6/2022	5,793.37	43.35	40.73	5,836.72	2.62	22-57	62.9	57	WD
PM-4I	4/8/2022	5,793.31	43.41	40.79	5,836.72	2.62	22-57	62.9	57	WD
PM-4X	1/6/2022	5,793.80	43.39	40.8	5,837.19	2.59	28.8-48.8	51.9	48.8	WD
PM-4X	4/8/2022	5,793.85	43.34	40.75	5,837.19	2.59	28.8-48.8	51.9	48.8	WD
PM-5I	1/6/2022	5,798.61	38.8	36.69	5,837.41	2.11	22.4-52.4	59	51.4	WD
PM-5I	4/8/2022	5,798.17	39.24	37.13	5,837.41	2.11	22.4-52.4	59	51.4	WD
PM-5X	1/6/2022	5,799.84	38.21	35.66	5,838.05	2.55	22.9-47.9	51.9	47.9	WD
PM-5X	4/8/2022	5,799.29	38.76	36.21	5,838.05	2.55	22.9-47.9	51.9	47.9	WD
PM-6I	1/6/2022	5,797.99	54.19	51.61	5,852.18	2.58	43.9-63.9	69.9	63.9	WD
PM-6I	4/8/2022	5,797.80	54.38	51.8	5,852.18	2.58	43.9-63.9	69.9	63.9	WD
PM-6X	1/6/2022	5,793.98	57.69	55.12	5,851.67	2.57	36.5-61.5	65	61.5	WD
PM-6X	4/8/2022	5,793.65	58.02	55.45	5,851.67	2.57	36.5-61.5	65	61.5	WD
PM-6X-UD	1/6/2022	5,792.16	59.87	57.36	5,852.03	2.51	85 - 109.5	112.5	75	UNWD
PM-6X-UD	4/8/2022	5,791.88	60.15	57.64	5,852.03	2.51	85 - 109.5	112.5	75	UNWD
PM-7I	1/6/2022	5,811.03	41.92	39.87	5,852.95	2.05	27.5-62.5	68.75	62.5	WD

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LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
PM-7I	4/8/2022	5,810.48	42.47	40.42	5,852.95	2.05	27.5-62.5	68.75	62.5	WD
PM-7X	1/6/2022	5,818.07	35.54	32.73	5,853.61	2.81	16.5-66.5	70	66.5	WD
PM-7X	4/8/2022	5,817.10	36.51	33.7	5,853.61	2.81	16.5-66.5	70	66.5	WD
PM-8I	1/6/2022	5,816.07	27.35	25.13	5,843.42	2.22	12.3-64.8	71.3	64.8	WD
PM-8I	4/8/2022	5,815.20	28.22	26	5,843.42	2.22	12.3-64.8	71.3	64.8	WD
PM-8X	1/6/2022	5,825.26	18.56	15.74	5,843.82	2.82	10.2-65.2	70	65.2	WD
PM-8X	4/8/2022	5,824.58	19.24	16.42	5,843.82	2.82	10.2-65.2	70	65.2	WD
PM-9I	1/6/2022	5,815.73	25.7	23.27	5,841.43	2.43	12-44.5	50.25	44.5	WD
PM-9I	4/8/2022	5,815.33	26.1	23.67	5,841.43	2.43	12-44.5	50.25	44.5	WD
PM-9X	1/6/2022	5,824.09	16.8	13.61	5,840.89	3.19	11.75-46.75	50	46.8	WD
PM-9X	4/8/2022	5,823.48	17.41	14.22	5,840.89	3.19	11.75-46.75	50	46.8	WD
PTP-1	1/4/2022	5,695.54	37.13	33.36	5,732.67	3.77	25-40	40	NE, >40	WD
PTP-1	4/4/2022	5,695.54	37.13	33.36	5,732.67	3.77	25-40	40	NE, >40	WD
PTP-10C	1/3/2022	5,693.88	32.62	28.32	5,726.50	4.30	19-34	34	32	WD
PTP-10C	4/4/2022	5,693.81	32.69	28.39	5,726.50	4.30	19-34	34	32	WD
PTP-11	1/3/2022	5,687.10	23.08	19.5	5,710.18	3.58	12-22	23.9	22	WD
PTP-11	4/5/2022	5,687.13	23.05	19.47	5,710.18	3.58	12-22	23.9	22	WD
PTP-12	1/3/2022	5,688.43	24.7	21.87	5,713.13	2.83	12-27	27	26	WD
PTP-12	4/5/2022	5,688.53	24.6	21.77	5,713.13	2.83	12-27	27	26	WD
PTP-13	1/4/2022	5,687.30	26.26	24.1	5,713.56	2.16	12.5-27.5	27.5	27	WD
PTP-13	4/4/2022	5,687.35	26.21	24.05	5,713.56	2.16	12.5-27.5	27.5	27	WD
PTP-14	1/4/2022	Dry	Dry	Dry	5,709.05	2.25	12-27	27	26.5	WD
PTP-14	4/4/2022	Dry	Dry	Dry	5,709.05	2.25	12-27	27	26.5	WD
PTP-15	1/4/2022	Dry	Dry	Dry	5,704.94	2.84	7.5-22.5	23.7	22.5	WD
PTP-15	4/4/2022	Dry	Dry	Dry	5,704.94	2.84	7.5-22.5	23.7	22.5	WD
PTP-15S	1/4/2022	Dry	Dry	Dry	5,704.55	2.35	7-12	12	NE, >12	WD
PTP-15S	4/4/2022	Dry	Dry	Dry	5,704.55	2.35	7-12	12	NE, >12	WD
PTP-16	1/4/2022	Dry	Dry	Dry	5,703.46	0.36	4.5-14.5	17	NE, >17	WD
PTP-16	4/4/2022	Dry	Dry	Dry	5,703.46	0.36	4.5-14.5	17	NE, >17	WD
PTP-17S	1/4/2022	Dry	Dry	Dry	5,711.50	4.50	10-15	15	NE, >15	WD
PTP-17S	4/4/2022	Dry	Dry	Dry	5,711.50	4.50	10-15	15	NE, >15	WD
PTP-18	1/4/2022	Dry	Dry	Dry	5,712.55	3.85	15.5-30.5	30.5	30.5	WD
PTP-18	4/4/2022	Dry	Dry	Dry	5,712.55	3.85	15.5-30.5	30.5	30.5	WD
PTP-19	1/4/2022	Dry	Dry	Dry	5,715.56	3.86	9.5-24.5	39	38.8	WD
PTP-19	4/4/2022	Dry	Dry	Dry	5,715.56	3.86	9.5-24.5	39	38.8	WD
PTP-20	1/4/2022	Dry	Dry	Dry	5,707.16	3.66	6-21	23.5	21	WD
PTP-20	4/4/2022	Dry	Dry	Dry	5,707.16	3.66	6-21	23.5	21	WD
PTP-20S	1/4/2022	Dry	Dry	Dry	5,706.15	2.65	NA	--	NA	WD
PTP-20S	4/4/2022	Dry	Dry	Dry	5,706.15	2.65	NA	--	NA	WD
PTP-21	1/4/2022	5,688.14	22.47	20.06	5,710.61	2.41	7.5-22.5	22.5	21	WD
PTP-21	4/4/2022	5,687.43	23.18	20.77	5,710.61	2.41	7.5-22.5	22.5	21	WD
PTP-22	1/4/2022	5,688.64	23.53	20.66	5,712.17	2.87	6-21	21	21	WD
PTP-22	4/4/2022	Dry	Dry	Dry	5,712.17	2.87	6-21	21	21	WD
PTP-22S	1/4/2022	Dry	Dry	Dry	5,711.50	2.20	7-12	12	NE, >12	WD
PTP-22S	4/4/2022	Dry	Dry	Dry	5,711.50	2.20	7-12	12	NE, >12	WD
PTP-23	1/3/2022	5,693.27	32.06	28.25	5,725.33	3.81	23-33	33	32	WD
PTP-23	4/4/2022	5,693.23	32.1	28.29	5,725.33	3.81	23-33	33	32	WD
PTP-24	1/3/2022	5,692.44	28.79	25.59	5,721.23	3.20	22-32	32	29.5	WD
PTP-24	4/4/2022	5,692.26	28.97	25.77	5,721.23	3.20	22-32	32	29.5	WD
PTP-25	1/4/2022	5,687.86	25.53	23.56	5,713.39	1.97	18.3-28.3	28.29	27	WD
PTP-25	4/4/2022	5,687.78	25.61	23.64	5,713.39	1.97	18.3-28.3	28.29	27	WD
PTP-26	1/4/2022	5,689.21	35.38	32.48	5,724.59	2.90	24-34	34	34	WD
PTP-26	4/4/2022	5,689.09	35.5	32.6	5,724.59	2.90	24-34	34	34	WD
PTP-27	1/4/2022	5,693.99	33.55	30.85	5,727.54	2.70	24-34	34	34	WD
PTP-27	4/4/2022	5,693.88	33.66	30.96	5,727.54	2.70	24-34	34	34	WD
PTP-2F	1/4/2022	5,692.84	36.28	32.26	5,729.12	4.02	22.5-37.5	37.5	36	WD
PTP-2F	4/4/2022	5,692.79	36.33	32.31	5,729.12	4.02	22.5-37.5	37.5	36	WD
PTP-3F	1/4/2022	5,690.95	34.09	30.45	5,725.04	3.64	16.5-31.5	31.5	NE, >31.5	WD
PTP-3F	4/4/2022	5,690.89	34.15	30.51	5,725.04	3.64	16.5-31.5	31.5	NE, >31.5	WD
PTP-4C	1/4/2022	5,690.89	29.58	25.71	5,720.47	3.87	17-27	27.2	NE, >27.2	WD
PTP-4C	4/4/2022	5,690.84	29.63	25.76	5,720.47	3.87	17-27	27.2	NE, >27.2	WD
PTP-5A	1/4/2022	Dry	Dry	Dry	5,717.37	3.37	15-25	25	NE, >25	WD
PTP-5A	4/4/2022	Dry	Dry	Dry	5,717.37	3.37	15-25	25	NE, >25	WD
PTP-6B	1/3/2022	5,688.55	24.51	20.55	5,713.06	3.96	9-24	24	NE, >24	WD
PTP-6B	4/4/2022	5,688.54	24.52	20.56	5,713.06	3.96	9-24	24	NE, >24	WD
PTP-7H	1/3/2022	5,688.90	23.63	20.2	5,712.53	3.43	12.5-22.5	22.5	NE, >22.5	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Date of Measurement	Water-Surface Elevation (ft NGVD)[a/]	Measured Depth to Water (ft below MP)[b/]	Depth to Water (ft bgs)[c/]	Measuring Point Elevation (ft NGVD)	Stickup (ft)[d/]	Screened Interval (ft bgs)	Total Depth (ft bgs)	Base of Weathering (ft bgs)	Formation[e/]
PTP-7H	4/4/2022	5,688.87	23.66	20.23	5,712.53	3.43	12.5-22.5	22.5	NE, >22.5	WD
PTP-8A	1/3/2022	5,689.72	28.14	25.18	5,717.86	2.96	16-26	26	NE, >26	WD
PTP-8A	4/4/2022	5,689.72	28.14	25.18	5,717.86	2.96	16-26	26	NE, >26	WD
PTP-9	1/3/2022	Dry	Dry	Dry	5,722.06	3.46	17-27	27	NE, >27	WD
PTP-9	4/4/2022	Dry	Dry	Dry	5,722.06	3.46	17-27	27	NE, >27	WD
PZ-101A	1/6/2022	5,679.88	146.32	144.02	5,826.20	2.30	314.6-325.1	328	48	LIGNITE
PZ-101A	4/8/2022	5,681.20	145	142.7	5,826.20	2.30	314.6-325.1	328	48	LIGNITE
PZ-103	1/6/2022	5,679.83	115.95	109.47	5,795.78	6.48	291.5-302	302.3	30	LIGNITE
PZ-103	4/8/2022	5,679.93	115.85	109.37	5,795.78	6.48	291.5-302	302.3	30	LIGNITE
RDPZ-102	1/6/2022	5,783.87	64.21	61.76	5,848.08	2.45	47.5-67	69.5	69.5	WD
RDPZ-102	4/8/2022	5,783.82	64.26	61.81	5,848.08	2.45	47.5-67	69.5	69.5	WD
SUMP	1/4/2022	5,685.74	27	27.9	5,712.74	-0.90	10-32.9	32.9	--	NO GEOLOGIC LOG
SUMP	4/4/2022	5,685.68	27.06	27.96	5,712.74	-0.90	10-32.9	32.9	--	NO GEOLOGIC LOG
T1-1	1/5/2022	5,674.68	3.59	1.52	5,678.27	2.07	7.5-17.5	17.5	--	ALLUVIUM
T1-1	4/11/2022	5,674.78	3.49	1.42	5,678.27	2.07	7.5-17.5	17.5	--	ALLUVIUM
T1-2	1/5/2022	5,675.33	9.69	6.37	5,685.02	3.32	10-20	20	--	WD
T1-2	4/11/2022	5,675.48	9.54	6.22	5,685.02	3.32	10-20	20	--	WD
T1-3	1/5/2022	5,675.59	3.87	0.41	5,679.46	3.46	6.4-16.4	16.4	--	WD
T1-3	4/11/2022	5,674.73	4.73	1.27	5,679.46	3.46	6.4-16.4	16.4	--	WD
T1-4	1/5/2022	5,676.16	3.93	0.54	5,680.09	3.39	4-14	14	--	WD
T1-4	4/11/2022	5,676.20	3.89	0.5	5,680.09	3.39	4-14	14	--	WD
T1-5	1/5/2022	5,677.38	15.32	11.92	5,692.70	3.40	14-24	24	--	WD
T1-5	4/11/2022	5,677.62	15.08	11.68	5,692.70	3.40	14-24	24	--	WD
TR-1	1/4/2022	Dry	Dry	Dry	5,706.65	1.72	8-18	18	NE, >18	WD
TR-1	4/4/2022	Dry	Dry	Dry	5,706.65	1.72	8-18	18	NE, >18	WD
U-518R-WD	1/13/2022	5,751.86	46.85	44.64	5,798.71	2.21	39.5 - 49.5	52.7	50.5	WD
U-518R-WD	4/7/2022	5,751.83	46.88	44.67	5,798.71	2.21	39.5 - 49.5	52.7	50.5	WD
U-701	1/3/2022	5,688.21	28.13	25.51	5,716.34	2.62	34-44	44	33.6	UNWD
U-701	4/4/2022	5,688.01	28.33	25.71	5,716.34	2.62	34-44	44	33.6	UNWD
U-701-WD	1/3/2022	Dry	Dry	Dry	5,716.24	2.23	12.7-22.7	22.7	34.9	WD
U-701-WD	4/4/2022	Dry	Dry	Dry	5,716.24	2.23	12.7-22.7	22.7	34.9	WD
WEST CLEANOUT	1/19/2022	Dry	Dry	Dry	5,772.41	--	--	--	--	NO GEOLOGIC LOG
WEST CLEANOUT	4/12/2022	Dry	Dry	Dry	5,772.41	--	--	--	--	NO GEOLOGIC LOG

a/ ft NGVD = elevation in feet referenced to the National Geodetic Vertical Datum of 1929.

b/ ft below MP = feet below measuring point

c/ ft bgs = feet below ground surface

d/ ft = feet

e/ Formation = formation or zone in which well screen is located. Formation/zone designations are as follow:

ALLUVIUM = Alluvium of un-named creek.
FILL = imported soils - not native
LIGNITE = "Lignite zone" in Denver Formation
UNWD = Unweathered Dawson Formation
UPPER DENVER = Upper part of Denver Formation
WD = Weathered Dawson Formation

f/ NE = Base of weathering not encountered during drilling of boring

g/ -- or NA = Information not available at this time

TABLE 4.3
SUMMARY OF VERTICAL HYDRAULIC GRADIENT CALCULATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		1st Quarter 2021				2nd Quarter 2021			
Shallow Well	Deep Well	Measure Date	Head Difference [a/] (ft)[b/]	Diff. in Saturated Screen Elev. [c/] (ft)	Vertical Gradient[d/] (ft/ft)	Measure Date	Head Difference (ft)	Diff. in Saturated Screen Elev. (ft)	Vertical Gradient (ft/ft)
B-304	B-304-UD	1/4/2022	-9.42	35.81	-0.263	4/4/2022	-7.39	34.59	-0.214
B-305WD	B-305-R	1/3/2022	B-305WD Dry			4/4/2022	B-305WD Dry		
B-307	B-306	1/4/2022	B-307 Dry			4/4/2022	B-307 Dry		
B-313	B-313-UD	1/4/2022	-5.80	28.15	-0.206	4/4/2022	-4.45	27.40	-0.162
B-314	B-314-UD	1/4/2022	-7.81	31.57	-0.247	4/4/2022	-7.94	31.56	-0.252
B-316	B-316-UD	1/3/2022	-3.66	22.63	-0.162	4/4/2022	-2.98	22.36	-0.133
B-317	B-317-UD	1/3/2022	0.32	23.70	0.014	4/4/2022	0.68	23.50	0.029
B-326-WD	B-326-UD	1/4/2022	3.91	21.30	0.184	4/4/2022	3.95	21.20	0.186
B-327-WD	B-327-UD	1/3/2022	-2.76	29.70	-0.093	4/4/2022	-1.97	29.31	-0.067
B-712-UD	B-712-LD	1/19/2022	-6.52	43.40	-0.150	4/12/2022	-6.54	43.40	-0.151
BKGD-2WD	BKGD-2UD	1/18/2022	-39.40	21.87	-1.802	4/11/2022	-38.56	21.87	-1.763
BM-4X-50S	BM-4X-40S	1/6/2022	-8.05	29.10	-0.277	4/8/2022	-8.32	29.09	-0.286
BW-PZ-1	BW-PZ-1LC	1/4/2022	-4.67	16.30	-0.287	4/4/2022	-4.85	16.31	-0.297
C-702Q3	C-702P4	1/19/2022	0.68	18.10	0.038	4/12/2022	0.79	18.10	0.044
GW-107A	GW-107UD	1/3/2022	1.06	21.90	0.048	4/4/2022	0.91	21.90	0.042
GW-114A	GW-108A	1/4/2022	-8.46	33.57	-0.252	4/4/2022	-8.70	33.59	-0.259
MW-1000	MW-1000LC	1/4/2022	MW-1000 Dry			4/4/2022	MW-1000 Dry		
MW33-WDR	MW33-UD	1/6/2022	MW33-WDR Dry			4/8/2022	MW33-WDR Dry		
MW36-WDR	MW36-UD	1/6/2022	-4.01	24.70	-0.162	4/8/2022	-3.69	24.70	-0.149
MW37-WD	MW37-UD	1/3/2022	3.46	14.68	0.236	4/4/2022	3.56	14.66	0.243
MW38-1064N-650E	MW38-1064N-655E	1/17/2022	-8.15	18.06	-0.451	4/6/2022	-7.48	17.42	-0.429
MW38-1373N-180W	MW38-1363N-180W	1/17/2022	1.36	29.65	0.046	4/6/2022	1.16	29.59	0.039
MW38-350S-50W	MW38-302S-50W	1/18/2022	-3.80	8.55	-0.444	4/6/2022	-3.67	8.49	-0.433
MW38-400N-180W	MW38-410N-180W	1/17/2022	-38.54	36.06	-1.069	4/6/2022	-37.63	35.89	-1.049
MW38-400N-240E	MW38-400N-300E	1/17/2022	-20.55	32.30	-0.636	4/6/2022	-20.20	32.24	-0.627
MW39-WD	MW39-UD	1/6/2022	-21.98	30.51	-0.720	4/8/2022	-21.93	30.44	-0.720
MW42-WD	MW42-UD	1/6/2022	-2.98	34.10	-0.087	4/8/2022	-2.74	33.90	-0.081
MW49-WD	B-519	1/6/2022	0.54	29.20	0.018	4/8/2022	0.52	29.20	0.018
MW51-WD	MW51-10S	1/13/2022	-0.77	15.38	-0.050	4/7/2022	-0.80	15.39	-0.052
MW51X-WD-100S	B-518	1/13/2022	7.43	38.00	0.196	4/7/2022	7.61	38.00	0.200
MW52-WD	MW52-UD	1/13/2022	-3.44	37.95	-0.091	4/7/2022	-3.01	37.82	-0.080
MW54-WD	MW54-UDR	1/13/2022	0.06	28.28	0.002	4/7/2022	-0.16	28.42	-0.006
MW62-WDR	MW62-UD	1/3/2022	-6.63	31.72	-0.209	4/4/2022	-6.42	31.61	-0.203
MW71-WD	MW71-UD	1/13/2022	0.64	46.31	0.014	4/7/2022	0.65	46.38	0.014
MW72-WD	MW72-UD	1/13/2022	-3.14	36.10	-0.087	4/7/2022	-3.00	36.10	-0.083
MW73-WD	MW73-UD	1/4/2022	-4.06	40.80	-0.100	4/4/2022	-4.90	41.34	-0.119

TABLE 4.3
SUMMARY OF VERTICAL HYDRAULIC GRADIENT CALCULATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		1st Quarter 2021				2nd Quarter 2021			
Shallow Well	Deep Well	Measure Date	Head Difference [a/] (ft)[b/]	Diff. in Saturated Screen Elev. [c/] (ft)	Vertical Gradient[d/] (ft/ft)	Measure Date	Head Difference (ft)	Diff. in Saturated Screen Elev. (ft)	Vertical Gradient (ft/ft)
MW74-WD	MW74-UD	1/17/2022	-3.75	34.70	-0.108	4/6/2022	-3.88	34.70	-0.112
MW75-WD	MW75-UD	1/17/2022	-14.91	44.09	-0.338	4/6/2022	-12.98	44.09	-0.294
MW76-WD	MW76-UD	1/17/2022	-21.13	42.00	-0.503	4/6/2022	-22.26	42.00	-0.530
MW77-WD	MW77-UD	1/3/2022	-4.65	34.42	-0.135	4/5/2022	-4.99	34.61	-0.144
MW78-WD	MW78-UD	1/13/2022	0.39	32.69	0.012	4/7/2022	0.26	32.71	0.008
MW79-WD	MW79-UD	1/13/2022	-0.47	34.70	-0.014	4/7/2022	-0.40	34.70	-0.012
MW91-WD	MW91-UD	1/13/2022	-1.17	43.50	-0.027	4/7/2022	-1.34	43.50	-0.031
MW93-WD	MW93-UD	1/13/2022	1.96	21.71	0.090	4/7/2022	2.28	21.76	0.105
MW-EW-1	MW-EW-1LC	1/3/2022	-2.46	17.22	-0.143	4/4/2022	-2.42	17.17	-0.141
MW-EW-1	MW-EW-1LCRA	1/3/2022	-6.99	38.32	-0.182	4/4/2022	-7.03	38.27	-0.184
MW-EW-2	MW-EW-2LC	1/3/2022	-1.90	16.26	-0.117	4/4/2022	-1.78	16.14	-0.110
NTES-EW1	B-712-UD	1/19/2022	-1.65	24.40	-0.068	4/12/2022	-1.49	24.40	-0.061
BM-15I-15N	PM-15I-UD	1/14/2022	10.25	20.26	0.506	4/7/2022	10.22	20.27	0.504
U-701-WD	U-701	1/3/2022	U-701-WD Dry			4/4/2022	U-701-WD Dry		

a/ The midpoint of the saturated portion of the screen interval is used to calculate the vertical distance between well pairs.

b/ ft = feet

c/ Groundwater elevations are presented in Table 4.2.

d/ A negative value indicates a downward gradient and a positive value indicates an upward gradients.

Highlighted cells indicate upward gradients

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Sample ID	Sample Type	Location [a/]	Water-Bearing Unit[b/]	Sampling Frequency[c/]	Date of Last Sample Collection[d/]	1st Quarter 2022	2nd Quarter 2022	3rd Quarter 2022[e/]	4th Quarter 2022[e/]
B-313	Compliance/Effectiveness/B-326-UD & B-313 RAWP[f/]	NB	WD	Semi-annual (Compliance)/Quarterly (RAWP & North End Monitoring)	11/16/2021	DRY	DRY	X	X
B-313-UD	Compliance	NB	UNWD	Biennial	12/7/2020			X	
B-314	Compliance/Effectiveness	NB	WD	Semi-annual	4/13/2022		4/13/2022		X
B-314-UD	Compliance	NB	UNWD	Biennial	8/5/2020			X	
B-321	B-326-UD & B-313 RAWP	NB	WD	Quarterly	8/30/2021	DRY	DRY	X	X
B-326-UD	Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Molybdenum Investigation	NB	UNWD	Biennial (Compliance)/Quarterly (RAWP, North End Monitoring & Molybdenum Investigation)	4/14/2022	2/8/2022	4/14/2022	X	X
B-326-WD	Compliance/Effectiveness/North End Monitoring/Molybdenum Investigation	NB	WD	Semi-annual (Compliance)/Quarterly (North End Monitoring & Molybdenum Investigation)	4/14/2022	2/8/2022	4/14/2022	X	X
B-327-UD	Compliance	NB	UNWD	Biennial	8/26/2020			X	
B-712-LD	Compliance	INT	UNWD	Biennial	9/2/2020			X	
BM-11X-100N	Compliance/Effectiveness	EB	WD	Semi-annual	5/18/2022		5/18/2022		X
BM-11X-100S	Compliance/Effectiveness	EB	WD	Semi-annual	5/18/2022		5/18/2022		X
BM-15E2	Compliance	EB	WD	Semi-annual	4/26/2022		4/26/2022		X
BM-15N6	Compliance/Effectiveness	EB	WD	Semi-annual	4/25/2022		4/25/2022		X
GW-106	Compliance	NB	WD	Semi-annual	4/18/2022		4/18/2022		X
GW-108A	Compliance	NB	UNWD	Biennial	8/19/2020			X	
GW-109	Compliance	NB	WD	Semi-annual	6/1/2020		DRY		X
MNA-01	Effectiveness	INT	WD	Semi-annual	5/19/2022		5/19/2022		X
MNA-03	Effectiveness	INT	WD	Semi-annual	5/19/2022		5/19/2022		X
MW05-WD	North End Monitoring	NE	WD	Semi-annual	3/1/2022	3/1/2022		X	
MW102-WD	North End Monitoring	NB	WD	Quarterly	4/28/2022	1/24/2022	4/28/2022	X	X
MW103-WD	North End Monitoring	NE	WD	Quarterly	5/9/2022	2/7/2022	5/9/2022	X	X
MW105-WD	Compliance	EB	WD	Semi-annual	4/20/2022		4/20/2022		X
MW106-UD	Compliance	EB	UNWD	Biennial	8/26/2020			X	
MW107-UD	Compliance	EB	UNWD	Biennial	8/20/2020			X	
MW108-WD	Compliance	EB	WD	Semi-annual	4/21/2022		4/21/2022		X
MW113-EW-1	North End Monitoring/Molybdenum Investigation	NE	WD	Quarterly	4/19/2022	1/25/2022	4/19/2022	X	X
MW113-UD	North End Monitoring/Molybdenum Investigation	NE	UNWD	Quarterly (RAWP & North End Monitoring)/Monthly (Molybdenum Investigation)	6/15/2022	1/25/2022 2/8/2022 3/8/2022	4/5/2022 5/17/2022 6/15/2022	X	X

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Sample ID	Sample Type	Location [a/]	Water-Bearing Unit[b/]	Sampling Frequency[c/]	Date of Last Sample Collection[d/]	1st Quarter 2022	2nd Quarter 2022	3rd Quarter 2022[e/]	4th Quarter 2022[e/]
MW113-WD	Molybdenum Investigation	NE	WD	Bi-weekly	6/29/2022	1/11/2022 1/25/2022 2/8/2022 2/22/2022 3/8/2022 3/22/2022	4/5/2022 4/19/2022 5/3/2022 5/17/2022 6/7/2022 6/15/2022 6/29/2022	X	X
MW114-WD	North End Monitoring	NE	WD	Quarterly	5/9/2022	1/20/2022	5/9/2022	X	X
MW117-WD	North End Monitoring	NE	WD	Quarterly	5/9/2022	1/20/2022	5/9/2022	X	X
MW118-WD	North End Monitoring	NE	WD	Quarterly	5/9/2022	1/20/2022	5/9/2022	X	X
MW121-WDR	North End Monitoring	NE	WD	Semi-annual	1/26/2022	1/26/2022		X	
MW122-WDR	North End Monitoring	NE	WD	Semi-annual	1/26/2022	1/26/2022		X	
MW123-WD	North End Monitoring	NE	WD	Semi-annual	1/26/2022	1/26/2022		X	
MW124-WD	North End Monitoring	NE	WD	Semi-annual	1/27/2022	1/27/2022		X	
MW125-WD	North End Monitoring	NE	WD	Semi-annual	1/27/2022	1/27/2022		X	
MW129-WD	North End Monitoring	NE	WD	Semi-annual	2/28/2022	2/28/2022		X	
MW132-WD	North End Monitoring	NE	WD	Quarterly	5/10/2022	1/31/2022	5/10/2022	X	X
MW135-WD	North End Monitoring	NE	WD	Semi-annual	2/23/2022	2/23/2022		X	
MW141-WD	North End Monitoring	NE	WD	Semi-annual	2/15/2022	2/15/2022		X	
MW142-WD	North End Monitoring	NE	WD	Semi-annual	2/23/2022	2/23/2022		X	
MW144-WD	North End Monitoring	NE	WD	Semi-annual	2/15/2022	2/15/2022		X	
MW151-WD	North End Monitoring	NE	WD	Quarterly	5/16/2022	1/31/2022	5/16/2022	X	X
MW153-EW-1	North End Monitoring	NE	WD	Quarterly	4/27/2022	1/27/2022	4/27/2022	X	X
MW154-EW-1	North End Monitoring	NE	WD	Quarterly	4/28/2022	1/27/2022	4/28/2022	X	X
MW155-EW-1	North End Monitoring	NE	WD	Quarterly	5/2/2022	1/31/2022	5/2/2022	X	X
MW156-EW-1	North End Monitoring	NE	WD	Quarterly	5/2/2022	2/9/2022	5/2/2022	X	X
MW156-WD	North End Monitoring	NE	WD	Quarterly	5/16/2022	2/10/2022	5/16/2022	X	X
MW157-WD	North End Monitoring	NE	WD	Quarterly	5/16/2022	2/10/2022	5/16/2022	X	X
MW160-WD	North End Monitoring	NE	WD	Quarterly	4/26/2022	1/31/2022	4/26/2022	X	X
MW170-EW-1	RAWP/MW77 Response Action/Molybdenum Investigation	EB	WD	Quarterly	5/10/2022	1/25/2022	5/10/2022	X	X
MW176-DEN	North End Monitoring	NE	Upper Denver	Semi-annual	2/15/2022	2/15/2022		X	
MW179-UDEN	North End Monitoring	NE	UNWEATHERED DENVER	Semi-annual	3/1/2022	3/1/2022		X	
MW23-C-SD	Compliance	EB	UNWD	Biennial	2/18/2021			X	
MW23-UPPER-C	Compliance	EB	WD	Semi-annual	4/20/2022		4/20/2022		X

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Sample ID	Sample Type	Location [a/]	Water-Bearing Unit[b/]	Sampling Frequency[c/]	Date of Last Sample Collection[d/]	1st Quarter 2022	2nd Quarter 2022	3rd Quarter 2022[e/]	4th Quarter 2022[e/]
MW36-WDR	Compliance	WB	WD	Semi-annual	5/10/2022		5/10/2022		X
MW38-1028N-256E	MW38 Source Control	WB	WD	Semi-annual	4/27/2022		4/27/2022		X
MW38-170S-140W	MW38 Source Control	WB	WD	Semi-annual	4/27/2022		4/27/2022		X
MW38-825S-445E	MW38 Source Control	WB	WD	Semi-annual	4/27/2022		4/27/2022		X
MW38-830N-230E	Compliance	WB	WD	Semi-annual	4/13/2022		4/13/2022		X
MW42-UD	Compliance	WB	UNWD	Biennial	8/31/2020			X	
MW43-WD	Compliance	WB	WD	Semi-annual	4/26/2022		4/26/2022		X
MW54-WD	Compliance	EB	WD	Semi-annual	4/18/2022		4/18/2022		X
MW60-WD	Compliance	EB	WD	Semi-annual	4/26/2022		4/26/2022		X
MW62-WDR	Compliance/Effectiveness	NB	WD	Semi-annual	4/19/2022		4/19/2022		X
MW70-WD	VES Performance	EB	WD	Semi-annual	5/3/2022		5/3/2022		X
MW71-WD	Compliance	EB	WD	Semi-annual	4/19/2022		4/19/2022		X
MW72-UD	Compliance	EB	UNWD	Biennial	8/20/2020			X	
MW74-WD	Compliance	NB	WD	Semi-annual	4/13/2022		4/13/2022		X
MW74-UD	Compliance	NB	UNWD	Biennial	8/6/2020			X	
MW76-UD	Compliance	NB	UNWD	Biennial	8/13/2020			X	
MW77-EW-1	North End Monitoring	EB	WD	Quarterly	4/28/2022	1/24/2022	4/28/2022	X	X
MW77-EW-2	North End Monitoring	EB	WD	Quarterly	4/28/2022	1/24/2022	4/28/2022	X	X
MW77-WD	Compliance	EB	WD	Semi-annual	4/18/2022		4/18/2022		X
MW78-WD	Compliance	EB	WD	Semi-annual	4/18/2022		4/18/2022		X
MW78-UD	Compliance	EB	UNWD	Biennial	2/23/2021			X	
MW90-WD	Compliance	EB	WD	Semi-annual	5/17/2022		5/17/2022		X
MW90-UD	Compliance	EB	UNWD	Biennial	5/18/2020			X	
MW91-WD	Compliance	EB	WD	Semi-annual	5/3/2022		5/3/2022		X
MW91-UD	Compliance	EB	UNWD	Biennial	8/13/2020			X	
MW98-WD	North End Monitoring	NB	WD	Quarterly	4/28/2022	1/24/2022	4/28/2022	X	X
NBBW-IW-3[g/]	Molybdenum Investigation	NB	WD	Quarterly	8/5/2021	DRY	DRY	X	X
PM-13X	Effectiveness	EB	WD	Semi-annual	5/5/2022		5/5/2022		X
PM-14X	Compliance/Effectiveness	EB	WD	Semi-annual	4/21/2022		4/21/2022		X
PM-3X	Effectiveness	WB	WD	Semi-annual	5/5/2022		5/5/2022		X
PM-6X	Effectiveness	SB	WD	Semi-annual	5/5/2022		5/5/2022		X
PM-6X-UD	Compliance	SB	UNWD	Biennial	9/9/2020			X	
Private Well 1	Homeownwer Well	NE	Upper Denver	Annual	6/7/2022		6/7/2022		
Private Well 2	Homeownwer Well	NE	Denver	Annual	6/7/2022		6/7/2022		
PTP-11	Molybdenum Investigation	NB	WD	Quarterly	5/11/2022	2/7/2022	5/11/2022	X	X

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Sample ID	Sample Type	Location [a/]	Water-Bearing Unit[b/]	Sampling Frequency[c/]	Date of Last Sample Collection[d/]	1st Quarter 2022	2nd Quarter 2022	3rd Quarter 2022[e/]	4th Quarter 2022[e/]
PTP-12	North End Monitoring/Molybdenum Investigation	NB	WD	Quarterly	5/11/2022	2/7/2022 2/14/2022	5/11/2022	X	X
PTP-13	North End Monitoring/Molybdenum Investigation	NB	WD	Quarterly	5/12/2022	3/1/2022	5/12/2022	X	X
PTP-14	North End Monitoring/Molybdenum Investigation	NB	WD	Quarterly	6/2/2020	DRY	DRY	X	X
U-518R-WD	Compliance	EB	WD	Semi-annual	4/21/2022		4/21/2022		X

a/ Location = geographic location at the site
- EB = East Boundary
- WB = West Boundary
- SB = South Boundary
- INT = Interior
- NB = North Boundary
- NE = North End
- NT = North Toe
- EXT-S = Exterior South

b/ Water-bearing unit = formation or zone in which well screen is located
Formation/zone designations are as follow:
- Alluvium = Alluvium
- WD = Weathered Dawson Formation
- UNWD = Unweathered Dawson Formation
- DEN = Upper part of Denver Formation
- UDEN = Unweathered Denver Formation
- Lignite = "Lignite zone" in Denver Formation

c/ Represents frequency for long term monitoring.

d/ Last sampling date - may be for 1,4-dioxane only or for full contaminant of concern list

e/ An "x" indicates that the well is scheduled to be sampled during the 3rd and/or 4th quarter of 2022

f/ RAWP = Response Action Work Plan

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
B-314	1,1-Dichloroethane	4/13/2022	1.5		µg/L	1
B-314	Nitrogen, Nitrate	4/13/2022	890		µg/L	500
B-326-UD	1,4-Dioxane	2/8/2022	4.5		µg/L	0.9
B-326-UD	1,4-Dioxane	4/14/2022	4.6		µg/L	0.9
B-326-UD	Molybdenum, Dissolved	2/8/2022	4.7	J	µg/L	20
B-326-UD	Molybdenum, Dissolved	4/14/2022	6	J	µg/L	20
B-326-WD	1,4-Dioxane	2/8/2022	3.6		µg/L	0.9
B-326-WD	1,4-Dioxane	4/14/2022	3.2		µg/L	0.9
B-326-WD	Cadmium	4/14/2022	0.54	J	µg/L	5
B-326-WD	Molybdenum, Dissolved	2/8/2022	120		µg/L	20
B-326-WD	Molybdenum, Dissolved	4/14/2022	100		µg/L	20
B-326-WD	Nitrogen, Nitrate	4/14/2022	360	J	µg/L	500
BM-11X-100N	1,1-Dichloroethane	5/18/2022	29		µg/L	1
BM-11X-100N	1,4-Dioxane	5/18/2022	0.1	J	µg/L	0.9
BM-11X-100N	Cadmium	5/18/2022	0.43	J	µg/L	5
BM-11X-100N	Chloroform	5/18/2022	1.1		µg/L	1
BM-11X-100N	Nitrogen, Nitrate	5/18/2022	12000		µg/L	2500
BM-11X-100N	Nitrogen, Nitrite	5/18/2022	400	J	µg/L	500
BM-11X-100N	Tetrachloroethene	5/18/2022	4.9		µg/L	1
BM-11X-100N	Trichloroethene	5/18/2022	4.4		µg/L	1
BM-11X-100S	1,1-Dichloroethane	5/18/2022	4.8		µg/L	1
BM-11X-100S	1,1-Dichloroethene	5/18/2022	0.63	J	µg/L	1
BM-11X-100S	Arsenic	5/18/2022	4.8	J	µg/L	15
BM-11X-100S	Cadmium	5/18/2022	0.58	J	µg/L	5
BM-11X-100S	Chloroform	5/18/2022	1.2		µg/L	1
BM-11X-100S	Nitrogen, Nitrate	5/18/2022	11000		µg/L	2500
BM-11X-100S	Nitrogen, Nitrite	5/18/2022	400	J	µg/L	500
BM-11X-100S	Tetrachloroethene	5/18/2022	1.2		µg/L	1
BM-11X-100S	Trichloroethene	5/18/2022	1.3		µg/L	1
BM-15E2	1,1-Dichloroethane	4/26/2022	1.5		µg/L	1
BM-15E2	Nitrogen, Nitrate	4/26/2022	18000		µg/L	5000
BM-15N6	1,1-Dichloroethane	4/25/2022	1.6		µg/L	1
BM-15N6	Nitrogen, Nitrate	4/25/2022	34000		µg/L	5000
BM-15N6	Tetrachloroethene	4/25/2022	2		µg/L	1
GW-106	Nitrogen, Nitrate	4/18/2022	5600		µg/L	500
M105-WD	Nitrogen, Nitrate	4/20/2022	220	J	µg/L	500
MNA-01	1,1-Dichloroethane	5/19/2022	59		µg/L	10
MNA-01	1,2-Dichloroethane	5/19/2022	27		µg/L	10
MNA-01	1,4-Dioxane	5/19/2022	8600		µg/L	2000
MNA-01	Benzene	5/19/2022	8.6	J	µg/L	10
MNA-01	Cadmium	5/19/2022	0.65	J	µg/L	5
MNA-03	1,1-Dichloroethane	5/19/2022	120		µg/L	4
MNA-03	1,2-Dichloroethane	5/19/2022	3.1	J	µg/L	4
MNA-03	1,4-Dioxane	5/19/2022	3600		µg/L	800
MNA-03	Arsenic	5/19/2022	6.8	J	µg/L	15
MNA-03	Benzene	5/19/2022	23		µg/L	4

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MNA-03	Cadmium	5/19/2022	0.58	J	µg/L	5
MNA-03	Ethylbenzene	5/19/2022	0.86	J	µg/L	4
MNA-03	Toluene	5/19/2022	1	J	µg/L	4
MNA-03	Trans-1,2-Dichloroethene	5/19/2022	0.66	J	µg/L	2
MW05-WD	1,4-Dioxane	3/1/2022	3.6		µg/L	0.9
MW102-WD	1,4-Dioxane	1/24/2022	0.92		µg/L	0.9
MW102-WD	1,4-Dioxane	4/28/2022	1.2		µg/L	0.9
MW103-WD	1,4-Dioxane	2/7/2022	0.35	J	µg/L	0.9
MW103-WD	1,4-Dioxane	5/9/2022	0.27	J	µg/L	0.9
MW108-WD	Cadmium	4/21/2022	0.55	J	µg/L	5
MW108-WD	Chloroform	4/21/2022	0.46	J	µg/L	1
MW108-WD	Nitrogen, Nitrate	4/21/2022	10000		µg/L	2500
MW113-EW-1	1,4-Dioxane	1/25/2022	99		µg/L	0.9
MW113-EW-1	1,4-Dioxane	4/19/2022	89		µg/L	0.9
MW113-EW-1	Molybdenum, Dissolved	4/19/2022	6500		µg/L	20
MW113-EW-1	Molybdenum, Total	4/19/2022	6400		µg/L	20
MW113-EW-1	Nitrogen, Nitrate	1/25/2022	210	J	µg/L	500
MW113-EW-1	Nitrogen, Nitrate	4/19/2022	150	J	µg/L	500
MW113-UD	1,4-Dioxane	1/25/2022	59		µg/L	0.9
MW113-UD	1,4-Dioxane	5/17/2022	57		µg/L	0.9
MW113-UD	Molybdenum, Dissolved	1/25/2022	830		µg/L	20
MW113-UD	Molybdenum, Dissolved	2/8/2022	770		µg/L	20
MW113-UD	Molybdenum, Dissolved	3/8/2022	740		µg/L	20
MW113-UD	Molybdenum, Dissolved	4/5/2022	780		µg/L	20
MW113-UD	Molybdenum, Dissolved	5/17/2022	680		µg/L	20
MW113-UD	Molybdenum, Dissolved	6/15/2022	640		µg/L	20
MW113-UD	Molybdenum, Total	1/25/2022	700		µg/L	20
MW113-UD	Molybdenum, Total	2/8/2022	740		µg/L	20
MW113-UD	Molybdenum, Total	3/8/2022	770		µg/L	20
MW113-UD	Molybdenum, Total	4/5/2022	800		µg/L	20
MW113-UD	Molybdenum, Total	5/17/2022	750		µg/L	20
MW113-UD	Molybdenum, Total	6/15/2022	650		µg/L	20
MW113-WD	1,4-Dioxane	5/3/2022	36		µg/L	0.9
MW113-WD	Molybdenum, Dissolved	1/11/2022	23000		µg/L	200
MW113-WD	Molybdenum, Dissolved	1/25/2022	21000		µg/L	200
MW113-WD	Molybdenum, Dissolved	2/8/2022	27000		µg/L	200
MW113-WD	Molybdenum, Dissolved	2/22/2022	25000		µg/L	200
MW113-WD	Molybdenum, Dissolved	3/8/2022	24000		µg/L	200
MW113-WD	Molybdenum, Dissolved	3/22/2022	30000		µg/L	200
MW113-WD	Molybdenum, Dissolved	4/5/2022	32000		µg/L	200
MW113-WD	Molybdenum, Dissolved	4/19/2022	31000		µg/L	200
MW113-WD	Molybdenum, Dissolved	5/3/2022	29000		µg/L	200
MW113-WD	Molybdenum, Dissolved	5/17/2022	29000		µg/L	200
MW113-WD	Molybdenum, Dissolved	6/7/2022	35000		µg/L	200
MW113-WD	Molybdenum, Dissolved	6/15/2022	31000		µg/L	200
MW113-WD	Molybdenum, Dissolved	6/29/2022	34000		µg/L	200

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW113-WD	Molybdenum, Total	1/11/2022	23000		µg/L	200
MW113-WD	Molybdenum, Total	1/25/2022	22000		µg/L	200
MW113-WD	Molybdenum, Total	2/8/2022	26000		µg/L	200
MW113-WD	Molybdenum, Total	2/22/2022	24000		µg/L	200
MW113-WD	Molybdenum, Total	3/8/2022	27000		µg/L	200
MW113-WD	Molybdenum, Total	3/22/2022	29000		µg/L	200
MW113-WD	Molybdenum, Total	4/5/2022	32000		µg/L	200
MW113-WD	Molybdenum, Total	4/19/2022	33000		µg/L	200
MW113-WD	Molybdenum, Total	5/3/2022	32000		µg/L	200
MW113-WD	Molybdenum, Total	5/17/2022	31000		µg/L	200
MW113-WD	Molybdenum, Total	6/7/2022	33000		µg/L	200
MW113-WD	Molybdenum, Total	6/15/2022	32000		µg/L	200
MW113-WD	Molybdenum, Total	6/29/2022	34000		µg/L	200
MW114-WD	1,4-Dioxane	1/20/2022	0.96		µg/L	0.9
MW114-WD	1,4-Dioxane	5/9/2022	0.89	J	µg/L	0.9
MW117-WD	1,4-Dioxane	1/20/2022	1.3		µg/L	0.9
MW117-WD	1,4-Dioxane	5/9/2022	1.2		µg/L	0.9
MW118-WD	1,4-Dioxane	1/20/2022	0.28	J	µg/L	0.9
MW118-WD	1,4-Dioxane	5/9/2022	0.22	J	µg/L	0.9
MW121-WDR	1,4-Dioxane	1/26/2022	0.77	J	µg/L	0.9
MW122-WDR	1,4-Dioxane	1/26/2022	1.9		µg/L	0.9
MW123-WD	1,4-Dioxane	1/26/2022	1.7		µg/L	0.9
MW124-WD	1,4-Dioxane	1/27/2022	0.48	J	µg/L	0.9
MW125-WD	1,4-Dioxane	1/27/2022	0.34	J	µg/L	0.9
MW129-WD	1,4-Dioxane	2/28/2022	4.7		µg/L	0.9
MW132-WD	1,4-Dioxane	1/31/2022	15		µg/L	0.9
MW132-WD	1,4-Dioxane	5/10/2022	10		µg/L	0.9
MW135-WD	1,4-Dioxane	2/23/2022	5.1		µg/L	0.9
MW141-WD	1,4-Dioxane	2/15/2022	2.2		µg/L	0.9
MW142-WD	1,4-Dioxane	2/23/2022	1.4		µg/L	0.9
MW151-WD	1,4-Dioxane	1/31/2022	4.8		µg/L	0.9
MW151-WD	1,4-Dioxane	5/16/2022	1.8		µg/L	0.9
MW153-EW-1	1,4-Dioxane	1/27/2022	3.3		µg/L	0.9
MW153-EW-1	1,4-Dioxane	4/27/2022	2.3		µg/L	0.9
MW154-EW-1	1,4-Dioxane	1/27/2022	1.7		µg/L	0.9
MW154-EW-1	1,4-Dioxane	4/28/2022	2.6		µg/L	0.9
MW155-EW-1	1,4-Dioxane	1/31/2022	0.49	J	µg/L	0.9
MW155-EW-1	1,4-Dioxane	5/2/2022	1.5		µg/L	0.9
MW156-EW-1	1,4-Dioxane	2/9/2022	0.45	J	µg/L	0.9
MW156-EW-1	1,4-Dioxane	5/2/2022	0.6	J	µg/L	0.9
MW156-WD	1,4-Dioxane	2/10/2022	0.19	J	µg/L	0.9
MW156-WD	1,4-Dioxane	5/16/2022	0.51	J	µg/L	0.9
MW160-WD	1,4-Dioxane	1/31/2022	3.7		µg/L	0.9
MW160-WD	1,4-Dioxane	4/26/2022	2.9		µg/L	0.9
MW170-EW-1	1,1,1-Trichloroethane	1/25/2022	1.8		µg/L	1
MW170-EW-1	1,1,1-Trichloroethane	5/10/2022	1.3		µg/L	1

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW170-EW-1	1,1-Dichloroethane	1/25/2022	3.7		µg/L	1
MW170-EW-1	1,1-Dichloroethane	5/10/2022	3.3		µg/L	1
MW170-EW-1	1,1-Dichloroethene	1/25/2022	3		µg/L	1
MW170-EW-1	1,1-Dichloroethene	5/10/2022	2.4		µg/L	1
MW170-EW-1	1,4-Dioxane	1/25/2022	14		µg/L	0.9
MW170-EW-1	1,4-Dioxane	5/10/2022	11		µg/L	0.9
MW170-EW-1	Acetone	5/10/2022	4.4	J	µg/L	10
MW170-EW-1	Cadmium	5/10/2022	0.31	J	µg/L	5
MW170-EW-1	cis-1,2-Dichloroethene	1/25/2022	9		µg/L	1
MW170-EW-1	cis-1,2-Dichloroethene	5/10/2022	8.2		µg/L	1
MW170-EW-1	Molybdenum, Dissolved	1/25/2022	1.3	J	µg/L	20
MW170-EW-1	Molybdenum, Total	1/25/2022	1.4	J	µg/L	20
MW170-EW-1	Nitrogen, Nitrate	1/25/2022	11000		µg/L	2500
MW170-EW-1	Nitrogen, Nitrate	5/10/2022	9700		µg/L	5000
MW170-EW-1	Tetrachloroethene	1/25/2022	1.2		µg/L	1
MW170-EW-1	Tetrachloroethene	5/10/2022	0.7	J	µg/L	1
MW170-EW-1	Trichloroethene	1/25/2022	0.49	J	µg/L	1
MW170-EW-1	Trichloroethene	5/10/2022	0.51	J	µg/L	1
MW176-DEN	1,4-Dioxane	2/15/2022	0.52	J	µg/L	0.9
MW179-UDEN	Molybdenum, Dissolved	3/1/2022	10	J	µg/L	20
MW23-UPPER-C	Nitrogen, Nitrate	4/20/2022	120	J	µg/L	500
MW23-UPPER-C	Nitrogen, Nitrite	4/20/2022	340	J	µg/L	500
MW36-WDR	Cadmium	5/10/2022	0.5	J	µg/L	5
MW36-WDR	Nitrogen, Nitrate	5/10/2022	18000		µg/L	5000
MW38-1028N-256E	1,1-Dichloroethane	4/27/2022	1.9		µg/L	1
MW38-1028N-256E	1,2-Dichloroethene	4/27/2022	0.55	J	µg/L	1
MW38-1028N-256E	1,4-Dioxane	4/27/2022	2		µg/L	0.9
MW38-1028N-256E	Bromodichloromethane	4/27/2022	0.29	J	µg/L	1
MW38-1028N-256E	Chloroform	4/27/2022	1.9		µg/L	1
MW38-1028N-256E	cis-1,2-Dichloroethene	4/27/2022	0.55	J	µg/L	1
MW38-1028N-256E	Tetrachloroethene	4/27/2022	0.46	J	µg/L	1
MW38-1028N-256E	Trichloroethene	4/27/2022	1		µg/L	1
MW38-170S-140W	1,1-Dichloroethane	4/27/2022	17		µg/L	1
MW38-170S-140W	1,2-Dichloroethene	4/27/2022	5.7		µg/L	1
MW38-170S-140W	1,4-Dioxane	4/27/2022	29		µg/L	0.9
MW38-170S-140W	1,4-Dioxane	4/27/2022	30		µg/L	20
MW38-170S-140W	Chloroform	4/27/2022	5.4		µg/L	1
MW38-170S-140W	cis-1,2-Dichloroethene	4/27/2022	5.7		µg/L	1
MW38-170S-140W	Dichlorodifluoromethane	4/27/2022	0.56	J	µg/L	2
MW38-170S-140W	Tetrachloroethene	4/27/2022	1.3		µg/L	1
MW38-170S-140W	Tetrahydrofuran	4/27/2022	2.6	J	µg/L	7
MW38-170S-140W	Trichloroethene	4/27/2022	3.9		µg/L	1
MW38-825S-445E	1,1-Dichloroethane	4/27/2022	2500		µg/L	400
MW38-825S-445E	1,1-Dichloroethene	4/27/2022	420		µg/L	400
MW38-825S-445E	1,2-Dichloroethane	4/27/2022	37000		µg/L	400
MW38-825S-445E	1,2-Dichloroethene	4/27/2022	540		µg/L	400

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW38-825S-445E	1,3-Dichlorobenzene	4/27/2022	76	J	µg/L	400
MW38-825S-445E	1,4-Dichlorobenzene	4/27/2022	390	J	µg/L	400
MW38-825S-445E	1,4-Dioxane	4/27/2022	2800		µg/L	90
MW38-825S-445E	Benzene	4/27/2022	160	J	µg/L	400
MW38-825S-445E	Chloroform	4/27/2022	140	J	µg/L	400
MW38-825S-445E	cis-1,2-Dichloroethene	4/27/2022	540		µg/L	400
MW38-825S-445E	m-Xylene & p-Xylene	4/27/2022	97	J	µg/L	800
MW38-825S-445E	Tetrahydrofuran	4/27/2022	2100	J	µg/L	2800
MW38-825S-445E	Trichloroethene	4/27/2022	210	J	µg/L	400
MW38-825S-445E	Vinyl Chloride	4/27/2022	1200		µg/L	400
MW38-825S-445E	Xylenes, Total	4/27/2022	97	J	µg/L	800
MW38-830N-230E	1,1-Dichloroethane	4/13/2022	3.3		µg/L	1
MW38-830N-230E	1,4-Dioxane	4/13/2022	4.2		µg/L	0.9
MW38-830N-230E	Bromodichloromethane	4/13/2022	0.99	J	µg/L	1
MW38-830N-230E	Chloroform	4/13/2022	3.8		µg/L	1
MW38-830N-230E	cis-1,2-Dichloroethene	4/13/2022	1.1		µg/L	1
MW38-830N-230E	Nitrogen, Nitrate	4/13/2022	8900		µg/L	500
MW38-830N-230E	Trichloroethene	4/13/2022	1.3		µg/L	1
MW43-WD	Nitrogen, Nitrate	4/26/2022	8500		µg/L	500
MW54-WD	Nitrogen, Nitrate	4/18/2022	4100		µg/L	500
MW62-WDR	1,4-Dioxane	4/19/2022	2.9		µg/L	0.9
MW62-WDR	Nitrogen, Nitrate	4/19/2022	120000		µg/L	25000
MW62-WDR	Nitrogen, Nitrite	4/19/2022	2100	J	µg/L	2500
MW71-WD	Nitrogen, Nitrate	4/19/2022	4700		µg/L	500
MW74-WD	Nitrogen, Nitrate	4/13/2022	3300		µg/L	500
MW77-EW-1	1,4-Dioxane	1/24/2022	2.5		µg/L	0.9
MW77-EW-1	1,4-Dioxane	4/28/2022	2.7		µg/L	0.9
MW77-EW-2	1,4-Dioxane	1/24/2022	0.09	J	µg/L	0.9
MW77-WD	1,1-Dichloroethene	4/18/2022	0.66	J	µg/L	1
MW77-WD	1,4-Dioxane	4/18/2022	12		µg/L	0.9
MW77-WD	Nitrogen, Nitrate	4/18/2022	13000	J	µg/L	500
MW77-WD	Tetrachloroethene	4/18/2022	0.74	J	µg/L	1
MW78-WD	Nitrogen, Nitrate	4/18/2022	190	J	µg/L	500
MW90-WD	Cadmium	5/17/2022	0.42	J	µg/L	5
MW90-WD	Nitrogen, Nitrate	5/17/2022	100	J	µg/L	500
MW91-WD	Cadmium	5/3/2022	0.21	J	µg/L	5
MW98-WD	1,4-Dioxane	1/24/2022	5.9		µg/L	0.9
MW98-WD	1,4-Dioxane	4/28/2022	7.8		µg/L	0.9
PM-13X	1,1,1-Trichloroethane	5/5/2022	0.2	J	µg/L	1
PM-13X	1,1-Dichloroethane	5/5/2022	18		µg/L	1
PM-13X	Chloroform	5/5/2022	0.53	J	µg/L	1
PM-13X	Tetrachloroethene	5/5/2022	0.69	J	µg/L	1
PM-13X	Trichloroethene	5/5/2022	0.92	J	µg/L	1
PM-14X	1,1-Dichloroethane	4/21/2022	3		µg/L	1
PM-14X	Cadmium	4/21/2022	0.43	J	µg/L	5
PM-14X	Chloroform	4/21/2022	0.26	J	µg/L	1

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
PM-14X	Nitrogen, Nitrate	4/21/2022	9600		µg/L	2500
PM-3X	1,1-Dichloroethane	5/5/2022	0.54	J	µg/L	1
PM-3X	Tetrachloroethene	5/5/2022	0.32	J	µg/L	1
PM-3X	Trichloroethene	5/5/2022	0.19	J	µg/L	1
PTP-11	Molybdenum, Dissolved	2/7/2022	6.4	J	µg/L	20
PTP-11	Molybdenum, Dissolved	5/11/2022	10	J	µg/L	20
PTP-11	Molybdenum, Total	2/7/2022	5.8	J	µg/L	20
PTP-11	Molybdenum, Total	5/11/2022	9.6	J	µg/L	20
PTP12	Molybdenum, Dissolved	2/7/2022	14	J	µg/L	20
PTP12	Molybdenum, Total	2/7/2022	15	J	µg/L	20
PTP-12	1,4-Dioxane	2/14/2022	7.1		µg/L	0.9
PTP-12	1,4-Dioxane	5/11/2022	4.8		µg/L	0.9
PTP-12	Molybdenum, Dissolved	5/11/2022	25		µg/L	20
PTP-12	Molybdenum, Total	5/11/2022	24		µg/L	20
PTP-13	1,4-Dioxane	3/1/2022	8.2		µg/L	0.9
PTP-13	1,4-Dioxane	5/12/2022	6.3		µg/L	0.9
PTP-13	Molybdenum, Dissolved	3/1/2022	620		µg/L	20
PTP-13	Molybdenum, Dissolved	5/12/2022	660		µg/L	20
PTP-13	Molybdenum, Total	3/1/2022	660		µg/L	20
PTP-13	Molybdenum, Total	5/12/2022	650		µg/L	20
U-518R-WD	1,1-Dichloroethane	4/21/2022	3.6		µg/L	1
U-518R-WD	1,2-Dichloroethane	4/21/2022	0.15	J	µg/L	1
U-518R-WD	Cadmium	4/21/2022	0.22	J	µg/L	5
U-518R-WD	Nitrogen, Nitrate	4/21/2022	140	J	µg/L	500
U-518R-WD	Trichloroethene	4/21/2022	0.78	J	µg/L	1

Shaded wells are compliance wells.

a/ Qualifiers:

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

b/ Units

µg/L = micrograms per liter

pCi/L = picocuries per liter

TABLE 4.6
SUMMARY OF COMPLIANCE MONITORING EVALUATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well	Compound	Date Range		Trend[a/]	Distribution	90% UCL[b/]	Mean	90% LCL[c/]	Performance Standard	Compliance Decision
B-313	1,4-Dioxane	NA	NA	NC	NC	NC	NC	NC	0.9	Well was dry -no samples collected this period, statistical evaluation could not be performed, considered in compliance
B-313	Nitrate	NA	NA	NC	NC	NC	NC	NC	0.9	Well was dry -no samples collected this period, statistical evaluation could not be performed, considered in compliance
B-326-UD	1,4-Dioxane	2/12/2020	4/14/2022	Decreasing	NC	5	4.628	4.256	0.9	Out of Compliance
B-326-UD	Nitrate	4/28/2015	2/4/2021	Decreasing	NC	NC	NC	NC	28,000	Not determined - Did not meet linear regression requirements, Potentially in compliance[f/]
B-326-WD	1,4-Dioxane	2/12/2020	4/14/2022	No trend	Normal	8.409	6.147	3.885	0.9	Out of Compliance
BM-11X-100N	Tetrachloroethene	10/20/2017	5/18/2022	No trend	Normal	6.429	6.05	5.671	5	Out of Compliance
BM-11X-100N	Trichloroethene	10/20/2017	5/18/2022	No trend	Normal	5.003	4.74	4.477	5	Indeterminant[g/]
BM-15N6	Nitrate	10/24/2017	4/25/2022	Decreasing	NC	NC	NC	NC	28,000	Not determined - Did not meet linear regression requirements, Potentially out of compliance[h/]
GW-109	1,4-Dioxane	NA	NA	NC	NC	NC	NC	NC	0.9	Well was dry -no samples collected this period, statistical evaluation could not be performed, considered in compliance
GW-109	Chloroform	NA	NA	NC	NC	NC	NC	NC	3.5	Well was dry -no samples collected this period, statistical evaluation could not be performed, considered in compliance
GW-109	Bromodichloromethane	NA	NA	NC	NC	NC	NC	NC	1	Well was dry -no samples collected this period, statistical evaluation could not be performed, considered in compliance
MW23-C-SD	1,4-Dioxane	3/15/2006	2/18/2021	No trend	NC	NC	NC	NC	0.9	Potentially in compliance[f/], 90% Nondetects - data not processed - 4th quarter 2020 results > GWPS but not verified by confirmation sample that was non detect.
MW38-830N-230E	1,4-Dioxane	11/1/2017	4/13/2022	No trend	Normal	7.897	6.12	4.343	0.9	Out of Compliance
MW38-830N-230E	Chloroform	11/1/2017	4/13/2022	Decreasing	NC	NC	NC	NC	3.5	Not determined - Did not meet linear regression requirements - a compliance determination could not be made
MW62-WDR	1,4-Dioxane	3/7/2018	4/19/2022	Decreasing	NC	3.117	2.962	2.807	0.9	Out of Compliance
MW62-WDR	Nitrate	3/7/2018	4/19/2022	No trend	Nonparametric	122,916	120,000	117,084	28,000	Out of Compliance
MW62-WDR	Nitrite	3/7/2018	4/19/2022	No trend	Normal	2,923	2,308	1,693	1,000	Out of Compliance
MW77-WD	1,4-Dioxane	10/26/2017	4/18/2022	No trend	Normal	10.03	8.02	6.01	0.9	Out of Compliance
MW106-UD	1,4-Dioxane	11/21/2006	8/26/2020	Decreasing	NC	NC	NC	NC	0.9	Not determined - Did not meet linear regression requirements, Potentially in compliance[f/], 90% Nondetects (decreasing trend due to decreasing MDL over time).

a/ Trend determined by Mann-Kendall trend test analysis. When there is an increasing or decreasing trend, least squares regression analysis is used to determine the UCL and LCL

b/ Upper Confidence Limit

c/ Lower Confidence Limit

d/ NA - Not applicable

e/ NC - Not calculated

f/ Potentially in compliance - a statistical determination could not be made but the preponderance of evidence (i.e., decreasing trend and recent results < performance standard) suggests the parameter is in compliance at this well.

g/ UCL above performance standard and LCL below performance standard - cannot determine potential for compliance

h/ Potentially out of compliance - a statistical determination could not be made but the preponderance of evidence (i.e., increasing trend and recent results > performance standard or all results > performance standard) suggests the parameter is out of compliance at this well.

Note: * Statistics performed per the 2018 GWMP

* For all other parameters for the above listed 11 wells and all 29 parameters in the other compliance monitoring wells, the maximum detection for any compound did not exceed the performance standard. Compliance statistics were not performed.

TABLE 4.7
SUMMARY OF SLURRY WALL GRADIENT CALCULATIONS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well Pair	Range of Head Differences (ft)		Mean of Differences	80% Lower Confidence Limit	95% Upper Confidence Limit	Gradient	Conclusion
	Minimum	Maximum	(ft)	(ft)	(ft)		
PM-1	-2.78	-0.31	-1.00	-1.33	-0.31	Inward Gradient exists	Wall is effective
PM-2	-7.09	-6.98	-7.01	-7.09	-6.85	Inward Gradient exists	Wall is effective
PM-3	0.17	0.73	0.55	0.45	0.76	Outward Gradient exists	Review water quality data
PM-4	-0.54	-0.27	-0.37	-0.44	-0.23	Inward Gradient exists	Wall is effective
PM-5	-1.23	-0.03	-0.87	-1.08	-0.42	Inward Gradient exists	Wall is effective
PM-6	3.83	4.15	4.02	3.96	4.14	Outward Gradient exists	Review water quality data
PM-7	-7.44	-6.54	-7.06	-7.23	-6.70	Inward Gradient exists	Wall is effective
PM-8	-10.17	-8.72	-9.35	-9.68	-8.64	Inward Gradient exists	Wall is effective
PM-9	-10.90	-7.77	-8.98	-9.44	-8.01	Inward Gradient exists	Wall is effective
PM-10	-5.67	-3.07	-4.35	-4.84	-3.30	Inward Gradient exists	Wall is effective
PM-11	-22.03	-19.05	-20.85	-21.15	20.20	Inward Gradient exists	Wall is effective
PM-12	-5.11	-4.29	-4.72	-4.85	-4.42	Inward Gradient exists	Wall is effective
PM-13	Not calculated	Not calculated	Not calculated	Not calculated	Not calculated	PM-13I was dry	Continue to review water quality data
PM-14	0.96	1.16	1.04	0.94	1.18	Outward Gradient exists	Review water quality data
PM-15	-13.84	-11.87	-12.67	-12.86	-12.27	Inward Gradient exists	Wall is effective

ft = feet

TABLE 4.8
NORTH END MONITORING - NITRATE AND 1,4-DIOXANE (NEW DATA ONLY)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Sample Date	1,4-Dioxane (µg/L)[a/]	Nitrogen, Nitrate (µg/L)	VOCs[b/]	Anions	Metals
31	B-314	4/13/2022	0.9 U	890	X[c/]	X	X
31	B-326-UD	2/8/2022	4.5				X
31	B-326-UD	4/14/2022	4.6				X
31	B-326-WD	2/8/2022	3.6				X
31	B-326-WD	4/14/2022	3.2	360 J	X	X	X
31	MW05-WD	3/1/2022	3.6				
31	MW113-EW-1	1/25/2022	99	210 J			
31	MW113-EW-1	4/19/2022	89	150 J			X
31	MW113-UD	1/25/2022	59				X
31	MW113-UD	5/17/2022	57				X
31	MW113-WD	5/3/2022	36				X
31	MW114-WD	1/20/2022	0.96				
31	MW114-WD	5/9/2022	0.89 J				
31	MW117-WD	1/20/2022	1.3				
31	MW117-WD	5/9/2022	1.2				
31	MW118-WD	1/20/2022	0.28 J				
31	MW118-WD	5/9/2022	0.22 J				
31	MW121-WDR	1/26/2022	0.77 J				
31	MW122-WDR	1/26/2022	1.9				
31	MW123-WD	1/26/2022	1.7				
31	MW124-WD	1/27/2022	0.48 J				
31	MW125-WD	1/27/2022	0.34 J				
31	MW129-WD	2/28/2022	4.7				
31	MW132-WD	1/31/2022	15				
31	MW132-WD	5/10/2022	10				
30	MW135-WD	2/23/2022	5.1				
30	MW141-WD	2/15/2022	2.2				
19	MW142-WD	2/23/2022	1.4				
24	MW144-WD	2/15/2022	0.9 U				
31	MW151-WD	1/31/2022	4.8				
31	MW151-WD	5/16/2022	1.8				
31	MW153-EW-1	1/27/2022	3.3				
31	MW153-EW-1	4/27/2022	2.3				
31	MW154-EW-1	1/27/2022	1.7				
31	MW154-EW-1	4/28/2022	2.6				
31	MW155-EW-1	1/31/2022	0.49 J				
31	MW155-EW-1	5/2/2022	1.5				
31	MW156-EW-1	2/9/2022	0.45 J				
31	MW156-EW-1	5/2/2022	0.6 J				
31	MW156-WD	2/10/2022	0.19 J				
31	MW156-WD	5/16/2022	0.51 J				
31	MW157-WD	2/10/2022	0.9 U				
31	MW157-WD	5/16/2022	0.9 U				
31	MW160-WD	1/31/2022	3.7				
31	MW160-WD	4/26/2022	2.9				
13	MW176-DEN	2/15/2022	0.52 J				
31	MW179-UDEN	3/1/2022	0.9 U				X
19	Private Well 1	6/7/2022	0.9 U				

TABLE 4.8
NORTH END MONITORING - NITRATE AND 1,4-DIOXANE (NEW DATA ONLY)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Sample Date	1,4-Dioxane (µg/L)[a/]	Nitrogen, Nitrate (µg/L)	VOCs[b/]	Anions	Metals
30	Private Well 2	6/7/2022	0.9 U				
31	PTP-12	2/14/2022	7.1				
31	PTP-12	5/11/2022	4.8				X
31	PTP-13	3/1/2022	8.2				X
31	PTP-13	5/12/2022	6.3				X

a/ µg/L = micrograms per liter

b/ VOCs = volatile organic compounds

c/ X = indicates the sample was analyzed for at least one compound within the group.

Final Q definitions:

J+ = a "J" qualifier indicating positive bias in the associated result

J=The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

U= The analyte was analyzed for and is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ=The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

TABLE 4.9
NBBW & NORTH END EXTRACTION SYSTEMS - VOLUME AND MASS REMOVED
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Mass Removal of 1,4-Dioxane from North End Groundwater Extraction January through June 2022 (1H22)			
Extraction Well	**Volume Removed (gallons)**	**Mass (grams)**	**Mass (pounds)**
MW153-EW-1	1,090,368	11.34	0.025
MW154-EW-1	353,808	2.43	0.005
MW155-EW-1	454,752	1.35	0.003
MW156-EW-1	0	0.00	0.000
MW160-WD	120,240	1.52	0.003
MW118-WD	0	0.00	0.000
MW114-WD	0	0.00	0.000
MW77-EW-2	0	0.00	0.000
MW102-WD	234,432	0.92	0.002
MW77-EW-1	11,880	0.12	0.000
MW98-WD	9,230	0.26	0.001
MW170-EW-1	3,220,848	156.92	0.346
MW113-EW-1	472,752	175.70	0.387
MW113-UD	4,709	1.12	0.002
B-321	0	0.00	0.000
NBBW-IW-3	0	0.00	0.000
TOTAL	5,973,019	351.66	0.775

Total Mass Removal of 1,4-Dioxane from North End Groundwater Extraction Cumulative through 6/30/22			
Extraction Well	**Volume Removed (gallons)**	**Mass (grams)**	**Mass (pounds)**
MW153-EW-1	22,626,840	427.0	0.941
MW154-EW-1	15,203,237	346.8	0.764
MW155-EW-1	14,206,096	213.8	0.471
MW156-EW-1	6,103,619	174.0	0.384
MW160-WD	6,202,594	259.0	0.571
MW118-WD	1,490,372	123.7	0.273
MW114-WD	805,136	58.4	0.129
MW77-EW-2	149,192	8.6	0.019
MW102-WD	7,503,212	257.4	0.568
MW77-EW-1	292,584	14.7	0.032
MW98-WD	763,487	119.4	0.263
MW170-EW-1	67,419,504	5538.1	12.210
MW113-EW-1	14,704,351	1719.8	3.791
MW113-UD	166,366	41.9	0.092
B-321	1,777,661	160.1	0.353
NBBW-IW-3	988,762	488.4	1.077
TOTAL	160,403,015	9,950.9	21.9

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																			
Well	**Sample Date**	**PCE**	**Q[b/]**	**TCE**	**Q**	**cis-1,2-DCE**	**Q**	**1,1-DCE**	**Q**	**1,1,1-TCA**	**Q**	**1,2-DCA**	**Q**	**1,1-DCA**	**Q**	**1,4-Dioxane**	**Q**	**NO3**	**Q**
Performance Standard→		**5**		**5**		**70**		**7**		**200**		**5**		**990**		**0.9**		**28**	
MW62-WDR	7/25/2016	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	5.6		130	
MW62-WDR	11/9/2016	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	4.4		150	
MW62-WDR	2/7/2017	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	5.2		140	
MW62-WDR	5/17/2017	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	5.3		110	
MW62-WDR	8/1/2017	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	5.8		110	
MW62-WDR	10/13/2017	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	4.6		120	
MW62-WDR	3/7/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.9		110	
MW62-WDR	5/10/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	4.2		120	
MW62-WDR	7/31/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.8		120	
MW62-WDR	5/14/2019	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.9		120	
MW62-WDR	12/17/2019	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.5		120	
MW62-WDR	5/14/2020	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.4		130	
MW62-WDR	11/11/2020	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.4		130	J
MW62-WDR	4/27/2021	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.3		120	
MW62-WDR	10/27/2021	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3.2		110	
MW62-WDR	4/19/2022	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	2.9		120	
B-323-WD	3/4/2011	1.5		0.85	J	0.98	J	2.5		2.2		0.13	U	3.7		53			
MW170-WD	3/7/2011	5.4		2.1		3.8		11		6.9		0.13	U	8.3		72			
MW170-EW-1	1/5/2012	11		3.6		8		26		11		0.55	J	15		150		110	
MW170-EW-1	8/22/2012	5		2		3.4		11		2.7		0.33	J	10		77		33	
MW170-EW-1	9/19/2012	4.5		2.2		3		11		3.1		0.35	J	9.3		72		27	
MW170-EW-1	10/22/2012	4.3		1.5		2.2		9.2		2		0.19	J	6.2		56		24	
MW170-EW-1	11/13/2012	3.8		1.5		2.2		8.7		1.9		0.13	U	5.9		46		19	
MW170-EW-1	12/10/2012	4.2		1.6		2		8		2.1		0.13	U	6.2		40		17	
MW170-EW-1	1/30/2013	5.2		1.8		1.9		11		2.7		0.17	J	6.9		45		13	
MW170-EW-1	2/20/2013	5.4		2.4		3.2		14		3.1		0.13	U	10		71		12	
MW170-EW-1	3/14/2013	8.3		3.5		4.6		21		4		0.34	J	15		79		8.8	
MW170-EW-1	4/22/2013	5.8		2.2		2.5		11		1.6		0.13	J	7.9		64		5.5	
MW170-EW-1	5/15/2013	5.2		2.1		2.7		9		1.6		0.13	U	8.1		50		5.5	
MW170-EW-1	6/17/2013	4.9		1.9		2.7		8		1.6		0.13	U	6.5		39		5.3	
MW170-EW-1	7/29/2013	4		1.4		2.1		6.2		1.2		0.13	U	5.1		32		5.3	
MW170-EW-1	8/21/2013	4.8		1.5		2		6.8		1.7		0.13	U	5.4		29		5	
MW170-EW-1	9/18/2013	3.3		1.1		1.6		4.4		0.93		0.13	U	3.7		32		5.3	
MW170-EW-1	11/11/2013	2.7		1.1		1.4		4.6		1		0.13	U	3.7		27		5.8	
MW170-EW-1	2/20/2014	1.7		0.64	J	0.8	J	2.5		0.72	J	0.13	U	2.6		15		5.1	
MW170-EW-1	5/28/2014	2.1		0.87	J	1		3.2		0.88	J	0.13	U	3.1		18		6.2	
MW170-EW-1	9/4/2014	2.3		0.86	J	1.9		4.3		1.1		0.13	U	3.1		22		14	
MW170-EW-1	12/3/2014	1.5		0.56	J	2		3.1		1.1		0.13	U	2.6		17		13	
MW170-EW-1	3/5/2015	1.7		0.59	J	2.3		2.9		1.3		0.13	U	2.2		12		14	

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																	
Well	Sample Date	PCE	Q[b/]	TCE	Q	cis-1,2-DCE	Q	1,1-DCE	Q	1,1,1-TCA	Q	1,2-DCA	Q	1,1-DCA	Q	1,4-Dioxane	Q	NO3	Q
Performance Standard→		5		5		70		7		200		5		990		0.9		28	
MW170-EW-1	6/18/2015	1.2		0.4	J	1.9		2.3		1.2		0.13	U	1.9		9.9		19	
MW170-EW-1	9/16/2015	1.1		0.43	J	1.4		1.8		0.98	J	0.13	U	1.6		8.8		22	
MW170-EW-1	12/10/2015	0.87	J	0.3	J	0.82	J	1.1		0.49	J	0.13	U	0.99	J	6.7		22	
MW170-EW-1	2/24/2016	0.76	J	0.23	J	0.8	J	0.94	J	0.48	J	0.13	U	0.82	J	5.3		18	
MW170-EW-1	6/23/2016	0.7	J	0.26	J	1.4		1.3		0.73	J	0.13	U	1.2		6		24	
MW170-EW-1	12/19/2016	0.56	J	0.19	J	0.69	J	0.79	J	0.42	J	0.13	U	0.69	J	3.9		21	
MW170-EW-1	3/13/2017	0.74	J	0.29	J	1.3		1.3		0.77	J	0.13	U	1.2		3.7		18	
MW170-EW-1	6/26/2017	0.61	J	0.21	J	0.98	J	1.2		0.55	J	0.13	U	0.92	J	4.6		15	
MW170-EW-1	9/11/2017	0.76	J	0.21	J	1.2		1.3		0.73	J	0.13	U	1.1		4.7		13	
MW170-EW-1	12/4/2017	0.67	J	0.26	J	2.7		1.6		0.98	J	0.13	U	1.4		5.5		11	
MW170-EW-1	3/7/2018	0.78	J	0.3	J	5.6		2.1		1.9		0.13	U	2.8		8.6		19	
MW170-EW-1	6/11/2018	1.3		0.53	J	17		5.4		5.1		0.16	J	6.8		15		12	
MW170-EW-1	9/5/2018	1.4		0.5	J	14		4.3		4.3		0.13	U	5.6		17		8.7	
MW170-EW-1	11/19/2018	1.7		0.65	J	17		5.5		5.5		0.2	J	7.1		20		7.7	
MW170-EW-1	2/8/2019	1.1		0.44	J	13		3.4		3.4		0.13	U	5.3		16		8.8	
MW170-EW-1	3/18/2019	1.6		0.63	J	13		4.4		3.1		0.13	U	5.6		18		8	
MW170-EW-1	4/18/2019	1.2		0.52	J	10		2.7		2.9		0.13	U	4.4		15		7.8	
MW170-EW-1	5/17/2019	1.2		0.49	J	10		2.8		2.8		0.13	U	4.6		15		8.4	
MW170-EW-1	6/14/2019	1		0.42	J	11		3.5		2.2		0.13	U	4		15		8.9	
MW170-EW-1	7/17/2019	1.4		0.62	J	14		4.7		3.8		0.13	U	6		30	J	7.8	
MW170-EW-1	8/19/2019	1.6		0.73	J	15		4.7		3.7		0.13	U	6.3		29	J	7.5	
MW170-EW-1	9/17/2019	1.1		0.43	J	12		3.5		2.5		0.13	U	4.8		17		7.4	
MW170-EW-1	10/15/2019	1.3		0.51	J	13		2.8		3.2		0.13	U	5.6		18		7.7	
MW170-EW-1	11/12/2019	1.2		0.48	J	12		3.4		2.6		0.13	U	4.8		19		7.8	
MW170-EW-1	12/10/2019	1.6		0.62	J	15		5		3.6		0.13	U	6.5		21		8.3	
MW170-EW-1	2/11/2020	1.3		0.5	J	13		4.3		2.8		0.14	J	5.1		18		8.1	
MW170-EW-1	5/12/2020	1.4		0.48	J	13		4.1		3.2		0.13	U	5.6		16		8.7	
MW170-EW-1	8/10/2020	1.1		0.42	J	11		3.7		2.4		0.28	J	4.9		19	U	9.2	
MW170-EW-1	8/20/2020															16			
MW170-EW-1	11/10/2020	1.6		0.64	J	12		3.6		2.6		0.13	U	4.7		16		8.8	
MW170-EW-1	2/4/2021	1.1		0.35	J	12		3.7		2.6		0.13	U	5.1		16		9.2	
MW170-EW-1	5/12/2021	0.95	J	0.38	J	9.8		2.8		1.8		0.13	U	4.1		15		11	J
MW170-EW-1	8/9/2021	1		0.45	J	9.5		2.8		1.8		0.13	U	4		14		9.8	
MW170-EW-1	10/27/2021	0.93	J	0.33	J	11		3.4		2		0.13	U	4.6		12		9.9	
MW170-EW-1	1/25/2022	1.2		0.49	J	9		3		1.8		0.13	U	3.7		14		11	
MW170-EW-1	5/10/2022	0.7	J	0.51	J	8.2		2.4		1.3		0.13	U	3.3		11		9.7	
MW171-WD	3/3/2011	1		0.65	J	0.36	J	2.1		1.1		0.13	U	2.8		21			
MW171-WD	1/4/2012	0.2	U	0.16	U	0.15	U	0.64	J	0.16	U	0.13	U	0.77	J	6.6		18	

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																	
Well	Sample Date	PCE	Q[b/]	TCE	Q	cis-1,2-DCE	Q	1,1-DCE	Q	1,1,1-TCA	Q	1,2-DCA	Q	1,1-DCA	Q	1,4-Dioxane	Q	NO3	Q
Performance Standard→		**5**		**5**		**70**		**7**		**200**		**5**		**990**		**0.9**		**28**	
MW171-WD	8/28/2012	0.3	J	0.21	J	0.15	U	0.71	J	0.24	J	0.13	U	0.93	J	8.4		15	
MW171-WD	1/31/2013	0.25	J	0.18	J	0.15	U	0.63	J	0.25	J	0.13	U	0.82	J	9.5		16	
MW171-WD	8/21/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	3		10	
MW172-WD	3/1/2011	1.7		0.83	J	0.86	J	6		1.3		0.13	U	6		51			
MW172-WD	1/4/2012	2.3		1.2		0.95	J	4.9		0.94	J	0.13	U	5.8		68		28	
MW172-WD	8/28/2012	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.82	J	1.3	
MW172-WD	1/30/2013	0.62	J	0.26	J	0.15	U	1.1		0.26	J	0.13	U	1		16		8.1	
MW172-WD	9/19/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.6	J	2.1	
MW173-WD	3/1/2011	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.5	U		
MW173-WD	8/24/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.15	U		
MW174-WD	1/5/2012	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.5	U	10	
MW174-WD	9/6/2012	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.5	U	6.7	
MW174-WD	2/5/2013	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.5	U	5.3	
MW174-WD	9/25/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.15	U	2.9	
MW175-WD	1/5/2012	3.5		2.1		3.5		13		0.42	J	0.27	J	12		76		62	
MW175-WD	9/6/2012	0.2	J	0.16	U	0.15	U	0.46	J	0.33	J	0.13	U	0.22	U	2.4	J	35	
MW175-WD	2/5/2013	0.2		0.47	J	0.61	J	2.3		0.24	J	0.13	U	2		15		19	
MW175-WD	9/19/2018	0.2		0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.53	J	28	
MW77-WD	12/19/2003	6.2		2.6		1.5		11		11		0.32	J	11		85	J	68	
MW77-WD	1/21/2004	6.7		2.9		1.6		12		11		0.13	U	11		76	J		
MW77-WD	5/26/2010	3.3		1.2		0.82	J	7		2.8		0.13	U	4.7		45		160	
MW77-WD	11/18/2010	2.3		0.9	J	0.66	J	4.2		1.7		0.13	U	3.5		37		120	
MW77-WD	3/2/2011	3		1.1		0.82	J	5.8		2		0.13	U	4.7		41			
MW77-WD	5/25/2011	4.6		2		1.3		10		3.5		0.13	U	7.2		61		170	
MW77-WD	11/15/2011	2.8		1.1		0.89	J	5.1		1.6		0.13	U	4.3		41		130	
MW77-WD	5/24/2012	1.6		0.46	J	0.15	U	2.1		0.76	J	0.13	U	1.6		23		42	
MW77-WD	11/8/2012	2.2		0.68	J	0.37	J	1.9		0.92	J	0.13	U	1.9		29		46	
MW77-WD	5/8/2013	2.1		0.55	J	0.22	J	1.9		0.67	J	0.13	U	1.3		27		65	
MW77-WD	11/12/2013	0.8		0.21	J	0.15	U	0.56	J	0.32	J	0.13	U	0.67	J	11		74	
MW77-WD	4/29/2014	1.6		1.49	J	0.17	J	1.4		0.58	J	0.13	U	1.1		23		63	
MW77-WD	11/18/2014	0.74	J	0.24	J	0.15	U	0.93	J	0.3	J	0.13	U	0.54	J	7.7		59	
MW77-WD	4/23/2015	0.57	J	0.16	U	0.15	U	0.37	J	0.17	J	0.13	U	0.28	J	5.8		53	
MW77-WD	11/12/2015	1.4		0.42	J	0.16	J	1.7		0.5	J	0.13	U	1.2		15		23	
MW77-WD	5/16/2016	0.36	J	0.16	U	0.15	U	0.24	J	0.16	U	0.13	U	0.22	U	3.5		35	
MW77-WD	10/31/2016	1.4		0.38	J	0.16	J	1.5		0.32	J	0.13	U	1		14		16	
MW77-WD	4/24/2017	1.3		0.51	J	0.19	J	1.9		0.44	J	0.13	U	1.7		20		24	
MW77-WD	10/26/2017	0.61	J	0.17	J	0.15	U	0.52	J	0.16	U	0.13	U	0.36	J	5.3		27	
MW77-WD	5/3/2018	0.98	J	0.22	J	0.15	U	0.75	J	0.16	U	0.13	U	0.51	J	9		26	
MW77-WD	8/2/2018	0.27	J	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	2.6		9.7	

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																	
Well	**Sample Date**	**PCE**	**Q[b/]**	**TCE**	**Q**	**cis-1,2-DCE**	**Q**	**1,1-DCE**	**Q**	**1,1,1-TCA**	**Q**	**1,2-DCA**	**Q**	**1,1-DCA**	**Q**	**1,4-Dioxane**	**Q**	**NO3**	**Q**
Performance Standard→		**5**		**5**		**70**		**7**		**200**		**5**		**990**		**0.9**		**28**	
MW77-WD	5/2/2019	0.48	J	0.16	U	0.15	U	0.26	J	0.16	U	0.13	U	0.22	U	3		17	
MW77-WD	10/22/2019	1.3		0.18	J	0.15	U	1.7		0.16	U	0.28	J	0.91	J	12		17	
MW77-WD	5/4/2020	0.61	J	0.18	J	0.15	U	0.43	J	0.16	U	0.13	U	0.22	U	5		18	
MW77-WD	10/28/2020	1.7		0.47	J	0.15	U	2.1		0.31	J	0.13	U	1.1		16		12	
MW77-WD	4/21/2021	0.56	J	0.16	U	0.15	U	0.52	J	0.16	U	0.13	U	0.22	U	4.3		15	
MW77-WD	10/27/2021	1.1		0.16	U	0.15	U	1.7		0.16	U	0.13	U	0.99	J	11		12	
MW77-WD	4/18/2022	0.74	J	0.16	U	0.15	U	0.66	J	0.16	U	0.13	U	0.22	U	12		13	J
MW98-WD	3/8/2010															44			
MW98-WD	6/10/2010															42			
MW98-WD	9/7/2010															38			
MW98-WD	12/1/2010															34			
MW98-WD	3/9/2011															36			
MW98-WD	6/14/2011															35			
MW98-WD	8/30/2011															40			
MW98-WD	12/13/2011															29			
MW98-WD	3/20/2012															26			
MW98-WD	6/13/2012															24			
MW98-WD	9/5/2012															23			
MW98-WD	12/6/2012															22			
MW98-WD	3/6/2013															19			
MW98-WD	6/4/2013															20			
MW98-WD	9/10/2013															21			
MW98-WD	11/4/2013															17	J		
MW98-WD	2/13/2014															17			
MW98-WD	5/14/2014															18			
MW98-WD	8/13/2014															22			
MW98-WD	12/2/2014															19			
MW98-WD	2/9/2015															16			
MW98-WD	6/11/2015															21			
MW98-WD	9/3/2015															16			
MW98-WD	12/28/2015															16			
MW98-WD	3/1/2016															15			
MW98-WD	6/20/2016															16			
MW98-WD	12/28/2016															14			
MW98-WD	3/2/2017															13			
MW98-WD	6/27/2017															14			
MW98-WD	7/27/2017															14			
MW98-WD	11/30/2017															12			
MW98-WD	3/21/2018															12			

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																	
Well	Sample Date	PCE	Q[b/]	TCE	Q	cis-1,2-DCE	Q	1,1-DCE	Q	1,1,1-TCA	Q	1,2-DCA	Q	1,1-DCA	Q	1,4-Dioxane	Q	NO3	Q
Performance Standard→		5		5		70		7		200		5		990		0.9		28	
MW98-WD	5/24/2018															11			
MW98-WD	9/4/2018	0.82	J	0.24	J	0.15	U	0.69	J	0.29	J	0.13	U	0.83	J	11		4.40	
MW98-WD	11/20/2018															12			
MW98-WD	2/22/2019															11			
MW98-WD	5/16/2019															10			
MW98-WD	7/24/2019															11			
MW98-WD	10/23/2019															12			
MW98-WD	2/13/2020															11			
MW98-WD	5/21/2020															8.6			
MW98-WD	8/24/2020															9.8			
MW98-WD	11/18/2020															11			
MW98-WD	2/11/2021															6.3			
MW98-WD	6/7/2021															9.8			
MW98-WD	8/31/2021															11			
MW98-WD	11/18/2021															11			
MW98-WD	1/24/2022															5.9			
MW98-WD	4/28/2022															7.8			
MW102-WD	3/8/2010															29			
MW102-WD	6/10/2010															29			
MW102-WD	9/7/2010															25			
MW102-WD	12/1/2010															19			
MW102-WD	3/9/2011															20			
MW102-WD	6/14/2011															21			
MW102-WD	8/30/2011															21			
MW102-WD	12/13/2011															12			
MW102-WD	3/20/2012															9.7			
MW102-WD	6/13/2012															6.4			
MW102-WD	9/5/2012															5.8			
MW102-WD	12/6/2012															4	J		
MW102-WD	3/6/2013															3.3	J		
MW102-WD	6/4/2013															3.2	J		
MW102-WD	9/10/2013															2.8	J		
MW102-WD	11/4/2013															2.8	J		
MW102-WD	2/13/2014															2.4	J		
MW102-WD	5/14/2014															2.7	J		
MW102-WD	8/13/2014															5.2			
MW102-WD	12/2/2014															3.6	J		
MW102-WD	2/9/2015															2.8	J		
MW102-WD	6/11/2015															4.4	J		

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																			
Well	**Sample Date**	**PCE**	**Q[b/]**	**TCE**	**Q**	**cis-1,2-DCE**	**Q**	**1,1-DCE**	**Q**	**1,1,1-TCA**	**Q**	**1,2-DCA**	**Q**	**1,1-DCA**	**Q**	**1,4-Dioxane**	**Q**	**NO3**	**Q**
Performance Standard→		**5**		**5**		**70**		**7**		**200**		**5**		**990**		**0.9**		**28**	
MW102-WD	9/3/2015															3.3			
MW102-WD	12/28/2015															2.9			
MW102-WD	3/1/2016															2.2			
MW102-WD	6/20/2016															3.3			
MW102-WD	12/28/2016															2.5			
MW102-WD	3/2/2017															2.9			
MW102-WD	6/27/2017															2.5			
MW102-WD	7/27/2017															2.5			
MW102-WD	11/30/2017															1.3			
MW102-WD	3/21/2018															1.4			
MW102-WD	5/24/2018															0.81	J		
MW102-WD	9/4/2018	0.24	J	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	1.8		2.9	
MW102-WD	11/20/2018															1.8			
MW102-WD	2/22/2019															1.5			
MW102-WD	5/16/2019															1.5			
MW102-WD	7/24/2019															1.7			
MW102-WD	10/23/2019															1.5			
MW102-WD	2/13/2020															1.1			
MW102-WD	5/21/2020															1.3			
MW102-WD	8/24/2020															1.1			
MW102-WD	11/18/2020															0.99			
MW102-WD	2/11/2021															0.9			
MW102-WD	6/7/2021															1.8			
MW102-WD	8/31/2021															1.7			
MW102-WD	11/18/2021															1.1			
MW102-WD	1/24/2022															0.92			
MW102-WD	4/28/2022															1.2			
MW77-EW-1	3/8/2010															32			
MW77-EW-1	6/10/2010															33			
MW77-EW-1	9/7/2010															27			
MW77-EW-1	12/1/2010															24			
MW77-EW-1	3/9/2011															22			
MW77-EW-1	6/14/2011															23			
MW77-EW-1	8/30/2011															30			
MW77-EW-1	12/13/2011															18			
MW77-EW-1	3/20/2012															16			
MW77-EW-1	6/13/2012															12			
MW77-EW-1	9/5/2012															12			
MW77-EW-1	12/6/2012															10			

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																			
Well	Sample Date	PCE	Q[b/]	TCE	Q	cis-1,2-DCE	Q	1,1-DCE	Q	1,1,1-TCA	Q	1,2-DCA	Q	1,1-DCA	Q	1,4-Dioxane	Q	NO3	Q
Performance Standard→		5		5		70		7		200		5		990		0.9		28	
MW77-EW-1	3/6/2013															9.7			
MW77-EW-1	6/4/2013															8.6			
MW77-EW-1	9/10/2013															9.1			
MW77-EW-1	12/17/2013															7.6			
MW77-EW-1	2/13/2014															7.6			
MW77-EW-1	5/14/2014															7.1			
MW77-EW-1	8/13/2014															10			
MW77-EW-1	12/2/2014															7.5			
MW77-EW-1	2/9/2015															6.6			
MW77-EW-1	6/11/2015															9.5			
MW77-EW-1	9/3/2015															6.5			
MW77-EW-1	12/28/2015															8.4			
MW77-EW-1	3/1/2016															4.8			
MW77-EW-1	6/20/2016															5.8			
MW77-EW-1	12/28/2016															4.5			
MW77-EW-1	3/2/2017															11			
MW77-EW-1	6/27/2017															11			
MW77-EW-1	7/27/2017															5.4			
MW77-EW-1	11/30/2017															3.7			
MW77-EW-1	3/21/2018															3.5			
MW77-EW-1	5/24/2018															2.5			
MW77-EW-1	9/4/2018	0.43	J	0.16	U	0.15	U	0.23	J	0.16	J	0.13	U	0.55	J	10		3	
MW77-EW-1	11/20/2018															3.3			
MW77-EW-1	2/22/2019															2.9			
MW77-EW-1	5/16/2019															2.9			
MW77-EW-1	7/24/2019															3.3			
MW77-EW-1	10/23/2019															4.5			
MW77-EW-1	2/13/2020															3			
MW77-EW-1	5/21/2020															2.8			
MW77-EW-1	8/24/2020															3			
MW77-EW-1	11/18/2020															3.4			
MW77-EW-1	2/11/2021															2.7			
MW77-EW-1	6/7/2021															3.2			
MW77-EW-1	8/31/2021															3.7			
MW77-EW-1	11/18/2021															3			
MW77-EW-1	1/24/2022															2.5			
MW77-EW-1	4/28/2022															2.7			
MW77-EW-2	3/8/2010															9.4			
MW77-EW-2	6/10/2010															8.9			

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																			
Well	Sample Date	PCE	Q[b/]	TCE	Q	cis-1,2-DCE	Q	1,1-DCE	Q	1,1,1-TCA	Q	1,2-DCA	Q	1,1-DCA	Q	1,4-Dioxane	Q	NO3	Q
Performance Standard→		5		5		70		7		200		5		990		0.9		28	
MW77-EW-2	9/7/2010															8.6			
MW77-EW-2	12/1/2010															11			
MW77-EW-2	3/9/2011															6.3			
MW77-EW-2	6/14/2011															1.7	J		
MW77-EW-2	8/30/2011															1.5	J		
MW77-EW-2	12/13/2011															0.82	J		
MW77-EW-2	3/20/2012															0.7	J		
MW77-EW-2	6/13/2012															0.58	J		
MW77-EW-2	9/5/2012															0.85	J		
MW77-EW-2	12/6/2012															0.52	J		
MW77-EW-2	3/6/2013															0.5	U		
MW77-EW-2	6/4/2013															0.5	U		
MW77-EW-2	9/10/2013															0.5	U		
MW77-EW-2	12/17/2013															0.5	U		
MW77-EW-2	2/13/2014															0.5	U		
MW77-EW-2	5/14/2014															0.5	U		
MW77-EW-2	8/13/2014															0.5	U		
MW77-EW-2	12/2/2014															0.5	U		
MW77-EW-2	2/9/2015															0.68	J		
MW77-EW-2	6/11/2015															0.94	J		
MW77-EW-2	9/3/2015															0.65	J		
MW77-EW-2	12/28/2015															0.53	J		
MW77-EW-2	3/1/2016															0.5	J		
MW77-EW-2	6/20/2016															0.3	J		
MW77-EW-2	12/28/2016															0.6	J		
MW77-EW-2	3/2/2017															0.81	J		
MW77-EW-2	6/27/2017															0.44	J		
MW77-EW-2	7/27/2017															0.18	J		
MW77-EW-2	11/30/2017															0.15	U		
MW77-EW-2	3/21/2018															0.37	J		
MW77-EW-2	5/24/2018															0.15	U		
MW77-EW-2	9/4/2018	0.20	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.15	U	0.55	
MW77-EW-2	11/20/2018															0.15	U		
MW77-EW-2	2/22/2019															0.17	J		
MW77-EW-2	5/16/2019															0.15	J		
MW77-EW-2	7/24/2019															0.4	U		
MW77-EW-2	10/23/2019															0.4	U		
MW77-EW-2	2/13/2020															0.12	J		

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		Compounds[a/]																	
Well	**Sample Date**	**PCE**	**Q[b/]**	**TCE**	**Q**	**cis-1,2-DCE**	**Q**	**1,1-DCE**	**Q**	**1,1,1-TCA**	**Q**	**1,2-DCA**	**Q**	**1,1-DCA**	**Q**	**1,4-Dioxane**	**Q**	**NO3**	**Q**
Performance Standard→		**5**		**5**		**70**		**7**		**200**		**5**		**990**		**0.9**		**28**	
MW77-EW-2	5/21/2020															0.17	J		
MW77-EW-2	8/24/2020															0.19	J		
MW77-EW-2	11/18/2020															0.19	J		
MW77-EW-2	2/11/2021															0.18	J		
MW77-EW-2	6/7/2021															2			
MW77-EW-2	9/14/2021															0.13	J		
MW77-EW-2	11/18/2021															0.12	J		
MW77-EW-2	1/24/2022															0.09	J		
MW77-EW-2	4/28/2022															0.09	U		
MW77-UD	1/4/2012	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.5	U	0.5	U
MW77-UD	2/7/2012	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.5	U	0.5	U
MW77-UD	9/6/2012	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.5	U	0.31	J
MW77-UD	8/20/2018	0.2	U	0.16	U	0.15	U	0.23	U	0.16	U	0.13	U	0.22	U	0.38	J	0.047	J

**All concentrations listed in micrograms per liter [µg/L], except nitrate (NO_3), which is listed in milligrams per liter [mg/L]

**Yellow shaded cells indicate the concentration exceeds the performance standard

a/ PCE = tetrachloroethene
TCE = trichloroethene
cis-1,2-DCE = cis-1,2-dichloroethene
1,1-DCE = 1,1-dichloroethene
1,1,1-TCA = 1,1,1-trichloroethane
1,2-DCA = 1,2-dichloroethane
1,1-DCA = 1,1-dichloroethane
NO3 = Nitrate

b/ Q = Final qualifier

Qualifiers J = The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.
U = The analyte was analyzed for and is not present above the level of the associated value.

TABLE 4.11

SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN 1/2 MILE OF EAST/SOUTH/WEST SITE BOUNDARIES AND 5 MILES NORTH OF NORTH BOUNDARY

JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT

LOWRY LANDFILL SUPERFUND SITE

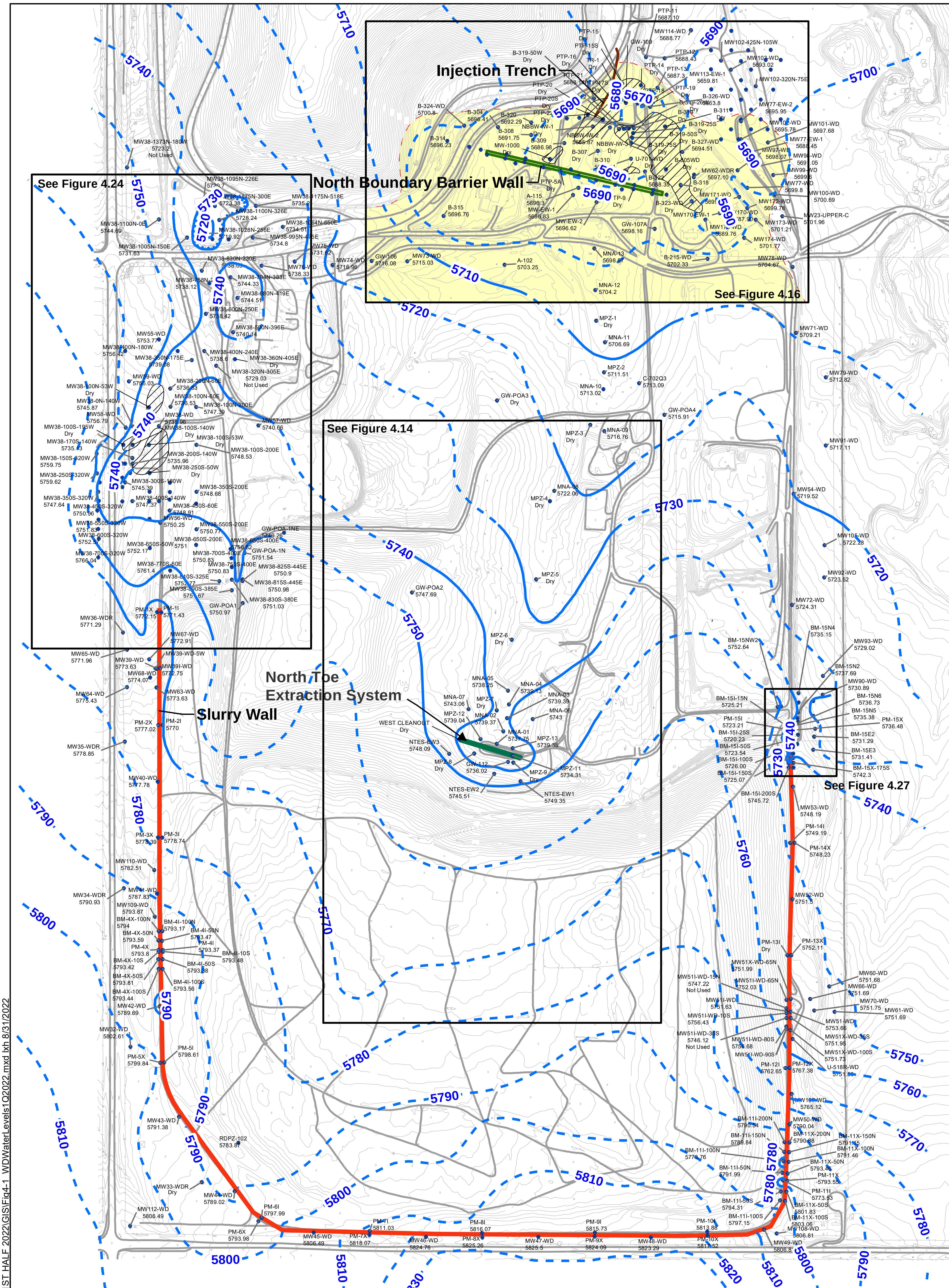
Well ID[1/]	Recorded Owner	Recorded Use	Completion Interval or Formation	Distance Downgradient from Superfund Site	Comments	Within 1,4-Dioxane Plume Boundary
3384	City of Aurora	Other (monitoring well)	Total depth of approx. 45 feet bgs[2/]	Approximately 2.6 miles	Monitoring well in Murphy Creek subdivision	No
3385	City of Aurora	Other (monitoring well)	Total depth of approx. 35 feet bgs	Approximately 2.4 miles	Monitoring well in Murphy Creek subdivision	No
3388	City of Aurora	Other (monitoring well)	Total depth of approx. 18 feet bgs	Approximately 3.3 miles	Monitoring well in Murphy Creek subdivision	No
3553	C. Chappell	Domestic	Total depth of approx. 40 feet bgs	Approximately 4.2 miles		No
1879	F.E. Heintz	Domestic	Unknown	Approximately 4.2 miles	Probably a deep water supply well, but needs to be verified	No
3313	J. Compton	Domestic	23 to 60 feet below ground surface (ft bgs)	Approximately 4.6 miles	Subject of past research by TCHD - abandoned and unusable	No
3312	J. Compton	Domestic	Unknown	Approximately 4.6 miles	Probably a deep water supply well, but needs to be verified	No
3556	West Arapahoe Soil Conservation	Stock[3/]	Quaternary	Approximately 1 mile	Livestock watering	No
2027	City of Aurora	Other (monitoring well)	18 ft to 23 ft bgs	Approximately 2.7 miles	2-inch diameter monitoring well in Murphy Creek subdivision	Yes
3561	Buckley Investment Company	Stock	Total depth of approx. 70 feet bgs	Approximately 1.5 miles	Livestock watering	No

1/ Wells within the drainage basin with total depth less than 100 feet. Waste Management and Lowry monitoring wells not included.

2/ bgs = below ground surface

3/ STOCK use is for watering for livestock on farms and ranches that are generally 35 acres or more in size.

These wells are also limited to 15 gpm. The wells are not used for human consumption.



Legend

Weathered Dawson Well Location

Dry area

Water Elevation Contour (10-foot interval)
(Dashed where inferred)

Dry Area or Well labeled dry –
Water Level Below Base of Well Screen

(5790.09) Water levels recorded week of January 3, 2022

BKGD-1WD
5842.55

BKGD-2WD
5840.76

N

0 250 500 Feet

1 inch = 500 feet

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FIGURE 4.1

SITEWIDE POTENTIOMETRIC SURFACE
ALLUVIUM/WEATHERED DAWSON
January 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

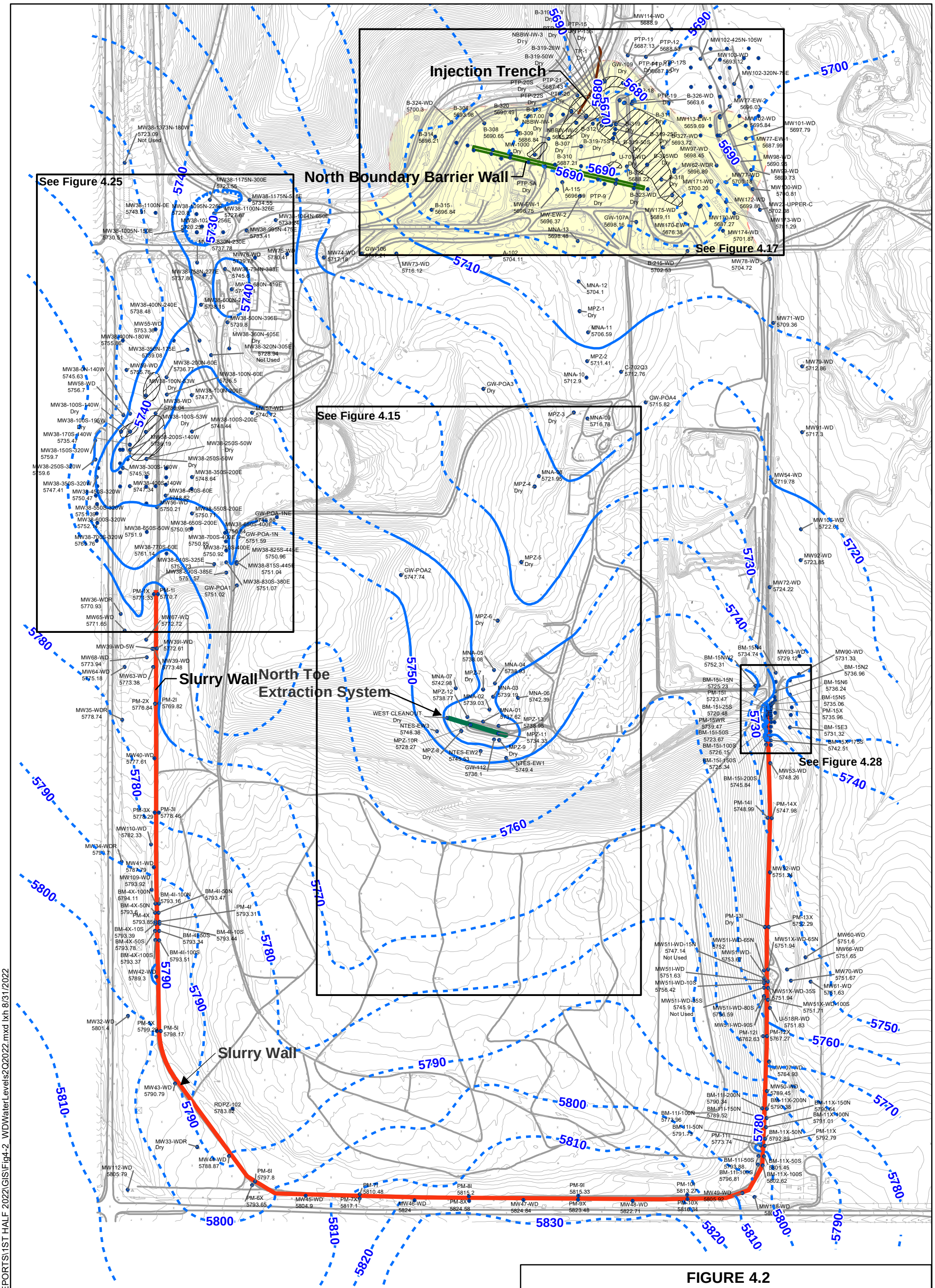
Injection Trench
North Boundary Barrier Wall
See Figure 4.25
See Figure 4.17
See Figure 4.15
See Figure 4.28
Slurry Wall
North Toe Extraction System
Slurry Wall
Legend
Weathered Dawson Well Location
Dry area
Water Elevation Contour (10-foot interval) (Dashed where inferred)
Dry Area or Well labeled dry – Water Level Below Base of Well Screen
(5790.09) Water levels recorded week of April 04, 2022
N
Feet
0 250 500
1 inch = 500 feet
FIGURE 4.2
SITEWIDE POTENTIOMETRIC SURFACE ALLUVIUM/WEATHERED DAWSON
April 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site
PARSONS
Denver, Colorado
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Figure 4.22

Injection Trench

North Boundary Barrier Wall

North Toe Extraction System

Slurry Wall

MW38-1363N-180W 5724.56
MW38-1200N-226E 5710.04
MW38-1120N-1000E 5716.45
MW38-1064N-660E 5717.12 Not Used
MW38-1064N-655E 5726.36
MW38-410N-180W 5717.88
MW38-400N-300E 5716.05
MW38-360N-405E Dry
MW38-200N-425E 5731.43
MW38-302S-50W 5744
MW38-450S-200E 5748.66
MW36-UD 5767.28
MW39-UD 5751.65
MW-1 5745.06 Not Used
MW35-UD 5759.63
MW111-UD 5766.69
MW-2 5758.00 Not Used
MW34-UD 5787.80
BM-4X-40S 5785.76
MW42-UD 5786.71
MW-3 5786.65
MW32-UD 5786.59
MW33-UD 5788.87
MW112-UD 5791.76
PM-6X-UD 5792.16
MW76-UD 5717.3
MW75-UD 5716.71
MW74-UD 5713.21
MW73-UD 5710.97
B-304-UD 5686.99
B-314-UD 5688.42
GW-106A 5687.29
B-313-UD 5680.7
BW-PZ-1LC 5688.11
MW-1000LC 5685.84
B-306 5689.78
B-317-UD 5690.64
U-701 5688.21
MW-EW-1LC 5694.37
MW-EW-2LC 5694.72
MW-EW-1LCRA 5692.2 Not Used
GW-107UD 5699.22
B-316-UD 5691.61
GW-107UDR 5680.94 Not Used
MW113-LD 5674.85 Not Used
MW113-UD 5631.69
B-326-UD 5667.71
B-327-UD 5691.75
B-305R 5692.23
MW62-UD 5690.47
MW77-UD 5695.15
MW23-C-SD 5698.39
MW23-WD 5701.24
MW37-UD 5699.23
MW78-UD 5705.06
MW71-UD 5709.85
MW79-UD 5712.35
C-702P4 5713.77
MW91-UD 5715.94
MW54-UDR 5719.58
MW72-UD 5721.17
MW93-UD 5730.98
MW90-UD 5730.89
PM-15I-UD 5735.46
B-502 5748.7
GW-104 5751.76
B-712-LD 5741.18 Not Used
B-712-UD 5747.7
B-712-25S-UD 5748.05
GW-101 5729.08
MW52-UD 5748.06
MW106-UD 5751.00
MW51-10S 5752.89
B-518 5759.16
B-706 5785.39
B-708 5774.26
MW107-UD 5751.95
B-519 5807.35
BKGD-2UD 5801.36 Not Used

5700 5690 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810

Legend

- Unweathered Dawson Well Location
- Water Elevation Contour (10-foot interval) (Dashed where inferred)
- (5790.09) Water levels recorded week of January 03, 2022
- Dry — Water Level Below Base of Screen

N

0 250 500 Feet

1 inch = 500 feet

FIGURE 4.3

SITEWIDE POTENTIOMETRIC SURFACE UNWEATHERED DAWSON
January 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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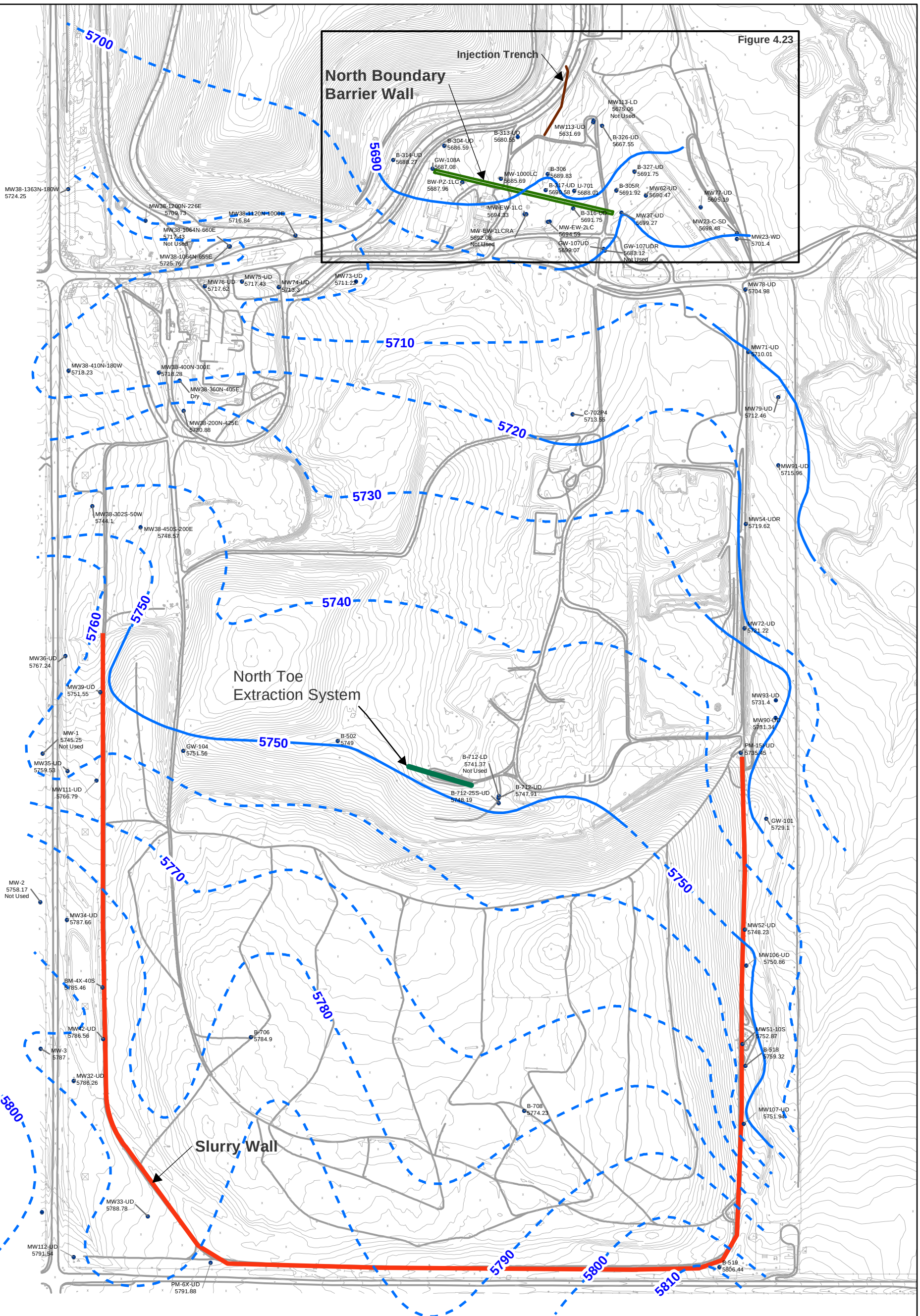
Figure 4.23



Legend

- Unweathered Dawson Well Location
- Water Elevation Contour (10-foot interval) (Dashed where inferred)
- (5790.09) Water levels recorded week of April 04, 2021
- Dry — Water Level Below Base of Screen

N

0 250 500 Feet

1 inch = 500 feet

FIGURE 4.4

SITEWIDE POTENTIOMETRIC SURFACE UNWEATHERED DAWSON
April 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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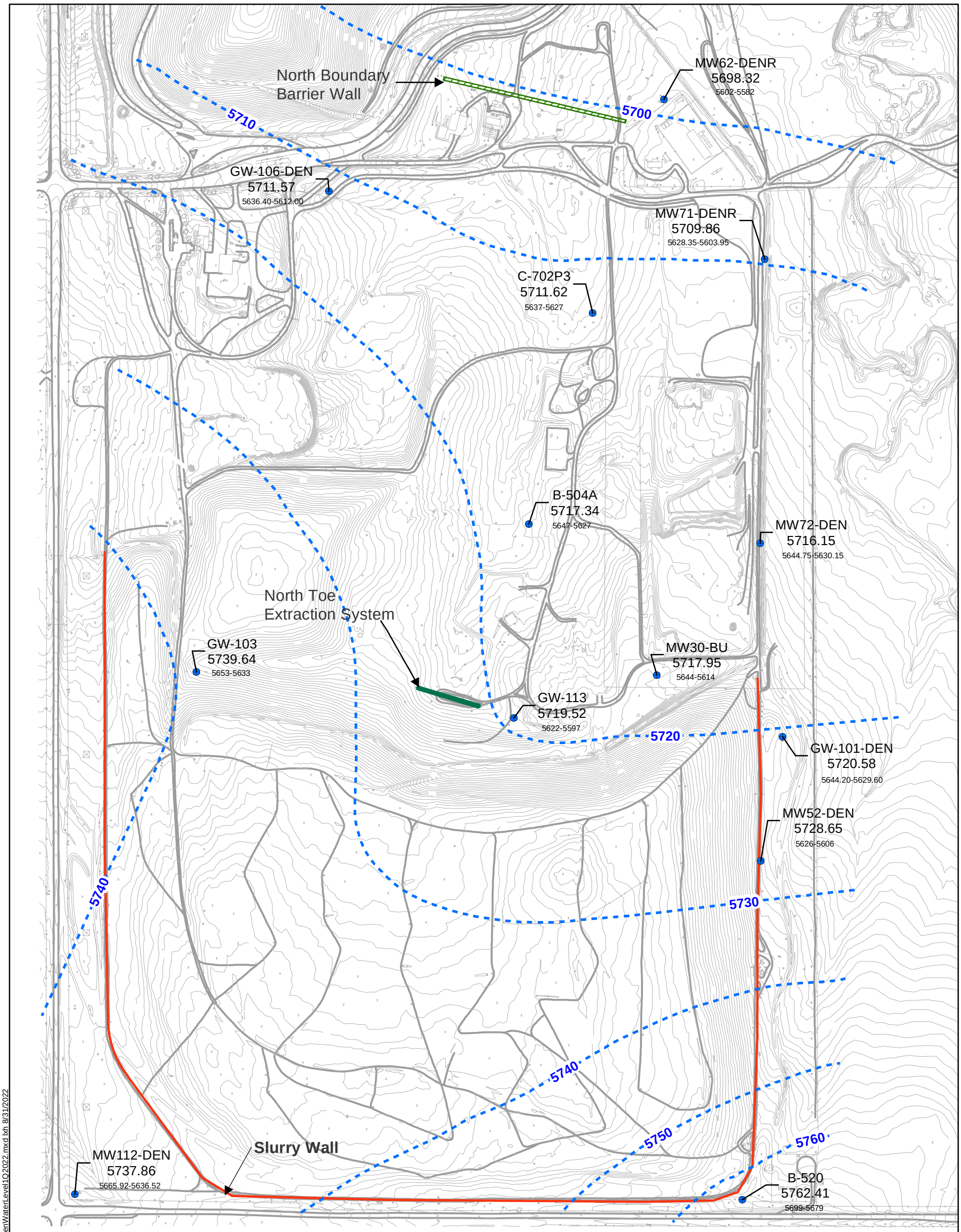

Legend

- MW112-DEN Well location,
  5737.86 Water Elevation, and
  5665.92 - 5636.52 Elevation of Screen Interval (feet above mean sea level)
- Water elevation contour
  (dashed where inferred, queried where uncertain)

N

0 250 500 Feet

1 inch = 500 feet

Figure 4.5
Sitewide Potentiometric Levels
Upper Denver Formation
January 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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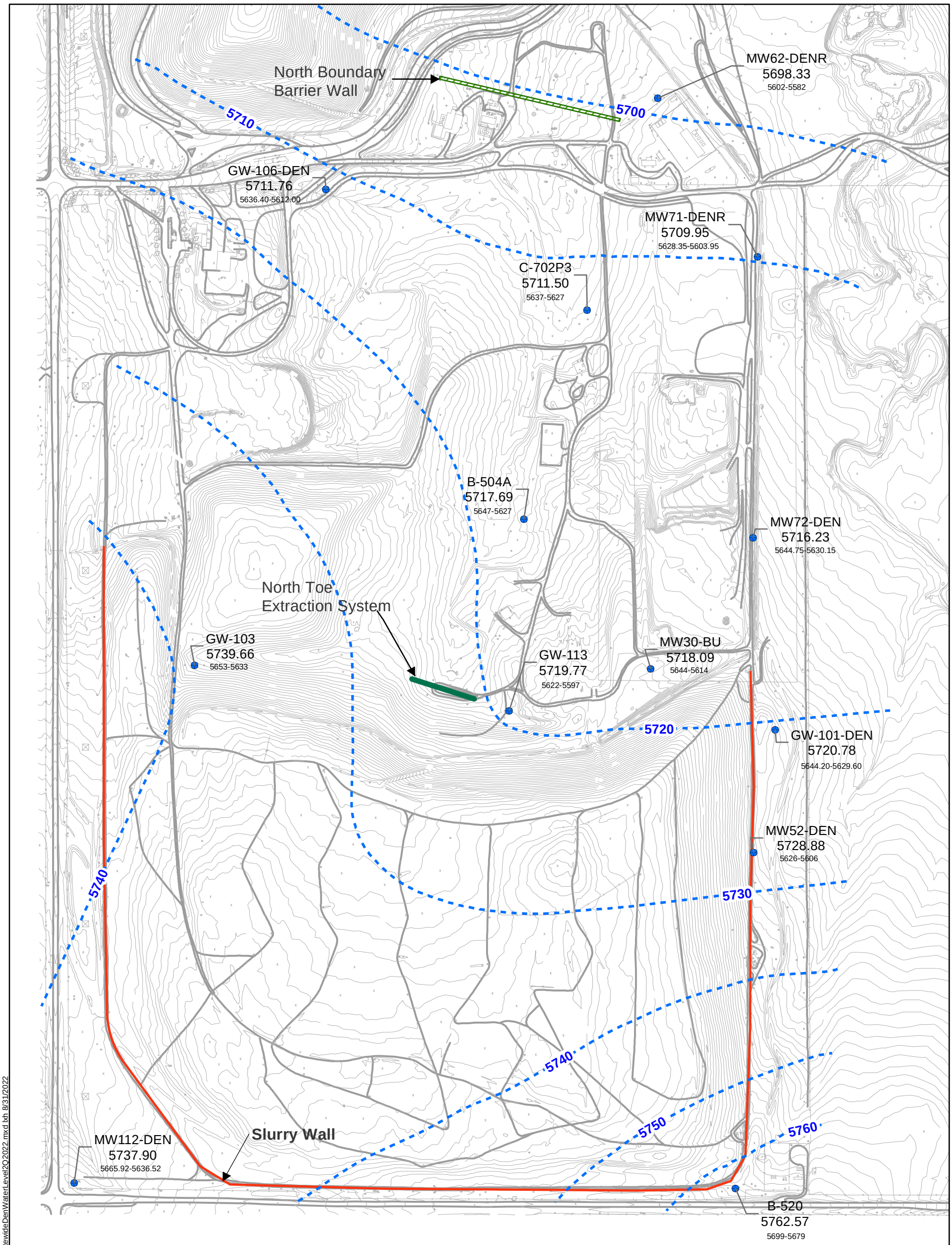

Legend

- MW112-DEN 5737.90 5665.92 - 5636.52 — Well location, Water Elevation, and Elevation of Screen Interval (feet above mean sea level)
- Water elevation contour (dashed where inferred, queried where uncertain)

N

0 250 500 Feet

1 inch = 500 feet

Figure 4.6
Sitewide Potentiometric Levels
Upper Denver Formation
April 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2022\GIS\Fig4-6 SitewideDenWaterLevel2Q2022.mxd lxh 8/31/2022

North Boundary
Barrier Wall

MW62-LIG
5674.36

GW-106-LIG
5690.90

MW71-LIG
5680.11

C-702Q1
5677.92

5675

5685

5690

North Toe
Extraction System

MW72-LIGR
5681.00

PZ-103
5679.83

GW-122
5680.98

GW-121
5680.83

GW-120
5681.11

MW52-LIG
5680.75

B-506
5686.90
(Screen interval
includes 30 ft
of Lower Denver)

5690

Slurry Wall

5680

PZ-101A
5679.88

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Legend

MW52-LIG 5680.75 — Well location and water elevation

Water elevation contour (dashed where inferred)

N

0 250 500 Feet

1 inch = 500 feet

Figure 4.7
Sitewide Potentiometric Levels
Lignite Layer
January 2022

O&M Status Report- 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

North Boundary
Barrier Wall

5675

MW62-LIG
5674.61

GW-106-LIG
5691.16

MW71-LIG
5680.40

C-702Q1
5678.31

5685

5680

5690

MW72-LIGR
5681.35

North Toe
Extraction System

PZ-103
5679.93

GW-120
5681.51

GW-121
5681.41

GW-122
5681.35

MW52-LIG
5680.89

B-506
5687.01
(Screen interval
includes 30 ft
of Lower Denver)

5690

Slurry Wall

PZ-101A
5681.20

N

0 250 500
Feet

1 inch = 500 feet

Legend

MW52-LIG 5680.89 — Well location and water elevation

Water elevation contour (dashed where inferred)

Figure 4.8
Sitewide Potentiometric Levels
Lignite Layer
April 2022

O&M Status Report- 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

S:\ESM\Proj\LWRY\LNFL\QUARTERLY REPORTS\1ST HALF 2022\GIS\Fig 4-8_SitewideLigWaterLevel2Q2022.mxd kh 8/31/2022

MW114-WD
PTP-11
PTP-12
MW103-WD
MW113-UD
MW113-WD
PTP-13
MW113-EW-1
B-326-UD
B-326-WD
MW77-EW-2
MW102-WD
B-314
B-313
B-321
MW77-EW-1
MW98-WD
MW62-WDR
MW77-WD
North Boundary
Barrier Wall
MW23-UPPER-C
MW38-1028N-256E
MW170-EW-1
MW38-830N-230E
MW74-WD
GW-106
MW78-WD
MW71-WD
MW38-170S-140W
Asbestos
Monofill
MW91-WD
MW54-WD
MW105-WD
MW38-825S-445E
MW36-WDR
North Toe
Extraction System
MW90-WD
MNA-03
BM-15N6
MNA-01
BM-15E2
PM-3X
PM-14X
PM-13X
MW60-WD
MW70-WD
U-518R-WD
MW43-WD
Slurry Wall
BM-11X-100N
BM-11X-100S
PM-6X
MW108-WD

Legend

FORMATION

- ALLUVIUM
- ALLUVIUM/WD
- LIGNITE
- Unweathered Dawson
- UPPER DENVER
- UNWEATHERED DENVER
- Weathered Dawson
- NO GEOLOGIC LOG
- Groundwater Compliance Well

N

Feet
0 250 500

1 inch = 500 feet

FIGURE 4.9
GROUNDWATER SAMPLING LOCATIONS
1st Half 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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13
18
24
19
25
30
MW176-DEN
MW144-WD
MW142-WD
MW141-WD
MW135-WD
MW05-WD
MW122-WDR
MW123-WD
MW124-WD
MW179-UDEN
MW129-WD
MW125-WD
MW121-WDR
MW156-WD
MW153-EW-1
MW157-WD
MW156-EW-1
MW151-WD
MW155-EW-1
MW154-EW-1
MW132-WD
MW118-WD
MW160-WD
MW117-WD
PTP-11
MW113-EW-1
MW113-WD
MW113-UD
PTP-12
MW114-WD
PTP-13
MW103-WD
B-321
B-326-WD
B-326-UD
MW77-EW-2
MW102-WD
B-313
MW77-EW-1
MW98-WD
B-314
MW62-WDR
MW74-WD
MW77-WD
MW38-1028N-256E
MW23-UPPER-C
MW38-830N-230E
MW170-EW-1
MW78-WD
GW-106
MW71-WD
Private Well 1
Private Well 2
Mississippi Ave.
E. Jewell Ave.
Yale Ave.
Gun Club Road
Coal Creek
Un-Named Murphy Creek Tributary
Murphy Creek
Murphy Creek Tributary
UNNAMED CREEK
MURPHY CREEK
STORMWAT

Legend

FORMATION

- ALLUVIUM
- LIGNITE
- Unweathered Dawson
- UNWEATHERED DENVER
- DENVER
- UPPER DENVER
- Weathered Dawson
- Groundwater Compliance Well

N

Feet

0 600 1,200

1 inch = 1,200 feet

FIGURE 4.10

GROUNDWATER
NORTH END SAMPLING LOCATIONS
1st Half 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

S:\ES\MajPro\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2022\GIS\Fig4-10 Sample Locs NE 1stHalf 12Q22.mxd lxh 8/24/2022

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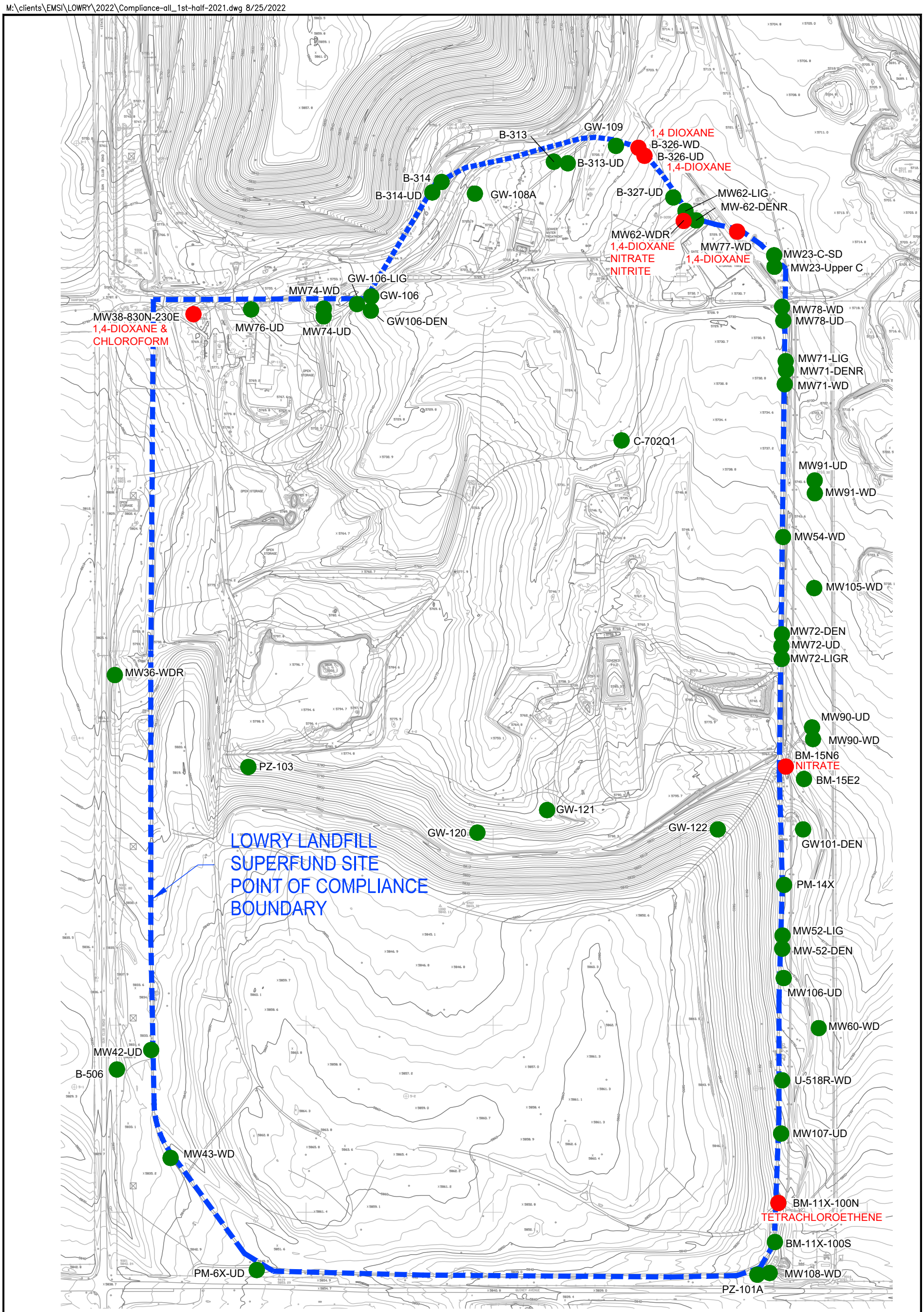


Legend

- Out of Compliance or Potentially out of Compliance
- In Compliance or Potentially in Compliance

Note: Results for certain parameters of indeterminant compliance are not shown

NITRATE Compounds With Detections That Exceed Performance Standard

N

0 250 500
FEET

Figure 4.11

Groundwater Compliance With Performance Standards

O&M Status Report 1st Half 2022
Lowry Landfill Superfund Site

EMSI Engineering Management Support, Inc.

PM-1X PM-1I

PM-2X PM-2I

PM-3X PM-3I

PM-4X PM-4I

PM-5X PM-5I

PM-6X PM-6I

PM-7X PM-7I

PM-8X PM-8I

PM-9X PM-9I

PM-10X PM-10I

PM-11X PM-11I

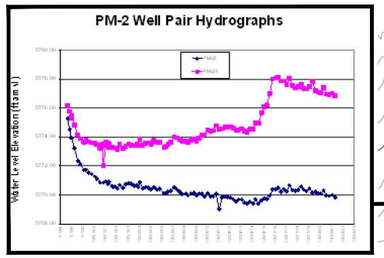
PM-12X PM-12I

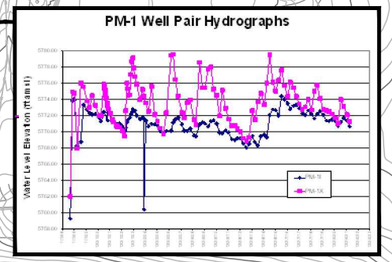
PM-13X PM-13I

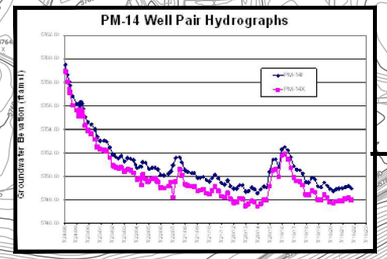
PM-14X PM-14I

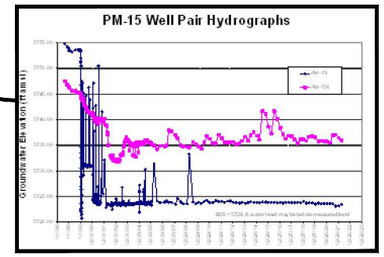
PM-15X PM-15I

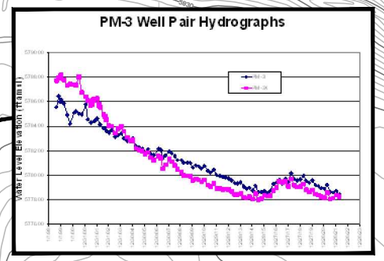
SLURRY WALL

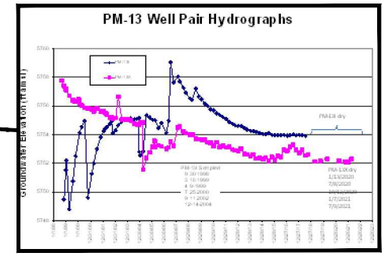


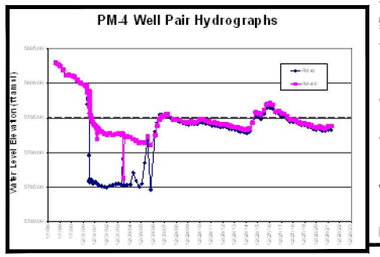


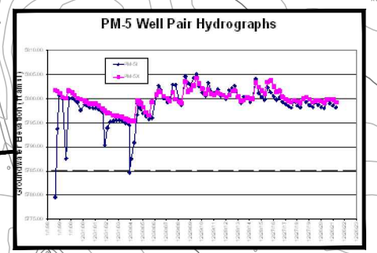


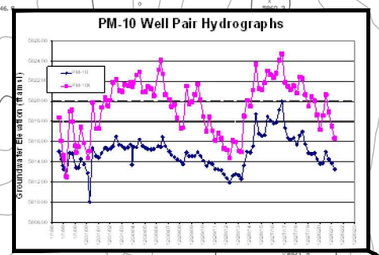


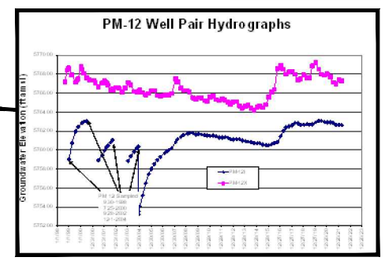


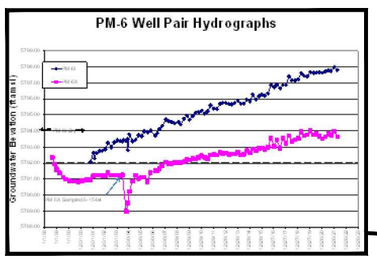


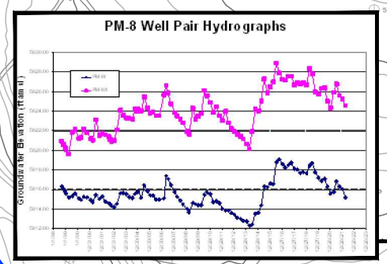


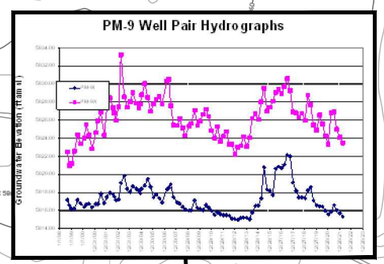


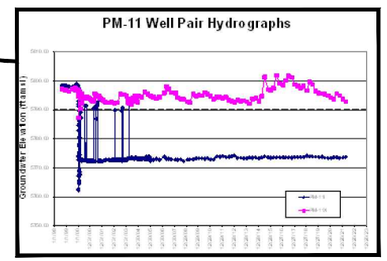


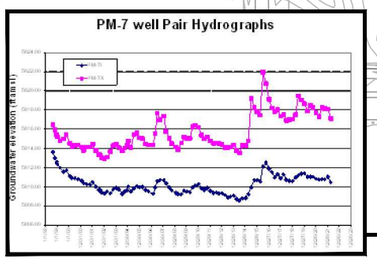












Legend

PM-14X Hydraulic gradient monitoring well

Exterior well hydrograph

Interior well hydrograph

0 200 400

FEET

N

Figure 4.12

Perimeter Slurry Wall Well Pair Hydrographs

O&M Status Report 1st Half 2022

Lowry Landfill Superfund Site

EMSI Engineering Management Support, Inc.

M:\clients\EMSI\LOWRY\2022 Hydrographs\1st Half\Hydrographs_1st-half-2022.dwg 8/25/2022

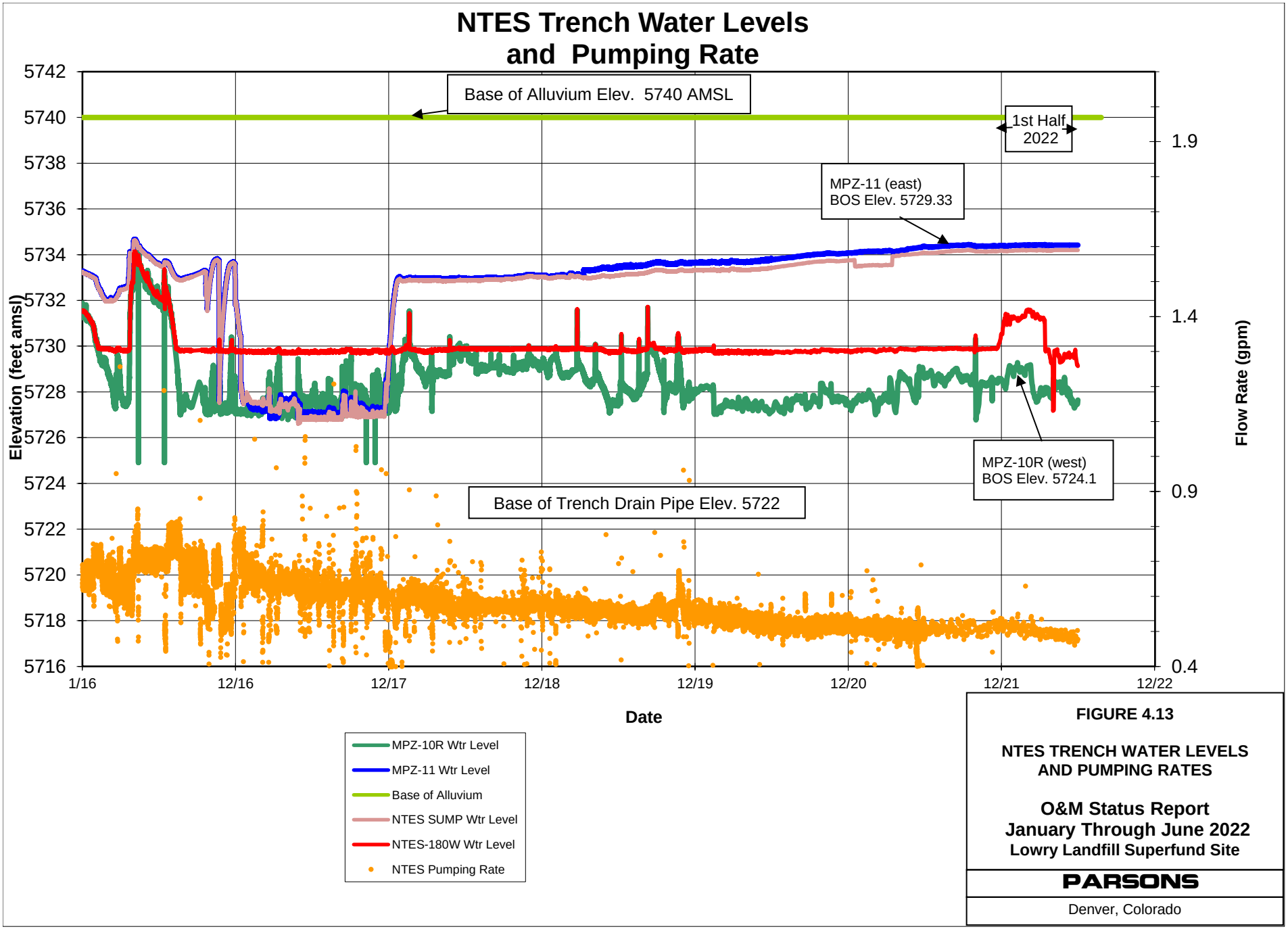


FIGURE 4.13

NTES TRENCH WATER LEVELS AND PUMPING RATES

O&M Status Report
January Through June 2022
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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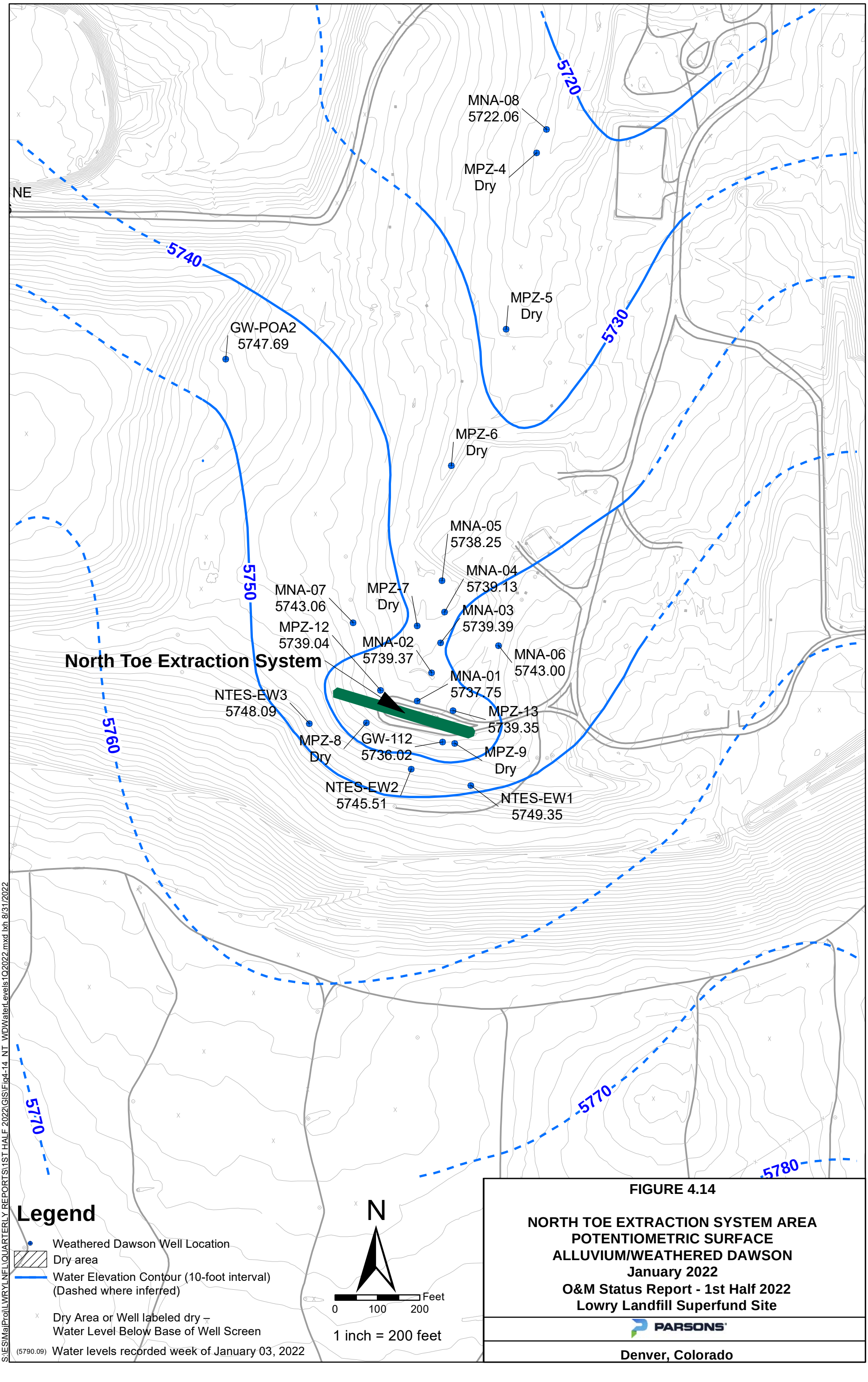
NE
5740
5720
MNA-08
5722.06
MPZ-4
Dry
MPZ-5
Dry
5730
GW-POA2
5747.69
MPZ-6
Dry
MNA-05
5738.25
MNA-04
5739.13
MNA-03
5739.39
MNA-06
5743.00
MPZ-7
Dry
MNA-07
5743.06
MPZ-12
5739.04
MNA-02
5739.37
MNA-01
5737.75
MPZ-13
5739.35
5750
North Toe Extraction System
NTES-EW3
5748.09
MPZ-8
Dry
GW-112
5736.02
MPZ-9
Dry
NTES-EW2
5745.51
NTES-EW1
5749.35
5760
5770
5780
Legend
Weathered Dawson Well Location
Dry area
Water Elevation Contour (10-foot interval)
(Dashed where inferred)
Dry Area or Well labeled dry –
Water Level Below Base of Well Screen
(5790.09) Water levels recorded week of January 03, 2022
N
0
100
200
Feet
1 inch = 200 feet
FIGURE 4.14
NORTH TOE EXTRACTION SYSTEM AREA
POTENTIOMETRIC SURFACE
ALLUVIUM/WEATHERED DAWSON
January 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site
PARSONS
Denver, Colorado
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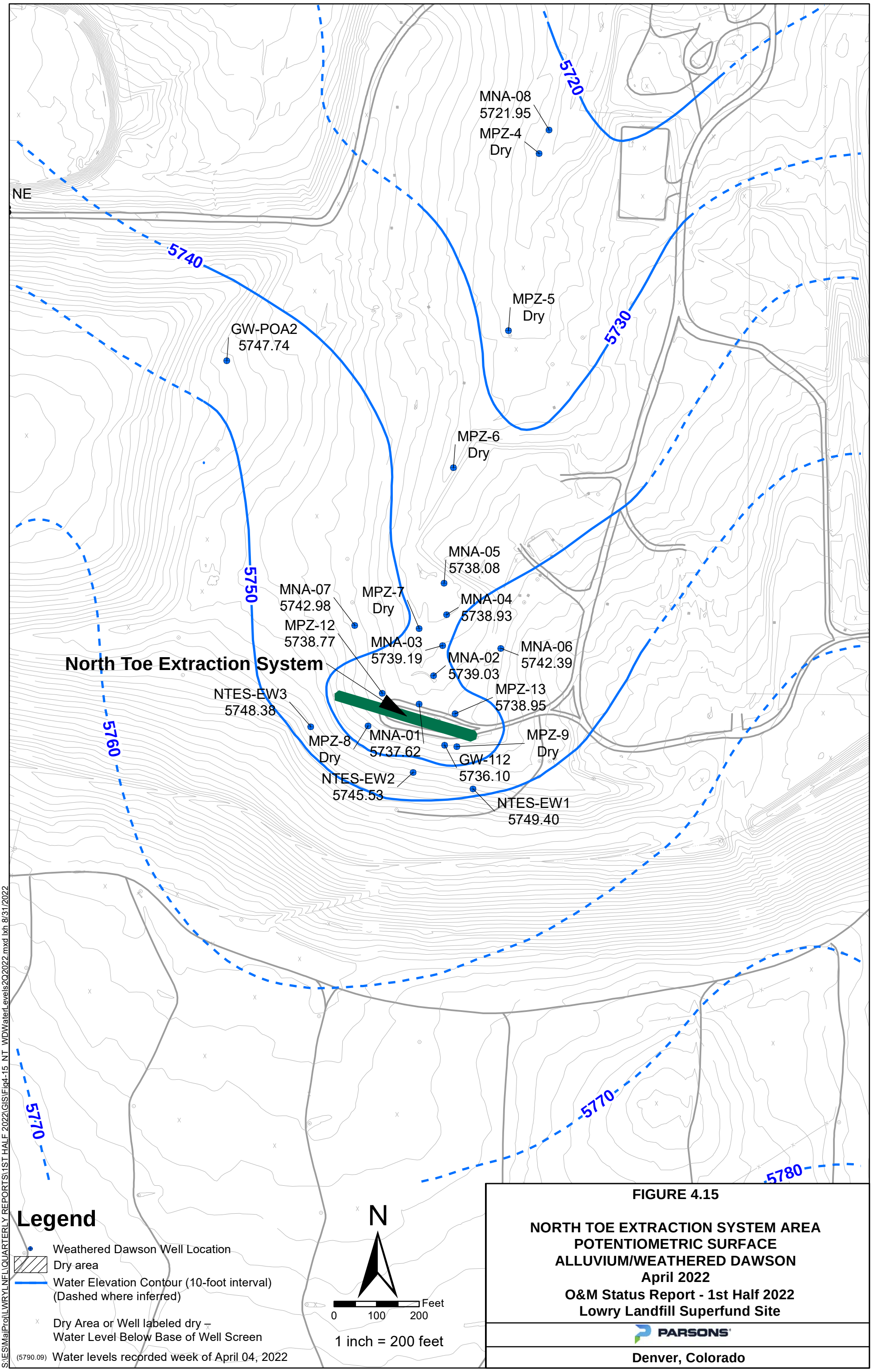
NE
5740
5720
5730
5750
5760
5770
5780
MNA-08
5721.95
MPZ-4
Dry
MPZ-5
Dry
GW-POA2
5747.74
MPZ-6
Dry
MNA-05
5738.08
MNA-07
5742.98
MPZ-7
Dry
MNA-04
5738.93
MPZ-12
5738.77
MNA-03
5739.19
MNA-06
5742.39
MNA-02
5739.03
North Toe Extraction System
NTES-EW3
5748.38
MPZ-13
5738.95
MPZ-8
Dry
MNA-01
5737.62
MPZ-9
Dry
GW-112
5736.10
NTES-EW2
5745.53
NTES-EW1
5749.40
Legend
Weathered Dawson Well Location
Dry area
Water Elevation Contour (10-foot interval)
(Dashed where inferred)
Dry Area or Well labeled dry –
Water Level Below Base of Well Screen
(5790.09) Water levels recorded week of April 04, 2022
N
Feet
0
100
200
1 inch = 200 feet
FIGURE 4.15
NORTH TOE EXTRACTION SYSTEM AREA
POTENTIOMETRIC SURFACE
ALLUVIUM/WEATHERED DAWSON
April 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site
PARSONS
Denver, Colorado
S:\ES\MalProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2022\GIS\Fig4-15 NT WDWaterLevels2Q2022.mxd lxh 8/31/2022

Legend

- Potentiometric Surface (dashed where inferred)
- Injection Trench
- Groundwater Monitoring Well
- Compliance Wells highlighted with blue
- Groundwater Extraction Well
- Groundwater Flow Direction
- Zone of Containment
- NBBW
- Area where the WD is dry

NBBW

Note: The water elevation value for the fully penetrating well when twinned by a partially penetrating piezometer was honored for contouring

Dry - Water Level Below Base of Screen (hatched contour line) Zone of Depression created by Groundwater Extraction

N

0 37.5 75 150 Feet

1 inch = 150 feet

FIGURE 4.16
NBBW AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE

January 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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Legend

- Water Elevation Contour (2-foot interval) (dashed where inferred)
- Injection Trench
- Groundwater Monitoring Well
- Compliance Wells highlighted with blue
- Groundwater Extraction Well
- Groundwater Flow Direction
- Zone of Containment caused by NBBW and Response Action Pumping
- NBBW
- Area where the WD is dry

NBBW

Note: The water elevation value for the fully penetrating well when twinned by a partially penetrating piezometer was honored for contouring

Dry - Water Level Below Base of Screen (hatched contour line) Zone of Depression created by Groundwater Extraction

N

0 37.5 75 150 Feet

1 inch = 150 feet

FIGURE 4.17
NBBW AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE

APRIL 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site

PARSONS

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Figure 4.18
B-326 and MW113 - Water Elevation/Dissolved Molybdenum

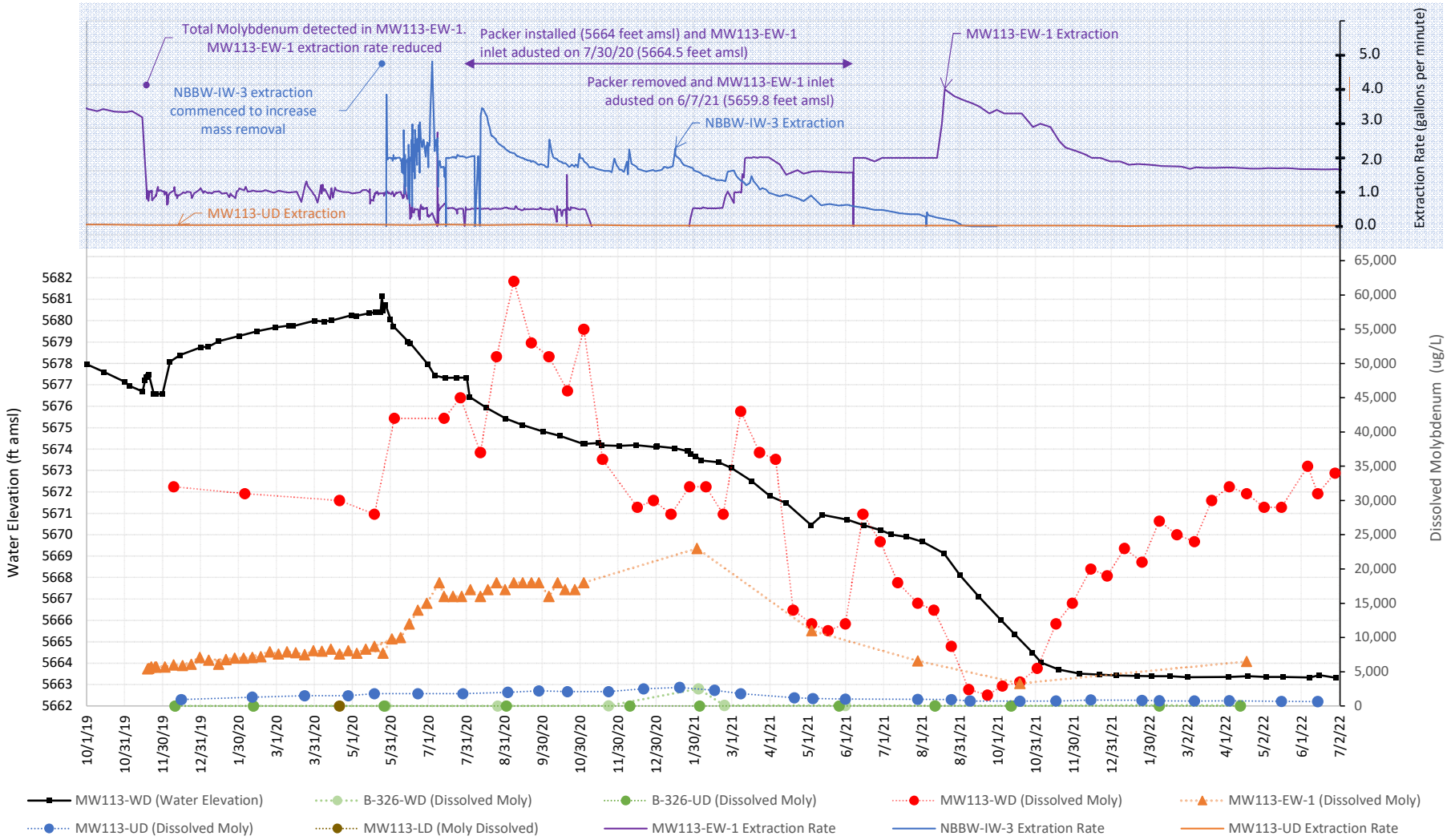


Figure 4.19
MW113 Area - Water Elevation/Bottom of Screen/MW113-EW-1 and NBBW-IW-3 Extraction Rate

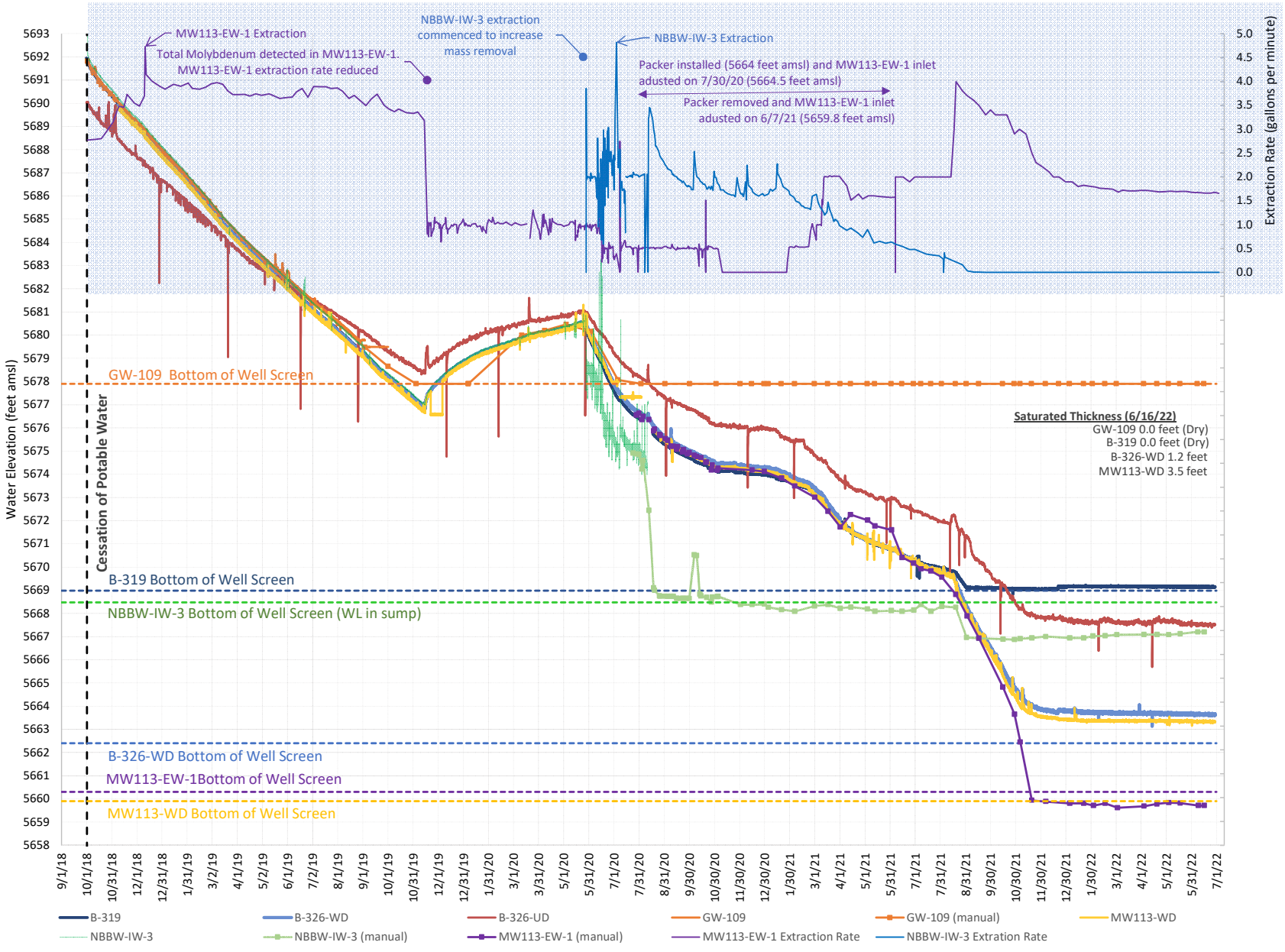


Figure 4.20
1,4-Dioxane Concentrations
B-326 / MW113 Area

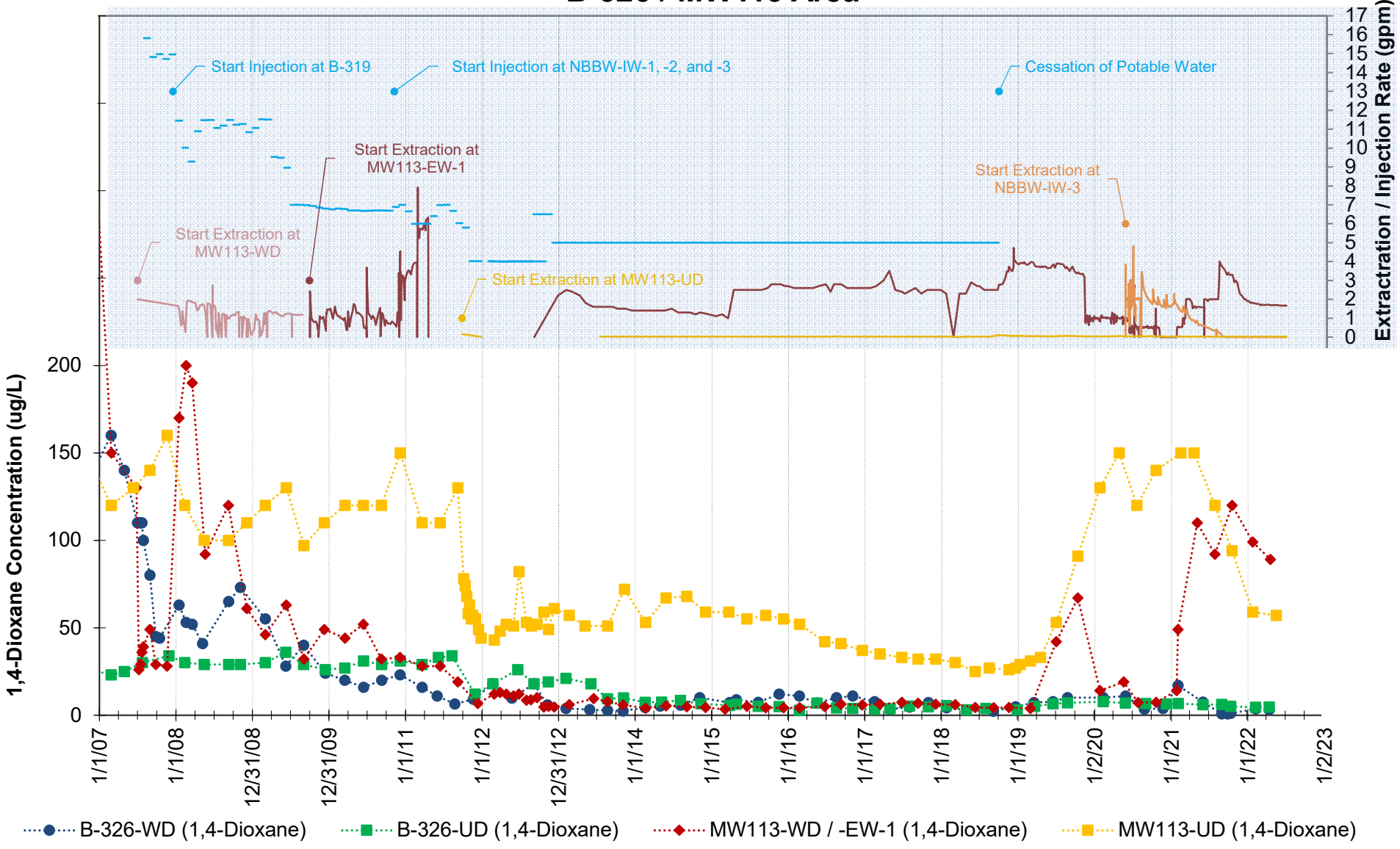
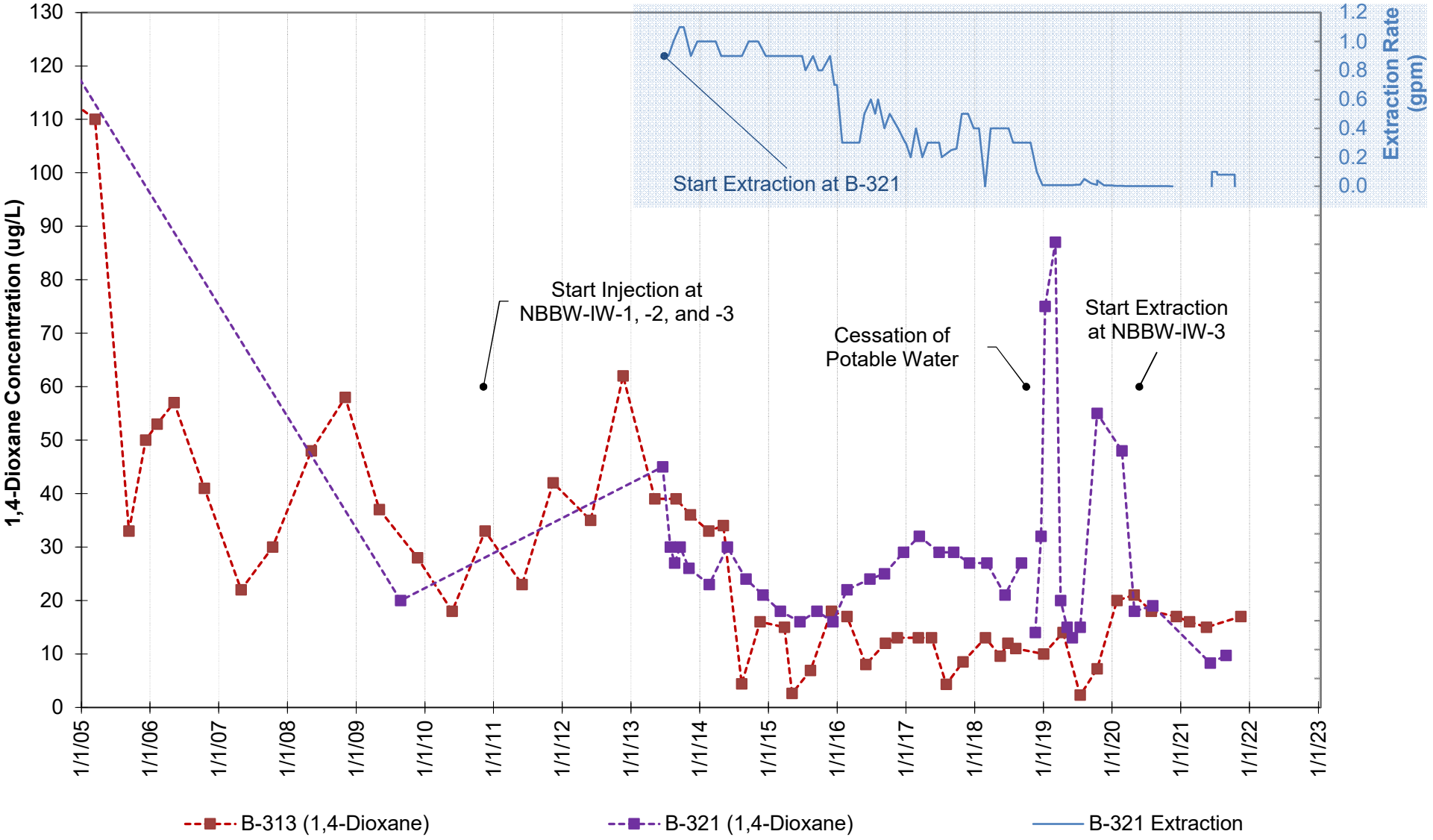


Figure 4.21
1,4-Dioxane Concentrations
B-321 (Extraction Well) / B-313 (Compliance Well)



No samples collected for B-313 and B-321 in 1st half 2022 - the wells were dry

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North Boundary Barrier Wall

MW113-LD
5674.85
Not Used

MW113-UD
5631.69

B-326-UD
5667.71

B-313-UD
5680.70

B-304-UD
5686.99

B-314-UD
5688.42

GW-108A
5687.29

MW-1000LC
5685.84

BW-PZ-1LC
5688.11

B-306
5689.78

B-317-UD
5690.64

U-701
5688.21

B-327-UD
5691.75

B-305R
5692.23

MW62-UD
5690.47

MW77-UD
5695.15

MW-EW-1LCRA
5692.20
Not Used

MW-EW-1LC
5694.37

MW-EW-2LC
5694.72

MW-EW-2LCR
5694.60

B-316-UD
5691.61

MW37-UD
5699.23

MW23-C-SD
5698.39

MW23-WD
5701.24

GW-107UD
5699.22

GW-107UDR
5680.94
Not Used

MW73-UD
5710.97

5679 5675 5671 5667 5669 5673 5677 5685 5683 5687 5689 5691 5693 5697 5695 5699 5701

N

0 75 150 Feet

1 inch = 150 feet

Legend

- Potentiometric Surface (dash where inferred)
- Injection Trench
- Groundwater Monitoring Well
  Compliance Wells highlighted with blue
- Groundwater Extraction Well
- Dry — Water Level Below Base of Screen

FIGURE 4.22

NBBW AREA
POTENTIOMETRIC SURFACE
UNWEATHERED DAWSON
JANUARY 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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North Boundary Barrier Wall

MW113-LD
5675.06
Not Used

B-326-UD
5667.55

MW113-UD
5631.69

B-313-UD
5680.55

B-304-UD
5686.59

B-314-UD
5688.27

GW-108A
5687.08

MW-1000LC
5685.69

B-306
5689.83

BW-PZ-1LC
5687.96

B-317-UD
5690.58

U-701
5688.01

B-327-UD
5691.75

B-305R
5691.92

MW62-UD
5690.47

MW77-UD
5695.19

MW-EW-1LCRA
5692.08
Not Used

MW-EW-1LC
5694.33

MW-EW-2LC
5694.59

MW-EW-2LCR
5694.34

B-316-UD
5691.75

MW37-UD
5699.27

MW23-C-SD
5698.48

MW23-WD
5701.40

GW-107UD
5699.07

GW-107UDR
5683.12
Not Used

MW73-UD
5711.22

5679 5673 5667 5669 5671 5675 5677 5681 5683 5685 5687 5689 5691 5693 5695 5697 5699 5701

NBBW

N

Feet
0 75 150
1 inch = 150 feet

Legend

- Potentiometric Surface (dash where inferred)
- Injection Trench
- Groundwater Monitoring Well
  Compliance Wells highlighted with blue
- Groundwater Extraction Well
- Dry — Water Level Below Base of Screen

FIGURE 4.23

NBBW AREA
POTENTIOMETRIC SURFACE
UNWEATHERED DAWSON
April 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site

PARSONS

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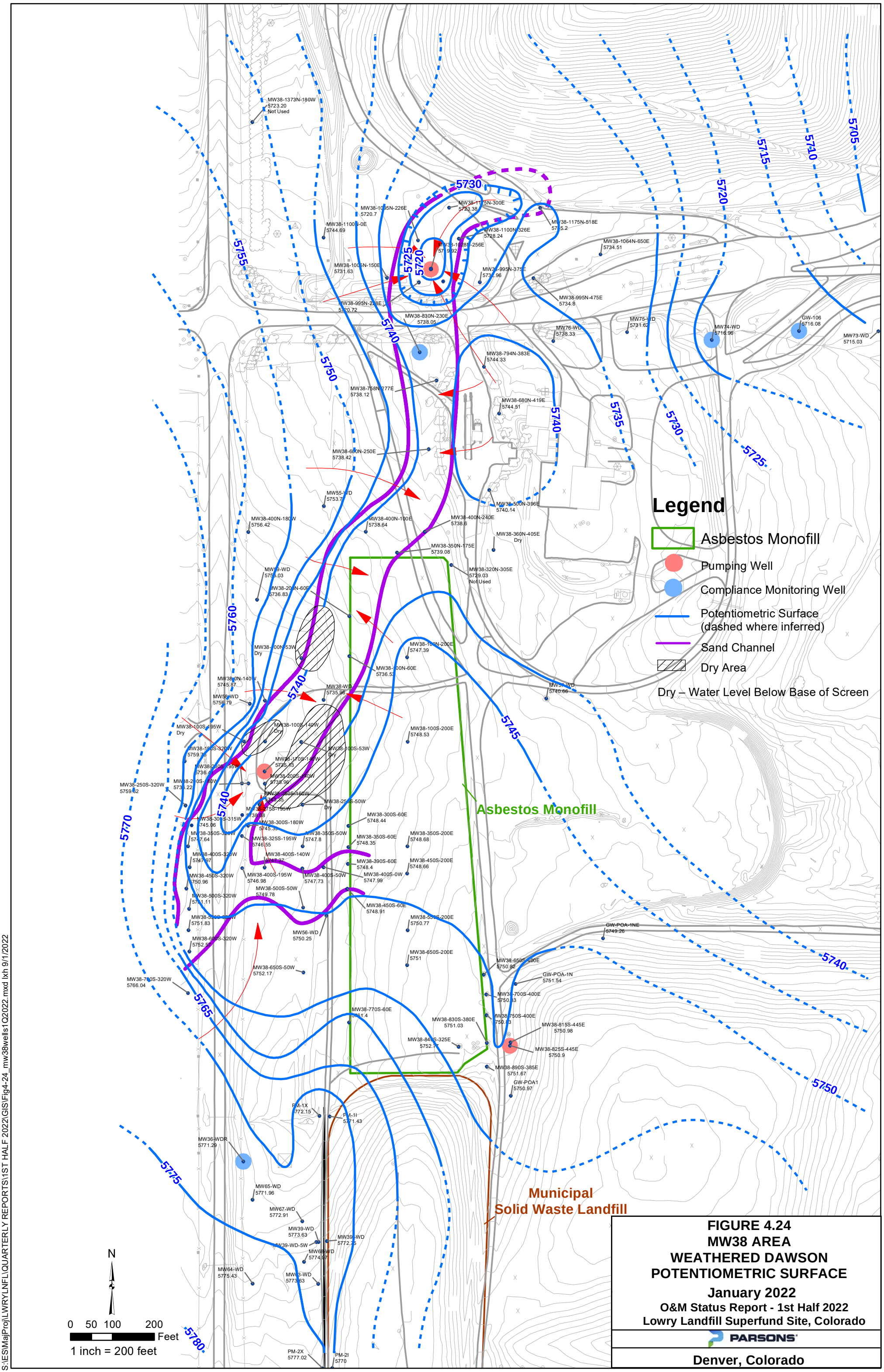

FIGURE 4.24
MW38 AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE
January 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

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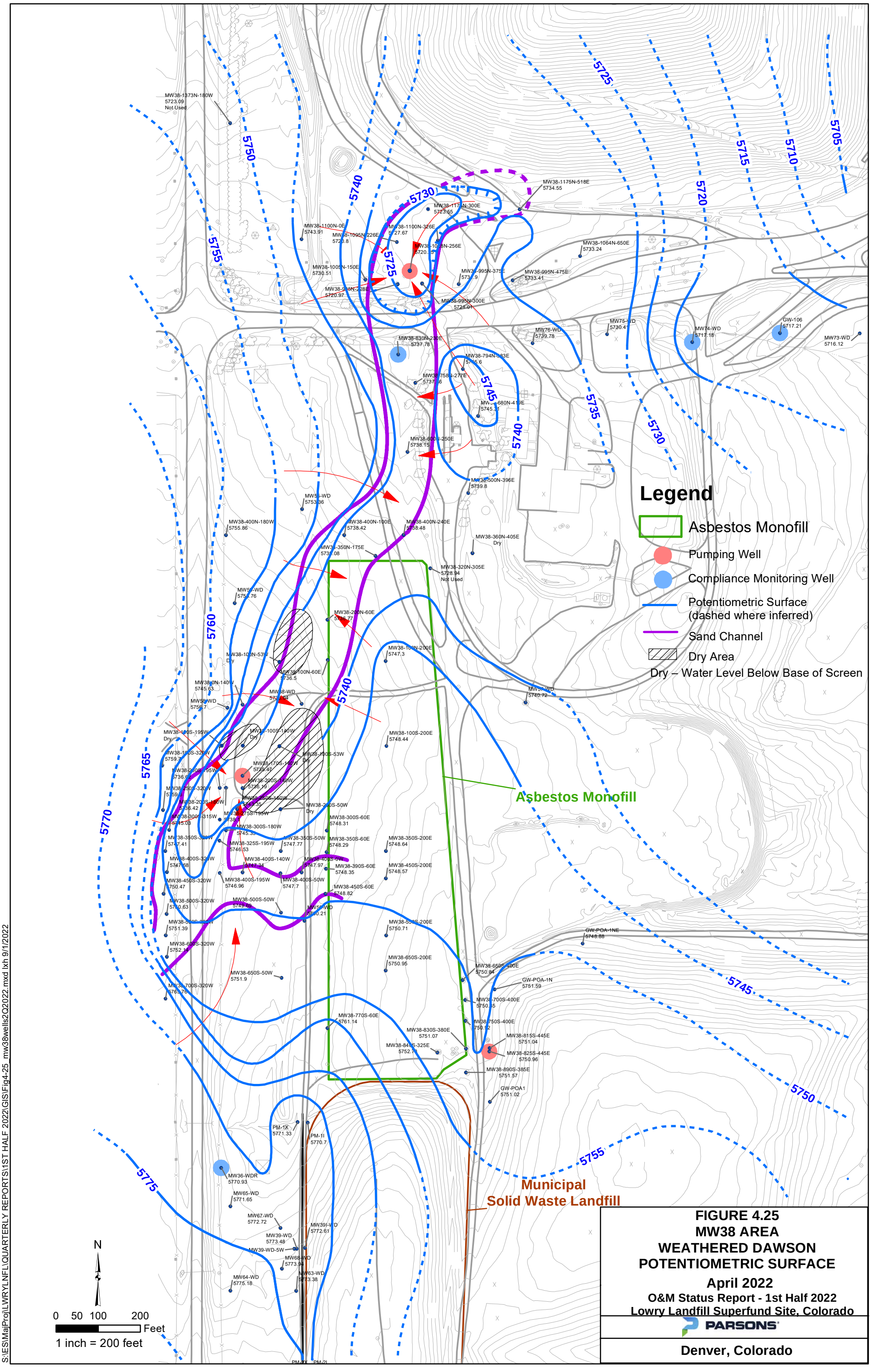

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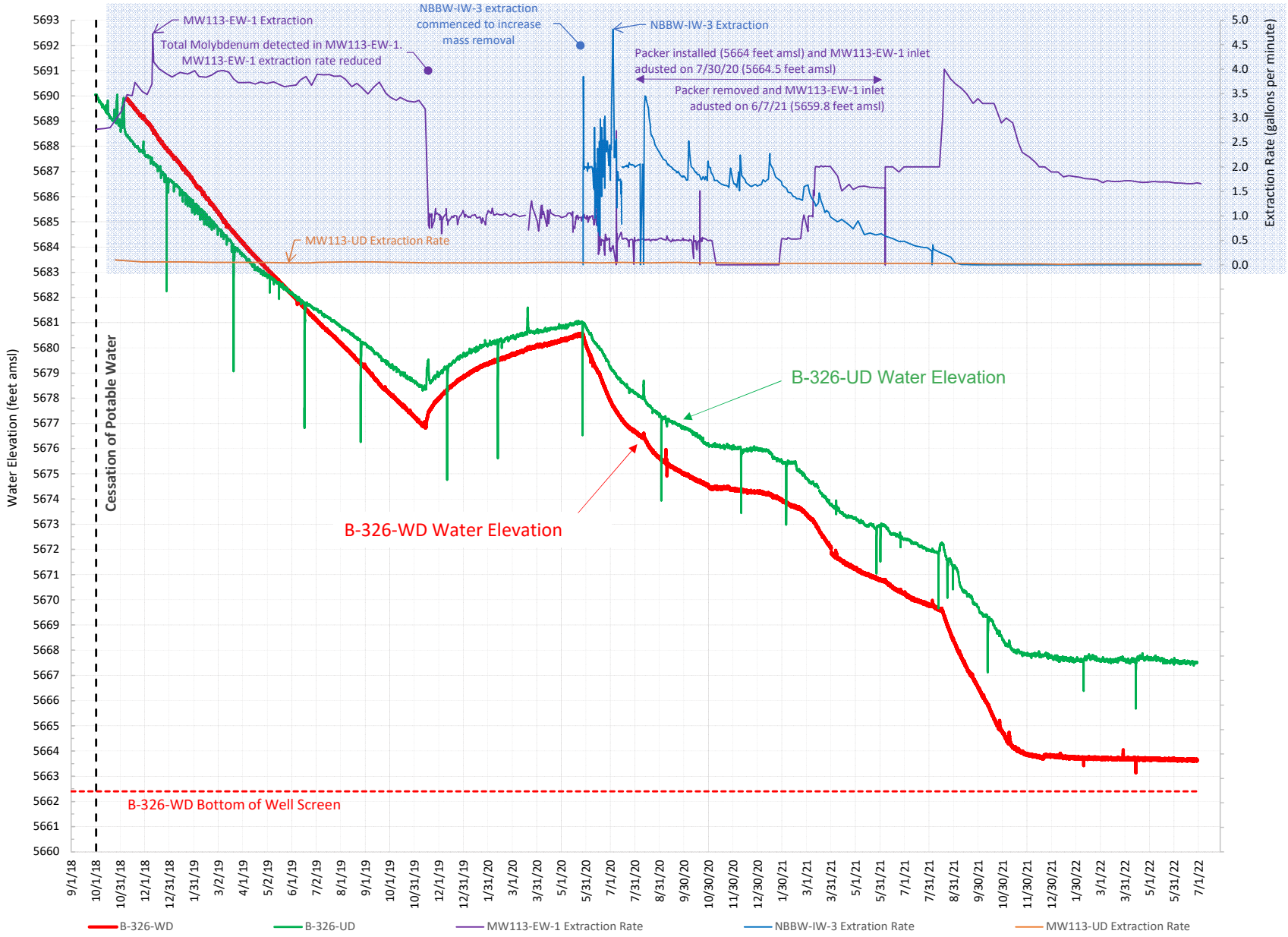
FIGURE 4.25
MW38 AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE
April 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

Figure 4.26
B-326-WD and B-326-UD Water Elevation and NBBW-IW-3, MW113-EW-1 and MW133-UD Extraction Rate



BM-15N4
5735.15

MW90-WD
5730.89

BM-15N3
5737.68

BM-15NE2
5729.23

BM-15NW1
5753.01
Not Used

BM-15NW2
5752.64

5735

BM-15N2
5737.69

BM-15NE1
5729.97

BM-15E5
5736.21

BM-15N1
5735.99

BM-15N6
5736.73

BM-15N5
5735.38

BM-15I-15N
5725.21

BM-15E1
5731.92

PM-15I
5723.21

PM-15X
5736.48

5750

5735

5725

5740

BM-15I-25S
5720.23

BM-15E4
5735.73

BM-15E2
5731.29

PM-15W
5746.19
Not Used

BM-15I-37.5S
5723.05

BM-15X-37.5S
5735.96

5730

BM-15I-50S
5723.54

BM-15X-50S
5737.70

PM-15WR
5739.57

BM-15X-75S
5738.70

BM-15E6
5738.08

BM-15I-75S
5738.13

5745

BM-15I-100S
5726.00

BM-15X-100S
5739.10

BM-15E3
5731.41

BM-15I-125S
5739.34

BM-15X-125S
5739.67

BM-15I-150S
5725.07

5740

BM-15X-150S
5740.36

BM-15I-175S
5741.29

BM-15X-175S
5742.30

5745

BM-15X-200S
5743.62

BM-15I-200S
5745.72

5745

E/S/W Slurry Wall

N

0 30 60 Feet

1 inch = 30 feet

Legend

- Potentiometric Surface
- Groundwater Monitoring Well
- Groundwater Compliance Well
- Groundwater Extraction Well
- Air Sparge Well

FIGURE 4.27

PM-15 AREA
POTENTIOMETRIC SURFACE
WEATHERED DAWSON
January 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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BM-15N4
5734.74

MW90-WD
5731.33

5730

BM-15N3
5737.13

5735

BM-15NE2
5729.15

BM-15NW2
5752.31

BM-15NW1
5752.74
Not Used

BM-15N2
5736.96

BM-15NE1
5729.78

BM-15E5
5735.58

BM-15N1
5735.43

BM-15N6
5736.24

BM-15N5
5735.06

5750

BM-15E1
5731.74

BM-15I-15N
5725.23

5735

5725

5740

PM-15X
5735.96

PM-15I
5723.47

BM-15E4
5735.21

BM-15I-25S
5720.48

BM-15E2
5731.14

5730

PM-15W
5746.15
Not Used

BM-15X-37.5S
5735.51

BM-15I-37.5S
5723.03

PM-15WR
5739.47

BM-15X-50S
5737.33

BM-15I-50S
5723.67

BM-15X-75S
5738.55

BM-15I-75S
5738.15

BM-15E6
5737.98

5745

BM-15I-100S
5726.15

BM-15X-100S
5738.95

BM-15E3
5731.32

BM-15I-125S
5739.41

BM-15X-125S
5739.65

BM-15I-150S
5725.34

5740

BM-15X-150S
5740.44

BM-15I-175S
5741.36

BM-15X-175S
5742.51

BM-15I-200S
5745.84

5745

BM-15X-200S
5743.96

5745

E/S/W Slurry Wall

N

0 30 60 Feet

1 inch = 30 feet

Legend

- Potentiometric Surface
- Groundwater Monitoring Well
- Groundwater Compliance Well
- Groundwater Extraction Well
- Air Sparge Well

FIGURE 4.28

PM-15 AREA
POTENTIOMETRIC SURFACE
WEATHERED DAWSON
April 2022
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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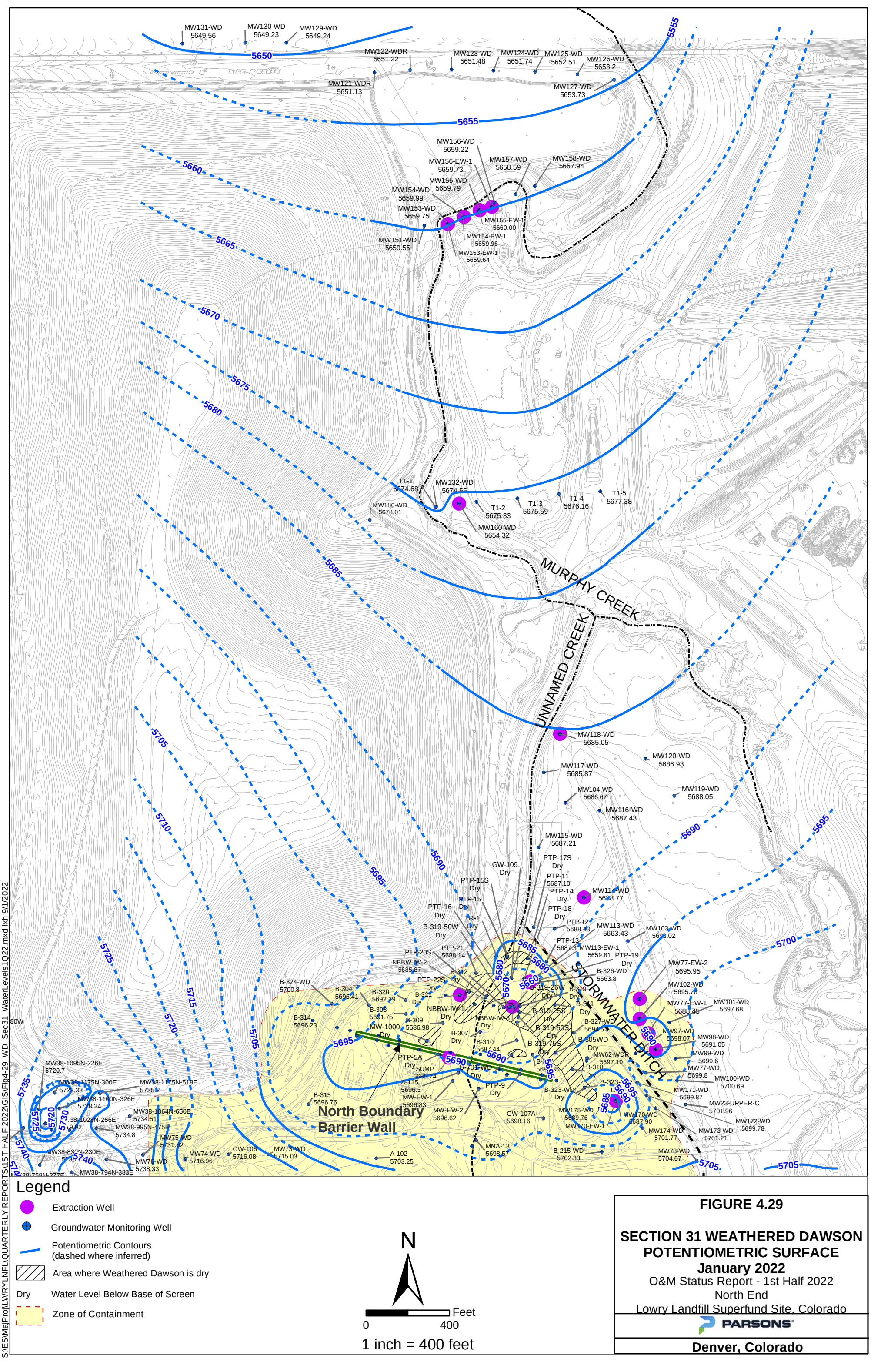

FIGURE 4.29

SECTION 31 WEATHERED DAWSON POTENTIOMETRIC SURFACE
January 2022
O&M Status Report - 1st Half 2022
North End
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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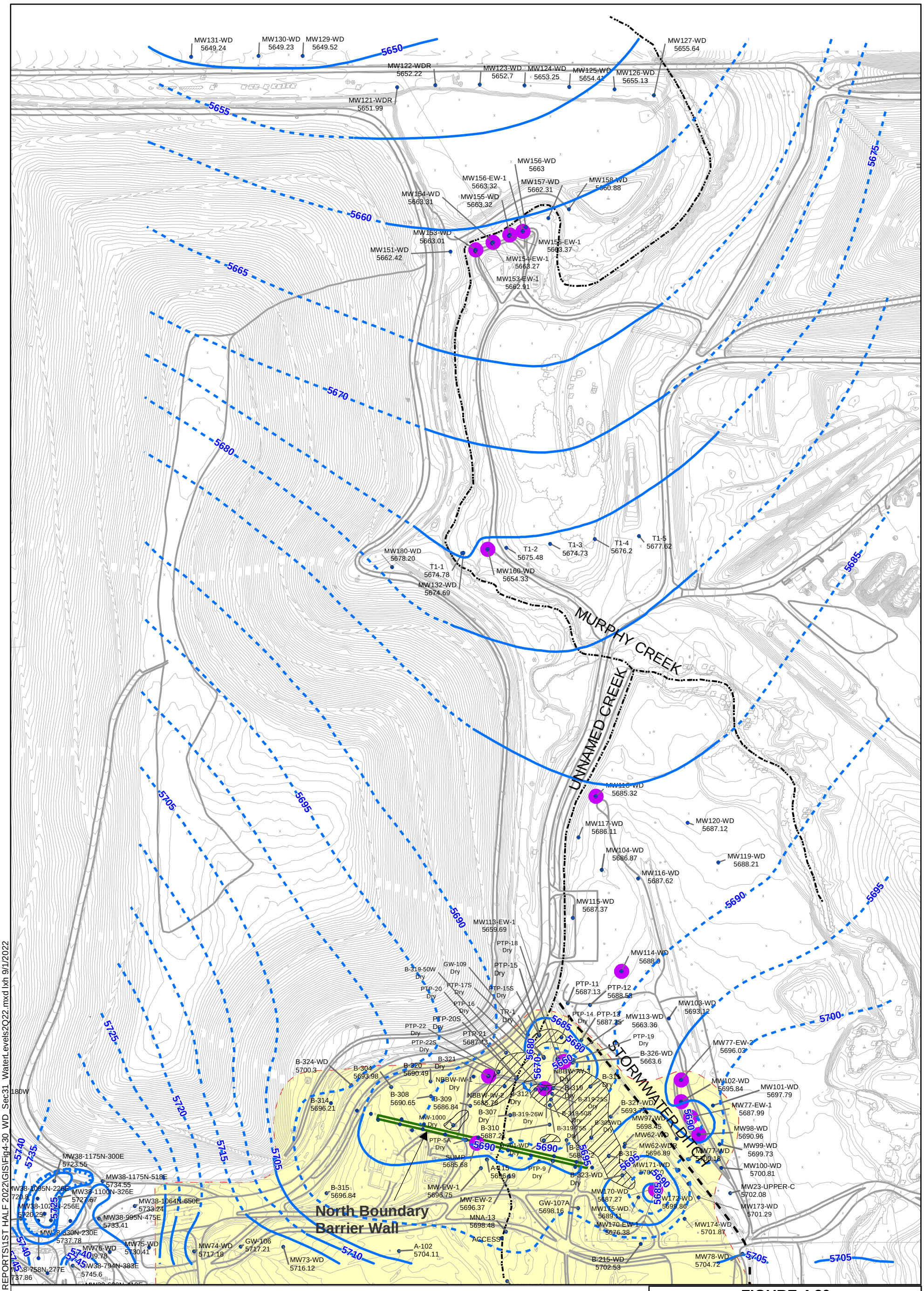

FIGURE 4.30

SECTION 31 WEATHERED DAWSON POTENTIOMETRIC SURFACE
April 2022

O&M Status Report - 1st Half 2022
North End
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

13
18
19
24
25
30
31
Mississippi Ave.
E. Jewell Ave.
Yale Ave.
Gun Club Road
Un-Named Murphy Creek Tributary
Murphy Creek
Un-Named Murphy Creek Tributary
Murphy Creek
NEPZ-097 5553.31
NEPZ-098 5554.38
NEPZ-099 5556.16
NEPZ-101 5560.04
NEPZ-103 5563.87
NEPZ-102 5562.54
NEPZ-104 5564.23
NEPZ-105 5565.71
MW176-UDEN 5557.22
MW176-DEN 5558.02
MW177-DEN 5568.71
MW177-UDEN 5565.07
MW145-WD 5567.9
MW144-WD 5567.87
SWMC-07
SWMC-06
SWMC-05
SWMC-04
SWMC-03
SWMC-02
SWMC-09
SWMC-08
SWMC-01
SW-6
SW-3
MW142-WD 5589.66
MW141-UDEN 5604.45
MW140-WD 5606.99
MW141-WD 5606.78
MW139-WD 5637.66
MW138-WD 5637.48
MW137-WD 5637.8
MW136-WD 5638.13
MW135-WD 5638.52
MW134-WD 5637.26
MW133-WD 5635.71
MW129-WD 5649.24
MW130-WD 5649.23
MW131-WD 5649.56
MW179-UDEN 5648.9
MW122-WDR 5651.22
MW124-WD 5651.74
MW126-WD 5653.2
MW127-WD 5653.73
MW121-WDR 5651.13
MW123-WD 5651.48
MW125-WD 5652.51
MW157-WD 5658.59
MW154-WD 5659.99
MW158-WD 5657.94
MW156-WD 5659.22
MW156-EW-1 5659.73
MW151-WD 5659.55
MW153-WD 5659.75
MW155-WD 5659.79
MW160-WD 5654.32
MW132-WD 5674.55
T1-1 5674.68
T1-2 5675.33
T1-3 5675.59
T1-4 5676.16
T1-5 5677.38
5555
5560
5565
5570
5575
5580
5585
5590
5595
5600
5605
5610
5615
5620
5625
5630
5635
5640
5645
5650
5655
5660
5665
5670
5675
5680
5685
5690

Legend

- Groundwater Extraction Well
- Groundwater Monitoring Well
- Domestic Well Location
- Surface Water Sample Location
- Piezometer Location
- Dry — Water Level Below Base of Screen

N

0 500 1,000 Feet

1 inch = 1,000 feet

FIGURE 4.31

SECTIONS 19 AND 30
WEATHERED DAWSON/
WEATHERED UPPER DENVER
POTENTIOMETRIC SURFACE
January 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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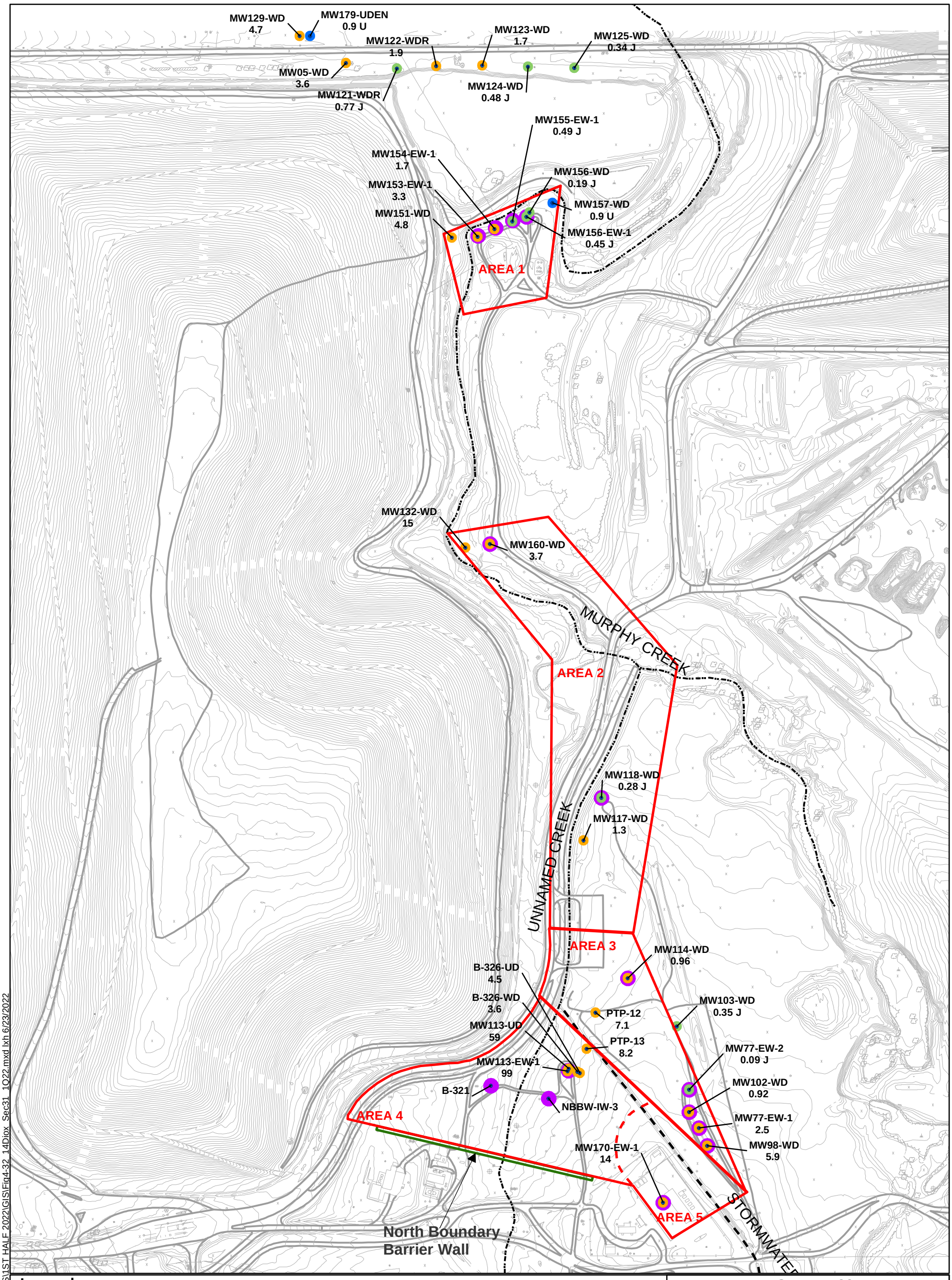

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Legend

- NO 1,4-Dioxane (14X) DETECTED
- DETECTED 14X <= 0.9 ug/L PERFORMANCE STANDARD
- DETECTED 14X > 0.9 ug/L PERFORMANCE STANDARD
- EXTRACTION WELL

J = ESTIMATED VALUE
U = UNDETECTED

N

0 200 400 800 Feet

1 inch = 400 feet

FIGURE 4.32

SECTION 31
1,4-DIOXANE RESULTS
FIRST QUARTER 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

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MW155-EW-1
1.5

MW154-EW-1
2.6

MW153-EW-1
2.3

MW151-WD
1.8

MW156-EW-1
0.6 J

MW156-WD
0.51 J

MW157-WD
0.9 U

AREA 1

MW132-WD
10

MW160-WD
2.9

MURPHY CREEK

AREA 2

MW118-WD
0.22 J

MW117-WD
1.2

UNNAMED CREEK

AREA 3

MW114-WD
0.89 J

PTP-13
6.3

PTP-12
4.8

MW113-UD
57

MW103-WD
0.27 J

MW113-WD
36

B-326-WD
3.2

B-326-UD
4.6

MW113-EW-1
89

MW102-WD
1.2

B-314
0.9 U

NBBW-IW-3

MW77-EW-2
0.9 U

MW77-EW-1
2.7

AREA 4

MW98-WD
7.8

MW62-WDR
2.9

MW77-WD
12

MW23-UPPER-C
0.9 U

MW170-EW-1
11

AREA 5

STORMWATER

MW38-1028N-256E
2

MW74-WD
0.9 U

MW78-WD
0.9 U

MW38-830N-230E
4.2

GW-106
0.9 U

North Boundary
Barrier Wall

Legend

- NO 1,4-Dioxane (14X) DETECTED
- DETECTED 14X <= 0.9 ug/L PERFORMANCE STANDARD
- DETECTED 14X > 0.9 ug/L PERFORMANCE STANDARD
- EXTRACTION WELL

J = ESTIMATED VALUE
U = UNDETECTED

N

0 200 400 800 Feet

1 inch = 400 feet

FIGURE 4.33

SECTION 31
1,4-DIOXANE RESULTS
SECOND QUARTER 2022

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

S:\ES\Maj\Proj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2022\GIS\Fig4-33_14Diox_Sec31_2Q22.mxd lkh 8/16/2022

MW176-DEN
0.52 J

MW144-WD
0.9 U

Mississippi Ave.

Gun Club Road

24

19

MW142-WD
1.4

Un-Named Murphy Creek Tributary

MW141-WD
2.2

E. Jewell Ave.

Un-Named Murphy Creek Tributary

Murphy Creek

Un-Named Murphy Creek Tributary

25

30

MW135-WD
5.1

MW121-WDR
0.77 J

MW05-WD
3.6

MW123-WD
1.7

MW179-UDEN
0.9 U

Murphy Creek

MW124-WD
0.48 J

MW129-WD
4.7

MW125-WD
0.34 J

Yale Ave.

MW156-WD
0.51 J

MW122-WDR
1.9

MW157-WD
0.9 U

MW151-WD
1.8

MW156-EW-1
0.6 J

MW153-EW-1
2.3

MW155-EW-1
1.5

MW154-EW-1
2.6

31

MW160-WD
2.9

MW132-WD
10

S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2022\GIS\Fig4-34_14Diox_Sec1930_12Q22.mxd lxh 6/23/2022

Legend

- DETECTED 14X > 0.9 ug/L PERFORMANCE STANDARD
- DETECTED 14X <= 0.9 ug/L PERFORMANCE STANDARD
- NO 1,4-Dioxane (14X) DETECTED
- EXTRACTION WELL
- Domestic Well Location

J = ESTIMATED VALUE
U = UNDETECTED

N

0 Feet 1,000

1 inch = 1,000 feet

FIGURE 4.34

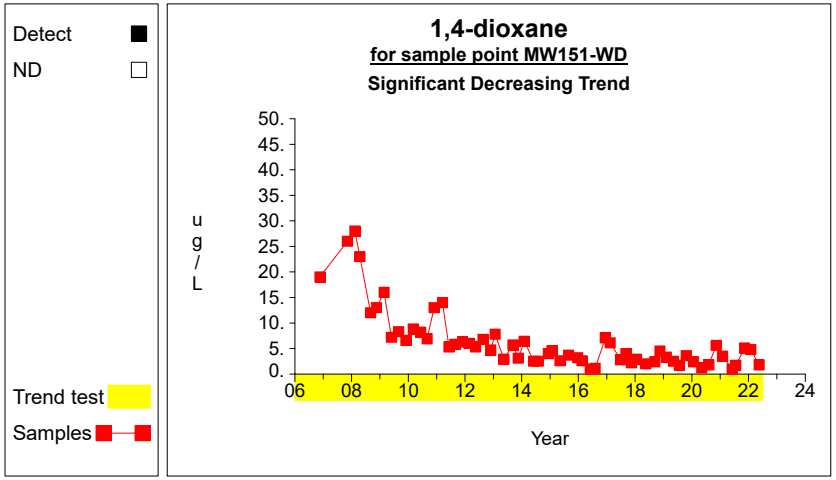
SECTIONS 19 AND 30
1,4-DIOXANE
MOST RECENT RESULTS

O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

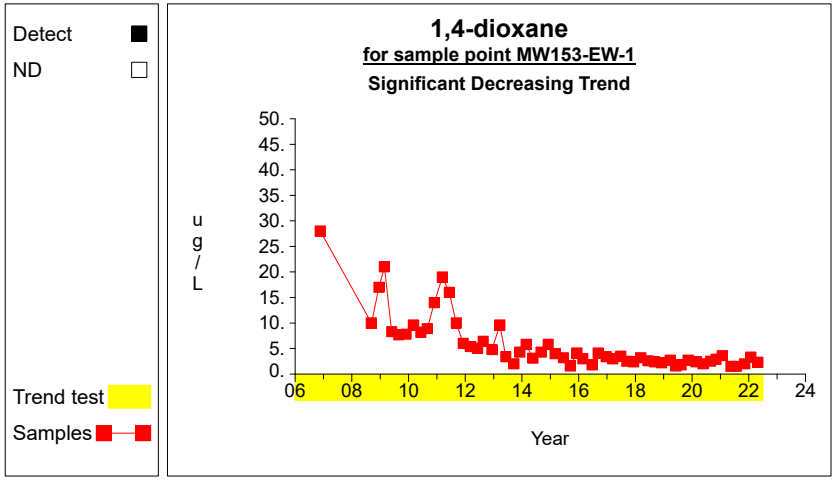
PARSONS

Denver, Colorado

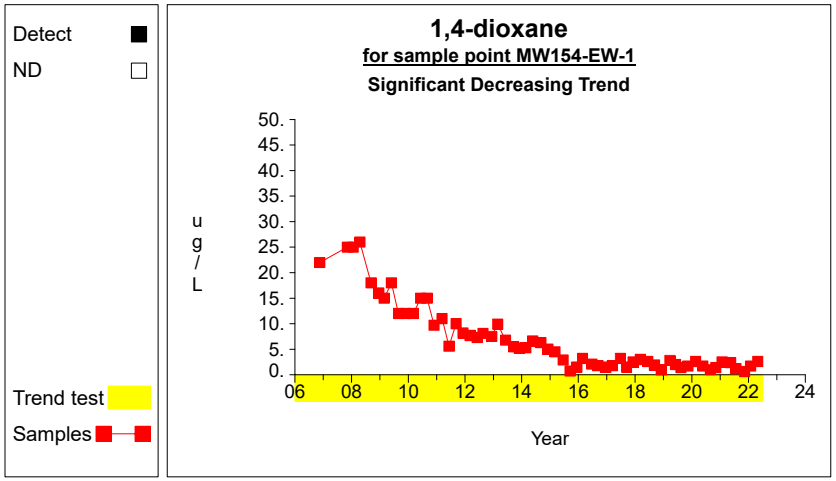
Figure 4.35
North End Trend Analysis Plots - Area 1
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund



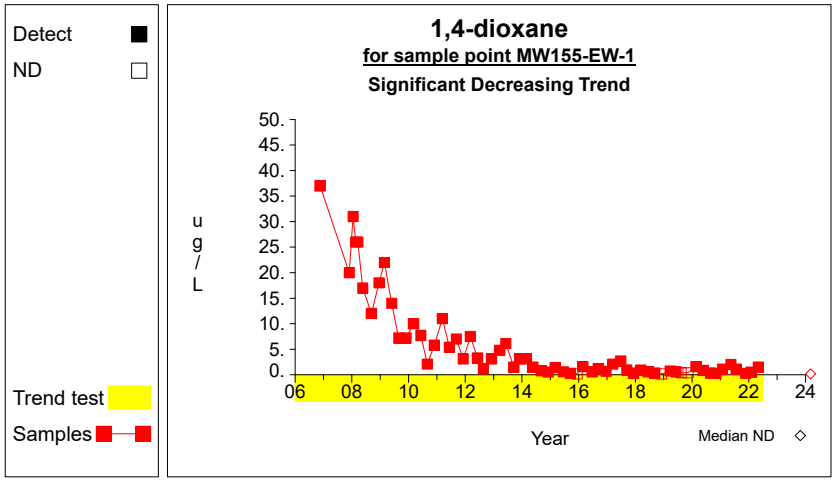
Graph 1



Graph 2



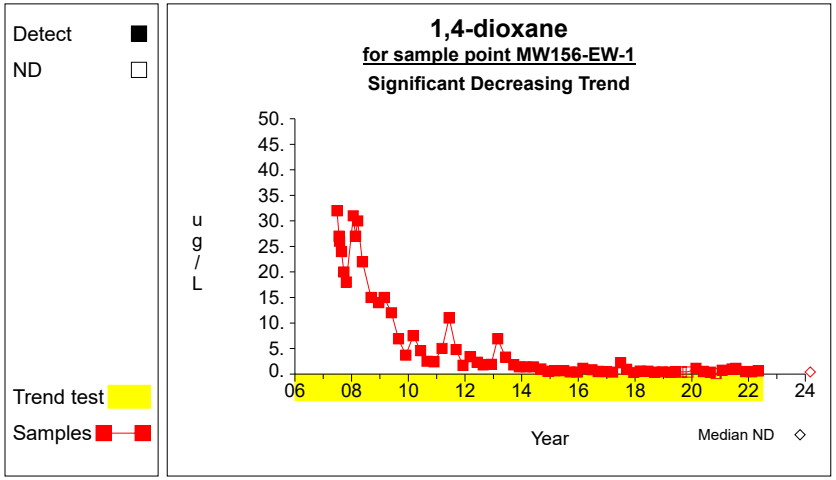
Graph 3



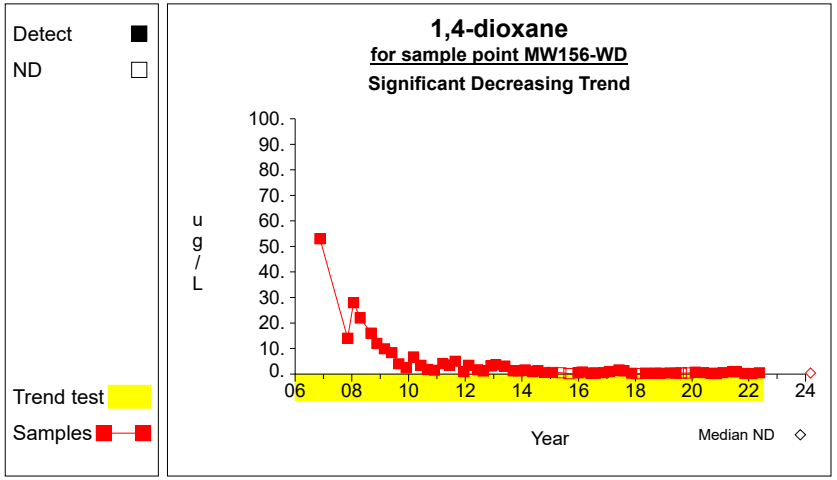
Graph 4

Analysis by Sen's Test prepared on: 8/3/2022

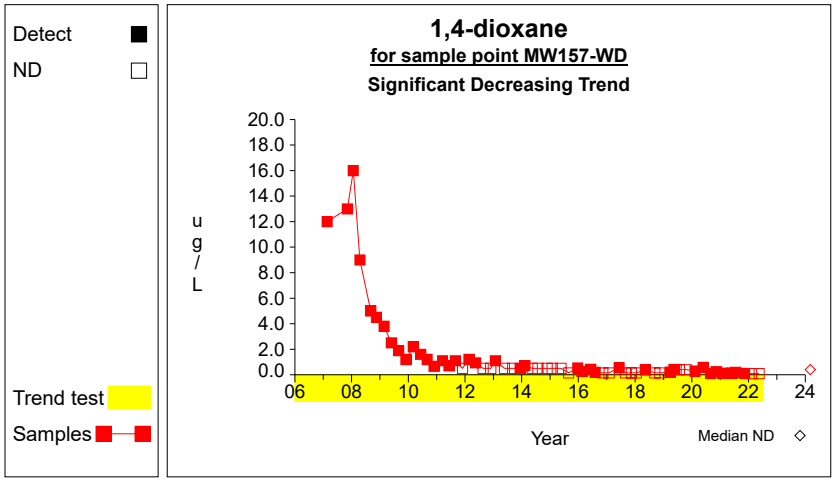
Figure 4.35
North End Trend Analysis Plots - Area 1
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund



Graph 5



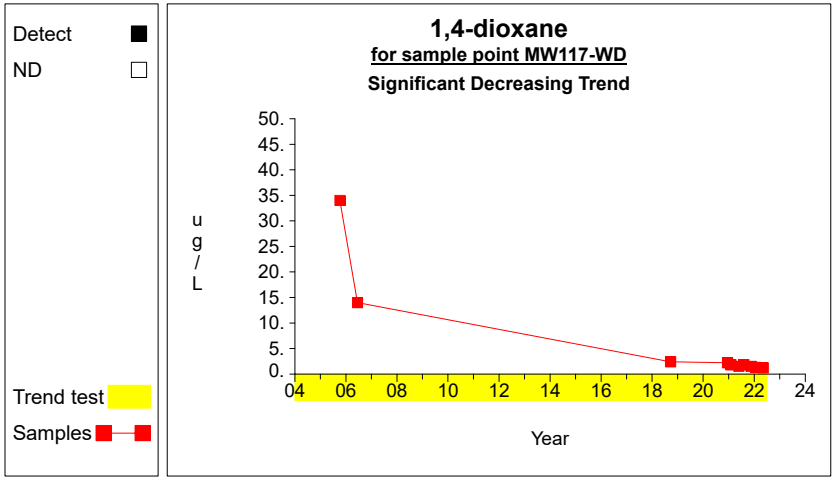
Graph 6



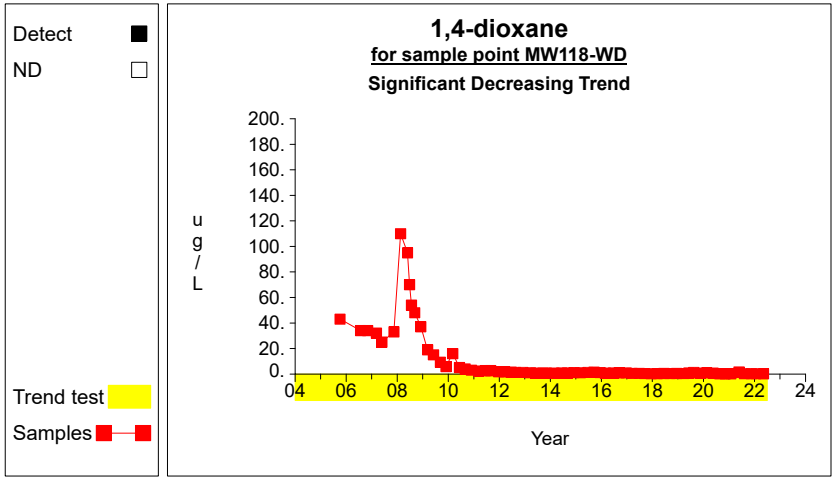
Graph 7

Analysis by Sen's Test prepared on: 8/3/2022

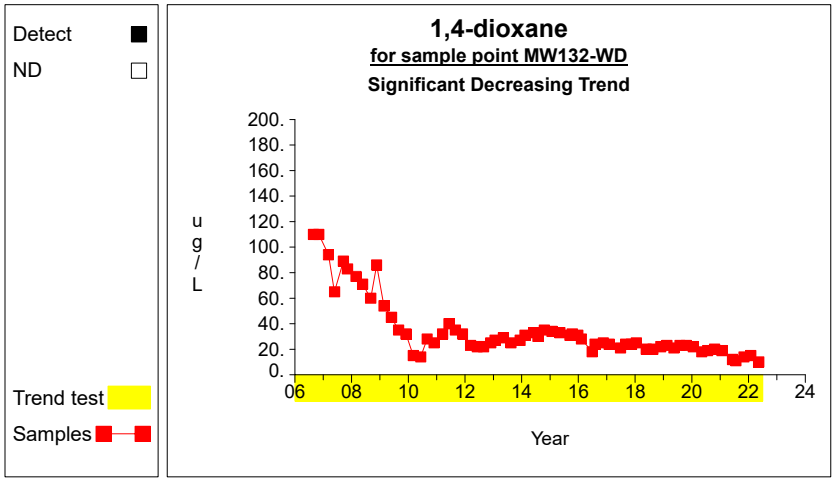
Figure 4.36
North End Trend Analysis Plots - Area 2
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



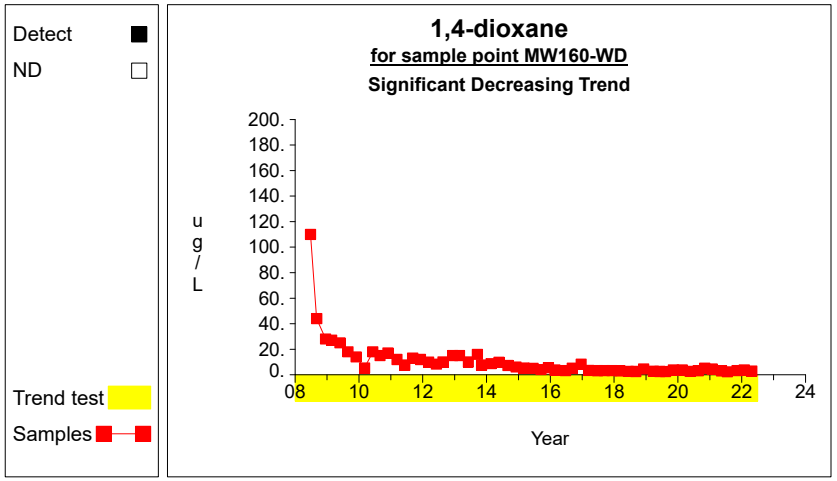
Graph 1



Graph 2



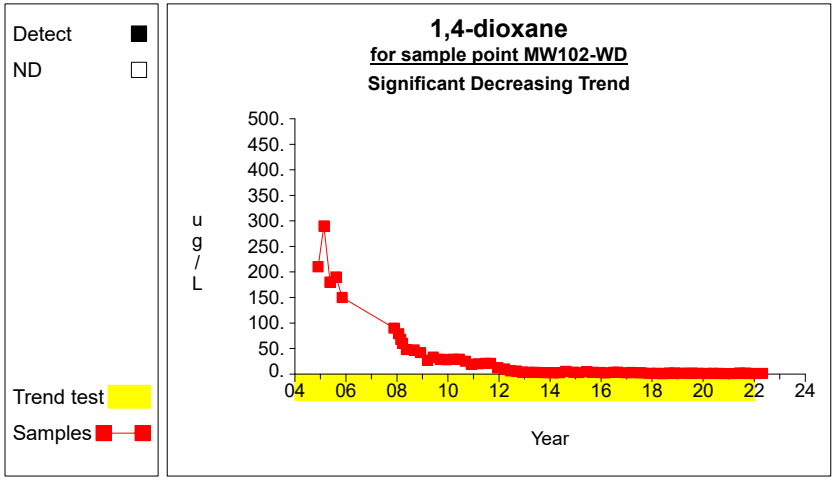
Graph 3



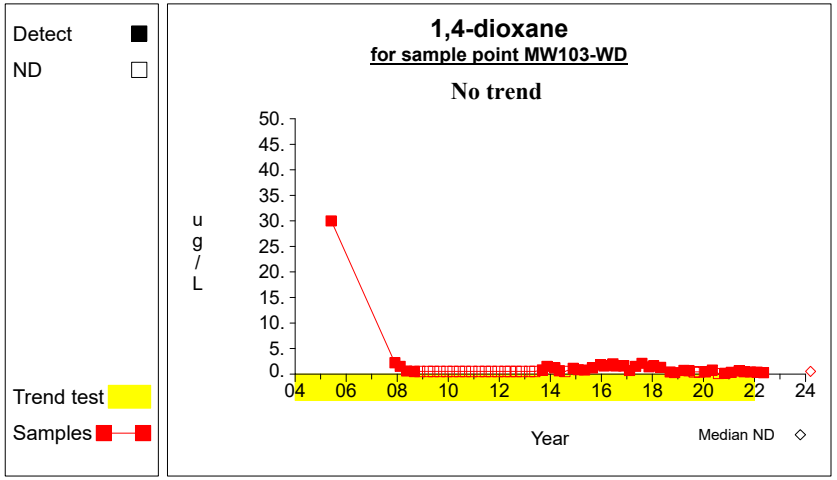
Graph 4

Analysis by Sen's Test prepared on: 8/3/2022

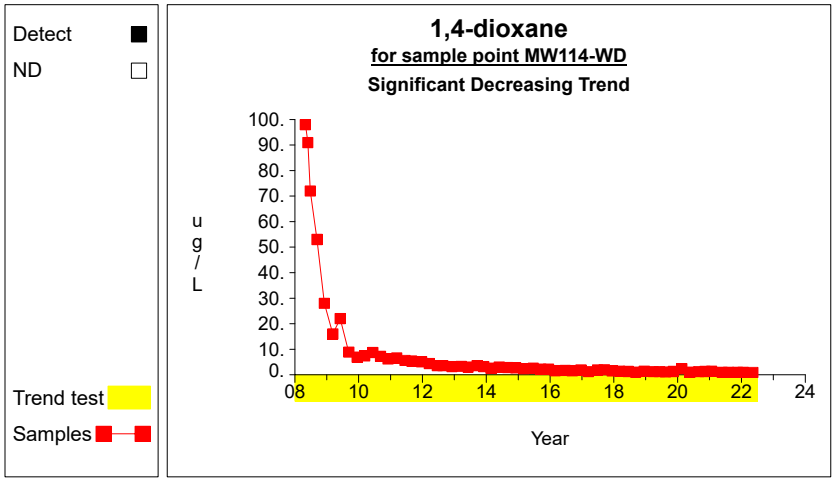
Figure 4.37
North End Trend Analysis Plots - Area 3
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



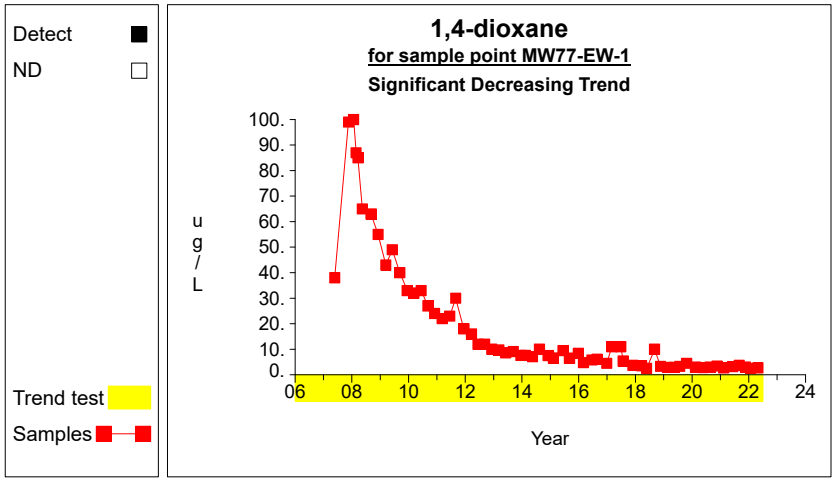
Graph 1



Graph 2



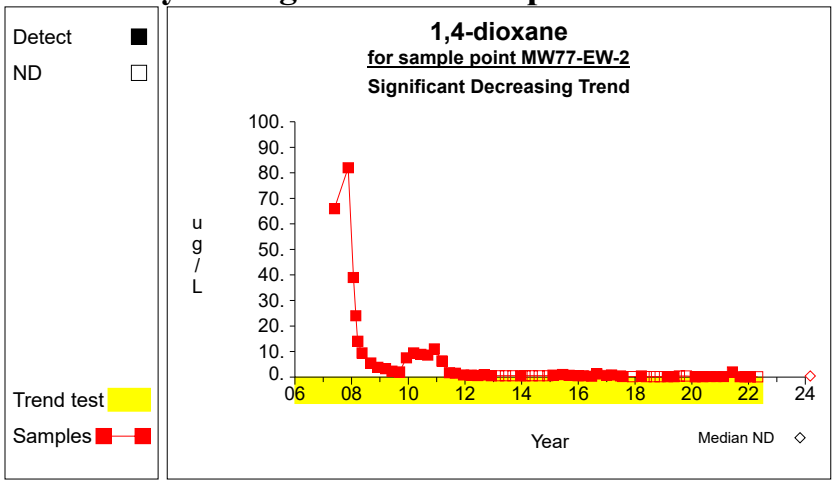
Graph 3



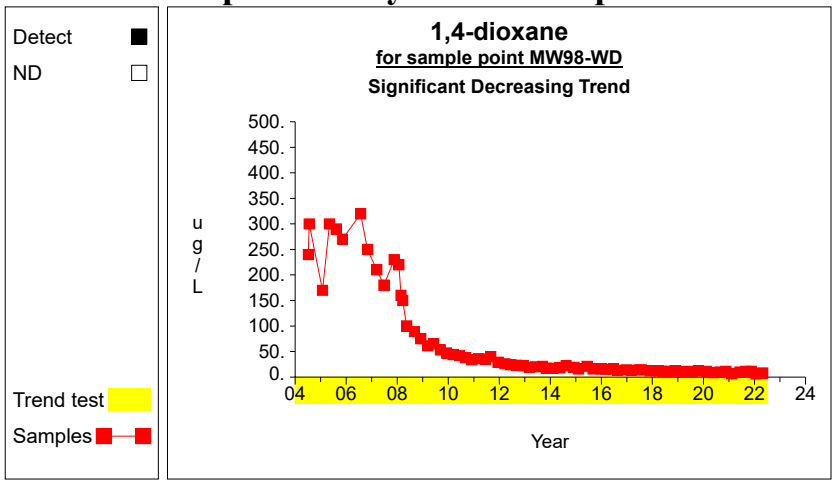
Graph 4

Analysis by Sen's Test prepared on: 8/3/2022

Figure 4.37
North End Trend Analysis Plots - Area 3
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



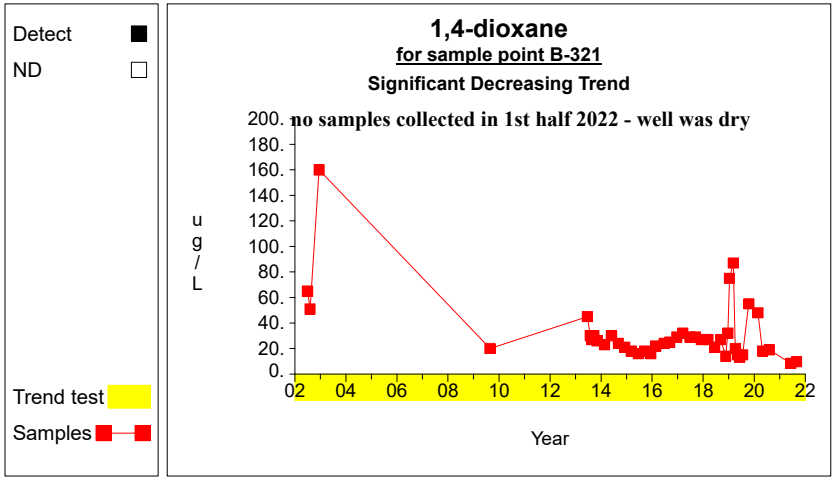
Graph 5



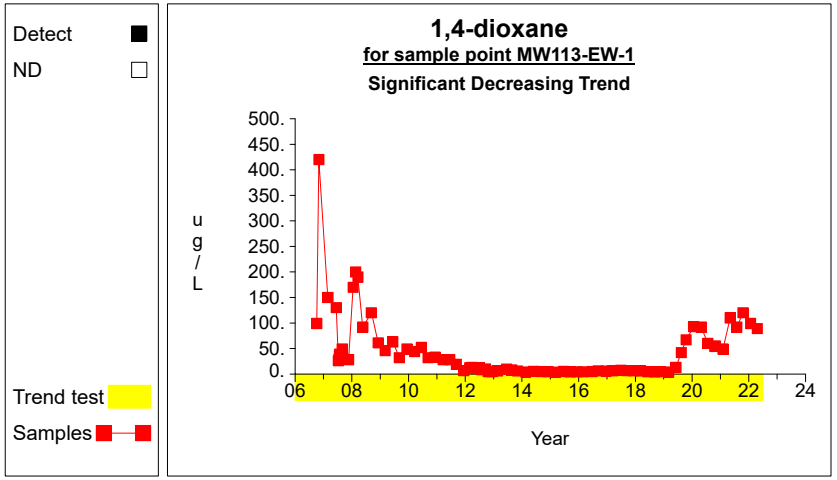
Graph 6

Analysis by Sen's Test prepared on: 8/3/2022

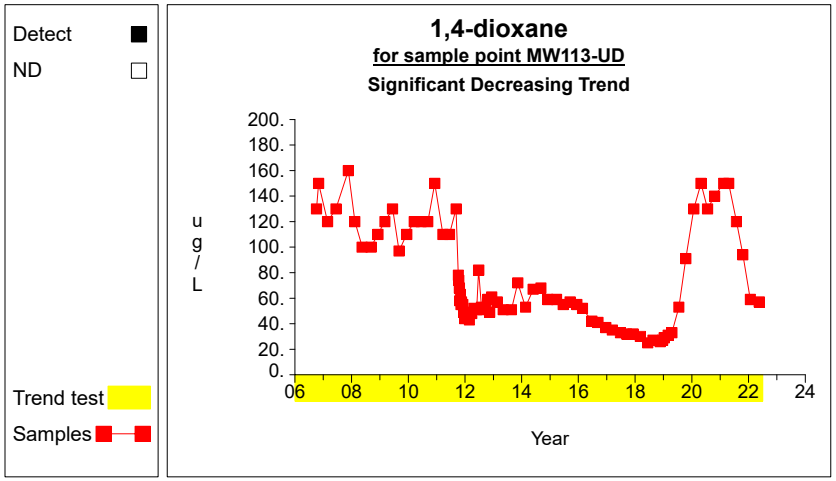
Figure 4.38
North End Trend Analysis Plots - Area 4
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



Graph 1



Graph 2



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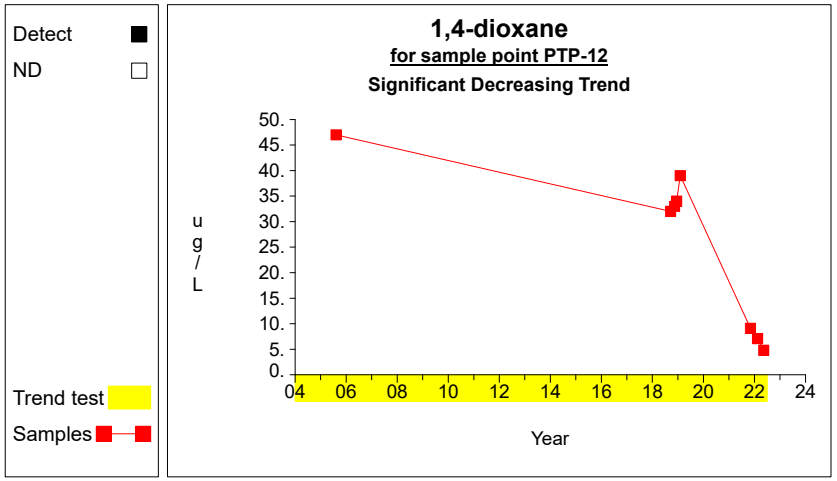
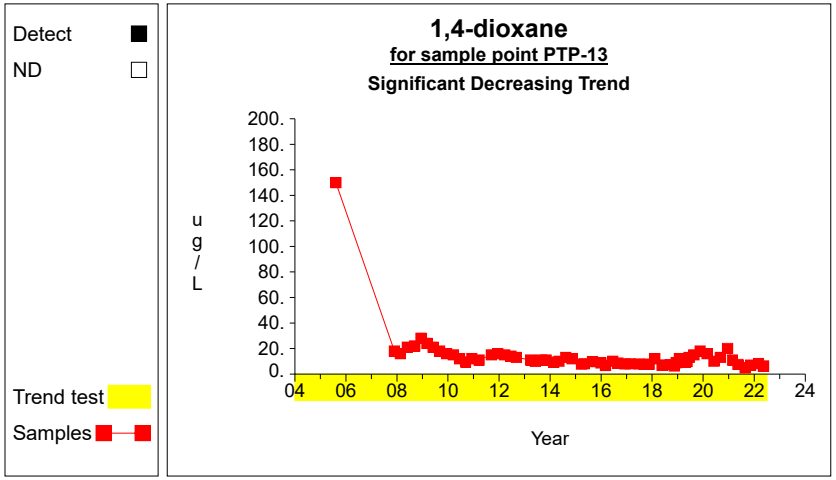


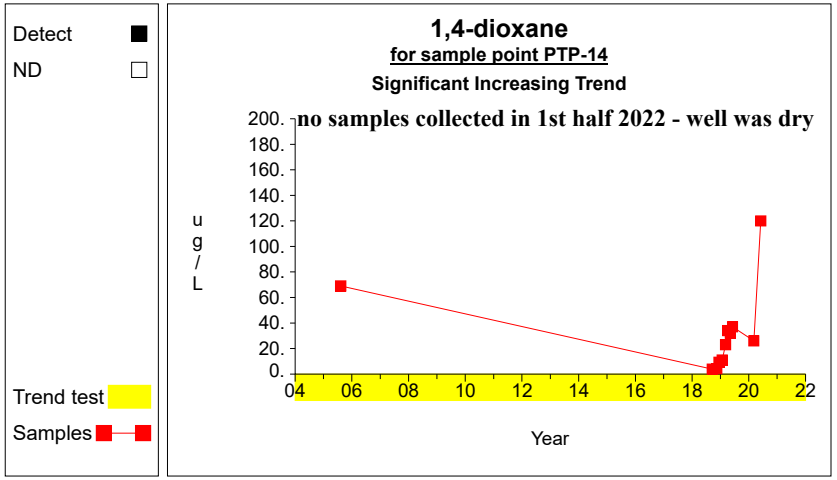
Graph 4

Analysis by Sen's Test prepared on: 8/3/2022

Figure 4.38
North End Trend Analysis Plots - Area 4
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



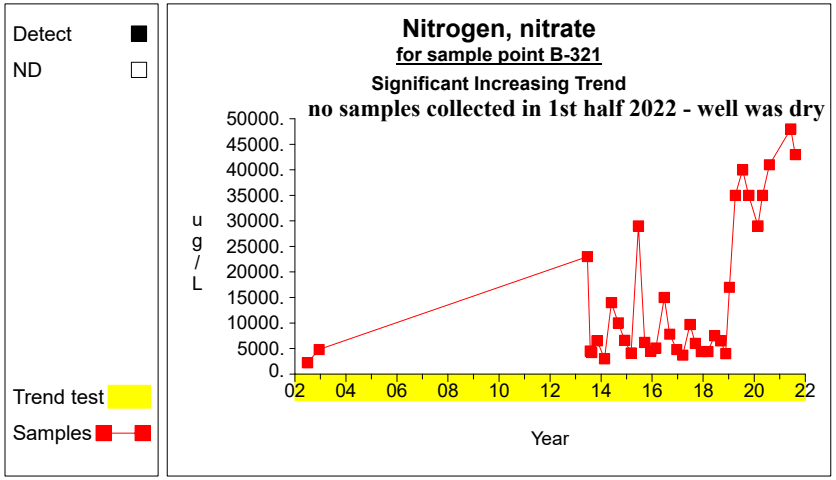
Graph 5



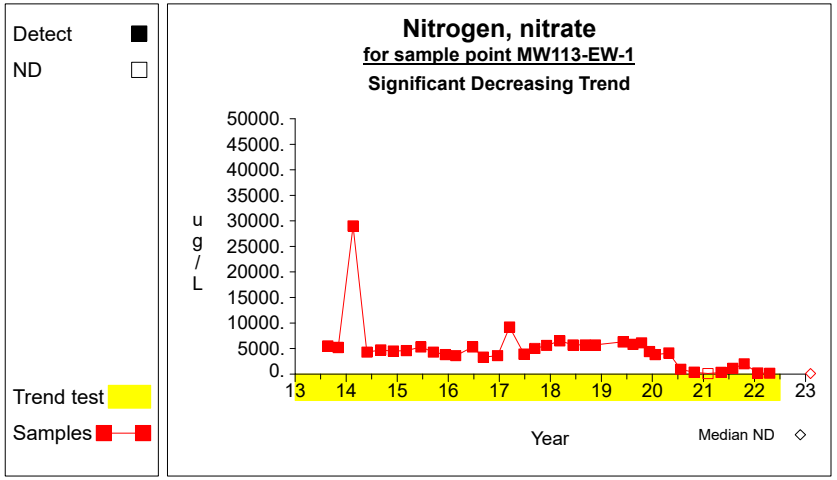
Graph 6

Analysis by Sen's Test prepared on: 8/3/2022

Figure 4.38
North End Trend Analysis Plots - Area 4
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



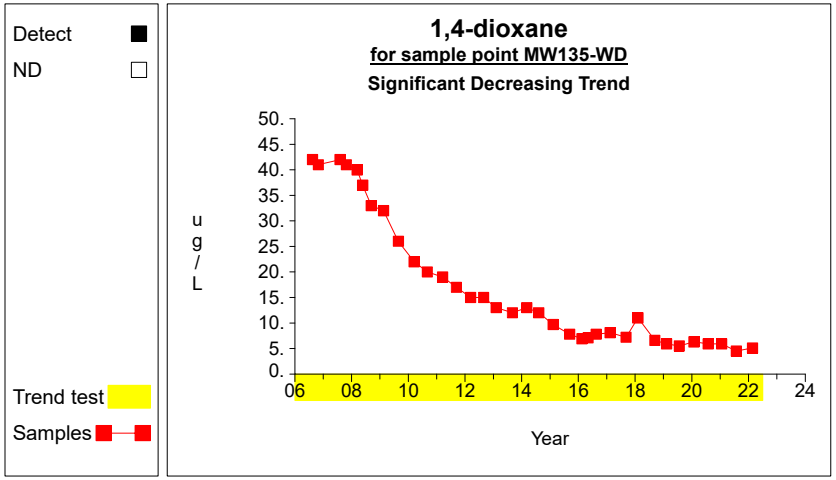
Graph 1



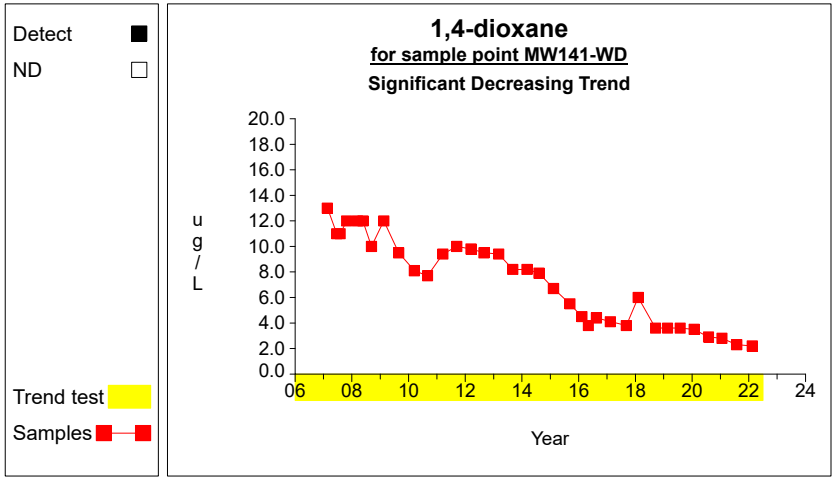
Graph 2

Analysis by Sen's Test prepared on: 8/3/2022

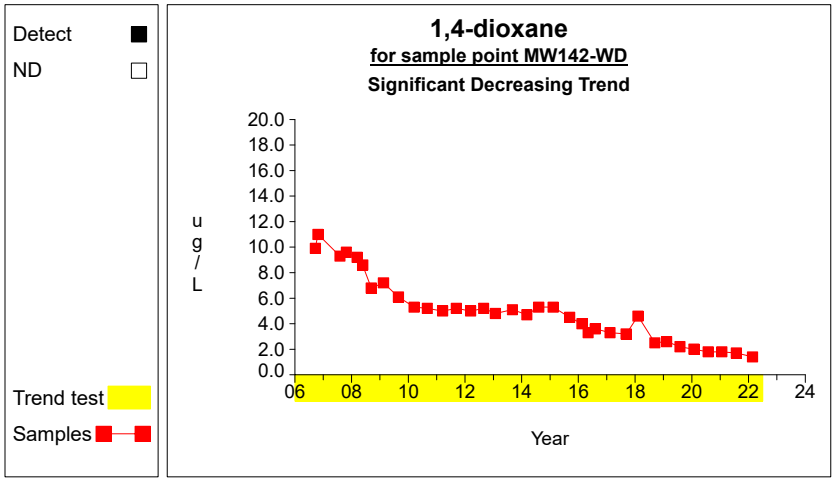
Figure 4.39
North End Trend Analysis Plots - Sections 30 and 19
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



Graph 1



Graph 2



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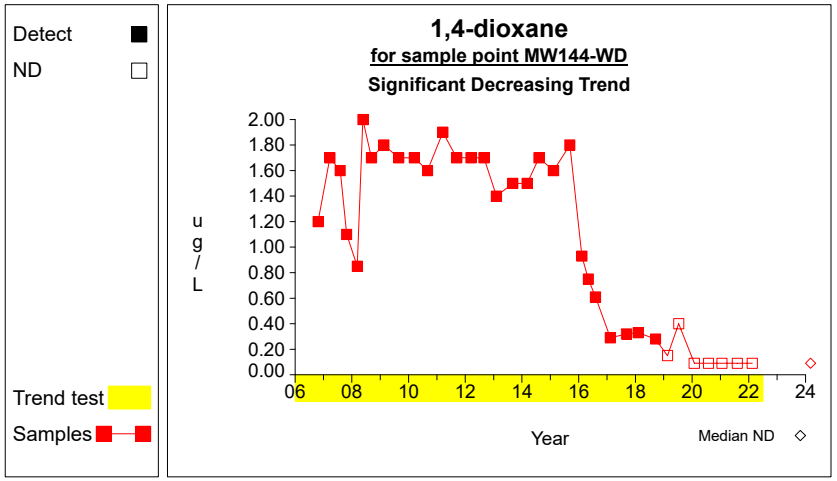
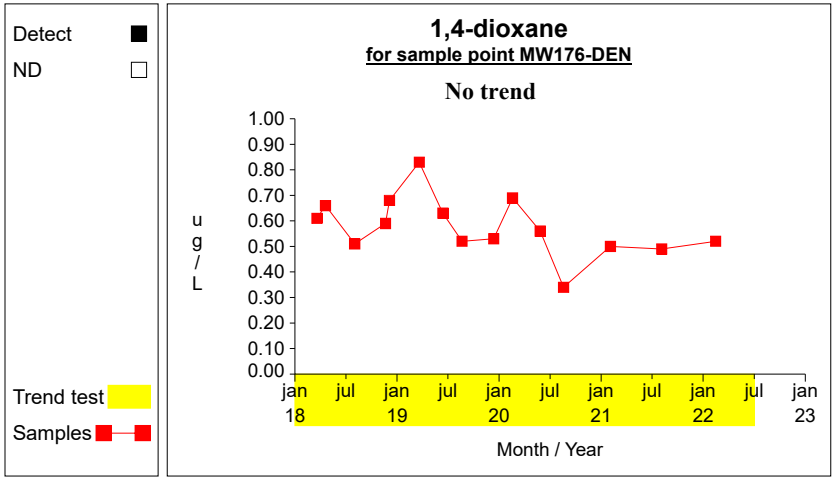


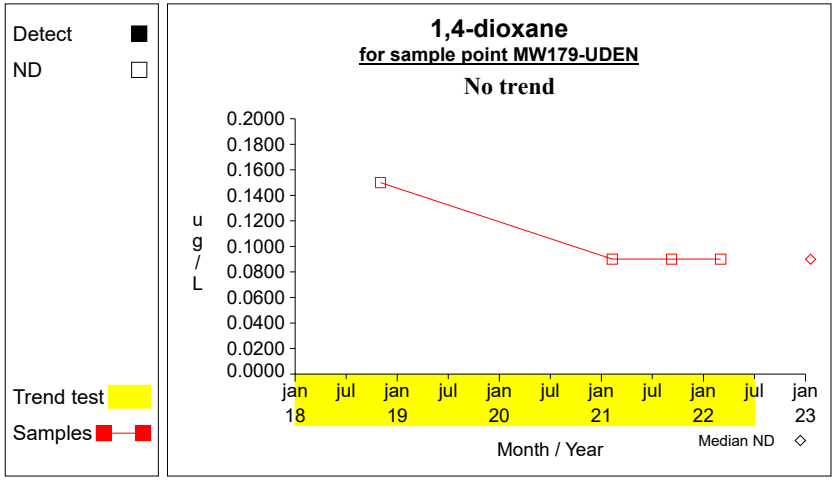
Graph 4

Analysis by Sen's Test prepared on: 8/3/2022

Figure 4.39
North End Trend Analysis Plots - Sections 30 and 19
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



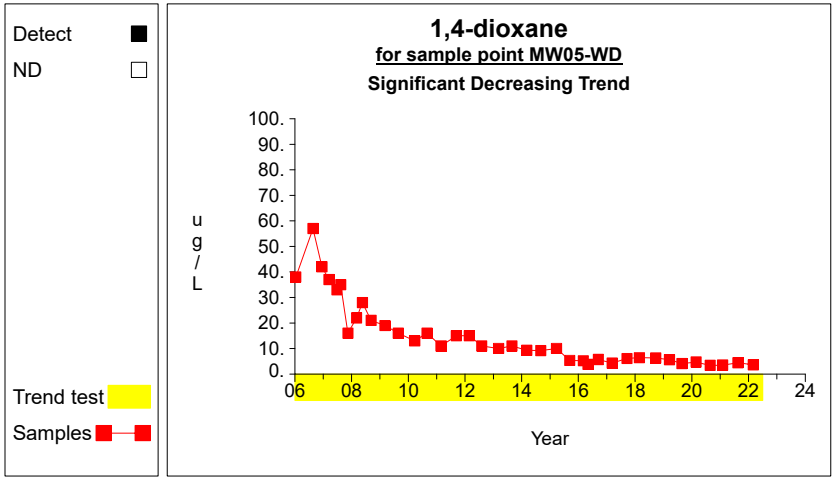
Graph 5



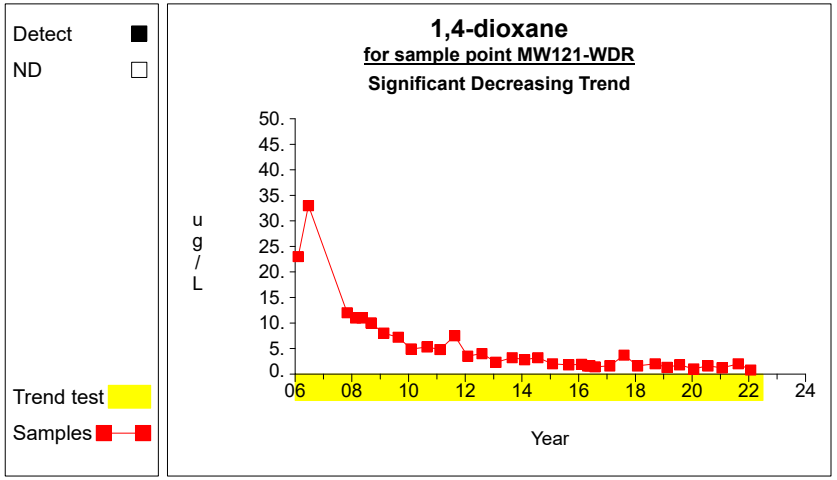
Graph 6

Analysis by Sen's Test prepared on: 8/3/2022

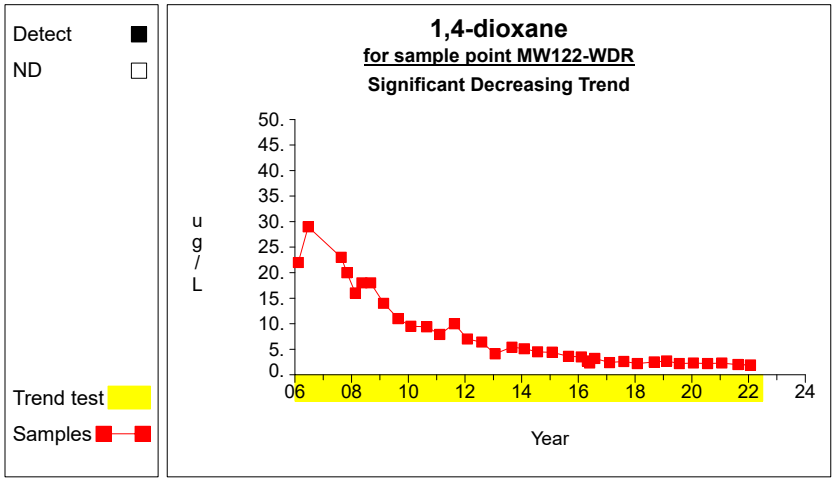
Figure 4.40
North End Trend Analysis Plots - Yale Area
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



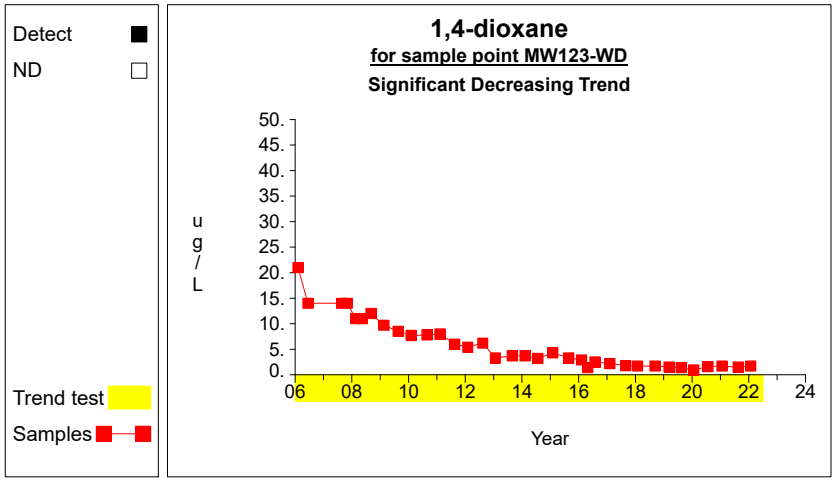
Graph 1



Graph 2



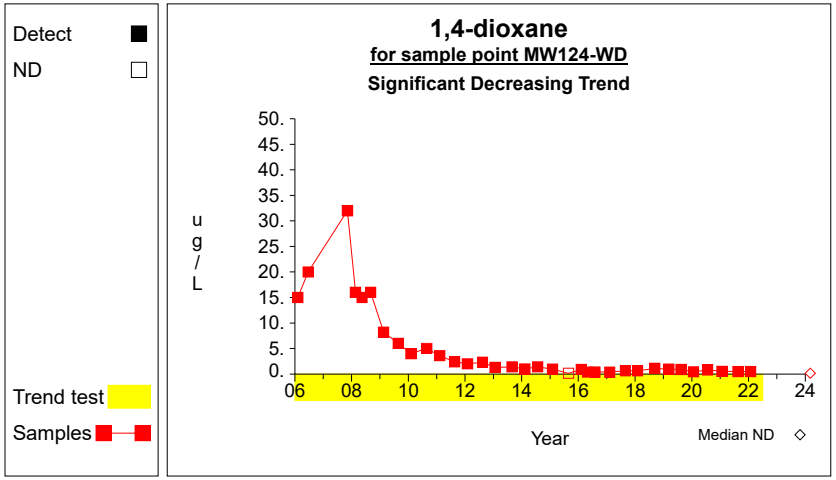
Graph 3



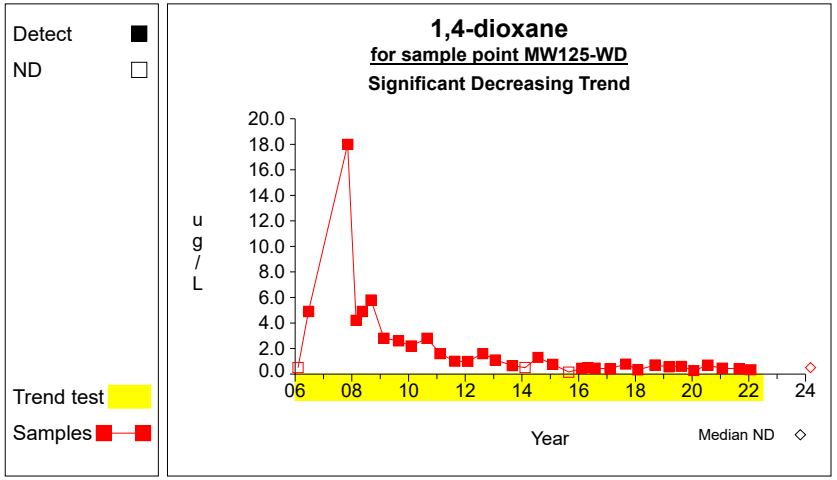
Graph 4

Analysis by Sen's Test prepared on: 8/3/2022

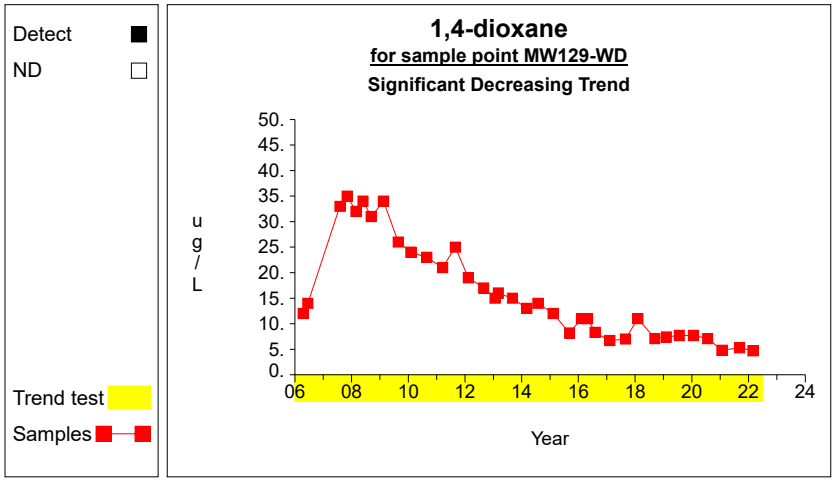
Figure 4.40
North End Trend Analysis Plots - Yale Area
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



Graph 5



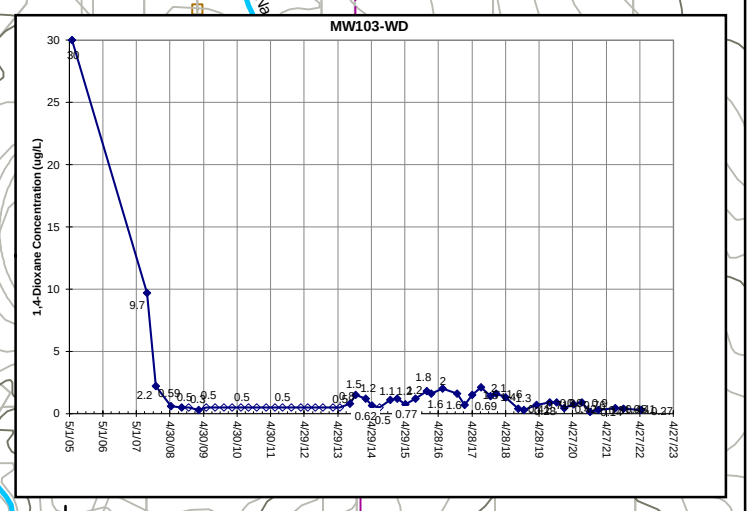
Graph 6

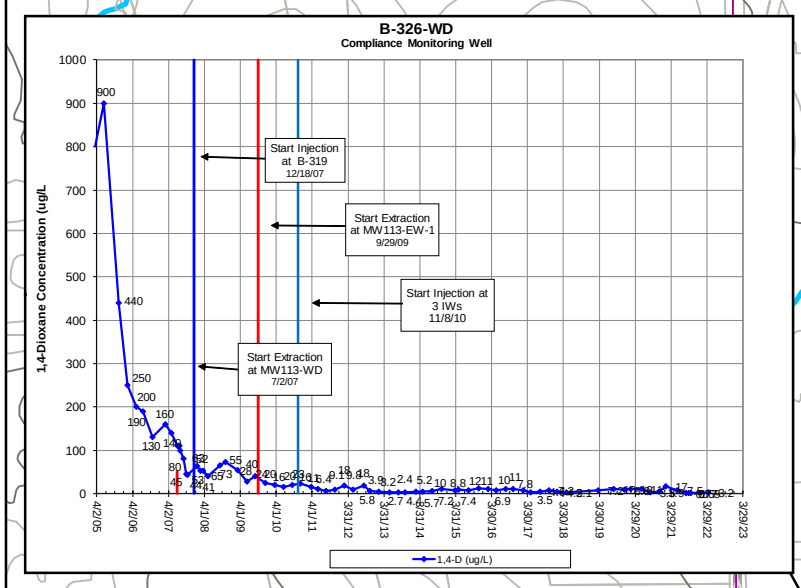


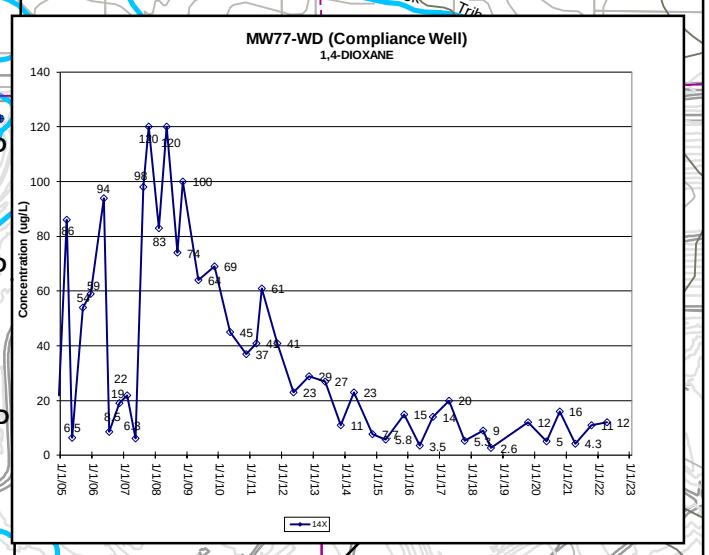
Graph 7

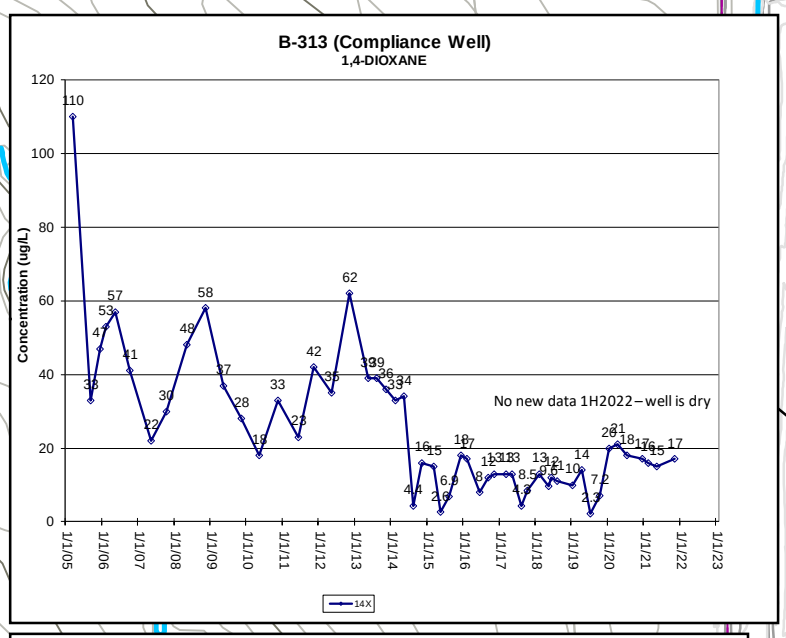
Analysis by Sen's Test prepared on: 8/3/2022

13
18
24
19
30
31
MW176-DEN
0.52 J
MW144-WD
0.9 U
MW142-WD
1.4
MW141-WD
2.2
MW135-WD
5.1
MW122-WDR
1.9
MW123-WD
1.7
MW124-WD
0.48 J
MW121-WDR
0.77 J
MW125-WD
0.34 J
MW179-UDEN
0.9 U
MW129-WD
4.7
MW05-WD
3.6
MW156-EW-1
0.6 J
MW156-WD
0.51 J
MW155-EW-1
1.5
MW151-WD
1.8
MW157-WD
0.9 U
MW153-EW-1
2.3
MW154-EW-1
2.6
MW132-WD
10
MW160-WD
2.9
PTP-13
6.3
MW113-WD
36
B-326-UD
4.6
B-326-WD
3.2
MW113-UD
57
MW113-EW-1
89
NBBW-IW-3
PTP-12
4.8
MW118-WD
0.22 J
MW117-WD
1.2
MW114-WD
0.89 J
MW103-WD
0.27 J
MW77-EW-2
0.9 U
MW102-WD
1.2
MW77-EW-1
2.7
PTP-14
Dry
B-313
Dry
B-321
Dry
MW62-WDR
2.9
MW98-WD
7.8
MW38-1028N-256E
2
B-314
0.9 U
MW23-UPPER-C
0.9 U
MW74-WD
0.9 U
GW-106
0.9 U
MW77-WD
12
MW38-830N-230E
4.2
MW170-EW-1
11
MW78-WD
0.9 U
MW91-WD
0.9 U
MW38-170S-140W
30
MW54-WD
0.9 U
MW38-825S-445E
2800
MW36-WDR
0.9 U
North Boundary
Barrier Wall
North Toe
Mississippi Ave.
E. Jewell Ave.
Yale Ave.
Gun Club Road
Coal Creek
Un-Named Murphy Creek Tributary
Murphy Creek
UNNAMED CREEK
MURPHY CREEK
Feet
0
600
1,200
1 inch = 1,200 feet
N









Legend

- Increasing Trend
- No Trend; 1,4-Dioxane <= 0.9 µg/L
- Decreasing Trend; 1,4 Dioxane > 0.9 µg/L
- No Trend; 1,4 Dioxane > 0.9 µg/L
- Decreasing Trend; 1,4-Dioxane <= 0.9 µg/L
- Never Above Performance Standard

Note: 1,4-Dioxane values from last sampling date for 1st half 2022

1,4 Dioxane > 0.9 µg/L in 2nd half 2021 (dashed where inferred)

FIGURE 4.41

PROGRESS FROM RESPONSE ACTIONS

LAST SAMPLING DATE

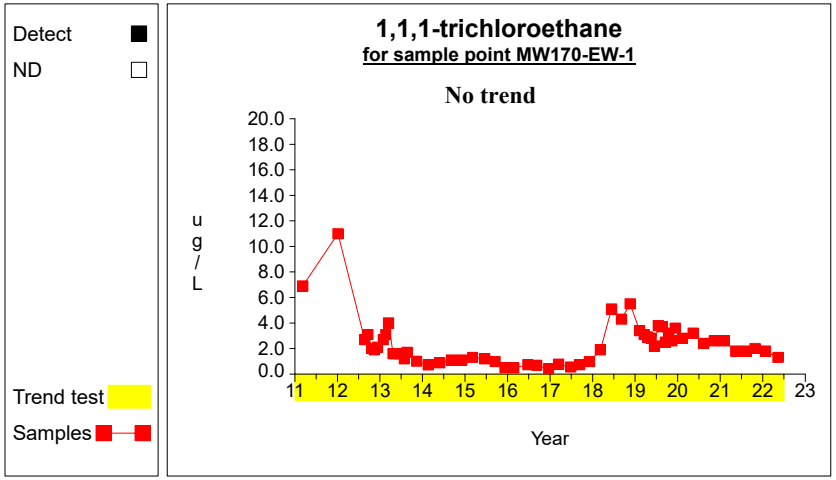
O&M Status Report - 1st Half 2022
Lowry Landfill Superfund Site, Colorado

PARSONS

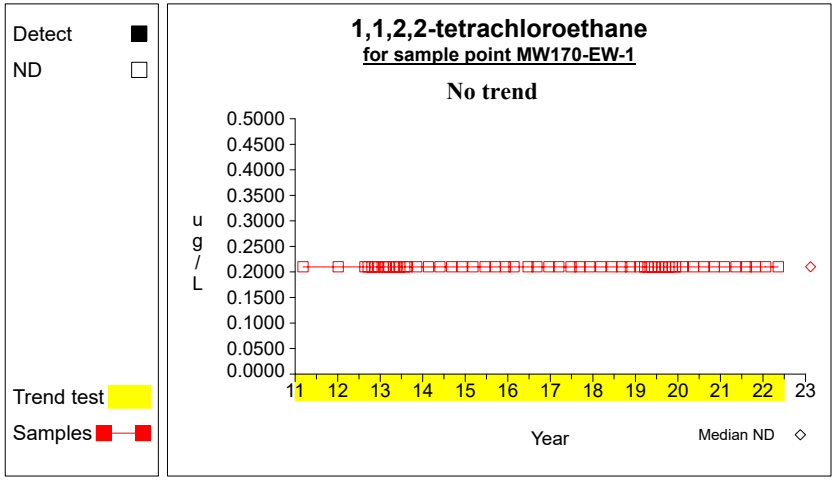
Denver, Colorado

S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2022\GIS\Fig 4-41 14Diox Sec1930 31 12Q22 MostRecent.mxd lxh 9/1/2022

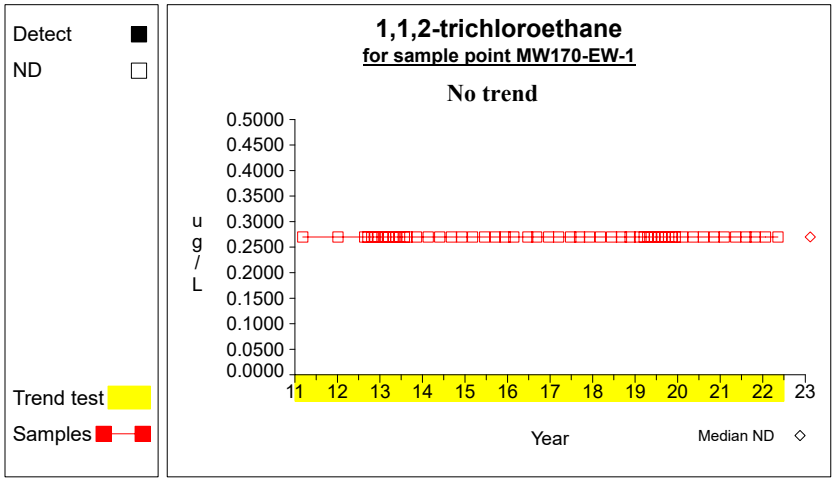
Figure 4.42
North End Trend Analysis Plots - Area 5
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



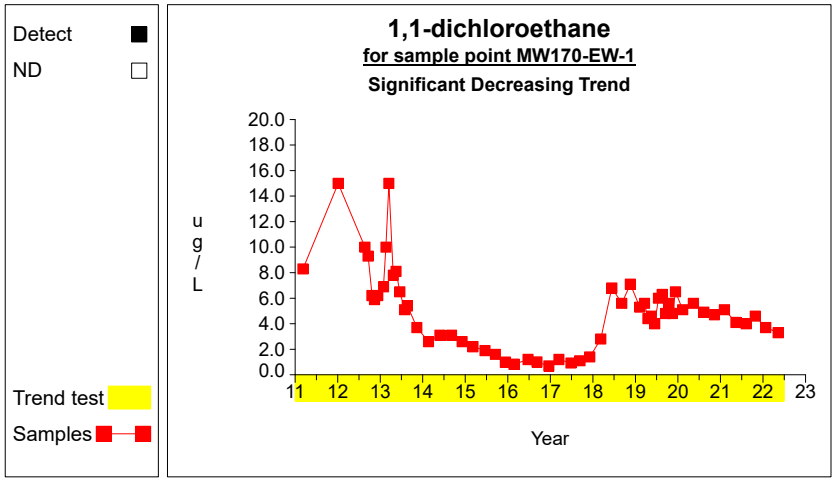
Graph 1



Graph 2



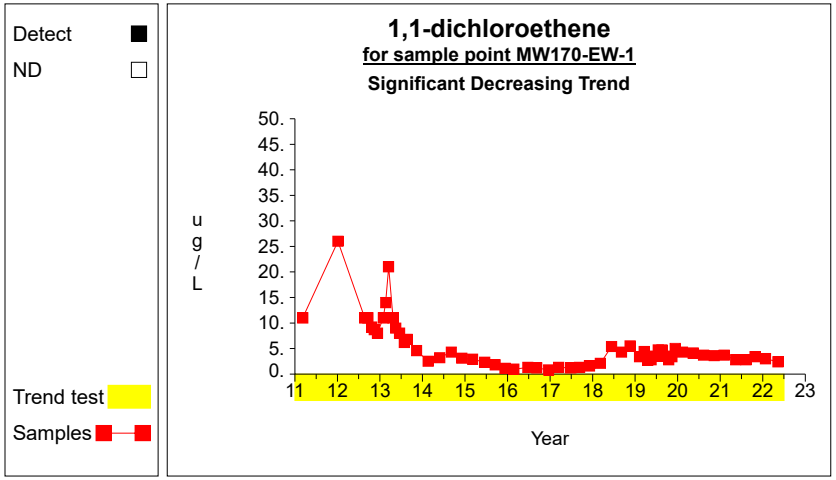
Graph 3



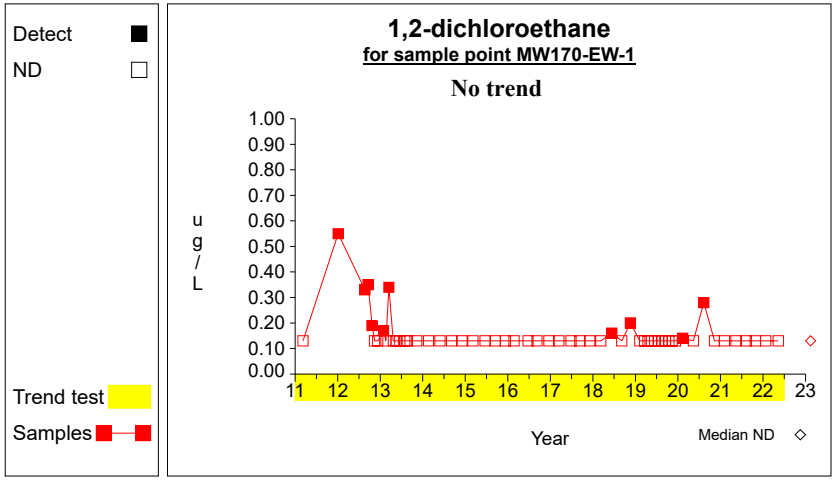
Graph 4

Analysis by Sen's Test prepared on: 8/3/2022

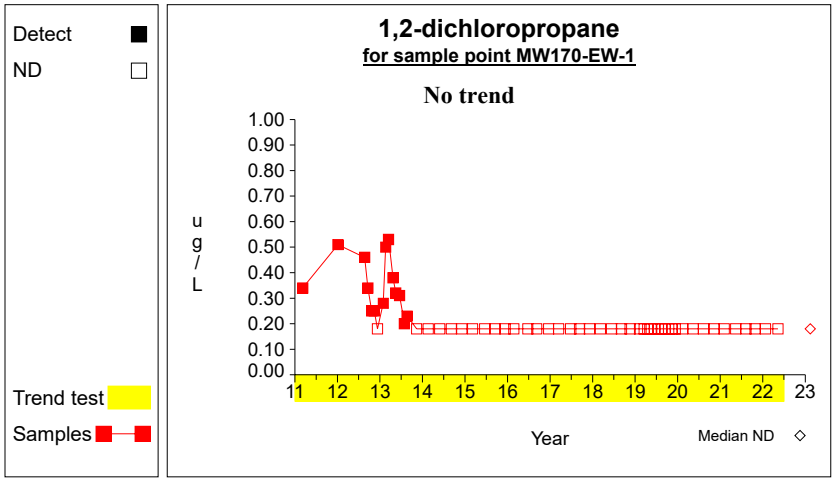
Figure 4.42
North End Trend Analysis Plots - Area 5
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



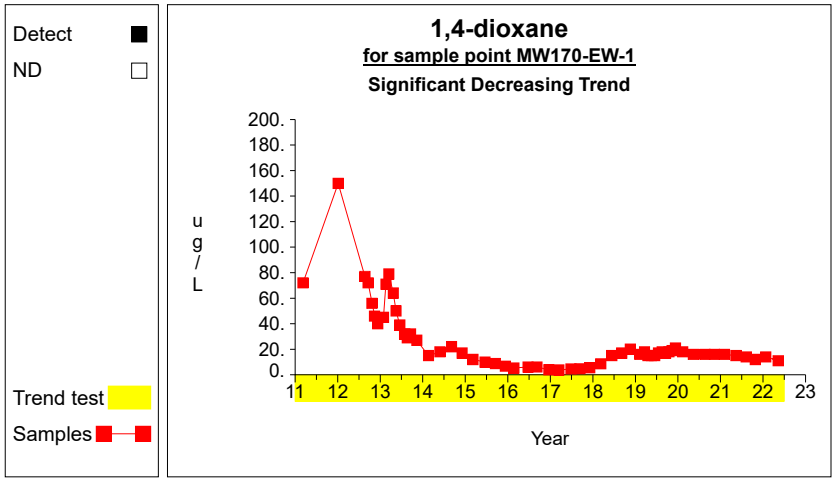
Graph 5



Graph 6



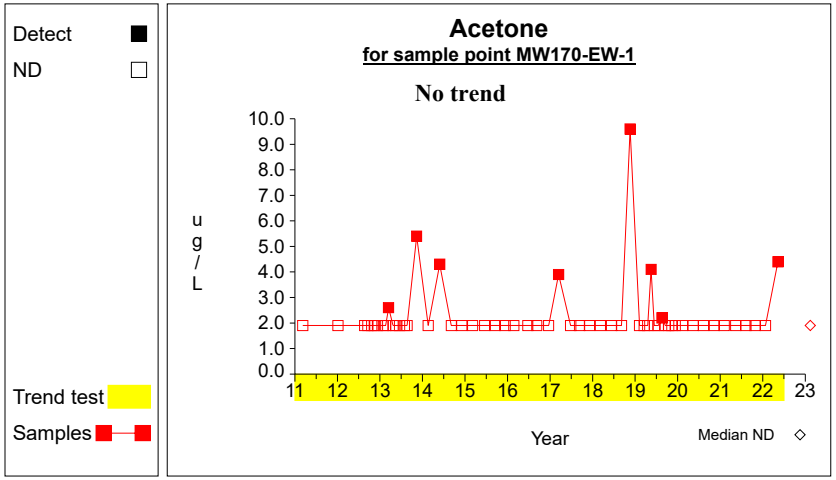
Graph 7



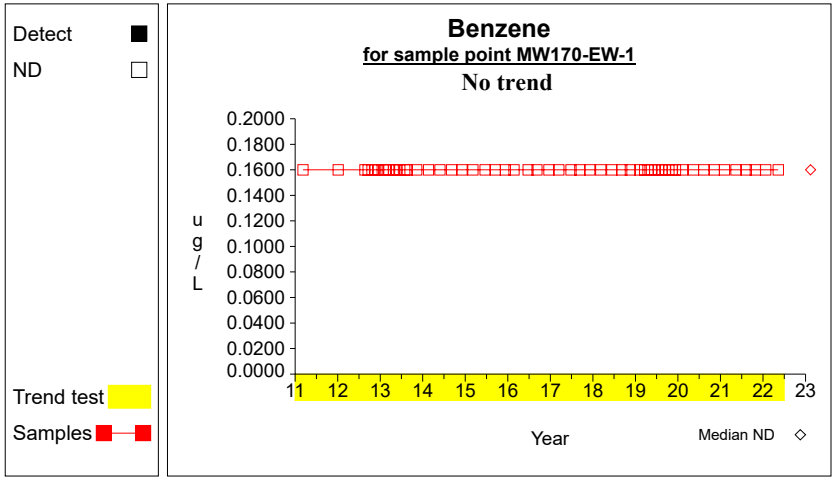
Graph 8

Analysis by Sen's Test prepared on: 8/3/2022

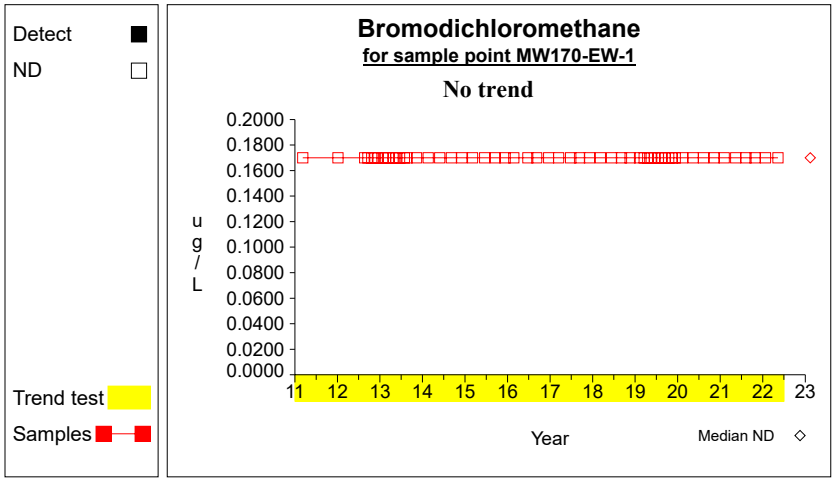
Figure 4.42
North End Trend Analysis Plots - Area 5
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



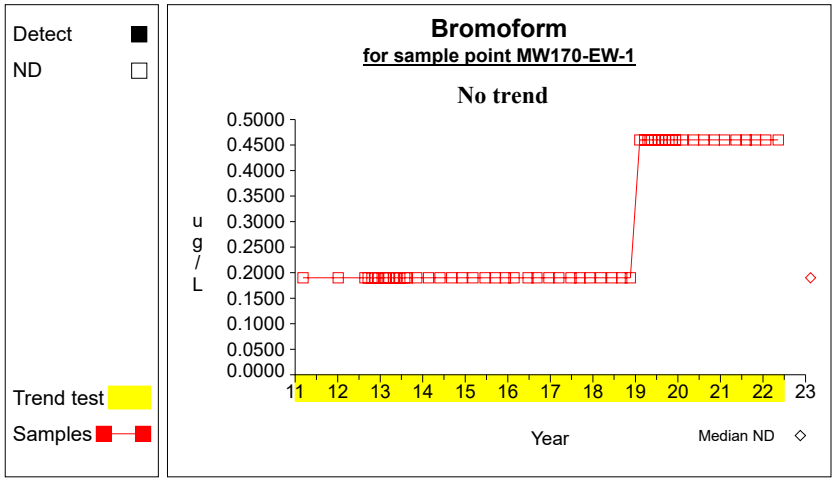
Graph 9



Graph 10



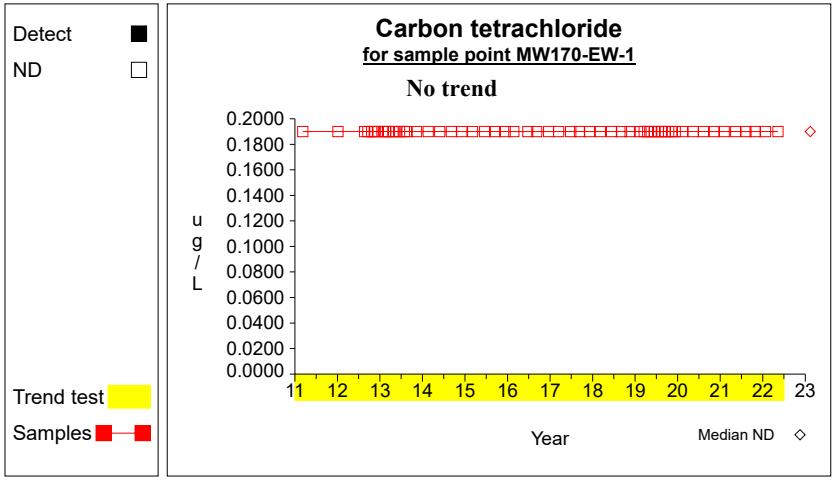
Graph 11



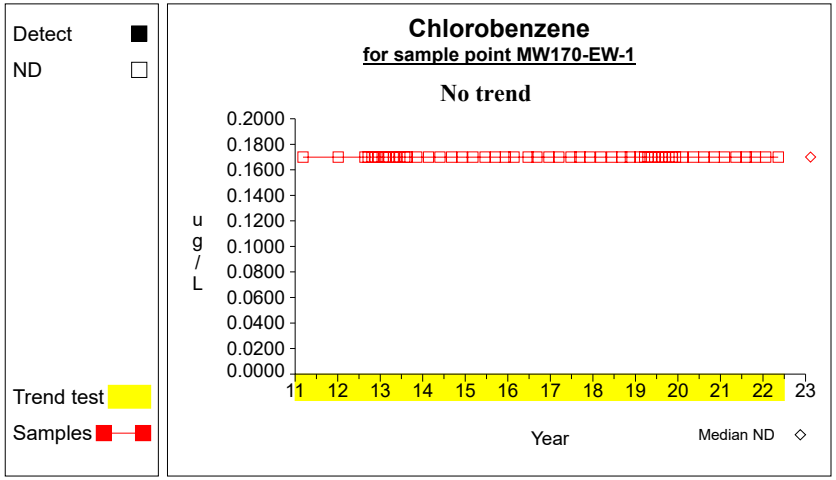
Graph 12

Analysis by Sen's Test prepared on: 8/3/2022

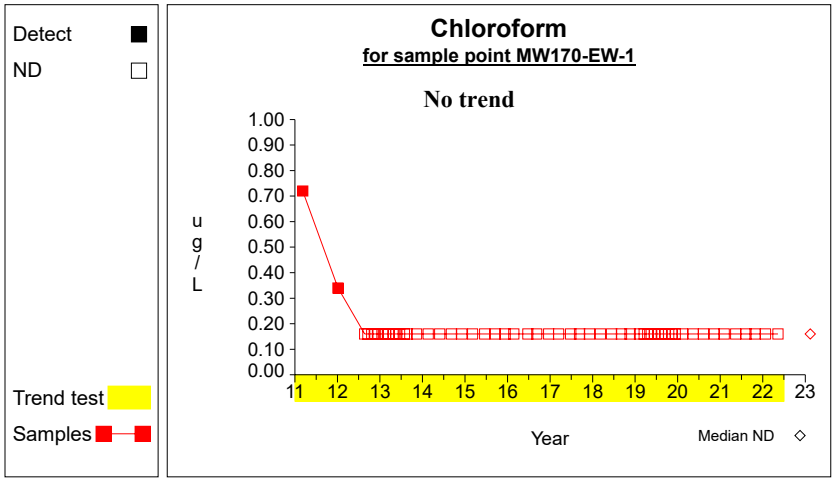
Figure 4.42
North End Trend Analysis Plots - Area 5
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



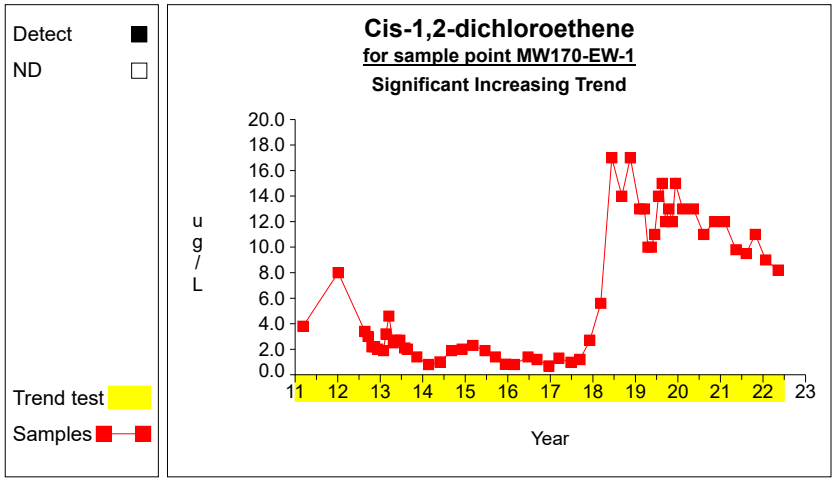
Graph 13



Graph 14



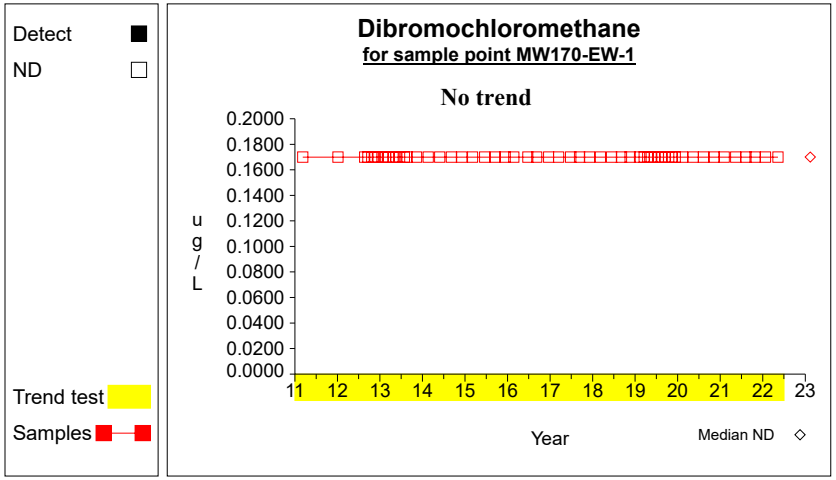
Graph 15



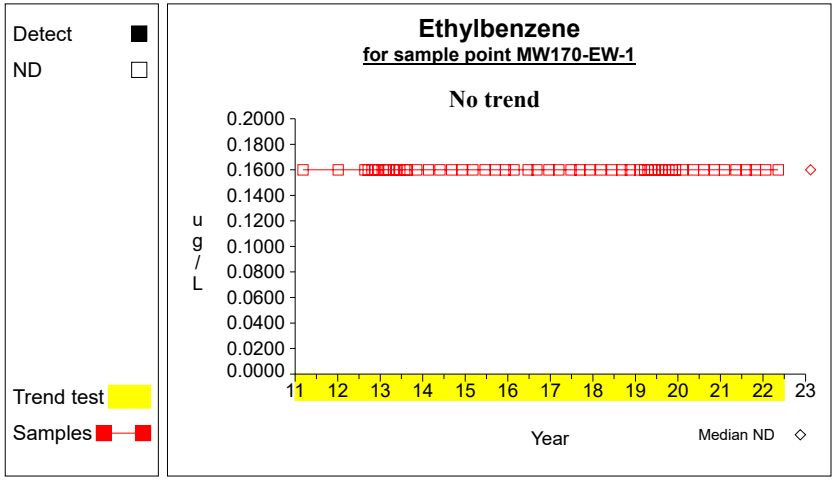
Graph 16

Analysis by Sen's Test prepared on: 8/3/2022

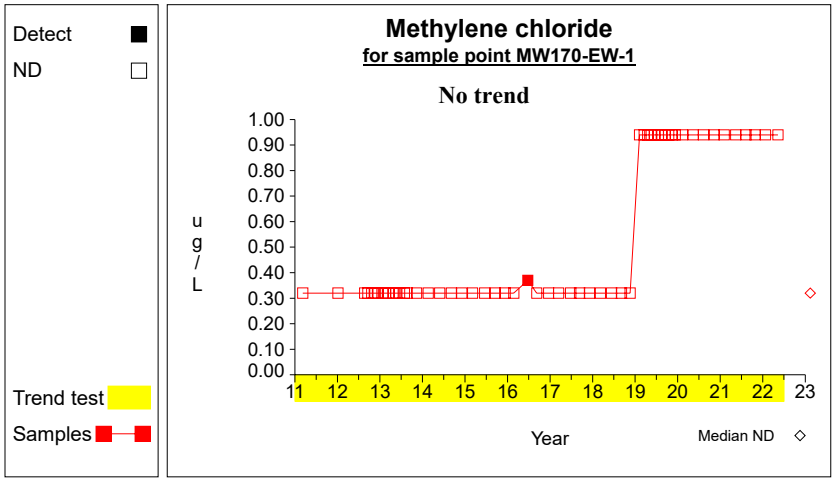
Figure 4.42
North End Trend Analysis Plots - Area 5
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



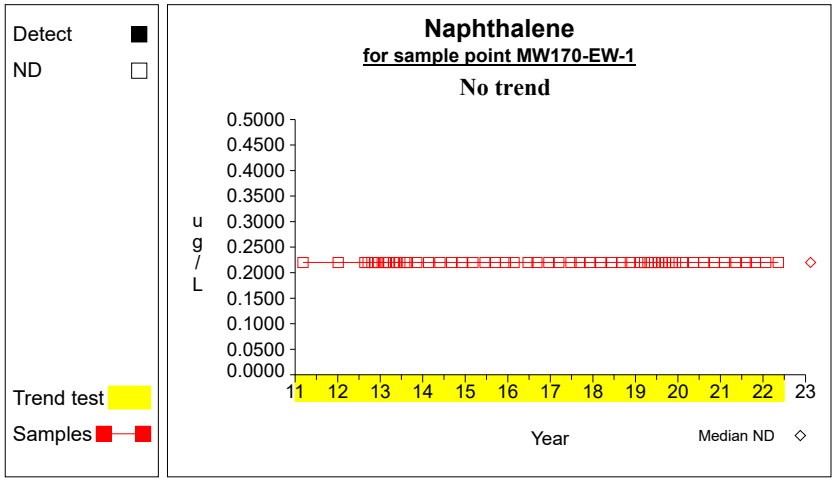
Graph 17



Graph 18



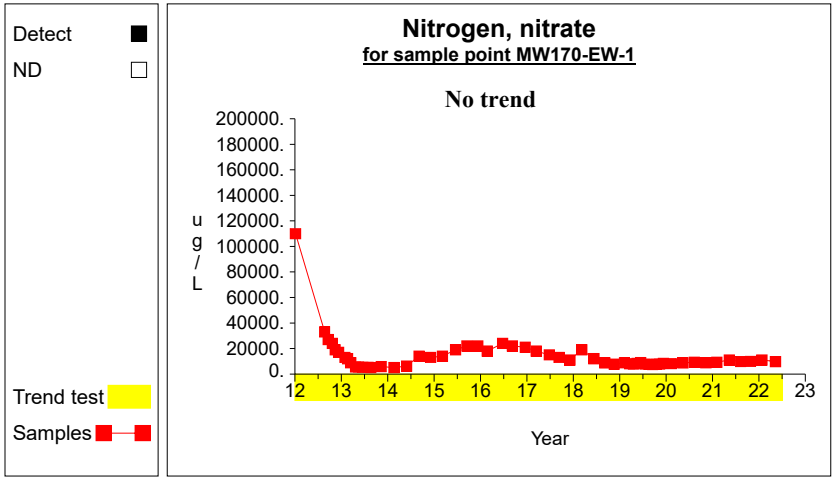
Graph 19



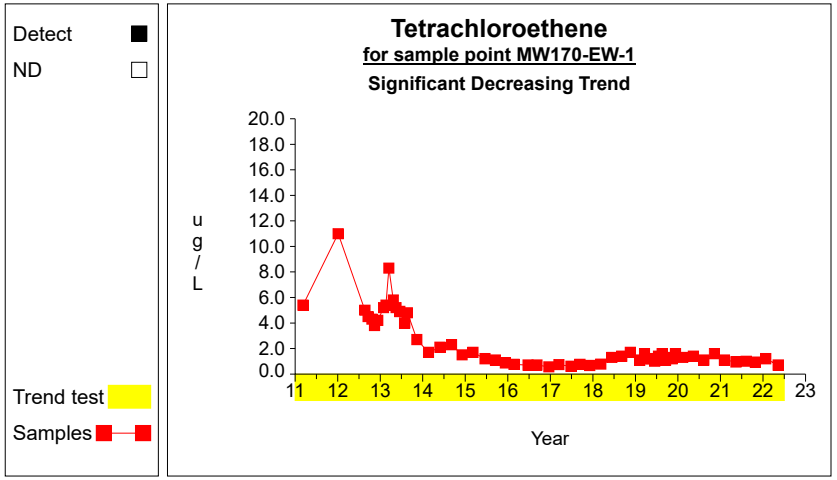
Graph 20

Analysis by Sen's Test prepared on: 8/3/2022

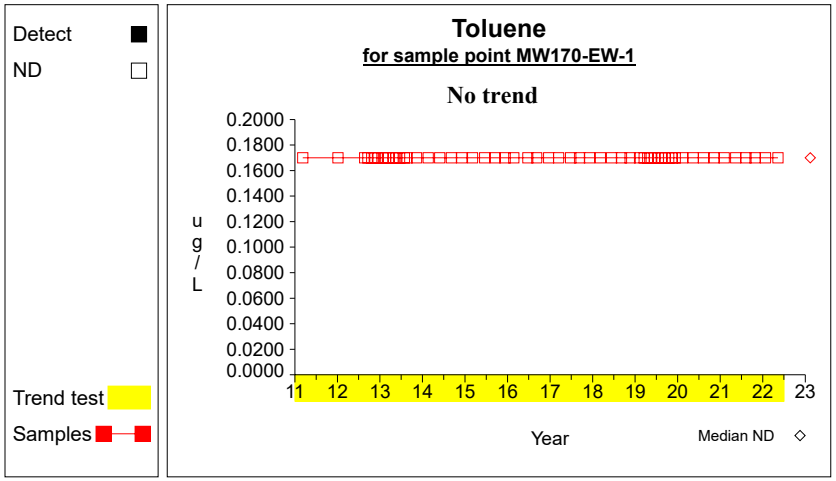
Figure 4.42
North End Trend Analysis Plots - Area 5
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



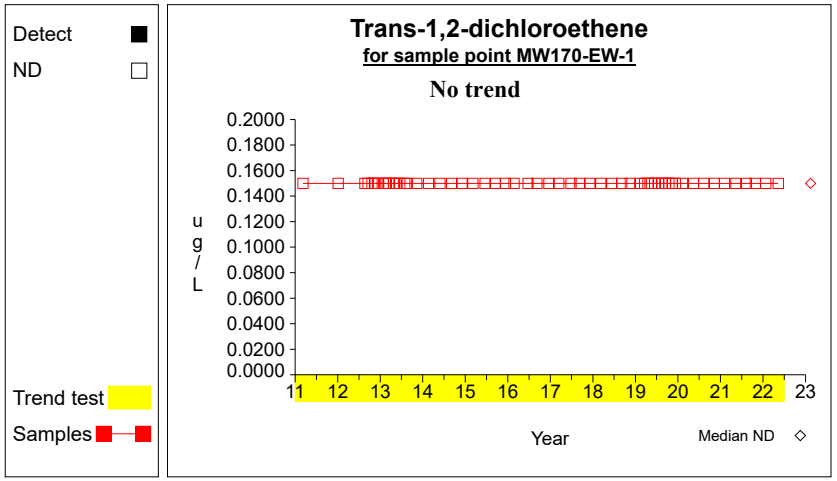
Graph 21



Graph 22



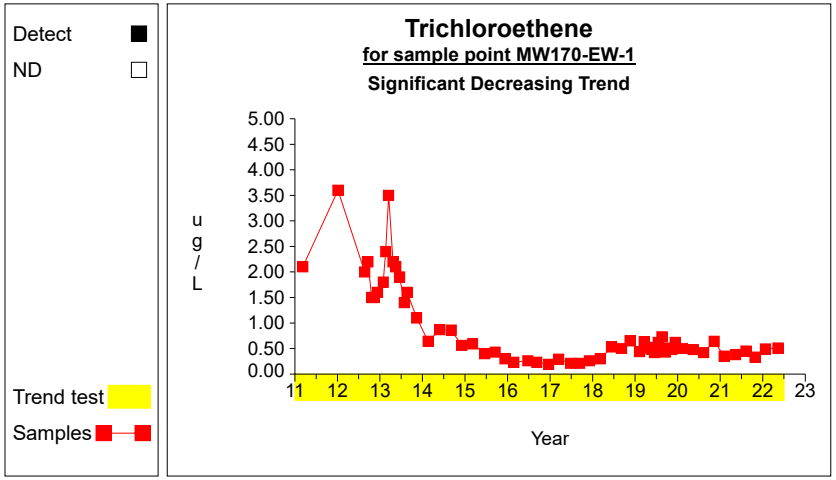
Graph 23



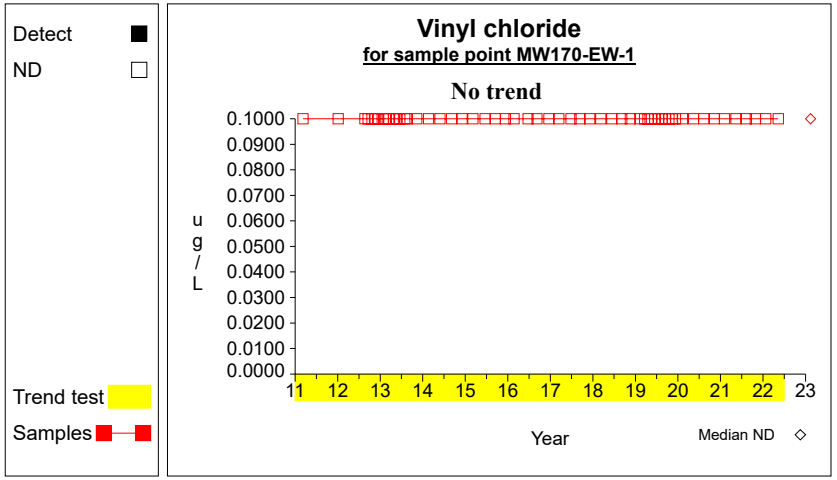
Graph 24

Analysis by Sen's Test prepared on: 8/3/2022

Figure 4.42
North End Trend Analysis Plots - Area 5
January through June 2022 Operations and Maintenance Status Report Lowry Landfill Superfund Site



Graph 25



Graph 26

Analysis by Sen's Test prepared on: 8/3/2022

Fig 4.43 Permitted Well Locations in the Vicinity and Downgradient of Lowry Landfill Superfund Site

Legend

- 1,4 Dioxane > 0.9 µg/L in 2nd quarter 2022 (dashed where inferred)
- Drainage Basin to Five Miles Downgradient of the Site
- Lowry Landfill Boundary
- ALL UNNAMED AQUIFERS
- ALLUVIAL
- ARAPAHOE
- DAWSON
- DENVER
- LARAMIE-FOX HILLS
- LOWER ARAPAHOE
- LOWER DAWSON
- QUATERNARY ALLUVIUM
- UNCONFINED SAN LUIS VALL
- UPPER ARAPAHOE
- UPPER DAWSON
- NO AQUIFER SPECIFIED

Black number: ID in the spreadsheet

0 1,250 2,500 Feet

N

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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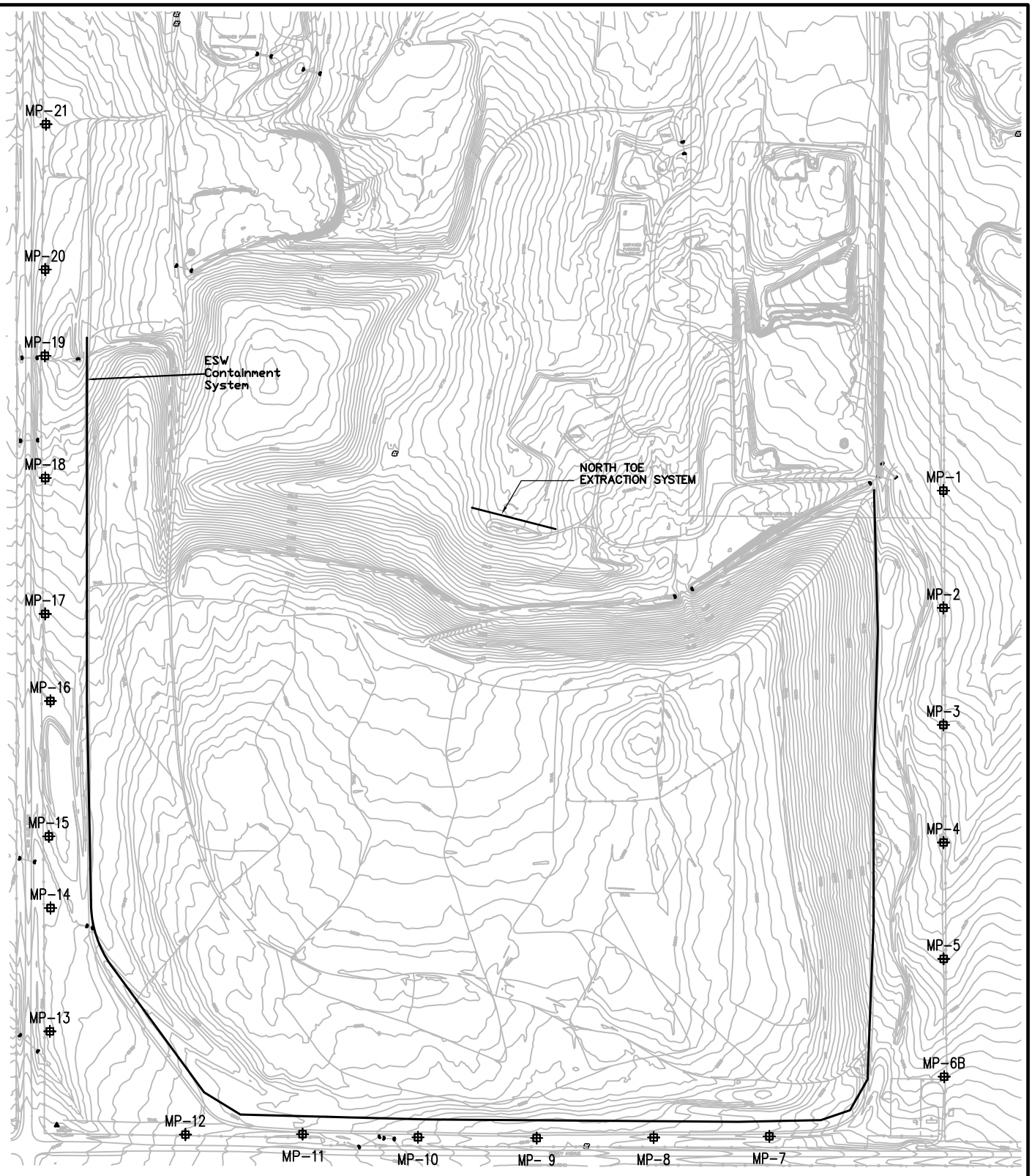


LEGEND

MP-1 — LFG Monitoring Probe

5730 — Topographic Contour

N

0 300 600'

1"=600'

FIGURE 5.1

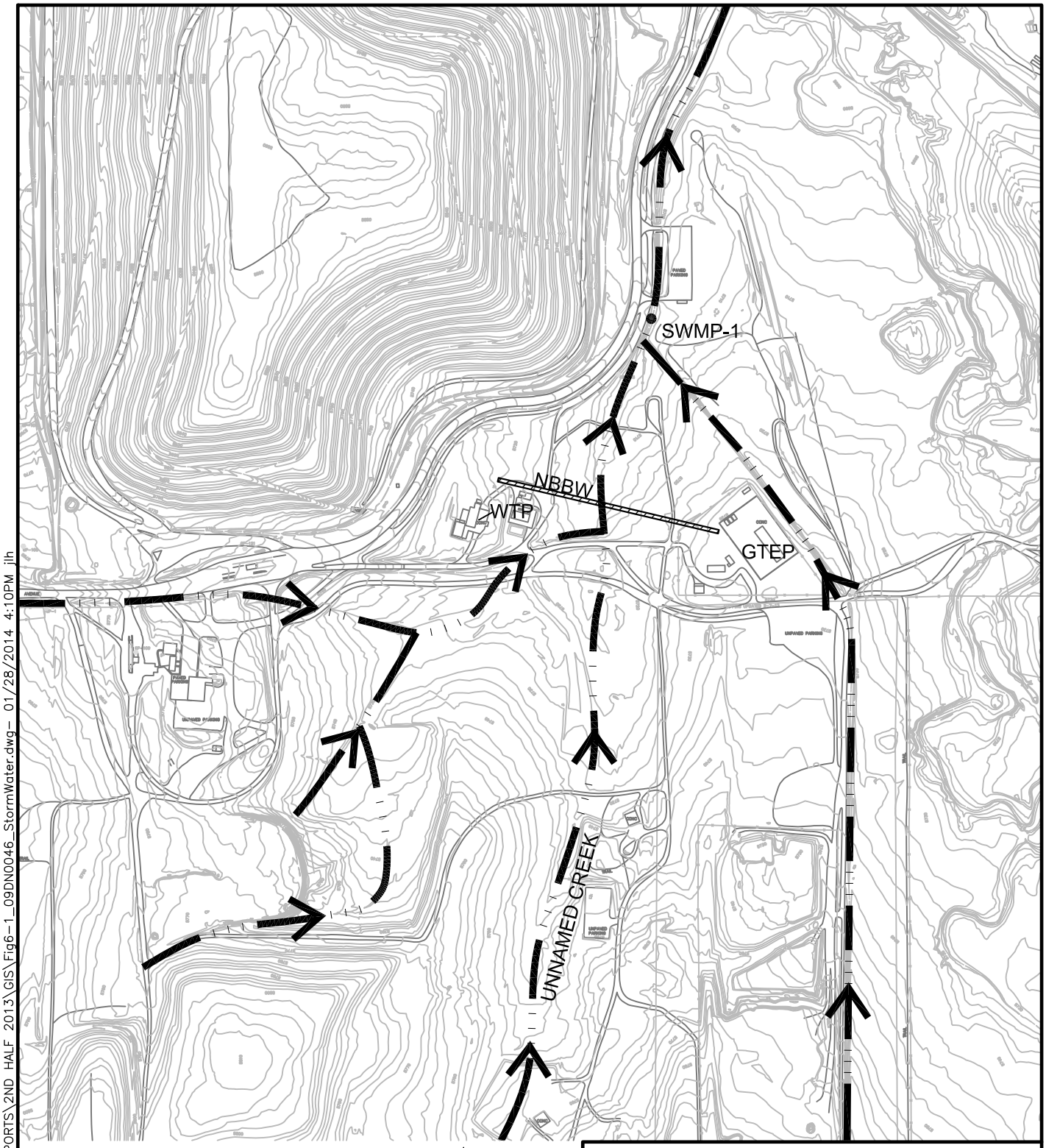
GAS MONITORING PROBE LOCATION MAP

Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

S:\ES\CAD\LOWRYLF\727479\60030\02DN0036.dwg 02\27\14 SEH



LEGEND

SWMP-1 — STORMWATER SAMPLE LOCATION

5730 — TOPOGRAPHIC CONTOUR

NORTH BOUNDARY BARRIER WALL

STORMWATER DRAINAGEWAY AND FLOW DIRECTION

N

0 300 600

FEET

FIGURE 6.1

STORMWATER SAMPLE LOCATION

Lowry Landfill Superfund Site, Colorado

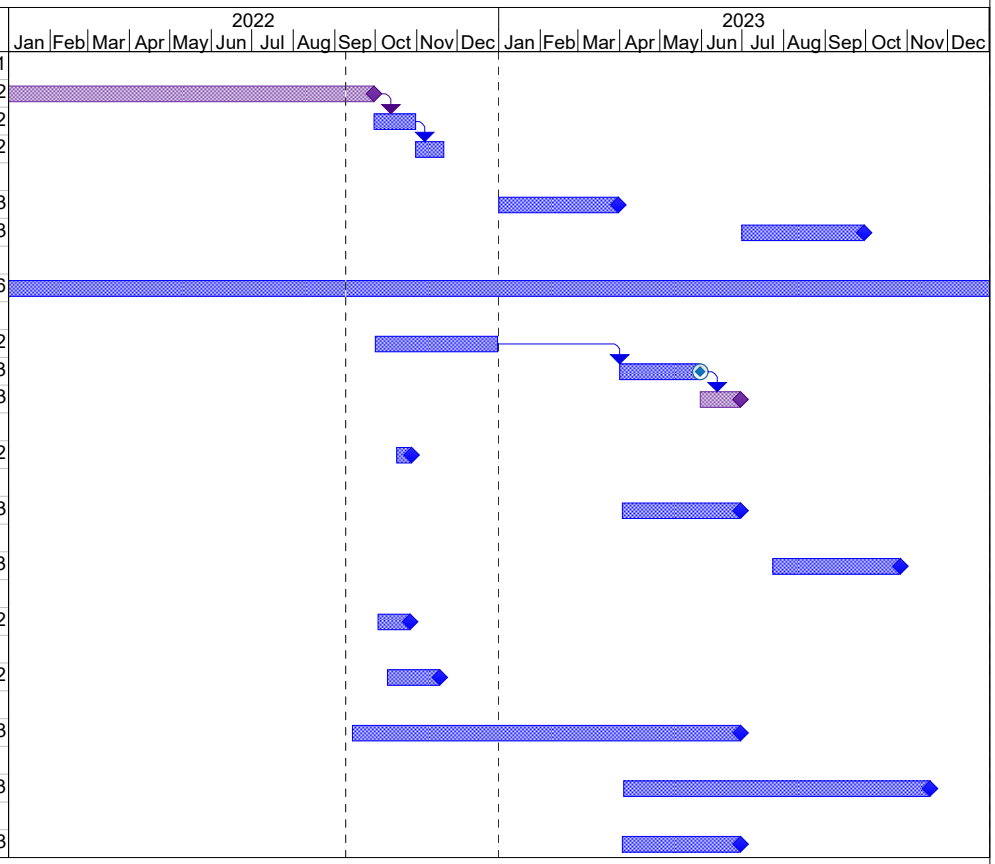
PARSONS

Denver, Colorado

S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\2ND HALF 2013\GIS\Fig6-1_09DN0046_StormWater.dwg- 01/28/2014 4:10PM jlh

Figure 9.1
Master Schedule

ID	Task Name	Duration	Start	Finish
1	Update Site Management Plan	136 edays	Fri 2/26/21	Mon 7/12/21
2	Agency Review	445 edays	Mon 7/12/21	Fri 9/30/22
3	Comment Resolution/Approval	31 edays	Fri 9/30/22	Mon 10/31/22
4	Final Site Management Plan Production	21 edays	Mon 10/31/22	Mon 11/21/22
5				
6	2H 2022 O&M Status Report	89 edays	Sun 1/1/23	Fri 3/31/23
7	1H 2023 O&M Status Report	91 edays	Sat 7/1/23	Sat 9/30/23
8				
9	WTP Periodic Compliance Reports	2000 edays	Fri 1/1/21	Wed 6/24/26
10				
11	E-records System Development for Current and Future Files	91 edays	Sat 10/1/22	Sat 12/31/22
12	Update Records Management Plan	60 edays	Sat 4/1/23	Wed 5/31/23
13	Agency Review/Comment Resolution/Approval	30 edays	Wed 5/31/23	Fri 6/30/23
14				
15	MW38 Source Well and 1,4-Dioxane Lab Study	11 edays	Mon 10/17/22	Fri 10/28/22
16				
17	MW38 Source Well Field Pilot Study	88 edays	Mon 4/3/23	Fri 6/30/23
18				
19	1,4-Dioxane Plume Remedy Study	95 edays	Mon 7/24/23	Fri 10/27/23
20				
21	Optimize Pumping at MW180-WD Transect	24 edays	Mon 10/3/22	Thu 10/27/22
22				
23	THF Augmentation	39 edays	Mon 10/10/22	Fri 11/18/22
24				
25	Treatment Plant Upgrade Project	289 edays	Wed 9/14/22	Fri 6/30/23
26				
27	Update PSHEP	228 edays	Tue 4/4/23	Sat 11/18/23
28				
29	Update Waste Management Plan	88 edays	Mon 4/3/23	Fri 6/30/23



Project: 2022 O&M Status Report
Date: 8 September 2022

Task Milestone Summary Rolled Up Task

APPENDIX A

WATER TREATMENT PLANT

APPENDIX A-1

WTP WEEKLY SUMMARIES AND STANDARD OPERATIONS CHECKLISTS

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level:	Counter: Cycles:
LFG Cond Automatic Trap CT-2	Sump Level:	Counter: Cycles:
LFG Cond Automatic Trap CT-3	Sump Level:	Counter: Cycles:
CT-4 Containment/Vessel (LFG Cond)	✓ Level: %	Tank Level: Counter: Cycles: Sump:
PM-15 Containment / Vessel	✓ Level: %	
MW-51 Containment / Vessel	✓ Level: %	
PM-11 Containment / Vessel	✓ Level: %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 12-22-21
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry 216.07' Date: 12-16-21
North Boundary System P-001:	CV 73.4 % @ 6.4 gpm	40.52 Hz / 2.07 Amps. / vault psi @ 18 / No Leaks
T-101 & T-102 Containment / Tank	✓	Levels: 32 % & 30 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	53.4 °F	Outside Temp.: ~ 3 °F EXTRA HEATER ON
(P-121) or P-122	✓	0.6 gpm / CV 54 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 12-16-21
RWST Back-Up Generator	✓	Last Test Run(monthly): 12-16-21

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~600 Gallons Reserve = 3TOTES
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 270 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 55 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 84-90 CV: 4 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.72	
pH 315	Value: 10.89	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 550	JUST REFILLED
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1&2-3-20-21 / #3-7-20-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	1-6-22 - Today	1335
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1408
pH-740 Discharge Surge Tank		Discharge suspended: 1325 ↔ 1333
Out of Hold Double Check	----------	None in hold: ✓✓
Valves Back to Normal Position	----------	All OK: ✓✓

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 76 %
Decant Transfer Pump (P-352)	✓	CV 62 % @0.8 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 34.2 psi	CV@ 73 % @ 1.9 gpm
Retention Tank (T-114)	✓ Operating Press: 34 psi	pH-113 @ 3.81
Bag Filter (BF-113)	✓ Operating Press: 36 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 34 psi	TP-173A-2 → TP-175A / 4 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 27 psi	CV@ 79 % @ 32.4 gpm
T-520 to GAC Total (FT-675)	254821980 gal	Time: 0947
North End On-Site Pumping	Operating Press: 2-3 psi	11.9 gpm @ 0941
North End Off-Site Pumping	Operating Press: 2-6 psi	8.5 gpm @ 0941
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.7
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓	Check sheet completed: NA/Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin + Media Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-22 21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 72 cc/min.
UV-Ox Power	✓	25.7 kVA 256 Volts 101 Amps
Lamp Hours	1677 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: ok
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	12.5 psi In 12.5 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 77 % @ 7.5 gpm
UV-OX Temperature	In(TT-670): 13.3 °C	Out(TT-710): 25.9 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 4 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	20869176 gal	Time: 0947
Post UV-Ox / Pre PDU	✓	Pressure: 14.5 psi
Post PDU	✓	Pressure: 8.0 psi

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 13 psi
PDT-730	✓	Δ Pressure: 9 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump ((P751) or P752)	✓	CV@ 54.5 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.4 gpm @ 0945
POTW Line Pressure (PT-770)	✓	32.1 psi
Effluent Totalizer Reading (FT-770)	248967866 gal	Time: 0948
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 12-13-21
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 11-8-21
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 12-23-21	Plant Effluent Suspended: 1401 ↔ 1425
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0949 - 0955

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19760493	(FT-505) LFG Cond. to T-530	219567
(FT-025) NBBW Influent	94696971	(FT-056) Off - Site N. End Influent	44027060
(FT-012) MW-38 Inf. to HMR-30	8956081	(FT-113) Ion Exchange Influent	1033023
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30073924
(FT-043) MW-38 to RWST	3085327	(FT-026) NBBW Bypass to RWST	4427726
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8215198
(FT-012T) MW-38 to T-540/541	8646830	(FT-035) NTES Inf. to BIO	6711642
(FT-040T) MW-38N to T-540/541	1978778	(FT-035T) NTES to T-530	466341
(FT-041T) MW-38S to T-540/541	2697029	(FT-017) BIO Inf. from T-530	659780
(FT-042T) MW-38 Source to T-540/541	4043007	(FT-018) T-540/541 Influent	8691532
(FT-055) On - Site N. End Influent	99437693	(FT-352) T-352 to HMR-30	1322529

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	40 °F (Analog Gauge)	Outside Temp.: ~ 4 °F
Compressor Building Vent	✓	closed - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 7-8-21 Serviced @ 60952 Hours	Coolant present in sight glass: (Y) / N Next service @ 62952 Hours Current Hours @ 62553
IRN30H Motor Speed	0 %	
IRN30H Pressure	120 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 9-30-21
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 12-23-21	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc - calibration + maint 1-5-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 12-22-21
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

New Virgin bituminous GAC on lead : lag 1/10/22 @
Column #2 of EX offline 1/12/22 Columns 6 & 7 taken off standby.

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	1.85	33.6 %	6.5		
P-3301A	SB	–	– %	–		
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.53	48 %	P035 35-30	P038 6	Globules Observed at TP-130: Y / (N) Time: 0830
T-530 P-005	✓	0.21	41 %	7.0		
T-540/541 P-006	✓	0.30	73 %	7.5		
LFG COND Auto-Traps	✓	0.0	NA	5.0		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	2.48	55.9 %	7.5		
P-3322	✓	3.44	46.9 %	5.0		
P-3323	✓	2.44	79.0 %	6.0		
P-3324	SB	–	– %	–		
Reactor Effluent Pumps						
P-3341	✓	2.80	57.9 %	15.0		
P-3341A	SB	–	– %	–		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-20-21
B-3331	✓	4.25	110	3-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.30	110	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.27	109	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 17.6 PPM
VTP-3360	✓	PID Reading: 10.5 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 66 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 30 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 47 % & 48 %	
T-540/541 Mixers	✓	
Chiller	✓	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	✓	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 12-22-21
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 70 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	4.00 gpm @ 1006
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 12-16-21

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 14 Gallons: ~100
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~210 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 12-16-21
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	12-23-21	Spray off & clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 11	Reset
BF-3340 a/b Differential Pressure	PSI: 1	14/13 @ 2.4gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 6	13/7 @ 2.4gpm
Last Backwash Performed	Date: 9-27-21	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 97 min / 95 Events
HMI's	✓	
BTS Process KWH Meter	1833969 KWH	Time: 1109
Building#2 KWH Meter	5301385 KWH	Time: 1109

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	cc-calibration & maint 1/5-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 06, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6229099	
FT-3324 Feed Spare	122780	
FT-3322 Feed to Reactor 2	11067394	
FT-3323 Feed to Reactor 3	913489	
FT-3301 T-510 to BIO	51722809	
FT-3341 BIO Effluent	66616262	
FT-3342 BIO Recycle	55958162	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 12-22-21
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.73 on	Counter: 193458 Cycles: 1092
LFG Cond Automatic Trap CT-2	Sump Level: 8.62 on	Counter: 274946 Cycles: 227
LFG Cond Automatic Trap CT-3	Sump Level: 7.23 on	Counter: 319405 Cycles: 788
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 82 %	Tank Level: 1.94 Counter: 191261 Cycles: 0 Sump: 8.27
PM-15 Containment / Vessel	✓ Level: 47 %	
MW-51 Containment / Vessel	✓ Level: 65 %	
PM-11 Containment / Vessel	✓ Level: 90 %	Guy Pumped 1-14-22
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 12-22-21
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: ~~2/13/20~~ 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry e 16.07 Date: 12/16/21
North Boundary System P-001:	CV 73.1% @ 6.1 gpm	40.43 Hz / 2.05 Amps. / vault psi @ 18 (no leak)
T-101 & T-102 Containment / Tank	✓	Levels: 16 % & 10 % e 0837 level low.
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	53.9 °F	Outside Temp.: ~ 50 °F
P-121 or P-122	ON SB while RWST low.	0.0 gpm / CV — %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 12/16/21
RWST Back-Up Generator	✓	Last Test Run(monthly): 12/16/21

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 500 Gallons Reserve = 3totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 240 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 30 Gallons Reserve = 1 tote + 30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 90-90 CV 3%
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10/20/21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10/20/21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.88	
pH 315	Value: 10.79	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 475	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-~~330~~)	✓	Exercise Valves Weekly: Both okay
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1&2 3/20/21 #3 7/20/21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All OK
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	1/13/22	1309
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1341
pH-740 Discharge Surge Tank	✓	Discharge suspended: 1300 ↔ 1308
Out of Hold Double Check	----------	None in hold: ✓ ✓ ✓ (w)
Valves Back to Normal Position	----------	All OK: ✓ ✓ ✓ (w)

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0%
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 25 %
Sludge Holding Tank (T-352)	✓	Level: 46 %
Decant Transfer Pump (P-352)	✓	CV 71% @ 0.8gpm
Filter Press Pumps (P-381 / P-382)	✓	P-381 being rebuilt. P-382 good.
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	Operating Press: 37.1 psi	CV@ 74% @ 1.9 gpm
Retention Tank (T-114)	Operating Press: 36 psi	pH-113 @ 3.78
Bag Filter (BF-113)	Operating Press: 40 psi	Column
Ion Exchange (Cage 1 or 2) + Guard	Operating Press: 36 psi	Column 2 online 1/12/22 @ 6:40 AM Standby.
Post Ion Exchange	Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 39 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 10 psi	CV@ 54 % @ 34.3 gpm
T-520 to GAC Total (FT-675)	255137726 gal	Time: 0653
North End On-Site Pumping	Operating Press: 2-3 psi	13.3 gpm @ 0652
North End Off-Site Pumping	Operating Press: 2-5 psi	8.4 gpm @ 0652
Peroxide Feed Pump (P-680)	✓	SPD 2.6% / RATE 0.7
Peroxide Conc. At (TP-710)	1 PPM	
Peroxide Conc. At (TP-740)	0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
60 ~~180~~ Day storage area check (Episodic)	✓	Check sheet completed: ✓ @ 1/10/22
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin & Main Gone.
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good.

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9/16/21	Next: 9/2022
Quarterly Test Run	Date: NA / Running	Next: NA / Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.2 cc/min.
UV-Ox Power	✓	25.5 kVA 2530 Volts 10.1 Amps
Lamp Hours	1839 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: Good. Refilled today.
UV-OX Bagfilters Status	Last change: 7/13/21 Cleaned: 7/13/21	14 psi In 14 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 82 % @ 7.4 gpm
UV-OX Temperature	In(TT-670): 12.8 °C	Out(TT-710): 25.2 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 6 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	20939072 gal	Time: 0640
Post UV-Ox / Pre PDU	✓	Pressure: 13 ~~7.75~~ psi
Post PDU	✓	Pressure: 7.75 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720 NCW GAC 1/10/22	✓	Δ Pressure: 2 psi
PDT-730 NCW GAC 1/10/22	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or P752)	✓	CV@ 55.4 %
Effluent Surge Tank (T-740)	✓	Level: 40%
Effluent Discharge Rate (FT-770)	✓	34.4 gpm @ 0656
POTW Line Pressure (PT-770)	✓	32.4 psi
Effluent Totalizer Reading (FT-770)	249264110 gal	Time: 0656
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 12/13/21
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 11/8/21
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: ~~5/19/20~~ 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: ~~5/19/20~~
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: ~~5/19/20~~
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 12/20/21	Plant Effluent Suspended: 1401 ↔ 1425
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or N
Verify Bridge Current between.300v-.360v	Reading: 0.330volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1109 ~ 1115

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19771104	(FT-505) LFG Cond. to T-530	219892
(FT-025) NBBW Influent	94759075	(FT-113) Ion Exchange Influent	1052108
(FT-012) MW-38 Inf. to HMR-30	8469407	(FT-056) Off - Site N. End Influent	44111516
(FT-042 HMR30) MW-38 Source to HMR-30	354184	(FT-810) Plant Potable Water In	30074898
(FT-043) MW-38 to RWST	3086016	(FT-026) NBBW Bypass to RWST	4430359
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8215199
(FT-012T) MW-38 to T-540/541	8654647	(FT-035) NTES Inf. to BIO	6716541
(FT-040T) MW-38N to T-540/541	1978784	(FT-035T) NTES to T-530	4166632
(FT-041T) MW-38S to T-540/541	2697035	(FT-017) BIO Inf. from T-530	660269
(FT-042T) MW-38 Source to T-540/541	4050820	(FT-018) T-540/541 Influent	86944405
(FT-055) On - Site N. End Influent	99562239	(FT-352) T-352 to HMR-30	1326755

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	77 °F (Analog Gauge)	Outside Temp.: ~ 50 °F
Compressor Building Vent	✓	
Primary Air Compressor (IRN30H)	2,000 Hour service date: 7/8/21 Serviced @ 60952 Hours	Coolant present in sight glass: (Y) / N Next service @ 62952 Hours Current Hours @ 62646
IRN30H Motor Speed	31 %	
IRN30H Pressure	119 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 9/30/21
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ ECO ON	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 12/23/21	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: 1
Alarms Enabled	✓	
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 12/22/21
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

New virgin bituminous GAC on load 1 as 1/10/22 @
Column #2 of IX system taken offline Columns #6 & #7 taken off
standby 1/12/22 @

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.90	35.0 %	7	
P-3301A	SB	—	— %	—	
NTES Pump P-002(Sump) / P-002W(10R)	✓	0.51	48 %	P035 36.5 / P038 7	Globules Observed at TP-130: Y / (N) Time: 0845 (Tom)
T-530 P-005	✓	0.20	41 %	7	
T-540/541 P-006	✓	0.21	63 %	7.5	
LFG COND Auto-Traps	✓	0.0	NA	4	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	1.12	42.7 %	8.0	
P-3322	✓	1.39	38.1 %	6.0	
P-3323	SB	—	— %	—	
P-3324	✓	1.25	62.0 %	6.5	
Reactor Effluent Pumps					
P-3341	✓	1.90	48.0 %	17	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments
					Last serviced on: 12/20/21
B-3331	✓	4.21	139	3/2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.36	137	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.20	128	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 9.6 PPM
VTP-3360	✓	PID Reading: 4.7 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 34 %	Last Cleaning (As needed, if 2" of solids accumulate): 12/15/19
T-530 LFG Condensate / NTES Tank	✓ Level: 31 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7/19/21 Next: 7/2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 81 % & 82%	
T-540/541 Mixers	✓	
Chiller	– OFFline –	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	– OFFline –	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 12/22/21
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): ~~12/2017~~ 9/2021
T-3320 Blend Tank	✓ Level: 72 %	Last Cleaning (Semi Annual): 9/10/21
T-3331 Reactor No. 1	✓	Digital Displays: GOOD / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: GOOD / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: GOOD / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9/10/21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 31 %	
Recycle Valve to Blend Tank	✓	4.00 gpm @ 1050
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 12/16/21

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 13.75 Gallons: ~ 100
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 200 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 12/16/21
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	12/23/21	Rinsed Clean Today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 9	
BF-3340 a/b Differential Pressure	PSI: 1	~~1/13~~ 12/12
75-micron Bags Last Cleaning	Date: 11/14/19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 4	12/7 @ 2.7 GPM
Last Backwash Performed	Date: 9/27/21	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 97 min / 95 Events
HMI's	✓	
BTS Process KWH Meter	1836571 KWH	Time: 1054
Building#2 KWH Meter	5306186 KWH	Time: 1054

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: 2
Alarms Enabled	✓	
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 13, 2022

Inspection Performed by: Chris Carlson

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6250458	
FT-3324 Feed Spare	122984	
FT-3322 Feed to Reactor 2	11097077	
FT-3323 Feed to Reactor 3	934327	
FT-3301 T-510 to BIO	51740233	
FT-3341 BIO Effluent	666 41670	
FT-3342 BIO Recycle	56000312	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 12/22/21
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.63 ok	Counter: ~~193458~~ 194955 Cycles: ~~1092~~ 1497
LFG Cond Automatic Trap CT-2	Sump Level: 8.81 ok	Counter: ~~274946~~ 275313 Cycles: ~~227~~ 367
LFG Cond Automatic Trap CT-3	Sump Level: 7.58 ok	Counter: ~~319405~~ 319628 Cycles: ~~788~~ 223
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 84 %	Tank Level: 1.90 Counter: 19126 Cycles: 1 Sump: 8.78 ok
PM-15 Containment / Vessel	✓ Level: 55 %	
MW-51 Containment / Vessel	✓ Level: 28 %	
PM-11 Containment / Vessel	✓ Level: 55 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 12-22-21
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: dry 21607' Date: 1-20-22 Today
North Boundary System P-001:	CV 73.3 % @ 6.3 gpm	40.43 Hz / 2.07 Amps. / vault psi @ 18 (no leaks
T-101 & T-102 Containment / Tank	✓	Levels: 16 % & 14 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	54.8 °F	Outside Temp.: ~ 28 °F
(P-121) or P-122	✓	0.60 gpm / CV 66 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 1-20-22 - Today
RWST Back-Up Generator	✓	Last Test Run(monthly): 1-20-22 - Today

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 370 Gallons Reserve = 3 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 225 Gallons Reserve = 55 gal
HCL Tote Levels	✓	~ 325 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 92-94 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.80	
pH 310	Value: 6.82	
pH 315	Value: 10.87	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 330	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1+2-3-20-21 / #3-7-20-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	1-20-22-today	1341
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1405
pH-740 Discharge Surge Tank		Discharge suspended: 1332 ↔ 1340
Out of Hold Double Check	----------	None in hold: ✓✓ id
Valves Back to Normal Position	----------	All OK: ✓✓ id

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 41 %
Decant Transfer Pump (P-352)	✓	CV 69 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	P-381 being rebuilt, P-382 ok
Filter Press	✓	Stage: full

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 38.6 psi	CV@ 73 % @ 1.9 gpm
Retention Tank (T-114)	✓ Operating Press: 38 psi	pH-113 @ 3.72
Bag Filter (BF-113)	✓ Operating Press: 41 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 37 psi	TP-174A → TP-176A/5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 39 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 10 psi	CV@ 55 % @ 34.0 gpm
T-520 to GAC Total (FT-675)	255472737 gal	Time: 1028
North End On-Site Pumping	Operating Press: 2-3 psi	12.6 gpm @ 1021
North End Off-Site Pumping	Operating Press: 2-6 psi	9.3 gpm @ 1021
Peroxide Feed Pump (P-680)	✓	SPD 2.6 % / RATE 0.7
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
~~180~~ 60 Day storage area check (Episodic)	✓	Check sheet completed: yes on 1-20-22
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Room & Main Gazebo
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 2.2 cc/min.
UV-Ox Power	✓	25.7 kVA 2539 Volts 10.3 Amps
Lamp Hours	2009 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	9.5 psi In 9.5 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 66 % @ 7.4 gpm
UV-OX Temperature	In(TT-670): 13.3 °C	Out(TT-710): 25.9 °C
PDU GAC (PDT-710)	✓ Backwashed today	Δ Pressure: 1 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21011672 gal	Time: 1029
Post UV-Ox / Pre PDU	✓	Pressure: 11 psi
Post PDU	✓	Pressure: 2.5 psi

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 3 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or P752)	✓	CV@ 55.4 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	34.0 gpm @ 1025
POTW Line Pressure (PT-770)	✓	32.4 psi
Effluent Totalizer Reading (FT-770)	249619996 gal	Time: 1029
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 1-17-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 11-8-21
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 12-23-21	Plant Effluent Suspended: 1401 ↔ 1425
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1030- 1035

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19780332	(FT-505) LFG Cond. to T-530	220363
(FT-025) NBBW Influent	94821643	(FT-056) Off - Site N. End Influent	44196116
(FT-012) MW-38 Inf. to HMR-30	8483793	(FT-113) Ion Exchange Influent	1070945
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30075452
(FT-043) MW-38 to RWST	3090578	(FT-026) NBBW Bypass to RWST	4431446
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8219124
(FT-012T) MW-38 to T-540/541	86553376	(FT-035) NTES Inf. to BIO	6721395
(FT-040T) MW-38N to T-540/541	1979086	(FT-035T) NTES to T-530	466877
(FT-041T) MW-38S to T-540/541	2697441	(FT-017) BIO Inf. from T-530	660773
(FT-042T) MW-38 Source to T-540/541	4050820	(FT-018) T-540/541 Influent	8697029
(FT-055) On - Site N. End Influent	99690964	(FT-352) T-352 to HMR-30	1329611

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	64 °F (Analog Gauge)	Outside Temp.: ~ 30 °F
Compressor Building Vent	✓	open - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 7-8-21 Serviced @ 60952 Hours	Coolant present in sight glass: Y / N Next service @ 62952 Hours Current Hours @ 62751
IRN30H Motor Speed	31 %	
IRN30H Pressure	115 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 9-30-21
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / N
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: Y / N
Air Dryer	✓ ECO On	Moisture at Receiver Tank: Y / N
Oil Moisture Prevention (Monthly)	Last Done: 12-23-21	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc - calibration + maint 1-19-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 12-22-21
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: Y / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	1.84	34.1 %	7.0		
P-3301A	SB	–	– %	–		
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.51	48 %	P035 36-37	P038 6	Globules Observed at TP-130: Y / (N) Time: 0900
T-530 P-005	✓	0.19	41 %	7.0		
T-540/541 P-006	✓	0.30	65 %	7.6		
LFG COND Auto-Traps	✓	0.0	NA	5.0		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	2.49	67.5 %	8.5		
P-3322	✓	3.49	50.3 %	6.0		
P-3323	SB	–	– %	–		
P-3324	✓	2.49	44.7 %	6.5		
Reactor Effluent Pumps						
P-3341	✓	2.83	63.1 %	18		
P-3341A	SB	–	– %	–		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-20-21
B-3331	✓	4.23	124	3-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.40	122	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.26	114	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 22.6 PPM
VTP-3360	✓	PID Reading: 15.8 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 53 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 34 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 67 % & 68 %	
T-540/541 Mixers	✓	
Chiller	OFFLINE	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	OFFLINE	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 12-22-21
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	Level: %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	4.00 gpm @ 1057
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 1-20-22-Today

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 13.5 Gallons: ~ 72
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 170 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 1-20-22-Today ↓
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	12-23-21	Acid/Base clean routine
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 7	Reset
BF-3340 a/b Differential Pressure	PSI: 1	8/9 @ 1.3 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 2.5	9/6.5 @ 1.3 gpm
Last Backwash Performed	Date: 9-27-21	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 97 min / 95 Events
HMI's	✓	
BTS Process KWH Meter	1839044 KWH	Time: 1202
Building#2 KWH Meter	5315014 KWH	Time: 1202

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	cc - calibration + maint 1-19-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 20, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6271283	
FT-3324 Feed Spare	143653	
FT-3322 Feed to Reactor 2	11126020	
FT-3323 Feed to Reactor 3	934327	
FT-3301 T-510 to BIO	51756103	
FT-3341 BIO Effluent	66665203	
FT-3342 BIO Recycle	56042107	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 12-22-21
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.66 oz	Counter: 195450 Cycles: 495
LFG Cond Automatic Trap CT-2	Sump Level: 8.63 oz	Counter: 275366 Cycles: 53
LFG Cond Automatic Trap CT-3	Sump Level: 7.25 oz	Counter: 319656 Cycles: 28
CT-4 Containment/Vessel (LFG Cond)	Level: 85 %	Tank Level: ~~4.95~~ 1.30 Counter: ~~191262~~ 191262 Cycles: ~~1~~ 0 Sump: ~~8.78~~ 8.85 oz
PM-15 Containment / Vessel	Level: 60 %	
MW-51 Containment / Vessel	Level: 55 %	
PM-11 Containment / Vessel	Level: 45 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 1-21-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry -16.07' Date: 1-20-22
North Boundary System P-001:	CV 73.2 % @ 6.2 gpm	40.41 Hz / 2.06 Amps. / vault psi @ 18/no leaks
T-101 & T-102 Containment / Tank	✓	Levels: 35 % & 34 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	54.1 °F	Outside Temp.: ~ 26 °F
(P-121) or P-122	✓	1.0 gpm / CV 53 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 1-20-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 1-20-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 280 Gallons Reserve = 3 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 200 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 290 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 88-90 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.82	
pH 315	Value: 10.87	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 500	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1&2-3-20-21/#3-7-20-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	1-27-22 - today	1236
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1305
pH-740 Discharge Surge Tank		Discharge suspended: 1307 ↔ 1324
Out of Hold Double Check	----------	None in hold: ✓✓'d mm
Valves Back to Normal Position	----------	All OK: ✓✓'d mm

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 55 %
Decant Transfer Pump (P-352)	✓	CV 60 % @0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	P-381 Rebuilt. Needs test. P-382 ok
Filter Press	✓	Stage: Ready to Fill / Empty

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 38.7 psi	CV@ 72 % @ 1.83 gpm
Retention Tank (T-114)	✓ Operating Press: 38 psi	pH-113 @ 3.67
Bag Filter (BF-113)	✓ Operating Press: 41 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 32.6 psi	TP-174A → TP-176-A/S canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 11 psi	CV@ 55 % @ 32.8 gpm
T-520 to GAC Total (FT-675)	255790625 gal	Time: 0956
North End On-Site Pumping	Operating Press: 2-3 psi	12.3 gpm @ 0943
North End Off-Site Pumping	Operating Press: 2-8 psi	8.9 gpm @ 0943
Peroxide Feed Pump (P-680)	✓	SPD 2.5 % / RATE 0.7
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
~~180~~ 60 Day storage area check	✓	Check sheet completed: yes/mcw - 1-27-22
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ix Resin + main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 1.2 cc/min.
UV-Ox Power	✓	25.7 kVA 255.6 Volts 10.2 Amps
Lamp Hours	2157 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	10.0 psi In 10.0 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 70 % @ 7.4 gpm
UV-OX Temperature	In(TT-670): 12.9 °C	Out(TT-710): 25.4 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 1 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21075420 gal	Time: 0957
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: ~~7.5~~ 7.75 psi

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 4 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or P752)	✓	CV@ 54.6 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.7gpm @ 0953
POTW Line Pressure (PT-770)	✓	32.2 psi
Effluent Totalizer Reading (FT-770)	249938798 gal	Time: 0957
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 1-17-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 11-8-21 NEXT- 2-2022
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly) ✓	Last Completed: 1-27-22-today	Plant Effluent Suspended: 1307 ↔ 1324
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0958- 1004

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19791728	(FT-505) LFG Cond. to T-530	220523
(FT-025) NBBW Influent	94876184	(FT-056) Off - Site N. End Influent	44281456
(FT-012) MW-38 Inf. to HMR-30	~~35484~~ 8500102	(FT-113) Ion Exchange Influent	1089476
(FT-042 HMR30) MW-38 Source to HMR-30	~~3092061~~ 35484	(FT-810) Plant Potable Water In	30076804
(FT-043) MW-38 to RWST	~~72236~~ 3092061	(FT-026) NBBW Bypass to RWST	4440239
(FT-042 RWST) MW-38 Source to RWST	~~8655376~~ 72236	(FT-014) Misc. Water to RWST	8226120
(FT-012T) MW-38 to T-540/541	~~1979086~~ 8655376	(FT-035) NTES Inf. to BIO	6726451
(FT-040T) MW-38N to T-540/541	~~2697441~~ 1979086	(FT-035T) NTES to T-530	467072
(FT-041T) MW-38S to T-540/541	~~4050820~~ 2697441	(FT-017) BIO Inf. from T-530	661280
(FT-042T) MW-38 Source to T-540/541	4050820	(FT-018) T-540/541 Influent	8699932
(FT-055) On - Site N. End Influent	99815820	(FT-352) T-352 to HMR-30	1332497

ABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	57 °F (Analog Gauge)	Outside Temp.: ~ 23 °F
Compressor Building Vent	✓	closed - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 7-8-21 Serviced @ 60952 Hours	Coolant present in sight glass: (Y) / N Next service @ 62952 Hours Current Hours @ 62836
IRN30H Motor Speed	0 %	
IRN30H Pressure	117 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 1-27-22 - today
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 1-27-22 - today	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	GC- calibration + maint 1-26-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 1-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	1.85	29 %	6.5		
P-3301A	SB	–	– %	–		
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.50	48 %	P035 35-36	P038 6.5	Globules Observed at TP-130: Y / (N) Time: 0925
T-530 P-005	✓	0.21	41 %	7.0		
T-540/541 P-006	✓	0.30	74 %	7.5		
LFG COND Auto-Traps	✓	0.0	NA	5.0		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	2.50	55.2 %	6.5		
P-3322	✓	3.14	55.4 %	6.5		
P-3323	SB	–	– %	–		
P-3324	✓	2.47	46.1 %	7.0		
Reactor Effluent Pumps						
P-3341	✓	4.13	48.0 %	10.0		
P-3341A	SB	–	– %	–		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-20-21
B-3331	✓	4.22	120	3-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.45	118	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.27	110	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 10.8 PPM
VTP-3360	✓	PID Reading: 7.6 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 69 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 33 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 46 % & 47%	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 12-22-21
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.97 gpm @ 1030
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 1-20-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 13.25 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 165 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 1-20-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	1-27-22 - today	New 4+10 pH STD's used
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 17	Reset
BF-3340 a/b Differential Pressure	PSI: 3	9/7 → 3.1 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 0	7/7 @ 3.1 gpm
Last Backwash Performed	Date: 1-26-22	UV-OK offline during backwash

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 97 min / 95 Events
HMI's	✓	
BTS Process KWH Meter	1841753 KWH	Time: 1126
Building#2 KWH Meter	5322620 KWH	Time: 1126

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	GC - calibration + maint 1-26-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, January 27, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6292963	
FT-3324 Feed Spare	150561	
FT-3322 Feed to Reactor 2	11156145	
FT-3323 Feed to Reactor 3	948842	
FT-3301 T-510 to BIO	51775209	
FT-3341 BIO Effluent	66692408	
FT-3342 BIO Recycle	56083371	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 1-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: Ⓨ / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 ok	Counter: 195688 Cycles: 238
LFG Cond Automatic Trap CT-2	Sump Level: 0.72 ok	Counter: 275378 Cycles: 12
LFG Cond Automatic Trap CT-3	Sump Level: 7.29 ok	Counter: 320604 Cycles: 948
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 85 %	Tank Level: 1.90 Counter: 191269 Cycles: 7 Sump: 8.92 ok
PM-15 Containment / Vessel	✓ Level: 65 %	
MW-51 Containment / Vessel	✓ Level: 40 %	
PM-11 Containment / Vessel	✓ Level: 60 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 1-21-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry 216.07' Date: 1-20-22
North Boundary System P-001:	CV 73.1 % @ 6.2 gpm	4030 Hz / 206 Amps. / vault psi @ 18/120 inches
T-101 & T-102 Containment / Tank	✓	Levels: 34 % & 33 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	49.9 °F	Outside Temp.: ~ 3 °F
(P-121) or P-122	✓	0.6 gpm / CV 52 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 1-20-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 1-20-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 470 Gallons Reserve = 2 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 175 Gallons Reserve = ~55 gallons
HCL Tote Levels	✓	~ 325 Gallons Reserve = ~30 gallons
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 58-60 CV: 5 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 7.19	
pH 315	Value: 11.04	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 405	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: both ok ✓
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1+2 3-2021 #3 7-20-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	2/4/22 Friday	~~0905~~
pH-315 HMR-30 (T-300B)		0920
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1020
pH-740 Discharge Surge Tank		Discharge suspended: 0905 ↔ 0918
Out of Hold Double Check	----------	None in hold: ✓✓ 2/4/22 TG
Valves Back to Normal Position	----------	All OK: ✓✓ 2/4/22 TG

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 38 %
Sludge Holding Tank (T-352)	✓	Level: 32 %
Decant Transfer Pump (P-352)	✓	CV 71 % @0.3 gpm
Filter Press Pumps (P-381 / P-382)	Rebuilt - Stage 4 Running Well	
Filter Press	✓	Stage: Running / operational

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 38.5 psi	CV@ 71 % @ 1.8 gpm
Retention Tank (T-114)	✓ Operating Press: 38 psi	pH-113 @ 3.6 gpm
Bag Filter (BF-113)	✓ Operating Press: 41 psi	
Ion Exchange (Cage 1 or 2) + Guard	✓ Operating Press: 37 psi	TP-174A → TP176A / 5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 11 psi	CV@ 55 % @ 32.1 gpm
T-520 to GAC Total (FT-675)	256119034 gal	Time: 1151
North End On-Site Pumping	Operating Press: 2-3 psi	12.3 gpm @ 0938
North End Off-Site Pumping	Operating Press: 2-8 psi	8.3 gpm @ 0938
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6 gpm
Peroxide Conc. At (TP-710)	1.0 ~~2.0~~ PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
60 ~~180~~ Day storage area check	✓	Check sheet completed: TG 2-3-22 ~~MKG 1-27-22~~ m
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin + Main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	Operational
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA - Running	Next: NA - Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.3 cc/min.
UV-Ox Power	✓	25.8 kVA 2430 Volts 10.6 Amps
Lamp Hours	2325 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	12 psi In 11.5 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ ~~37~~ 72 % @ 7.4 gpm
UV-OX Temperature	In(TT-670): 14.7 °C	Out(TT-710): 25.6 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 3 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 1 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21148006 gal	Time: 0951
Post UV-Ox / Pre PDU	✓	Pressure: 14 psi
Post PDU	✓	Pressure: 8 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 3 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or P752)	✓	CV@ 52.4 %
Effluent Surge Tank (T-740)	✓	Level: 38 %
Effluent Discharge Rate (FT-770)	✓ 27.1	~~31.4~~ gpm @ 0959
POTW Line Pressure (PT-770)	✓	31.5 psi
Effluent Totalizer Reading (FT-770)	250264788 gal	Time: 1000
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 1-17-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 11-8-21 Next 2-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 1-27-22	Plant Effluent Suspended: 1307 ↔ 1324
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1002 - 1012

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19800075	(FT-505) LFG Cond. to T-530	220577
(FT-025) NBBW Influent	94938033	(FT-056) Off - Site N. End Influent	44365960
(FT-012) MW-38 Inf. to HMR-30	8519486	(FT-113) Ion Exchange Influent	1107933
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30077
(FT-043) MW-38 to RWST	3092450	(FT-026) NBBW Bypass to RWST	4441603
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8232139
(FT-012T) MW-38 to T-540/541	8655376	(FT-035) NTES Inf. to BIO	6731395
(FT-040T) MW-38N to T-540/541	1979086	(FT-035T) NTES to T-530	467258
(FT-041T) MW-38S to T-540/541	2697441	(FT-017) BIO Inf. from T-530	661803
(FT-042T) MW-38 Source to T-540/541	4050820	(FT-018) T-540/541 Influent	8702410
(FT-055) On - Site N. End Influent	99939899	(FT-352) T-352 to HMR-30	1335900

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	54 °F (Analog Gauge)	Outside Temp.: ~ 0 °F
Compressor Building Vent	✓	Closed - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 7-8-21 Serviced @ 60952 Hours	Coolant present in sight glass: (Y) / N Next service @ 62952 Hours Current Hours @ 62923
IRN30H Motor Speed	31 %	
IRN30H Pressure	122 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 1-27-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ ECO ON	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 1-27-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	Heater ON	GC # checking UV-Ox Effluent: 1
Alarms Enabled	✓	GC calibration + Maint ~~1-26-22~~ 2-2-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 1-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	2.11	33.8 %	7.5	
P-3301A	SB	—	— %	—	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.52	48 %	P035: 33-36 / P038: 7	Globules Observed at TP-130: Y / (N) Time: 1055
T-530 P-005	✓	0.20	41 %	7	
T-540/541 P-006	SB	~~0.00~~	~~40~~ %	~~8.5~~	New impeller installed today
LFG COND Auto-Traps	✓	0.0	NA	~~6.5~~ 5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	1.84	43 %	6.5	
P-3322	✓	2.65	41 %	5	
P-3323	✓	1.88	60.9 %	4.5	
P-3324	SB	—	— %	—	
Reactor Effluent Pumps					
P-3341	✓	3.88	54.8 %	9	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-30-21
B-3331	✓	4.18	110	3-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.27	109	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.18	100	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 122.7 PPM Lamp on PID may need clean or replace.
VTP-3360	✓	PID Reading: 5.7 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 55 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 27 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 26 % & 27 %	
T-540/541 Mixers	✓	Operational
Chiller	OFFline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On) OK / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): ~~12-22-21~~ 2-22 today
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 74 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 32 %	
Recycle Valve to Blend Tank	✓	6.45 gpm @ 1037
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 1-20-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 13.25 Gallons: ~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 165 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 1-20-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	1-27-22	~~New SPDS 1-27-22~~ Sample off Cloumatchy
pH-3331 Reactor 1	↓	
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 14	Reset
BF-3340 a/b Differential Pressure	PSI: 3	10/7 @ 1.8 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ✓	
GACF-3340 Status		
GACF-3340 Differential Pressure	PSI: 0	7/7 @ 1.8 gpm
Last Backwash Performed	Date: ~~2-4-22~~ 1-26-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 97 min / 95 Events
HMI's	✓	
BTS Process KWH Meter	1844364 KWH	Time: 1300
Building#2 KWH Meter	5330560 KWH	Time: 1300

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: 2
Alarms Enabled	✓	GC calibration + Maint 1-26-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 03, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6314254	
FT-3324 Feed Spare	163172	
FT-3322 Feed to Reactor 2	11185714	
FT-3323 Feed to Reactor 3	957315	
FT-3301 T-510 to BIO	51793231	
FT-3341 BIO Effluent	66717997	
FT-3342 BIO Recycle	~~56125855~~ 56125850	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: ~~2-4-22~~ 1-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 ok	Counter: 196050 Cycles: 362
LFG Cond Automatic Trap CT-2	Sump Level: 8.63 ok	Counter: 275430 Cycles: 52
LFG Cond Automatic Trap CT-3	Sump Level: 7.58 ok	Counter: 322258 Cycles: 1654
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 95 %	Tank Level: 1.91 Counter: 191270 Cycles: 1 Sump: 9.11 ok
PM-15 Containment / Vessel	✓ Level: 68 %	
MW-51 Containment / Vessel	✓ Level: 45 %	
PM-11 Containment / Vessel	✓ Level: 70 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 1-21-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry 16.07' Date: 1-20-22
North Boundary System P-001:	CV 73.3 % @ 6.2 gpm	40.49 Hz / 2.06 Amps. / vault psi @ 18/NO LOWER
T-101 & T-102 Containment / Tank	✓	Levels: 47 % & 47 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	56.3 °F	Outside Temp.: ~ 40 °F
(P-121) or P-122	✓	2.0 gpm / CV 49 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 1-20-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 1-20-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 360 Gallons Reserve = 2 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 155 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 270 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM X Fume vent motor bad, working on parts for repair 2/17/22

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 56-58 CV: 5 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.83	
pH 315	Value: 10.87	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~520	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1 #2 -3-20-21 / #3 -7-2-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	2-10-22 -today	1249
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1330
pH-740 Discharge Surge Tank		Discharge suspended: 1240 ↔ 1248
Out of Hold Double Check	----------	None in hold: ✓✓
Valves Back to Normal Position	----------	All OK: ✓✓

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level: ~50 %
Sludge Holding Tank (T-352)	✓	Level: 65 %
Decant Transfer Pump (P-352)	✓	CV 53 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 37.2 psi	CV@ 69 % @ 1.80 gpm
Retention Tank (T-114)	✓ Operating Press: 37 psi	pH-113 @ 3.87
Bag Filter (BF-113)	✓ Operating Press: 40 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 36 psi	TP-17HA→TP-17CA/5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 43 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 16 psi	CV@ 61 % @ 36.0 gpm
T-520 to GAC Total (FT-675)	256419435 gal	Time: 1002
North End On-Site Pumping	Operating Press: 2-3 psi	12.3 gpm @ 0950
North End Off-Site Pumping	Operating Press: 2-6 psi	8.7 gpm @ 0950
Peroxide Feed Pump (P-680)	✓	SPD 2.7 % / RATE 0.7
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
60 ~~180~~ 55 Day storage area check	✓	Check sheet completed: yes new 2-10-22 new
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Drum + Mun Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM * New solenoid valve on FV-708 - 2-9-22 *

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~7.2 cc/min.
UV-Ox Power	✓	25.7 kVA 254 Volts 10.1 Amps
Lamp Hours	2418 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	11.5 psi In 12.0 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 74 % @ 7.5 gpm
UV-OX Temperature	In(TT-670): 12.7 °C	Out(TT-710): 25.3 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 3 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21187928 gal	Time: 1002
Post UV-Ox / Pre PDU	✓	Pressure: 14 psi
Post PDU	✓	Pressure: 7.75 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 7 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE *New check SWS Installed 2-9-22 on Discharge Pumps*

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 55.2 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	36.0 gpm @ 1000
POTW Line Pressure (PT-770)	✓	32.7 psi
Effluent Totalizer Reading (FT-770)	2505694 16 gal	Time: 1003
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 1-17-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 11-8-21 next 2-2022
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 1-27-22	Plant Effluent Suspended: 1307 ↔ 1324
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1004 → 1008

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	198 29038	(FT-505) LFG Cond. to T-530	220738
(FT-025) NBBW Influent	94971887	(FT-056) Off - Site N. End Influent	44449268
(FT-012) MW-38 Inf. to HMR-30	8529781	(FT-113) Ion Exchange Influent	1126194
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30078564
(FT-043) MW-38 to RWST	3096783	(FT-026) NBBW Bypass to RWST	44707 58
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8232630
(FT-012T) MW-38 to T-540/541	866 4186	(FT-035) NTES Inf. to BIO	6736378
(FT-040T) MW-38N to T-540/541	1979523	(FT-035T) NTES to T-530	467495
(FT-041T) MW-38S to T-540/541	2697994	(FT-017) BIO Inf. from T-530	662327
(FT-042T) MW-38 Source to T-540/541	4058622	(FT-018) T-540/541 Influent	8703275
(FT-055) On - Site N. End Influent	100063229	(FT-352) T-352 to HMR-30	1338405

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	64 °F (Analog Gauge)	Outside Temp.: ~ 42 °F
Compressor Building Vent	✓	Open - observed
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62950 Hours	Coolant present in sight glass: Y / N Next service @ 64950 Hours Current Hours @ 63006
IRN30H Motor Speed	0 %	
IRN30H Pressure	117 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco off	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 1-27-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc-calibration + manual 2-9-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 1-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

* Acid Fume vent motor fld. STARTED repair, waiting on parts currently
* 2-9-22 - New Solenoid valve installed on UV-Ox valve CV-708
* 2-9-22 - New check balls installed on discharge pumps P-751 + P-752

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	2.05	2500 %	5.5	
P-3301A	SB	–	– %	–	
NTES Pump Swapped out 2-3-22 P-002(Sump) / (P-002W(10R))	✓	0.50	48 %	P035 34-35 / P038 7.0	Globules Observed at TP-130: Y / (N) Time: 0920
T-530 P-005	✓	0.19	41 %	7.0	
T-540/541 P-006	✓	0.21	41 %	7.0	New Impeller 2-3-22
LFG COND Auto-Traps	Motor ✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.51	59.3 %	8.5	
P-3322	✓	3.52	53.6 %	6.5	
P-3323	SB	–	– %	–	
P-3324	✓	2.49	39.4 %	6.0	
Reactor Effluent Pumps					
P-3341	✓	2.20	46.2%	8.5	
P-3341A	SB	–	– %	–	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-30-21
B-3331	✓	4.17	124	3-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.29	126	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.11	119	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 12.8 PPM Methane Cleared LAMP on ASA
VTP-3360	✓	PID Reading: 4.6 PPM Last week After High reading

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 71 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 24 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 85% & 86%	
T-540/541 Mixers	✓	
Chiller	OFFLine	Chiller Coolant Lvl: ~ ~ " Below full mark
Chiller Cooling Fins (as needed)	OFFLine	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 29 %	
Recycle Valve to Blend Tank	✓	4.02 gpm @ 1040
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 1-20-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 12.80 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 155 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 1-20-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	1-27-22	Spray and Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 93	Reset (Running @ Higher Flows Best Flow Days)
BF-3340 a/b Differential Pressure	PSI: 4	21/17 @ 4.7gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 9.5	17/7.5 @ 4.7gpm
Last Backwash Performed	Date: 1-26-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 97 min / 95 Events
HMI's	✓	
BTS Process KWH Meter	1847538 KWH	Time: 1126
Building#2 KWH Meter	5338122 KWH	Time: 1126

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Cc-calibration + maint. 2-9-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 10, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6340094	
FT-3324 Feed Spare	181812	
FT-3322 Feed to Reactor 2	1122631	
FT-3323 Feed to Reactor 3	964303	
FT-3301 T-510 to BIO	51827561	
FT-3341 BIO Effluent	66758658	
FT-3342 BIO Recycle	56165405	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 1-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 13.22 oc	Counter: 196400 Cycles: 350
LFG Cond Automatic Trap CT-2	Sump Level: 8.68 oc	Counter: 2755558 Cycles: 128
LFG Cond Automatic Trap CT-3	Sump Level: 7.56 oc	Counter: 324488 Cycles: 2230
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.36 Counter: ~~196400~~ 191271 Cycles: 0 Sump: 9.06
PM-15 Containment / Vessel	✓ Level: 72 %	
MW-51 Containment / Vessel	✓ Level: 30 %	
PM-11 Containment / Vessel	✓ Level: 30 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 1-21-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07' Date: 2-17-22 - Today
North Boundary System P-001:	CV 73.0% @ 6.1 gpm	40.27 Hz / 2.06 Amps. / vault psi @ 18 / No leaks
T-101 & T-102 Containment / Tank	✓	Levels: 34 % & 34 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	54.8 °F	Outside Temp.: ~ 14 °F
(P-121) or P-122	✓	1.0 gpm / CV 53 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 2-17-22 - Today
RWST Back-Up Generator Block Heater Good/on.	✓	Last Test Run(monthly): 2-17-22 - Today

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 560 Gallons Reserve = 1 Tote
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 130 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 250 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM *2-10-22- New Belt & Motor on Acid Fume Vent*

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 58 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.57	
pH 315	Value: 10.63	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 475	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both OK
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1+2-3-20-21/#3-7-20-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All OK
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	2-7-22-none	1237
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1330
pH-740 Discharge Surge Tank		Discharge suspended: 1249 ↔ 1256
Out of Hold Double Check	----------	None in hold: ✓✓ jm
Valves Back to Normal Position	----------	All OK: ✓✓ jd jm

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 47 %
Decant Transfer Pump (P-352)	✓	CV 63 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: 4 - currently running on T-351

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 39.2 psi	CV@ 71 % @ 1.79 gpm
Retention Tank (T-114)	✓ Operating Press: 38 psi	pH-113 @ 3.85
Bag Filter (BF-113)	✓ Operating Press: 41 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 37 psi	TP-174A→TP-176A/5 Canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 14 psi	CV@ 58 % @ 31.5 gpm
T-520 to GAC Total (FT-675)	256746046 gal	Time: 0826
North End On-Site Pumping	Operating Press: 2-3 psi	12.2 gpm @ 0817
North End Off-Site Pumping	Operating Press: 2-6 psi	8.4 gpm @ 0817
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
~~180~~ Day storage area check	✓	Check sheet completed: yes/mica/2-17-22-felix
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Extension + main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 22 cc/min.
UV-Ox Power	✓	25.7 kVA 2621 Volts 10.1 Amps
Lamp Hours	2584 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	12.0 psi In 12.0 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 76 % @ 7.4 gpm
UV-OX Temperature	In(TT-670): 13.2 °C	Out(TT-710): 26.1 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 4 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 2 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	212606 18 gal	Time: 0826
Post UV-Ox / Pre PDU	✓	Pressure: 15 psi
Post PDU	✓	Pressure: 7.75 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 7 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.7 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.2gpm @ 0825
POTW Line Pressure (PT-770)	✓	32.3 psi
Effluent Totalizer Reading (FT-770)	250897036 gal	Time: 0827
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 2-16-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 1-27-22	Plant Effluent Suspended: 1307 ↔ 1324
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0827 - 0831

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19843964	(FT-505) LFG Cond. to T-530	221426
(FT-025) NBBW Influent	95032940	(FT-056) Off - Site N. End Influent	44532920
(FT-012) MW-38 Inf. to HMR-30	8547664	(FT-113) Ion Exchange Influent	1144090
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30079222
(FT-043) MW-38 to RWST	3097108	(FT-026) NBBW Bypass to RWST	4471949
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8240429
(FT-012T) MW-38 to T-540/541	8664186	(FT-035) NTES Inf. to BIO	6741318
(FT-040T) MW-38N to T-540/541	1979523	(FT-035T) NTES to T-530	467623
(FT-041T) MW-38S to T-540/541	2697994	(FT-017) BIO Inf. from T-530	662830
(FT-042T) MW-38 Source to T-540/541	4058622	(FT-018) T-540/541 Influent	8706165
(FT-055) On - Site N. End Influent	100185502	(FT-352) T-352 to HMR-30	1341841

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	56 °F (Analog Gauge)	Outside Temp.: ~ 18 °F
Compressor Building Vent	✓	closed - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62950 Hours	Coolant present in sight glass: (Y) / N Next service @ 64950 Hours Current Hours @ 63091
IRN30H Motor Speed	0 %	
IRN30H Pressure	116 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ ECO on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 1-27-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	106 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	CC-Calibration + Maint 2-16-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 1-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

2-10-22 - New Belt and Motor on Acid Fume Hood Vent

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.82	34.4 %	7.0	
P-3301A	SB	—	— %	—	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.51	47 %	P035 34-35 / P038 7.0	Globules Observed at TP-130: Y / (N) Time: 0720
T-530 P-005	✓	0.21	41 %	7.5	
T-540/541 P-006	✓	0.30	44 %	8.0	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.51	57.9 %	9.0	
P-3322	✓	3.40	54.1 %	6.0	
P-3323	SB	—	— %	—	
P-3324	✓	2.51	38.8 %	5.0	
Reactor Effluent Pumps					
P-3341	✓	2.59	57.3 %	17.0	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-30-21
B-3331	✓	4.16	112	3-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.35	114	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.14	100	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 17.3 PPM
VTP-3360	✓	PID Reading: 10.1 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 67 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 29 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 64 % & 65%	
T-540/541 Mixers	✓	
Chiller	OFF Line	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	OFF Line	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	4.00 gpm @ 0845
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 2-17-22-Today

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 12.75 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 125 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 2-17-22-Today
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	1-27-22	Acid/Base clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 21	Reset
BF-3340 a/b Differential Pressure	PSI: 4	18/14 ≈ 2.7 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 7.5	14/6.5 ≈ 2.7 gpm
Last Backwash Performed	Date: 1-26-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 97 min / 95 Events
HMI's	✓	
BTS Process KWH Meter	1850335 KWH	Time: 1001
Building#2 KWH Meter	5345231 KWH	Time: 1001

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	QC-Calibration + maint 2-16-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 17, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6362903	
FT-3324 Feed Spare	204469	
FT-3322 Feed to Reactor 2	11253334	
FT-3323 Feed to Reactor 3	964305	
FT-3301 T-510 to BIO	51849940	
FT-3341 BIO Effluent	66789336	
FT-3342 BIO Recycle	56206217	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 1-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.82 ok	Counter: 197013 Cycles: 613
LFG Cond Automatic Trap CT-2	Sump Level: 8.63 ok	Counter: 275703 Cycles: 145
LFG Cond Automatic Trap CT-3	Sump Level: 7.44 ok	Counter: 324806 Cycles: 318
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.36 Counter: 191278 Cycles: 7 Sump: 8.89 ok
PM-15 Containment / Vessel	✓ Level: 78 %	
MW-51 Containment / Vessel	✓ Level: 60 %	
PM-11 Containment / Vessel	✓ Level: 50 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: ~~1-25-22~~ 2-18-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @16.07' Date: 2-17-22
North Boundary System P-001:	CV 73.0% @ 6.2 gpm	40.24Hz / 2.05 Amps. / vault psi @ 18/No leaks
T-101 & T-102 Containment / Tank	✓	Levels: 23 % & 22 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	49.9 °F	Outside Temp.: ~ 4 °F
(P-121) or P-122	✓	0.6 gpm / CV 60 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 2-17-22
RWST Back-Up Generator Block Heater check	✓	Last Test Run(monthly): 2-17-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~440 Gallons Reserve = 1 tote
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~115 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~220 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	~~Checked and Flushed~~ - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 56-58 CV: 4 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.87	
pH 315	Value: 10.89	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 365	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1&2-3-20-21 / #3-2-20-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	2-24-22-Today	1330
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1400
pH-740 Discharge Surge Tank		Discharge suspended: 1403 ↔ 1427
Out of Hold Double Check	----------	None in hold: ✓✓ in
Valves Back to Normal Position	----------	All OK: ✓✓ in

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level: ~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 41 %
Decant Transfer Pump (P-352)	✓	CV 67 % @ 05 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 37.2 psi	CV@ 69 % @ 1.80 gpm
Retention Tank (T-114)	✓ Operating Press: 36 psi	pH-113 @ 3.68
Bag Filter (BF-113)	✓ Operating Press: 39 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 36 psi	TP-174A→TP-176A/5 Chambers + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 14 psi	CV@ 58 % @ 32.1 gpm
T-520 to GAC Total (FT-675)	257071178 gal	Time: 0956
North End On-Site Pumping	Operating Press: 2-3 psi	12.3 gpm @ 0945
North End Off-Site Pumping	Operating Press: 2-8 psi	8.8 gpm @ 0945
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
60 ~~180~~ Day storage area check	✓	Check sheet completed: yes-MG-2-24-22-Today
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: DK Resin + mum Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~7.0 cc/min.
UV-Ox Power	✓	25.7 kVA 2472 Volts 103 Amps
Lamp Hours	2754 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	12.0 psi In 12.5 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 76 % @ 7.4 gpm
UV-OX Temperature	In(TT-670): 13.6 °C	Out(TT-710): 25.9 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 3 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	213332 44 gal	Time: 0959
Post UV-Ox / Pre PDU	✓	Pressure: 15 psi
Post PDU	✓	Pressure: 8 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 7 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.4 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.1 gpm @ 0955
POTW Line Pressure (PT-770)	✓	32.1 psi
Effluent Totalizer Reading (FT-770)	251223312 gal	Time: 1000
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 2-16-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly) ✓	Last Completed: 2-24-22-Today	Plant Effluent Suspended: 1403 ↔ 1427
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1000 - 1008

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19852431	(FT-505) LFG Cond. to T-530	221505
(FT-025) NBBW Influent	95094752	(FT-056) Off - Site N. End Influent	44618692
(FT-012) MW-38 Inf. to HMR-30	8565347	(FT-113) Ion Exchange Influent	1162203
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30079882
(FT-043) MW-38 to RWST	3097557	(FT-026) NBBW Bypass to RWST	4473525
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8242116
(FT-012T) MW-38 to T-540/541	8664186	(FT-035) NTES Inf. to BIO	6746306
(FT-040T) MW-38N to T-540/541	1979523	(FT-035T) NTES to T-530	467849
(FT-041T) MW-38S to T-540/541	2697984	(FT-017) BIO Inf. from T-530	663354
(FT-042T) MW-38 Source to T-540/541	4058622	(FT-018) T-540/541 Influent	8709073
(FT-055) On - Site N. End Influent	100310277	(FT-352) T-352 to HMR-30	1344410

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	50 °F (Analog Gauge)	Outside Temp.: ~ 10 °F
Compressor Building Vent	✓	Closed- operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63180
IRN30H Motor Speed	31 %	
IRN30H Pressure	118 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ ECO OFF	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 2-24-22 - Today	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc-calibration + maint 2-23-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 2-21-22 - Annual
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

New UPS in HMI30 + LWJT5 PLC's today.

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.84	35.9 %	7.5	
P-3301A	SB	—	— %	—	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.49	48 %	P035: 35-36 / P038: 7.0	Globules Observed at TP-130: Y / (N) Time: 0910
T-530 P-005	✓	0.21	41 %	7.5	
T-540/541 P-006	✓	0.32	57 %	8.0	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	~~✓ 2.52~~	~~3.52 58.9~~	58.9 %	8.0	
P-3322	✓	3.46	53.9 %	5.5	
P-3323	SB	—	— %	—	
P-3324	✓	2.48	39.5 %	5.5	
Reactor Effluent Pumps					
P-3341	✓	3.08	60.1 %	18	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-30-21
B-3331	✓	4.31	116	3-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.38	112	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.24	106	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 32.1 PPM
VTP-3360	✓	PID Reading: 26.1 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 60 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 27 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 39 % & 49 %	T-540 feed line may be frozen.
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On) OK / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 70 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.98 gpm @ 1025
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 2-17-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 12.5 Gallons: ~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 110 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 2-17-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	2-24-22 - today	New 4 & 10 pH STDs used
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 16	Reset
BF-3340 a/b Differential Pressure	PSI: 3	16/13 @ 2.7 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 6	13/7 @ 2.7 gpm
Last Backwash Performed	Date: 1-26-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	*New 2-10-22 UPS @ 131 min / 0 Events*
HMI's	✓	
BTS Process KWH Meter	1853106 KWH	Time: 1124
Building#2 KWH Meter	5352874 KWH	Time: 1124

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Calibration + Maint. 2-23-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, February 24, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6384052	
FT-3324 Feed Spare	225461	
FT-3322 Feed to Reactor 2	11282695	
FT-3323 Feed to Reactor 3	964310	
FT-3301 T-510 to BIO	51865837	
FT-3341 BIO Effluent	66813013	
FT-3342 BIO Recycle	5624800	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 2-21-22 - Annual
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

2-10-22 - New UAS for Motor Control Center.

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 ok	Counter: 198160 Cycles: 147
LFG Cond Automatic Trap CT-2	Sump Level: 8.67 ok	Counter: 276675 Cycles: 379
LFG Cond Automatic Trap CT-3	Sump Level: 7.22 ok	Counter: 3285722 Cycles: 1236
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 32 %	Tank Level: 3.36 Counter: 191296 Cycles: 2 Sump: 9.01 ok
PM-15 Containment / Vessel	✓ Level: 26 %	
MW-51 Containment / Vessel	✓ Level: 75 %	
PM-11 Containment / Vessel	✓ Level: 70 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 3-25-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry → 16.07' Date: 3-17-22
North Boundary System P-001:	CV 72.9 % @ 6.2 gpm	40.18 Hz / 2.05 Amps. / vault psi @ 18 / No leaks
T-101 & T-102 Containment / Tank	✓	Levels: 27 % & 27 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	54.5 °F	Outside Temp.: ~ 40 °F
(P-121) or P-122	✓	0.6 gpm / CV 49 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 3-17-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 3-17-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~460 Gallons Reserve = ~250 gal
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~260 Gallons Reserve = ~130 gal
HCL Tote Levels	✓	~110 Gallons Reserve = ~30
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22 - Today
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22 - Today
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.64	
pH 315	Value: 10.74	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 510	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both OK
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All OK
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	4-7-22-Today	1426
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1457
pH-740 Discharge Surge Tank		Discharge suspended: 1417 ↔ 1424
Out of Hold Double Check	----------	None in hold: ✓✓ 'd mm
Valves Back to Normal Position	----------	All OK: ✓✓ 'd mm

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 65 %
Sludge Holding Tank (T-352)	✓	Level: 30 %
Decant Transfer Pump (P-352)	SB	CV — % @ — gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty - Ready to Fill

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 40 psi	CV@ 70 % @ 1.74 gpm
Retention Tank (T-114)	✓ Operating Press: 40 psi	pH-113 @ 3.48
Bag Filter (BF-113)	✓ Operating Press: 43 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 39 psi	TP-174A → TP-176A / 5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 35 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 19 psi	CV@ 63 % @ 32.3 gpm
T-520 to GAC Total (FT-675)	258982585 gal	Time: 1210
North End On-Site Pumping	Operating Press: 23 psi	12.3 gpm @ 1156
North End Off-Site Pumping	Operating Press: 2-6 psi	8.4 gpm @ 1156
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.7
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

4-6-22 - GAC picked up by Clean Harbors X

Item	Status	Comments
~~180~~ 90 Day storage area check	✓	Check sheet completed: yes - Final - 4-6-22
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin + Media Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA / Running	Next: NA / Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.0 cc/min.
UV-Ox Power	✓	27.17 kVA 2682 Volts 10.2 Amps
Lamp Hours	382 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	9 psi In 9 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 65 % @ 7.1 gpm
UV-OX Temperature	In(TT-670): 12.9 °C	Out(TT-710): 25.7 °C
PDU GAC (PDT-710)	✓ Backwashed today	Δ Pressure: 1 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	20 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 1 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	216122 80 gal	Time: 1210
Post UV-Ox / Pre PDU	✓	Pressure: 11 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 11 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752)	✓	CV@ 53.6 %
Effluent Surge Tank (T-740)	✓	Level: 39 %
Effluent Discharge Rate (FT-770)	✓	31.9 gpm @ 1201
POTW Line Pressure (PT-770)	✓	32.4 psi
Effluent Totalizer Reading (FT-770)	253142392 gal	Time: 1211
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 3-23-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 3-24-22	Plant Effluent Suspended: 1307 ↔ 1326
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1212 → 1216

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20001489	(FT-505) LFG Cond. to T-530	221994
(FT-025) NBBW Influent	95389425	(FT-056) Off - Site N. End Influent	45141404
(FT-012) MW-38 Inf. to HMR-30	8633257	(FT-113) Ion Exchange Influent	1267963
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30085662
(FT-043) MW-38 to RWST	3122273	(FT-026) NBBW Bypass to RWST	4556290
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8276332
(FT-012T) MW-38 to T-540/541	8672314	(FT-035) NTES Inf. to BIO	6775548
(FT-040T) MW-38N to T-540/541	1979829	(FT-035T) NTES to T-530	468980
(FT-041T) MW-38S to T-540/541	2698389	(FT-017) BIO Inf. from T-530	664465
(FT-042T) MW-38 Source to T-540/541	4066047	(FT-018) T-540/541 Influent	8716648
(FT-055) On - Site N. End Influent	1010509 14	(FT-352) T-352 to HMR-30	1364947

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	60 °F (Analog Gauge)	Outside Temp.: ~ 45 °F
Compressor Building Vent	✓	OPEN - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: Ⓨ / N Next service @ 64971 Hours Current Hours @ 63716
IRN30H Motor Speed	31 %	
IRN30H Pressure	115 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / Ⓝ
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: Ⓨ / N
Air Dryer	✓ Econ on	Moisture at Receiver Tank: Y / Ⓝ
Oil Moisture Prevention (Monthly)	Last Done: 3-24-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	CC-Calibration + Maint 4-6-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 3-24-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: Ⓨ / N

Other Comments:

#4-6-22- SPENT GAC Picked up by Clean Harbours. Hazardous Storage area Empty

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.76	43.6 %	8.5	
P-3301A	SB	—	— %	—	
NTES Pump 4-4-22 Switch out P-002(Sump) / (P-002W(10R))	✓	0.50	48 %	P035 36-37 / P038 65	Globules Observed at TP-130: Y / (N) Time: 1110
T-530 P-005	✓	0.20	41 %	7.0	
T-540/541 P-006	✓	0.30	50 %	7.0	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.30	75.8 %	7.5	
P-3322	✓	3.32	51.2 %	6.0	
P-3323	SB	—	— %	—	
P-3324	✓	2.32	40.7 %	6.0	
Reactor Effluent Pumps					
P-3341	✓	3.57	64.2 %	16.0	
P-3341A	SB	—	—%	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.26	132	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.31	130		Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.20	124		Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 52.5 PPM will check w/ rental next
VTP-3360	✓	PID Reading: 51.3 PPM week

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 55 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 34 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 44 % & 46 %	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 76 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.97 gpm @ 1233
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 3-17-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 11 Gallons: ~ 85
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 320 Gallons New Pk 4-6-22
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 3-17-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	3-24-22	Spray off clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 5	Reset
BF-3340 a/b Differential Pressure	PSI: 0	11/11 @ 1.8gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 4	11/7 @ 1.8gpm
Last Backwash Performed	Date: 3-18-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 1 Events
HMI's	✓	
BTS Process KWH Meter	1873600 KWH	Time: 1339
Building#2 KWH Meter	5395236 KWH	Time: 1339

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	cc- calibrations + maint 4-6-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 07, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6556139	
FT-3324 Feed Spare	396619	
FT-3322 Feed to Reactor 2	11521860	
FT-3323 Feed to Reactor 3	964313	
FT-3301 T-510 to BIO	5211 6070	
FT-3341 BIO Effluent	67101660	
FT-3342 BIO Recycle	56498179	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 3-24-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: Y / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 ok	Counter: 198362 Cycles: 202
LFG Cond Automatic Trap CT-2	Sump Level: 8.58 ok	Counter: 277170 Cycles: 495
LFG Cond Automatic Trap CT-3	Sump Level: 7.23 ok	Counter: 330450 Cycles: 1928
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 32 %	Tank Level: 3.36 Counter: 191296 Cycles: 0 Sump: 8.91 ok
PM-15 Containment / Vessel	✓ Level: 30 %	
MW-51 Containment / Vessel	✓ Level: 55 %	
PM-11 Containment / Vessel	✓ Level: 40 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 3-25-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07' Date: 3-17-22
North Boundary System P-001:	CV 73.2 % @ 6.2 gpm	40.48 Hz / 2.06 Amps. / vault psi @ 18/100 leaves
T-101 & T-102 Containment / Tank	✓	Levels: 28 % & 27 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	54.6 °F	Outside Temp.: ~ 42 °F
P-121 or P-122	✓	2.0 gpm / CV 64 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 3-17-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 3-17-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 330 Gallons Reserve = ~250 gal
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 280 Gallons Reserve = ~130 gal
HCL Tote Levels	✓	~ 95 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 50-54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
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WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

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E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.71	
pH 315	Value: 10.87	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good very clear Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 425	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	4-14-22 - Today	1250
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1329
pH-740 Discharge Surge Tank		Discharge suspended: 1240 ↔ 1248
Out of Hold Double Check	----------	None in hold: ✓✓'d
Valves Back to Normal Position	----------	All OK: ✓✓'d

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level: ~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 40 %
Decant Transfer Pump (P-352)	✓	CV 71 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty Ready to Fill

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 46.6 psi	CV@ 77 % @ 1.71 gpm
Retention Tank (T-114)	✓ Operating Press: 45 psi	pH-113 @ 3.62
Bag Filter (BF-113)	✓ Operating Press: 49 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 44 psi	TP-174A→TP-176A / 5 canisters + control
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 21 psi	CV@ 64 % @ 31.9 gpm
T-520 to GAC Total (FT-675)	259298972 gal	Time: 0947
North End On-Site Pumping	Operating Press: 2-3 psi	12.3 gpm @ 0939
North End Off-Site Pumping	Operating Press: 2-8 psi	8.6 gpm @ 0939
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: NA/Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin + Media Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.0 cc/min.
UV-Ox Power	✓	26.46 kVA 2712 Volts 9.8 Amps
Lamp Hours	546 Hrs	
Crystal Condition & Wiper Status	# Wiper has been sticking. Oiled & Drive # increased PSI	Oiler status: ok
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	9.5 psi In 9.5 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 62 % @ 6.4 gpm
UV-OX Temperature	In(TT-670): 13.3 °C	Out(TT-710): 27.3 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	20 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21675172 gal	Time: 0947
Post UV-Ox / Pre PDU	✓	Pressure: 11 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 13 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.5 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.0 gpm @ 0945
POTW Line Pressure (PT-770)	✓	32.2 psi
Effluent Totalizer Reading (FT-770)	253460166 gal	Time: 0947
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 4-14-22 - Today
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 3-24-22	Plant Effluent Suspended: 1307 ↔ 1326
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0948 → 0952

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20009961	(FT-505) LFG Cond. to T-530	222110
(FT-025) NBBW Influent	95450261	(FT-056) Off - Site N. End Influent	45227968
(FT-012) MW-38 Inf. to HMR-30	8646320	(FT-113) Ion Exchange Influent	1284955
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30086120
(FT-043) MW-38 to RWST	3122615	(FT-026) NBBW Bypass to RWST	4557825
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8281347
(FT-012T) MW-38 to T-540/541	8677988	(FT-035) NTES Inf. to BIO	6780298
(FT-040T) MW-38N to T-540/541	1979891	(FT-035T) NTES to T-530	469149
(FT-041T) MW-38S to T-540/541	2698448	(FT-017) BIO Inf. from T-530	664962
(FT-042T) MW-38 Source to T-540/541	4071626	(FT-018) T-540/541 Influent	8719393
(FT-055) On - Site N. End Influent	101172801	(FT-352) T-352 to HMR-30	1367944

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Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	65 °F (Analog Gauge)	Outside Temp.: ~ 45 °F
Compressor Building Vent	✓	closed - [illegible]
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63801
IRN30H Motor Speed	31 %	
IRN30H Pressure	117 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 3-24-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	Calibration + ~~[illegible]~~ maint 4-13-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 3-24-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

* UV-OX crystal water has been sticking periodically, replace into air line and increase psi slightly.

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.87	44.6%	8.5	
P-3301A	SB	–	– %	–	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.50	48 %	P035 36-37 / P038 5.5	Globules Observed at TP-130: Y / (N) Time: 0911
T-530 P-005	✓	0.19	41 %	7.0	
T-540/541 P-006	✓	0.20	41 %	7.0	
LFG COND Auto-Traps	✓	0.0	NA	5	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.37	53.4 %	4.0	
P-3322	✓	3.22	50.2 %	5.0	
P-3323	SB	–	– %	–	
P-3324	✓	2.33	35.6 %	4.5	
Reactor Effluent Pumps					
P-3341	✓	2.90	63.1 %	19.0	
P-3341A	SB	–	– %	–	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.25	132	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.26	130	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.17	126	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 10.8 PPM
VTP-3360	✓	PID Reading: 3.5 PPM

Using Pine Rental SN 592-908710 until our site one gets serviced

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 61 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 29 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 64% & 65%	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	4.24 gpm @ 1030
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 3-17-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 11 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 280 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 3-17-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	3-24-22	Spray off Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 18	Reset
BF-3340 a/b Differential Pressure	PSI: 1	15/16 ≈ 2.4 ppm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 8	15/7 ≈ 2.4 ppm
Last Backwash Performed	Date: 3-18-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 1 Events
HMI's	✓	
BTS Process KWH Meter	1876346 KWH	Time: 1100
Building#2 KWH Meter	5401059 KWH	Time: 1100

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Calibration + method 4-13-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 14, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6578603	
FT-3324 Feed Spare	418928	
FT-3322 Feed to Reactor 2	11553066	
FT-3323 Feed to Reactor 3	964317	
FT-3301 T-510 to BIO	52137915	
FT-3341 BIO Effluent	67131556	
FT-3342 BIO Recycle	56539259	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 3-24-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: Y / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 oc	Counter: 198525 Cycles: 163
LFG Cond Automatic Trap CT-2	Sump Level: 8.62 oc	Counter: 277821 Cycles: 651
LFG Cond Automatic Trap CT-3	Sump Level: 7.23 oc	Counter: 331878 Cycles: 1428
CT-4 Containment/Vessel (LFG Cond)	✓ Level: ~~32~~ 30 %	Tank Level: 3.38 Counter: 191296 Cycles: 0 Sump: 8.91
PM-15 Containment / Vessel	✓ Level: ~~30~~ 32 %	
MW-51 Containment / Vessel	✓ Level: ~~55~~ 25 %	
PM-11 Containment / Vessel	✓ Level: ~~40~~ 15 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 3-25-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07' Date: 4-21-22 - today
North Boundary System P-001:	CV 73.0 % @ 6.3 gpm	40.80 Hz / 2.07 Amps. / vault psi @ 18 / 100 cubic
T-101 & T-102 Containment / Tank	✓	Levels: 37 % & 35 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	59.1 °F	Outside Temp.: ~ 58 °F unplugged portable Heater
(P-121) or P-122	✓	0.6 gpm / CV 50 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 4-21-22 - today
RWST Back-Up Generator	✓	Last Test Run(monthly): 4-21-22 - today

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 445 Gallons Reserve = —
Caustic Bay Heater	✓	warm today
Peroxide Tote Level	✓	~ 225 Gallons Reserve = ~130 gal
HCL Tote Levels	✓	~ 60 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.64	
pH 315	Value: 10.91	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 550	JUST Refilled
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Bothok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: Allok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	4-21-22 ~ Today	1327
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1405
pH-740 Discharge Surge Tank		Discharge suspended: 1320 ↔ 1326
Out of Hold Double Check	----------	None in hold: ✓ ✓ " m
Valves Back to Normal Position	----------	All OK: ✓ ✓ " m

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 41 %
Decant Transfer Pump (P-352)	✓	CV 67 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty Ready to fill

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 43.7 psi	CV@ 74 % @ 1.70 gpm
Retention Tank (T-114)	✓ Operating Press: 48 psi	pH-113 @ 3.72
Bag Filter (BF-113)	✓ Operating Press: 46 psi	
Ion Exchange (Cage 1 or 2) + Guard	✓ Operating Press: 42.5 psi	TP-174A → TP176A / 5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 22 psi	CV@ 66 % @ 32.2 gpm
T-520 to GAC Total (FT-675)	25962144 gal	Time: 1011
North End On-Site Pumping	Operating Press: 2-3 psi	12.3 gpm @ 1007
North End Off-Site Pumping	Operating Press: 2-6 psi	8.7 gpm @ 1007
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.7
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: NA/Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin + Media Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.0 cc/min.
UV-Ox Power	✓	26.38 kVA 2707 Volts 9.7 Amps
Lamp Hours	714 Hrs	
Crystal Condition & Wiper Status	Wiper Hardness OK Sleeve Condition OK	Oiler status: OK
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	9.5 psi In 10.0 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 63 % @ 6.5 gpm
UV-OX Temperature	In(TT-670): 13.6 °C	Out(TT-710): 27.3 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	20 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 2 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21738294 gal	Time: 1012
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 14 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752)	✓	CV@ 53.5 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.3 gpm @ 1010
POTW Line Pressure (PT-770)	✓	32.1 psi
Effluent Totalizer Reading (FT-770)	253784034 gal	Time: 1012
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 4-14-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 3-24-22	Plant Effluent Suspended: 1307 ↔ 1326
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1013- 1017

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20016291	(FT-505) LFG Cond. to T-530	222201
(FT-025) NBBW Influent	95512298	(FT-056) Off - Site N. End Influent	45315560
(FT-012) MW-38 Inf. to HMR-30	8663822	(FT-113) Ion Exchange Influent	1302145
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30086576
(FT-043) MW-38 to RWST	3123002	(FT-026) NBBW Bypass to RWST	4559103
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8289213
(FT-012T) MW-38 to T-540/541	8678491	(FT-035) NTES Inf. to BIO	6785141
(FT-040T) MW-38N to T-540/541	1980144	(FT-035T) NTES to T-530	469298
(FT-041T) MW-38S to T-540/541	2698686	(FT-017) BIO Inf. from T-530	665495
(FT-042T) MW-38 Source to T-540/541	4071626	(FT-018) T-540/541 Influent	8722207
(FT-055) On - Site N. End Influent	101296560	(FT-352) T-352 to HMR-30	1370021

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	70 °F (Analog Gauge)	Outside Temp.: ~ 58 °F
Compressor Building Vent	✓	open - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63888
IRN30H Motor Speed	51 %	
IRN30H Pressure	115 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Econ on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 4-21-22 - today	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	calibration + maint 4-20-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22 - today
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	3.50	65.5 %	15.0	
P-3301A	SB	–	– %	–	
NTES Pump P-002(Sump) / P-002W(10R)	✓	0.50	48 %	P035 35-36 / P038 5.5	Globules Observed at TP-130: Y / (N) Time: 0940
T-530 P-005	✓	0.20	41 %	6.5	
T-540/541 P-006	✓	0.30	43 %	7.0	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.66	68.6 %	5.0	
P-3322	✓	3.65	53.1 %	5.0	
P-3323	SB	–	– %	–	
P-3324	✓	2.65	38.7 %	5.0	
Reactor Effluent Pumps					
P-3341	✓	4.06	73.2 %	25.0	
P-3341A	SB	–	– %	–	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.23	140	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.35	142	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.28	140	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 5.7 PPM
VTP-3360	✓	PID Reading: 2.7 PPM

* Site unit serviced and working OK but not used today

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 69 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 25 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 3.19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 45 % & 46 %	
T-540/541 Mixers	✓	
Chiller	OFFLINE	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	OFFLINE	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): ~~2-3-21~~ 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 73 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.99 gpm @ 1027
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 4-21-22-Today

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 10.9 Gallons: ~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 275 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 4-21-22-Today
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	3-24-22	Acid/Caustic Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 19	reset
BF-3340 a/b Differential Pressure	PSI: 5	30/25 @ 4.5 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 17.5	7.5/25 @ 4.5 gpm
Last Backwash Performed	Date: 3-18-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	1879116 KWH	Time: 1103
Building#2 KWH Meter	5406293 KWH	Time: 1103

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Calibration + maint 4-20-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 21, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6602017	
FT-3324 Feed Spare	442177	
FT-3322 Feed to Reactor 2	11585586	
FT-3323 Feed to Reactor 3	964317	
FT-3301 T-510 to BIO	52161110	
FT-3341 BIO Effluent	67163102	
FT-3342 BIO Recycle	56580598	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22 - today
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: Ⓨ / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 OK	Counter: 198680 Cycles: 155
LFG Cond Automatic Trap CT-2	Sump Level: 8.68 OK	Counter: 278760 Cycles: 939
LFG Cond Automatic Trap CT-3	Sump Level: 7.25 OK	Counter: 332929 Cycles: 1051
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.38 Counter: 191297 Cycles: 1 Sump: 8.84 OK
PM-15 Containment / Vessel	✓ Level: 35 %	
MW-51 Containment / Vessel	✓ Level: 50 %	
PM-11 Containment / Vessel	✓ Level: 45 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 4-22-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @16.07' Date: 4-21-22
North Boundary System P-001:	CV 73.2 % @ 6.2 gpm	40.49 Hz / 2.07 Amps. / vault psi @ 18/NBOL cells
T-101 & T-102 Containment / Tank	✓	Levels: 22 % & 20 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	58.2 °F	Outside Temp.: ~ 60 °F
(P-121) or P-122	✓	2.0 gpm / CV 69 % Sounds well & steady
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 4-21-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 4-21-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 335 Gallons Reserve = 3 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 275 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 345 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.92	
pH 315	Value: 10.91	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 460	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES * New 4+10 pH STD's Today *

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	4-28-22 - Today	1228
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1258
pH-740 Discharge Surge Tank		Discharge suspended: 1300 ↔ 1317
Out of Hold Double Check	----------	None in hold: ✓✓'d on
Valves Back to Normal Position	----------	All OK: ✓✓'d on

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 41 %
Decant Transfer Pump (P-352)	✓	CV69 % @0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty ready to fill

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 40.5 psi	CV@ 74 % @ 1.70 gpm
Retention Tank (T-114)	✓ Operating Press: 39.5 psi	pH-113 @ 3.72
Bag Filter (BF-113)	✓ Operating Press: 43 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 39 psi	TP-174A→TP-176A / 5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 23 psi	CV@ 66 % @ 31.3 gpm
T-520 to GAC Total (FT-675)	259943892 gal	Time: 0952
North End On-Site Pumping	Operating Press: 2-3 psi	12.2 gpm @ 0945
North End Off-Site Pumping	Operating Press: 2-8 psi	8.7 gpm @ 0945
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: NA/Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: DX Resin + main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 20 cc/min.
UV-Ox Power	✓	26.38 kVA 2711 Volts 9.7 Amps
Lamp Hours	981 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: ok
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	10 psi In 10 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 65 % @ 6.4 gpm
UV-OX Temperature	In(TT-670): 14.3 °C	Out(TT-710): 27.9 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	15 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21801356 gal	Time: 0953
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 16 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.1 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	31.3 gpm @ 0951
POTW Line Pressure (PT-770)	✓	32.1 psi
Effluent Totalizer Reading (FT-770)	254108352 gal	Time: 0953
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 4-14-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly) ✓	Last Completed: 4-28-22	Plant Effluent Suspended: 1300 ↔ 1317
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0956-1003

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20023936	(FT-505) LFG Cond. to T-530	222302
(FT-025) NBBW Influent	95574320	(FT-056) Off - Site N. End Influent	45402932
(FT-012) MW-38 Inf. to HMR-30	8681191	(FT-113) Ion Exchange Influent	1319230
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30087000
(FT-043) MW-38 to RWST	3123285	(FT-026) NBBW Bypass to RWST	4560184
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8289213
(FT-012T) MW-38 to T-540/541	8683285	(FT-035) NTES Inf. to BIO	6789963
(FT-040T) MW-38N to T-540/541	1980324	(FT-035T) NTES to T-530	469444
(FT-041T) MW-38S to T-540/541	2698701	(FT-017) BIO Inf. from T-530	665982
(FT-042T) MW-38 Source to T-540/541	4076218	(FT-018) T-540/541 Influent	8725011
(FT-055) On - Site N. End Influent	10141958	(FT-352) T-352 to HMR-30	1372186

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	64 °F (Analog Gauge)	Outside Temp.: ~ 62 °F
Compressor Building Vent	✓	open - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63974
IRN30H Motor Speed	31 %	
IRN30H Pressure	117 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 4-21-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	106 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: 1
Alarms Enabled	✓	Calibration standard 4-27-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.29	33.4 %	6.0	
P-3301A	SB	–	– %	–	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.51	48 %	P035 35.36 / P038 6.0	Globules Observed at TP-130: Y / (N) Time: 0925
T-530 P-005	SB	–	– %	–	
T-540/541 P-006	✓	0.20	42 %	6.5	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	~~2.26~~	2.26	73.3 %	6.5	
P-3322	✓	3.15	58.5 %	7.0	
P-3323	SB	–	– %	–	
P-3324	✓	2.30	49.2 %	7.0	
Reactor Effluent Pumps					
P-3341	✓	3.22	69.8 %	20.0	
P-3341A	SB	–	– %	–	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.14	138	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.28	148	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.31	142	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 205 PPM
VTP-3360	✓	PID Reading: 9.1 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 72 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 21 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 59 % & 59 %	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 72 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	4.17 gpm @ 1015
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 4-21-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 10.8 Gallons: ~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 270 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 4-21-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	4-28-22 - today	New 4+10 pHSTD's today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 25	reset
BF-3340 a/b Differential Pressure	PSI: 1	15/14 @ 2.4gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 7	14/7 @ 2.4gpm
Last Backwash Performed	Date: 3-18-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	1881864 KWH	Time: 1100
Building#2 KWH Meter	5411003 KWH	Time: 1100

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: 2
Alarms Enabled	✓	calibration + maint 4-27-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, April 28, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6625896	
FT-3324 Feed Spare	465882	
FT-3322 Feed to Reactor 2	11613741	
FT-3323 Feed to Reactor 3	964317	
FT-3301 T-510 to BIO	52185822	
FT-3341 BIO Effluent	67196318	
FT-3342 BIO Recycle	56621999	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 oz	Counter: 197214 Cycles: 201
LFG Cond Automatic Trap CT-2	Sump Level: 8.63 oz	Counter: 275916 Cycles: 213
LFG Cond Automatic Trap CT-3	Sump Level: 7.40 oz	Counter: 324806 Cycles: 0
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.36 Counter: 191281 Cycles: 3 Sump: 9.04 oz
PM-15 Containment / Vessel	✓ Level: 82 %	
MW-51 Containment / Vessel	✓ Level: 85 %	
PM-11 Containment / Vessel	✓ Level: 35 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 2-18-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry 216.07 Date: 2-17-22
North Boundary System P-001:	CV 73.3 % @ 6.2 gpm	49.49 Hz / 202 Amps. / vault psi @ 18 / no leaks
T-101 & T-102 Containment / Tank	✓	Levels: 17 % & 16 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	54.4 °F	Outside Temp.: ~ 52 °F
(P-121) or P-122	✓	2.3 gpm / CV 74 % Surcharged with fresh water
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 2-17-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 2-17-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 335 Gallons Reserve = 1 tote
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 82 Gallons Reserve = 455
HCL Tote Levels	✓	~ 210 Gallons Reserve = ~30
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.88	
pH 315	Value: 10.88	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 500	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Ok from ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): #1 & 2 - 3-3-22 / #3 - 2-20-21
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	3-3-22 - today	1218
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1255
pH-740 Discharge Surge Tank		Discharge suspended: 1210 ↔ 1217
Out of Hold Double Check	----------	None in hold: ✓ ✓ 1st mm
Valves Back to Normal Position	----------	All OK: ✓ ✓ 1st mm

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level: ~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 30 %
Decant Transfer Pump (P-352)	SB	CV ~ % @ ~ gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 39.0 psi	CV@ 70 % @ 1.78 gpm
Retention Tank (T-114)	✓ Operating Press: 38.5 psi	pH-113 @ 3.81
Bag Filter (BF-113)	✓ Operating Press: 42 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 38 psi	TP-174A→TP-176A/5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 15 psi	CV@ 59 % @ 31.7 gpm
T-520 to GAC Total (FT-675)	257392855 gal	Time: 0912
North End On-Site Pumping	Operating Press: 2-3 psi	12.3 gpm @ 0857
North End Off-Site Pumping	Operating Press: 2-8 psi	9.1 gpm @ 0851
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
~~180~~ 60 Day storage area check	✓	Check sheet completed: YCJ - MKG - 3-3-22 - today
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Excellent + much Cleaned
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA (Annually)	Next: NA (Annually)
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.0 cc/min.
UV-Ox Power	✓	25.7 kVA 256.2 Volts 103 Amps
Lamp Hours	2921 Hrs	will reset Hrs + change out on Monday - 3-7-22
Crystal Condition & Wiper Status	✓	Oiler status: ok
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	12.0 psi In 12.0 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 76 % @ 7.0 gpm
UV-OX Temperature	In(TT-670): 12.2 °C	Out(TT-710): 25.6 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 4 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21401344 gal	Time: 0913
Post UV-Ox / Pre PDU	✓	Pressure: 14 psi
Post PDU	✓	Pressure: 7.25 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 8 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.4 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	31.7 gpm @ 0911
POTW Line Pressure (PT-770)	✓	32.2 psi
Effluent Totalizer Reading (FT-770)	251546046 gal	Time: 0913
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 2-16-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 2-24-22	Plant Effluent Suspended: 1403 ↔ 1427
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0914 - 0918

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19860801	(FT-505) LFG Cond. to T-530	221615
(FT-025) NBBW Influent	95155750	(FT-056) Off - Site N. End Influent	44705452
(FT-012) MW-38 Inf. to HMR-30	8579869	(FT-113) Ion Exchange Influent	1180098
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30081234
(FT-043) MW-38 to RWST	3097876	(FT-026) NBBW Bypass to RWST	44744776
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8245931
(FT-012T) MW-38 to T-540/541	8671325	(FT-035) NTES Inf. to BIO	6751171
(FT-040T) MW-38N to T-540/541	1979523	(FT-035T) NTES to T-530	467957
(FT-041T) MW-38S to T-540/541	2697994	(FT-017) BIO Inf. from T-530	663846
(FT-042T) MW-38 Source to T-540/541	4065762	(FT-018) T-540/541 Influent	8711885
(FT-055) On - Site N. End Influent	100433732	(FT-352) T-352 to HMR-30	1346974

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	70 °F (Analog Gauge)	Outside Temp.: ~ 55 °F
Compressor Building Vent	✓	Open - observed
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63271
IRN30H Motor Speed	0 %	
IRN30H Pressure	117 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 2-24-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc-calibration + maint - 3-2-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 2-21-22 - Annual
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) N

Other Comments:

* Manual Amp Hour 30 Sludge Intervals #1 + #2 today - 3-3-22

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.31	28.5 %	6.5	
P-3301A	SB	–	– %	–	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.52	49 %	P035 34.5 / P038 6.5	Globules Observed at TP-130: Y / (N) Time: 0830
T-530 P-005	✓SB	–	– %	–	TANK @ 22%
T-540/541 P-006	✓	0.20	41 %	7.5-8.0	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.16	60.0%	8.5	
P-3322	✓	3.10	40.9 %	5.0	
P-3323	SB	–	– %	–	
P-3324	✓	2.10	44.8 %	6.0	
Reactor Effluent Pumps					
P-3341	✓	2.87	51.7 %	16.5	
P-3341A	SB	–	– %	–	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments
B-3331	✓	4.20	138	3-2022-Soon	Last serviced on: 12-30-21
B-3332	SB	–	–	↓	Greased, Belt and Filter Checked: (Y) / N
B-3333	✓	4.23	132		Belt and Filter Checked: Y / (N)
B-3334	✓	4.20	130		Greased, Belt and Filter Checked: (Y) / N
					Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 31.6 PPM
VTP-3360	✓	PID Reading: 22.6 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 70 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 22 %	currently on SB
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 74% & 74%	currently running source well batch
T-540/541 Mixers	✓	
Chiller	OFFLine	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	OFFLine	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 910-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 31 %	
Recycle Valve to Blend Tank	✓	4.00 gpm @ 1005
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 2-17-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 12.25 Gallons: ~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 100 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 2-17-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	2-24-22	Spray off Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 22	Reset
BF-3340 a/b Differential Pressure	PSI: 1	12/11 21.9gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 5	11/6 ≈1.9gpm
Last Backwash Performed	Date: 1-26-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 0 Events
HMI's	✓	
BTS Process KWH Meter	1855883 KWH	Time: 1057
Building#2 KWH Meter	5359541 KWH	Time: 1057

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: 42
Alarms Enabled	✓	CC-calibration + maint. -3-2-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 03, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6406062	
FT-3324 Feed Spare	247319	
FT-3322 Feed to Reactor 2	11313276	
FT-3323 Feed to Reactor 3	964310	
FT-3301 T-510 to BIO	51883469	
FT-3341 BIO Effluent	66838780	
FT-3342 BIO Recycle	56289225	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 2-21-22- Annual
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: Ⓨ / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.92 oc	Counter: 197520 Cycles: 306
LFG Cond Automatic Trap CT-2	Sump Level: 8.66 oc	Counter: 275916 Cycles: 0
LFG Cond Automatic Trap CT-3	Sump Level: 7.31 oc	Counter: 325044 Cycles: 238
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.36 Counter: 191282 Cycles: 1 Sump: 9.11 oc
PM-15 Containment / Vessel	✓ Level: 85 %	Currently clogged or frozen. Guy to pump this weekend
MW-51 Containment / Vessel	✓ Level: 40 %	
PM-11 Containment / Vessel	✓ Level: 60 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 2-18-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07' Date: 2-17-22
North Boundary System P-001:	CV 730% @ 6.2 gpm	40.27 Hz / 2.06 Amps. / vault psi @ 18/no leaks
T-101 & T-102 Containment / Tank	✓	Levels: 34 % & 33 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	52.9 °F	Outside Temp.: ~ 15 °F
(P-121) or P-122	✓	0.60 gpm / CV 52 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 2-17-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 2-17-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 525 Gallons Reserve = 3 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 75 Gallons Reserve = ~55 gal + 1 tote
HCL Tote Levels	✓	~ 170 Gallons Reserve = ~30
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-56 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.82	
pH 315	Value: 10.87	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 425	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both on
Manual Sludge Lateral pumping	✓	* Last done (As Needed): DAily currently / Clogging issues *
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All on
Automatic Blow-down Operations	✓	

* New sludge lateral piping on back of HMR30 drain valves to sludge transfer pump on 3-7-22 *

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	3-10-22 - today	1314
pH-315 HMR-30 (T-300B)	↓	
pH-365 Primary Acid Ret. Tank	↓	
pH-113 Pre-Ion Exchange	↓	1340
pH-670 Pre-UV-OX	← UV-OX offline / NO calibration	
pH-740 Discharge Surge Tank	3-10-22 - today	Discharge suspended: 1305 ↔ 1313
Out of Hold Double Check	----------	None in hold: ✓✓'d
Valves Back to Normal Position	----------	All OK: ✓✓'d

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 65 %
Sludge Holding Tank (T-352)	✓	Level: 58 %
Decant Transfer Pump (P-352)	✓	CV 64 % @ 05 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: 4 currently running on T-351

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 39.7 psi	CV@ 71 % @ 1.76 gpm
Retention Tank (T-114)	✓ Operating Press: 38.5 psi	pH-113 @ 8.57
Bag Filter (BF-113)	✓ Operating Press: 41.5 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 38 psi	TP-174A → TP-176A/5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 37 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 19 psi	CV@ 62 % @ 31.3 gpm
T-520 to GAC Total (FT-675)	257207280 gal	Time: 1031
North End On-Site Pumping	Operating Press: 2.3 psi	12.2 gpm @ 1029
North End Off-Site Pumping	Operating Press: 2-8 psi	8.9 gpm @ 1029
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

*Received Approval for Present GAC 90 Day Extension 90 days From DAVID Foster/CDPHE * 3-10-22

Item	Status	Comments
90 ~~180~~ Day storage area check	~~Currently awaiting 60 day Extension approval~~	Check sheet completed: YES - 3-10-22 - MGW - Todays
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Exterior & Main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	OFFLINE/ALC ISSUES - 3-7-22	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: —	Next: —
Peroxide Feed Pump (P-650)	—	Flow Rate: ~ — cc/min.
UV-Ox Power	—	— kVA — Volts — Amps
Lamp Hours	0 Hrs	* New Lamp Installed 3-7-22 - UV-OX OFFLINE STRUCTURE *
Crystal Condition & Wiper Status	—	Oiler status: OK
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	— psi In — psi Out
UV-OX Feed Pump (P-600 or P-601)	—	CV@ — % @ — gpm
UV-OX Temperature	In(TT-670): — °C	Out(TT-710): — °C
PDU GAC (PDT-710)	—	Δ Pressure: — psi
Peroxide Concentration Pre UV	— PPM	
Peroxide Concentration Post UV(TP-720)	— PPM	
Peroxide Conc. Post PDU (TP-730)	— PPM	
Secondary Acid Feed Pump (P-630)	—	CV @ — %
Secondary Acid Retention Tank (T-645)	—	
Pre – UV Oxidizer Total (FT-670)	214395768 gal	Time: 1031
Post UV-Ox / Pre PDU	—	Pressure: — psi
Post PDU	—	Pressure: — psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 11 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 52.9 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	31.0 gpm @ 1030
POTW Line Pressure (PT-770)	✓	31.9 psi
Effluent Totalizer Reading (FT-770)	25186650 gal	Time: 1032
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 2-16-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 2-24-22	Plant Effluent Suspended: 1403 ↔ 1427
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1032- 1036

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19874790	(FT-505) LFG Cond. to T-530	221746
(FT-025) NBBW Influent	95206718	(FT-056) Off - Site N. End Influent	44793836
(FT-012) MW-38 Inf. to HMR-30	8594810	(FT-113) Ion Exchange Influent	1197941
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30082204
(FT-043) MW-38 to RWST	3099727	(FT-026) NBBW Bypass to RWST	4487191
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8252108
(FT-012T) MW-38 to T-540/541	8672314	(FT-035) NTES Inf. to BIO	6756094
(FT-040T) MW-38N to T-540/541	1979829	(FT-035T) NTES to T-530	468207
(FT-041T) MW-38S to T-540/541	2698388	(FT-017) BIO Inf. from T-530	663846
(FT-042T) MW-38 Source to T-540/541	4066047	(FT-018) T-540/541 Influent	8713411
(FT-055) On - Site N. End Influent	100558309	(FT-352) T-352 to HMR-30	1349908

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	45 °F (Analog Gauge)	Outside Temp.: ~ 15 °F
Compressor Building Vent	✓	Closed - ø Screened
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: Ⓨ / N Next service @ 64971 Hours Current Hours @ 63359
IRN30H Motor Speed	31 %	
IRN30H Pressure	115 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / Ⓝ
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: Ⓨ / N
Air Dryer	✓	Moisture at Receiver Tank: Y / Ⓝ
Oil Moisture Prevention (Monthly)	Last Done: 2-24-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status On SB UV-Ox offline	Comments
GC Operational	—	GC # checking UV-Ox Effluent: →
Alarms Enabled	—	
GC Influent Filters	—	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 2-21-22 - Annual
Building #1 Eye Wash/Shower	*New 3-7-22* ✓	Checked and Flushed- All OK: Ⓨ / N

Other Comments:

3-7-22- New UV-OX Lamp Installed. UV-OX PLC Issues. Not Running / New Sludge Lateral piping Installed on BACK of HMR30 under Automated valves to the Sludge transfer Pump / New Safety Shower Engraved Manual Pumping HMR30 Sludge laterals DAILY currently due to clogging issues

3-10-22- Receive Approval For Spent GAC Shipping Extension to 90 days Per David Foster from CDPHE

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	9.85	53.3 %	10.0		
P-3301A	SB	–	– %	–		
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.54	49 %	P035 36-37	P038 4.5	Globules Observed at TP-130: Y / (N) Time: 0935
T-530 P-005	SB	–	– %	–		
T-540/541 P-006	SB	–	– %	–		
LFG COND Auto-Traps	✓	0.0	NA	5.0		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	4.71	57.6 %	4.5		* New Analog pressure gauge 3-4-22 *
P-3322	✓	6.55	48.6 %	5.0		
P-3323	SB	–	– %	–		
P-3324	✓	4.70	39.3 %	5.0		* ~~New Analog Pressure Gauge~~ 3-4-22
Reactor Effluent Pumps						
P-3341	✓	9.79	72.2 %	14.0		
P-3341A	SB	–	– %	–		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 12-30-21
B-3331	✓	4.33	116	3-2022 - soon	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.38	114	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.27	108	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 44.1 PPM New PID Lamp Installed
VTP-3360	✓	PID Reading: 31.2 PPM This one getting too old + oversensitive to Methane

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 69 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 27 %	Currently on SB
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 68 % & 69 %	
T-540/541 Mixers	✓	
Chiller	OFFLine	Chiller Coolant Lvl: ~ ✓ " Below full mark
Chiller Cooling Fins (as needed)	OFFLine	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 72 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 28 %	
Recycle Valve to Blend Tank	✓	3.83 gpm @ 1054
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 2-17-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 12 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 75 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 2-17-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	2-24-22	Spray off Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 139	Reset. Backwashing more often to Higher flows
BF-3340 a/b Differential Pressure	PSI: 8	17/9 @ 9.9 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 3	20/17 @ 9.9 gpm
Last Backwash Performed	Date: 3-8-22 UV-OX off line 3-7-22	* Running Higher Flows + new BTS. will need more frequent backwashing *

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 0 Events
HMI's	✓	
BTS Process KWH Meter	1859445 KWH	Time: 1147
Building#2 KWH Meter	5367952 KWH	Time: 1147

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	CC-calibration + Maint - 3-9-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 10, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6434550	
FT-3324 Feed Spare	275666	
FT-3322 Feed to Reactor 2	11352882	
FT-3323 Feed to Reactor 3	964313	
FT-3301 T-510 to BIO	51925770	
FT-3341 BIO Effluent	66887176	
FT-3342 BIO Recycle	56331195	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 2-21-22- Annual
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

3-7-22-UV-OK offline PLC ISSUES. START Running Higher Flows thru BTS.

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.77 oa	Counter: 197714 Cycles: 194
LFG Cond Automatic Trap CT-2	Sump Level: 8.64 oa	Counter: 275990 Cycles: 74
LFG Cond Automatic Trap CT-3	Sump Level: 7.40 oa	Counter: 325429 Cycles: 385
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.38 Counter: 19129 Cycles: 9 Sump: 9.05 oa
PM-15 Containment / Vessel	✓ Level: 20 %	
MW-51 Containment / Vessel	✓ Level: 35 %	
PM-11 Containment / Vessel	✓ Level: 40 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 2-18-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07' Date: 3-17-22 - today
North Boundary System P-001:	CV70.8 % @ 6.2 gpm (Total Waste)	38.52 Hz / 2.02 Amps. / vault psi @ 18/No leaks
T-101 & T-102 Containment / Tank	✓	Levels: 63 % & 61 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	56.7 °F	Outside Temp.: ~ 31 °F
(P-121) or P-122	✓	6.0 gpm / CV 71 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 3-17-22 - today
RWST Back-Up Generator	✓	Last Test Run(monthly): 3-17-22 - Today

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 540 Gallons Reserve = 480 + 1 Pk
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 305 Gallons Reserve = ~130 gal
HCL Tote Levels	✓	~ 165 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-56 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.89	
pH 315	Value: 10.96	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓ Slightly cloudy	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 540	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22 All Laterals clear still today
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	3-17-22-Today	1424
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		1455
pH-670 Pre-UV-OX	NO calibration - UV-OX offline	
pH-740 Discharge Surge Tank	3-17-22-Today	Discharge suspended: 1417 ◄► 1423
Out of Hold Double Check	----------	None in hold: ✓✓'d
Valves Back to Normal Position	----------	All OK: ✓✓'d

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 54 %
Decant Transfer Pump (P-352)	✓	CV 73 % @ 0.8 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty/needs wash at

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 40.0 psi	CV@ 70 % @ 1.74 gpm
Retention Tank (T-114)	✓ Operating Press: 39 psi	pH-113 @ 3.89
Bag Filter (BF-113)	✓ Operating Press: 43 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 39 psi	TP-174A→TP-176A/Sample Taps + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 36 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 17 psi	CV@ 60 % @ 29.0 gpm
T-520 to GAC Total (FT-675)	258003772 gal	Time: 1030
North End On-Site Pumping	Operating Press: 2-3 psi	12.2 gpm @ 1018
North End Off-Site Pumping	Operating Press: 2-6 psi	9.2 gpm @ 1018
Peroxide Feed Pump (P-680)	✓	SPD 2.2 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE * Received Extension to 90days for Spent GAC per David Foster/CDPHE -3-10-22 *

Item	Status	Comments
~~180~~ 90 Day storage area check	✓	Check sheet completed: yes-mea-Today
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ix Resin + Main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	offline - ALC Issues/3-7-22	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: —	Next: —
Peroxide Feed Pump (P-650)	—	Flow Rate: ~ — cc/min.
UV-Ox Power	—	— kVA — Volts — Amps
Lamp Hours	0 Hrs	New Lamps on 3-7-22
Crystal Condition & Wiper Status	—	Oiler status: ok
UV-OX Bagfilters Status	Last change: 7-13-21 Cleaned: 7-13-21	— psi In — psi Out
UV-OX Feed Pump (P-600 or P-601)	—	CV@ — % @ — gpm
UV-OX Temperature	In(TT-670): — °C	Out(TT-710): — °C
PDU GAC (PDT-710)	—	Δ Pressure: — psi
Peroxide Concentration Pre UV	— PPM	
Peroxide Concentration Post UV(TP-720)	— PPM	
Peroxide Conc. Post PDU (TP-730)	— PPM	
Secondary Acid Feed Pump (P-630)	—	CV @ — %
Secondary Acid Retention Tank (T-645)	—	—
Pre – UV Oxidizer Total (FT-670)	21439568 gal	Time: 1030
Post UV-Ox / Pre PDU	—	Pressure: — psi
Post PDU	—	Pressure: — psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 11 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752)	✓	CV@ 52.2 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	29.7 gpm @ 1028
POTW Line Pressure (PT-770)	✓	31.7 psi
Effluent Totalizer Reading (FT-770)	252159450 gal	Time: 1031
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 2-16-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 2-24-22	Plant Effluent Suspended: 1403 ↔ 1427
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1032 - 1036

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19893305	(FT-505) LFG Cond. to T-530	221833
(FT-025) NBBW Influent	95247702	(FT-056) Off - Site N. End Influent	44880684
(FT-012) MW-38 Inf. to HMR-30	8596665	(FT-113) Ion Exchange Influent	1215488
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30083204
(FT-043) MW-38 to RWST	3113184	(FT-026) NBBW Bypass to RWST	4508625
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8262141
(FT-012T) MW-38 to T-540/541	8672314	(FT-035) NTES Inf. to BIO	6761069
(FT-040T) MW-38N to T-540/541	1979829	(FT-035T) NTES to T-530	468389
(FT-041T) MW-38S to T-540/541	2698389	(FT-017) BIO Inf. from T-530	663846
(FT-042T) MW-38 Source to T-540/541	4066047	(FT-018) T-540/541 Influent	8713411
(FT-055) On - Site N. End Influent	100680435	(FT-352) T-352 to HMR-30	1355826

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	50 °F (Analog Gauge)	Outside Temp.: ~ 32 °F
Compressor Building Vent	✓	Closed - Operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63450
IRN30H Motor Speed	31 %	
IRN30H Pressure	121 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 2-24-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status ON SB - UV-OX OFFLINE	Comments
GC Operational	—	GC # checking UV-Ox Effluent: —
Alarms Enabled	—	cc calibration and maint 3-23-22
GC Influent Filters	—	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 2-21-22- Annual
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

UV-OX STILL OFFLINE due to PLC ISSUES

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	7.50	52.3 %	10.0		
P-3301A	SB	–	– %	–		
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.51	49 %	P035 34-35	P038 4.5	Globules Observed at TP-130: Y / (N) Time: 0930
T-530 P-005	SB	–	– %	–		
T-540/541 P-006	SB	–	– %	–		
LFG COND Auto-Traps	✓	0.0	NA	5.0		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	3.99	64.1 %	5.5		
P-3322	✓	5.51	51.4 %	6.0		
P-3323	SB	–	– %	–		
P-3324	✓	3.91	44.1 %	7.0		
Reactor Effluent Pumps						
P-3341	✓	8.64	82.1 %	~~26.0~~ 28.0		
P-3341A	SB	–	– %	–		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.29	122	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: (Y) / N
B-3333	✓	4.41	124	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.23	116	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 34.6 PPM
VTP-3360	✓	PID Reading: 25.6 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 71 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 33 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 69 % & 70%	
T-540/541 Mixers	✓	
Chiller	OFFLINE	Chiller Coolant Lvl: ~ – " Below full mark
Chiller Cooling Fins (as needed)	OFFLINE	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: (On OK) / Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 70 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 32 %	
Recycle Valve to Blend Tank	✓	4.09 gpm @ 1101
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 3-17-22-today

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 11.9 Gallons: ~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 60 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 3-17-22-today
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	2-24-22	Acid/BASE cleaning today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 187	reset
BF-3340 a/b Differential Pressure	PSI: 19	28/9 ⇒ 8.9 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date: ↓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 6	34/28 ⇒ 8.9 gpm
Last Backwash Performed	Date: ~~3-18-22~~ 3-18-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: (On OK) / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 1 Events
HMI's	✓	
BTS Process KWH Meter	1863665 KWH	Time: 1224
Building#2 KWH Meter	5375989 KWH	Time: 1224

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	cc-calibration + maint 3-16-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 17, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6471278	
FT-3324 Feed Spare	312239	
FT-3322 Feed to Reactor 2	11403918	
FT-3323 Feed to Reactor 3	964313	
FT-3301 T-510 to BIO	51995483	
FT-3341 BIO Effluent	66962278	
FT-3342 BIO Recycle	56372611	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 2-21-22-Annual
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: Ⓨ / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.58 oz	Counter: 197899 Cycles: 185
LFG Cond Automatic Trap CT-2	Sump Level: 8.58 oz	Counter: 276114 Cycles: 124
LFG Cond Automatic Trap CT-3	Sump Level: 7.25 oz	Counter: 326135 Cycles: 706
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.38 Counter: 19292 Cycles: 1 Sump: 8.94 oz
PM-15 Containment / Vessel	✓ Level: 23 %	
MW-51 Containment / Vessel	✓ Level: 25 %	
PM-11 Containment / Vessel	✓ Level: 15 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 2-18-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07 Date: 3-17-22
North Boundary System P-001:	CV 78.6 % @ 6.2 gpm	41.13 Hz / 2.07 Amps. / vault psi @ 18 / No leaks
T-101 & T-102 Containment / Tank	✓	Levels: 35 % & 34 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	54.8 °F	Outside Temp.: ~ 50 °F
(P-121) or P-122	✓	6.0 gpm / CV 97 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 3-17-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 3-17-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~440 Gallons Reserve = 480 -1 tote
Caustic Bay Heater	✓	operational
Peroxide Tote Level	✓	~302 Gallons Reserve = 130 gallons
HCL Tote Levels	✓	~ 155 Gallons Reserve = 30 gallons
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 55-60 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.65	
pH 315	Value: 10.92	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓ Slightly cloudy	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 450	
Clear-well Transfer Pumps(P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both OK
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All OK ✓
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	3-24-22-today	1231 1306
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		
pH-740 Discharge Surge Tank		Discharge suspended: 1307 ↔ 1326
Out of Hold Double Check	----------	None in hold: ✓✓ id
Valves Back to Normal Position	----------	All OK: ✓✓ id

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS * Greased Thickener motor today *

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 53 %
Decant Transfer Pump (P-352)	✓	CV 67 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Clean - Ready for use

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 38.2 psi	CV@ 69 % @ 1.73 gpm
Retention Tank (T-114)	✓ Operating Press: 38 psi	pH-113 @ 3.64
Bag Filter (BF-113)	✓ Operating Press: 41 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 38 psi	TP174A - TP176A / 5 canisters + guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 21 psi	CV@ 66 % @ 36.8 gpm
T-520 to GAC Total (FT-675)	258307972 gal	Time: 1004
North End On-Site Pumping	Operating Press: 2-3 psi	12.2 gpm @ 1005
North End Off-Site Pumping	Operating Press: 2-8 psi	8.7 gpm @ 1005
Peroxide Feed Pump (P-680)	✓	SPD 2.8 % / RATE 0.7 gpm
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE *Received an Extention to 90 days per David Foster/COPHE on 3-10-22 for spent GAC

Item	Status	Comments
*90 ~~180~~ Day storage area check	✓	Check sheet completed: YES - TPG today
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ix Resin + Media Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓ Restarted 3-22/23-22	New PLC + HMI screen
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: —	Next: —
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 2.0 cc/min.
UV-Ox Power	✓	28.41 kVA 2837 Volts 10.0 Amps
Lamp Hours	48 Hrs	
Crystal Condition & Wiper Status	✓ operational	Oiler status: OK
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	10 psi In 10 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 69 % @ 9.1 gpm
UV-OX Temperature	In(TT-670): 12.3 °C	Out(TT-710): 22.5 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	✓ 90 PPM	
Peroxide Concentration Post UV(TP-720)	✓ 20 PPM	
Peroxide Conc. Post PDU (TP-730)	✓ 0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21462022 gal	Time: @ 10:22
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 6 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 12 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 55.6 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓ 36.5	~~32.7~~ gpm @ 1040
POTW Line Pressure (PT-770)	✓	32.7 psi
Effluent Totalizer Reading (FT-770)	252466344 gal	Time:
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 3-23-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly) ✓	Last Completed: 3-24-22	Plant Effluent Suspended: 1307 ↔ 1326
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1041

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19951587	(FT-505) LFG Cond. to T-530	221888
(FT-025) NBBW Influent	95266121	(FT-056) Off - Site N. End Influent	44967664
(FT-012) MW-38 Inf. to HMR-30	8601220	(FT-113) Ion Exchange Influent	1233040
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30083964
(FT-043) MW-38 to RWST	3121457	(FT-026) NBBW Bypass to RWST	4553208
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8262141
(FT-012T) MW-38 to T-540/541	8672314	(FT-035) NTES Inf. to BIO	6765984
(FT-040T) MW-38N to T-540/541	1979829	(FT-035T) NTES to T-530	468541
(FT-041T) MW-38S to T-540/541	2698389	(FT-017) BIO Inf. from T-530	663846
(FT-042T) MW-38 Source to T-540/541	4066047	(FT-018) T-540/541 Influent	8713411
(FT-055) On - Site N. End Influent	100803383	(FT-352) T-352 to HMR-30	1359957

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	61 °F (Analog Gauge)	Outside Temp.: ~ 45 °F
Compressor Building Vent	✓	open - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63537
IRN30H Motor Speed	31 %	
IRN30H Pressure	120 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 3-24-22 - today	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc - calibration + maint 3-23-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments 3-24-22-Today
Building #1 Fire Extinguishers	✓	Date inspected: ~~2-21-22~~ ~~Annual~~
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

UV-OX now up and running on 3-22/3-23-22. New PLC installed and New Hmi screen installed.

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	6.0	42 %	8		
P-3301A	SB	—	— %	—		
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.48	48 %	P035 34-35	P038 4.5	Globules Observed at TP-130: Y / (N) Time: 0930
T-530 P-005	SB	—	— %	—		
T-540/541 P-006	SB	—	—%	—		
LFG COND Auto-Traps	✓	0.0	NA	5		Between Cycles: (Y) / N
Reactor Feed Pumps		3.15				
P-3321	✓	~~2.79~~	58.4 %	4.5		
P-3322	✓	4.27	50.9 %	6.0		
P-3323	SB	—	— %	—		
P-3324	✓	3.29	42.6 %	6.5		
Reactor Effluent Pumps						
P-3341	✓	4.1	14 %	14		
P-3341A	SB	—	— %	—		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.24	130	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.33	135	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.15	125		Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 35.29 PPM was change ordered
VTP-3360	✓	PID Reading: 29.8 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 67 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 35 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 69 % & 70%	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	Level: %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	4.23 gpm @ 1240
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 3-17-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 11.5 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 55 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 3-17-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	3-24-22 - Today	New 4 and 10 PH STDS today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 128	Reset to 0
BF-3340 a/b Differential Pressure	PSI: 6	9/15 @ 5.4 GPM
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ✓	
GACF-3340 Status		
GACF-3340 Differential Pressure	PSI: 2	9/7 @ 5.4 GPM
Last Backwash Performed	Date: 3-18-22	~~Reset to 0~~ m

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK (Off) Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 1 Events
HMI's	✓	
BTS Process KWH Meter	1867825 KWH	Time: 1233
Building#2 KWH Meter	5384095 KWH	Time: 1233

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	cc - calib mission & maint 3-23-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 24, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6506204	
FT-3324 Feed Spare	347010	
FT-3322 Feed to Reactor 2	11452460	
FT-3323 Feed to Reactor 3	964313	
FT-3301 T-510 to BIO	52059637	
FT-3341 BIO Effluent	67031547	
FT-3342 BIO Recycle	56414607	

K. SAFETY

Item	Status	Comments 3-24-22 - today
Building #2 Fire Extinguishers	✓	Inspection date: ~~2-21-22~~ ~~contact~~
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 oz	Counter: 198013 Cycles: 114
LFG Cond Automatic Trap CT-2	Sump Level: 8.68 oz	Counter: 276296 Cycles: 182
LFG Cond Automatic Trap CT-3	Sump Level: 7.26 oz	Counter: 327286 Cycles: 1151
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 32 %	Tank Level: 3.36 Counter: 191294 Cycles: 2 Sump: 8.92 oz
PM-15 Containment / Vessel	✓ Level: 24 %	
MW-51 Containment / Vessel	✓ Level: 45 %	
PM-11 Containment / Vessel	✓ Level: 38 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 3-25-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry -16.07' Date: 3-17-22
North Boundary System P-001:	CV 73.1 % @ 6.2 gpm	41.32 Hz / 2.07 Amps. / vault psi @ 18 / no leaks
T-101 & T-102 Containment / Tank	✓	Levels: 32 % & 30 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	53.9 °F	Outside Temp.: ~ 30 °F
(P-121) or P-122	✓	0.6 gpm / CV 54 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 3-17-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 3-17-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 325 Gallons Reserve = 480 x 1 tote
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 287 Gallons Reserve = 130 gal
HCL Tote Levels	✓	~ 145 Gallons Reserve = ~30
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 54-56 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 10-20-21
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.87	
pH 315	Value: 10.89	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Slightly cloudy Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 480	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Gate ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	3-31-22-Today	1210
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1245
pH-740 Discharge Surge Tank		Discharge suspended: 1136 ↔ 1145
Out of Hold Double Check	----------	None in hold: ✓✓'d m
Valves Back to Normal Position	----------	All OK: ✓✓'d m

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 40 %
Decant Transfer Pump (P-352)	SB	CV — % @ — gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty/Ready to Fill

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 40.2 psi	CV@ 70 % @ 1.72 gpm
Retention Tank (T-114)	✓ Operating Press: 40 psi	pH-113 @ 3.87
Bag Filter (BF-113)	✓ Operating Press: 43 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 39 psi	TP-174A→TP-176A/5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 18 psi	CV@ 61 % @ 31.5 gpm
T-520 to GAC Total (FT-675)	258657200 gal	Time: 0732
North End On-Site Pumping	Operating Press: 2-3 psi	12.2 gpm @ 0837
North End Off-Site Pumping	Operating Press: 2-8 psi	8.8 gpm @ 0837
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE *Received an Extension to 90 days Per David Foster/COPHE Forsaken GAC. 3-10-22

Item	Status	Comments
90 ~~180~~ Day storage area check	✓	Check sheet completed: yes - mk 4-7-22
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Dx Region + Main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.0 cc/min.
UV-Ox Power	✓	26.46 kVA 2708 Volts 9.8 Amps
Lamp Hours	212 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: ok
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	12 psi In 12 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 75 % @ 7.1 gpm
UV-OX Temperature	In(TT-670): 13.8 °C	Out(TT-710): 26.8 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 4 psi
Peroxide Concentration Pre UV	✓ 95 PPM	
Peroxide Concentration Post UV(TP-720)	✓ 20 PPM	
Peroxide Conc. Post PDU (TP-730)	✓ 0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 2 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21543500 gal	Time: 0733
Post UV-Ox / Pre PDU	✓	Pressure: 14 psi
Post PDU	✓	Pressure: 7.5 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 10 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 55.6 %
Effluent Surge Tank (T-740)	✓	Level: 48 %
Effluent Discharge Rate (FT-770)	✓	35.9 gpm @ 0724
POTW Line Pressure (PT-770)	✓	33.2 psi
Effluent Totalizer Reading (FT-770)	252815690 gal	Time: 0733
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 3-23-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 3-24-22	Plant Effluent Suspended: 1307 ↔ 1326
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.331 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0734 - 0738

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	19995192	(FT-505) LFG Cond. to T-530	221931
(FT-025) NBBW Influent	95326391	(FT-056) Off - Site N. End Influent	450521 36
(FT-012) MW-38 Inf. to HMR-30	8617687	(FT-113) Ion Exchange Influent	1250161
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30084460
(FT-043) MW-38 to RWST	3121820	(FT-026) NBBW Bypass to RWST	4554666
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8272755
(FT-012T) MW-38 to T-540/541	8672314	(FT-035) NTES Inf. to BIO	6770729
(FT-040T) MW-38N to T-540/541	1979829	(FT-035T) NTES to T-530	468684
(FT-041T) MW-38S to T-540/541	2698389	(FT-017) BIO Inf. from T-530	663927
(FT-042T) MW-38 Source to T-540/541	4066047	(FT-018) T-540/541 Influent	8713715
(FT-055) On - Site N. End Influent	100924173	(FT-352) T-352 to HMR-30	1363228

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	58 °F (Analog Gauge)	Outside Temp.: ~ 35 °F
Compressor Building Vent	✓	open / operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 63628
IRN30H Motor Speed	31 %	
IRN30H Pressure	116 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 3-24-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	108 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc-calibration & maint 3-30-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 3-24-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.77	46.4 %	9.0	
P-3301A	SB	–	– %	–	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.51	49 %	P035: 34-35 / P038: 5.5	Globules Observed at TP-130: Y / (N) Time: 0815
T-530 P-005	✓	0.19	41 %	7.0	
T-540/541 P-006	✓	0.31	42 %	7.0	
LFG COND Auto-Traps	✓	0.0	NA	5	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.30	58.3 %	4.0	
P-3322	✓	3.12	50.2 %	6.0	
P-3323	SB	–	– %	–	
P-3324	✓	2.21	39.0 %	5.5	
Reactor Effluent Pumps					
P-3341	✓	2.60	52.7 %	12.0	
P-3341A	SB	–	– %	–	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.27	130	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.38	130	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.19	122	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 38.6 PPM Lamp on PID old and oversensitive to response. New Lamp ordered
VTP-3360	✓	PID Reading: 29.2 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 63 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 37 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-1921 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 67% &67 %	
T-540/541 Mixers	✓	
Chiller	Offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 73 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.98 gpm @ 0850
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 3-17-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 11.25 Gallons: ~ 85
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 45 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 3-17-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	3-24-22	Spray off Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 65	Reset
BF-3340 a/b Differential Pressure	PSI: 0	8/8 ≈ 1.5 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date:	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	8/7 ≈ 1.5 gpm
GACF-3340 Differential Pressure	PSI: 1	8/7 ≈ 1.5 gpm
Last Backwash Performed	Date: 3-18-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 1 Events
HMI's	✓	
BTS Process KWH Meter	1871066 KWH	Time: 0943
Building#2 KWH Meter	5389839 KWH	Time: 0943

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	cc- calibration + maint - 3-30-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, March 31, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6534152	
FT-3324 Feed Spare	374795	
FT-3322 Feed to Reactor 2	11491304	
FT-3323 Feed to Reactor 3	964313	
FT-3301 T-510 to BIO	52100497	
FT-3341 BIO Effluent	67077888	
FT-3342 BIO Recycle	56454759	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 3-24-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55on	Counter: 199644 Cycles: 964
LFG Cond Automatic Trap CT-2	Sump Level: 8.66on	Counter: 279480 Cycles: 720
LFG Cond Automatic Trap CT-3	Sump Level: 7.22on	Counter: 333715 Cycles: 786
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.38 Counter: 191297 Cycles: 0 Sump: 8.83
PM-15 Containment / Vessel	✓ Level: 38 %	
MW-51 Containment / Vessel	✓ Level: 20 %	
PM-11 Containment / Vessel	✓ Level: 18 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 4-22-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: dry @16.07' Date: 4-21-22
North Boundary System P-001:	CV72.9 % @ 6.3 gpm	40.21 Hz / 2.06 Amps. / vault psi @ 18/no leaks
T-101 & T-102 Containment / Tank	✓	Levels: 15 % & 14 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	57.1 °F	Outside Temp.: ~ 55 °F
(P-121) (circled) or P-122	✓ SB	— gpm / CV — % TANKS low/Guy to pump [illegible]
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 4-21-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 4-21-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~510 Gallons Reserve = 2 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 267 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~310 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	**OFFLINE**	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.79	
pH 315	Value: 10.96	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 380	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Both ok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: Allow
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	5-5-22 - Today	1352
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1425
pH-740 Discharge Surge Tank		Discharge suspended: 1340 ↔ 1351
Out of Hold Double Check	----------	None in hold: ✓✓ 11 am
Valves Back to Normal Position	----------	All OK: ✓✓ 11 am

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 40 %
Decant Transfer Pump (P-352)	✓	CV 69 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty / Ready to Fill.

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 42.6 psi	CV@ 79 % @ 1.68 gpm
Retention Tank (T-114)	✓ Operating Press: 47 psi	pH-113 @ 3.69
Bag Filter (BF-113)	✓ Operating Press: 50 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 46.5 psi	TP-174A → TP-176A / 5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 21 psi	CV@ 64 % @ 31.1 gpm
T-520 to GAC Total (FT-675)	260266719 gal	Time: 1038
North End On-Site Pumping	Operating Press: 2-3 psi	12.2 gpm @ 1033
North End Off-Site Pumping	Operating Press: 2-6 psi	8.7 gpm @ 1033
Peroxide Feed Pump (P-680)	✓	SPD 2.3 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: NA / Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Exterior + Main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA / Running	Next: NA / Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 2.0 cc/min.
UV-Ox Power	✓	26.57 kVA 2714 Volts 9.8 Amps
Lamp Hours	1050 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK / Refilled
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	10.0 psi In 10.0 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 65 % @ 6.4 gpm
UV-OX Temperature	In(TT-670): 14.1 °C	Out(TT-710): 27.7 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	20 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21864772 gal	Time: 1039
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 13 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.1 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	31.3 gpm @ 1037
POTW Line Pressure (PT-770)	✓	31.9 psi
Effluent Totalizer Reading (FT-770)	254432940 gal	Time: 1039
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 4-14-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 4-28-22	Plant Effluent Suspended: 1300 ↔ 1317
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1040-1044

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20028718	(FT-505) LFG Cond. to T-530	222654
(FT-025) NBBW Influent	95636298	(FT-056) Off - Site N. End Influent	455491332
(FT-012) MW-38 Inf. to HMR-30	8700330	(FT-113) Ion Exchange Influent	13364Z4
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30087808
(FT-043) MW-38 to RWST	3123759	(FT-026) NBBW Bypass to RWST	45561713
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8289213
(FT-012T) MW-38 to T-540/541	8683745	(FT-035) NTES Inf. to BIO	6794672
(FT-040T) MW-38N to T-540/541	1980552	(FT-035T) NTES to T-530	469685
(FT-041T) MW-38S to T-540/541	2698950	(FT-017) BIO Inf. from T-530	666039
(FT-042T) MW-38 Source to T-540/541	4016218	(FT-018) T-540/541 Influent	8727820
(FT-055) On - Site N. End Influent	101542815	(FT-352) T-352 to HMR-30	1374652

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	50 °F (Analog Gauge)	Outside Temp.: ~ 60 °F
Compressor Building Vent	✓	
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 64055
IRN30H Motor Speed	38 %	
IRN30H Pressure	115 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 4-21-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	Calibration + maint 5-4-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	1.20	31.3 %	6.5		
P-3301A	SB	–	– %	–		
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.49	48 %	P035 35-36	P038 9.0	Globules Observed at TP-130: Y / (N) Time: 1005
T-530 P-005	SB	–	– %	–		
T-540/541 P-006	✓	0.30	65 %	10.5		
LFG COND Auto-Traps	✓	0.0	NA	5.0		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	2.66	50.1 %	5.5		
P-3322	✓	3.68	49.4 %	5.0		
P-3323	SB	–	– %	–		
P-3324	✓	2.65	35.5 %	5.0		
Reactor Effluent Pumps						
P-3341	✓	3.23	52.5 %	14.0		
P-3341A	SB	–	– %	–		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.21	132	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	–	–	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.30	140	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.33	136	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 11.6 PPM
VTP-3360	✓	PID Reading: 4.8 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 66 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 30 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 41 % & 42%	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 2-3-22
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 32 %	
Recycle Valve to Blend Tank	✓	3.98 gpm @ 1106
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 4-21-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 10.5 Gallons: ~~~260~~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 260 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 4-21-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N) * minor drip *	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	4-28-22	Spray off Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 22	Reset
BF-3340 a/b Differential Pressure	PSI: 4	15/11 @ 4.0 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 4	11/7 @ 4.0 gpm
Last Backwash Performed	Date: 4-29-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	1884433 KWH	Time: 1157
Building#2 KWH Meter	5416122 KWH	Time: 1157

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Calibration + maint 5-4-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 05, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6648912	
FT-3324 Feed Spare	488739	
FT-3322 Feed to Reactor 2	116507O7	
FT-3323 Feed to Reactor 3	964324	
FT-3301 T-510 to BIO	52209449	
FT-3341 BIO Effluent	67227469	
FT-3342 BIO Recycle	56663501	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 12, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55 ok	Counter: 199944 Cycles: 300
LFG Cond Automatic Trap CT-2	Sump Level: 8.67 ok	Counter: 280344 Cycles: 864
LFG Cond Automatic Trap CT-3	Sump Level: 7.25 ok	Counter: 334335 Cycles: 620
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.38 Counter: 191298 Cycles: 1 Sump: 8.82 ok
PM-15 Containment / Vessel	✓ Level: 45 %	
MW-51 Containment / Vessel	✓ Level: 40 %	
PM-11 Containment / Vessel	✓ Level: 45 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 4-22-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @16.07' Date: 4-21-22
North Boundary System P-001:	CV 73.3 % @ 6.3 gpm	40.49 Hz / 2.07 Amps. / vault psi @ 18/No leaks.
T-101 & T-102 Containment / Tank	✓	Levels: 25 % & 24 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	63.5 °F	Outside Temp.: ~ 60 °F
(P-121) or P-122	✓	2.0 gpm / CV 67 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 4-21-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 4-21-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 345 Gallons Reserve = 2 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 237 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 280 Gallons Reserve = ~30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
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Inspection Date: Thursday, May 12, 2022

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E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.82	
pH 315	Value: 10.87	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~500	
Clear-well Transfer Pumps(P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Bothok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All ok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	5-12-22 - today	1251
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1323
pH-740 Discharge Surge Tank		Discharge suspended: 1243 ↔ 1250
Out of Hold Double Check	----------	None in hold: ✓✓'d m
Valves Back to Normal Position	----------	All OK: ✓✓ m

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 43 %
Decant Transfer Pump (P-352)	✓	CV 68 % @ 0.6 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full / Ready for Cleanout

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 12, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 44.3 psi	CV@ 76 % @ 1.68 gpm
Retention Tank (T-114)	✓ Operating Press: 43.0 psi	pH-113 @ 3.51
Bag Filter (BF-113)	✓ Operating Press: 47.0 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 42.5 psi	TP-174A→TP-176A/Sentinel + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 39 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 16 psi	CV@ 61 % @ 33.5 gpm
T-520 to GAC Total (FT-675)	260571035 gal	Time: 1002
North End On-Site Pumping	Operating Press: 2-3 psi	13.9 gpm @ 0952
North End Off-Site Pumping	Operating Press: 2-6 psi	8.7 gpm @ 0952
Peroxide Feed Pump (P-680)	✓	SPD 2.5 % / RATE 0.7
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: NA/Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ix Resin + Main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~7.0 cc/min.
UV-Ox Power	✓	26.75 kVA 2730 Volts 9.8 Amps
Lamp Hours	1217 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: ok
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	9.5 psi In 10 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 66 % @ 6.5 gpm
UV-OX Temperature	In(TT-670): 15.3 °C	Out(TT-710): 29.1 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	20 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 2 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21927488 gal	Time: 1003
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

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Inspection Date: Thursday, May 12, 2022

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L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments May Have Had Air trapped last couple weeks
PDT-720	✓	Δ Pressure: 8 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 54.2 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	33.5 gpm @ 0959
POTW Line Pressure (PT-770)	✓	32.5 psi
Effluent Totalizer Reading (FT-770)	254738960 gal	Time: 1003
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 4-14-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 2-16-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 4-28-22	Plant Effluent Suspended: 1300 ↔ 1317
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1004-1007

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20035855	(FT-505) LFG Cond. to T-530	222771
(FT-025) NBBW Influent	95698117	(FT-056) Off - Site N. End Influent	45578360
(FT-012) MW-38 Inf. to HMR-30	8716422	(FT-113) Ion Exchange Influent	1353340
(FT-042 HMR30) MW-38 Source to HMR-30	35489	(FT-810) Plant Potable Water In	30088300
(FT-043) MW-38 to RWST	3124084	(FT-026) NBBW Bypass to RWST	4563005
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8298355
(FT-012T) MW-38 to T-540/541	8689223	(FT-035) NTES Inf. to BIO	6799432
(FT-040T) MW-38N to T-540/541	1980775	(FT-035T) NTES to T-530	469839
(FT-041T) MW-38S to T-540/541	2699208	(FT-017) BIO Inf. from T-530	666274
(FT-042T) MW-38 Source to T-540/541	4081246	(FT-018) T-540/541 Influent	8730740
(FT-055) On - Site N. End Influent	101650386	(FT-352) T-352 to HMR-30	1376595

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STANDARD OPERATIONS CHECKLIST
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WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 12, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	62 °F (Analog Gauge)	Outside Temp.: ~ 65 °F
Compressor Building Vent	✓	Open - Operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 64165
IRN30H Motor Speed	31 %	
IRN30H Pressure	117 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 4-21-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	ac - calibration + maint 5-11-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 12, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.73	32.6 %	6.5	
P-3301A	SB	—	— %	—	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.48	48 %	P035 37-38 / P038 15	Globules Observed at TP-130: Y / (N) Time: 0930
T-530 P-005	✓	0.20	73 %	8.0	
T-540/541 P-006	✓	0.30	73 %	~~37~~ 15.0	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.32	49.5 %	6.0	
P-3322	✓	3.06	49.1 %	5.0	
P-3323	SB	—	— %	-	
P-3324	✓	2.26	34.3 %	5.0	
Reactor Effluent Pumps					
P-3341	✓	3.29	58.2 %	15.5	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.15	140	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.26	146	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.29	144	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 29.6 PPM Fresh Sand well stack mw38
VTP-3360	✓	PID Reading: 8.7 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 12, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 71 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 30 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 59 % & 60 %	
T-540/541 Mixers	✓	
Chiller	OFFLINE	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	OFFLINE	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly):
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 31 %	
Recycle Valve to Blend Tank	✓	3.99 gpm @ 1028
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 4-21-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 10.25 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 235 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 4-21-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N) 5-22-Fixed Drip	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 12, 2022

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F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	4-28-22	Strong Off Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 27	Reset
BF-3340 a/b Differential Pressure	PSI: 1	11/10 @ 2.4 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 4	10/6 @ 2.4 gpm
Last Backwash Performed	Date: 4-29-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator		Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	1886858 KWH	Time: 1107
Building#2 KWH Meter	5419941 KWH	Time: 1107

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	GC-Calibration + Maint 5-11-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 12, 2022

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J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6671843	
FT-3324 Feed Spare	511493	
FT-3322 Feed to Reactor 2	11682553	
FT-3323 Feed to Reactor 3	964324	
FT-3301 T-510 to BIO	52232259	
FT-3341 BIO Effluent	67258291	
FT-3342 BIO Recycle	56704824	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

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A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55'	Counter: 200,337 Cycles: 393
LFG Cond Automatic Trap CT-2	Sump Level: 8.66'	Counter: 281,093 Cycles: 749
LFG Cond Automatic Trap CT-3	Sump Level: 7.25'	Counter: 335,122 Cycles: 787
CT-4 Containment/Vessel (LFG Cond)	Level: 30 %	Tank Level: 3.38 Counter: 191,298 Cycles: 0 Sump: 8.80'
PM-15 Containment / Vessel	Level: 48 %	
MW-51 Containment / Vessel	Level: 25 %	
PM-11 Containment / Vessel	Level: 15 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 4-22-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: 0.74/16.07' Date: 5-19-22 - today
North Boundary System P-001:	CV 73.1 % @ 6.3 gpm	40.38 Hz / 2.07 Amps. / vault psi @ 18/No levels
T-101 & T-102 Containment / Tank	✓	Levels: 34 % & 35 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	66.7 ~~68~~ °F	Outside Temp.: ~ 68 °F
(P-121) or P-122	✓	0.5 gpm / CV 50 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 5-19-22 - today
RWST Back-Up Generator	✓	Last Test Run(monthly): 5-19-22 - today

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 235 Gallons Reserve = 2 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 210 Gallons Reserve = ~55 gal
HCL Tote Levels	✓	~ 275 Gallons Reserve = ~330 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

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STANDARD OPERATIONS CHECKLIST
MAIN WTP

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E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.73	
pH 315	Value: 10.75	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 425	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Bothok
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: Allok
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	5-19-22-Today	1241
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1310
pH-740 Discharge Surge Tank		Discharge suspended: 1234 ↔ 1240
Out of Hold Double Check	----------	None in hold: ✓✓NA
Valves Back to Normal Position	----------	All OK: ✓✓NA

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level: ~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 45 %
Decant Transfer Pump (P-352)	✓	CV 65 % @ 0.6 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 19, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 44.5 psi	CV@ 75 % @ 1.67 gpm
Retention Tank (T-114)	✓ Operating Press: 44 psi	pH-113 @ 3.91
Bag Filter (BF-113)	✓ Operating Press: 48 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 42 psi	TP-174A→TP-176A / 5 canisters + Guard
Post Ion Exchange	✓ Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 23 psi	CV@ 66 % @ 31.6 gpm
T-520 to GAC Total (FT-675)	260899155 gal	Time: 0920
North End On-Site Pumping	Operating Press: 2-3 psi	12.7 gpm @ 0915
North End Off-Site Pumping	Operating Press: 2-~~8~~ psi	8.1 gpm @ 0915
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: NA/Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin + Main Good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.0 cc/min.
UV-Ox Power	✓	27.13 kVA 2701 Volts 10.0 Amps
Lamp Hours	1383 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 3-24-22 Cleaned: 3-24-22	9.0 psi In 10.0 psi Out
UV-OX Feed Pump ((P-600) or P-601)	✓	CV@ 63 % @ 6.4 gpm
UV-OX Temperature	In(TT-670): 15.4 °C	Out(TT-710): 29.6 °C
PDU GAC (PDT-710)	✓ Backwashed today	Δ Pressure: 1 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 1 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	21989980 gal	Time: 0920
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 19, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 15 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.5 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	34.6 gpm @ 0919
POTW Line Pressure (PT-770)	✓	32.3 psi
Effluent Totalizer Reading (FT-770)	2550688808 gal	Time: 0921
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 5-18-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 4-28-22	Plant Effluent Suspended: 1300 ↔ 1317
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: 0.330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0922-0926

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20041510	(FT-505) LFG Cond. to T-530	222902
(FT-025) NBBW Influent	95759213	(FT-056) Off - Site N. End Influent	45665268
(FT-012) MW-38 Inf. to HMR-30	8733070	(FT-113) Ion Exchange Influent	1370218
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30089124
(FT-043) MW-38 to RWST	3124631	(FT-026) NBBW Bypass to RWST	4564917
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8305638
(FT-012T) MW-38 to T-540/541	8689484	(FT-035) NTES Inf. to BIO	6804081
(FT-040T) MW-38N to T-540/541	1980893	(FT-035T) NTES to T-530	470040
(FT-041T) MW-38S to T-540/541	2699345	(FT-017) BIO Inf. from T-530	666780
(FT-042T) MW-38 Source to T-540/541	4081246	(FT-018) T-540/541 Influent	8733628
(FT-055) On - Site N. End Influent	101782247	(FT-352) T-352 to HMR-30	1378886

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 19, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	63 °F (Analog Gauge)	Outside Temp.: ~ 72 °F
Compressor Building Vent	✓	Open - operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62971 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 64249
IRN30H Motor Speed	31 %	
IRN30H Pressure	120 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco on	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 4-21-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc - calibration + maint 5-18-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 19, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.85	40.6 %	6.5	
P-3301A	SB	—	— %	—	
NTES Pump P-002(Sump) / P-002W(10R)	✓	0.49	47 %	P035 37-38 / P038 6.5	Globules Observed at TP-130: Y / (N) Time: 0855
T-530 P-005	✓	0.18	40 %	7.0	
T-540/541 P-006	✓	0.30	45 %	7.0	
LFG COND Auto-Traps	✓	0.0	NA	5.0	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.35	59.9 %	5.0	
P-3322	✓	3.09	53.1 %	5.0	
P-3323	✓	2.44	56.0 %	5.0	
P-3324 * New Pump+motor	SB	—	— %	—	New PMA motor 5-16-22
Reactor Effluent Pumps					
P-3341	✓	3.60	66.9 %	21.0	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.22	146	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.27	152	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.28	150	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 10.9 PPM
VTP-3360	✓	PID Reading: 5.6 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 19, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 70 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 26 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 37 % & 39 %	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 5-12-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 70 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	Level: 31 %	
Recycle Valve to Blend Tank	✓	4.41 gpm @ 0953
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 5-19-22-Rotary

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 10 Gallons: ~ 85
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 220 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 5-19-22-Rotary
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 19, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	4-28-22	Acid/Caustic clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 32	Reset
BF-3340 a/b Differential Pressure	PSI: 2	20/18 @ 3.5 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: ~~18~~ 11	18/7 @ 3.5 gpm
Last Backwash Performed	Date: 4-29-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	1889225 KWH	Time: 1040
Building#2 KWH Meter	5423423 KWH	Time: 1040

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	CL - Calibration + maint 5-18-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 19, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6694522	
FT-3324 Feed Spare	528717	New Pump + Motor 5-16-22
FT-3322 Feed to Reactor 2	11714052	
FT-3323 Feed to Reactor 3	969550	
FT-3301 T-510 to BIO	52254354	
FT-3341 BIO Effluent	67288605	
FT-3342 BIO Recycle	5046318	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

5-16-22- New Pump + Motor Installed on P-3324

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55'	Counter: 200,634 Cycles: 297
LFG Cond Automatic Trap CT-2	Sump Level: 8.65'	Counter: 281,801 Cycles: 708
LFG Cond Automatic Trap CT-3	Sump Level: 7.24'	Counter: 335,891 Cycles: 769
CT-4 Containment/Vessel (LFG Cond)	Level: 30 %	Tank Level: 3.38 Counter: 191,293 Cycles: 0 Sump: 8.91'
PM-15 Containment / Vessel	Level: 50 %	
MW-51 Containment / Vessel	Level: 40 %	
PM-11 Containment / Vessel	Level: 45 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: ~~4-22-22~~ 5-25-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07 Date: 5-19-22
North Boundary System P-001:	CV67.5 % @ 0.0 gpm	36.15 Hz / 2.02 Amps. / vault psi @ 18/ [illegible]
T-101 & T-102 Containment / Tank	✓	Levels: 16 % & 13 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	59 °F	Outside Temp.: ~ 61 °F
(P-121) or P-122	✓	2.5 gpm / CV 71 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 5-19-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 5-19-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 450 Gallons Reserve = 1 tote
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 190 Gallons Reserve = 55 gal
HCL Tote Levels	✓	~ 160 Gallons Reserve = 30 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 46-48 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 7.38	
pH 315	Value: 11.25	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 500	
Clear-well Transfer Pumps(P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: both ok ✓
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: OK ✓
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	5-26-22	1330
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1420
pH-740 Discharge Surge Tank		Discharge suspended: 1424 ↔ 1454
Out of Hold Double Check	----------	None in hold: ✓✓ TG
Valves Back to Normal Position	----------	All OK: ✓✓ TG

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 30 %
Decant Transfer Pump (P-352)	✓	CV 78% @ 0.0 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	Level: 30 %	
Feed Pump (P-114)	Operating Press: 45 psi	CV@ 73 % @ 1.7 gpm
Retention Tank (T-114)	Operating Press: 40 psi	pH-113 @ 3.8
Bag Filter (BF-113)	Operating Press: 44 psi	
Ion Exchange (Cage 1 or 2) + Guard	Operating Press: 38 psi	TP-174A → TP-176A | 5 canisters + Guard
Post Ion Exchange	Operating Press: 3.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 34 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 21 psi	CV@ 58 % @ 24.4 gpm
T-520 to GAC Total (FT-675)	261223302 gal	Time: 0840
North End On-Site Pumping	Operating Press: 1-2 psi	12.4 gpm @ 0842
North End Off-Site Pumping	Operating Press: 4-8 psi	8.9 gpm @ 0846
Peroxide Feed Pump (P-680)	✓	SPD 1.8 % / RATE 0.5 gpm
Peroxide Conc. At (TP-710)	0.5 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: N/A empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ix Resin + Main good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	OFFline/SB	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: N/A ~~Running~~	Next: N/A ~~Running~~
Peroxide Feed Pump (P-650)	OFF	Flow Rate: ~ N/A cc/min. N/A
UV-Ox Power	OFFline	— kVA — Volts — Amps
Lamp Hours	— Hrs	
Crystal Condition & Wiper Status	N/A	Oiler status: N/A
UV-OX Bagfilters Status	Last change: 3-4-22 Cleaned: 3-4-22	4 psi In 4 psi Out
UV-OX Feed Pump (P-600 or P-601)		CV@ % @ gpm
UV-OX Temperature	In(TT-670): N/A °C	Out(TT-710): N/A °C
PDU GAC (PDT-710)	UV-OX OFF	Δ Pressure: 0 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	15 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 1 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	22055863 gal	Time: 0850
Post UV-Ox / Pre PDU	✓	Pressure: 9 psi
Post PDU	✓	Pressure: 2 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 10 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 50.5 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	24.5 gpm @ 0858
POTW Line Pressure (PT-770)	✓	31.2 psi
Effluent Totalizer Reading (FT-770)	255395674 gal	Time: 0900
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 5-18-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 5-26-22 today	Plant Effluent Suspended: 1424 ↔ 1454
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: .330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0901 - 0910

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20052542	(FT-505) LFG Cond. to T-530	223089
(FT-025) NBBW Influent	95820547	(FT-056) Off - Site N. End Influent	45753016
(FT-012) MW-38 Inf. to HMR-30	8747101	(FT-113) Ion Exchange Influent	1387056
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30089840
(FT-043) MW-38 to RWST	3124977	(FT-026) NBBW Bypass to RWST	4567094
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8305642
(FT-012T) MW-38 to T-540/541	8694808	(FT-035) NTES Inf. to BIO	6808858
(FT-040T) MW-38N to T-540/541	1981036	(FT-035T) NTES to T-530	470190
(FT-041T) MW-38S to T-540/541	2699602	(FT-017) BIO Inf. from T-530	667303
(FT-042T) MW-38 Source to T-540/541	4086188	(FT-018) T-540/541 Influent	8736292
(FT-055) On - Site N. End Influent	101907835	(FT-352) T-352 to HMR-30	1380968

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	65 °F (Analog Gauge)	Outside Temp.: ~ 72 °F
Compressor Building Vent	✓	
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62921 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 64333
IRN30H Motor Speed	31 %	
IRN30H Pressure	115 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly)	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ ECOon	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 5-26-22 today	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	ON SB OVOROFF	GC # checking UV-Ox Effluent: [redacted]
Alarms Enabled	✓	cc - calibrations + Maintnance 5-25-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	2.3	44 %	7	
P-3301A	SB	—	— %	—	
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.48	47 %	P035 35-38 / P038 6	Globules Observed at TP-130: Y / (N) Time: 1050
T-530 P-005	✓	0.00	41 %	7	
T-540/541 P-006	✓	0.00	43 %	7.5	
LFG COND Auto-Traps	✓	0.00	NA	4.5	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.57	71.5 %	7.5	
P-3322	✓	3.58	59.4 %	7	
P-3323	✓	2.69	52.4 %	8	
P-3324	SB	—	— %	—	New pump + Motor 5-16-22
Reactor Effluent Pumps					
P-3341	✓	4.99	76.2 %	27	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.3	148	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.31	150	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.29	146	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 200 + PPM Freshwater Source well batch
VTP-3360	✓	PID Reading: 9.8 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	√ Level: 76 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	√ Level: 23 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 56 % & 57 %	
T-540/541 Mixers	✓	
Chiller	offline	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 5-12-22
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	√ Level: 73 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	√	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	√	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	√	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	√	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	√	
T-3340 Overflow Tank	√ Level: 67 %	
Recycle Valve to Blend Tank	✓	3.98 gpm @ 0934
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 5-19-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 9,5 Gallons: ~ 70
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 210 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	√ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 5-19-22
Caustic Pump (P-2232)	√ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	√ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	5-26-22 ~ today	New 4 & 10 pH stds today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 27	Reset
BF-3340 a/b Differential Pressure	PSI: 5	28/23 @ 5.3 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	~~28/7 @ 5~~
GACF-3340 Differential Pressure	PSI: 19	28/7 @ 5.3 gpm
Last Backwash Performed	Date: 5-26-22 today	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	01891731 KWH	Time: 1015
Building#2 KWH Meter	5428678 KWH	Time: 1015

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	CC - Calibrations + Maint 5-25-22
GC Influent Filters	✓	

TABLE 3.19.2

STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, May 26, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6717158	
FT-3324 Feed Spare	528717	
FT-3322 Feed to Reactor 2	11745495	
FT-3323 Feed to Reactor 3	991866	
FT-3301 T-510 to BIO	52276255	
FT-3341 BIO Effluent	67318707	
FT-3342 BIO Recycle	56788545	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55'	Counter: 201,015 Cycles: 381
LFG Cond Automatic Trap CT-2	Sump Level: 8.65'	Counter: 282,647 Cycles: 846
LFG Cond Automatic Trap CT-3	Sump Level: 7.28'	Counter: 336,634 Cycles: 743
CT-4 Containment/Vessel (LFG Cond)	Level: 30 %	Tank Level: 3.38 Counter: 191,298 Cycles: 0 Sump: 8.85'
PM-15 Containment / Vessel	Level: 52 %	
MW-51 Containment / Vessel	Level: 70 %	
PM-11 Containment / Vessel	Level: 68 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 5-25-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07 Date: 5-19-22
North Boundary System P-001:	CV 73.1 % @ 6.4 gpm	40.46 Hz / 2.07 Amps. / vault psi @ 18 / No leaks
T-101 & T-102 Containment / Tank	✓	Levels: 28 % & 27 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	58 °F	Outside Temp.: ~ 56 °F
(P-121) or P-122	✓	0.6 gpm / CV 57 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 5-19-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 5-19-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 325 Gallons Reserve = 1 tote
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 175 Gallons Reserve = 55 gallons
HCL Tote Levels	✓	~ 135 Gallons Reserve = 30 gallons
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 52-56 CV: 5 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.51	
pH 315	Value: 10.87	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 450	
Clear-well Transfer Pumps(P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: both OK ✓
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: OK ✓
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)		1413
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1454
pH-740 Discharge Surge Tank		Discharge suspended: 1403 ↔ 1412
Out of Hold Double Check	----------	None in hold: ✓✓ TG
Valves Back to Normal Position	----------	All OK: ✓✓ TG

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 30 %
Decant Transfer Pump (P-352)	✓	CV 78 % @ 0.0 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	Level: 30 %	
Feed Pump (P-114)	Operating Press: 31.7 psi	CV@ 66 % @ 1.7 gpm
Retention Tank (T-114)	Operating Press: 31 psi	pH-113 @ 3.6
Bag Filter (BF-113)	Operating Press: 34 psi	
Ion Exchange (Cage (1) or 2) + Guard	Operating Press: 26 psi	TP-174A → TP-176A | 4 canisters + Guard
Post Ion Exchange	Operating Press: 3.5 psi	TP-174A #1 OFFLINE 6-1-22 CONN #3

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 22 psi	CV@ 63 % @ 31.2 gpm
T-520 to GAC Total (FT-675)	261543653 gal	Time: 1006
North End On-Site Pumping	Operating Press: 6.5 psi	12.4 gpm @ 0817
North End Off-Site Pumping	Operating Press: 7 psi	8.7 gpm @ 0817
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6 gpm
Peroxide Conc. At (TP-710)	0.5 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: N/A Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ix Resin + Main good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System		
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ cc/min.
UV-Ox Power	✓	2646 kVA 2714 Volts 9.8 Amps
Lamp Hours	1690 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 3-4-22 Cleaned: 3-4-22	11 psi In 11.5 psi Out
UV-OX Feed Pump (P-600 or (P-601))		CV@ 70 % @ 6.9 gpm
UV-OX Temperature	In(TT-670): 14.5 °C	Out(TT-710): 27.1 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	20~~10~~ PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	22114136 gal	Time: 1020
Post UV-Ox / Pre PDU	✓	Pressure: 14 psi
Post PDU	✓	Pressure: 8 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 13 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752))	✓	CV@ 53.8 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.5 gpm @ 0826
POTW Line Pressure (PT-770)	✓	32.4 psi
Effluent Totalizer Reading (FT-770)	255712890 gal	Time: 0818
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 5-18-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 5-26-22	Plant Effluent Suspended: 1424 ↔ 1454
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: .330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0830 - 0845

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20061552	(FT-505) LFG Cond. to T-530	223253
(FT-025) NBBW Influent	95873766	(FT-056) Off - Site N. End Influent	45840072
(FT-012) MW-38 Inf. to HMR-30	8764874	(FT-113) Ion Exchange Influent	1403887
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30090136
(FT-043) MW-38 to RWST	3127762	(FT-026) NBBW Bypass to RWST	4578025
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8305643
(FT-012T) MW-38 to T-540/541	8695623	(FT-035) NTES Inf. to BIO	6813512
(FT-040T) MW-38N to T-540/541	1981295	(FT-035T) NTES to T-530	470431
(FT-041T) MW-38S to T-540/541	2700099	(FT-017) BIO Inf. from T-530	667836
(FT-042T) MW-38 Source to T-540/541	4086188	(FT-018) T-540/541 Influent	8739054
(FT-055) On - Site N. End Influent	102032430	(FT-352) T-352 to HMR-30	1382988

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	58 °F (Analog Gauge)	Outside Temp.: ~ 65 °F
Compressor Building Vent	✓	
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62921 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 64417
IRN30H Motor Speed	31 %	
IRN30H Pressure	119 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ ECO ON	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 5-26-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	108 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	Calibrations + Maintnance [redacted] 6-1-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

6-1-22- IX System column #3 taken offline + emptied prior to saturation down.

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	1.8	37 %	7.5		
P-3301A	SB	—	— %	—		
NTES Pump P-002(Sump) / (P-002W(10R)) Swapout 6-1-22	✓	0.50	47 %	P035 33-34	P038 6	Globules Observed at TP-130: Y / (N) Time: 0945
T-530 P-005	✓	0.20	41 %	7		
T-540/541 P-006	✓	0.30	49 %	7.5		
LFG COND Auto-Traps	✓	0.00	NA	4.5		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	1.97	66 %	7.5		
P-3322	✓	2.89	51.3 %	6.5		
P-3323	✓	3.20	50.7 %	7.5		
P-3324	SB	—	— %	—		New pump + Motor 5-16-22
Reactor Effluent Pumps						
P-3341	✓	2.88	58.3%	30		
P-3341A	SB	—	— %	—		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.32	149	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.33	148	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.08	130	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 230 + PPM
VTP-3360	✓	PID Reading: 30.10 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 64 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 21 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 40 % & 41 %	
T-540/541 Mixers	✓	
Chiller	offline ✓	Chiller Coolant Lvl: ~ — " Below full mark
Chiller Cooling Fins (as needed)	offline ✓	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 5-12-22
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	Level: 70 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	Level: 30 %	
Recycle Valve to Blend Tank	✓	4.00 gpm @ 0909
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 5-19-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 9.25 Gallons: ~ 75
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 200 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 5-19-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	5-26-22	Spray off probes with water
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2	↓	↓
pH-3333 Reactor 3	↓	↓

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 28	21/24 @ 3.7 gpm
BF-3340 a/b Differential Pressure	PSI: 3	
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ✓	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 19	21/7 @ 3.6 gpm
Last Backwash Performed	Date: 5-26-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 122 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	1894184 KWH	Time: 1150
Building#2 KWH Meter	5432627 KWH	Time: 1150

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Calibrations + Maint [redacted]
GC Influent Filters	✓	6-1-22

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 02, 2022

Inspection Performed by: Mike Gelwick / Tom Gilbert

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6740160	
FT-3324 Feed Spare	531540	
FT-3322 Feed to Reactor 2	11777444	
FT-3323 Feed to Reactor 3	1011725	
FT-3301 T-510 to BIO	52298601	
FT-3341 BIO Effluent	67349039	
FT-3342 BIO Recycle	56829330	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

275
230
505

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwick~~ Tom Gilbert

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55'	Counter: 201,513 Cycles: 498
LFG Cond Automatic Trap CT-2	Sump Level: 8.66'	Counter: 283,654 Cycles: 1007
LFG Cond Automatic Trap CT-3	Sump Level: 7.25'	Counter: 337,628 Cycles: 994
CT-4 Containment/Vessel (LFG Cond)	Level: 30 %	Tank Level: 3.38 Counter: 191,298 Cycles: 0 Sump: 8.93'
PM-15 Containment / Vessel	Level: 60 %	
MW-51 Containment / Vessel	Level: 38 %	
PM-11 Containment / Vessel	Level: 30 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 5-20-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07 Date: 5-19-22
North Boundary System P-001:	CV 73.6 % @ 6.5 gpm	40.82 Hz / 2.07 Amps. / vault psi @ 18 / No leaks
T-101 & T-102 Containment / Tank	✓	Levels: 35 % & 33 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	64.7 °F	Outside Temp.: ~ 52 °F
(P-121) or P-122	✓	0.6 gpm / CV 52 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 5-19-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 5-19-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 500 Gallons Reserve = None
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 160 Gallons Reserve = 55 gallons
HCL Tote Levels	✓	~ 115 Gallons Reserve = 30 gallons
Chemical Totes and Piping Inspected	✓	Leaks observed: (N) / N
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 54-60 CV: 4 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Getwick~~ Tom Gilbert / Chris Carlson

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.79	
pH 315	Value: 10.86	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ ✓ 375	
Clear-well Transfer Pumps(P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: OK ✓
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: OK ✓
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	6/9/22	1103
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX	✓	1138
pH-740 Discharge Surge Tank		Discharge suspended: 1053 ↔ 1103
Out of Hold Double Check	----------	None in hold: ✓✓ (N/A)
Valves Back to Normal Position	----------	All OK: ✓✓ (N/A)

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 30 %
Decant Transfer Pump (P-352)	✓	CV 74 % @0.0 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Empty needs to be Washed

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwick~~ Tom Gilbert

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	Operating Press: 33.1 psi	CV@ 66 % @ 1.7 gpm
Retention Tank (T-114)	Operating Press: 32 psi	pH-113 @ 4.4
Bag Filter (BF-113)	Operating Press: 35 psi	
Ion Exchange (Cage 1 or 2) + Guard	Operating Press: 26 psi	TP-174A → TP-176A/4 canisters + guard
Post Ion Exchange	Operating Press: 2.5 psi	TP-174A ± 1 offline 6-1-22

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 19 psi	CV@ 62 % @ 32 gpm
T-520 to GAC Total (FT-675)	261868204 gal	Time: 0905
North End On-Site Pumping	Operating Press: 6.5 psi	12.5 gpm @ 0906
North End Off-Site Pumping	Operating Press: 7 psi	8.6 gpm @ 0906
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6 gpm
Peroxide Conc. At (TP-710)	0.5 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ Empty	Check sheet completed: N/A empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ix Resin + Main good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/ Running	Next: NA/ Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.2 cc/min.
UV-Ox Power	✓	2658 kVA 2726 Volts 9.8 Amps
Lamp Hours	1857 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 3-4-22 Cleaned: 3-4-22	11.5 psi In 12 psi Out
UV-OX Feed Pump (P-600 or (P-601))	✓	CV@ 72 % @ 6.9 gpm
UV-OX Temperature	In(TT-670): 15.3 °C	Out(TT-710): 27.9 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 3 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	20 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 3 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	22181744 gal	Time: 0914
Post UV-Ox / Pre PDU	✓	Pressure: 14 psi
Post PDU	✓	Pressure: 8 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwick~~ Tom Gilbert

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 11 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752)	✓	CV@ 53.7 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.4 gpm @ 0917
POTW Line Pressure (PT-770)	✓	32.3 psi
Effluent Totalizer Reading (FT-770)	256043690 gal	Time: 0920
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 5-18-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: ↓
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 5-26-22	Plant Effluent Suspended: 1424 ↔ 1454
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: .330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0924 - 0932

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20072105	(FT-505) LFG Cond. to T-530	223366
(FT-025) NBBW Influent	95938583	(FT-056) Off - Site N. End Influent	45927976
(FT-012) MW-38 Inf. to HMR-30	8778687	(FT-113) Ion Exchange Influent	1420778
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30090896
(FT-043) MW-38 to RWST	3128929	(FT-026) NBBW Bypass to RWST	4579330
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8315667
(FT-012T) MW-38 to T-540/541	8704445	(FT-035) NTES Inf. to BIO	6818260
(FT-040T) MW-38N to T-540/541	1981567	(FT-035T) NTES to T-530	470587
(FT-041T) MW-38S to T-540/541	2700478	(FT-017) BIO Inf. from T-530	667979
(FT-042T) MW-38 Source to T-540/541	40944323	(FT-018) T-540/541 Influent	8741965
(FT-055) On - Site N. End Influent	102158516	(FT-352) T-352 to HMR-30	1385160

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwick~~ Tom Gilbert

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	58 °F (Analog Gauge)	Outside Temp.: ~ 58 °F
Compressor Building Vent	✓	operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: Serviced @ 62921 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 64505
IRN30H Motor Speed	31 %	
IRN30H Pressure	120 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly)	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ Eco ON	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 5-26-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	Calibrations + Maint 6-9-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 4-21-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

6-1-22 IX system column #3 taken offline

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwick~~ Tom Gilbert / Chris Carlson

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	1.2	30 %	7.5	
P-3301A	SB	—	— %	—	
NTES Pump 6-1-22 Sump P-002(Sump) / (P-002W(10R))	✓	0.48	48 %	P035 34-35 / P038 5.5	Globules Observed at TP-130: Y / (N) Time: 0955
T-530 P-005	✓	0.0	40 %	7	
T-540/541 P-006	✓	0.21	41 %	7.5	
LFG COND Auto-Traps	✓	0.00	NA	4	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	1.70	42.7 %	2.5	
P-3322	✓	2.19	38.6 %	5	
P-3323	✓	1.32	54.7 %	5	
P-3324	SB	—	— %	—	New pump + motor 5-16-22
Reactor Effluent Pumps					
P-3341	✓	1.58	%	12	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-5-2022
B-3331	✓	4.29	150	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	—	Belt and Filter Checked: Y / (N)
B-3333	✓	4.31	149	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.06	132	6-2022	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 67.0 PPM
VTP-3360	✓	PID Reading: 62.5 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwicki~~ Tom Gilbert

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 70 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 24 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 82 % & 82 %	
T-540/541 Mixers	✓	
Chiller	OFF ✓	Chiller Coolant Lvl: ~N/A " Below full mark
Chiller Cooling Fins (as needed)	OFF ✓	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 5-12-22
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	Level: 70 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.98 gpm @ 0948
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 5-19-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 9.25 Gallons: ~ 85
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 175 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 5-19-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwick~~ Tom Gilbert

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	5-26-22	Spray off probes with water today 6-9-22
pH-3331 Reactor 1	↓	
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status		
Automatic Backwash	Cycle Count: 27	
BF-3340 a/b Differential Pressure	PSI: 1	13/14 @ 1.8
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ✓	
GACF-3340 Status		
GACF-3340 Differential Pressure	PSI: 7	13/6 @ 2.1
Last Backwash Performed	Date: ~~5-26-22~~ 6-9-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	01896388 KWH	Time: 1113
Building#2 KWH Meter	05435857 KWH	Time: 1114

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Calibration + Maint 6-9-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 09, 2022

Inspection Performed by: ~~Mike Gelwick~~ Tom Gilbert

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6762164	
FT-3324 Feed Spare	531544	
FT-3322 Feed to Reactor 2	11808010	
FT-3323 Feed to Reactor 3	1033398	
FT-3301 T-510 to BIO	52320273	
FT-3341 BIO Effluent	67378734	
FT-3342 BIO Recycle	56871151	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 4-21-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.55	Counter: 201773 Cycles: 260
LFG Cond Automatic Trap CT-2	Sump Level: 8.65	Counter: 284102 Cycles: 448
LFG Cond Automatic Trap CT-3	Sump Level: 7.23	Counter: 338897 Cycles: 1269
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 30 %	Tank Level: 3.38 Counter: 191298 Cycles: 0 Sump: 8.84
PM-15 Containment / Vessel	✓ Level: 65 %	
MW-51 Containment / Vessel	✓ Level: 20 %	
PM-11 Containment / Vessel	✓ Level: 15 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 5-20-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07 Date: 5-19-22
North Boundary System P-001:	CV 73.7% @ 6.6 gpm	40.75 Hz / 2.07 Amps. / vault psi @ 18 | NO leaks
T-101 & T-102 Containment / Tank	✓	Levels: 24 % & 23 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	71 °F	Outside Temp.: ~ 72 °F
(P-121) or P-122	✓	0.6 gpm / CV 60 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 5-19-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 5-19-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 368 Gallons Reserve = None
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 300 Gallons Reserve = 205
HCL Tote Levels	✓	~ 100 Gallons Reserve = 1 tote
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 54-60 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert / Charles Andrews

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 7.00	
pH 315	Value: 10.86	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	
Clarifier Water Quality	✓	Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 475	
Clear-well Transfer Pumps(P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: ok ✓
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: all ok ✓
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	6/16/22	1442
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1510
pH-740 Discharge Surge Tank		Discharge suspended: 1432 ↔ 1441
Out of Hold Double Check	----------	None in hold: ✓✓ ed (W)
Valves Back to Normal Position	----------	All OK: ✓✓ ed (W)

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 40 %
Sludge Holding Tank (T-352)	✓	Level: 36 %
Decant Transfer Pump (P-352)	✓	CV 67 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	Operating Press: 33 psi	CV@ 66 % @ 1.7 gpm
Retention Tank (T-114)	Operating Press: 34 psi	pH-113 @ 3.6
Bag Filter (BF-113)	Operating Press: 36 psi	
Ion Exchange (Cage 1 or 2) + Guard	Operating Press: 26 psi	TP-174A → TP176A/4 canisters + guard
Post Ion Exchange	Operating Press: 2.5 psi	TP-174A #1 offline 6-1-22

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 39 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 19 psi	CV@ 62 % @ 33.1 gpm
T-520 to GAC Total (FT-675)	262193587 gal	Time: 0920
North End On-Site Pumping	Operating Press: 1-3 psi	12.6 gpm @ 0921
North End Off-Site Pumping	Operating Press: 2-7 psi	8.6 gpm @ 0921
Peroxide Feed Pump (P-680)	✓	SPD 2.5 % / RATE 0.7 gpm ✓
Peroxide Conc. At (TP-710)	0.5 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓ ~~Hole Hel~~ ✓	Check sheet completed: NA (Empty)
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: IX Resin + Main good
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.2 cc/min.
UV-Ox Power	✓	26.19 kVA 2717 Volts 9.7 Amps
Lamp Hours	2025 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: OK
UV-OX Bagfilters Status	Last change: 3-4-22 Cleaned: 3-4-22	11.5 psi In 12.5 psi Out
UV-OX Feed Pump (P-600 or P-601)		CV@ 74 % @ 7.0 gpm
UV-OX Temperature	In(TT-670): 16.3 °C	Out(TT-710): 28.9 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 3 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 2 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	22249832 gal	Time: 0928
Post UV-Ox / Pre PDU	✓	Pressure: 14 psi
Post PDU	✓	Pressure: 8 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 9 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or (P752)	✓	CV@ 53.9 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	32.7 gpm @ 0930
POTW Line Pressure (PT-770)	✓	32.4 psi
Effluent Totalizer Reading (FT-770)	256370762 gal	Time: 0932
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 5-18-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done:
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 5-26-22	Plant Effluent Suspended: 1424 ↔ 1454
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.001 volts(monthly)	Adjustment Needed: Y or (N)
Verify Bridge Current between.300v-.360v	Reading: .330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0933 - 0940

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20078042	(FT-505) LFG Cond. to T-530	223498
(FT-025) NBBW Influent	96004348	(FT-056) Off - Site N. End Influent	46016264
(FT-012) MW-38 Inf. to HMR-30	8793761	(FT-113) Ion Exchange Influent	1437480
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30091704
(FT-043) MW-38 to RWST	3129258	(FT-026) NBBW Bypass to RWST	4580578
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8315667
(FT-012T) MW-38 to T-540/541	8704445	(FT-035) NTES Inf. to BIO	6822999
(FT-040T) MW-38N to T-540/541	1981567	(FT-035T) NTES to T-530	470730
(FT-041T) MW-38S to T-540/541	2700478	(FT-017) BIO Inf. from T-530	667979
(FT-042T) MW-38 Source to T-540/541	4094323	(FT-018) T-540/541 Influent	8744635
(FT-055) On - Site N. End Influent	102285134	(FT-352) T-352 to HMR-30	1386666

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	67 °F (Analog Gauge)	Outside Temp.: ~ 74 °F
Compressor Building Vent	✓	operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2/7/22 Serviced @ 62921 Hours	Coolant present in sight glass: (Y) / N Next service @ 64971 Hours Current Hours @ 64595
IRN30H Motor Speed	31 %	
IRN30H Pressure	116 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly)	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ ECO ON	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 5-26-22	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	Calibrations + Maint 6-16-22
GC Influent Filters	✓	False Calculation Error

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: ~~6-21-22~~ 5/23/22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

6-1-22 Ix System column #3 taken offline

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)	Comments
T-510 Pumps					
P-3301	✓	3.5	62 %	13-14	
P-3301A	SB	—	— %	—	
NTES Pump 6-1-22 Swap P-002(Sump) / (P-002W(10R))	✓	0.48	48 %	P035 33-34 / P038 8	Globules Observed at TP-130: Y / (N) Time: 1000
T-530 P-005	✓	0.00	40 %	7	
T-540/541 P-006	✓	0.30	41 %	7.5	
LFG COND Auto-Traps	✓	0.00	NA	4	Between Cycles: (Y) / N
Reactor Feed Pumps					
P-3321	✓	2.66	54.9 %	2.5	
P-3322	✓	3.67	49.9 %	5	
P-3323	✓	2.67	71.8 %	5	
P-3324	SB	—	— %	—	New pump + motor 5-16-22
Reactor Effluent Pumps					
P-3341	✓	3.85	%	20	
P-3341A	SB	—	— %	—	

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: ~~5-2022~~ 3/16/22
B-3331	✓	4.26	158	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	—	Belt and Filter Checked: Y / (N)
B-3333	✓	4.29	155	6-2022	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.04	140	6-2022	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 2.9 PPM
VTP-3360	✓	PID Reading: 1.0 PPM

TABLE 3.19.2
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BIOLOGICAL TREATMENT SYSTEM

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Inspection Performed by: Tom Gilbert

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 66 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 27 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 61 % & 62 %	
T-540/541 Mixers	✓	
Chiller	OFF ✓	Chiller Coolant Lvl: ~ N/A " Below full mark
Chiller Cooling Fins (as needed)	OFF ✓	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 5-12-22
T-3310 Sedimentation Tank	Visual Level: OK	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	Level: 69 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	400 gpm @ 1000
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 5-19-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: 9 Gallons: ~ 85
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 160 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	6/16/22
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ~~5-19-22~~ e
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert / Chris Carlson

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	5/26/22	Cleaned with Acid/Base Soaks
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 20	
BF-3340 a/b Differential Pressure	PSI: 3	15/18 @ 2.8 gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ✓	
GACF-3340 Status		
GACF-3340 Differential Pressure	PSI: 9	15/6 @ 2.9 gpm
Last Backwash Performed	Date: ~~6-16-22~~ 4/29/22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / Off Warm Out
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	✓ 1898327 KWH	Time: 1115
Building#2 KWH Meter	✓ 5438731 KWH	Time: 1115

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	Calibrations + Maint 6-16-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 16, 2022

Inspection Performed by: Tom Gilbert

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6783391	
FT-3324 Feed Spare	531544	
FT-3322 Feed to Reactor 2	11837503	
FT-3323 Feed to Reactor 3	1054276	
FT-3301 T-510 to BIO	52338765	
FT-3341 BIO Effluent	67404792	
FT-3342 BIO Recycle	56912549	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: ~~6-21-22~~ 5/23/22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 14.90'	Counter: 20241 Cycles: 468
LFG Cond Automatic Trap CT-2	Sump Level: 8.62'	Counter: 294534 Cycles: 432
LFG Cond Automatic Trap CT-3	Sump Level: 7.20'	Counter: 339258 Cycles: 361
CT-4 Containment/Vessel (LFG Cond)	✓ Level: ~31 %	Tank Level: 3.34 Counter: 191316 Cycles: 18 Sump: 8.45'
PM-15 Containment / Vessel	✓ Level: ~65%	
MW-51 Containment / Vessel	✓ Level: ~50 %	
PM-11 Containment / Vessel	✓ Level: ~50 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 5-20-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: ~~6/13/20~~ 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: Dry @ 16.07' Date: 6/20/22
North Boundary System P-001:	CV 73.6% @ 6.7 gpm	40.91 Hz / 2.08 Amps. / vault psi @ 18 (No Leaks)
T-101 & T-102 Containment / Tank	✓	Levels: 32 % & 30 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	~~106~~ 70.4 °F	Outside Temp.: ~ 80 °F
P-121 or P-122	✓	0.6 gpm / CV 54 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 6/20/22
RWST Back-Up Generator	✓	Last Test Run(monthly): 6/20/22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~ 250 Gallons Reserve = 3 totes
Caustic Bay Heater	✓	
Peroxide Tote Level	✓	~ 275 Gallons Reserve = ~255 gallons
HCL Tote Levels	✓ Top ~100 bottom ~75	~ 175 Gallons Reserve = ~350 gallons
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: Y / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 47-48 CV: 3%
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4/7/22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4/7/22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.9	
pH 310	Value: 6.99	
pH 315	Value: 10.78	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Very Good
Clarifier Water Quality	✓	Very Good Oil or sheen observed: Y (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~ 410	
Clear-well Transfer Pumps(P-371 (372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: Top a little stiff.
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3/15/22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All okay
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	6/23/22 Fresh STDS	1115
pH-315 HMR-30 (T-300B)	↓	
pH-365 Primary Acid Ret. Tank	↓	
pH-113 Pre-Ion Exchange	↓	
pH-670 Pre-UV-OX	↓	1145
pH-740 Discharge Surge Tank	↓	Discharge suspended 1045 ↔ 1110
Out of Hold Double Check	----------	None in hold: ✓ ✓ (W)
Valves Back to Normal Position	----------	All OK: ✓ ✓ (W)

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 35 %
Sludge Holding Tank (T-352)	✓	Level: 34 %
Decant Transfer Pump (P-352)	SB	CV —% @ — gpm
Filter Press Pumps (P-381 / P-382)	✓	P-382 needs cleaning (sticks)
Filter Press	✓	Stage: Full

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30%	
Feed Pump (P-114)	Operating Press: 34.2 psi	CV@ 66 % @ 1.7 gpm
Retention Tank (T-114)	Operating Press: 33 psi	pH-113 @ 3.9
Bag Filter (BF-113)	Operating Press: 35 psi	
Ion Exchange (Cage (1) or 2) + Guard	Operating Press: 25 psi	Columns 4, 5, 6 & 7 online
Post Ion Exchange	Operating Press: 2.5 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 38 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or P-522)	Operating Press: 17 psi	CV@ 61 % @ 31.9 gpm
T-520 to GAC Total (FT-675)	26251634 gal	Time: 0657
North End On-Site Pumping	Operating Press: ~2 psi	12.5 gpm @ 0756
North End Off-Site Pumping	Operating Press: 2-6 psi	8.5 gpm @ 0756
Peroxide Feed Pump (P-680)	✓	SPD 2.4 % / RATE 0.6
Peroxide Conc. At (TP-710)	1 PPM	
Peroxide Conc. At (TP-740)	0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓	Check sheet completed: NA (Empty)
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Ex Spent Resin & Mixed good.
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good.

K. UV-OXIDATION SYSTEM

Item	Status	Comments
UV-Oxidation System	✓	
Annual Test Run (Calgon)	Date: 9/16/21	Next: 9/2022
Quarterly Test Run	Date: NA RUNNING	Next: NA / RUNNING
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~7 cc/min.
UV-Ox Power	✓	26.52 kVA 2717 Volts 9.6 Amps
Lamp Hours	2190 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: Needed oil (very low)
UV-OX Bagfilters Status	Last change: 3/4/22 Cleaned: 3/4/22	8 psi In 9 psi Out
UV-OX Feed Pump (P-600 or P-601)	✓	CV@ 63 % @ 7.0 gpm
UV-OX Temperature	In(TT-670): 15.7 °C	Out(TT-710): 28.2 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 1 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	22317028 gal	Time: 0653
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 4 psi
PDT-730	✓	Δ Pressure: 3 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or P752)	✓	CV@ 53.3%
Effluent Surge Tank (T-740)	✓	Level: 40%
Effluent Discharge Rate (FT-770)	✓	32.2 gpm @ 0659
POTW Line Pressure (PT-770)	✓	32.1 psi
Effluent Totalizer Reading (FT-770)	256,695,010 gal	Time: 0659
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 6/20/22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: 6/20/22
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done: 6/20/22
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 5/18/22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: ~~5/19/20~~ 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: ~~5/19/20~~ ✓
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: ~~5/19/20~~ ✓
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 0 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: Today 6/23/22	Plant Effluent Suspended: 1045 ↔ 1110
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.000 volts(monthly)	Adjustment Needed: (Y) or N W451.998
Verify Bridge Current between.300v-.360v	Reading: 0.330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 0819 – 0824

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20083914	(FT-505) LFG Cond. to T-530	223651
(FT-025) NBBW Influent	96069882	(FT-113) Ion Exchange Influent	1454038
(FT-012) MW-38 Inf. to HMR-30	9909305	(FT-056) Off - Site N. End Influent	46103888
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30094692
(FT-043) MW-38 to RWST	3129549	(FT-026) NBBW Bypass to RWST	4581722
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8322951
(FT-012T) MW-38 to T-540/541	8704445	(FT-035) NTES Inf. to BIO	6827662
(FT-040T) MW-38N to T-540/541	1981567	(FT-035T) NTES to T-530	470881
(FT-041T) MW-38S to T-540/541	2700478	(FT-017) BIO Inf. from T-530	667979
(FT-042T) MW-38 Source to T-540/541	4094323	(FT-018) T-540/541 Influent	8747547
(FT-055) On - Site N. End Influent	10241902	(FT-352) T-352 to HMR-30	1388675

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	60 °F (Analog Gauge)	Outside Temp.: ~ 86 °F
Compressor Building Vent	✓	
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2/7/22 Serviced @ 62921 Hours	Coolant present in sight glass: (Y) / N Next service @ 64921 Hours Current Hours @ 64680
IRN30H Motor Speed	31 %	
IRN30H Pressure	115 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2/7/22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / (N)
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: (Y) / N
Air Dryer	✓ OK ECO on but has warning	Moisture at Receiver Tank: Y / (N)
Oil Moisture Prevention (Monthly)	Last Done: 6/23/22 (Blows down regularly)	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	110 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: 1
Alarms Enabled	✓	
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 5/23/22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

Other Comments:

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	1.44	35.8 %	7		
P-3301A	SB	—	— %	—		
NTES Pump P-002(Sump) (Pump Sump 6/1/22 P-002W(10R))	✓	0.48	47 %	P035	P038	Globules Observed at TP-130: Y / (N) Time: 0505
T-530 P-005	SB	—	— %	—		
T-540/541 P-006	✓	0.30	43 %	6		Feed to P-006 Flushed y-strainers emptied
LFG COND Auto-Traps	✓	0.00	NA	4		Between Cycles: (Y) / N 6/22/22 (ew)
Reactor Feed Pumps						
P-3321	✓	2.02	50.4 %	3		
P-3322	✓	2.80	45.1 %	5		
P-3323	SB	—	— %	—		
P-3324	OFF	2.02	39.1 %	5		
Reactor Effluent Pumps						
P-3341	✓	1.78	58.5 %	16		
P-3341A	SB	—	— %	—		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3/16/22
B-3331	✓	4.25	154	6/2022	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	✓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.25	152		Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	4.05	141		Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 31.8 PPM
VTP-3360	✓	PID Reading: 30.0 PPM

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 54 %	Last Cleaning (As needed, if 2" of solids accumulate): ~~12/15/19~~ 7/14/21
T-530 LFG Condensate / NTES Tank	Level: 32%	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7/19/21 Next: 7/2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 36% & 39%	
T-540/541 Mixers	✓	
Chiller	Offline	Chiller Coolant Lvl: ~ NA " Below full mark
Chiller Cooling Fins (as needed)	OFFline	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 5/12/22
T-3310 Sedimentation Tank	Visual Level: Okay	Last Cleaning (As Needed, use TSS info to determine): ~~12/2017~~ 9/2021
T-3320 Blend Tank	✓ Level: 70 %	Last Cleaning (Semi Annual): 9/10/21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9/16/21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.97 gpm @ 0949
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 6/23/22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: ~8.5 Gallons: ~ 85
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 155 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 6/16/22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	Today 6/23/22	Cleaned & Calibrated Fresh 7.00's
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2	↓	↓
pH-3333 Reactor 3	↓	↓

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 18	
BF-3340 a/b Differential Pressure	PSI: 3psi @ 1.8 GPM	20psi 17psi
75-micron Bags Last Cleaning	Date: 11/14/19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date: ✓	
GACF-3340 Status		
GACF-3340 Differential Pressure	PSI: 10 psi @ 1.86pm	
Last Backwash Performed	Date: ~~6/16/22~~ 4/29/22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / ~~Off Warm Out~~
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 131 min / 2 Events
HMI's	✓	
BTS Process KWH Meter	1900235 KWH	Time: 0935
Building#2 KWH Meter	544/551 KWH	Time: 0935

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: 2
Alarms Enabled	✓	
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 23, 2022

Inspection Performed by: Chris Carlson

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6805218	
FT-3324 Feed Spare	536567	
FT-3322 Feed to Reactor 2	11867824	
FT-3323 Feed to Reactor 3	1070773	
FT-3301 T-510 to BIO	52358772	
FT-3341 BIO Effluent	67432593	
FT-3342 BIO Recycle	56953584	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 5/23/22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

A. PERIMETER COLLECTION SYSTEMS

Item	Status	Comments
LFG Cond Automatic Trap CT-1	Sump Level: 12.80	Counter: 202424 Cycles: 183
LFG Cond Automatic Trap CT-2	Sump Level: 8.69	Counter: 285390 Cycles: 856
LFG Cond Automatic Trap CT-3	Sump Level: 7.32	Counter: 339903 Cycles: 645
CT-4 Containment/Vessel (LFG Cond)	✓ Level: 32 %	Tank Level: 3.37 Counter: 191353 Cycles: 39 Sump: 8.62
PM-15 Containment / Vessel	✓ Level: 66 %	
MW-51 Containment / Vessel	✓ Level: 20 %	
PM-11 Containment / Vessel	✓ Level: 15 %	
MW-38 Systems	✓	
North Toe System	✓	
North End Systems (Weekly)	✓	
Full N. End Systems Check (Monthly)	✓	Last Done: 6-29-22
North End Pipeline(s)Flushing (As Needed)	✓	Perform if suspended solids present Last Done: 11/15/15
NTES line flush to T-530 (As needed)	✓	Perform if suspended solids present Last Done: 10/29/21
NTES Piping Containment	✓	Monthly Sump Level: dry 016.07' Date: 6-20-22
North Boundary System P-001:	CV69.6 % @ 6.8 gpm	37.68 Hz / 2.03 Amps. / vault psi @ 18/no leaks
T-101 & T-102 Containment / Tank	✓	Levels: 39 % & 36 %
Raw Water Storage Tanks Piping	✓	
RWST Building Temp. (TT-101)	72.6 °F	Outside Temp.: ~ 80 °F
(P-121) or P-122	✓	2.0 gpm / CV 51 %
RWST 2ndry Cont. High Level Switch	✓	(LSH-101) Last Test(monthly): 6-20-22
RWST Back-Up Generator	✓	Last Test Run(monthly): 6-20-22

B. CHEMICAL STORAGE BAYS

Item	Status	Comments
Caustic Tote Levels	✓	~415 Gallons Reserve = 2 totes
Caustic Bay Heater	✓	OFF w/manual
Peroxide Tote Level	✓	~ 250 Gallons Reserve = 255 gal
HCL Tote Levels	✓	~ 165 Gallons Reserve = 1 tote 330 gal
Chemical Totes and Piping Inspected	✓	Leaks observed: Y / (N)
Emergency Shower Inspected	✓	Checked and Flushed - All OK: (Y) / N

C. PRIMARY AND SECONDARY ACID FEED SYSTEM

Item	Status	Comments
Primary Acid Feed Pump (P-631)	✓	
Ion Exchange Acid Feed Pump (P-632)	✓	PI-0632 PSI: 54 CV: 3 %
Primary Acid Retention Tank (T-510)	✓	
All Acid Feed Lines	✓	Leaks observed: Y / (N)

D. NBBW INJECTION TRENCH

Item	Status	Comments
Injection Carbon (GAC-810)	OFFLINE	Date online: 7/20/18
Injection Rate (FT-800)	0.0 gpm	NBBW-IW-1= 0.0 NBBW-IW-2= 0.0 NBBW-IW-3= 0.0 gpm ea.
Totalizer Reading (FT-800)	105,135,774 gal	INJ. STOPPED 10/02/18 @ 1545

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

E. CHEMICAL PRECIPITATION SYSTEM (US FILTER HMR-30)

Item	Status	Comment
T-300A Mixer	NA	
T-300B (Caustic Mixer)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Water Level	✓	
T-300B (Caustic Mix Chamber)	✓	Last Cleaning (Qtrly): 4-7-22
T-300A/B Overflow	✓	
pH Set-point for (pH 315)	Value: 10.8	
pH 310	Value: 6.68	
pH 315	Value: 10.02	
Flocculation Chamber Paddle Wheel	✓	
Precipitate Floc Quality	✓	Good
Clarifier Water Quality	✓	Good Oil or sheen observed: Y / (N)
Clarifier Effluent Piping / Water Level	✓	
Clear-well Chamber and Water Level	✓	
HMR PLC Panel	✓	
Caustic Pump (P-270)	SB	
Caustic Pump (P-280)	✓	
Polymer Pump (P-310)	✓	
Polymer Tank Mixer	✓	
Polymer Tank Level	Gallons: ~530	
Clear-well Transfer Pumps (P-371 / 372)	✓	
Sludge Transfer Pump (P-330)	✓	Exercise Valves Weekly: TOP ALITTLE STIFF/SCHEDULE
Manual Sludge Lateral pumping	✓	Last done (As Needed): 3-15-22
Manual Sludge Lateral Ball Valves	✓	Exercise Weekly: All OK
Automatic Blow-down Operations	✓	

F. pH PROBES

pH Probe Location	Calibration Date	Comments: (Time done)
pH-310 HMR-30 (T-300A)	6-30-22 today	1408
pH-315 HMR-30 (T-300B)		
pH-365 Primary Acid Ret. Tank		
pH-113 Pre-Ion Exchange		
pH-670 Pre-UV-OX		1440
pH-740 Discharge Surge Tank		Discharge suspended: 1400 ↔ 1407
Out of Hold Double Check	----------	None in hold: ✓ ✓ down
Valves Back to Normal Position	----------	All OK: ✓ ✓ down

G. SLUDGE THICKENER, SLUDGE HOLDING TANKS, FILTER PRESS* Grease THICKENER MOTOR BEARINGS today *

Item	Status	Comments
Verify Sludge Thickener Running	✓	Gauge Reading: 0 %
Sludge Thick. Transfer Pump (P-350)	✓	
Sludge Holding Tank (T-351)	✓	Level:~ 45 %
Sludge Holding Tank (T-352)	✓	Level: 41 %
Decant Transfer Pump (P-352)	✓	CV64 % @ 0.5 gpm
Filter Press Pumps (P-381 / P-382)	✓	P-382 needs cleaning / grease
Filter Press	✓	Stage: Roll

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

H. ION EXCHANGE

Item	Status	Comments
Feed Tank (T-113)	✓ Level: 30 %	
Feed Pump (P-114)	✓ Operating Press: 33.0 psi	CV@ 65 % @ 1.68 gpm
Retention Tank (T-114)	✓ Operating Press: 32 psi	pH-113 @ 3.83
Bag Filter (BF-113)	✓ Operating Press: 35 psi	
Ion Exchange (Cage (1) or 2) + Guard	✓ Operating Press: 25 psi	Columns 4,5+6 + Guard online
Post Ion Exchange	✓ Operating Press: 3.0 psi	

I. FEED SURGE TANK

Item	Status	Comments
Feed Surge Tank (T-520)	✓ Level: 35 %	Last Cleaning (As Needed, if 4" of solids accumulate): 12/15/19
Feed Surge Pump (P-521 or (P-522))	Operating Press: 14 psi	CV@ 56 % @ 25.9 gpm
T-520 to GAC Total (FT-675)	262847728 gal	Time: 1148
North End On-Site Pumping	Operating Press: 2-3 psi	12.6 gpm @ 1143
North End Off-Site Pumping	Operating Press: 2-6 psi	8.6 gpm @ 1143
Peroxide Feed Pump (P-680)	✓	SPD 6.9 % / RATE 0.5
Peroxide Conc. At (TP-710)	1.0 PPM	
Peroxide Conc. At (TP-740)	0.0 PPM	

J. HAZARDOUS WASTE STORAGE

Item	Status	Comments
180 Day storage area check	✓	Check sheet completed: NA/Empty
Satellite Haz. Waste Areas (BLDG #1)	✓	Condition: Existing Racks + main Cabinet
Satellite Haz. Waste Area (BLDG #2)	✓	Condition: Good

K. UV-OXIDATION SYSTEM *New Power Cabinet cooling fan installed today *

Item	Status	Comments
UV-Oxidation System	✓	* OFF During the day today for New Fan Installed *
Annual Test Run (Calgon)	Date: 9-16-21	Next: 9-2022
Quarterly Test Run	Date: NA/Running	Next: NA/Running
Peroxide Feed Pump (P-650)	✓	Flow Rate: ~ 7.0 cc/min.
UV-Ox Power	✓	27.83 kVA 2637 Volts 10.5 Amps
Lamp Hours	2355 Hrs	
Crystal Condition & Wiper Status	✓	Oiler status: ok
UV-OX Bagfilters Status	Last change: 3-4-22 Cleaned: 3-4-22	10 psi In 11 psi Out
UV-OX Feed Pump ((P-600) or P-601)	✓	CV@ 66 % @ 6.9 gpm
UV-OX Temperature	In(TT-670): 19.5 °C	Out(TT-710): 33.4 °C
PDU GAC (PDT-710)	✓	Δ Pressure: 2 psi
Peroxide Concentration Pre UV	100 PPM	
Peroxide Concentration Post UV(TP-720)	25 PPM	
Peroxide Conc. Post PDU (TP-730)	0.0 PPM	
Secondary Acid Feed Pump (P-630)	✓	CV @ 0 %
Secondary Acid Retention Tank (T-645)	✓	
Pre – UV Oxidizer Total (FT-670)	22383816 gal	Time: 1149
Post UV-Ox / Pre PDU	✓	Pressure: 12 psi
Post PDU	✓	Pressure: 7 psi

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

L. PDU AND LIQUID –PHASE GRANULAR ACTIVATED CARBON

Item	Status	Comments
PDT-720	✓	Δ Pressure: 8 psi
PDT-730	✓	Δ Pressure: 2 psi

M. EFFLUENT DISCHARGE

Item	Status	Comments
Effluent Surge Pump (P751 or P752)	✓	CV@ 51.7 %
Effluent Surge Tank (T-740)	✓	Level: 40 %
Effluent Discharge Rate (FT-770)	✓	25.9 gpm @ 1146
POTW Line Pressure (PT-770)	✓	31.3 psi
Effluent Totalizer Reading (FT-770)	257028232 gal	Time: 1149
POTW MH17S-078 Discharge Check (Monthly)	✓	Last Done: 6-20-22
4X8-Inch POTW Leak Detection Checks (Monthly)	✓	Last Done: ↓
4X8-Inch POTW Air Reliefs Checks (Monthly)	✓	Last Done:
4X8-Inch POTW Isolation Valves Exercise (Qtrly)	✓	Last Done: 5-18-22
2-Inch POTW Backup Pressure Testing (Annual)	✓	Last Done: 7/8/21
2-In POTW Backup Air Reliefs Checks (Annual)	✓	Last Done: 7/8/21
2-Inch POTW Isolation Valve Exercise (Annual)	✓	Last Done: 7/8/21
Rotate Chiller Compressors	NA on Standby	~~Now in Lead: 1 or 2~~

N. LEL EFFLUENT TANK T-740

Item	Status	Comments
LEL-740 Sensor	✓	Reading: 1 %
LEL Sensor Calibration / Automatic High LEL Shutdown Test (monthly)	Last Completed: 6-23-22	Plant Effluent Suspended: 1045 ↔ 1110
LEL Sensor Bridge Adjustment to 2.0 volts	Reading: 2.00 volts(monthly)	Adjustment Needed: ⊘ or ✓ 01.998
Verify Bridge Current between.300v-.360v	Reading: .330 volts(monthly)	

O. WTP INFLUENT TOTALIZERS Time : 1150 - 1154

Source	Reading(Gallons)	Source	Reading(Gallons)
(FT-015) RWST Influent	20093834	(FT-505) LFG Cond. to T-530	224029
(FT-025) NBBW Influent	96134367	(FT-056) Off - Site N. End Influent	46192440
(FT-012) MW-38 Inf. to HMR-30	8821745	(FT-113) Ion Exchange Influent	1471046
(FT-042 HMR30) MW-38 Source to HMR-30	35484	(FT-810) Plant Potable Water In	30095936
(FT-043) MW-38 to RWST	3129802	(FT-026) NBBW Bypass to RWST	4585914
(FT-042 RWST) MW-38 Source to RWST	72236	(FT-014) Misc. Water to RWST	8330685
(FT-012T) MW-38 to T-540/541	8714222	(FT-035) NTES Inf. to BIO	6832312
(FT-040T) MW-38N to T-540/541	1981567	(FT-035T) NTES to T-530	471104
(FT-041T) MW-38S to T-540/541	2700478	(FT-017) BIO Inf. from T-530	668024
(FT-042T) MW-38 Source to T-540/541	4104100	(FT-018) T-540/541 Influent	8750471
(FT-055) On - Site N. End Influent	102539013	(FT-352) T-352 to HMR-30	1390993

TABLE 3.19.1
STANDARD OPERATIONS CHECKLIST
MAIN WTP

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

P. AIR COMPRESSORS

Item	Status	Comments
Compressor Intake Temp.	68 °F (Analog Gauge)	Outside Temp.: ~ 85 °F
Compressor Building Vent	✓	open / operational
Primary Air Compressor (IRN30H)	2,000 Hour service date: 2-7-22 Serviced @ 62921 Hours	Coolant present in sight glass: Ⓨ / N Next service @ 64921 Hours Current Hours @ 64767
IRN30H Motor Speed	0 %	
IRN30H Pressure	120 psi	
IRN30H Moisture purge valve chk(Weekly):	✓	
IRN30H Intake Filter	✓	Date Last Changed: 2-7-22
Air Tanks Moisture Purge Valves	Manually Activate(weekly) ✓	Excessive Moisture: Y / Ⓝ
Backup Air Compressors (T-30 East and West)	✓	Both cool to touch: Ⓨ / N
Air Dryer	✓ ECO ON flashing when any light on	Moisture at Receiver Tank: Y / Ⓝ
Oil Moisture Prevention (Monthly)	Last Done: 6-23-22 (Blowing down Frequently)	Run at max speed by bleeding air from filter canister above/after air dryer for 2 hrs
Air Receiver Tank	✓	108 psi

Q. SUMPS

Item	Status	Comments
Bag Filter Sump	✓	
Wet Well Sump	✓	

R. GAS CHROMATOGRAPH

Item	Status	Comments
GC Operational	✓	GC # checking UV-Ox Effluent: #1
Alarms Enabled	✓	cc - calibration + maint 6-29-22
GC Influent Filters	✓	

S. SAFETY

Item	Status	Comments
Building #1 Fire Extinguishers	✓	Date inspected: 6-27-22
Building #1 Eye Wash/Shower	✓	Checked and Flushed- All OK: Ⓨ / N

Other Comments:

* UV-OX OFF during Checks today. Resistance = 1446. New Power Cabinet Fan Installed.

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

A. PUMPS

Item	Status	Flow Rate (gpm)	Pump Speed (CV%)	Discharge Pressure (psi)		Comments
T-510 Pumps						
P-3301	✓	1.83	41.8 %	7.0		
P-3301A	SB	—	— %	—		Drive sound ok
NTES Pump P-002(Sump) / (P-002W(10R))	✓	0.47	48 %	P035: 35-36	P038: 6	Globules Observed at TP-130: Y / (N) Time: 1110
T-530 P-005	✓	0.20	32 %	8		
T-540/541 P-006	✓	0.19	41 %	6		
LFG COND Auto-Traps	✓	0.0	NA	5.0		Between Cycles: (Y) / N
Reactor Feed Pumps						
P-3321	✓	~~2.30~~ 2.26	51.2 %	3.5		
P-3322	✓	3.01	47.7 %	5.0		
P-3323	SB	—	— %	—		
P-3324	✓	2.20	43.8 %	5.0		
Reactor Effluent Pumps						
P-3341	✓	2.09	56.2 %	16		
P-3341A	SB	—	— %	—		

B. BLOWERS

Item	Status	Pressure (psi)	Temp (°F)	Next Scheduled Service (Qtrly)	Comments Last serviced on: 3-16-22
B-3331	✓	4.24	156	SOON/Tomorrow	Greased, Belt and Filter Checked: (Y) / N
B-3332	SB	—	—	↓	Belt and Filter Checked: Y / (N)
B-3333	✓	4.26	150	↓	Greased, Belt and Filter Checked: (Y) / N
B-3334	✓	3.98	138	↓	Greased, Belt and Filter Checked: (Y) / N

C. REACTOR VENTILATION

Item	Status	Comments
Vapor Carbon Contactor	✓	On-line: 2/10/18
Reactor Vent Blower	✓	
Reactor Vent Booster	✓	
VTP-3350	✓	PID Reading: 65.7 PPM Fresh sample [illegible] batch
VTP-3360	✓	PID Reading: 28.2 PPM today

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

D. TANKS / REACTORS / SUMPS / CONTAINMENTS / PIPING / Chiller

Item	Status	Comments
T-510 Post HMR-30 Mixing Tank	✓ Level: 62 %	Last Cleaning (As needed, if 2" of solids accumulate): 7/14/21
T-530 LFG Condensate / NTES Tank	✓ Level: 41 %	
T-530 Mixer	✓	
LFG Condensate Conveyance Line	✓	Last Pressure Test: 7-19-21 Next: 7-2022 (Annual at a minimum or if flow drops off)
T-540/541 MW38 Tanks	Lvls: 85 % & 87%	
T-540/541 Mixers	✓	
Chiller	OFFLINE	Chiller Coolant Lvl: ~NA " Below full mark
Chiller Cooling Fins (as needed)	OFFLINE	Last Cleaning: 4/20/18 (unit on Standby)
Secondary Containments	✓	Heat Trace: On OK / (Off Warm out)
Feed Piping to Sedimentation Tank	✓	Last Back Flushing (Quarterly): 5-12-22
T-3310 Sedimentation Tank	Visual Level: ok	Last Cleaning (As Needed, use TSS info to determine): 9/2021
T-3320 Blend Tank	✓ Level: 71 %	Last Cleaning (Semi Annual): 9-10-21
T-3331 Reactor No. 1	✓	Digital Displays: (GOOD) / Needs Attn
T-3332 Reactor No. 2	✓	Digital Displays: (GOOD) / Needs Attn
T-3333 Reactor No. 3	✓	Digital Displays: (GOOD) / Needs Attn
T-3334 Settling Tank	✓	Last Cleaning (Semi Annual): 9-10-21
P-3334 Biosolids Pump	✓	
T-3340 Overflow Tank	✓ Level: 30 %	
Recycle Valve to Blend Tank	✓	3.98 gpm @ 1213
Building Containment Sump	✓	Last Alarm Test Date (Monthly): 6-23-22

E. CHEMICAL FEED SYSTEM

Item	Status	Comments
Phosphorous Supply	✓	Bags: ~8.5 Gallons: ~ 80
Phosphorous Pump (P-2221)	✓	
Caustic Supply	✓	~ 120 Gallons
Caustic Pump (P-2211)	SB	Currently in acid addition mode
Acid Supply	✓	~ 40 Gallons
Acid Pump (P-2211)	✓	
Caustic Pump (P-2231)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): 6-16-22
Caustic Pump (P-2232)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly): ↓
Caustic Pump (P-2233)	✓ Leaks: Y / (N)	Last tubing tip cleaning (monthly):

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

F. pH Probes

pH Probe Location	Calibration Date (Monthly)	Comments
pH-3320 Blend Tank	6-23-22	Strayed off Clean today
pH-3331 Reactor 1	↓	↓
pH-3332 Reactor 2		
pH-3333 Reactor 3		

G. FILTER SYSTEM

Item	Status	Comments
BF-3340 a/b Status	✓	
Automatic Backwash	Cycle Count: 19	~~20/17 → 2.8gpm~~ Reset
BF-3340 a/b Differential Pressure	PSI: 3	20/17 → 2.8gpm
75-micron Bags Last Cleaning	Date: 11-14-19	
75-micron Bags Last Inspection	Date: ↓	
75-micron Bags Last Changed	Date:	
GACF-3340 Status	✓	
GACF-3340 Differential Pressure	PSI: 11	17/6 → 2.8gpm
Last Backwash Performed	Date: 4-29-22	

H. ELECTRICAL AND INSTRUMENTATION

Item	Status	Comments
"BIO" Backup Generator	✓	Block Heater: On OK / (Off Warm Out)
Electrical Surge Suppressor	✓	
Motor Control Center	✓	
PLC	✓	UPS @ 130 min / 8 Events
HMI's	✓	
BTS Process KWH Meter	1902256 KWH	Time: 1237
Building#2 KWH Meter	5444513 KWH	Time: 1237

I. GAS CHROMATOGRAPHY

Item	Status	Comments
GC Operational	✓	GC # checking BIO: #2
Alarms Enabled	✓	cc-calibration + maint 6-29-22
GC Influent Filters	✓	

TABLE 3.19.2
STANDARD OPERATIONS CHECKLIST
BIOLOGICAL TREATMENT SYSTEM

WEEKLY OPERATIONS AND MAINTENANCE INSPECTION CHECKLIST

Inspection Date: Thursday, June 30, 2022

Inspection Performed by: Mike Gelwick

J. TOTALIZERS

Item	Readings (gallons)	Comments
FT-3321 Feed to Reactor 1	6828110	
FT-3324 Feed Spare	559265	
FT-3322 Feed to Reactor 2	11899615	
FT-3323 Feed to Reactor 3	1070773	
FT-3301 T-510 to BIO	52380367	
FT-3341 BIO Effluent	67461916	
FT-3342 BIO Recycle	56995546	

K. SAFETY

Item	Status	Comments
Building #2 Fire Extinguishers	✓	Inspection date: 6-27-22
Building #2 Eye Wash/Shower	✓	Checked and Flushed- All OK: (Y) / N

L. OTHER COMMENTS:

LOWRY WTP OPERATIONS LOG

Date: Sunday, 1/2/22

1230	Plant operations good.
1250	Decant T-351 to bottom valve. Wet well activated. Water is clear, no color.
	Check TP-130 for oil globules: none observed. Water is very clear with yellow-green tint.
	Clean pH-315 probe with acid solutions. Check HMR-30 for oil or sheen: none observed. Spray down weir.
1310	Added 3.5 # TSP and 35 gal water to phosphorus tank.
	All Blowers ok
1430	Both GCs operational within limits.
1500	Plant operations good.
@ 0650	Check plant remotely - All okay.
@ 2030	Check plant remotely - All okay.
@ 1/1/22	0950 check plant remotely - All okay.
@ 1/1/22	2130 Check plant remotely - All okay.

Influent Sources and Flow Rates: @ 1245
NBBW – 6.4 gpm
N. END ON-SITE – 11.9 gpm
N. END OFF-SITE – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.52 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 1.0 gpm
T-540/541 – 0.01 gpm
MW113 Area – 1.9 gpm

OPERATOR(S) Manuela Seewald

LOWRY WTP OPERATIONS LOG

Date: **Monday, January 03, 2022**

Time:	
0535	Plant operations good. Prepare for quarterly MP-001 plant effluent sampling. Rinse dedicated composite containers, add preservitive, program and calibrate volume per sample on autosamplers.
0645	Restart Filter press on T-351
0740	Blowdown operations good.
0800	Mike starting both auto samplers for 24hr Flow paced sampling. Effluent totalizer reading 248,826,394 gallons, effluent flowrate @ 31.5 gpm and effluent tank pH reading 6.81 @ 15.7°c.
1050	-Begin QTRly Early warning sampling. TOTAL Molybdenum, VOC's + Low level 1,4 Dioxane from each port.
1140	-Clean pH-315 probe w/ Acid solution. Check the HMI-30 for oil or sheen: None observed. Spray down weir.
	-Check TP-130 for oil globules: None observed. water is very clear w/ yellow-green hue.
1150	-Begin flush of MP-001 sample port and check for residual chlorine: None detected. ok to use HCl preserved vials.
1200	-Collect 1ST set of Time paced grab samples @ MP-001 sample port for Low-Level 1,4-Dioxane, VOC's and Nonylphenols. Place samples in Fridge.
1217	-IX System performance HACH testing with Lab split samples AFTER 1,025,057 gal treated; TP-183 = 180 ug/L; TP-174A = 290 ug/L; TP-173A = 4600 ug/L; TP-170 = 5600 ug/L. Running @ 1.9 gpm.
1550	-Begin flush of MP001 sample port and check for residual chlorine: None detected.
1600	-Collect 2nd set of time paced grab samples @ MP-001 sample port for Low-Level 1,4-Dioxane, VOC's + Nonylphenols. Place samples in fridge with others.
1605	-STOP Filter Press. Not quite full yet. Plants operations Good. Auto samplers on track.
1945	Begin MP-001 port flush and check for residual chlorine - none detected.
2000	Collect 3rd set of time paced grab samples for low-level 1,4-Dioxane, VOC's; Nonylphenols. Place samples in fridge.
2345	Begin MP-001 port flush and check for residual chlorine - none detected.
0000	Collect 4th set of time paced grab samples for low level 1,4-Dioxane, VOC's; Nonylphenols. Place samples in fridge.

Influent Sources and Flow Rates: @ **0910**

- NBBW – **6.4** gpm
- North End On Site- **11.9** gpm
- North End Off-Site – **8.5** gpm
- RWST – **0.6** gpm
- NTES – **0.5** gpm(10R only)
- MW38 T-540/541 – **0.3** gpm(Source well and 38 pumping wells mix)
- MW38 N & S– **1.9** gpm
- COND/NTES T-530- **0.2** gpm(6am-1pm daily)
- MW113 Area – **1.9** gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, January 04, 2022**

Time:	
0345	- Plants operations Good. Auto Samplers OK. Restart Filterpress on STAGE 4.
0350	- Begin flush of MP-001 sample port and check for residual chlorine: None detected
0400	- Collect 5th set of time paced grab samples @ MP-001 sample port for Low-Level 1,4-Dioxane, VOCs + NONYLphenols. Place samples in Fridge.
0415	- Working on weekly BTS sampling and START Efficiency checks. Collect TP-3340 GC/Lab SPLIT sample.
0455	- Collect TP-730 GC/Lab Split sample and TP-710 and TP-740 weekly Low-Level 1,4-Dioxane samples.
0515	- START Prep for BTS weekly Field Readings.
0740	Blowdown operations good.
0800	Shutdown auto samplers after 24hours and 46,288 gallons discharge. Effluent totalizer reading 248,872,682 gallons - Mike collecting 6th set of time paced grab samples after a 10 min Flush of MP-001 and check for residual ~~chlori~~ chlorine - none detected. Slowly stir both composite containers and check pH's. Sodium Thiosulfate preserved @ 7.51 (18,000 ml of sample) and Nitric preserved @ 1.83 (26,000 mls collected) both are very clear, no color. Fill lab bottles from composites and pack all for courier / shipment to labs.
0820	Filter-press full.
0840	Tom sending in manual level of the NBBW sump for level transducer calibration check. DTW reading 27.00' = GWE 5685.55'. HMI reading 5685.50', NO calibration needed at this time.
1315	Begin flushing fines from virgin GAC units using potable water.
1512	- Clean pH-315 probe w/ Acid solution. Check the HMX 30 for oil or Sheen: None observed. Spray down wall.
	- Check TP-130 for oil globules: None observed. water is very clear w/ yellow green tint.
1520	- Plants operations Good.

Influent Sources and Flow Rates: @ 0345
NBBW – 6.4 gpm
North End On Site- 11.9 gpm
North End Off-Site – 8.4 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.0 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, January 05, 2022**

Time:	
0550	Plant operations good. Start on weekly GC maintenance and calibrations.
0730	Blowdown operations good.
1120	- Decant T-351 from bottom valve. Wet well activated. Water is clear no odor.
	- Clean pH-315 probe w/ Acid solution. Check the Hach 30 for oil or sheen: None observed. Sample down weir.
	- Check TP-430 for oil globules: None observed. Water is very clear w/ yellow-green tint
1230	Backup WTP data to DVD & Flash drive. Daily OneDrive backup working well.
1250	Continue on flushing fines from virgin GAC with potable water. (fines sent to T-351)
1600	- GAC vessels purged of Carbon fines. Ready for install.
1615	- Plants operations closed.

Influent Sources and Flow Rates: @0750
NBBW – 6.5 gpm
North End On Site- 11.9 gpm
North End Off-Site – 9.7 gpm
RWST – 0.6gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick / Chris Carlson**

~2.0" light snow overnight below 0 temps

LOWRY WTP OPERATIONS LOG

Date: **Thursday, January 06, 2022**

Time:	
0645	- Plants operations Good. Go to check other site systems
0700	- Automatic blowdown operations Good.
0830	- Decant T-351 to bottom valve. wetwell activated. water is clear no color. Increase T-352 to 0.80 gpm to help pump Extra water from
	- Clean pH-315 probe w/Acid solution. Check the HMI 30 For chlorsheen: None observed. Spray down weir.
	- Check TP-130 for oil globules: None observed. water is very clear w/ yellow-green tint. Work thru on weekly plants systems Checks and calibrations today.
0900	- Refill polymer tank w/ 2 cups of NALCO polymer and 200 gal of potable water. Drain down carbon vessel we flushed Fines from yesterday, Into the wet well.
1130	- Refill BTS phosphorus tank w/ 6# of TSP and 60 gal of potable water.
1325	- Suspend plant Discharge to calibrate pH-740 probe to 4+10 pH STD's
1333	- Resume normal Discharge. continue with other pH probes calibrations to 4+10 pH STD's → pH-113, 670, 310, 315 & 365
1420	- Plants weekly systems checks and calibrations complete.
1500	- Plants operations Closed.

Carbon Fines

Influent Sources and Flow Rates: @ 0845
NBBW – 6.4 gpm
North End On Site- 11.9 gpm
North End Off-Site – 8.5 gpm
RWST – 0.6 gpm
NTES – 0.53 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick / ~~Chris Carlson~~**

LOWRY WTP OPERATIONS LOG

Date: **Friday, January 07, 2022**

Time:	
0745	- Plants operations Good. Coming out of Automatic Blowdown operations Good.
0830	- Decant T-351 to bottom valve. Wet well activated. water is clear no color. Reduce P-352 backdown to 0.50 gpm.
	- Clean pH-315 probe w/Acid solution. Check the HMR30 for oil or sheen: none observed. Spray down weir.
	- Check TP-130 for oil globules; None observed. Water is very clear w/ yellow-green tint.
0910	- Work on Filter Press Empty.
1045	- START working on Rebuilding Air side of 2" diaphram pump
1300	- TOM working on washout of filter press
1315	- Plants operations Good.

Influent Sources and Flow Rates: @ 0800
NBBW – 6.4 gpm
North End On Site- 11.9 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.54 gpm(10R only)
MW38 T-540/541 – 0.32 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.21 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: Sunday, January 09, 2022

0845	- Plant operations good
0955	- Decant T-351 from bottom valve. Wet well activated. Water is very clear no color
	- Check TP-130 for oil globules: None observed Water is very clear w/ yellow tint
	- clean pH-315 probe w/ Acid solution. Check HMR30 for oil or sheens: none observed : sprayed down weir
1000	- Filled Phosphorus tank w/ 55 gallons / 5.5 LBs TSP
1030	- Plant operations good
1/8/22 0800	- Remote check Plant - Plant operations Ok
0920	- Increase RWSTS TO 1.30 gpm. N. MW38 pumping well reached its cut off point. (Remotely)
2100	- Log in Remotely, Allok
1-9-22 - Sunday	
0750	- Remote log in. Allok.
2000	- Remote Log in. Allok.

Influent Sources and Flow Rates: @0845
NBBW – 6.3 gpm
N. END ON-SITE – 11.8 gpm
N. END OFF-SITE – 7.9 gpm
RWST – 1.3 gpm
NTES – 0.51 gpm
COND/NTES T-530 – 0.20 gpm (6AM–1PM daily)
MW38 – 1.0 gpm
T-540/541 – 0.30 gpm
MW113 Area – 1.9 gpm

OPERATOR(S) Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: **Monday, January 10, 2022**

Time: 0620	Plant operations good. Prepare for Lead ? Lag GAC change out with virgin bituminous
↓	acid washed GAC. Scan ? Upload December SOP checklist for PCR.
0715	Reboot HMIFTVIEW1 to reset temporary file space, online 0717.
0740	Plant operations good. Work on adjusting maximum pump speed setpoint at N.End onsite
	well MW170-EW1 (pump beginning to wear out, level in well was slowly rising
	at 11.8gpm). 0810 flow rate up to 13.0gpm, Note: this rate is slightly
	Faster than what the well can produce and level is going back down
	Slowly.
0816	Shutdown plant and begin draining lead ? lag gac units to the wet
	well.
	Change both lead ? lag GAC units with one's with new virgin acid washed bituminous
↓	GAC. Note: Units that came off were moved to the hazardous waste storage area.
1217	Restart plant - work on fixing minor drips on GAC connections to process.
	Note: Units comming offline will need to drain into the plant wet well for a minimum
↓	of 72 hours per O ? M manual before GAC can be removed and placed in super-sacks.
1500	Decant T-351 bottom valve, wet well activated. Water is clear, no color. Clean the HMR-30
	weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules -
↓	none observed & water is clear, light yellow.
1515	Plant operations good. End.

Influent Sources and Flow Rates: 0635
NBBW – 6.3GPM
N. END ON-SITE – 11.8GPM
N. END OFF-SITE – 8.7GPM
RWST – 1.3GPM
NTES – 0.52GPM
COND/NTES T-530 – 0.2GPM (6AM-1PM)
MW38 – 1.9GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.9GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, January 11, 2022**

Time: 0550	Plant operations good. Start on weekly efficiency and process performance sampling.
0730	Blowdown operations good - Perform weekly ION Exchange performance readings / lab sampling @ after 1,046,192 gallons treated. Flow rate at 2.0 gpm (still catching up from yesterdays stoppage). TP-183 @ 210 ug/L; TP-174A @ 360 ug/L; TP-173A @ 5,500 ug/L;
↓	TP-170 @ 5,700 ug/L.
0915	Perform weekly BTS sampling. Then pack samples on ice.
1130	Increase N. End ONSITE flow rate by turning up the extraction rate at MW170-EW-1
↓	(still catching up from yesterdays stoppage). Rate now at 14.0 gpm
1330	Clean the HMR-30 water and pH probe - No oil or sheen observed in the HMR-30. Check TP-130
↓	for oil globules - None observed. Water is very clear, light yellow.
↓	Work on weekly BTS field readings
1620	Field readings completed
1630	Plant operations good. End.

Influent Sources and Flow Rates: 0640
NBBW – 6.3GPM
N. END ON-SITE – 13.1GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.51GPM
COND/NTES T-530 – 0.2GPM (6AM-1PM)
MW38 – 1.9GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 2.0GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, January 12, 2022**

Time: 0550	Plant operations good. Start on weekly GC maintenance and calibrations.
0643	Stop MW38N's extraction in preperation for source well batch extraction.
0650	Decant T-351 bottom valve, wet well activated. Water is clear, NO color. Clean the HMR-30 weir and pH probe - NO oil or sheen observed in the HMR-30. Check TP-130 for oil globules - NONE observed. Water is very clear, light yellow.
0700	Start filter press on T-351 (in stage 1).
0712	Set RWST influent to be 2.6 gpm after blowdown.
0735	Blowdown operations good. Switch MW38 influent from direct HMR-30 influent to T-540/541
0800	Start up MW38 source well batch extraction to T-540/541.
0945	Backup plant data to Flash | DVD. Daily OneDrive backup working well.
1040	Stop Ion Exchange process, total volume treated 1,049,314 gallons. Take column 2 offline and ~~add~~ take columns 6 & 7 out of standby. Note: Also taking sample port TP-173A offline and taking sample port TP-176A ~~TP-177A~~ @ out of standby.
1100	Restart Ion Exchange process.
1300	Filter press full.
1525	Plant operations good. T-540/541 at 44%, will leave source well batch extraction running overnight.

@

Influent Sources and Flow Rates: 0640
NBBW – 6.3GPM
N. END ON-SITE – 13.7GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.51GPM
COND/NTES T-530 – 0.2GPM (6AM-1PM)
MW38 – 1.9GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 2.0GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Thursday, January 13, 2022**

Time:	
0550	Plant operations good. Start on weekly systems checks and calibrations.
0740	Blowdown operations good. Note: RWST levels are getting low, may need to stop UV-OX and run BTS later while finishing up with the MW38 source well batch extraction. (Influents to the HMR-30 will be low if RWST go to low and feed stops while MW38 N&S wells are off during source well batch extraction)
0837	RWST low (~10%) influent from 4 hrs off. Will let T-510 cycle the UV-OX/BTS into recycle while it refills, for now.
0915	Refill phosphorous tank with 60 gallons potable water + 6 lbs TSP.
0845	Tom - No decant on T-351 (below bottom valve). Checked TP-130 for oil globules - none. Water is clear with yellow tint. Cleaned pH-315 with acid solution and checked HMR-30 for oil or sheen - none observed. Sprayed down weir.
1010	Shutdown MW38 source well batch extraction (T-540/541 @ 81')
1030	Reduce T-540/541 to BTS from 0.3gpm to 0.2gpm while fresh MW38 source well water present.
1052	Start MW38 N&S extraction to T-540/541, to displace source well water in the pipeline to T-540/541.
1300	Suspend discharge for pH-7.40 calibration.
1308	pH-7.0 calibration completed - resume discharge. Continue on pH calibrations at pH-1.13, 3.65, 3.10, 3.15 & 6.70
1341	pH calibration completed - All okay.
1545	Plant operations good.
1720	Remotely switch MW38 N&S extraction to RWSTs after 720 gallon pumped to displace source well water in the conveyance piping to T-540/541. Plant operations good.

Influent Sources and Flow Rates: 0640
NBBW – 6.3GPM
N. END ON-SITE – 13.3GPM
N. END OFF-SITE – 8.7GPM
RWST – 2.6GPM
NTES – 0.51GPM
COND/NTES T-530 – 0.2GPM (6AM-1PM)
MW38 – 5.0GPM(source well to T540/541)
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.9GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Tom Gilbert

~1/2" snow P.M.

LOWRY WTP OPERATIONS LOG

Date: Friday, January 14, 2022

0730	- Plant operations good. Blowdown operations good.
1100	- Decant T-351 from bottom valve - wet well activated; water is very clear
↓	- Cleaned ph-315 probe w/ acid solution and checked HMR-30 for oil or sheens: None observed; Sprayed weir
	- Checked TP-130 for oil globules - none observed Water is very clear w/ yellow tint
1330	- Plant operations good
(W) 0645	Check plant remotely - All okay, RWST's have refilled to 15% and P-121 has restarted at 2.6 gpm.

Influent Sources and Flow Rates: @ 1045
NBBW – 6.3 gpm
N. END ON-SITE – 13.1 gpm
N. END OFF-SITE – 8.5 gpm
RWST – 2.6 gpm
NTES – 0.51 gpm
COND/NTES T-530 – 0.19 gpm (6AM–1PM daily)
MW38 – 1.8 gpm
T-540/541 – 0.20 gpm
MW113 Area – 1.9 gpm

OPERATOR(S) Tom Gilbert / Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Saturday, January 15, 2022

0700	On site for weekend systems checks. Plant operations good. Dropping into blowdown.
↓	Refill phosphorous tank with 30 gallon potable water + 3lbs TSP.
0748	Blowdown operations good. Lower RWST influent from 2.6 gpm to 0.6 gpm and switch MW38 N&S extraction from RWSTs to direct HMR-30 influent. Also increase T-540/541 flow rate from 0.2 gpm to 0.3 gpm (results of TP-3350 for 1,4D & 1,2DCA good - BTS has adjusted to fresh source well water entering the system). Clean the HMR-30 weir and pH probe - NO oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed. Water is very clear, light yellow.
↓	
1100	Plant operations good. Measure 4G signals near plant for possible new internet provider options. Verizon 4GLTE 3bars, 33.3 Mbps download, 2.44 Mbps upload; 21ms Ping & 6ms Jitter, AT&T 4GLFE 3bars, 16.4 Mbps download, 2.14 mbps upload, 44ms Ping & 6 ms Jitter. - Send information to Easton along with physical address of the plant.
1/16/22 0212	Receive P-3322 strainer warning alarm - Remotely acknowledge alarm - CV of pump came up abruptly then went back down to normal (lost prime or bio solids temporary clogged pump but CV back to normal. Plant operations good.
↓	
1040	Check plant remotely - All okay.
1730	Check plant remotely - All okay.

Influent Sources and Flow Rates: @ 0750
- NBBW – 6.3 gpm
- N. END ON-SITE – 13.0 gpm
- N. END OFF-SITE – 8.5 gpm
- RWST – 0.6 gpm
- NTES – 0.49 gpm
- COND/NTES T-530 – 0.2 gpm (6AM–1PM daily)
- MW38 – 2.1 gpm
- T-540/541 – 0.3 gpm
- MW113 Area – 1.9 gpm

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, January 17, 2022**

Time: 0630	Plant operations good.
0740	Blowdown operations good. - work with Mike to add ~50gallons HCL to mail box supply.
1005	- Decant T-351 to bottom valve. west well activated. Water IS Clear NO color.
	- Clean pH-315 probe w/ Acid solution. Check the Hach 30 for oil or sheen: None observed. Spray down area.
	- Check TP-130 for oil globules: None observed. water IS clear w/ yellow-green tint.
1100	- Checking POTW Air Releifs and Vaults/Leak Detections and POTW Discharge point MH 175-078: All ok NO leaks observed / NO ISSUES observed.
1104	- TOM calling in Level for MW38-1028N-256E for QTrly Transducer calibration check. DTW → 51.88 - 5719.92 MSL HMI reading 5719.76 msl / -0.16' difference. NO calibration needed at this time.
1530	- Plant IS operations Good.

Influent Sources and Flow Rates: 0930
NBBW – 6.3GPM
N. END ON-SITE – 12.8GPM
N. END OFF-SITE – 8.2GPM
RWST – 0.6GPM
NTES – 0.51GPM
COND/NTES T-530 – 0.2GPM (6AM-1PM)
MW38 – 2.0GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.9GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Mike Gelwick

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, January 18, 2022**

Time:	
0500	- Plants operations Good
0555	- collect weekly TP-780 GC/BAR split samples / START Efficiency checks. collect weekly TP-740 + TP-710 Low-Level 1,4-Dioxane samples.
0715	Blowdown operations good.
0810	- Decant T-351 TO Bottom valve. wet well activated. water IS clear NO color - Clean pH-315 probe w/ Acid solution. Check the Hoses FOR oil or sheen: None observed. Spray down weir. - check TP-130 for oil globules: None observed. water IS Clear w/ Light yellow-green tint.
0845	E.T. Tech Joel Shaw on site to transfer GAC INTO super sacks (4). Mike working on BTS sampling and field readings today
0920	- UC Denver on site for tour and Media solids sample collection from BTS Reactors
1000	- IX System performance HACH TESTING WITH Lab split sampling After 1,065,515 gal treated: TP-183 ≈ 130 ug/L; TP-175A ≈ 150 ug/L; TP-174A ≈ 270 ug/L; TP-170 ≈ 5800 ug/L.
0938	- TOM calling In Level from MW38-1703-140W South pumping well FOR QTRly TRANSducer calibration check: ΔTW ≈ 71.63 = 5735.13 MSL HMI Reading 5734.99 MSL -0.14 difference. NO calibration needed at THIS time.
1435	- Refill BTS phosphorus TANK w/ 5 # OF TSP and 50 gal of potable water.
1700	ET. done with GAC transfer to super sacks - plant operations good.

Influent Sources and Flow Rates: @ 0540
NBBW – 6.3 gpm
North End On Site- 12.7 gpm
North End Off-Site – 8.5 gpm
RWST – 0.60 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.80 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, January 19, 2022**

Time:	
0600	Plant operations good. Start on weekly GC maintenance and calibrations.
0800	- Work on Getting the Spent carbon Super SACKS topped off and sealed + Labeled for Shipment.
1050	- Accent T-351 TO bottom valve. Wet well extinguished. Water ES clear No color.
	- Clean pH-315 probe w/ Acid Solution. Check the HMI 30 Foam on/off on Steam: None observed. Spray Down worn
	- Check TP-130 for oil globules: None observed. Water ES clear w/ Light yellow-green tint.
1238	Manuela & Tom sounding in manual levels in the N.TOE area for quarterly transducer calibration
↓	check. MPZ-12 DTWC 24.05' = GWE 5739.04'. HMI reading 5738.98 - No calibration Needed
	at this time.
1246	NTES-180W DTW @ 35.81' = GWE 5729.82'. HMI reading 5729.91' - No calibration needed
↓	at this time.
1322	NTES SUMP DTW @ 28.68' = GWE 5734.15'. HMI reading 5734.16' - No calibration need at this time
1341	MPZ-10R DTWC 33.34' = GWE 5729.31. HMI reading 5729.13'. - No calibration needed at this time.
1350	MPZ-11 DTWC 32.12' = GWE 5734.31'. HMI reading 5734.39'. No calibration needed at this time.
1530	- Plants operations Good.

Influent Sources and Flow Rates: @ 1065

NBBW – 6.3 gpm
North End On Site- 12.6 gpm
North End Off-Site – 8.2 gpm
RWST – 0.6 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.50 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, January 20, 2022**

Time:	
0600	Plant operations good. Setup for PDU backwash.
0705	PDU backwashed, Δ pressure improved from 6psi to 1psi.
0900	- Decmt T-351 to bottom valves wet well actuated. water is clear no color
	- Clean pH-315 probe w/ Acid solution. Check the Hond 30 for oil or sheen: None observed. Spray down wcm.
	- Check TP-130 for oil globules: None observed. water is clear w/ light yellow-green tint
	- working on weekly plants systems checks and calibrations today
1332	- Suspend plant discharge to calibrate pH-740 probe to 4+10 pH STDs
1340	- Resume normal discharge. Continue with other WTP pH probes calibrations to 4+10 pH STDs → pH-113, 670, 310, 315 + 365
1420	- Weekly plants systems checks and calibrations complete.
1605	- Plant operations Good.

Influent Sources and Flow Rates: @ 0810
NBBW – 6.3 gpm
North End On Site- 12.5 gpm
North End Off-Site – 8.8 gpm
RWST – 0.6 gpm
NTES – 0.53 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, January 21, 2022**

Time:	
0725	- Plants operations Good. Automatic blowdown operations Good.
0830	- Decant T-351 to bottom valve, wetwell inspected. water is clear no color.
	- Clean AIT-315 probe w/ Acid solution. Check the Humco for oil or sheen: None observed. Spray down weir.
	- Check TP-130 for oil globules: None observed. water is clear w/ yellow green tint.
1025	- Place BTS In to Maint. Hold to Flush Reactors Feed piping.
1055	- BTS out of Hold. Alloc. Pumps CV's + pressures back to Normal Alloc.
1105	- Refill BTS phosphorus TANK w/ 4.5 lbs of TSP and 45 gal of potable water.
1305	- Plants operations Good.

Influent Sources and Flow Rates: @ 0742
NBBW – 6.3 gpm
North End On Site- 12.5 gpm
North End Off-Site – 8.9 gpm
RWST – 0.6 gpm
NTES – 0.53 gpm(10R only)
MW38 T-540/541 – 0.19 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.9 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: SATURDAY, JANUARY 22, 2022

0650	- Plants operations Good
0700	- Automatic blowdown operations Good. Go to check other site systems
0805	- Reboot HMI FTVIEW 1 to reset internal memory.
0810	- HMI FTVIEW 1 BACK ON line
0813	- Reboot HMI 2 to reset Internal memory
0820	- HMI 2 BACK ON line.
0830	- Decant T-351 to bottom valve. wet well activated. water IS clear NO color
	- Clean pH-315 probe w/Acid solution. Check the HMI 30 for oil or sheen: None observed. Spray down wet well.
	- Check TP-130 for oil globules: None observed. water IS clear w/ yellow-green tint.
1000	- Plants operations Good
2100	- Remote log in Allok.
Sunday, JANUARY 23, 2022	
0830	- Remote Log in Allok
2145	- Remote Log in allok.

Influent Sources and Flow Rates: @ 0850
NBBW – 6.3 gpm
N. END ON-SITE – 12.5 gpm
N. END OFF-SITE – 8.41 gpm
RWST – 0.6 gpm
NTES – 0.53 gpm
COND/NTES T-530 – 0.18 gpm (6AM–1PM daily)
MW38 – 2.0 gpm
T-540/541 – 0.31 gpm
MW113 Area – 1.9 gpm

OPERATOR(S) Mike Gaeluck

LOWRY WTP OPERATIONS LOG

Date: **Monday, January 24, 2022**

Time:	
0530	Plant operations good.
0845	- Decant T-351 to bottom valve. wet well activated. water is clear no color.
	- Clean pH-315 probe w/ Acid solution. Check TK-130 for oil or sheen: None observed. Spray down weir.
	- Check TK-130 for oil globules: None observed. water is clear w/ yellow green tint.
	- Refill polymer tank w/ 2 cups of NALCO polymer and 200 gal of potable water. Clean S. Bitt glass
1100	- 2" Diaphram pump P-381 Filterpress sludge pump Rebuilt and back on line. New o-rings, BALLS, BALL seats + Diaphreams on Air + Fluid sides.
1230	- Work on Emptying out Filterpress.
1425	- Filterpress Empty needs washout.
1500	- Plant operations Good

Influent Sources and Flow Rates: @ 0955
NBBW – 6.3 gpm
North End On Site- 12.4 gpm
North End Off-Site – 8.4 gpm
RWST – 0.6 gpm
NTES – 0.54 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

~3" snow Today 0.1" in gauge after melting

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, January 25, 2022**

Time:	
0450	- Plants operations Good. Prepare for TP-730, 740 + 710 sampling
0530	- Collect TP-730 weekly GC/CAB split sample and Begin weekly Efficiency checks. Collect TP-710 + TP-740 weekly Low Level 1,4-Dioxane samples.
0840	- Decant T-351 to bottom valve. Wet well activated. water is clear No color - Clean pH-315 probe w/ Acid solution. Check the HMR 30 for oil or sheen: None observed Spray down weir. - Check TP-130 for oil globules: None observed. water is Clear w/ light yellow-green tint.
0845	- Notice MW38N. pumping well has reached its cut off point around 8AM. Increase RWSTS to 1.3 gpm to supplement Reduction in Flow to the HMR30 to Aid in T-310 tank stabilization. - working on BTS weekly sampling and field readings today.
1000	- IX system performance HACH testing w/ weekly Lab split sampling AFTER 1,084,186 gal treated: TP-183 = 210 ug/L; TP-175A = 310 ug/L; TP-174A = 610 ug/L; TP-170 = 5800 ug/L. Note: System has Dropped in Flow to 1.8 gpm consistantly since Monday morning 1-24-22.
1330	- Refill BTS phosphorus tank w/ 6# of TSP and 60 gal of potable water.
1518	- Receive UV-OX GC fault for High 1,4-Dioxane level. Level = 127.6 ppb. UV-OX into Recycle ok. - Do some investigating and can not find an obvious reason for the issue. will leave the UV-OX off for tonight and Divert mw38 and N66w to the RWSTS for the night as well. NOTE: All Efficiency checks were normal today.
1620	- Plants operations ok.
1610	Remotely increase RWST influent from 2.5 gpm to 3.5 gpm for the night (will take advange of the UV-OX being off to test high influent rates from the HMR-30 to BTS.

Influent Sources and Flow Rates: @ 0545
NBBW – 6.3 gpm
North End On Site- 12.4 gpm
North End Off-Site – 8.3 gpm
RWST – 0.6 gpm
NTES – 0.53 gpm(10R only)
MW38 T-540/541 – 0.29 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530-Q20 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick** / Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, January 26, 2022**

Time:	
0545	Plant operations good. Start on weekly GC maintenance & calibrations.
0637	GC2 TP-3350 result good at 3.4 ug/L for 1,4-Dioxane after running with a slightly higher influent rate from the HMR-30 overnight of 3.5 gpm. Increase RWST influent from 3.5 gpm to 4.5 gpm. Observe the BTS effluent pump running at a high CV%. with the higher flow - Backwash GACF-3340 while plant in blowdown. Flow/pressure much improved after backwash. Switch R3 feed from P-3323 to P-3324.
0800	Blowdown operations good. Will continue to test BTS at higher flows while UV-OX is off. Observe RWST levels are indicating the tanks are having trouble flowing between each other T-101 @ 4% while T-102 @ 19%. Mike to clean basket strainers today to improve that.
0850	- Place BTS into maint. Hold and stop RWBTS pump to clean out RWBTS basket strainers.
0930	BTS out of maintenance hold. RWBTS pump back to auto, basket strainers cleaned in RWBTS.
1015	- Decant T-351 to bottom valve, wet well activated. water is clear NO color. - Clean pH-365 probe w/ acid solution. Check the HMR-30 for oil or sheen: None observed. Spray down well. - Check TP-430 for oil globules: None observed. water is clear w/ light yellow-green tint.
	Setup to test run UV-OX with discharge of the UV-OX, post PDU being returned to the RWST's.
1110	Start UV-OX, warming up. 1120 Discharging to RWST. Note: FT-670 Total reading 21,065,600 gallons. Will allow UV-OX to operate like this for a while before taking GC sample of TP-730. Increase RWST influent from 4.5 gpm to 5.5 gpm to keep the high flow testing in the BTS going.
1150	Peroxide dosing working well TP-730 0 ppm, TP-720 20 ppm & Pre UV-OX 100 ppm.
1245	GC maintenance and calibrations completed. Run test of TP-730 on GC1.
1300	Backup WTP data to Flash drive and DVD. Daily OneDrive backup working well. Mike washing out filter press.
1425	GC1 TP730 Result normal. 1,4-Dioxane at < 1 ug/L. Yesterday rise in 1,4-Dioxane (continued)

Influent Sources and Flow Rates: @ 0825
- NBBW – 6.3 gpm (to RWST)
- North End On Site- 12.4 gpm
- North End Off-Site – 8.6 gpm
- RWST – 4.5 gpm
- NTES – 0.54 gpm(10R only)
- MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
- MW38 N & S– 0.9 gpm (to RWST)
- COND/NTES T-530- 0.2 gpm(6am-1pm daily)
- MW113 Area – 1.6 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: Wednesday, January 26, 2022 (continued)

↓	possibly due to air in the peroxide feed line. Unit working normally now.
1449	Place UV-OX in recycle to switch its discharge from temporary testing flow to RWSTs
↓	to normal discharge to feed surge tank. FT-670 Totalizer @ 21,067,190. 1,590 gal. sent to RWSTs
1453	Resume normal discharge post PDV to feed surge tank and get MW38 P/S running to
↓	UMR-30 again. Start GCI on next TP-730 early.
1625	Plant operations good.

Influent Sources and Flow Rates: @
NBBW – gpm
N. END ON-SITE – gpm
N. END OFF-SITE – gpm
RWST – gpm
NTES – gpm
COND/NTES T-530 – 27 gpm (6AM–1PM daily)
MW38 – gpm
T-540/541 – gpm
MW113 Area – gpm

OPERATOR(S) Chris Carlson / Mike Gelwick

~3" snow today 0.1" in gauge.

LOWRY WTP OPERATIONS LOG

Date: **Thursday, January 27, 2022**

Time:	
0745	- Plants operations Good. Out of Automatic blowdown ok.
0850	- Prepare New pH STD's for calibrations. Calibrate Fisher multimeter for use during LEL-740 calibration to ensure 0% LEL in T-740 Ambient air.
	- working on weekly/monthly Plants System checks and calibrations today
0925	- Decant T-351 to Bottom valve. wet well activated. water is clear No color
	- Clean pH-315 probe w/ Acid solution. Check the Hach 30 for oil or sheen. None observed. Spray down wash.
	- Check TP-130 for oil globules: No one observed. water is clear w/ Light yellow-green tint.
1000	- START Main compressor oil moisture prevention process. Run for 2 hrs monthly at max speed.
1140	- Perform monthly BTS pH probes calibrations to New 4+10 pH STD's.
1236	- Calibrate WTP pH probes to New 4+10 pH STD's ⇒ pH-113, 670, 310, 315 + 365
1307	- Suspend Plant Discharge to calibrate pH-740 probe to New 4+10 pH STD's and LEL-740 sensor to 49% LEL.
1316	- Plant shut down for High LEL ⇒ 8% LEL during calibration of LEL-740. High LEL shut down operations Good.
1324	- RESTART Plants, Resume Normal Discharge.
1330	- weekly/monthly Plants Systems checks and calibrations complete.
1430	- Plants operations Good.

Influent Sources and Flow Rates: @ 0750
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.7 gpm
RWST – 1.0 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.83 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: Friday, January 28, 2022

0745	- Plant operations good.
1145	- Decant T-351 from bottom valve. Wet well activated. Water is clear, no color
	- Clean ph-315 probe with acid solution, check HMR30 for oil or sheens: none observed. Sprayed down weir
	- check TP-130 for oil globules: none observed. Water is very clear w/ yellow-green tint.
1500	- Fill phosphorus tank with 5.5 LBS | 55 gallons of water
1525	- Plant operations good.
@ 0700	Check plant remotely - note BCs taking a sample during blowdown. Stop GC's.
↓	because both UV-OX; BTS note discharging during blowdown.
0845	Restart GC's sampling.
@ 1515	Check plant operations remotely - All okay.

Influent Sources and Flow Rates: @ 1136
NBBW – 6.3 gpm
N. END ON-SITE – 12.4 gpm
N. END OFF-SITE – 8.9 gpm
RWST – 1.0 gpm
NTES – 0.52 gpm
COND/NTES T-530 – 0.19 gpm (6AM–1PM daily)
MW38 – 2.0 gpm
T-540/541 – 0.31 gpm
MW113 Area – 1.9 gpm

OPERATOR(S) Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: Saturday January 29 2022

1230	Operations of Plant good.
1330	Clean pH-315 probe w/ acid solution. Check HMR-30 for oil or sheen: none observed. Spray down weir. Check TP-130 for oil globules: none observed. Water is very clear with yellow/green tint. Decant T-351. Wet well activated. Water is clear, no color. Both GC's operational within limits All blowers okay. Phosphorus tank @ 82 gal.
1530	Plant operations good.
(W) 0735	Plant checked remotely - All okay. Blowdown operations good.
(W) 1900	Check plant remotely - All okay.
(W) 1/30/22 0655	Check plant operations remotely - All okay.
(W) 1600	Check plant operations remotely - All okay.

Influent Sources and Flow Rates: @ 1330
NBBW – 6.3 gpm
N. END ON-SITE – 12.4 gpm
N. END OFF-SITE – 8.6 gpm
RWST – 1.0 gpm
NTES – 0.52 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 2.0 gpm
T-540/541 – 0.3 gpm
MW113 Area – 1.8 gpm

OPERATOR(S) Manuela Seewald

LOWRY WTP OPERATIONS LOG

Date: **Monday, January 31, 2022**

Time:	
0635	Plant operations good-
0755	Plant operations good. RWST's @ 24%, reduce influent from RWST's from 1.0 gpm to 0.6 gpm
1130	- Decant T-351 to bottom valve. wetwell activated. water IS clear No color
	- Clean pH-315 probe w/ Acid solution. Check TPH-330 for oil or sheen: None observed. Spray down weir.
	- Check TP-430 For oil globules: None observed. water IS clear w/ yellow-green tint.
	- Work on Getting Auto samplers set up and calibrated. Triple rinse each dedicated composite container. Setting up to Resample Qtrly SVOC's - Hexachlorocyclopentadine + Benzidine. Will Also be collecting VOC grab Resamples from MW05I For Dichloro Fluoro methane, 1,2,3-Trichloro propane + O-Xylene tomorrow During monthly grabs. will Add preservatives JUST prior to START up.
	Add one full caustic tote to main Bay supply.
1415	- BTS IN TO maint Hold to flush Reactors Feed Lines
1430	- BTS BACK ONLINE. Work on setting Bottles Ready for Sampling START tomorrow.
1605	- Plants operations Good.

Influent Sources and Flow Rates: @ 0800
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, February 01, 2022**

Time:	
0430	- Plants operations Good.
0455	- Collect TP-730 GC/Lab split sample and begin Efficiency checks. Also collect weekly TP-710 + TP-740 Low Level 1,4-Dioxane sample.
0800	- START AUTO Samplers for MP-001 monthly permit sampling and QTRly SVOCs ReSample. TOTAL Effluent → 250/684/76 gal → 31.7 gpm → 7.03 SU → 15.3°C
0805	- IX System performance HACH testing w/ weekly Lab split samples AFTER 1102467 gal Treated: TP-183 → 220 ug/L; TP-175A → 230 ug/L; TP-174A → 400 ug/L; TP-170 → 5,900 ug/L. System currently Running → 1.85 gpm.
	- working on weekly BTS sampling today.
0845	- Decant T-351 to bottom valve. Wet well activated. water is clear no color.
	- Clean pH-315 probe w/ Acid solution. Check TIK Hand 30 for oil or sheen: None observed. Spray down well.
	- Check TPU30 for oil globules: None observed. water is clear w/ light yellow-green tint.
1000	- working on monthly Early warning sampling.
1145	- Begin Flush of mp-001 sample port and check for residual chlorine: None detected. Ok to use HCl preserved vials.
1200	- Collect 1st set of time paced grab samples → MP-001 sample port for Low-Level 1,4-Dioxane and QTRly VOC's ReSample for Dichlorodifluoromethane, 1,2,3-Trichloropropane + O-Xylene. Place samples in fridge.
1208	- Place BTS into manual Hold to clean p-006 y-strainer.
1214	- BTS out of Hold. y-strainer pretty clogged.
1230	- Refill BTS phosphorus tank w/ 6 # of TSP and 60 gal of potable water. working on BTS Field testings.
1545	- START flush of mp-001 sample port and check for residual chlorine: None detected
1600	- collect 2nd set of time paced grab samples → MP-001 sample port for Low Level 1,4-Dioxane and QTRly VOC's ReSample. Place samples in fridge with others.
1610	- Plants operations Good.
1945	Start MP-001 port flush a check for residual chlorine - None detected.
2000	Collect 3rd set of time paced grab samples for low level 1,4-Dioxane & Qtrly VOC resample.
2345	Start MP-001 port flush and check for residual chlorine - None detected.
0000	Collect 4th set of time paced grab samples for low level 1-4 Dioxane & Qtrly VOCs resample. Place in fridge with the others.

Influent Sources and Flow Rates: @ 0525
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.5 gpm
RWST – 0.6 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.32gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.82 gpm

Operator: **Mike Gelwick / Chris Carlson**

~3" Snow Tuesday 4PM - Today

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, February 02, 2022**

Time:	
0340	- Plants operations Good - Auto samplers on + pack olc.
0395	- START Flush of MP-001 sample port and check for residual chlorine: none detected
0400	- collect 5th set of Time paced grab samples @ MP-001 for Low-Level 1,4-Dioxane and Qtrly VOC's last sample. Place samples in Fridge.
0540	- Clean pH-315 probe w/ Acid solution. Check the Hach SC for oil or sheen: None observed. Spray down wash.
	- Check TM130 for oil globules: None observed. water is clear w/ light yellow-green tint.
0600	- Chris working on GC's calibrations and maintenance and DATA backups today
0700	- Automatic Blowdown operations Good.
0745	Blowdown operations good. Mike starting MP-001 post Flush - checking for residual chlorine - none detected.
0800	Mike collecting 6th and final time paced grabs for low level 1,4-Dioxane & Qtrly VOCs (resample) w/QC & stopping auto samplers after 24 hrs. Effluent totalizer reading 250,215,000 gallons, 46,524 gallons discharge over the last 24 hrs.. Slowly stir composite containers, check pH's (Sodium Thiosulfate preserved @ 7.41 & Nitric preserved @ 1.70). Both are very clear, no color. Mike & Tom Filling lab bottles from composites and placing samples in fridge.
0840	- Decant T-351 to bottom valve. wet well activated. water is clear no color.
0847	- STOP 9000 pump. TANK level is @ 29%. Too cold to STOP MW38 pumping wells to run a batch of source well water today.
1030	Backup plant data to Flash drive & DVD. Once a day OneDrive backup working well.
1330	Plant operations good.

Influent Sources and Flow Rates: @0340
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.4 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.83 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, February 03, 2022**

Time:	
0615	Plant operations good. Ambient outdoor temp -10°F this morning. BTS building has cooled off
↓	to 60°F. Reactor temperatures good, tank heaters working well.
0740	Blowdown operations good. Mike starting weekly systems checks & calibration.
0800	Top off hydrolic oil on Filterpress.
0900	Start Filterpress on T-351 (stage 1). Newly rebuilt P-351 sludge pump working very well.
	Tom helping Mike with weekly systems check & calibrations.
1011	- BTS into manual Hold to flush P-006 piping
1124	- BTS out of Hold. P-006 Feed Line flushed. work on Impeller & clean out check ball.
1305	- Test Run P-006 pump. Allok. CV down to 40% @ 0.30 gpm. will leave off until can run a batch of source well waters.
1310	- Checked HMR-30 for oil or Sheens: none observed, Sprayed down weir
	- Rinse PIT-315 probe with Muriatic acid solution
	- Checked TP-130 for oil globules or Sheens; None observed, water is clear with a yellow tint - no debris
1320	- Work on/chris to Attach new chain on caustic bay Roll up door.
1530	- STOP Filter Press. Not Full yet. Run tomorrow. Weekly Alloks Systems checks mostly finished. will finish up tomorrow
1600	- Plants operations Good.

Influent Sources and Flow Rates: @ 0755
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.3 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.6 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, February 04, 2022**

Time:	
0730	- Plants operations Good. Coming out of Automatic Blowdown OK. Restart Filter Press on T-351 - Stage 4.
0835	- Clean pH-315 probe w/Acid solution. Check TK-HMR30 for oil or Sheen: None observed. Spray down weir
	- Check TP-130 for oil globules; None observed. Water is clear w/ Light yellow cyan tint.
0900	- Work with Tom on finishing up weekly Plants Systems checks and help train him on pH probes calibrations more.
0905	- Suspend Plant Discharge to calibrate pH-740 probe to 4+10 pH-STD's.
0918	- Resume Normal Discharge. continue w/ the other pH probes calibrations to 4+10 pH STD's → pH-113, 670, 310, 315 + 365
1025	- Weekly plants systems checks and calibrations complete
1050	- Refill B13 phosphorus TANK w/ 4 # of TSP and 40 gal of potable water.
1350	- Filter Press B is full.
1400	- Plants operations Good.

Influent Sources and Flow Rates: @ 0800
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.22 gpm(6am-1pm daily)
MW113 Area – 1.83 gpm

Operator: **Mike Gelwick** / ~~**Chris Carlson**~~ Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: SATURDAY, February 5, 2022

0556	- Receive NTES UNSTABLE Flow Alarm. Log in Remotely and acknowledge. Set NTES to Divert to T-530 and set T-530 TO 0.5 gpm. Come to site to see if I can get it going. T-530 @ 28% and may not have enough water to last the weekend @ 0.5 gpm.
0648	- Set NTES UNSTABLE Flow set point to 0 gpm. Go to try to get MW2-10R going again. Alarm Cleared out.
0655	- UNABLE to get MW2-10R going again by cycling Air. ~~on~~ Decide to switch out pumps since I'm Here, Gather Gear + calibrate PID.
0735	- MW2-10R going again.
0745	- Set T-530 Flow Bike to 0.20 gpm, Cycle NTES to manual to get valve in better position to Get Flows stable again.
0758	- Flow from NTES ~~stabilized~~ on stabilizing. Set back to Normal and Reset UNSTABLE Flow to 0.30 gpm again, Set Flow to 0.53 gpm to help pump trench back down.
0810	- Plant Operations Good. NTES Operations Normal.
1155	- Decant to bottom Valve T-351. Wet well not activated - water is very clear - Clean PH-315 probe with Acid solution. Check HMR30 for oil sheens: None observed - Sprayed down weir - check TP-130 for oil globules and sheens: None observed water is clear with light yellow tint
1230	- Plant operations good
1435	- Log in Remotely, Increase LWST Flow to 1.0 gpm. T-510 tank going low offline Autom UVOX into Recycle.
2235	- Log in Remotely. All ok
2300	- Receive 3323 strainer working Alarm. Log in Remotely and switch over to 3324 Backup pump for Reactor 3
Sunday, February 6, 2022	
0734	- FV-708 Fail to open UV-OX Alarm. Check SHUT Down UV-OX Remotely. Will leave OFF until Monday. Divert Flows.
1530	- Log in Remotely. UV-OX still OFF. All else ok
2130	- Log in Remotely. All ok. UV-OX still OFF.

Influent Sources and Flow Rates: @1026
NBBW – 6.2 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.3 gpm
RWST – 0.6 gpm
NTES – 0.53 gpm
COND/NTES T-530 – 0.21 gpm (6AM–1PM daily)
MW38 – 1.9 gpm
T-540/541 – 0.0 gpm
MW113 Area – 1.9 gpm

OPERATOR(S) Mike Grelinger / Tom Gilbert / Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, February 07, 2022**

Time:	
0550	Plant operations okay - observe acid vent hood has tripped it's motor overload, belt loose since sub zero weather. Will get manlift for roof access.
↓	Observe BTS doing very well with 4.5 gpm from HMR-30, increase to 5.5 gpm - Stop
↓	MW38 N&S extraction in preperation for MW38 source well extraction to T-540/541.
0640	Start MW38 source well batch extraction to T-540/541.
0750	Blowdown operations good. IR on site to perform 2,000 hour compressor service.
0815	Start P-006 (T-540/541) to BTS at 0.2 gpm.
0905	- Decant T-351 to bottom valve. Wet well activated. Water is clear no color.
	- Clean pH-315 probe in acid solution. Check the HMR-30 for oil or sheen: None observed. Spray down weirs
	- Check TP-130 for oil globules! None observed. Water is slightly cloudy/yellow-orange tint. Probably due to pump swapout.
	- Clean P-352 y-strainer.
1150	- Work on repair of plant potable water fountain DRIP on west well near discharge pumps.
1330	- DrM Repaired. will leave off overnight to let Chlorine set up well.
1515	- Plants operations Good.
1630	Check latest TP-3350 result, doing good. Slightly high, fresh source well has not effected the effluent of the BTS yet.

Influent Sources and Flow Rates: @ 09:30
NBBW – 6.3 gpm to RWST
North End On Site- 12.2 gpm
North End Off-Site – ~~0.57~~ gpm
RWST – 5.5 gpm
NTES – 0.54 gpm(10R only)
MW38 T-540/541 – 0.20 gpm(Source well and 38 pumping wells mix)
MW38 ~~N&S~~ – 5.0 gpm to T-540/541 source well only
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.82 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, February 08, 2022**

Time:	
0450	- Plants operations Good. Prep for Effluents checks START and sample collection.
0520	- Collect TP-740 + TP-710 weekly Low Level 1,4-Dioxane samples. START Effluents checks. NOT collecting TP-730 samples today. UV-OX #3 OFF. Testing Higher Flows thru the BTS.
0630	Restore potable water to repaired section of 2" piping. Refill polymer tank with 200 gallons potable water + 2 cups polymer.
0800	- Mike working on BTS weekly sampling + Field testing + tasks
1003	- IX System performance HACH testing w/Lab split sampling After 1,120,992 gal treated: TP-183 ⇒ 180 ug/L; TP-175A ⇒ 190 ug/L; TP-174A ⇒ 490 ug/L; TP-170 ⇒ 6000 ug/L. System currently Running @ 1,81g pm.
	- RESTARTED MW38 N+S pumping wells going to T-540/541 until at least 600 gal pumped THRU pipeline to displace any Residual source well waters. Source well Stopped @ 0900.
1205	- Decant T-541 to bottom valve of wet well + Effluent water is clear no odor.
	- Clean pH-315 probe w/Acid solution. Check the HACH 30 for oil or sheen: None observed. Spray down water.
	- check TP-130 for oil globules: None observed. water is very slightly cloudy w/ yellow-orange tint.
1230	- Refill BTS phosphorus TANK w/6 # of TSP and 60 gal of potable water. working on BTS field testings
1500	- Plants operations Good.
1830	990 gallons of MW38N's used to displace source well water to T-540/541. Switch MW38N's to RWST's. Note: BTS effluent continues to trend higher for 1,2 DCA & 1,4-Dioxane, will leave rate from HACH-30 to BTS at ~6 gpm. Plant operations good.

Influent Sources and Flow Rates: @0525
NBBW – 6.3 gpm TOTALIZER
North End On Site- 12.3 gpm
North End Off-Site – 8.6 gpm
RWST – 5.5 gpm
NTES – 0.53 gpm(10R only)
MW38 T-540/541 – 0.22 gpm(Source well and 38 pumping wells mix)
MW38 ~~N&S~~ 5.0 gpm SOURCEWELL BATCH
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.82 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, February 09, 2022**

Time:	
0545	Plant operations okay. BTS effluent still trending slowly upward for 1,2-DCA & 1,4-Dioxane with higher flow rate from Hmr-30. Start on weekly GC maintenance and calibrations.
0750	Blowdown operations good.
0815	- Decant T-351 from bottom valve. wet well activated. water is clear nodes.
	- Clean pH-315 probe w/ Acid solution. Check the Hmr-30 for oil or sheen: None observed. Spray down well.
	- Check TP-130 for oil globules: None observed. water is very slightly cloudy w/ yellow-orange tint.
	Replace solinoid valve on FV-708. City of Denver mechanics here for annual forklift service.
1000	Start UV-ox, warming up. 1010 UV-ox warmup completed - discharging. New solinoid on FV-708 working well.
1030	Backup WTP data to Flash drive & DVD. Daily OneDrive backup working well.
1456	- Suspend Plant Discharge to replace Discharge pumps 2" check ball valves with new ones.
1506	- Resume Normal Discharge. Small leak. O Ring not set correctly
1509	- Suspend plant Discharge to Fix.
1520	- Resume Normal Discharge again. NO leaks. Allow.
1600	- Plants operations Good.

Influent Sources and Flow Rates: @ 0753
NBBW – 6.3 gpm (to RWSTs)
North End On Site- 12.2gpm
North End Off-Site – 8.5 gpm
RWST – 5.5 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.2 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.6 gpm (to RWST)
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.6 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, February 10, 2022**

Time:	
0615	Plant operations good.
0710	Switch from discharge pump P-751 to P-752 (New 2" check ball valve because old one was sticking closed).
0750	Blowdown operations good. Mike starting on weekly systems checks and calibrations.
0920	- Decant T-551 from bottom valve. wet well activated. water IS clear NO color.
	- Clean pH-315 probe wet acid solution. Check the Hach 50 for oil or sheen: None observed. Spray down weir
	- Check TP-130 for oil globules: None observed. water IS clearing up. Light yellow-green tint.
1140	- Chris working on Acid Fume vent Hood motor replacement.
1300	New motor & belt online on Acid hood vent.
1314	Reboot HMI FTVIEW1 to install latest views software update, online 1318.
1240	- Suspend Plant Discharge to Calibrate pH-740 probe to 4+10 pH STD.
1248	- Resume normal Discharge. Continue with other pH probes calibrations to 4+10 pH STD: D, pH 413, 670, 310, 315 + 365.
1340	- Plants Systems checks and calibrations complete.
1515	Plants operations good. Latest GC2 TP-3350 results good. (1,1 Dioxane @ 16.91 ug/L & 1,2-DCE 2.06 ug/L) @ 1333. Increase T-540/541 to BTS from 0.2 gpm to 0.3 gpm.

Influent Sources and Flow Rates: @0754
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.7 gpm
RWST – 2.0 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.2 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, February 11, 2022**

Time:	
0730	- Plants operations Good. Coming out of blowdown ok.
0900	- Decant T-351 to bottom valve. Wetwell activated. water is clear no color
	- Clean pH 3.15 probe w/ Acid Solution. Check the Hmk 30 for oil or sheen: None observed. Spray down weir
	- Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green tint
1020	- Refill BTS phosphorus TANK w/ 4# of TSP and 40gal of potable water
1035	- Place BTS into manual Hold and flush reactors feed lines.
1105	- BTS out of Hold. leaving P-3324 on line for Reactor 3, P-3323 on SB.
1200	- Plants operations Good.

Influent Sources and Flow Rates: @ 0750
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.5 gpm
RWST – 2.0 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.27 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.80 gpm

Operator: **Mike Gelwick**

~2"
SNOW
2/11 P.M. –
2/12 A.M.

LOWRY WTP OPERATIONS LOG

Date: Saturday, February 12, 2022

0630	ON site for weekend systems checks. Plant operations good.
0650	Decant T-351 bottom valve, wet well did not activate. Water is clear, no color.
↓	Clean the HMR-30 weir and pH probe - no oil or sheen observed in the HMR-30. Check
↓	TP-130 For oil globules - NONE observed. Water is slightly cloudy light yellow/green.
0700	Plant dropping into blowdown - All okay.
0750	Blowdown operations good.
0845	Plant operations good.
1800	Check plant remotely - All okay.
2/13/22 0640	Check plant remotely - All okay
1845	Check plant remotely - All okay

Influent Sources and Flow Rates: @ 0643
NBBW – 6.2 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.1 gpm
RWST – 2.0 gpm
NTES – 0.51 gpm
COND/NTES T-530 – 0.21 gpm (6AM–1PM daily)
MW38 – 1.8 gpm
T-540/541 – 0.31 gpm
MW113 Area – 1.8 gpm

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, February 14, 2022**

Time:	
0615	Plant operations good.
0740	Blowdown operations good.
0805	Reboot HMI FTVIEW1 to reset available temporary memory, online 0810.
0815	RWST's levels down to 30%. Reduce RWST influent from 2.0 gpm to 1.0 gpm.
1106	Receive GC fault alarm from GC1. Value of 1,1DCE has ~~a~~ a calculation error - result came out at 1910.05 ug/L. Visually the peak look no longer than the calibration peak at @9:09 4.01 ug/L. Other sample values look normal. Rck and clear alarm. Take UV-OX out of recycle. Will run another TP-730 sample early to confirm the error.
1123	- Stop T-530/P-005 to ~~off~~load/transfer a load of CT-4 condensate to T-530. START TOTAL → 220802 gal. on FT-505.
1215	- Stop transfer of CT-4 condensate. FT-505 TOTAL → 221308 gal. A total of 506 gal transferred to T-530.
1240	- Restart T-530/P-005 @ 0.20 gpm 6am-1pm daily. Clean up & set up.
1305	- Decant T-351 from bottom valve west well activated. Water is clear no color.
	- Clean pH-315 probe w/ Acid solution. Check the tank for oil or sheen: none observed. Spray down wash.
	- Check TP-130 for oil globules: None observed. water is clear w/ yellow-green tint
	Next TP-730 GC1 result value normal for 1,1DCE @ 14.39 ug/L
1530	- Plant operations Good.

Influent Sources and Flow Rates: @ 0902
NBBW – 6.2 gpm
North End On Site- 12.7 gpm
North End Off-Site – 8.6 gpm
RWST – 2.0 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.7 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, February 15, 2022**

Time:	
0500	- Plants operations Good.
0515	- Collect TP-730 GC/Lab split samples and START Efficiency checks. Also Collect weekly TP-710 and TP-740 samples for Low Level 1,4-Dioxane
0610	RWST's levels at 27'. 26'. reduce RWST influent from 1.0 gpm to 0.6 gpm.
0730	Blowdown operations good. Mike working on BTS weekly sampling + Field Reading s today
0955	- IX system performance HACH testing w/Lab split sampling after 1,139,108 gal treated: TP-183 ⊃ 160 ug/L; TP-175A ⊃ 180 ug/L; TP-174A ⊃ 710 ug/L; TP-170 ⊃ 6000 ug/L. System currently running ⊃ 1.78 gpm.
1150	- Decant T-351 to bottom valve. wet well all trumpets water IS clear no odors.
	- clean pH-315 probe w/Acid solution. Check THE Hemlock for oil or sheen; None observed. Spray down weir.
	- Check TP-130 for oil globules: None observed. water IS clear w/ yellow green tint.
1215	- Refill BTS phosphate TANK w/ 6 # of TSP and 60 gal of potable water.
1510	- Plants operations Good.

Influent Sources and Flow Rates: @ 0525
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.9 gpm
RWST – 1.0 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.32gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.78 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, February 16, 2022**

Time:	
0530	Plant operations good. Start on weekly GC maintenance and calibrations.
0730	Blowdown operations good.
0754	RWSTs levels at 38% & 37% (Slurry wall water transfer (yesterday). Increase RWST influent from 0.6 gpm to 1.0 gpm.
0830	- Add a new tote of NaOH on line on BLDG W/chl.s
0900	- Working on Monthly POTW Leak Detection, Air Relays, Vaults checks and POTW MH175-078 check and QTRly POTW Isolation valves Excercising. Using my WTP Lap top and mobile Phone to Log on Remotely and suspend Discharge ↓ each valve Excercising and restarting Discharge to check for leaks each time.
1015	- Checks of POTW line complete. All OK.
1030	- Decant T-351 to bottom valve. Wet well did not activate. water is clear no color.
	- Clean pH-315 probe w/Acid solution. Check the HMI#30 for oil or sheen: None observed. Spray down wet.
	- Check FP-130 for oil globules : None observed. water is clear w/yellow-green tint
	- TOM working on filterpress clean out.
1340	- Filter Press ready to fill.
1420	Reboot HMI2 - online 1423.
1515	- Plants operations Good.

Influent Sources and Flow Rates: @ 0752
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.4 gpm
RWST – 0.6 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

~2" of snow Wednesday P.M to Thursday A.M

LOWRY WTP OPERATIONS LOG

Date: **Thursday, February 17, 2022**

Time:	
0640	- Plants operations Good.
0700	- Automatic blowdown operations Good.
0720	- Decant T-351 to bottom valve. wetwell activated. water is clear NO color.
	- Clean pH-315 probe w/Acid solution. Check TP-130 for oil or grease: None observed. Spray down weir.
	- check TP-130 for oil globules: None observed. water is clear w/yellow-green tint
	- START Filter Press running on T-351.
	- working on weekly Plants systems checks and calibrations today.
1249	- Suspend plant discharge to calibrate pH-740 probe to 4+10 pH standards.
1256	- Resume Normal discharge. Continue with other Plant pH probes calibrations to 4+10 pH standards pH-113, 670, 310, 315 + 365
1345	- Plants weekly Systems checks and calibrations Complete.
1500	- STOP Filter Press. Finish filling tomorrow.
1515	- Plants operations Good.

Influent Sources and Flow Rates: @ 0750
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.3 gpm
RWST – 1.0 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.79 gpm

Operator: **Mike Gelwick**

T.I." @ of snow Thursday Lake Pm. - Friday.

LOWRY WTP OPERATIONS LOG

Date: **Friday, February 18, 2022**

Time:	
0730	-Plants operations Good. Coming out of Automatic blowdown ok. Restart Filterpress. In stage 4. From T-351
0850	-Clean pH-315 probe w/Acid solution. Check the MW-30 for oil or sheen: None observed. Spray downwell
	-Check TP-130 for oil globules: None observed. Water is clear w/yellow-green tint.
0920	-Place BT3 Into Maint. Hold to flush reactor feed Lines
0950	-BT3 out of Hold.
1005	-Refill BT3 phosphorus tank w/4# of TSP and 40gal of potable water.
1045	-Filterpress full. working on Replacing floor drain Grating w/Plastic grating.
1330	-Plants Operations Good.

Influent Sources and Flow Rates: @ 0750
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 9.3 gpm
RWST – 1.0 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.21 gpm(6am-1pm daily)
MW113 Area – 1.79 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: SATURDAY, February, 19, 2022

0700	- Plants operations Good. Automatic blowdown operations Good. Go to Check Other S.Te Systems
0825	- Decant T-351 to bottom valve. wet well did not activate. water IS clear no color
	- Clean pH-315 probe w/Acid solution. Check the HMR 30 for oil or sheen: None observed. Spray down water.
	- Check TP-130 for oil globules; None observed. water IS clear w/ yellow-green tint
	- Notice P-006 mech. seal IS Dripping. Prepare for Repair.
0850	- Stop P-006 pump to Replace mech. seal.
0937	- RESTART P-006/T-540-541 @ 0.30 gpm. NO Leaks observed.
1040	- Plants operations Good.
1700	- Remote log on. Allok
2100	- Remote Log on. Allok
Sunday, February 20, 2022	
0715	- Remote Log on. Allok. Automatic Blowdown operations Good
0905	- GC I VOC Alarm. FALSE High 1,1 DCE Due to Hot water SAMPLE. Let Hot water PASS thru and will take Another Sample later.
1300	- Remote Log on. GCS Both OK. New Sample on TP-730 OK.
1930	- Remote Log on. Allok.

Influent Sources and Flow Rates: @ 0835
NBBW – 6.2 gpm
N. END ON-SITE – 12.3 gpm
N. END OFF-SITE – 9.1 gpm
RWST – 1.0 gpm
NTES – 0.52 gpm
COND/NTES T-530 – 0.19 gpm (6AM–1PM daily)
MW38 – 1.9 gpm
T-540/541 – 0.30 gpm
MW113 Area – 1.79 gpm

OPERATOR(S) Mike Gelwicke

LOWRY WTP OPERATIONS LOG

Date: **Monday, February 21, 2022**

Time:	
0650	- Plants operations Good.
0700	- Automatic blowdown operations Good. Reduce RWSTS Flow from 1.0gpm to 0.6gpm. TANKS @ 27%.
0840	- Decant T-351 to bottom valve. wet well activated. Water IS clear NO odor.
	- Clean pH-315 probe w/Acid solution. Check tote HMK 30 for oil or sheen: None observed. SPray Down weir.
	- Check PP-170 for oil globules: None observed. Water IS clear and yellow-green rust.
0930	- Mountain Alarm onsite for Annual Fire EXT. Inspection. Checked Alarms + Building Alarms Testing + Backflow Preventers Inspections.
1100	- All Alarms + Back Flow Preventers OK. A few Fire EXT. Around Site Need Replacing and 2 year Replacements will be ordered
1545	- Plants operations Good.

Influent Sources and Flow Rates: @ 0658
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.7 gpm
RWST – 1.0 gpm
NTES – 0.52 gpm(10R only)
MW38 T-540/541 – 0.29 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.7) gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, February 22, 2022**

Time:	
0730	Plant operations good.
0745	Blowdown operations good. Mike preparing for weekly BTS & IX system performance sampling and weekly efficiency checks. Note: Testing split of TP-730 (UV-OX discharge) on GC & lab at 8A.M. to ~~check~~ verify warm water 1,1DCE GC results post blowdown are falsly higher due to the warmer sample water taking less time to heat in GC water baths. Resulting in a longer period of 1,1DCE off gassing than under normal operations & calibrations of the GC.
0800	- Collect TP-730 GC/Lab split sample, START Efficiency checks. Refill BTS phosphonate TANK w/ 6 gal of TSP + 60 gal of potable water.
0820	- Decant T-351 to bottom valve. Wet well Activated. Water is clear no color.
	- Clean pH-315 probe w/ acid solution. Check the HMR30 for oil or silicon: None observed. Spray down weir.
	- Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green hue.
1015	- Collect TP-710 + 740 weekly Low Level 1,4-Dioxane samples
1025	- IX performance HACH testing with Lab split sampling. After 1,157,110 gal Treated: TP-183 ⇒ 200 ug/L; TP-175A ⇒ 240 ug/L; TP-174A ⇒ 1090 ug/L; TP-170 ⇒ 6300 ug/L. System currently Running ⇒ 1.77 gpm.
	*All samples on ice for courier and work on BTS Field Readings
1450	- Plants operations Good
1615	1,1 DCE off gassing test completed (Field values). Lab splits shipped today. Observed warm 8A.M. TP-730 sample lowered the bath to 41.5°C during Fill cycle, then took 12 minutes 45 seconds to reach 65°C (bath setpoint). Normal temperature TP-730 dropped bath temperature to 30.8°C, then took 17 minutes to reach 65°C. Warmer sample sat at 65°C for 4 minutes and 15 seconds longer than normal temperature sample. Note: Calibrations of the GC's performed to simulate normal operations by injecting calibration standard into the bath when temperature is between 30°C & 32°C.
1520	Plant operations good.

Influent Sources and Flow Rates: @ 0746
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.8 gpm
RWST – 0.6 gpm
NTES – 0.53 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

~1" snow overnight cold below freezing temps.

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, February 23, 2022**

Time:	
0545	Plant operations good. Observe N. End OFFsite Flow is down by ~1 GPM, will look for the possible well that is most likely frozen due to the extended freezing temperatures.
↓	Work on weekly GC maintenance and calibrations.
0740	Blowdown operations good.
0950	Place BTS into hold for PLC UPS swap out (replacing eight year old UPS on second set of batteries). Change out took longer than expected because one of the original 24V Power supplies in the PLC died not power back up when PLC died.
↓	
0958	Plant shut down automatically due to the loss of communication between main PLC & Bio PLC.
↓	
1019	Restart plant after changing out the bad power supply. Bio out of hold. New UPS and power supply working well.
1110	Backup WTP data to Flash & DVD. Daily OneDrive backup working well.
1125	- Decant T-351 to bottom valve. Wet well activated. Water is clear No color.
	- Clean pit-315 probe w/ Acid solution. Check the thermo for oil or sheen; None observed. Spray down weir.
	- Check TP-130 For oil globules; None observed. Water is slightly cloudy w/ yellow-orange tint.
	- MW102 - will was frozen due to extended very cold temps outside. Able to throw out and get Comp. Again. Flow started up.
1530	- Plant operations Good.

Influent Sources and Flow Rates: @ 0746
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 7.3 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

~1" NEW SNOW OVERNIGHT

LOWRY WTP OPERATIONS LOG

Date: **Thursday, February 24, 2022**

Time: 0545	Plant operations good.
0700	- Automatic blowdown operations Good.
0830	- Mike working on weekly/monthly Plants Systems checks and calibrations today
0910	- calibrate SIX multimeter TO 50% LEL to use during calibration of LEL-740 to ensure 0% LEL on F740.
0918	- Decant T-351 TO bottom valve. wet well activated. water IS clear No color
	- Clean pH-315 probe w/Acid solution. Check the HMR30 for oil or sheen: None observed. Spray down wet
	- Check TP-130 for oil globules: None observed. Water IS Slightly cloudy w/ yellow-orange tint.
1000	- START Monthly oil moisture prevention Run on Main Compressor. 2 Hrs @ max speed.
1145	- Perform monthly GTS pH probes calibrations to 4+10 pH STDS (New STDS today)
1200	- STOP Main compressor oil moisture prevention max Run.
1330	- Begin calibrations of WTP pH probes to New 4+10 pH STDS @ pH-113, 315, 310, 365 & 670.
1403	- Suspend Plant Discharge to calibrate pH-740 to New 4+10 pH STDS and calibrate LEL-740 to 49% LEL.
1414	- Plant Shut Down @ 8% LEL During calibration of LEL-740. Automatic Shutdown @ performed. Chris change out UPS on HMR30 PLC and RWSTS PLC with New ones while plant IS off.
1427	- ReSTART Plant and become Normal Discharge. TAKE UV-OX out of recycle.
1525	- Plants operations Good.

Influent Sources and Flow Rates: 0630
NBBW – 6.2GPM
N. END ON-SITE – 12.3GPM
N. END OFF-SITE – 8.8GPM
RWST – 0.6GPM
NTES – 0.51GPM
COND/NTES T-530 – 0.2GPM (6AM-1PM)
MW38 – 1.7GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.8GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Mike Gelinske

LOWRY WTP OPERATIONS LOG

Date: **Friday, February 25, 2022**

Time:	
0249	Receive N.TOE flow unstable alarm. Check remotely and see that when T-510 level goes low and BTS is put into hold the N.TOE flow to T-530 is blocked, end of the pipe appears to be frozen. When T-510 refills and BTS out of hold flow returns to normal. Will troubleshoot more when on site later.
0300	Plant operations good.
0645	On site - plant operations good.
0700	Observe N.TOE flow has stopped when it went into diject to T-530. Able to thaw out the small ice blockage on the end of the pipe ~~with~~ with heat gun where heat trace ends.
0745	Blow down operations good.
0855	Decant T-351 bottom valve, wet well activated. Water is clear, no color. Clean the HMR-30 weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed. Water is cloudy light yellow/green -
0925	Reduce UV-OX flow from 7.5gpm to 7.0 gpm to help keep T-510 full while NBBW rate is low.
1300	Refill phosphorus tank with 40gallons potable water + 4 lbs TSP.
1600	Plant operations good.

Influent Sources and Flow Rates: 0815
NBBW – 6.1GPM
N. END ON-SITE – 12.3GPM
N. END OFF-SITE – 8.8GPM
RWST – 0.6GPM
NTES – 0.51GPM
COND/NTES T-530 – 0.2GPM (6AM-1PM)
MW38 – 1.7GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.8GPM
OTHER – NA

OPERATOR(S) Chris Carlson

Date: Saturday 2/26/2022

LOWRY WTP OPERATIONS LOG

1300 Plant operations good.
1440 Decant T-351 to bottom valve. Wet well activated. Water is clear no color.
Check TP-130 for oil globules: None observed. Water is very clear w/ brownish tint.
Clean pH-315 probe w/ acid solution.
Check HMR-30 for oil or sheen: none observed. Spray down weir.
Both GC's operational within limits.
All blowers ok.
Phosphorus tank @ 85gal. Good.
1545 Plant operations good.

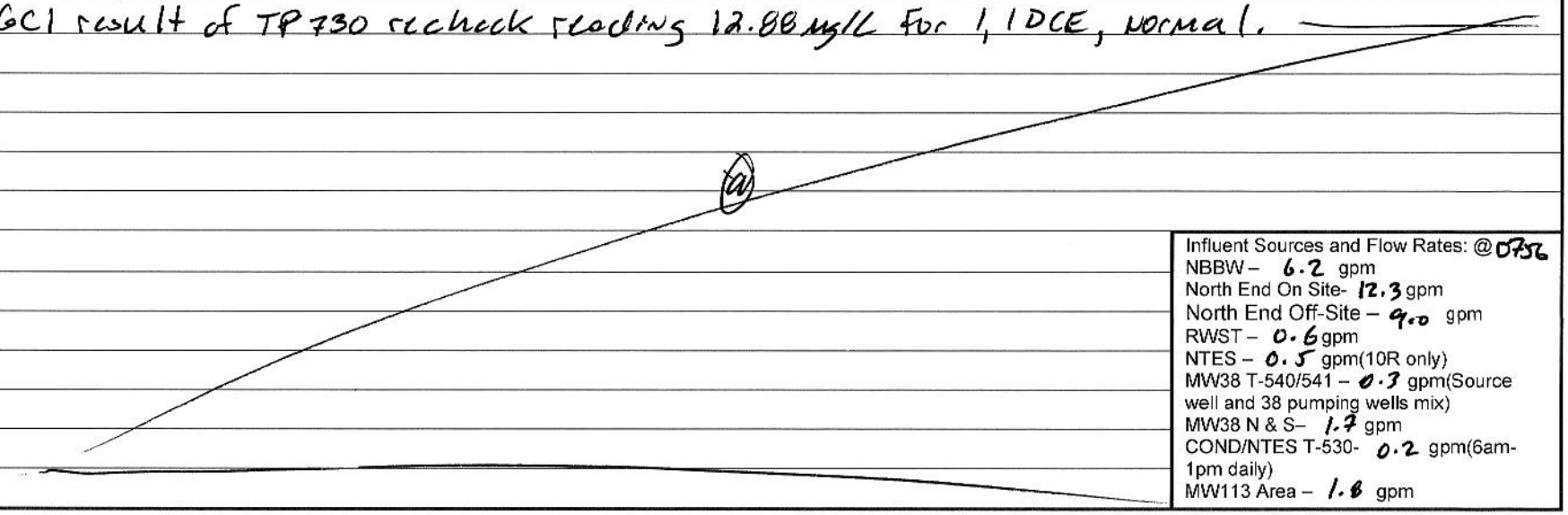
Influent Sources and Flow Rates: @ 1300
NBBW – 6.2 gpm
N. END ON-SITE – 12.3 gpm
N. END OFF-SITE – 8.9 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 1.7 gpm
T-540/541 – 0.31 gpm
MW113 Area – 1.8 gpm

OPERATOR(S) Manuela Seewald

LOWRY WTP OPERATIONS LOG

Date: **Monday, February 28, 2022**

Time:	
0600	Plant operations good. Start filter press on T-351 (IN stage 1). Refill polymer tank with
↓	200 gallons potable water + 2 cups polymer.
0750	Blowdown operations good.
1050	-Clean pH-315 probe w/ Acid solution. Check the Hach 50 for color/sheen: None observed. Spray down with
	-Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green tints
	-Work on setting up AUTOSAMPLERS for monthly WTP sampling and SVOC's Qtrly Res Sample #2. Triple rinse each dedicated
	composite container.
1135	-AUTOSAMPLERS ready. Will Add Preservatives JUST PRIOR TO START UP.
1539	-Recent GC1 VOC Fault Alarm. 1,1-DCE reading False High @ 2037.14 ppb. DISABLE GC1 Alarms and clear out and take UV-ox out of
	Loop to be able to cool water down before a new TP-730 Sample IS started. STOP Filter Press. IN STAGE 4
1605	-START a New TP-730 Sample on GC1 and re-enable Alarm.
1610	-Plants operations Good.
1714	GC1 result of TP730 recheck reading 12.88 ug/L for 1,1 DCE, normal.



Influent Sources and Flow Rates: @ 0756
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 9.0 gpm
RWST – 0.6 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, March 01, 2022**

Time:	
0500	- Plants operations Good. Prepare for weekly GC split samples, RESTART Filterpress; STAGE 4 Freon T-551.
0525	- Collect weekly TP-730 GC/Lab split samples and TP-710 & 740 Low Level 1, 4-Dioxane SAMPLES. START Efficiency checks.
0700	- Automatic Blowdown operations Good. Add preservatives to Dedicated composite sample containers.
0800	- START Autosamplers for WTP monthly permit sampling and Resample of QTrly SVOCs for Hexachlorocyclopentadiene Due to Lab QC Issues. TOTAL Effluent @ 251,450,746 gal @ 6,725 @ 15.3°C @ 32.5 gpm.
	- Working on BTS weekly sampling, Early warning monthly samples and IX system weekly samples today.
1000	- Begin collection of monthly Early Warning samples for TOTAL Molybdenum + Low Level 1, 4-Dioxane. Samples to NO fridge.
1030	- IX system performance HACH testing w/Lab split sampling. After 1,175,126 gal treated: TP-185 @ 230 ug/L; TP-175A @ 270 ug/L; TP-174A @ 2100 ug/L; TP-170 @ 6200 ug/L. Used High Range test on TP-174A today. System currently Running @ 1.77 gpm.
1115	- PACK All SAMPLES on Ice for courier Pickup. Refill BTS Phosphorous TANK w/ 5# of TSP and 50 gal of potable water
1150	- START Flush of MP-001 Sample port and check for residual chlorine: NONE detected. OK to use HCl preserved vials
1200	- Collect 1st set of Time paced grab samples for Low Level 1, 4-Dioxane, water IS very clear, NO odor. Place SAMPLES IN Fridge.
1250	- Clean pH-315 probe w/ Acid solution. Check TIC Hach 30 for oil or sheen: None observed. SAMPLE Warm water.
	- Check TP-130 for oil globules: None observed. Water IS clear w/ yellow-green tint.
1530	- Filterpress IS full.
1550	- START Flush of MP-001 Sample port and check for Residual Chlorine: NONE detected.
1600	- Collect 2nd set of Time paced grab samples for Low Level 1, 4-Dioxane. Water IS very clear, NO odor. SAMPLES In to Fridge.
1610	- Plants Operations Good. Autosamplers operations Good.
1945	Start MP-001 port flush and check for residual Chlorine - NONE detected.
2000	Collect 3rd set of time paced grabs samples for low level 1,4 Dioxane. Water is VEry clear, NO color. Place sample in fridge with others.
2345	Start MP-001 port flush and check for residual chlorine - NONE detected.
0000	Collect 4th set of time paced grab samples for low level 1,4 Dioxane. WATER is VEry clear, NO color. Place sample with others in the fridge.

Influent Sources and Flow Rates: @ 0538
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 9.1 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.77 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, March 02, 2022**

Time:	
0330	- Plants operations Good. Autosamplers ok.
0350	- START Flush of MP-001 sample port and check for residual chlorine: None detected
0400	- collect 5th set of time paced GRAB samples for Low Level 1,4-Dioxane. Water is very clear, No color. Place samples in Fridge with others
0630	- Chris working on weekly GAC's calibrations and maintenance w/DATA Bitelines today
0750	- START Flush of MP-001 sample port and check for residual chlorine: None detected
0800	- STOP Autosamplers. Collect 6th/final set of time paced grab samples for Low level 1,4-Dioxane. water is very clear No color. Place samples in fridge. TOTAL Effluent = 25149763 8gal. A total of 46,892 gal treated during sample period.
	- Process composite samples by Gently stirring and checking pH of each composite. SVOC's pH = 7.56 SU. Metals pH = 1.92 SU.
	- Fill composite sample bottles.
0825	Stop MW38 N & S in preparation for MW38 source well batch extraction (T-540/541 @ 24%)
0838	Increase RWST influent from 0.6gpm to 2.3gpm -
0846	Switch MW38 from direct HMR-30 influent to T-540/541 and startup source well batch extraction.
1105	- Clean pH-315 probe w/Acid Solution, Check the HMR30 for oil or sheen: None observed. Spray downwater
	- Check TA-130 for oily globules: None observed. water is clear w/yellow-green tint.
1232	- Receive BIOGAC Alarm. BTS Into Hold. Alarm due to DISable timer running out during a blank run After calibration and carry over from calibration standard causing Alarm with High concentrations. Reset DISABLE timer and restart BTS.
1300	Backup WTP data to Flash drive & CD. Daily OneDrive backup working well.
1610	Plant operations good.

Influent Sources and Flow Rates: @0337
NBBW – 6.7 gpm
North End On Site- 12.3 gpm
North End Off-Site – 9.0 gpm
RWST – 0.6 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.78 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, March 03, 2022**

Time:	
0550	Plant operations good. Setup for HMR-30 sludge lateral cleanout (#1 & #2 laterals partly clogging)
0700	Begin pumping thick sludges from lateral #1 & #2 during blowdown.
0755	Lateral pumping completed and HMR-30 refilled. Some of the thicker sludge moved over to
	lateral #3 - will see if it will need cleaning if still slow next week. Laterals 1 & 2
	clear.
0815	- Mike working on weekly plants systems checks and calibrations today
0830	- Clean pH-315 probe w/Acid solution. Check the HMR30 for oil or sheen: none observed. Spray down weir
	- check TA130 for oil globules: none observed. Water is clear w/ yellow-green tint.
0850	- MW38 Source well flow went down to 1.0 gpm. Lost power & batteries may have died.
0940	- Check on MW38 source well. Power loss. Cycle inverter. Able to restart.
1030	- MW38 source well lost battery power again. Batteries may be getting old or the recent very cold outside temperatures may have affected
	the charging process. Will leave off. Tanks @ 75%.
1124	- START MW38 N+S pumping wells going to T540/541 until at least 600 gal has run thru pipeline to displace any residual
	MW38 source well waters.
1210	- Suspend plant discharge to calibrate pH-740 probe to 4+10 pH STD's.
1217	- Resume normal discharge. Continue with other pH probes calibrations to 4+10 pH STD's → pH-113, 670, 310, 315 + 365
1300	- Weekly plants systems checks and calibrations complete.
1302	- Decant T-351 to bottom valve. Wet well activated. Water is clear. No color.
1420	- Place BTS into maint. Hold to flush reactors feed pumps.
1500	- BTS out of hold. OK
1739	- 701 gal flushed thru MW38 pipeline. Switch MW38 N+S pumping wells to EW6T3. Switch manual valves
	to go to HMR30.
1745	- Plants operations good.

Influent Sources and Flow Rates: @ 0815
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.7 gpm
RWST – 2.3 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.20 gpm(Source well and 38 pumping wells mix)
MW38 ~~N & S~~ 5.0 gpm source well batch
COND/NTES T-530- 0.0 gpm(6am-1pm daily)
MW113 Area – 1.78 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, March 04, 2022**

Time:	
0600	Plant operations good.
0700	Observe HMR-30 sludge laterals are partly clogged again - will work on pumping out build up sludge from them this morning.
0738	Switch MW38 N&S back to direct HMR-30 influent.
0800	- Work w/Chris to put a new TOK of NaOH online in chemical bldg.
0825	- Decant T-351 to bottom valve, wet well activated. water is clear no color.
	- Clean pH-315 probe w/Acid solution. Check the HMR-30 for oil or sheen: none observed. Spray down weir
	- Check TP-130 for oil globules: None observed. water is clear w/ yellow-green hint.
	- Calibrate Rental GEM 5000 SN# G506891/Pinkdental ID43409 to 2.5%/50% CH4: Reading 2.45%. For QTRly Buildings Methane SAFety checks ~~with~~ from Thor & Ann working on today.
0900	Observe latest BTS effluent GC result from 6AM looking normal. Increase T-540/541 from 0.2 gpm to 0.3 gpm
0915	Work on freeing up sludge laterals and transfering extra sludge to thickner tank. Note: BTS & UV-Ox going into hold/recycle while T-510 low during cleanout.
1430	-Site Buildings methane SAFety checks and GAS probes complete.
1440	- Plants operating Good

Influent Sources and Flow Rates: @ 0823
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.6 gpm
RWST – 0.5 gpm
NTES – 248 gpm(10R only)
MW38 T-540/541 – 0.19 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.0 gpm(6am-1pm daily)
MW113 Area – 1.76 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: Saturday, March 5, 2022

0740	Plant operations good
0800	- Decant T-351 to bottom valve. Wet Well not activated. Water is very clear
	- clean ph-315 probe with acid solution, Check HMR30 for oil or sheens: None observed. Spray Weir
	- Checked Tp-130 for oil globules: None observed - water is very clear with a yellow hue.
0900	- Plant operations good
0830	- Filled phosphorus tank with 6 LBS of TSP/60 gallons H_2O

Influent Sources and Flow Rates: @0740
NBBW – 6.2 gpm
N. END ON-SITE – 12.3 gpm
N. END OFF-SITE – 9.0 gpm
RWST – 0.5 gpm
NTES – 0.52 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 1.8 gpm
T-540/541 – 0.32 gpm
MW113 Area – 1.8 gpm

OPERATOR(S) Tom Gilbert

~3" NEW SNOW SAT P.M - SUN. 0.1" IN GAUGE -

LOWRY WTP OPERATIONS LOG

Date: **Monday, March 07, 2022**

Time:	
0550	Plant operations good. Setup to pump extra sludge from HMR-30 laterals during blowdown -
0700	Shutdown UV-Ox so lamp can be changed out. Also switching out battery on UPS. Begin pumping extra sludge, note: after blowdown observed the HMR-30's 1" sludge pump not moving any sludge. After troubleshooting determined the line feeding it was clogged. This line has a lot of calcium buildup - desicced to replace it with new. Changed out UV-Ox lamp but PLC Failed to power up - contacted Brown Hill to see about swapping out the PLC (they were already working on converting the Direct logic's program to Allen Bradley). May try to rewire the direct logic's to an external power supply in the meantime. Prepare to run Bio only after the clarifier until the UV-Ox PLC issue is resolved. Will leave T-540/541 off for now while the BTS adjusts to the higher Flow rates
1200	New HMR-30 sludge lateral line working well
1530	- New safety shower installed
1600	- Decant T-351 from bottom valve, wet well activated. wasted BS clear noodles.
	- Clean pH-315 probe w/ Acid solution, Check the HMR 30 for oil or sheen: None observed. Spray down area
	- Check TP-130 for oil globules: None observed. water BS clear w/ yellow-green tint.
1615	- Plants operations OK.

Influent Sources and Flow Rates: @ 1615
NBBW – 6.3 gpm turbid BS
North End On Site- 12.3 gpm
North End Off-Site – 8.6 gpm
RWST – 4.0 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm to HMR 30
COND/NTES T-530- 0.0 gpm(6am-1pm daily)
MW113 Area – 1.76 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, March 08, 2022**

Time:	
0550	Plant operations okay with UV-OX offline, latest TP-3350 result @ 6.7ug/L for 1,4Dioxane.
0600	Increase the RWST influent from 4gpm to 5gpm. Start next TP-3350 sample early.
↓	Begin weekly effluency GC sampling.
0700	Observe HMR-30 laterals clogged again, manually pump down lateral chambers using clean-out ports. Laterals #1 & #2 cleared during blowdown, #3 still partly clogged and could use more cleaning.
↓	
0800	Work on sludge lateral #3 - 0820 Lateral #3 better #1 & #2 very good. HMR-30 refilling. Mike working on weekly BTS & IX performance sampling today.
1000	-Collect weekly TP-740 + TP-710 samples for Low Level 1,4-Dioxane
1020	-IX Performance Batch testing w/Lab split sampling After 1,192,877gal treated: TP-183 → 150 ug/L; TP-175A → 150 ug/L; TP-174A → 3400 ug/L; TP-170 → 6300 ug/L. System currently running → ~1.75 gpm.
1100	-Decant T-351 from bottom valve. Wet well activated. Effluent is clear No color
	-Clean pH-315 probe w/ Acid solution. Check the HMR 30 for oil or sheen: None observed. Spray down weir.
	-Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green tint.
1210	-working on weekly BTS field readings. Refill BTS phosphorus tank w/ 5 #'s of TSP and 500gal of potable water
1400	Backwash GACF-3340. Observe latest BTS effluent GC result @ 6.21 ug/L for 1,4-Dioxane.
1425	Stop RWST influent and take NBBW out of divert to RWST. This will increase flow to BTS by ~1.3 gpm.
1530	Plant Operations Check

Influent Sources and Flow Rates: @ 0952
NBBW – 6.3 gpm to RWST
North End On Site- 12.2 gpm
North End Off-Site – 8.8 gpm
RWST – 5.0 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.6 gpm to HMR30
COND/NTES T-530- 0.0 gpm~~(6am-1pm daily)~~
MW113 Area – 1.74 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, March 09, 2022**

Time	
0550	Plant operations okay, GC2 TP3350 (BTS effluent) up to 46ug/L 1,4 Dioxane with All of the NBBW and MW38 N's S water being sent to the HAIR-30 / BTS. Start on weekly GC maintenance and calibrations.
↓	
0700	Decant T-351 bottom valve then work on clearing the HAIR-30 laterals during blowdowns.
0730	All three laterals working well. Start filterpress on T-351 (in stage 1)
0840	- Clean pH-315 probe w/ Acid solution. Check the HAIR 30 for oil or algae: None observed. Spray down wash.
↓	- Check TP-130 for oil globules: None observed, water is clear w/ yellow-green hint.
1100	Backup WTP data to Flash drive and DVD. Daily One Drive working well.
1335	Observe latest BTS effluent GC result has remained consistant around 46 ug/L for 1,4 Dioxane
↓	Restart RWST influent at 0.6 gpm.
1500	Shutdown filterpress (in stage 4). Plant operations good.

Influent Sources and Flow Rates: @ 0855
NBBW – 6.2 gpm
North End On Site- 12.3gpm
North End Off-Site – 9.0 gpm
RWST – 0.0 gpm
NTES – 0.56 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.5 gpm
COND/NTES T-530- 0.0 gpm~~(6am-1pm daily)~~
MW113 Area – 1.75 gpm

Operator: **Mike Gelwick / Chris Carlson**

~3" of snow on West melting slowly. 0.1" in gauge.

LOWRY WTP OPERATIONS LOG

Date: **Thursday, March 10, 2022**

Time: 0555	Plant operations okay. Latest BTS GC2TP-3350 result up to 147ug/L. Start GC2 early on
↓	Next TP-3350 sample.
0700	Work on pumping the HMR-30 sludge laterals cleanouts during blowdown.
0720	laterals #1 & #2 clear. #3 still partly clogged but getting better with every cleanout attempt.
0900	- Working on weekly plants systems checks and calibrations today
0935	- Clean pH-315 probe w/ Acid solution. Check the HMR30 for oil or sheen: None observed. Spray down weir
	- Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green tint
1305	- Suspend Plant Discharge to calibrate pH-740 probe to 4+10 pH STD's
1313	- Resume Normal Discharge. Continue w/ other pH probes calibrations to 4+10 pH STD's ⇒ pH-113, 310, 345 & 365. UV-ox offline NO calibration
	⇒ pH-670 this week.
1350	- Weekly plants systems checks and calibrations complete.
	Work with DAN G. on plan to test THF augmentation of the biological system to increase it's efficiency to treat 1,4-Dioxane during ~~periods~~ periods of low retention times (historically when more THF mass was present the biological process was able to handle far greater flows and still remove 1,4 Dioxane with great efficiency). This "pilot test" will consist of dosing 99.9% THF at 20.5 ml ~~/day~~ @ per day into the Blend Tank T-3320 at 5ml doses.
1510	- STOP Filter Press. Still not full. Just the 4.
1515	- Plants operations closed.
1842	Receive call from DAN G. Going to wait on THF augmentation testing. Go ahead and store water to bring the BTS back to normal operations, while UV-ox is down for repairs.

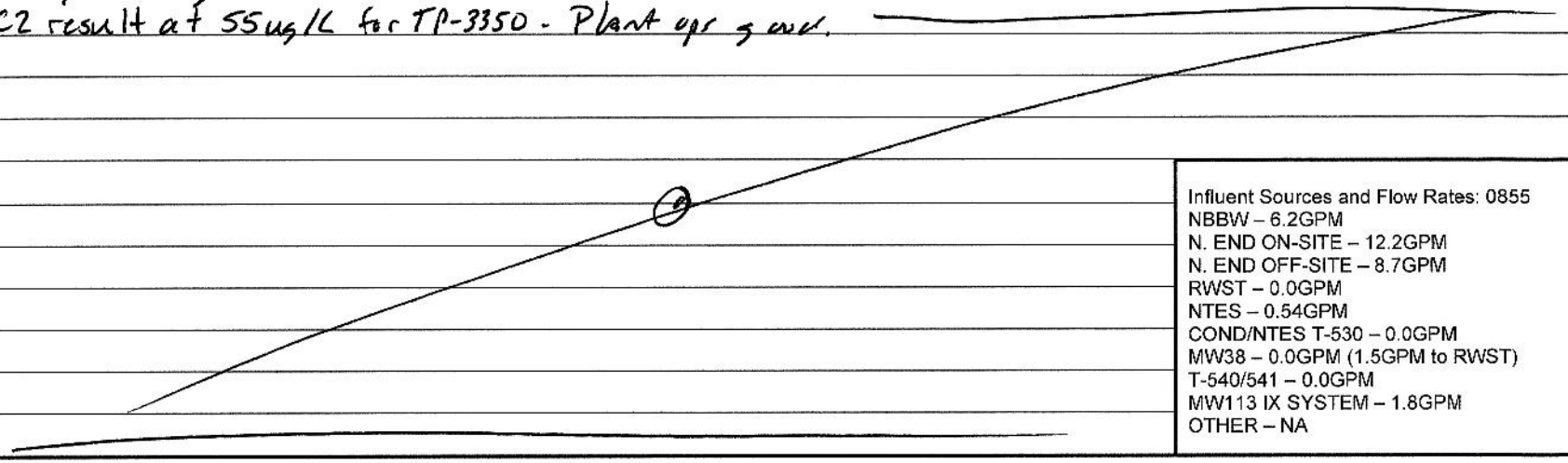
Influent Sources and Flow Rates: 0615
NBBW – 6.2GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.6GPM
RWST – 0.6GPM
NTES – 0.53GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.6GPM
T-540/541 – 0.0GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Mike Gelwick

LOWRY WTP OPERATIONS LOG

Date: **Friday, March 11, 2022**

Time: 0450	Plant operations okay. BTS effluent at 132 ug/L 1,4-Dioxane overnight. Reduce flow to BTS by switching MW38/NTES well to RWST and stop RWST influent to the plant to increase retention time in the BTS.
0638	Start GC2 early on next TP3350 BTS effluent sample. Work on flushing the HMR-30 sludge letter line using potable water and compressed air while 4N blowdown. Start Filterpress on T-351 (in stage 4).
0750	Lateral Flushing completed #2 & #3 are very good and clear lateral #1 still partly clogged.
0900	Latest BTS effluent GC result at 119ug/L for 1,4-Dioxane. Refill phosphorus tank with 40 gallons potable water + 4 lbs TSP. Clean the HMR-30 weir and pH probe – no oil or sheen observed in the HMR-30. Check TP-130 for oil globules – none observed. Water is very clear, light yellow / green.
1015	Decant T-351 top valve, wet well activated. Water is clear, no color.
1130	0900 TP-3350 BTS effluent result down to 65ug/L 1,4-Dioxane.
1200	Plant operations good.
1737	GC2 result at 55ug/L for TP-3350 - Plant ops good.



Influent Sources and Flow Rates: 0855
NBBW – 6.2GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.0GPM
NTES – 0.54GPM
COND/NTES T-530 – 0.0GPM
MW38 – 0.0GPM (1.5GPM to RWST)
T-540/541 – 0.0GPM
MW113 IX SYSTEM – 1.8GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Saturday, March 12, 2022**

Time: 0600	Plant operations good. 2AM BT3 effluent GC2 TP3350 result at 61 ug/L for 1,4-Dioxane
0700	Pre Pump extra sludge and flush Lateral #1 with potable water & compressed air during
↓	blowdown. Clean the HMR-30 weir and pH probe - No oil or sheen observed in the HMR-30.
↓	Check TP-130 for oil globules - none observed. Water is very clear light yellow/green.
0740	All three laterals clear. Note: Decanted T-351 top valve and started Filter press (in stage 4)
↓	before blowdown. Wet well was activated, water is clear, no color.
↓	W.M. transferring slurry wall water to RWST's today.
0900	Stop Filterpress. Decant T-351 bottom valve, wet well activated. Water is clear, no color.
0945	Plant operations good.
1240	Latest TP-3350 BT3 effluent result from 1030 @ 37.96 ug/L for 1,4-Dioxane. 1,4 Dioxane ✓
3/13/22 0715	(0615 plant time) Check plant remotely. Plant operation okay. TP-3350 up to 75 ug/L ✓ Should
↓	come back down once decant water from T-352 has been processed (T-352 @ 47%).
↓	RWST @ 68% & 67%.
0815	(0715 plant time) Check blowdown operations remotely. Start RWST @ 6gpm and send MW38N's to
↓	HMR-30 during refill stage to shorten the time it takes to refill the unit. Laterals appear
↓	to be clear, took ~10 minutes to refill even with the added flow. Stop RWST influent
↓	and set MW38N's to divert to RWST when HMR-30 full at 0826 (0726 plant time).
1910	(1900 plant time) check remotely. GC2 TP-3350 1,4-Dioxane @ 61 ug/L. Decant to HMR-30 stopped ~15 min
↓	ago. RWST @ 71% & 70%. - Plant operations good.
2025	GC2 TP3350 1,4-Dioxane result at 66 ug/L. Plant ops good.

Influent Sources and Flow Rates: 0620
NBBW – 6.2GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.6GPM
RWST – 0.0GPM
NTES – 0.52GPM
COND/NTES T-530 – 0.0GPM
MW38 – 0.0GPM (1.5GPM to RWST)
T-540/541 – 0.0GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, March 14, 2022**

Time:	
0530	(0430 Plant time) ON site - plant operations good. (RWST's @ 74% & 73%, will transfer some water to backup Frac (T-103) tank today). Work on changing clocks to DST on GC CPU's & rebooting them.
↓	
0537	Shutdown plant and update clocks on HMI'S & PLC to DST. Reboot HMI's.
0552	Restart plant.
0645	Decant T-351 bottom valve, wet well activated. Water is clear, no odor. Clean P-352 Y-Strainer.
↓	
0715	Blowdown operations okay. Perform some mixer cleaning of lateral #3 using the cleanout port while unit was in the sparge cycle.
↓	
0840	Start filterpress on T-351 (in stage 4)
0900	- Begin transfer of RWST3 water to empty FRACTANK #2 (T-103) & RWST3 to make room for RWST3 for Extra water.
0930	- Replace bottom NaOH totes with fresh new ones and move old ones to top position for blowdown after later today. Replace peroxide tote with a fresh new one and save remainder in old tote for later use. (cc'ma)
1045	- Clean pH-315 probe w/acid solution. Check the HMI30 for oil or sheen: None observed. Spray down water.
	- Check TP-130 for oil globules: None observed: water is clear w/ yellow-green tint.
1115	- STOP RWST3 water transfer to FRACTANK (T-103). TANKS @ 16% & 56%. Still some room in FRACTANK T-103 if needed after TANKS Equalize.
1345	- Collect Semi-Annual sludge samples for TENORM, TCLP and RADS.
1505	- Plants operations Good

Influent Sources and Flow Rates: 0531
NBBW – 6.1GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.6GPM
RWST – 0.0GPM
NTES – 0.52GPM
COND/NTES T-530 – 0.0GPM
MW38 – 0.0GPM (1.5GPM to RWST)
T-540/541 – 0.0GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Mike Gelwick

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, March 15, 2022**

Time:	
0600	Plant operations good. TP3350 result overnight @ 70ug/L - influent flow to BTS
↓	reduce a little more by switching NBBW to RWST's and turning on RWST influent
↓	at 5.0 gpm. Start weekly GC effluency sampling.
0700	Pump extra sludge from lateral cleanouts during the airspace cycle of blowdown
0730	All three laterals pumping well. Temporarily turn on NBBW & MW38 N's S influents to
↓	refill the HMR-30 quicker. Decanted T-351 from bottom valve. wet well activated water is clear no odor.
0750	HMR-30 refilled, place NBBW and MW38 N's back to RWST direct. Mike preparing for
	weekly performance sampling & Field readings for BTS
1000	- collect TP-710 + TP-740 weekly Low level 1, 4-Bromane samples.
1010	- Ex performance HACH testing w/Lab split sampling AFTER 1,210,401 gal treated: TP-183 → 200 ug/L;
	TP-175A → 220 ug/L; TP-174A → 3800 ug/L; TP-170 → 6500 ug/L. currently system running → 1.77 gpm.
1413	- Clean pH-315 probe w/Acid Solution. Check the HMR30 for oil or sheen: None observed. Spray down weir
	- check TP-130 for oily globules: None observed. water is clear w/ yellowish green hint.
1550	- Plant is operating good.

Influent Sources and Flow Rates: @ 0755
NBBW – 6.2 gpm (to RWST)
North End On Site- 12.2 gpm
North End Off-Site – 9.1 gpm
RWST – 5.0 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.8 gpm (to RWST)
COND/NTES T-530- 0.0 gpm(6am-1pm daily)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, March 16, 2022**

Time:	
0600	Plant operations good. BTS effluent GC2 TP-3350 1,4-Dioxane result at +22ug/L Started on weekly GC maint.
0640	Decant T-351 bottom valve, wet well activated. Water is clear, no color.
0725	Blowdown operations good. All three sludge laterals clear - no extra cleanout pumping needed.
0800	Increase RWST influent from 5.0 gpm to 5.5 gpm.
0900	-Clean pH-315 probe w/ Acid solution. Check the HMI 80 for oil or sheen: None observed. Spray down weir.
↓	-Check TP-180 for oil globules: None observed. Water is clear w/ yellow-green tint.
↓	-Refill polymer tank w/ 2 cups of NALCO polymer and 200 gal of potable water.
1045	Backup WTP data to Flash Drive & DVD. Daily OneDrive backup working well.
0940	-Working on QTRly BTS Blowers servicing today.
1400	-STOP N.End onsite flow to repair a broken valve on NBBW-IW-3 vault. NOTE: NBBW IW-3 is OFF currently. Put a Plug in the camlock on piping.
1425	-RESTART N.End onsite.
1555	-Plants operations Good.

Influent Sources and Flow Rates: @0750
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.7 gpm
RWST – 5.0 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.6 gpm(to RWST)
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.8 gpm

Operator: **Mike Gelwick / Chris Carlson**

~ 4" of Heavy Wet Snow Overnight. Still Lightly Snowing This Morning. 0.54" in Gauge.

LOWRY WTP OPERATIONS LOG

Date: **Thursday, March 17, 2022**

Time:	
0725	- Plants operations Good. Coming out of Automatic Blowdown ok.
0900	- Worthington weekly Plants Systems checks and calibrations today. HMR30 Sludge Interval Sounding very clear today
0930	- Decant T-351 to bottom value. Wet well activated. Water IS clear NO color.
	- Clean pH-315 probe w/Acid solution. Check the HMR30 for Oil or Sheen: None observed. Spray Down worm.
	- Check TP-130 for oil globules: None observed. Water IS clear w/ yellow green tint.
1300	- Acid/BASe clean BTS pH probes In Preparation for calibration Next week.
1417	- Suspend plant Discharge to calibrate pH-740 probe to 4+10 pH STD's.
1423	- Resume Normal Discharge. Continue with other pH probes calibrations to 4+10 pH STD's → pH-113, 310, 315 + 365, NO pH-670 calibration UV-ox
	Still offline due to PLC Issues.
1500	- Weekly Plants Systems checks and calibrations complete.
1540	- Plants Operations Closed

Influent Sources and Flow Rates: @ 0815
NBBW – 6.2 gpm To WST5
North End On Site- 12.2 gpm
North End Off-Site – 8.7 gpm
RWST – 6.0 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 00 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.5 gpm To WST5
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.75 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: **Friday, March 18, 2022**

Time:	
0730	- Plants operations Good. Coming out of Automatic blowdown Ok.
0810	- Decant T-351 to bottom valves wetwell activated. Water IS clear NO color.
	- Clean pH-315 probe w/Acid solution. Check the HMRJO for oil or sheen: None observed. Spray down area
	- Check TP-130 for oily globules: None observed. water IS clear w/ yellow green tint.
0945	- TOM working on filter mass washout.
1057	- Put NBBW into Normal Mode and STOP RWSTS pump to TRANSfer more RWSTS water to FRAC tanks for storage. (T-103 & T-104)
1130	- Work on BACKWASH OF GACF-3340 BTS carbon vessel.
1200	- T-103 FRACTANK full. Switch over to T-104 frac tank
1345	- STOP TRANSfer OF RWSTS waters to T-104 FRACTANK. T-101 @ 12%. Refilled BTS phosphorus tank w/ 4# of TSP and 40 gal potable water.
1400	- RESTART RWSTS flow @ 6.5 gpm to HMRJO and PUT NBBW BACK to DIVERT to RWSTS.
1520	- Plants operations Good

Influent Sources and Flow Rates: @0755
NBBW – 6.2 gpm TO RWSTS
North End On Site- 12.7 gpm
North End Off-Site – 8.8 gpm
RWST – 6.5 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.5 gpm TO RWSTS
COND/NTES T-530- 0.0 gpm~~(6am-1pm daily)~~
MW113 Area – 1.75 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: SATURDAY, MARCH 19, 2022

0800	- Plants operations Good. Go to check other site systems.
0920	- Site systems ok. Decant T-351 to bottom valve. Wet well activated. water IS clear NO color
	- Clean pH-315 probe w/ Acid solution. Check the HMK30 for oil or sheen: None observed. Spray down west.
	- Check TP-130 for oil globules: None observed. water IS clear w/ yellow-green tint. Clean up sludge mess on floor from F. Filter press washout.
	- GAC 2 ok. All blowers ok. Ultrafilters system good.
1100	- Plants operations Good
2000	- Remote log in - Allen
Sunday,	MARCH 20, 2022
0845	- Remote Log in. P-352 Alarming, BUT shut off ok. ACK. Alarm. will Clean y/ strainer monday.
2200	- Remote log in. Allen.

Influent Sources and Flow Rates: @ 0830
NBBW – 6.2 gpm TOTALIZER
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.5 gpm
RWST – 6.5 gpm
NTES – 0.50 gpm
COND/NTES T-530 – 0.0 gpm ~~(6AM-1PM daily)~~
MW38 – 1.5 gpm TOTALIZER
T-540/541 – 0.0 gpm
MW113 Area – 1.73 gpm

OPERATOR(S) Mike Gelwicks

LOWRY WTP OPERATIONS LOG

Date: **Monday, March 21, 2022**

Time	
0600	Plant operations okay. BTS effluent averaging overnight at 33ug/L for 1,4-Dioxane (Has been in 30's all weekend).
	Observe HMI2 has a Windows warning about possible harddrive failure due to an error it has detected. HMI2 appears to be operating normally other than this pop-up error message. Create a restore point and backup RSVIEW TAGS / screens to flashdrive - just in case it does crash.
	Work on reducing the size of the one minute data base on ~~FTPlus~~ HMIFTVIEW1.
0800	Blowdown operations good. Reduce RWST influent from 6.5 gpm to 5.5 gpm and switch MW38N&S from RWST to direct HMR-30 influent. This will increase the flow to the BTS by ~ 0.4 gpm. Work on sludge box ~~clean~~ waste characterization.
0815	- Clean P-352 y strainer. Restart. OK @ 63% CV and 0.50 gpm.
	- Account T-351 from bottom valve. wetwell activated. water is clear no odor
	- Clean pH-315 probe w/ Acid solution. Check the HMR30 for oil or sheen: None observed. Spray down wash.
	- Check TM130 for oily globules: None observed. water is clear w/ following exceptions.
0857	Stop HMIFTVIEW1 to start using smaller OneMIN data file
0905	HMIFTVIEW1 ONLINE. Work on making the OneMinute Bio Log file smaller.
0935	Jim Barry and ~~Rich~~ Cordova of Brown Hill on site to begin to replace the UV-OX PLC
1023	Stop HMIFTVIEW1 to start using smaller BioLog data file.
1029	HMIFTVIEW1 online. Continue waste characterization of ~~the~~ full sludge box.
1400	Mike has replaced the Auto samplers Teflon tubing to T-740.
1545	Plant operations good. Jim Returning tomorrow to complete programming.
	Reduce RWST influent from 5.5 gpm to 5.0 gpm.

Influent Sources and Flow Rates: @ 0805
NBBW – 6.3 gpm TO WWTS
North End On Site- 12.1 gpm
North End Off-Site – 8.9 gpm
RWST – 6.5 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.4 gpm TO WWTS
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.74 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, March 22, 2022**

Time:	
0600	Plant operations okay. Start on weekly plant efficiency checks. Setup to run UV-OX effluent post PDU back to the #1 RWST's for testing. UV-OX flow totalizer at start 21,439,567 gal
0710	Jim B. on site to complete UV-OX programming and test/certify UV-OX alarms & shutdowns.
0750	Blowdown operations good. Mike working on BTS weekly sampling + field readings today
0757	Power up UV-OX and fine tune programming (UV-OX discharging to RWST's)
0835	- Decant T-351 from bottom valve. wet well activated. water IS clear NO color
	- Clean pH-315 probe w/ Acid solution. Check the flume for oil or sheen: None observed. Spray down weir
	- check TP-730 for oil globules: None observed. water IS clear w/ yellow-green tint.
1100	- Refill BTS phosphorus tank w/ 5# of TSP and 50 gal of potable water.
1020	- collect weekly TP-710 + 740 Low level 1,4-Dioxane samples.
1035	- IX Performance HACH testing w/ Lab split sampling After 1,228,018 gal treated: TP-183 ⇒ 240 ug/L; TP-175A ⇒ 290 ug/L; TP-174A ⇒ 4300 ug/L; TP-170 ⇒ 6500 ug/L. System currently Running ⇒ 1.73 gpm.
1500	Jim has the UV-OX running well. Shutdown & Warning alarms tested. Power regulation working well. Will leave the UV-OX running with it's discharge (post PDU) going to the RWST's tonight. Will take a few GC samples of TP-730 to confirm the units operations before discharging to Fuel surge tank.
1540	Plant ops good.
1600	Check peroxide values: Post PDU (TP-730) 0 ppm, Post UV-OX (TP-720) 25 ppm & Pre UV-OX 100 ppm.

Influent Sources and Flow Rates: @1533
- NBBW – 6.1 gpm
- North End On Site- 12.1 gpm
- North End Off-Site – 8.6 gpm
- RWST – 5.0 gpm
- NTES – 0.5 gpm(10R only)
- MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
- MW38 N & S– 0.0 gpm
- COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
- MW113 Area – 1.73 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, March 23, 2022**

Time:	
0550	Plant operations good. UV-OX operated as expected overnight, in recycle to RWST (post PDV) GC TP730 samples taken overnight indicate the system is working correctly. Start on Weekly GC maintenance and calibrations.
0705	Place UV-OX back to normal discharge to Feed surge tank during blowdown - UV-OX totalizer reading 21,447,854 gallons. Total of 8,287 gallons of UV-OX test water returned to the RWST's.
0740	Blowdown operations good. Begin treating stored water. Note, will keep BTS flows the same. Using UV-OX to treat the higher influents from the RWST's.
0805	Turn up UV-OX lamp power to 26.8 KVA and increase flow from 7 gpm to 9 gpm Check peroxide at higher flow rate Post PDV (TP730) @ 0 ppm, Post UV-OX (TP-720) @ 20 ppm and Pre UV-OX @ 100 ppm.
0845	- Decant T-351 to bottom valve. wet well activated. water is clear no odor.
	- Clean pH-315 probe w/ Acid solution. Check the Hach 30 for oil or sheen: None observed. Spray down wash.
	- Check TP-130 for oil globules: None observed. water is clear w/ yellow-green tint.
0920	- Perform monthly 4x8" PDTW Air release + leak detection checks and check PDTW MH175-078 Discharge point. All ok.
1320	Backup WTP Data to Flash and DVD. Daily One Drive backup working well.
1450	- Plants operations good.

Influent Sources and Flow Rates: @ 0847
- NBBW – 6.2 gpm
- North End On Site- 12.2 gpm
- North End Off-Site – 9.0 gpm
- RWST – 6.0 gpm
- NTES – 0.45 gpm(10R only)
- MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
- MW38 N & S– 1.6 gpm
- COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
- MW113 Area – 1.4 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, March 24, 2022**

Time: 0600	Plant operations good. UV-OX working well at full power with flow at 9gpm - ND 1,4-Dioxane on TP730 GC results. UV-OX feed pump P-601 CV @ 93%. 5 Micron bags need to be changed. RWST's down to 37%. will begin to transfer water from back up reserved tanks to them today.
0700	Change out UV-OX bagfilters during blowdowns.
0740	Blowdown operations good. Tom (training); Mike starting on weekly systems checks.
0915	Decant T-351 from bottom valve - Wet well activated - water level now below bottom valve
	Rinse Ph-315 probe with acid solution
	Checked HMR-30 for oil or sheens - none observed. Sprayed down weir
	Checked TP-130 for oil or sheens - none observed water is clear w/ yellow tint
0930	- Calibrate Site Multimeter to 50% LEL to use during LEL-740 calibration to ensure 0% LEL on T-740. Purchase new pH 10 + 4 pH STDs for use during calibrations today.
1000	- START Monthly Main Compressor Oil Moisture prevention. Run at Max speed for ~2 hrs.
1045	- Perform monthly BTS pH probes calibrations to New 4+10 pH STDs
1220	- STOP Main compressor oil moisture prevention run.
1231	- Begin weekly calibration of WTP pH probes using New 4+10 pH STDs @ pH-113, 670, 315, 310 & 365.
1307	- Suspend plant DI charge to calibrate pH-740 to 4+10 pH STDs and LEL-740 to 49% LEL.
1315	- Plant Shut Down for High LEL @ 8% LEL. Automatic Shut Down working properly.
1325	- ReSTART Plant.
1326	- Resume Normal DI charge.
1335	- Weekly/Monthly Plants systems checks and calibrations Complete.
1600	- Plants operations Good.

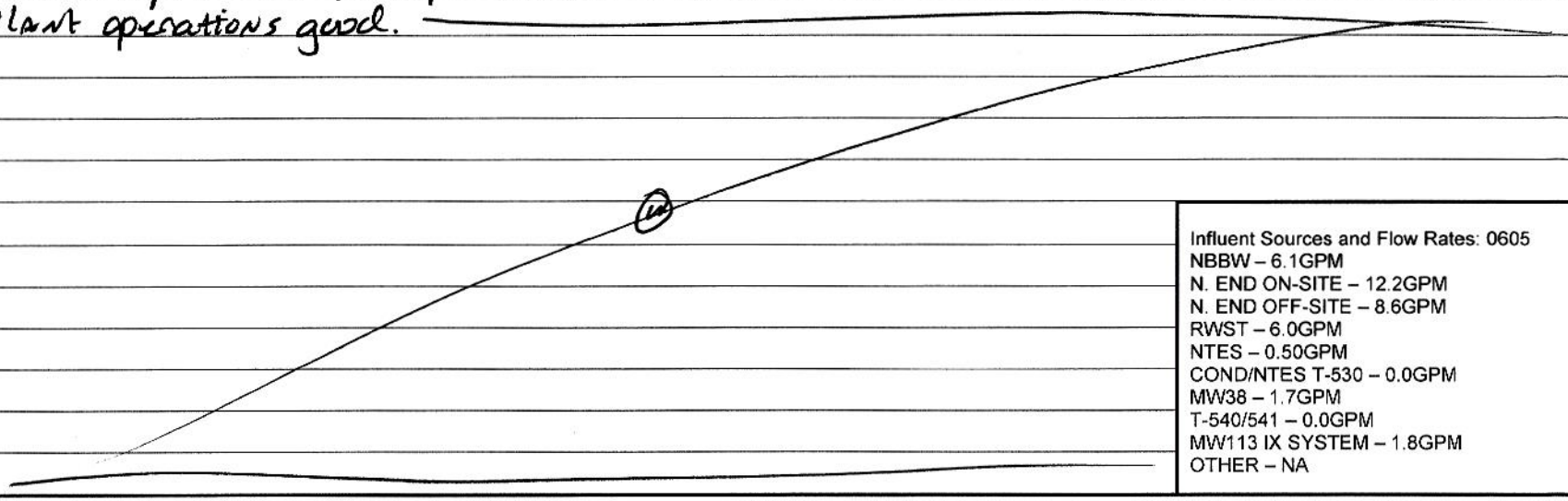
Influent Sources and Flow Rates: @ 0750
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.7 gpm
RWST – 6.0 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.6 gpm
COND/NTES T-530- 0.0 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson** / TOM Gilbert

LOWRY WTP OPERATIONS LOG

Date: **Friday, March 25, 2022**

Time: 0600	Plant operations good. UV-OX working well at full power with flow at 9 gpm, ND on GC TP730 results for 1,4-Dioxane. RWSTs @ 54%. & 57%. - will transfer more stored water from backup tanks into them this morning.
0745	Blowdown operations good. Decant T-351 bottom valve, wet well activated. Water is clear, no color. Clean the HMR-80 weir and pH probe - ND oil or sheen observed in the HMR-30. Observe a slow drip coming from sludge lateral #2 cleanout port. Port may need to be re-sealed if drip continues. Check TP-130 for oil globules - none observed. Water is very clear light yellow/green.
0840	Jim Barry on site. Go through complete program to update the user manual for the UV-OX with new user control interface. Also do more shutdown and warning testing - All working well.
1115	Jim was left.
1130	RWSTs up to 60%., stop transfer.
1200	Plant operations good.



Influent Sources and Flow Rates: 0605
NBBW – 6.1GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.6GPM
RWST – 6.0GPM
NTES – 0.50GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.7GPM
T-540/541 – 0.0GPM
MW113 IX SYSTEM – 1.8GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Saturday, March 26, 2022

0930	Plant operations good.
1000	Decant T-351 to bottom valve, wet well activated. Water was cloudy for 2 minutes then cleared up. T-352 now @ 44%
	Clean HMR-30 wev and PH-315 probe with acid solution - no oil or sheens observed
	Checked TP-130 for oil globules or sheens - none observed water is very clear w/ yellow tint
1140	Filled phosphorus tank with 60 gallons / 6LBS TSP
1215	Plant operations good
(w) 0815 ↓	Check plant remotely - All okay RWSTs @ 61% & 61%. Both the UV-ox and BTS are working well at high flow rates.
(w) 1320	Check plant remotely - All okay. RWST @ 57% & 55%.
3/27/22 0640	Check plant remotely - All okay
1651 ↓	Receive GC1 TP730 fault alarm. Check remotely the GC has posted a false high value of 1774.00 ug/L for Chloroform. Peak is visually small like a normal result that is <1 ug/L. Take screen shot of result, clear alarm, take UV-ox out of recycle and start GC1 on next TP730 sample early. Check plant ops - all ok RWST @ 33% & 32%.
2015 ↓	Check GC1 result remotely. Chloroform result normal at 0.29 ug/L, peak looks to be very similar to the last sample with the false high calculated value.
↓	Plant ops good.

Influent Sources and Flow Rates: @0950
NBBW – 6.2 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.7 gpm
RWST – 6.0 gpm
NTES – 0.50 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 1.8 gpm
T-540/541 – 0.0 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Tom Gilbert / Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Monday, March 28, 2022

0615	Plant operations good. RWSTs at 22% & 21%. Start transfer of remaining stored
↓	water in T-103 back to the RWSTs.
0740	Blowdown operations good.
0820	Reboot HMIFTVIEW1 to reset temporary memory storage.
0826	HMIFTVIEW1 online.
	- Decant T-351 to bottom valve. Wetwell activated. Water is clear no color
	- Clean pH-315 probe w/ Acid solution. Check the HMX30 for oil or sheen; none observed. Strainer worn.
	- Check TP-130 for oil globules: none observed. Water is clear w/ yellow-green tint.
0830	Transfer of stored water completed. RWSTs @ 50%.
1535	- Plants operations Good.

Influent Sources and Flow Rates: @ 0840
NBBW – 6.2 gpm
N. END ON-SITE – ~~6.0~~ gpm 12.2
N. END OFF-SITE – ~~WELL~~ gpm 6.9
RWST – 6.0 gpm
NTES – 0.5 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 1.8 gpm
T-540/541 – 0.0 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Chris Carlson & Mike Gelwick

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, March 29, 2022**

Time:	
0600	- Plants operating Good. Prep to collect TP-730, 740 + 710 weekly samples.
0625	- Collect TP-730 weekly QC / Lab split samples + START Efficiency checks and collect TP-710 and TP-740 weekly Low Level 1, 4-Dioxane samples.
0740	Blowdown operations good. Mike working on BTS sampling + field readings today.
0830	- Decant T-351 to bottom valve Wet well Activated water is clear No color.
	- Clean pH-315 probe w/ Acid solution. Check the Hach 30 for oil or sheen: None observed. Spray down weir.
	- Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green tint
1000	- IX System performance HACH Testing w/ Lab split sampling After 1,245, 453 gal Treated: TP-183 → 240 ug/L; TP-175A → 290 ug/L; TP-174A → 4600 ug/L; TP-170 → 6700 ug/L. System currently running → 1.73 gpm.
1015	RWST's at 29'1 & 28'1, reduce RWST influent from 6 gpm to 0.6 gpm, reduce UV-OX flow from 9 gpm to 7 gpm, reduce BTS flow from HMR-30 from 6 gpm to ~2 gpm. Reduce UV-OX power from 28.8 KVA to 25.7 KVA. Returning operations to pre PLC failure settings now that stored water has been treated.
1330	Pump RWST secondary containment sump (snow melt from multiple events and 400 gallons of snow melt from decon pad) into the RWST for treatment.
1440	Total of 2759 gallons of secondary containment water added to RWST.
1605	- Plants operating Good.

Influent Sources and Flow Rates: @ 0633
NBBW – 6.3 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.6 gpm
RWST – 6.0 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.0 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.71 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, March 30, 2022**

Time: 0520	Plant operations good. Start weekly QC maintenance and calibrations. Refill phosphorous
↓	tank with 60 gallons potable water + 6 lbs TSP.
0630	Start up T-530 to BTS at 0.2 gpm (pump set to operate daily @ 6am-1pm), T-530 @ 38%.
0750	Blowdown operations good.
0900	- Decant T-351 to bottom valve. Wet well Activated. water is clear no color.
↓	- Check TP-130 for oil globules: None observed. water is clean w/ yellow green tint
↓	- Clean pH-315 probe w/ Acid solution. Check the Hach 30 for oil or sheen: None observed. Spray down water.
1030	Backup plant data to flash drive and DVD. Daily OneDrive backup working well.
1410	Restart T-540/541 to BTS at 0.3 gpm (tanks @ 69% & 70%)
1510	- Plants operations Good.

Influent Sources and Flow Rates: 0637
NBBW – 6.2GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.50GPM
COND/NTES T-530 – 0.2GPM (6am-1pm)
MW38 – 1.7GPM
T-540/541 – 0.0GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson & Mike Gelwicke

LOWRY WTP OPERATIONS LOG

Date: **Thursday, March 31, 2022**

Time:	
0650	- Plants operations Good
0700	- Automatic blowdown operations Good. working on weekly Plants systems checks and calibrations today.
0815	- Decant T-351 to bottom valve. wet well Activated. water IS clear NO color.
	-Clean pH-315 probe w/Acid solution. Check the HMI30 for oil or sheen: None observed. Spray Down wet.
	- Check TP-130 for oil globules: None observed. Water IS clear w/yellow-green tint
1136	- SUSPend plant Discharge to calibrate pH-740 probe to 4+10 pH STD's.
1145	-Resume Normal Discharge. continue with other plants pH probes calibrations to 4+10 pH STD's ⇒ pH-113, 670, 310, 315 + 365.
1305	- Weekly Plants Systems Checks and calibrations complete.
1415	- Work on Repairing air leak. on MW155-EW-1. small pinhole developed on Air line where it was contacting Fitting Adapter.
1445	- MW155-EW-1 restarted ok. N.End offsite flow dropped slightly during repair.
1515	- Plants operations Good.

Influent Sources and Flow Rates: @0655
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.29 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.72 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: **Friday, April 01, 2022**

Time:	
0645	- Plants operations Good.
0700	- Automatic Blowdown operations Good.
0900	- Working on setting up for Annual sampling on Monday. Triple Rinse All containers and measuring devices. Program and
	calibrate Auto samplers. Will add preservatives just prior to startup. Get Cond sheets + COC's + Labels ready
1130	- Decant T-351 to bottom valve. Wet well did not activate. Water is clear No color.
	- Clean pH-315 probe w/Acid solution. Check TK House 30 for oil or sheen: None observed. Spray down west.
	- Check TA-130 for oil globules: None observed. Water is clear w/yellow green tint.
1215	- Plants operations Good

Influent Sources and Flow Rates: @ 0650
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.9 gpm
RWST – 0.6 gpm
NTES – 0.48 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.5 gpm
COND/NTES T-530- 0.21 gpm(6am-1pm daily)
MW113 Area – 1.73 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: April 2, 2022 SATurday

1200	Plants operations good.
1330	Decant T-351 to bottom valve. Wet well activated, water is clear no color. Clean pH-315 probe w/ acid solution. Check HMR-30 for oil or sheen: none observed. Spray down weir. Check TP-130 for oil globules: none observed. Water is clear with brownish-green tint. Both GC's operational within limits. All Blowers okay. Refill phosphorus tank with 5# TSP and 50gal potable water.
1430	Plants operations good.
2000	- Remote Log in - Allon
Sunday April 3, 2022	
0830	- Remote Log in - Allon
1950	- Remote Log in - Allon

Influent Sources and Flow Rates: @ 1230
NBBW – 6.3 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.6 gpm
RWST – 0.6 gpm
NTES – 0.48 gpm
COND/NTES T-530 – 0.22gpm (6AM–1PM daily)
MW38 – 1.5 gpm
T-540/541 – 0.33 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Manuela Seewald / Mike Cochran

LOWRY WTP OPERATIONS LOG

Date: **Monday, April 04, 2022**

Time	
0600	Plant operations good. Observe N. Toe P-002W pump is stalling momenteraly from time to time.
↓	Will swap out pumps this morning.
0700	Mike adding preservitives to MP-001 composite containers.
0740	Blowdown operations good.
0800	Start both auto samplers on MP-001. Effluent total reading 252,998,366 gallons, flow
↓	rate at startup 29.2 gpm, pH - 7.40 @ 6.87 @ 15.9°C.
0845	Mike swapping out P-002W - cleaned P-002W online @ 0925.
1010	- Decant T-351 to bottom valve. wetwell activated. water is clear no color.
	- clean AA-315 probe w/ Hcl solution. Check the HMI 80 for oil or sheen: none observed
	- check TP-130 for oil globules: none observed, water is slightly cloudy w/ yellow-orange tint.
	- Refill Polymer tank w/ 200 gal of potable water and 2 cups of NALCO polymer.
1038 (W)*	- Begin working on Annual early warning sampling / collecting Aliquots for composites. Add preservatives to composite containers.
1150	- START Flush of MP-001 + check for residual chlorine: NONE detected. OK to use Hcl preserved vials
1200	- collect 1st set of Time paced grab samples @ MP-001 sample port for VOC's, Low Level 1,4-Dioxane and NONYlphenols,
	place samples in fridge. water is very clear NO color.
1220	- Process Early warning composites: Gently stir each one and check the pH values: SVOC's pH @ 7.00 su metals READ pH @ 1.52 su
	- fill sample bottles, All Early warning samples placed in fridge until packing tomorrow
1550	- START Flush of MP-001 sample port and check for residual chlorine: NONE detected
1600	- collect 2nd set of time paced GRAB samples for VOC's, Low Level 1,4-Dioxane and NONYlphenols. Place samples in fridge
	water is very clear NO color.
1610	- Plants operations Good. Autosamplers on track
1950	Start MP-001 port flush and check for residual chlorine - NONE detected!
2000	Collect 3rd set of time paced grab samples for VOCs, low level 1,4-Dioxane and
↓	NONYlphenols, waters very clear NO color. Place in fridge with others.
2345	Start MP-001 port flush and check for residual chlorine - NONE detected

Influent Sources and Flow Rates: @ 0806
- NBBW – 6.2 gpm
- North End On Site- 12.8 gpm
- North End Off-Site – 8.9 gpm
- RWST – 0.6 gpm
- NTES – 0.5 gpm(10R only)
- MW38 T-540/541 – 0.2 gpm(Source well and 38 pumping wells mix)
- MW38 N & S– 1.5 gpm
- COND/NTES T-530- 0.2 gpm(6am-1pm daily)
- MW113 Area – 1.7 gpm

(W)* 11/8 Manuela has taken a manual level at the NBBW sump for transducer check. DTW @ 27.06 = GWE = 5685.49'. HMI reading 5685.50, no calibration needed at this time.

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: Tuesday, April 05, 2022

0000	Collect 4th set of time paced grab samples for VOCs, low level 1,4-Dioxane and NONYphenols. WATER IS very clear, NO color. Place samples in Fridge with others.
0315	- Plants Operations Good. Prep for BTS sampling and MP-001 GRAB
0350	- START Flush of MP-001 Sample port and check for residual chlorine: None Detected
0400	- collect 5th set of time paced grab samples @ MP-001 for VOCs, Low-Level 1,4-Dioxane and Nonylphenols. water IS very clear NO color place samples in Fridge with others.
0415	- working on BTS Sampling and START Efficiency checks.
0450	- Collect TP-730, Weekly GC Lab split samples. Also collect TP-710 and TP-740 weekly Low Level 1,4-Dioxane samples. - ALL Samples placed in Fridge until Affecting Later today.
0750	- START Flush of MP-001 Sample port and check for residual chlorine: None detected.
0800	- Collect 6th set of time paced grab SAMPLES @ MP-001 for VOCs, Low Level 1,4-Dioxane and NONylphenols with QC volume for each, water IS very clear NO color, Place Samples in Fridge with others. - STOP Autosamplers and process composite samples. Gently stir each composite and check pH values. - SVOCs pH @ 7.20 / Metals-Rads pH @ 1.54. Total Effluent @ 253,044,344 gal. A total of 45,978 gal treated during sample period. Fill sample bottles
0900	- Affix All Samples on Ice for SHIPMENT to Labs. and work on Sampling paperwork.
0905	- IX Performance HACH Testing w/Lab Split Sampling After 1,262,677 gal Treated: TP-183 @ 270 ug/L; TP-175A @ 890 ug/L; TP-174A @ 4800 ug/L; TP-170 @ 6,700 ug/L. currently running @ 1.72 gpm
1000	- Check TA-130 for Oil globules: None observed. water IS slightly cloudy w/ yellow-orange tint - Decant T-351 from bottom valve. wet well and NOT aeration. water IS Clear NO color - Clean pH-315 probe w/ ACID solution spray down weir and check Hand Sol for oil or sheen: None observed.
1500	- Plants operations Good.

Influent Sources and Flow Rates: @ 0350
NBBW – 6.4 gpm
N. END ON-SITE – 12.3 gpm
N. END OFF-SITE – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm
COND/NTES T-530 – 0.2 gpm (6AM–1PM daily)
MW38 – 1.5 gpm
T-540/541 – 0.31 gpm
MW113 Area – 1.72 gpm

OPERATOR(S) Chris Carlson / Mike Gelwick

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, April 06, 2022**

Time:	
0550	Plant operations good. Start on weekly GC maintenance and efficiency checks.
0615	Reboot HMIFTVIEW1 to update virus software.
0745	Blowdown operations good.
0815	- Clean pH-315 probe w/Acid solution. Check the HMI-30 For oil or sheen: None observed. Spray Down wash.
↓	- Decant T-351 to bottom valve. Wet well activated. Water IS clear No color.
↓	- Check TA-130 For oily globules: None observed. Water IS clear w/ yellow-green tint.
0840	- working on ST3 Field readings today.
1000	Backup WTP data to Flash drive and DVD. Daily One Drive backup working well but slow today.
0938	Tom has taken a manual level at MW38N well (MW38-1028N-256E) for quarterly transducer
↓	check. DTW @ 51.55' = GWE 5720.25'. HMI reading 5720.19', No calibration needed
↓	at this time.
1318	Tom has take a manual level at MW38S well (MW38-1705-140W) for quarterly transducer
↓	check. DTW @ 71.29' = GWE 5735.47'. HMI reading 5735.26'. Transducer reading
↓	recalibrated to 5735.47' today.
1615	Plant operations good.

Influent Sources and Flow Rates: @0745
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.2 gpm
RWST – 0.6 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.6 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, April 07, 2022**

Time:	
0615	Plant operations good. Setup For Chamber B of HMR-30 cleanout
0700	~~Reboot~~ Shutdown UV-OX and keep INFluents in divert to RWST for Chamber B cleanout.
0730	E.T. Tech on site with vacuum trailer.. cleaning out Chamber B also cleaned
↓	Chamber A of ~6" of solids. Chamber B mixer removed cleaned and reinstalled.
0900	Begin refilling the HMR-30 while ~~E.T.~~ E.T. empties the vacuum rd sludge
↓	bins and decons their equipment. Decon water also added to sludge
↓	bins. liquids pumped out of bins to T-351, leaving heavy solids that will
↓	be dewatered and added to sludge box when box has been emptied.
1000	HMR-30 refilled restart UV-OX - warming up. Note: POU backwashed while UV-OX was OFF today.
1013	UV-OX discharging.
1110	- Clean pH-315 probe w/ Acid solution. Check for HMR-30 for oil or sheen: None observed. Spray down work.
	- Check TP-430 For oily globules: None observed. Water is clear w/ yellow-green tint.
	- working on weekly Plants systems checks and calibrations.
1345	Stop HMI2 to replace UPS and reboot to upgrade Virus software.
1351	ONline - All okay.
1417	- suspend plant DB charge to calibrate pH-740 probe to 4 + 10 pH STDT
1424	- Resume normal DB charge. continue with other pH probes calibrations to 4+10 pH STDT 2pH-113, 670, 310, 315 + 865
1440	- Decant T-351 to bottom valve. wetwell activated. water is clear no color.
1450	- Reduce UV-OX Flow to 6.5 gpm From 7.0 gpm
1505	- weekly plants systems checks and calibrations complete.
1515	- Plants operations Good

Influent Sources and Flow Rates: @1130
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.6 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530-0.49 gpm(6am-1pm daily)
MW113 Area – 1.74 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, April 08, 2022**

Time:	
0705	- UV-OX Shut down for Low flow. May be the 6.5 gpm set to yesterday NOT QUITE enough. Will turn back to 7 gpm and see if works out. Won't until Blowdown is over and HMI 30 is verified before restart.
0730	- Increase BWTB to 6 gpm to refill HMI 30 system.
0800	- Restart UV-OX, restart/warm up process ok.
0810	- UV-OX back on line. working properly.
0835	- HMI 2 has a blue screen message, received Heartbeat Alarm. Restart HMI 2. Alarm for Heartbeat still showing. Reboot HMI 2 Again.
0907	- HMI 2 back on Line. Alarm for Heartbeat is gone now. Allow
0915	- Decant T-351 to bottom valve. Wet well activated. water is clear No color.
	- Clean pH-315 probe w/ Acid solution. Check the HMI 30 for oil or sheen: None observed. Spray down area. HMI 30 water very clear.
	- Check TP-130 for oil globules: None observed. water is clear w/ yellow-green tint.
1335	- Place BTB into manual Hold to flush Reactor Feed Lines
1401	- BTB out of Hold. ok
1430	- Alarms, operations Good.

Influent Sources and Flow Rates: @ 0754
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.6 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S–1.6 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.71 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: Saturday, April 09, 2022

0545	On site, plant operations good. Refill phosphorus tank with 40 gallons water + 4 lbs TSP.
0618	PID of P-600/601 adjusted to react quicker to flow adjustments. Reduce UV-OX feed from 7 gpm to 6.5 gpm (will observe how flow rate stabilizes when UV-OX switches from discharging to recycle during blowdown).
0700	P-600/601 flow regulation working better. Flow did dip momentarily below 5 gpm but pumps speed increased quickly to compensate. Clean the HMR 30 weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed. Water is clear, light yellow/green.
0820	Decant T-351 bottom valve, wet well activated. Water is clear, no color.
0850	Plant operations good.
2000	Check plant remotely - All okay
4/10/22 0630	Check plant remotely - All okay
2025	Check plant remotely - All okay.

Influent Sources and Flow Rates: @ 0645
NBBW – 6.3 gpm
N. END ON-SITE – 12.3 gpm
N. END OFF-SITE – 8.8 gpm
RWST – 0.6 gpm
NTES – 0.5 gpm
COND/NTES T-530 – 0.2 gpm (6AM–1PM daily)
MW38 – 1.7 gpm
T-540/541 – 0.3 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, April 11, 2022**

Time:	
0610	Plant operations good.
0750	Blowdown operations good.
0845	- Decant T-351 to bottom valve. wet well activated. water is clear no color.
	- clean pH-315 probe w/ acid solution. Check the Hose 30 for oil or sheen: None observed. spray down wash. water is very clean
	- check TA-130 for oil globules: None observed. water is clear w/ yellow-green tint.
1505	- Plants operations Good.

Influent Sources and Flow Rates: @0755
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.6 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, April 12, 2022**

Time:	
0500	- Plants operations Good. Prep for TP-730, 740 + 710 samples.
0515	- collect TP-730 GC/Lab split samples and begin Efficiency checks. Also collect TP-710 and TP-740 weekly Low Level 1,4-dioxane samples. water is very clear no color. samples into Fridge until pickup.
0715	Reboot HMIFTVIEW1 when moving power to UPS connections, to accomidate Cell signal booster.
0750	Blowdown operations good.
0825	- Decant T-351 to bottom valve. wet well activated. water is clear no color
	- Clean pH-315 w/Acid solution. Check the Hole 30 for oil or sheen: None observed. Sample Down weir
	- check TP-130 for oil globules: None observed. water is clear w/ yellow-green tint.
	- working on BTS sampling and field readings today.
1000	Jim B. on site to drop off UV-OX PLC drawings and to look at main PLC for upgrade cost estimate
	- EX performance HACH testing w/Lab split sampling After 1,280,054 gal Treated: TP-182 @ 240 ug/L; TP-175A @ 320 ug/L; TP-174A @ 5200 ug/L; TP-170 @ 6800 ug/L. Currently Running @ 1.70 gpm.
1150	- Refill BTS Phosphorus TANK w/ 5# of TSP + 50 gal of potable water
1313	Tom sending in manual levels of the N-TOE area for transducer calibration checks.
	MPZ-11 DTW @ 32.10 = GWE 5734.33. HMI reading 5734.44, no calibration need at this time.
	MPZ-12 DTW @ 24.32 = GWE 5738.77.' HMI reading 5739.15. Calibration performed at this time.
	MPZ-10R DTW @ 34.38 = GWE 5728.27'. HMI reading 5727.99'. Calibration performed at this time.
	NTES-180W DTW @ 35.87' = GWE 5729.76'. HMI reading 5731.15' (manual level double checked-ok). this transducer is off by 1.39' (will observe it later to see if it's going bad) Recalibration performed at this time.
	NTES-SUMP DTW @ 28.63' = GWE 5734.20'. HMI reading 5734.19'. No calibration needed at this time.
1630	Plant operations good.

Influent Sources and Flow Rates: @0525
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 9.1 gpm
RWST – 0.6 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.5 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 670 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, April 13, 2022**

Time:	
0600	Plant operations good.
0610	Stop MW38N & S extraction to prepare for MW38 source well batch extraction. Start on weekly GC maintenance and calibrations with Mike to refresh him on it.
0615	Increase RWST influent from 0.6 gpm to 2.0 gpm.
0730	Switch MW38 from direct HMR-30 influent to T-540/541. Mike starting up MW38 source well ~~extraction~~ extraction-
1105	-Decant T-351 to bottom valve. Wet well activated. Water IS clear no action.
	-Clean PH-365 probe w/acid solution. Check PH Hose 30 for oil or slime: None observed. Spray down vent. Water IS clean
	-Check TP-130 for oily globules; None observed. Water IS clear w/yellow-green hue.
	-Calibrated both AIDS (Rental & S.K) to check BTS vent to compare results. Rental AID Reading 10.6 ppm @ VTP-3350 and 3.5 ppm @ VTP-3360. These are More Normal Readings. S.K AID May Need some service. If TS Readings were super High again and did not settle out/stop.
1130	- BACK UP GC+WTP DATA TO Flash Drive and OVD. Reduce T-540/541 flow to BTS from 0.7 gpm to 0.2 gpm so BTS CAN adjust to the Fresh Source well water.
1138	Receive UV-ox Warning alarm - Crystal wiper Failed to travel the full length within the 60 seconds limit. Observe the wiper would travel up but stick within 1" or 2" from the top. Increased air pressure slightly going to the piston and wiper was able to travel the full length, piston automatic oiler working well.
1620	Receive UV-ox warning for wiper again - Increased pressure a bottle more to get it working well.
1914	Receive UV-ox warning for wiper again. Solenoid valve may not be full opening - will add extra oil to the valve in the morning.

Influent Sources and Flow Rates: @ 0605
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 6.9 gpm
RWST – 0.6 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.5 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, April 14, 2022**

Time	
0600	Plant operations okay. Add pneumatic oil inline to UV-OX wiper solenoid and do multiple test runs, working well now but has been sticking after it ~~site~~ sits between the 900 seconds cycle times.
	Observe the MW38 source well extraction stopped at 0138 this morning - Solar system ran out of battery power. Able to get it restarted this morning. T-540/541 levels at 62%.
0750	Blow down operations good. UV-OX wiper cycling normally. Mike starting weekly system checks and calibrations.
0846	Observe MW38 source well has again powered down due to low battery voltage. Will leave off, T-540/541 at 63%. begin displacing source well water in the pipeline to T-540/541 using MW38 N&S extraction wells.
0911	- Decant T-351 to bottom valve. Wet well activated. Water is clear No color
	- Clean pH-315 probe w/ Acid solution. Check the HMA 30 for oil or sheen: None observed. Spray down weir, water is clean. No color
	- Check TM-130 for oil globules: None observed. Water is clear w/ yellow-green tint.
1240 ~~1300~~	- Suspend Plant discharge to calibrate pH-7&10 probe to 4+10 pH STD.
1248	- Resume normal discharge. Continue with other plant pH probes calibrations #04 10 pH STD: pH-113, 670, 310, 315 + 365
	- Chris performing monthly POTW Air Relays and 4x Bin leak checks. Also checking POTW MH 175-078 discharge point. All ok. No leaks observed.
1345	- Weekly Plants systems checks and calibrations complete.
1401	- Switch MW38 N+S wells to HMA 30 mode. 611 gal Flushed thru MW38 pipeline. Reduce RWSTS
	Flow TO 0.60 gpm
1446	- Plants Operations Good.

Influent Sources and Flow Rates: @0600
NBBW – 6.2 gpm
North End On Site-12.2 gpm
North End Off-Site – 8.7 gpm
RWST – 2.0 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.2 gpm(Source well and 38 pumping wells mix)
MW38 ~~N & S~~ – 4.7 gpm Source well to T-540/541
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, April 15, 2022**

Time:	
0720	-Plants operations Good. Automatic Blowdown operations Good.
0750	-Increase P-006/T-540 to 0.30gpm. GC Results ok.
0930	-Decant T-351 to bottom valve. wet well activated. water is clear no color.
	-Clean pH-315 probe w/Acid solution. Check the Hach 30 for oil or sheen: None observed. Spray down wash
	-Check TP-130 For oily globules: None observed. water is clear w/ yellow-green tint.
1030	-Refill BTS phosphorus TANK w/ 4# of TSP and 40 gal of potable water
1120	-Plants operations Good.
1158	-Receive UV-ox Shut down and P-752 Fault Alarms. Back on site to check readings out. Able to reset P-752 reset and going. Check UV-ox All seems ok.
1222	-RESTART UV-ox.
1235	-Plants operations BACK TO Normal / ok.

Influent Sources and Flow Rates: @0750
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.8 gpm
RWST – 0.6 gpm
NTES – 0.48 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.70 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: SATURDAY, APRIL 16, 2022

0640	- Plants operations Good. Go to check other site systems
0740	- Site systems All ok. Automatic blowdown operations cutting, OK
0805	- Relamp T-351 to bottom valve. wetwell activated. water IS clear no color
	- Clean pH-315 probe w/Acid solution. check TIC HMR-30 for oil or sheen: None observed. Spray down weir. water IS very clear
	- Check TM-130 for oil globules: None observed. water IS clear w/yellow-green tint.
0945	- Plants operations Good

Influent Sources and Flow Rates: @0645
NBBW – 6.2 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.4 gpm
RWST – 0.6 gpm
NTES – 0.50 gpm
COND/NTES T-530 – 020 gpm (6AM–1PM daily)
MW38 – 1.7 gpm
T-540/541 – 0.31 gpm
MW113 Area – 1.71 gpm

OPERATOR(S) Mike Gedwick

LOWRY WTP OPERATIONS LOG

Date: **Monday, April 18, 2022**

Time:	
0600	Plant operations good.
0745	Blowdown operations good.
0940	- Decant T-351 to bottom valve. Water will accumulate. Water is clear w/o color.
	- Clean pH-315 probe w/ acid solution. Check the HMI at 80 for oil or sheen: None observed. Spray down wet. Water is very clean.
	- Check TP-180 for oil globules: None observed. Water is clear w/ yellow-green tint.
1020	Reboot HMI (ETVIEW1 to update software. Online at 1025 -
1445	- Plants operations Good.

Influent Sources and Flow Rates: @ 0758
NBBW – 6.2 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.6 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, April 19, 2022**

Time:	
0450	- Plants operations Good. Prep for weekly TP-780 740 + 710 samplings.
0515	- collect TP-730 GC/Lab splits samples and START Efficacy cleans. Also collect TP-740 + TP-710 Low Level 1,4-B, Styrene samples.
0830	- Decant T-351 to bottom valve. Wetwell activated. water IS clear no color.
	- Clean pH-315 probe w/Acid solution. Check TP-HMR 30 for oil or sheen: None observed. Spray down weir. water IS clear
	- Check TP-130 for oily globules: None observed. water IS clear w/yellow-green tint.
	- working on BTS weekly sampling and Hold readings today.
0900	- Refill BTS phosphorus TANK w/6# of TSP and 60 gal of potable water
0955	- IX Performance HACH Testing w/Lab split sampling After 1,297,279 gal treated: TP-183 → 150 ug/L; TP-175A → 170 ug/L; TP-174A → 5200 ug/L; TP-170 → 7100 ug/L. currently running → 1.70 gpm.
1320	INCREASE MW38S extraction from ~0.9 gpm to ~1.2 gpm -
1505	-Plants operations Good

Influent Sources and Flow Rates: @0525
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 9.0 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.28 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.70 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, April 20, 2022**

Time:	
0600	Plant operations good. Mike starting on weekly GC Maintenance and calibrations.
0742	Blowdown operations good.
1020	- Decant T-351 to bottom valve. Wet well activated. Water IS clear No color.
	- Clean pH-315 probe w/Acid solution. Check the Hach 50 for oil or sheen: None observed. Spray down well. water IS clear
	- Check TP-130 for oily globules: None observed. water IS clear w/yellow-green tint
1330	- WTP + GC's DATA BACKED UP TO Flash Drive and DISK ok.
1545	- Plants operations Good.

Influent Sources and Flow Rates: @ 0456
NBBW – 6.3 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.5 gpm
RWST – 0.6 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, April 21, 2022**

Time:	
0630	Plant operations good.
0750	Blowdown operations good. Mike starting weekly systems checks and calibrations.
0930	- START main WTP compressor oil moisture prevention run @ MAX speed for 2 hrs.
0940	- Decant T-351 to bottom valve. wetwell activated. water IS clear NO color
	- Clean pH-315 probe w/ acid solution. Check TK Hand 80 for oil or sheen: None observed. Spray down west. water IS slightly cloudy today
	- Check TP-180 for oily globules: None observed. water IS clear w/ yellow-green tint.
	- Refill polymer tank w/ 2 cups of NALCO polymer and 200 gal of potable water
1130	- STOP main compressor oil moisture prevention run.
1140	- Acid/Base clean DIS pH probes today IN preparation for calibration next week
1320	- Suspend Plant DIS charge to calibrate pH-7410 to 4+10 pH STD's
1326	- Resume Normal DIS charge. continue with other pH probes calibrations to 4+10 pH STD's @ pH-113, 670, 310, 315 & 365.
1415	- Weekly Plants checks and calibrations Complete.
1500	- Plants operations Good.

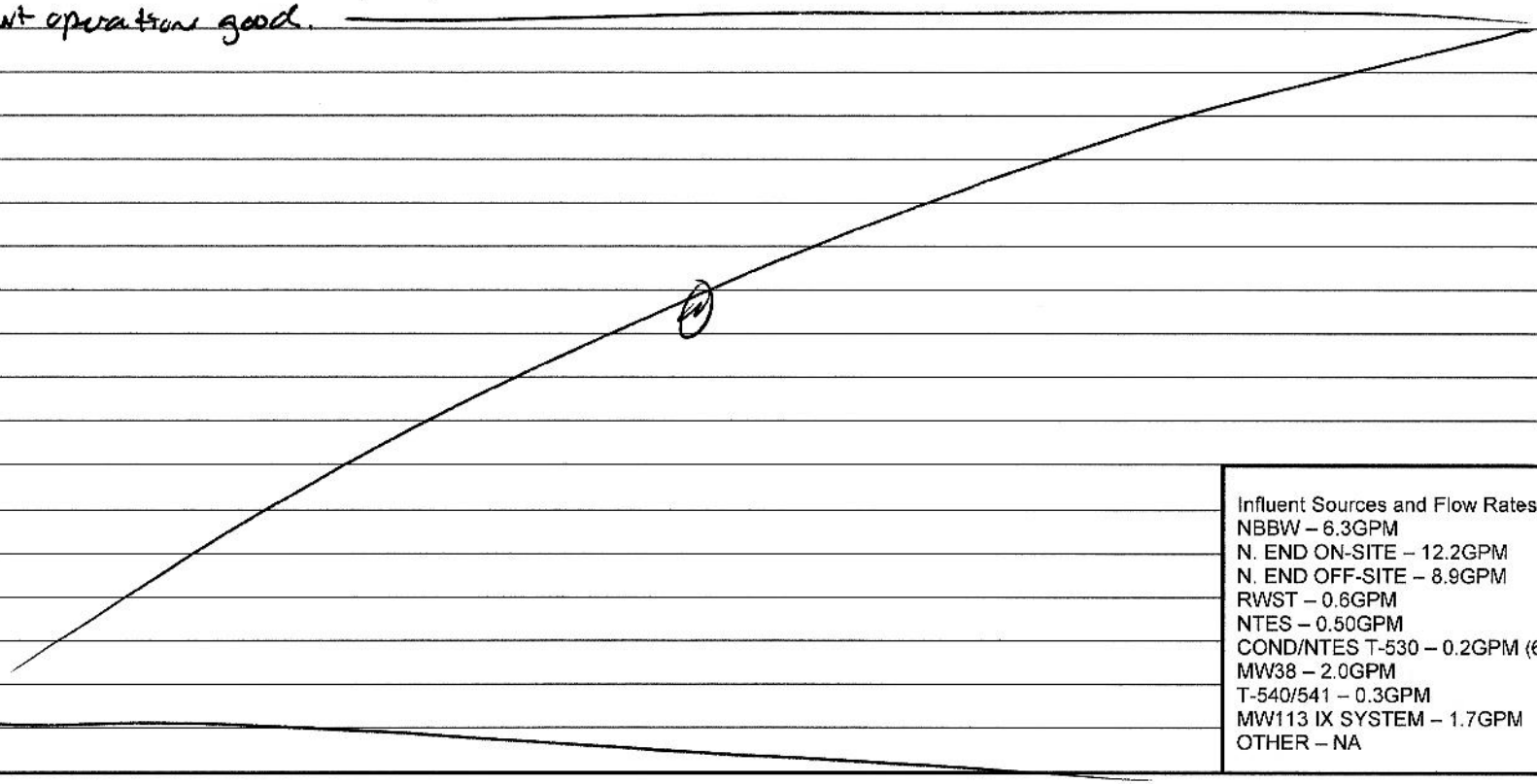
Influent Sources and Flow Rates: @ 0752
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 9.0 gpm
RWST – 0.6 gpm
NTES – 0.47 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, April 22, 2022**

Time: 0600	Plant operations good.
0743	Blowdown operations good.
0823	Reboot HMIFTVIEW1 to update Virus detection software - online @ 0827.
0920	Refill phosphorus tank with 45 gallons potable water + 4.5 lbs TSP. Decant T-351 bottom valve, wet well activated. Water is clear, no color. Clean the HMR-30 weir and pH probe. No oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed
↓	Water is very clear, light yellow / green.
1230	Plant operations good.



Influent Sources and Flow Rates: 0650
NBBW – 6.3GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.9GPM
RWST – 0.6GPM
NTES – 0.50GPM
COND/NTES T-530 – 0.2GPM (6am-1pm)
MW38 – 2.0GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Saturday, April 23, 2022

0845	Plant operations good
1015	Decant T-351 to bottom valve. Wet well activated. Water is clear no color. LT-352 now @ 42%. Clean HMR-30 probe w/ acid solution. Sprayed weir and checked for oil or sheens: None observed checked Tp-130 for oil globules - none observed water is very clear with yellow/green hue.
1100	Plant operations good
@ 1200	Isolate potable water feed to the WTP using the shutoff located N.W. of the DADS scale house to test if potable water usage numbers are reduced over Saturday P.M. and all day Sunday.
4/24/22	1300 Remote log in - Plant operations good
@ 0630	Check plant remotely - All okay.
@ 1830	Check plant remotely - All okay.

Influent Sources and Flow Rates: @ 0900
NBBW – 6.3 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 9.0 gpm
RWST – 0.6 gpm
NTES – 0.51 gpm
COND/NTES T-530 – 0.20 gpm (6AM–1PM daily)
MW38 – 2.0 gpm
T-540/541 – 0.30 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: **Monday, April 25, 2022**

Time: 0600	Plant operations good. Leaving potable to plant off until ~9AM after the daily automatic meter reading takes place at the ECCV meter at S Picadilly Rd & E Quincy Ave.
0750	Blowdown operations good.
0915	Restore potable water to the plant. Looks like isolating this section had no effect on how much water was logged at the meter.
1230	Decant T-351 bottom valve, wet well activated. Water is clear, no color. Clean the HMR-30 weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed. Water is clear, light yellow/green.
1525 ~~+52~~	Plant operations good.

Influent Sources and Flow Rates: 0656
NBBW – 6.2GPM
N. END ON-SITE – 12.2GPM
N. END OFF-SITE – 8.9GPM
RWST – 0.6GPM
NTES – 0.50GPM
COND/NTES T-530 – 0.2GPM (6am-1pm)
MW38 – 2.0GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, April 26, 2022**

Time:	
0450	- Plants operations Good. Prep for weekly TP-730, 710 + 740 samples.
0515	- Collect weekly TP-730 GAC/Lab Split samples and START Efficiency checks. Also collect weekly TP-710 + 740 Low Level 1, 4-Bromane samples
0610	Plant operations good
0750	Blowdown operations good. Mike working on BTS sampling and field readings today
0830	- Decant T-35 to bottom valve. Wet well activated. water is clear no color
	- Clean pH-315 probe w/ acid solution. check TK Hood 30 for oil or sheen: None observed. Spray down w.w.
	- Check TP-130 for oil globules: None observed. water is clear w/ yellow-green tint.
0850	- Refill BTS phosphorus TANK w/ 6# of TSP and 60 gal of potable water
0955	- IX performance HACH testing w/ Lab Split Sampling After 1,314,336 gal Treated: TP-183 = 250 ug/L; TP-175A = 320 ug/L; TP-179A = 6200 ug/L; TP-170 = 7000 ug/L
1525	- Plants operations Good.

Influent Sources and Flow Rates: @ 0525
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 9.4 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.29 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.70 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, April 27, 2022**

Time:	
0600	Plant operations good. Start weekly GC maintenance and calibrations.
0748	Blowdown operations good. Work with mike to remove empty caustic and HCL totes from chemical bays. Add 75 gallons of peroxide to main bay supply. Also add 1 full tote of caustic & HCL to main bay supply.
1050	- Decant T-351 to bottom valve. Wet well activated. water IS clear NO color.
	- Clean pit-315 probe w/Acid solution. Check TPK HOUSE for oil or sheen: None observed. Spray down weir.
	- check TP-130 for oil globules: None observed. water IS clear w/yellow-green tint.
1115	- STOP MW38 N + S pumping wells to begin a batch of MW38 source well water to T-540/541.
1135	- START MW38 source well pumping to T-540/541
1220	- BACK UP GC'S + WTP'S DATA to Flash Drive and DISK. All OK.
1250	INCREASE RWST influent from 0.6 gpm to 2.0 gpm while MW38N's are off during batch mode.
1300	Place P-005 in standby after running some potable water through it to clean the impeller, T-530 @ 20%. Reduce T-540/541 to BTS from 0.3 gpm to 0.2 gpm while Fresh MW38 source well is entering the BTS.
1500	Plants operations Good.

Influent Sources and Flow Rates: @0748
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.8 gpm
RWST – 0.6 gpm
NTES – 0.46 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, April 28, 2022**

Time:	
0600	Plant operations good. Observe MW38 source well batch extraction stopped at 0312 after 4,592 gallons - batteries empty (T-540/541 @ 58% Full). Start MW38N & S extraction to T-540/541 to displace the source well water in the conveyance pipeline to T-540/541.
0750	Blowdown operations good.
0845	- working on monthly/weekly Plants Systems checks and calibrations today
	- Calibrate the multimeter to use during LEL-740 calibration to ensure 0% Ambient Air on T-740.
	- create new pH STDs (4+10) to use today during pH probes calibrations.
0925	- Decant T-351 to bottom valve. wet well a cleaned. water is clear w/o color.
	- Clean pH-315 probe w/ acid solution. check the Hach 30 for oil or sheen: None observed. spray down weir.
	- check TP-130 for oil globules: None observed. water is clear w/ yellow-in Green tint
1120	- Perform monthly BTS pH probes calibrations to New 4+10 pH STDs
1228	- Begin weekly pH probes calibrations to New 4+10 pH STDs @ Main WTP → pH 113, 670, 310, 315 & 365
1300	- Suspend Plant Discharge to calibrate pH-740 to New 4+10 pH STDs and LEL-740 to 49% LEL.
1309	- Plant Shut down for High LEL @ 8% during calibration. Automatic shut down Alarm working properly.
1317	- Restart Plant and Resume normal Discharge.
1347	- Switch MW38 N+S pumping wells to Hach 30 mode. 672 gal Flushed thru pipeline to T-540/541. Reduce wells flow to 0.60 gpm.
1500	- Plants operations Good.

Influent Sources and Flow Rates: @ 0750
NBBW – 6.3 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.9 gpm
RWST – 2.0 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.2 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.3 gpm(to T-540/541)
COND/NTES T-530- 0.0 gpm(~~Sent~~ 1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, April 29, 2022**

Time:	
0610	Plant operations good. Observed BTS effluent results doing well. Increase T-540/541 to BTS
↓	from 0.2 gpm to 0.3 gpm.
0750	Blowdown operations good.
1000	- Vacuum T-351 to bottom valve. Wetwell activated. Water IS clear no color.
	-Clean pH-315 probe w/ Acid Solution. Check the Hach 30 for oil or sheen: None observed. Spray down water.
	-Check TP 430 for oil globules: none observed. Water IS clear w/ yellow-green tint.
1030	- Work on setting up and calibrating Auto sampler to START on Monday for monthly Molybdenum composite from MP-001.
	-Triple rinse dedicated composite container. Will add preservative just prior to START up.
1130	-Place BTS Instrument Hold to BACKWASH GACF 3340 and Flush Reactor feed Lines.
1228	- BTS out of Hold. ok
1237	- Refill BTS phosphorus tank w/ 5 #'s of TSP and 50 gal of potable water
1315	- Notice BTS Recycle valve Not Responding correctly and overflow tank not refilling. Cycle BTS Instr Hold for a min and take out of
	Hold. Recycle valve back to Normal and overflow tank refilling again.
1445	- Plant's operations Ground.

Influent Sources and Flow Rates: @0753
NBBW – 6.3 gpm
North End On Site- 12.7 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.48 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: Saturday, April 30, 2022

1330	Plant operations good.
1500	decant T-351 to bottom valve, wet well activated. Water is clear, no color.
	Clean pH-315 probe w/ acid solution, check HMR-30 for oil or sheen: None observed. Spray down weir.
	Check TP-130 for oil globules: none observed. Water is very clear with yellow-green tint.
	Both GCs operational within limits, GC1 (TP-730): 1,1-DCE @ 10.25ppm
	All Blowers okay
	Phosphorus tank @ 85 gal.
1530	Plant operations good.
1950	- Remote Log in. Allok
Sunday, ~~April~~ May 1, 2022	
0800	- Remote Log in. Allok
2100	- Remote Log in. Allok.

Influent Sources and Flow Rates: @ 14:10
NBBW – 6.3 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.6 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 2.0 gpm
T-540/541 – 0.28 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Manuela Seewald

0.72" of Rain
In Gauge overnight

LOWRY WTP OPERATIONS LOG

Date: **Monday, May 02, 2022**

Time:	
0730	- Plants operations Good. Automatic blowdown operations Good. Add Nitric Acid preventative to composite containers.
0800	- START Auto Sampler for total molybdenum composite from MP-001. TOTAL Effluent ⊃ 2542892.14 gal ⊃ 6.926 u ⊃ 15.7°C ⊃ 30.3 gpm
0855	- Decant T-351 to bottom valve. Wetwell activated. Water is clear no color.
	- Clean pH-315 probe w/ Acid Solution. Check the Hawk 30 for oil or sheen: None observed. Spray down weir.
	- Check TP-130 for oil globules; None observed. Water is clear w/ yellow-green front
0955	- Working on Monthly Early warning Sampling for Low-Level 1,4-Dioxane and Total Molybdenum.
1035	- working on DX performance HACH Testing w/ Lab Split Sampling After 1,329,100 gal treated: TP-183 ⊃ 260 ug/L; TP-175A ⊃ 280 ug/L; TP-174A ⊃ 5300 ug/L; TP-170 ⊃ 7100 ug/L. Currently Running ⊃ 1.69 gpm. Place All 8 Samples In to Fridge until Pausing tomorrow for Covers
1150	- begin flush of MP-001 Sample port and check for Residual chlorine: None detected. OK to use HCl Preserved vials. water is very clear no color.
1200	- collect 1st set of Time paced grab samples from MP-001 for Monthly Low Level 1,4-Dioxane. Place samples in Fridge w/ the others.
1550	- begin flush of MP-001 Sample port and check for Residual Chlorine: None detected. Water is very clear no color
1600	- Collect 2nd set of Time paced grab samples for Monthly Low-Level 1,4-Dioxane. Place samples in Fridge with others.
1950	- Begin flush of MP-001 Sample port and check for residual chlorine; None detected. water is very clear no color.
2000	- collect 3rd set of Time paced grab samples from MP-001 Sample port for Monthly Low-Level 1,4-Dioxane. Place samples in Fridge with others
2350	- begin flush of MP-001 Sample port and check for residual chlorine; None detected. water is very clear no color.
0000	- collect 4th set of Time paced grab samples from MP-001 Sample Port for Monthly Low-Level 1,4-Dioxane. Place samples in Fridge with others.

Influent Sources and Flow Rates: @0755
NBBW – 6.2 gpm
North End On Site- 12.1 gpm
North End Off-Site – 9.1 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.30gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.69 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, May 03, 2022**

Time:	
0330	- Plants operations Good. Prepare GC's for START OF Efficiency checks
0350	- Begin Flush of MP-001 SAMPLE port and check for Residual Chlorine: None detected. water IS very clear NO color.
0400	- collect 5th set of time paced grab samples @ MP-001 SAMPLE port for monthly Low-Level 1,4-Dioxane. Place SAMPLES IN Fridge with others
0415	- working on BTS weekly SAMPLING and START Efficiency checks
0435	- Receive NTES unstable Alarm, Acknowledge and finish BTS sampling. NOTICE NTES SUMP transducer NOT registering on either HMI. will TROUBLESHOOT After sampling. SAMPLES IN to Fridge until PACKING
0500	- collect weekly TP-730 GC/Lab SPLIT SAMPLES and ALSO collect TR-740 & 710 weekly Low-Level 1,4-Dioxane SAMPLES.
0510	- Divert NTES TO T-530 and START P-005/T-530 @ 0.50 gpm.
0515	- looks Like MPZ-10R STARTED again. May have drawn down to a Recharge point. will check on things When I Return to SITE.
0710	- Automatic Blowdown operations Good. GO to check on NTES. All seems Normal. will check SUMP level with meter Later today
0750	- Begin Flush of MP-001 SAMPLE port and check for residual chlorine: None detected. water IS very clear NO color.
0800	- Collect 6th/Final set of time paced grab SAMPLES from MP-001 for monthly Low-Level 1,4-Dioxane. Place SAMPLE IN Fridge w/others
	- STOP Auto SAMPLER, TOTAL Effluent @ 254336092 gal. A total of 4687B gal treated During SAMPLE period.
	- Process composite SAMPLES. Gently SHIT composite and check pH value. pH of composite @ 1.81 SU. Fill SAMPLE bottle.
	- PUT NTES BACK TO Normal mode and STOP T-530/P-005 again. Flush w/Potable water again But leave on to open INCASE needed again.
0818	- STOP RWSTS pumping, TANKS @ 13%. Reset NTES telemetry. SUMP level Reg IS tering But IS Reading High. Go to take a manual level
	- NTES SUMP manual level Reading 28.63'. THIS IS THE same as last month on 4-12-22. Will Replace SOON. SUMP Level ok, Looks like It
	Failed on 5-1-22 @ ~2230. PACK ALL SAMPLES on ICE for courier PICKUP
1124	- Decant T-351 to bottom valve. Wetwell activated. water IS clear No color.
	- Clean pH-315 probe w/Acid solution. Check THE TANK 80 for oil or sheen: None observed. SPRAY down WELL
	- Check TP-130 for oil globules: None observed. water IS clear w/ yellow-green tint.
	- working on BTS Field Readings.
1230	- Refill BTS Phosphorus TANK w/ 6 # of BTS P and 60 gal of potable water.
1530	- Plants operations Good

Influent Sources and Flow Rates: @0822
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 9.1 gpm
RWST – 0.0 gpm TANKS Low
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.0 gpm(~~Sam-1pm daily~~)
MW113 Area – 1.70 gpm

Operator: **Mike Gelwick**

0.25" Rain overnight + throughout the day

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, May 04, 2022**

Time:	
0720	- Plants operations Good. Automatic blowdown operations Good. Working on weekly GAC's calibrations and maint routine
0940	- Decant T-351 to bottom valve. Wet well activated. Water is Clear No color.
	- Clean pH-315 probe w/ acid solution. Check the HMI 50 for oil or Sheen: None observed. Spray down weir.
	- Check TP-130 for oil globules: None observed. Water is slightly cloudy orange tint.
1120	- After finding that MPZ-11, NTES-180W and NTES Sump TRANSducers all Had a malfunction at the exact same time on 5-1-22
	I took a manual Level at each well and Recalibrated them to the proper Level. MPZ-11 @ 32.01' DTW = 5734.42 MSL HMI = 5759.84 MSL
	Recalibrated; NTES-180W @ 35.88' DTW = 5729.75 HMI = 5727.23 Recalibrated; NTES Sump @ 28.63' DTW = 5734.20 MSL HMI = 5756.28 MSL
	Recalibrated; MPZ-10R Level and transducer OK @ 34.28' DTW = 5728.37 MSL HMI = 5728.39 No Read. After Recalibration All seem to
	Be holding the Level INPUT.
1452	- Reboot HMI FTView 1. Did not BACKUP Today's DATA. Resetting Temporary memory. Will back up on flash drive and disk tomorrow.
1456	- HMI FTView BACK online
1550	- Plants operations Good.

Influent Sources and Flow Rates: @ 0835
NBBW – 6.2 gpm
North End On Site- 12.1 gpm
North End Off-Site – 9.1 gpm
RWST – 0.0 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.29 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.0 gpm ~~(6am-1pm daily)~~
MW113 Area – 1.69 gpm

Operator: **Mike Gelwick**

0.12" rain overnight

LOWRY WTP OPERATIONS LOG

Date: **Thursday, May 05, 2022**

Time:	
0800	-Plants operations Good. Pumping out of Bloodhound operations ok. GAC's operations Good within limits. Working on weekly Plants Systems Checks and calibrations today, NTES Transducers Holding calibration ok.
1005	-Decant T-351 to bottom valve. Wet well activated. water is clear no color. Getting slightly cloudy at end of decant.
	-Clean pH-315 probe w/ acid solution. Check the Hmw30 for oil or sheen: None observed. spray down weir.
	-Check TP-130 for oil globules: None observed. water is slightly cloudy orange tint.
1340	-suspend Plant Discharge to calibrate pH-740 probe to 4+10 pH std's.
1351	-Resume Normal Discharge. continue with other plants pH probes calibrations to 4+10 pH std's pH-113, 670, 310, 315 + 365
1430	-weekly plants systems checks and calibrations complete.
1450	-weekly DATA BACK UP Performed. Backed up DATA From WTP + GAC's to flash drive and B/U.
	-Guy STARTING to PUMP INTO LWST3. START LWST3 pumping @ 0.50 gpm to Hmw30.
1510	-Plants operations Good.

Influent Sources and Flow Rates: @ 1005
NBBW – 6.2 gpm
North End On Site- 12.2 gpm
North End Off-Site – 8.9 gpm
RWST – 0.0 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.69 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: **Friday, May 06, 2022**

Time:	
0730	- Plants operations Good. Automatic Blowdown operations Good.
0915	- Decant T-351 to bottom valve. wet well attended. water is clear color. Kinda slightly cloudy at end of decant.
	- Clean Alt-315 probe w/acid solution. check the tank 30 for oil or sheen: None observed. Spray down water.
	- Check tank 30 for oil globules: None observed. water is slightly cloudy w/ orange tint.
0940	- Refill 675 phosphates tank w/ 4 # of T5, and 40 gal of potable water.
1100	- Plants operations Good.

Influent Sources and Flow Rates: @ 0900
NBBW – 6.3 gpm
North End On Site- 12.2 gpm
North End Off-Site – 9.1 gpm
RWST – 0.50 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.70 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: SATURDAY, MAY 7, 2022

0515	- Plants operations Good. Go to check other site systems.
0640	- Decant T-351 to bottom valve. wet well did NOT activate. water IS clear NO color.
	- Clean pH-315 probe w/ Acid solution. Check the Hmmr SD for oil or sheen: None observed. Spray down weir.
	- check TP-130 for oil globules: None observed. Water IS slightly cloudy w/ Orange tint.
	- Both GC's operational within limits.
	- All Blowers OK. Minor drip on Reactor 3 Canister tubing at Pump. will address on monday
	- BAG filters operations Good.
	- NO Refill Needed on Phosphorus tank. ~90 gal
0700	- Automatic slowdown operations Good
0745	- coming ~~out~~ out of slowdown ops
0750	- Plant operations Good.
1250	- Receive CaCl VOC High Alarm. 1,1-DCE Reading falsely High ~3157.22 ppb. Reset Alarm and GC1 and will take a new sample After UV-OX Cools
	down.
1329	- START a New CaCl/TP-730 sample.
1545	- Sample came out Good/OK.
2100	- Remote Log in Allok
Sunday,	MAY 8, 2022
0842	- Remote Log In allok
2130	- Remote Log In allok.

Influent Sources and Flow Rates: @ 0520
NBBW – 6.3 gpm
N. END ON-SITE – 12.2 gpm
N. END OFF-SITE – 8.5 gpm
RWST – 0.5 gpm
NTES – 0.49 gpm
COND/NTES T-530 – 0.0 gpm (~~6AM-1PM daily~~)
MW38 – 2.0 gpm
T-540/541 – 0.30 gpm
MW113 Area – 1.69 gpm

OPERATOR(S) Mike Gelwicks

LOWRY WTP OPERATIONS LOG

Date: **Monday, May 09, 2022**

Time:	
0545	Plant operations good.
0610	Fusion Connect technician onsite to install and setup 4G LTE Internet (replacing T1).
0740	Blowdown operations good.
0755 ~~0900~~	Start Filterpress on stage 1.
0900	Start 24hr MP-001 grab sampling for NONylphenol (resample due to QC issues with last months sample). Effluent total reading 254610862 gallons, pH-740 reading 6.92 @ 15.5°C
↓	Flow rate 30.0 gpm.
0813	Reboot HMI FT View 1 to check internet - All okay - online 0818.
0900	Restart FP T-530 to BTS at ~~0.0~~ 0.2 gpm 6am - 1pm (tank 31% full).
1040	- Clean pH-315 probe w/ Acid solution and check the HMI 530 for oil or sheen: None observed. Spray down cover.
	- Check FP-130 for oil globules: None observed. Water is slightly cloudy w/ orange tint.
	- Refill polymer tank w/ 2 cups of NALCO polymer and 200 gal of potable water.
1150	- Begin flush of MP-001 sample port. Water is clear no color. ~~Needs collect~~
1200	- Collect 1st set of time paced grab samples @ MP-001 sample port for Qtrly NONylphenols Resample. Place samples in fridge
1545	- Stop Filterpress. Not full yet. In stage 4.
1550	- Begin flush of MP-001 sample port. Water is very clear No color.
1600	- Collect 2nd set of time paced grab samples @ MP-001 sample port for Qtrly NONylphenols Resample. Put samples in Fridge with others
1605	- Plants operations Good.
1945	Begin MP-001 sample port flush. Water is very clear, no color.
2000	Collect 3rd set of time paced grab sample for quarterly NONylphenol resample. Place sample in fridge with others.
2345	Begin MP-001 sample port flush. Water is very clear, No color.
0000	Collect 4th set of time paced grab sample for quarterly NONylphenol resample. Place sample in fridge with others

Influent Sources and Flow Rates: @0920
- NBBW – 6.3 gpm
- North End On Site- 12.1 gpm
- North End Off-Site – 8.8 gpm
- RWST – 0.5 gpm
- NTES – 0.49 gpm(10R only)
- MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
- MW38 N & S– 1.9 gpm
- COND/NTES T-530- 0.2 gpm(6am-1pm daily)
- MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, May 10, 2022**

Time:	
0315	- Plants operations Good. Prep GC's for Efficiency checks START UP. RESTART Filter Press Instage 4.
0350	- Begin Flush of MP-coil sample port. water IS very clear NO color
0400	- Collect 5th set of ~~time~~ paced grab samples @ MP-coil sample port for Qrtly Navy phenols Re-sample. Place samples on Fridge w/ the others
0415	- working on BTS weekly sampling and START Efficiency checks
0450	- Collect TP-730 GC/Lab weekly split samples. Also collect weekly TP-710 + TP-740 Low Level 1,4-Dioxane samples.
0500	- Filter press Full. All samples Placed in Fridge until time to take to Lab for courier.
0510	- Clean pH-315 probe w/ Acid solution. Check the HMR30 for oil or sheen's. None observed. Spray down weir.
	- Check TP130 for oily globules: None observed. Water IS clearing up again w/ yellow-green tint usual.
0750	- Begin Flush of MP-coil sample port, water IS very clear NO color.
0800	- Collect 6th/Final set of Time paced grab samples @ MP-coil sample port for Qrtly Navy phenols Re-sample. ~~Three~~ with QC Volume (MS, MSD, Blank and Dupe). Place samples on fridge with others. TOTAL Effluent @ 254,657,722 gal. A total of 46,860 gal treated During sample period.
0845	- IX performance HACH Testing w/ Lab Split Sampling After 1,348,344 gal treated: TP-183 @ 250 ug/L; TP-175A @ 270 ug/L; TP-174A @ 6200 ug/L; TP-170 @ 7300 ug/L. Currently Running @ 1.69 gpm.
1200	- Refill BTS phosphorus tank w/ 6 # of TSP and 60 gal of potable water working on BTS Field Readings
1430	- Plants operations Good
1555	Receive FT-055 low flow alarm. MW170-EW-1 submersible pump motor drawing too many amps and will need pump replacement. Leave MW170-EW-1 extraction system powered down for the night. Note: This pump was installed 2/6/15 and has pumped ~ 84 million gallons.

Influent Sources and Flow Rates: @ 0350
NBBW – 6.3 gpm
North End On Site- 12.1 gpm
North End Off-Site – 8.9 gpm
RWST – 0.5 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.69 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, May 11, 2022**

Time:	
0500 ↓	Plant operations good. Start on weekly GC maintenance and calibrations. Prep for MW170EW1 extraction pump swap.
0745	Blowdown operations good.
0800	Stop MW38N's extraction in preparation for MW38 source well batch extraction.
0817	Increase RWST influent from 0.5 gpm to 2.0 gpm. Switch MW38 pipeline from direct HMR30 influent to T-546/541.
0840	- START MW38 Source well Batch to T-540/541
1045	- Receive GC 2 High VOC Alarm due to Disable Alarms timer timing out during a Rinse Blank of the GC. Alarm working well Put GC10 Into Hold. Reset everything and Get GC's going on Normal Samples.
1220	- Decant T-351 to bottom valve. wetwell activated. Water ES clear no color.
	- Clean pH-315 probe w/Acid solution. Check the HMR30 for oil or Sheen: none observed. Spray down area.
	- Check TR130 for oily globules: none observed, water ES clear w/ yellow - green tint. Switch to Normal.
1430	- MW170 - EW1 Restarted and Running ok.
1530	- Plants Operations Good.

Influent Sources and Flow Rates: @0757
NBBW – 6.2 gpm
North End On Site- 0.0 gpm
North End Off-Site – 8.6 gpm
RWST – 0.5 gpm
NTES – 0.48 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, May 12, 2022**

Time:	
0615	Plant operations good.
0622	MW38 source well batteries died at 0120 last night, T-540/541 @ 57%. - Start MW38 N&S wells to displace source well water in the pipeline to T-540/541.
0930	- Decant T-351 to bottom valve. Wetwell activated. Water is clear no color.
	- Clean pH-315 probe w/acid solution. Check the HMR 30 for odor or sheen: none observed. Spray down weir.
	- Check TP130 for oily bubbles; none observed. Water is clear w/ yellow green tint.
	- working on weekly plants systems checks and calibrations today
1205	- Switch MW38 N+S pumping wells to HMR 30 mode. 736 gal flush thru MW38 pipeline. Reduce RWST flow to 0.50 gpm
1243	- Suspend plant discharge to calibrate pH-740 probe to 4+10 pH STD's.
1250	- Resume normal discharge. Continue with other pH probes calibrations to 4+10 pH STD's = pH-113, 670, 310, 315 + 365
1330	- weekly plants systems checks and calibrations complete
1340	- Place BTS into maint hold and flush A-006 piping.
1425	- BTS out of hold. All ok
1430	- weekly data backup complete.
1530	- Plants operations good.

Influent Sources and Flow Rates: @ 0845
NBBW – 6.3 gpm
North End On Site- 13.9 gpm
North End Off-Site – 8.7 gpm
RWST – 2.0 gpm MW38 source well batch
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.2 gpm
COND/NTES T-530- 0.21 gpm(6am-1pm daily)
MW113 Area – 1.69 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, May 13, 2022**

Time: 0615	Plant operations good.
0745	Blowdown operations good.
0802	Reboot WMEFTVIEW1 to reset available temporary memory, online 0807.
0900	Decant T-351 bottom valve, wet well activated. Water is clear, no color. Clean the HMR-30
↓	weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules,
↓	none observed. Water is slightly cloudy light yellow/green.
1250	Plant operations good.

Influent Sources and Flow Rates: 0636
NBBW – 6.2GPM
N. END ON-SITE – 13.8GPM
N. END OFF-SITE – 8.9GPM
RWST – 0.5GPM
NTES – 0.49GPM
COND/NTES T-530 – 0.2GPM (6am-1pm)
MW38 – 1.2GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Saturday, May 14, 2022

0700	Plant operations good (in blowdown).
0720	Clean the HMR-30 weir and pH probe - NO oil or sheen observed in the HMR-30. Note: All three sludge laterals clear and working very well. Check TP-130 for oil globules - none observed. Water is clear, light yellow/green.
0745	Blowdown completed - All okay.
0850	Refill phosphorus tank with 55 gallons potable water + 5.5 lbs TSP.
0930	Plant operations good.
5/15/22	
0545	Check plant remotely - All okay. N. End on site flow down to 13.1 gpm.
1845	Check plant remotely - All okay.
2032	Receive P-3324 strainer alarm. Unable to get pump to flow remotely. Switch R3 influent to P-3323.

Influent Sources and Flow Rates: @ 0745
NBBW – 6.2 gpm
N. END ON-SITE – 13.4 gpm
N. END OFF-SITE – 8.9 gpm
RWST – 0.5 gpm
NTES – 0.5 gpm
COND/NTES T-530 – 0.2 gpm (6AM–1PM daily)
MW38 – 1.9 gpm
T-540/541 – 0.3 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, May 16, 2022**

Time:	
0105	Receive Heartbeat error 1 alarm. Remotely acknowledge alarm on HMI2. HMIFTVIEW1
↓	CPU unresponsive.
0521	HMIFTVIEW1 online after hard reboot. Windows was frozen. Plant operations
	okay TP-730 flow to GCI slow. Clean y-strainer in building 1 and bleed air from
	PDU - Flowing good now. Work on changing OneDrive settings to limit upload speed to
↓	125 KB/s (was having trouble syncing the larger ONEMIN Files - working better now).
0745	Blowdown operations good.
0815	Troubleshoot P-3324 - motor okay but wet end not flowing. Note: this is the last of the
	original feed pumps. Isolate P-3324 and lockout power to it while looking at
	wet end internals.
0915	-Decant T-351 Bottom valve. wet well activated. water is clear no odor
	-Clean pH-315 probe w/acid solution. check the Hand 80 for oil or sheen; None observed. Slightly hazy water.
	-Check TP-130 for oil globules; None observed. water is clear w/ yellow-green tint.
1000	- work on switch out of P-3324 pump w/New march pump. The impeller on the current one is shot.
1430	-New pump and piping installed @ P-3324, will leave off and let Glue and Thread sealant dry overnight.
1500	-Plant operations Good.

Influent Sources and Flow Rates: @0810
NBBW – 6.3 gpm
North End On Site- 13.0 gpm
North End Off-Site – 4.1 gpm
RWST – 0.5 gpm
NTES – 0.46 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, May 17, 2022**

Time:	
0450	- Plants operations Good.
0520	- collect TP-730 GC/Lab Split Samples and START Efficiency checks. Also collect TP-710 + 740 weekly Low Level 1, 4-Hexane samples. Place samples in fridge.
0600	Startup P-3324 New pump & motor as Feed to R3. Working well.
0750	Blowdown operations good. Mike working on weekly BP sampling and field readings today
1000	- IX system performance HACH testing with weekly Lab Split After 1,365,446 gal Treated: TP-183 = 270 ug/L; TP-175A = 310 ug/L; TP-174A = 6600 ug/L; TP-170 = 7100 ug/L. System currently running @ 1.08 gpm.
1030	- Decant T-351 to bottom valve wetwell activated. Water is clear No color.
	- Clean pH-315 probe w/Acid solution. Check the Hach 30 for oil or sheen; None observed. Spray down weir.
	- Check TP-130 for oil globules; None observed. Water is clear w/ yellow-green tint.
1515	- Plants operations Good.

Influent Sources and Flow Rates: @ 0530
NBBW – 6.3 gpm
North End On Site- 12.8 gpm
North End Off-Site – 8.9 gpm
RWST – 0.5 gpm
NTES – 0.48 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.0 gpm
COND/NTES T-530-0.20 gpm(6am-1pm daily)
MW113 Area – 1.67 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, May 18, 2022**

Time:	
0550	Plant operations good. Start on weekly QC MAINTENANCE and Calibrations.
0745	Blowdown operations good.
0803	Reboot HMI FT VIEW1 to reset temporary file MEMORY cache - Online @ 0808.
0900	- Work on General Alarms clean up.
1025	- Decant T-351 to bottom valve. wet well activated, water IS clear NO color.
	- Clean pH-315 probe w/Acid solution. Check the Hach 30 for oil or sheen: None observed. Spray down wall
	- Check TP-130 for oil globules; None observed. Water IS clear w/yellow-green tint.
1107	Receive UVOX WARNING alarm - peroxide flow low. Peroxide pump indicating the internal pressure exceeded and has stopped. Able to quickly restore peroxide flow to normal by restarting the pump and priming to remove some trapped air.
	Refill phosphorus tank with 60 gallons potable water + 6 lbs TSP.
	Mike performing quarterly 4"&6" POTW discharge line INSPECTION and valve exercising (Discharge suspended while exercising isolation valves).
1300	Backup data to FLASH & DVD. One Drive backup working well.
	- POTW Qtrly valve exercising and vault leak checks complete. Also inspect MH175-078 discharge point. All ok
1530	Plant operations good.

Influent Sources and Flow Rates: @ 1025
NBBW – 6.3 gpm
North End On Site- 12.7 gpm
North End Off-Site – 8.8 gpm
RWST – 0.5 gpm
NTES – 0.48 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.1 gpm N. well Recharges/day
COND/NTES T-530- 0.21 gpm(6am-1pm daily)
MW113 Area – 1.68 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, May 19, 2022**

Time	
0545	Plant operations good.
0700 ↓ 0805	Receive UV-OX shutdown - Low Flow (Flow dropped below 5 gpm while switching into recycle). Clean PDU air release and backwash PDU while unit is off.
↓ 0823	Blowdown operations good - HMR-30 refilled restart UV-OX. Observed a large amount of air in the recycle system - pump was initially air locked on restart.
	UV-OX warmup completed - discharging to PDU/Feedsurgetank, PDU Δ pressure improved from 4psi to 2psi. Mike working on weekly Plants Systems checks and calibrations today.
0955	- Decant T-351 to bottom valve. wet well activated. Water is clear NO color.
	- Clean pH-315 probe w/acid solution. check HMR-30 for oil or sheen: None observed. Spray down wet well
	- Check FP-130 for oily globules: None observed. water is clear w/ yellow-green hue.
1100	- Perform Acid/Base cleaning of BTS pH probes in preparation for calibration next week.
1234	- Suspend plant discharge to calibrate AIT-740 probe to 4+10 pH STDs.
1240	- Resume Normal Discharge. Continue with other pH probes calibrations to 4+10 pH STDs ⇒ pH-113, 670, 310, 315 & 365.
1315	- Weekly Plants Systems checks and calibrations complete, continue water plant observation.
1600	- Plants operations Good.
2119	Receive pH-365 unstable alarm - check remotely. pH of T-510 has suddenly dropped to ~2. P-631 appears to be malfunctioning because pH rises when pump is stopped by pulling it in manual off. When pump placed back in auto pH dropped again - auto setpoint is at 0% cv. Leave pump off and travel to site. Observe when pump is place in auto the pump is stuck in aux mode and is pumping rapidly - unable to get the pump out of aux mode. On board computer malfunctioning (Note: This has happened to other pumps of this model after many years of service). Change out P-631 with an upgraded GAMMA X ProMinent. Observe new pump for ~30 minutes for leaks and proper dosing. 5/20/22 0200 Plant operations good.

Influent Sources and Flow Rates: @0827
- NBBW – 6.3 gpm
- North End On Site- 12.7 gpm
- North End Off-Site – 0.9 gpm
- RWST – 0.5 gpm
- NTES – 0.49 gpm(10R only)
- MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
- MW38 N & S– 1.9 gpm
- COND/NTES T-530- 0.2 gpm(6am-1pm daily)
- MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, May 20, 2022**

Time:	
0701	- Receive UV-OX Start Down Alarm for Low Flow again at blow down.
0745	- HML30 Full. Restart UV-OX. Not very much air in bag filters. Automatic blowdown operations Good.
0803	- UV-OX warm up complete. Resuming Normal Discharge to PDU/Feed surge tank
0842	- Water going to UV-OX Has cooled down. Place UV-OX Into Recycle to test If Flow drops off again.
	- Flow Remind Normal Alloc.
0857	- Place UV-OX Into Recycle again to test If Flow drops off. Flow Remand Normal. Alloc
1008	- START a GCI/TP-730 SAmple to test IF UV-OX Flow Drops off In Recycle ~~#~~ during the GC Full cycle
1019	- Place UV-OX Into Recycle. All OK. NO Flow Drop.
1033	- UV-OX Discharging Normally to PDU/Feed surge tank. Working on General Cleanup of Plants.
1255	- Decant T-351 to bottom valve. wetwell activated. Water IS clear NO color.
	- Clean A11-315 probes w/Acid solution. Check the HML30 for oil or sheen: None observed. Spray Down water.
	- Check TP-130 for oil globules: NONE observed. Water IS clear w/yellow-green tint.
1430	- Plants operations Good.
@0640	Check plant / P-631 operations remotely - Observe TP-730 GC result from 2349 5/19 at 17.05 ug/L (Normally ND, Warning alarm 100 ug/L) Start NEXT TP-730 sample early. Plant and New P-631 pump working well.

Influent Sources and Flow Rates: @ 1035
NBBW – 6.2 gpm
North End On Site- 12.6 gpm
North End Off-Site – 9.2 gpm
RWST – 0.5 gpm
NTES – 0.48 gpm(10R only)
MW38 T-540/541 – 0.32gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.6 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.68 gpm

Operator: **Mike Gelwick**

Rain turning to snow ~5" wet snow Thurs. Friday - Sat A.M. 0.75" in gauge.

LOWRY WTP OPERATIONS LOG

Date: Saturday, May 21, 2022

1100	Plants operations good
1140	Noticed slow leak in Bldg 1 from ceiling due to heavy snow storm from previous night. Placed bucket to collect snow melt water. Texted Chris.
1200	Noticed slow leak in Bio from ceiling due to snow melt. Water is falling into grated area. Texted Chris. Phosphorus tank @ 55 gal. Added 4.5 # TSP and 45 gal potable water. All blowers ok. Both GCs operational within limits.
1310	Decant T-351 to bottom valve. Wet well activated. Water is clear no color. Check TP-130 for oil globules: none observed. Water is very clear with yellow-green tint. Clean pH-315 probe with acid solutions. Check HMR-30 for oil or sheen: none observed. Spray down weir.
1330	Plants operations good.
@ X0241	Received UV-OX shutdown alarm - Could be power related due to the storm or possibly the Feed pump losing prime. Able to remotely restart UV-OX
↓	Adjust UV-OX Flow rate from 6.5 gpm to 7.0 gpm and RWST influent
✓	From 0.5 gpm to 1.0 gpm - Flow rate logarithm adjusted.
0303	Warm up completed, UV-OX discharging normally.
0620	Check plant remotely - All okay. Observe UV-OX switch to recycle
↓	high flow and logarithmic changes working well.
1700	Check plant remotely - All okay. Reduce RWST influent to 0.6 gpm.

Influent Sources and Flow Rates: @ 1130
- NBBW – 6.3 gpm
- N. END ON-SITE – 12.5 gpm
- N. END OFF-SITE – 7.9 gpm
- RWST – 1.0 gpm
- NTES – 0.49 gpm
- COND/NTES T-530 – 0.2 gpm (6AM–1PM daily)
- MW38 – 1.9 gpm
- T-540/541 – 0.3 gpm
- MW113 Area – 1.7 gpm

OPERATOR(S) Manuela Seewald

LOWRY WTP OPERATIONS LOG

Date: **Sunday, May 22, 2022**

0645	Check plant remotely - All okay P-631 dosing working well.
0700	Observe UV-ox switch to recycle for blowdown - All okay.
1650	Check plant remotely - All okay.

Influent Sources and Flow Rates: @
NDBW – gpm
N. END ON-SITE – gpm
N. END OFF-SITE – gpm
RWST – gpm
NTES – gpm
COND/NTES T-530 – gpm (6AM–1PM daily)
MW38 – gpm
T-540/541 – gpm
MW113 Area – gpm

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, May 23, 2022**

Time:	
0630	Plant operations good.
0740	Blowdown operations good.
0835	- Decant T-351 to bottom valve. Wet well alternated. Water IS clear NO color.
	- Clean pH-315 probe w/ Acid solution. Check TP-1 thru 30 for oil or sheen: None observed. Spray down well.
	- Check TP-130 for oil globules: None observed. water IS clear w/ yellow-green tint.
1215	- Add ~ 5 gal of Lawn water/Snow melt to T-530 TANK from N.A.T. over flow with Equipment Drained from N.A.T Extractions. water IS very
	clear NO color and very clear looking with NO odor. Also Add ~ 2 gal of Purge water from MW4-01 + MW4-03 sampling to T-530.
1500	- Plants operations Good.

Influent Sources and Flow Rates: @ 0803
NBBW – 6.3 gpm
North End On Site- 12.5 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.5 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, May 24, 2022**

Time:	
0450	- Plants operations Good. Prep for Sampling TP-730, 740 + 710.
0515	- Collect TP-730 GC/Lab split samples and START Efficiency checks. Also collect TP-740 + TP-710 weekly Low Level, 4-Bromo Standard
0740	Blowdown operations good. Mike & Tom (training) working on weekly BTS / Ion Exchange performance sampling / field readings.
0850	- Refill BTS phosphorus TANK w/5 # of TSP and 50 gal of potable water.
1020	- IX Performance HACH Testing w/ weekly Lab split sampling. After 1,382,365 gal treated: TP-183 @ 230 ug/L; TP-175A @ 280 ug/L; TP-174A @ 6700 ug/L; TP-170 @ 200 ug/L. Currently running @ 1.67 gpm.
1050	- Recount T-351 to bottom valve. Wet well drawdown. Water is clear no color. - Clean pH-315 probe w/ field solution. Check HR Hach 50 for oil or sheen: None observed. 3 Way down weir. - Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green tint.
1114	T-540/541 level down to 20%. Reduce flow to BTS from tanks from 0.3 gpm to 0.2 gpm (will be doing an MW38 source well batch extraction overnight). Metro sample technicians on site for MP-001 24hour grab sampling @ 0910. Amy B. & Tony L. of Metro onsite as well for Annual Pretreatment Site Industrial User Inspection.
1432	- STOP MW38 N+S wells in preparation for MW38 source well batch.
1446	Switch MW38 from direct HMR-30 influent to T-540/541 tanks. Increase RWST influent from 0.6 gpm to ~~2.6 gpm~~ 2.5 gpm. Mike starting up MW38 source well extraction.
1515	- Plants operations Good.

Influent Sources and Flow Rates: @ 0525
NBBW – 6.3 gpm
North End On Site- 12.4gpm
North End Off-Site – 8.6 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.9 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.67 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, May 25, 2022**

Time:	
0535	Plant operations good. Start on weekly GC maintenance and ~~efficiency~~ calibrations
0745	Blowdown operations good. Observed MW38 Source well solar system stopped extraction at 0403 this morning. Will allow batteries to recharge and restart sourcewell batch extraction this afternoon. T-540/541 currently @ 45%.
0815	- New TOTE of NaOH put online for Chemical Sty.
1100	- Decant T-351 to bottom valve. Wetwell activated. Water is clear NO color
	- Clean pH-315 probes/Acid solution. Check THE HUMCO for oil or sheen, None observed. Spray down wash.
	- Check TP-130 for oil globules: None observed. Water is clear w/ yellow-green tint.
	- Refill Polymer tank w/ 2 cups of NALCO polymer and 200gal of potable water.
1220	Create DVD and Flash file of data backup - OneDrive automatic data backup working well.
1500	- Restart MW38 Sourcewell Pumping to T-540/541. TANKS @ 48%
1845	Source well batteries depleted - batch extraction stopped.

Influent Sources and Flow Rates: @ 0748
NBBW – 6.3 gpm
North End On Site- 12.4 gpm
North End Off-Site – 0.7 gpm
RWST – 2.5 gpm
NTES – 0.47 gpm(10R only)
MW38 T-540/541 – 0.2 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 0.0 gpm
COND/NTES T-530- 0.2 gpm(6am-1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, May 26, 2022**

Time:	
0545	Plant operations gwch. Restart MW38N&S extraction to T-540/541 to displace MW38 source
↓	well water in the pipeline to T-540/541.
0700	UV-OX shutdown – Low flow. P-600 lost prime or PID reaction time too slow. Leaving
	UV-OX off (was planning on putting it on standby while RWST level was low).
0800	Jim B. & Jon S. from Brown's Hill is on site to begin VULNARability assessment of control
	software/hardware. TDM working on weekly/monthly Plant Systems checks and calibrations
	-START monthly oil moisture prevention Run on main WTP compressor. MAX speed for 2 hrs.
1000	-STOP oil moisture prevention Run on main compressor.
1007	-Place BTS into Hold and STOP and Power down P-121. Some residual power bleeding over to P-122 wiring.
	-Disconnect P-122 power wires from old pump and cap off + isolate them.
1035	-BTS out of Hold. Restart P-121.
1045	-Decant T-351 to bottom valve, wet well activated
	-checked HMR30 for oil or sheens: None observed -sprayed down weir
	-checked TP-130 for oil globules: None observed - water is ~~XXX~~ clear w/ yellow-green hue
1130	Jon S. has the information he needs and leaves left. Jim staying to work on minor control
	program changes and install ~~XXX~~ WIN-911 4.21.5 version - also
1202	Rebooting HMI FTVIEW1 a few times for WIN-911 software installation
1250	-Perform monthly BTS pH probes calibrations to new 4+10 pH STDs
1330 ~~XXXX~~	- calibrated WTP probes to 4+10 PH STDs @ PH113,670,315,310,365
1424	- Suspended plant discharge to calibrate PH740 and LEL740
1441	- Plant shut down @ 8% LEL during calibration of LEL740
1452	- Plant Restarted
1454	- Resume Normal discharge - Plant and systems calibrations complete
	Leaving UV-OX off overnight (RWSTs still low at 20%.)
1510	Switched MW38N&S to RWST after displacing MW38 source well water to T-540/541

Influent Sources and Flow Rates: @
NBBW – gpm
North End On Site- gpm
North End Off-Site – gpm
RWST – gpm
NTES – gpm(10R only)
MW38 T-540/541 – gpm(Source well and 38 pumping wells mix)
MW38 N & S– gpm
COND/NTES T-530- gpm(6am-1pm daily)
MW113 Area – gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Friday, May 27, 2022**

Time:	
0550	Plant operations good.
0623	Restart UV-OX - observe P-601 is again air locked at start up.
0655	Test low flow shutdown of UV-OX - working well. Unit shuts down if flow is < 5gpm for 90 seconds.
0755	Blowdown operations good.
0904	HMR-30 is full again. Restart UV-OX. P-601 pump overlocked again. Use P-600 and isolate P-601 from the system. Observe no air in the system after doing this. P-601 Need impeller / wet end replace / rebuild.
	-Calibrate Environmental GEM 5000 SN#G506B94 ID#43410 to 2.5% CH_4, reading 2.6% CH_4, OK. For daily Building Methane safety checks & Perimeter GAS Probes monitoring.
0906	-Decant T-351 to bottom valve. wetwell activated. Water IS Clear No color.
	-Clean pH-315 probe w/ test solution. Check the HMR30 for oil or sheen; None observed. Spray down weir.
	-Check TP-430 for oil globules: None observed. water IS clear w/ yellow-green hint.
1430	-Refill 6T3 phosphorus + ANK w/ 5# of TSP and 50gal of potable water.
1500	-Plants operations Good

Influent Sources and Flow Rates: @ 09/5
NBBW – 6.4 gpm
North End On Site- 12.5 gpm
North End Off-Site – 8.8 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.2 gpm
COND/NTES T-530- 0.21 gpm(6am-1pm daily)
MW113 Area – 1.68 gpm

Operator: **Mike Gelwick / Chris Carlson**

5/28/22
0345 Remote log in. Plant operations good

LOWRY WTP OPERATIONS LOG

Date: Sunday, May 29, 2022

0800	- Plant operations good.
0900	- Decant T-351 to bottom valve, wet well activated. water is very clear no color
	- clean ph-315 probe w/ Acid Solution. Check HMR30 for oil or sheen: none observed. Sprayed weir
	-Check TP-130 for oil globules: None observed. water is clear w/ green-yellow hue
1000	- Plant operations good.
5/30/22	
0900	Remote Log in. Plant operations good
5-28-22	- Saturday - MCL
0645	- Remote Log in. Allok. NO UV-ox SHUTdown.
2015	- Remote Log in. Notice NTES/MAZ-10K Pump has stalled. Trench level coming up and AV to valve opening. Flow ok for now. Come to site and see if can get going again.
2055	- Able to get it pumping again. Allok.
2215	- Remote Log in. Allok. will swap out 10K pump next week.
5-29-22	- Sunday - MCL
0542	- Receive GC1 VOC Fault Alarm. Log on remotely. 1,2-DCA @ 7.83 ppb. False High. Peak is smaller than 9.99 calibration peak. Reset GC Alarm and will take a new TP-730 sample after UV-ox cools back down.
0607	- START a New TP-730 sample on GC1.
0740	- GC1 results Good. 1,2-DCA Down to 0.83 ppb. NO UV-ox Low Flow SHUTdown today
2111	- Remote Log On Allok
5-30-22	- Monday - MCL
0700	- Remote log On. Automatic Breakdown operations Good. UV-ox ok.
2200	- Remote Log On. Allok.

Influent Sources and Flow Rates: @0850
NBBW – 6.4 gpm
N. END ON-SITE – 12.4 gpm
N. END OFF-SITE – 7.6 gpm
RWST – 0.6 gpm
NTES – 0.50 gpm
COND/NTES T-530 – 0.20 gpm (6AM–1PM daily)
MW38 – 2.1 gpm
T-540/541 – 0.30 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Tom Gilbert / Mike Cudnick

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, May 31, 2022**

Time:	
0450	- Plants operations Good. Arsenic for TP-730 110 & 740 samples.
0515	- Collect TP-730 weekly Gc/Lab Split samples and begin Efficiency checks. Also collect TP-710 & TP-740 weekly Low Level 1,4-Dioxane samples.
0702	Receive UV-OX shutdown for low flow. P-600 lost prime when switching to recycle. Leave UV-OX off during blowdown.
0800	Blowdown operations good. Rebuild P-601 wet end.
0904	Restart UV-OX - observed a lot of air in the system at startup but NO air once UV-OX warm up was completed. Mike working on weekly WTS sampling & field testings today
0955	- IX Performance HACH Testing w/Lab Split samplings After 1,399,195 gal treated: TP-183 → 252 ug/L; TP-175A → 260 ug/L; TP-174A → 6500 ug/L; TP-170 → 7400 ug/L. Currently Running @ 1.66 gpm.
1205	- Decant T-351 to bottom valve. wetwell all around. water is clear no color.
	- Clean AP-315 probe w/ Acid solution. Check the Hose for oil or sheen: None observed. Spray down worn
	- Check TP-180 for oil globules: None observed. water is slightly cloudy w/ yellow orange tint.
1220	Reboot UMI FT VIEW1 to reset available temporary memory, online 1225.
1415	- Refill WTS Phosphorus tank w/ 6# OK TSP + 60 gal of potable water
1515	- Plants operations Good

Influent Sources and Flow Rates: @0530
NBBW – 6.3 gpm
North End On Site- 12.3 gpm
North End Off-Site – 8.3 gpm
RWST – 0.6 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.1 gpm
COND/NTES T-530- 0.20 gpm(6am-1pm daily)
MW113 Area – 1.66 gpm

Operator: **Mike Gelwick / Chris Carlson**

1" in use
Slow rain
overnight
0.07" additional
7AM - 10PM
Today.

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, June 01, 2022**

Time:	
0545	plant operations good. Start on weekly QC maintenance and calibrations. Prepare
↓	for IX system lead column removal.
0700	Observe UV-OX when switching into recycle for blowdown. P-601 lost prime due to air-pocket
↓	that is forming in the recycle piping - remove air bleed valve and inspect.
0708	Stop IX system. Take Column 3 (lead) offline and place column 4 in lead. TP-174A post
	moved to post column 4 and restart IX at 0714. Continue to troubleshoot UV-OX recycle
	system. IX system total volume treated reading 1,401,409 gallons.
0815	HMR-30 refilled after blowdown. Restart UV-OX, air bleed working.
0830	- Decant T-351 to bottom valve. WAT well activated. waters is clear no color.
	- Clean pH-315 probe w/ Acid solution. Check the HMR 30 for air or sludge: none observed. Spray down with water
	- Check TP-130 for oil globules: none observed. waters is slightly cloudy w/ yellow-orange hint.
	Empty spent resin from Column 3 into satellite hazardous waste drum, drum is ~2/3 full now.
1045	- Increase P-005 flow to 0.50 gpm and put NTES into divert to T-530 to sweep out MW2-10R pump w/ backflow.
1222	- Return P-005 to 0.20 gpm and NTES back to normal to sediment tank.
1515	- Plants observations Good.

Influent Sources and Flow Rates: @
NBBW – gpm
North End On Site- gpm
North End Off-Site – gpm
RWST – gpm
NTES – gpm(10R only)
MW38 T-540/541 – gpm(Source well and 38 pumping wells mix)
MW38 N & S– gpm
COND/NTES T-530- gpm(6am-1pm daily)
MW113 Area – gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Thursday, June 02, 2022**

Time:	
0650	- Plants operations Good
0700	- Automatic Blowdown operations Good. UV-ox Kept Good Flow Auxiliary switched over.
0740	- TOM working on Weekly Alarms Systems checks and calibrations today
0945	- Decant T-351 to bottom valve. Wet well activated. Water is clear no color
	- Clean ph-315 probe with Acid Solution. Check HMR30 for oil or sheens - none observed - sprayed down weir
	- check TP-130 for oil globules - none observed. water is clear with a yellow tint
1403	Discharge suspended to calibrate PH-740 to 4 and 10 PH STDS. 1412 Resume normal discharge
1413	Calibrated pH-310, ph-315, PH365, ph-113, ph-670 probes to 4 and 10 PH STDS
1500	weekly plants ~~&~~ systems Checks + calibrations complete
1600	- Plants operations Good.

Influent Sources and Flow Rates: @ 0650
NBBW – 6.4 gpm
North End On Site- 12.4 gpm
North End Off-Site – 8.6 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.30 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.1 gpm
COND/NTES T-530- 0.24 gpm(6am-1pm daily)
MW113 Area – 1.68 gpm

Operator: **Mike Gelwick** / TOM Gilbert

LOWRY WTP OPERATIONS LOG

Date: **Friday, June 03, 2022**

Time:	
0620	-Plants operations Good. MW38 North pumping well reached its cut off level and stopped @ 1745 yesterday evening. Currently Recharging MW38 South well pumping @ 1.3 gpm.
0700	-Automatic Blowdown operations Good. UV-ox Flow Good during switch over.
0810	-Increase LWSTS flow to 1.2 gpm to make up difference of MW38 North well being off for Recharge
0915	-Decon + T-351 to bottom valve, wet well extracted. water is clear NO odor.
	-Clean pH-315 probe w/ Acid Solution. Check the Hach 30 for oil or sheen: None observed. Spray down weir.
	- Check TP-130 for oil globules: None observed. water is clear NO odor.
1015	- Place BT3 into Maint Hold and Flush heaters Feed pump.
1044	- BT3 out of Hold.
1315	-Calibrate and set up Autosampler for Monday Monthly Sampling Event START. Triple Rinse dedicated composite containers for Metals/molybdenum.
1500	-Plant operations Good.

Influent Sources and Flow Rates: @ 0625
NBBW – 6.5 gpm
North End On Site- 12.4 gpm
North End Off-Site – 9.8 gpm
RWST – 0.60 gpm
NTES – 0.50 gpm(10R only)
MW38 T-540/541 – 0.31 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.3 gpm
COND/NTES T-530- 0.19 gpm(6am-1pm daily)
MW113 Area – 1.68 gpm

Operator: **Mike Gelwick**

LOWRY WTP OPERATIONS LOG

Date: SATURDAY, June 4, 2022

0630	- Plants operations Good. Go to Check other site systems
0800	- Refill BTS phosphorus tanks w/ 5 lb of TSP and 50 gal of potable water.
0820	- Decant T-351 to bottom valve. Wet well activated. Water IS clear No odor.
	- Clean pH-315 probe w/ acid solution. Check the tank 30 for oil or sitken: None observed. Spray down weir.
	- Check TP-430 for oil globules: None observed. Water IS clear w/ yellow-green tint.
0830	- Flush P-005 / T-530 pump with potable water and STOP pump, TANK @ 20% (T-530).
	- Both Gac's operational within limits
	- All showers ok. Backflows Good.
0930	- MW38 ~~S~~ North well restarted. Decrease RWST flow to 0.60 gpm.
1900	- Remote Log In all ok.
Sunday, June 5, 2022	
0850	- Remote Log in, All ok
2200	- Remote Log in, All ok.

Influent Sources and Flow Rates: @ 0630
NBBW – 6.5 gpm
N. END ON-SITE – 12.4 gpm
N. END OFF-SITE – 8.4 gpm
RWST – 1.2 gpm
NTES – 0.48 gpm
COND/NTES T-530 –0.22 gpm (6AM–1PM daily)
MW38 – 1.3 gpm
T-540/541 – 0.31 gpm
MW113 Area – 1.67 gpm

OPERATOR(S) Mike Gschwind

LOWRY WTP OPERATIONS LOG

Date: **Monday, June 06, 2022**

Time:	
0535	Plant operations good.
0555	Reboot HMIFTVIEW1 to reset temporary file memory cache - online @ 0601.
0629	Reboot HMI2 (Has been > 1 month since last reboot). Online @ 0631.
0740	Blowdown operations good. Mike adding preservative to MP-001 composite sample container.
0800	Start up auto sampler on MP-001 flow paced sampling. Effluent totalizer reading 255,900,098 gallons. Work with Mike & N adding full caustic tote to main bay supply. Tom working on lining sludge roll-off box and emptying filter press.
0950	- Begin working on monthly WTP3 Early warning sampling and weekly IX System sampling.
1030	- IX System performance HACH testing w/Lab split sampling. After 1,413,688 gal treated: TP-183 = 300 ug/L; TP-175A = 410 ug/L; TP-174A = 530 ug/L (Low Range test); TP-170 = 7500 ug/L. Currently System Running @ 1166 gpm. All samples placed in ~~Office~~ Fridge until packing Tomorrow for courier.
1152	- Begin Flush of MP-001 sample port and check for Residual chlorine; NONE detected. OK to use HCl preserved vials.
1200	- Collect 1st set of time paced grab samples @ MP-001 sample port for Low-Level 1,4-Dioxane. Water is very clear NO color. Place samples in fridge with others.
1205	- Decant T-351 to bottom valve. Wet well activated water is clear NO color.
	- Clean pH-315 probe w/Acid solution. Check the Hach 30 for oil or sheen: None observed. Spray down with water.
	- Check TP-130 for oil globules: None observed. Water is clear w/yellow-green tint.
1550	- Begin flush of MP-001 sample port and check for Residual chlorine: NONE detected. Water is very clear NO color
1600	- Collect 2nd set of time paced grab samples from MP-001 sample port for Low-Level 1,4-Dioxane. Place samples in fridge with others
1605	- Plant 3 operations Good. Auto sampler on track. OK.
1945	Begin MP-001 port Flush and check for residual chlorine - NONE detected.
1800	Collect 3rd set of time paced grab samples for low level 1,4-Dioxane. Sample is very clear, no color. Place sample in the fridge with others.
2340	Begin MP-001 port Flush and check for residual chlorine - NONE detected.

Influent Sources and Flow Rates: @ 0952
NBBW – 6.5 gpm
North End On Site- 12.4 gpm
North End Off-Site – 9.0 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 2.2 gpm
COND/NTES T-530- 0.0 gpm(~~Garm~~ 1pm daily)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson** / Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: Tuesday, June 07, 2022

0000	Collect 4th set of time paced grab samples for low level 1,4-Dioxane. Sample is very clear, NO color. Place sample in the fridge with others.
0325	-Plants operations Good.
0350	-Begin flush of MP-001 sample port and check for Residual chlorine; None detected. water is very clear NO color.
0400	-collect 5th set of time paced grab samples from MP-001 sample port for Low-Level 1,4-Dioxane. Place sample in fridge with others
0415	-working on weekly BTS sampling. START Efficiency Checks.
0500	-collect TP-730 GAC/Lab split samples and TP-710 + TP-740 weekly Low-Level 1,4-Dioxane samples 6-8.
0530	-working on BTS Field Readings today
0750	-Begin flush of MP-001 sample port and check for Residual chlorine; None detected. water is very clear NO color
0800	-collect 6th/final set of time paced Grab Samples From MP-001 sample port for Low Level 1,4-Dioxane. Place sample in Fridge with others
	-STOP AWRS sampler and process composite sample by Gently stirring and checking pH value. pH value @ 1.91 SU. OK to fill Bottle
	-Total Effluent @ 255,947,642 gal. A total of 47,544 gal treated during sample period. PACK all samples on Ice for courier Pickup today
0930	-Decant to T-351 to bottom valve. wet well activated. water is clear NO odor. Clean P-352 y-Strainer.
	-Clean pH-315 probe w/Acid Solution. Check the HMR-30 for oil or sheen; None observed. Spray down well.
	-Check TP-430 for oil globules; None observed. water is clear w/ yellow-green tint.
0959	-P-352 Going again. Alert.
1030	Stop MW38N's extraction to prepare for MW38 source well batch extraction.
1050	Switch MW38 from direct HMR-30 influent to T-540/541 (levels @ 24% & 26%)
1100	Start MW38 source well batch extraction (Note: New batteries installed 6/6/22).
1325	-Plants operations Good

Influent Sources and Flow Rates: @0325
NBBW – 6.5 gpm
N. END ON-SITE – 12.4 gpm
N. END OFF-SITE – 8.9 gpm
RWST – 0.6 gpm
NTES – 0.48 gpm
COND/NTES T-530 – 0.0 gpm ~~(6AM-1PM daily)~~
MW38 – 2.1 gpm
T-540/541 – 0.30 gpm
MW113 Area – 1.67 gpm

OPERATOR(S) Chris Carlson / Mike Gelwick

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, June 08, 2022**

Time: 0550	Plant operations good. MW38 source well batch extraction working well, T-540/541 @ 62%. Work
↓	on weekly GC maintenance and calibrations.
0624	Receive UV-OX warning alarm - peroxide flow low. Internal pressure high alarm on
↓	P-650. Air in the system has caused the alarm - purge air bubbles from the pump /
↓	system - Peroxide flow normal @ 0630, P-650 working well again. Continue on GC maint.
0745	Blowdown operations good. Refill phosphate tank with 65 gallons potable + 5.5 lbs TSP.
0820	Start filterpress on T-351 (in stage 1). Clean the HMR-30 weir and pH probe - no oil or
↓	sheen observed in the HMR-30. Check TP-130 for oil globules - none observed. Water
↓	is clear, light yellow / green.
1040	Filterpress full.
1050	Weekly Flash & DVD of WTP data created. One drive backup working well.
1400	Empty Filterpress.
1520	Shutdown MW38 source well batch extraction. T-540/541 @ 78% & 80'.
1550	Start MW38 N & S extraction to T-540/541 to displace source well water in the conveyance
↓	line to T-540/541.
2145	Remotely switch MW38 N&S from T-540/541 to RWSTs after 650 gallons pumped to displace
	the source well water in the conveyance line to T-540/541. Plant operations good.

Influent Sources and Flow Rates: 0600
NBBW – 6.6GPM
N. END ON-SITE – 12.5GPM
N. END OFF-SITE – 8.8GPM
RWST – 2.0GPM
NTES – 0.48GPM
COND/NTES T-530 – 0.0GPM
MW38 – 4.8GPM (source well to T540/541)
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Thursday, June 09, 2022

Time: 0520	Plant operations good.
0540	Reduce RWST influent from 2.0 gpm to 0.6 gpm and switch MW38 NIS from RWSTs to discnt
↓	HMR-30 influent. Reduce T-540/541 influent to BTS while fresh MW38 source well water
↓	is present so BTS can adjust to it. Prepare for weekly systems checks and calibrations.
0600	Clean the HMR-30 weir and pH probe - No oil or sheen observed on the HMR-30. Check
↓	TP-130 for oil globules - none observed. Water is slightly cloudy light yellow/green.
0740	Blowdown operations good. Start weekly system checks with Tom.
1053	Start discharge suspension for pH-740 calibration
1103	pH-740 calibration completed - resume normal discharge. Continue on pH calibrations at
↓	pH-113, pH-670, pH-310, pH-315, pH-365.
1138	pH calibrations completed - All okay.
1525	Plant operations good.

Influent Sources and Flow Rates: 0600
NBBW – 6.6GPM
N. END ON-SITE – 12.5GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.49GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.9GPM
T-540/541 – 0.2GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: **Friday, June 10, 2022**

Time: 0600	Plant operations good. Continue to troubleshoot MPZ-11 transducer - not the transducer, suspect
↓	the PLC circuit is damaged (sending 16V DC loop, should be 24V DC).
0745	Blandown operations good.
0755	Reboot HMIFTVIEW1 to reset available temporary memory, online 0802.
0901	Observe HMIFTVIEW1 is failing to send heartbeat update to the PLC. Reboot again.
0906	Online - Heartbeat working.
1040	Clean the HMR-30 weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130
	for oil globules - none observed
1200	Plant operations good.

Influent Sources and Flow Rates: 0615
NBBW – 6.6GPM
N. END ON-SITE – 12.5GPM
N. END OFF-SITE – 9.3GPM
RWST – 0.6GPM
NTES – 0.49GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.7GPM
T-540/541 – 0.2GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Saturday, June 11, 2022

0620	On site for weekend system checks. Plant operations good. Refill phosphorus tank with
↓	45 gallons potable water + 4.5 lbs TSP.
0645 ~~0700~~ (a)	~~Observe~~ Clean the HMR-30 weir and pH probe - No oil or sheen observed in the HMR-30.
↓	Check TP-130 for oil globules - none observed. Water is very clear, light green/yellow.
0700	Observe latest GC result for TP-3350 indicating the BTS has adjusted to the fresh
↓	MW38 source well water. Set P-006 (T-540/541 to BTS) at 0.3 gpm.
0945	Plant operations good.
6/12/22 0635	Check plant remotely - All okay.
1725	Check plant remotely - All okay.

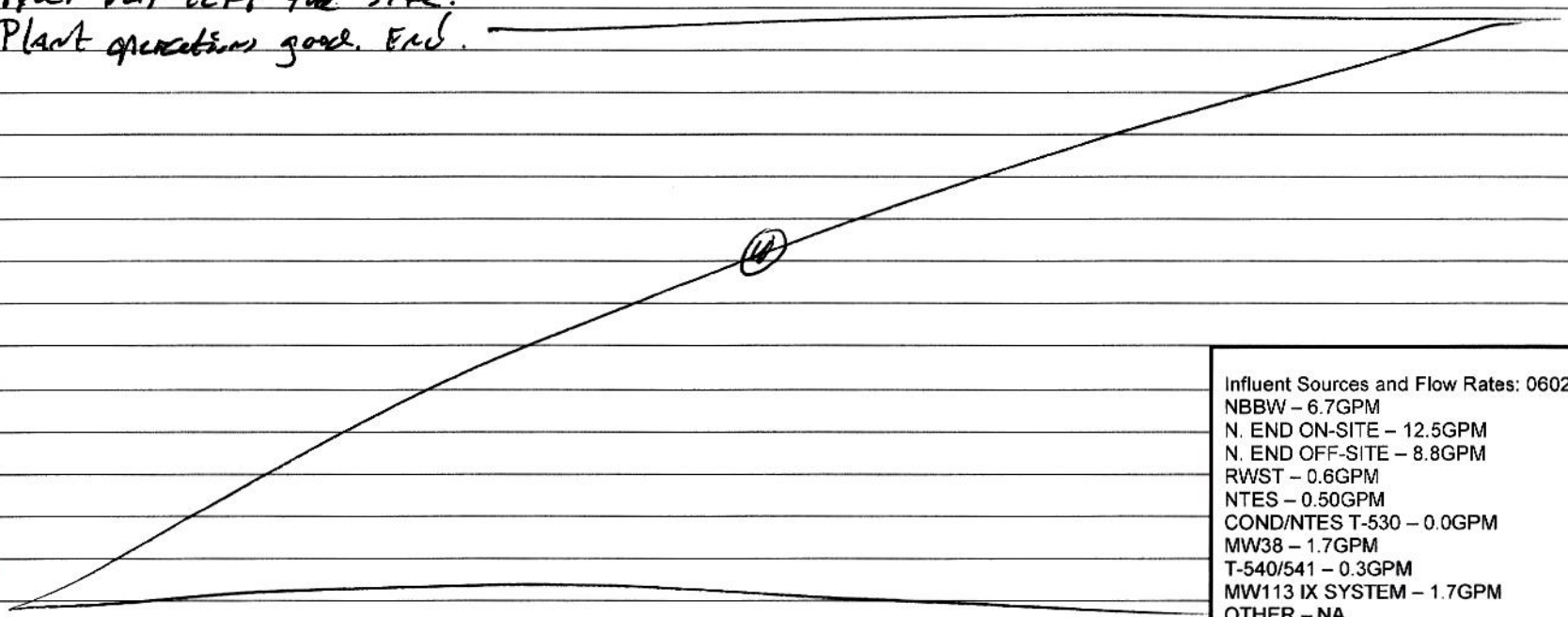
Influent Sources and Flow Rates: @ 0643
NBBW – 6.6 gpm
N. END ON-SITE – 12.5 gpm
N. END OFF-SITE – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.1 gpm
COND/NTES T-530 – 0.0 gpm (~~6AM-1PM daily~~) (a)
MW38 – 1.8 gpm
T-540/541 – 0.2 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, June 13, 2022**

Time: 0550	Plant operations good.
0628	Reboot HMI FT VIEW1 to reset available temporary memory, 0633 online.
0645	Refill polymer tank with 200 gallons potable water + 2 cups polymer. Clean the HMR-30 weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed.
↓	Water is very clear, light green / yellow.
0745	Blowdown operations good.
1000	Tyler Tippit from Piper Electric on site to asses MW170-EC1 & P-001 VFD's /
↓	Backup VFD.
1130	Tyler is going to look up a second / possibly a third backup VFD for them,
↓	Tyler has left the site.
1500	Plant operations good. End.



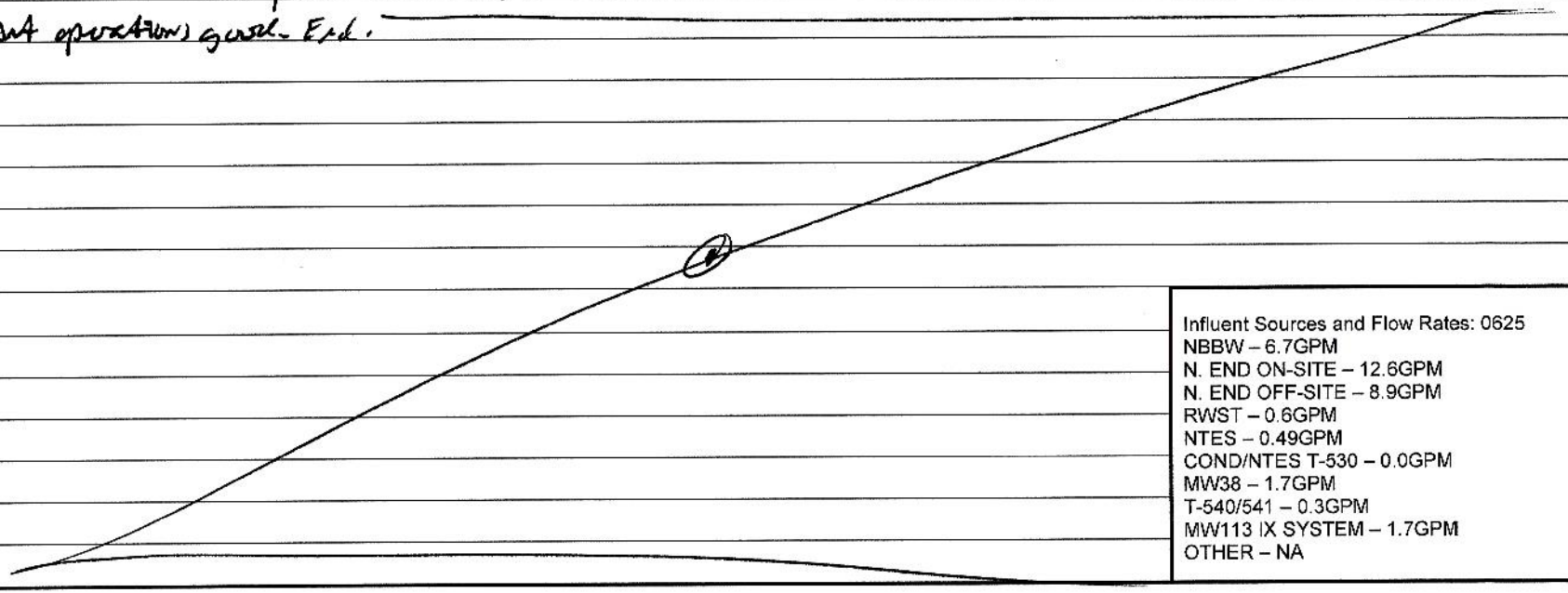
Influent Sources and Flow Rates: 0602
NBBW – 6.7GPM
N. END ON-SITE – 12.5GPM
N. END OFF-SITE – 8.8GPM
RWST – 0.6GPM
NTES – 0.50GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.7GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, June 14, 2022**

Time: 0520	Plant operations good. Start on weekly plant efficiency checks/sampling & UV-ox performance sampling.
↓	
0740	Blowdown operations good.
0900	Tom working on weekly BTS performance sampling.
0945	Start filterpress od T-351 (in stage 1). Clean the HMR-30 weir and pH probe - NO oil or sheen observed in the HMR-30. Check TP-180 for oil globules - NONE observed. Water is very
↓	clear, light yellow/green.
1000	Tom starting weekly Ix performance sampling/Hach readings.
1010	After 1,432,761 gallons treated TP-183 @ 200 ug/L; TP-175A @ 240 ug/L; TP-174A @ ~~7000~~ 270 ug/L (out of range) and 300 ug/L LR; TP-170 @ 7500 ug/L
1620	Shut down filterpress (in stage 4).
1640	Plant operations good. End.



Influent Sources and Flow Rates: 0625
NBBW – 6.7GPM
N. END ON-SITE – 12.6GPM
N. END OFF-SITE – 8.9GPM
RWST – 0.6GPM
NTES – 0.49GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.7GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, June 15, 2022**

Time: 0540	Plant operations okay - received a UV-ox warning alarm on the way to the site. Peroxide flow low - observe P-680 has a local warning for pressure high (air from peroxide bubbler has built up and pump has stopped for warning. Automatic bleed programmed is unable to overcide the local pumps warning / stop. Will look into having an air purge cycle to occur at least once per day to prevent build up/action it becomes an internal pump shutdown. Able to quickly get air purged manually and flow of peroxide returned to normal. Start on weekly GC maintenance and calibrations.
0740	Blowdown operations good. Refill phosphorus tank with 60 gallons potable water + 6 lbs TSP. Restart Filterpress (in stage 4). Unload chemical delivery - peroxide & HCL totes only (caustic on back order (delivery scheduled for later this week). Continue on GC calibrations.
0915	Add 165 gallons of peroxide to main bay supply.
1500	Shutdown Filterpress (in stage 4)
1515	Clean the HMR-30 weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed. Water is very clear, light yellow/green.
1600	Plant operations good. End.

Influent Sources and Flow Rates: 0806
NBBW – 6.6GPM
N. END ON-SITE – 12.5GPM
N. END OFF-SITE – 8.8GPM
RWST – 0.6GPM
NTES – 0.49GPM
COND/NTES T-530 – 0.0GPM
MW38 – 0.9GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Thursday, June 16, 2022**

Time: 0525	Plant operations good.
0616	Receive GC TP730 Fault alarm - UV-ox in recycle. GC1 has posted a false high 1,1-DCE result of 1360.73 ug/L - Result peak is smaller than calibration peak of 9.91 ug/L. Document ~~Falsie~~ False calculation error and take UV-OX out of recycle.
0730	Start Filterpress on T-351 (IN stage 4).
0745	Blowdown operations good. Tom starting on weekly WTP systems checks.
1000	- Decant T-351 to bottom valve. wet well activated. Water is clear w/ no color -cleaned ph-315 probe with acid solution. check HMR-30 for oil or sheens - none observed - sprayed down weir -checked TP-130 for oil globules - none observed. Water is clear with a yellow tint
1432	Place effluent in timed suspension for pH-740 calibration.
1441	pH-740 calibration completed - Resume normal discharge. Continue on pH calibrations at
	pH-670, 113, 310, 315 & 365.
1510	pH calibrations completed - All okay. Note: Follow up sample on GC1 result read 6.89 ug/L for 1,1-DCE.
1530	Plant operations good. End.

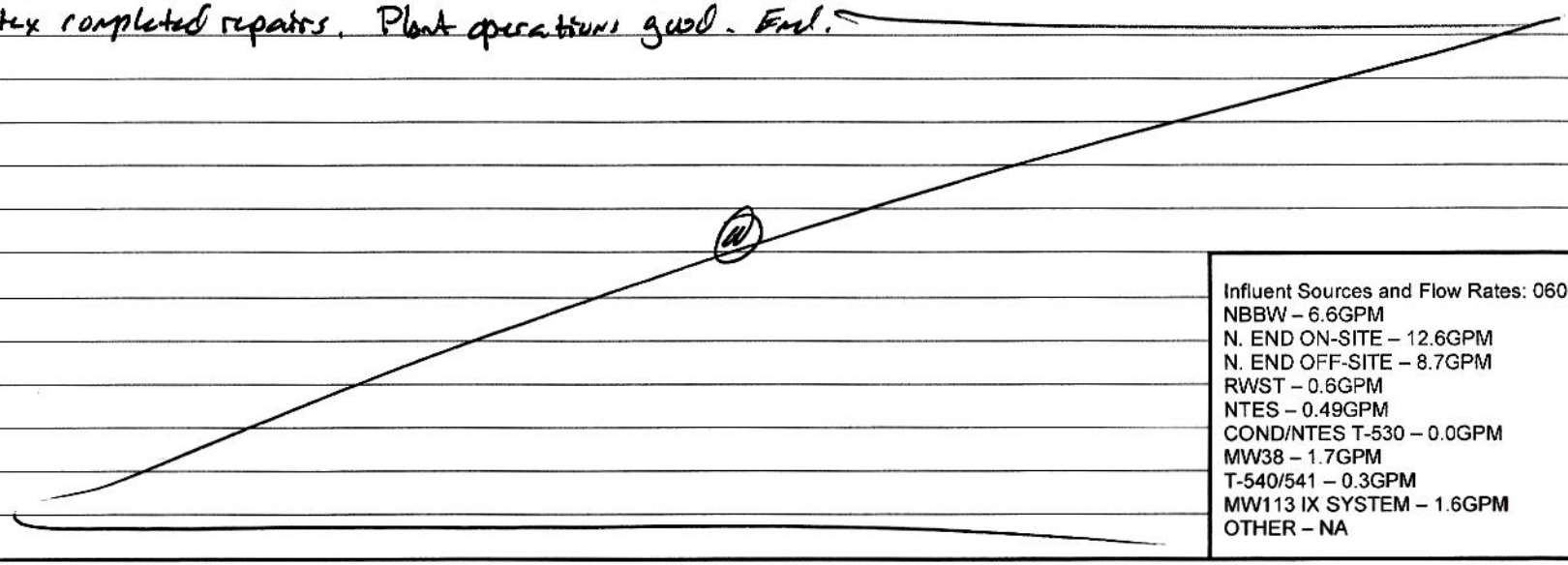
Influent Sources and Flow Rates: 0535
NBBW – 6.6GPM
N. END ON-SITE – 12.5GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.49GPM
COND/NTES T-530 – 0.0GPM
MW38 – 2.6GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson / Tom Gilbert

LOWRY WTP OPERATIONS LOG

Date: **Friday, June 17, 2022**

Time: 0525	Plant operations good
0645 ↓	Clean the HMR-30 wetr and pH probe - no oil or sheen observed in the HMR-30. Check TP-130 for oil globules - none observed. Water is very clear, light green/yellow.
0743	Blowdown operations good.
0845 ↓	Vortex Doors on site to evaluate Caustic bay door mechanism. Thinks he can fix today after going to pickup parts.
0900 ↓	EPR at Quincy's Cooper Leaf working on potable water valve that has a leak. Cracked reducing Fitting under the Air/Vac valve leaking as well. They will shutdown the water for a few minutes to change out fittings and local isolation valve under the Air/Vac that will also be replaced. (Note: ECCV having trouble with isolation of the system - unable to isolate properly today and needs more staff available in case problem arise). Leak repair moved to later when ECCV has been notified and has staff on hand.
1330	Vortex completed repairs. Plant operations good. End.



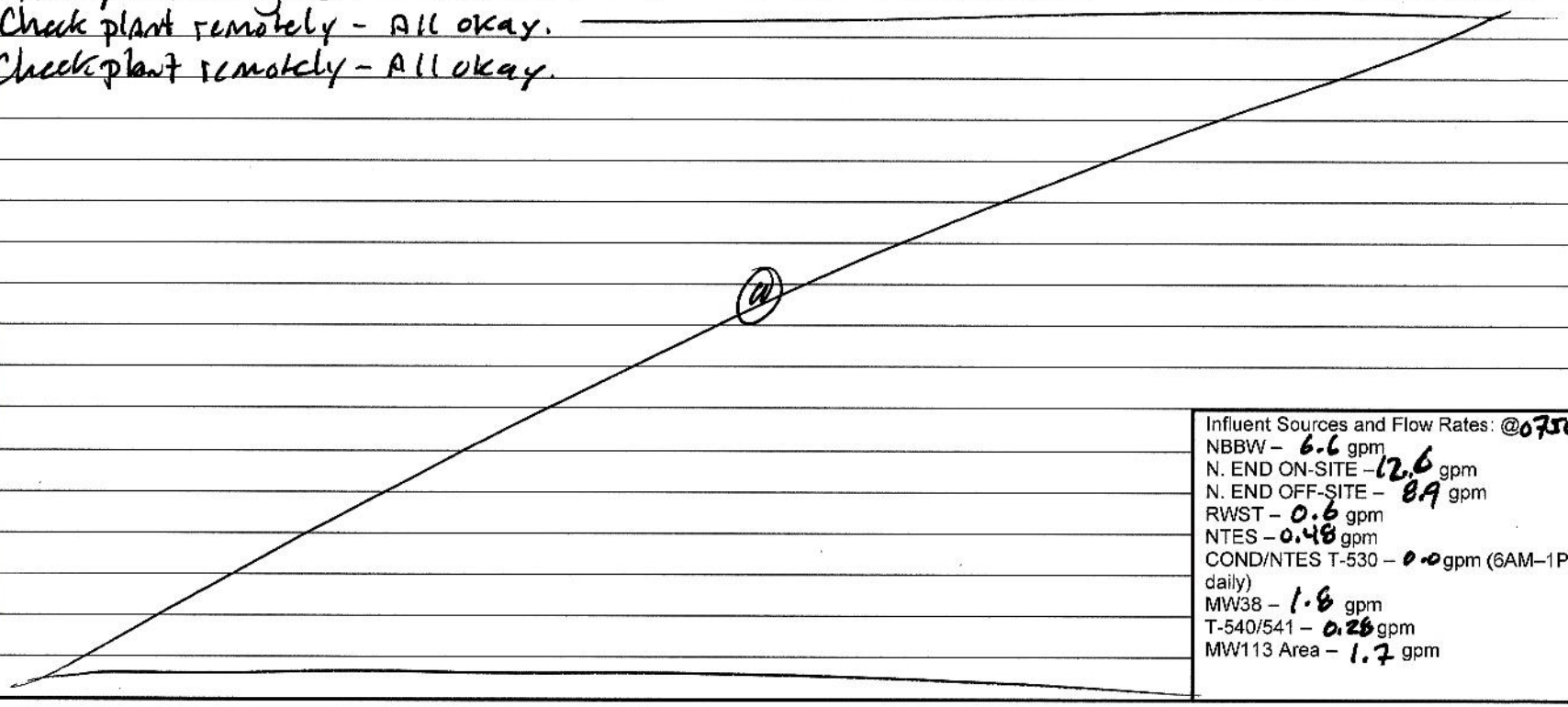
Influent Sources and Flow Rates: 0600
NBBW – 6.6GPM
N. END ON-SITE – 12.6GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.49GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.7GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.6GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: Saturday, June 18, 2022

0710	ON site for weekend systems check - Plant has just dropped into blowdown - All okay.
↓	Backwash PDU while in blowdown. Δ pressure improved from 4psi to 1psi.
0746	Blowdown operations good. Clean the HMR-30 weir and pH probe - no oil or sheen
↓	observed in the HMR-30. Check TP-130 for oil globules - none observed. Water is very
↓	clear, light green/yellow.
0805	Refill phosphorus tank with 46 gallons of potable water + 4.6lbs TSP.
0915	Decant T-351 bottom valve, wet well activated. Water is clear, No color.
0930	Plant operations good.
6/19/22 0615	Check plant remotely - All okay.
1810	Check plant remotely - All okay.



Influent Sources and Flow Rates: @0750
NBBW – 6.6 gpm
N. END ON-SITE – 12.6 gpm
N. END OFF-SITE – 8.9 gpm
RWST – 0.6 gpm
NTES – 0.48 gpm
COND/NTES T-530 – 0.0 gpm (6AM–1PM daily)
MW38 – 1.8 gpm
T-540/541 – 0.28 gpm
MW113 Area – 1.7 gpm

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, June 20, 2022**

Time: 0620	Plant operations good.
0710	Clean the Hach-30 weir and pH probe - No oil or sheen observed in the HMR-30. Check TP-130 for
↓	oil globules - none observed. Water is very clear, light yellow / green.
0740	Blowdown operations good.
1100	Decant T-351 bottom valve, wet well activated. Water is clear, no color.
↓	Check POTW discharge line vaults / leak detection ports and discharge at COA manhole. - All okay.
1330	Test run RWST generator and test RWST containment high float switch - both good.
↓	Check N.T.E.S. secondary containment sump - Dry @ 16.07'
1445	Plant operations good. End.

Influent Sources and Flow Rates: 0630
NBBW – 6.6GPM
N. END ON-SITE – 12.6GPM
N. END OFF-SITE – 8.9GPM
RWST – 0.6GPM
NTES – 0.48GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.8GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.6GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, June 21, 2022**

Time: 0545	Plant operations good. Work on weekly plant efficiency & BTS performance sampling.
0740	Blowdown operations good.
0800	Perform weekly DON Exchange system Hach reading / lab splits. System flow rate at
↓	1.66gpm; Total volume treated 1,449,221 gallons. TP-183 @ 220ug/L; TP-175A @ 240ug/L;
↓	TP-174A @ 290ug/L and TP-170 @ 7,400ug/L.
1000	Unload three caustic totes from Univar truck.
1030	Decant T-351 bottom valve, wet well activated. Water is clear, no color. Clean
↓	the HMR-30 water and pH probe - no oil or sheen observed in the HMR-30. Check
↓	TP-130 for oil globules - none observed. Water is very clear, light yellow/green.
1400	Work on weekly BTS field readings. Note: Kevin with B&B HVAC on site to install
↓	replacement fan on condenser of Build #1 office AC/Heather unit.
1510	AE repairs done Kevin leaving.
1550	Check plant operations - all okay.
1600	End.

Influent Sources and Flow Rates: 0747
NBBW – 6.6GPM
N. END ON-SITE – 12.5GPM
N. END OFF-SITE – 8.6GPM
RWST – 0.6GPM
NTES – 0.48GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.7GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, June 22, 2022**

Time: 0545	Plant operations good. Observe P-006 is at 100% but maintaining setpoint. Started weekly GC maintenance and calibrations. Refill phosphorus tank with 60 gallons potable water + 6 lbs TSP.
0600	Shutdown P-006 to clean y-strainer.
0620	Reboot HMI FTVIEW1 to reset temporary memory file space; online 0625.
0648	P-006 y-strainer & feed piping cleaned/flushed, was very clogged with the iron based bio growth (warmer temps heating up source well water in T-540 (5C1)), All clear now.
	Work on BTS OUR / media solids.
0800	BTS Field reading completed. Go to cooperless F blvd & gurney to isolated to potable water so air/vac valve & piping can be replaced. Note: Aphalt crew over the weekend got asphalt in the valve box of the isolation valve - Took a while to stop water because ECCV had to bring out a small vacuum trailer to clean out the box - EPR's first attempt at the repair didn't work - will need to replace the entire tee assembly - water may be off until ~2 PM - Let W.M. know. Continue on GC calibrations and weekly plant data backup.
1150	Clean the HMR-30 weir and pH probe - no oil or sheen observed in the HMR-30. Check TP-130
	for oil globules - none observed. Water is very clear, light yellow/green.
1250	Potable water restarted after repair is completed. Running potable on the ground
	to work the air out of the system (sent to grassy area).
1330	Flushing stopped so line can pressurize to test assembly - All Okay
	resume flushing
1430	Flushing completed. 2,400 gallons of potable used.
1530	Plant operations good. End.

Influent Sources and Flow Rates: 0555
NBBW – 6.6GPM
N. END ON-SITE – 12.6GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.48GPM
COND/NTES T-530 – 0.0GPM
MW38 – 0.9GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Thursday, June 23, 2022**

Time: 0500	Plant operations good. Decant T-351 bottom valve, wet well activated. Water is clear, NO color. Clean the HMR-30 weir and pH probe - NO oil or sheen observed in the HMR-30. Check TP-130 for oil globules - NONE observed. Water is very clear, light yellow / green. Start weekly systems checks and calibrations.
0745	Blowdown operations good.
1045	Place discharge in timed suspension for LEL-740 calibration.
1057	Plant shutdown when LEL value got to 8%. when 50% LEL calibration gas was applied. LEL-740 calibration completed at 1104 - All okay.
1105	Calibrate pH-740 while plant was off.
1110	pH-740 calibration completed. Restart plant and discharge. Take UV-04 out of recycle.
1115	Continue on pH calibration of pH-113, 670, 310, 315 & 365.
1145	pH calibrations completed - All Okay -
1615	Plant operations good. End.

Influent Sources and Flow Rates: 0620
NBBW – 6.7GPM
N. END ON-SITE – 12.6GPM
N. END OFF-SITE – 8.8GPM
RWST – 0.6GPM
NTES – 0.47GPM
COND/NTES T-530 – 0.0GPM
MW38 – 0.9GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.6GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Friday, June 24, 2022**

Time: 0545	Plant operations good. Clean the HMR-30 weir and pH probe - No oil or sheen observed in the HMR-30. Check TP-130 for oil globules - None observed. Water is very clear, light yellow / green.
↓	
↓	
0740	Blowdown operations good.
1300	Plant operations good
1320	Leave for the day.
1915	Return to site, internet monitor indicating the internet is down. Reboot WANs & Fortigate box
1920	Internet restored.
1930	Plant operations good.

Influent Sources and Flow Rates: 0626
NBBW – 6.7GPM
N. END ON-SITE – 12.6GPM
N. END OFF-SITE – 8.7GPM
RWST – 0.6GPM
NTES – 0.47GPM
COND/NTES T-530 – 0.0GPM
MW38 – 1.8GPM
T-540/541 – 0.3GPM
MW113 IX SYSTEM – 1.7GPM
OTHER – NA

OPERATOR(S) Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: June 25, 2022

1100	Plant operations good.
	Decant T-351 to bottom valve. Wet well activated. Water is clear, no color.
	Check TP-130 for oil globules: none observed. Water is very clear with yellow/green tint.
	Clean pH-345 probe with acid solution. Check HMR-30 for oil or sheen: none observed. Spray down wet.
1150	Both GC's operational within limits.
	All Blowers okay.
	Phosphorus tank @ 50 gal. Added 5# TSP and 50 gal water.
1320	Plant operations good.
(W) 0745	Check plant remotely - All okay.
1715	Check plant remotely - All okay.
6/26/22 0445	Check plant remotely - All okay.
1530	Check plant remotely - All okay.

Influent Sources and Flow Rates: @ 1120
NBBW – 6,7 gpm
N. END ON-SITE – 12,5 gpm
N. END OFF-SITE – 8,9 gpm
RWST – 0,6 gpm
NTES – 0,48 gpm
COND/NTES T-530 – 0,0 gpm (6AM–1PM daily)
MW38 – 1,8 gpm
T-540/541 – 0,3 gpm
MW113 Area – 1,7 gpm

OPERATOR(S) Manuela Seewald / Chris Carlson

LOWRY WTP OPERATIONS LOG

Date: **Monday, June 27, 2022**

Time:	
0600	Plant operations good.
0630	Reboot HMIFTVIEW1 to reset available temporary memory, online 0637.
0745	Blowdown operations good.
	Add one full tote of caustic to main bay supply.
0940	-Decant T-351 Bottom valves wet well activated. Water is clear No carbon
	-Clean pH-315 probe w/Acid solution. Check the HMI for 0.1 on screen: None observed. Spray down wall.
	-Check TP-130 for 0.1 globules: None observed. Water is very clear w/light yellow green tint
1610	-Plants operations Good.

Influent Sources and Flow Rates: @ ~~0800~~ 0600
NBBW – 6.6 gpm
North End On Site- 12.5 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.49 gpm(10R only)
MW38 T-540/541 – 0.3 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.0 gpm(~~6am~~ ~~1pm daily~~) (D)
MW113 Area – 1.7 gpm

Operator: **Mike Gelwick / Chris Carlson**

LOWRY WTP OPERATIONS LOG

Date: **Tuesday, June 28, 2022**

Time: 0615	- Plants operations Good.
0625	- Collect weekly TP-730 GC/Lab split samples and Also collect weekly TP-740 + TP-710 Low Level 1,4-Dioxane and START Efficiency checks. Working on BTS weekly sampling + Field testing today.
1000	- IX System Performance HACH TESTING w/Lab split samples AFTER 1466166 gal Treated: TP-185 → 300 ug/L; TP-175A → 350 ug/L; TP-174A → 470 ug/L; TP-170 → 7200 ug/L. System currently running → 1.66 gpm.
1040	- Decant T-351 to bottom valve. Wet well activated. Water is clear NO color.
	- Clean pH-315 probe w/Acid solution. Check the HMR 30 for oil or sheen: None observed. Spray down weir
	- check TP-430 for oil globules: NONE observed. Water is very clear w/light yellow green shot.
	- Refill polymer TANK w/2 cups of NALCO polymer and 200 gal of potable water.
1100	Shut down MW38 N's S extraction. Increase RWST influent from 0.6 gpm to 2.0 gpm.
1120	Switch MW38 from direct HMR 30 influent to T-540/541 (levels at 19%; 23%.)
1145	Start MW38 source well batch extraction.
1600	- Plants operations Good
	Note: Observed air in the potable water supply still present - purge another 400 gallons of potable water to remove some of it (potable sent out side of plant into a grassy area).

Influent Sources and Flow Rates: @0635
NBBW – 6.7 gpm
North End On Site- 12.5 gpm
North End Off-Site – 8.7 gpm
RWST – 0.6 gpm
NTES – 0.47 gpm(10R only)
MW38 T-540/541 – 0.29 gpm(Source well and 38 pumping wells mix)
MW38 N & S– 1.7 gpm
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.65 gpm

Operator: **Mike Gelwick / Chris Carlson**

0.14"
rain P.M.

LOWRY WTP OPERATIONS LOG

Date: **Wednesday, June 29, 2022**

Time:	
0510	Plant operations good. Source well batch extraction working well, T-540/541 @ 46'.
↓	Refill phosphorus tank with 45 gallons potable water and 4.5 lbs TSP.
0745	Blowdown operations good.
0900	Observe all of the NTES transducers are periodically pegging out - looks like the PLC is having a problem - will power cycle to see if that helps to stabilize values.
0810	- Decant T-351 to bottom valve, wet well activated. Water is clear no color.
	- Clean pH-345 probe w/Acid solution. Check the HMI-30 for oil or sheen: None observed. Spray down area.
	- Check TP-430 for oil globules: None observed. water is very clear w/ light yellow-green hue.
1615	- Plants operations Good.
1938	- Plant Shut down Due to power loss. Power restored as I Arrived on site, Lightning and T-Storms in Area, May have been reason. Reset Alarms and Faulted motors. P-3301A Drive Burned out. Shut off and will Run P-3301 tonight if ~~can't~~ can't can replace Drive.
2042 ~~0842~~	- Reboot HMI 2. unable to reach remotely.
2055 ~~0855~~	- Reboot HMI 2 again. Heartbeat Alarm wouldn't clear.
2100 ~~0900~~	- Restart Plant, UV-ox in recycle.
2112 ~~0912~~	- UV-ox discharging.
2122 ~~0922~~	- Plants operations back to normal.

Influent Sources and Flow Rates: @0655
NBBW – 6.7 gpm
North End On Site- 12.5 gpm
North End Off-Site – 8.7 gpm
RWST – 2.0 gpm
NTES – 0.47 gpm(10R only)
MW38 T-540/541 – 0.33 gpm(Source well and 38 pumping wells mix)
MW38 ~~N & S~~ 3.5 gpm source well to T540/541
COND/NTES T-530- 0.0 gpm(~~6am-4pm daily~~)
MW113 Area – 1.65 gpm

Operator: **Mike Gelwick / Chris Carlson**

0.03" rain PM

LOWRY WTP OPERATIONS LOG

Date: **Thursday, June 30, 2022**

Time	
0530	On site - ~~obse~~ observe UV-OX power cabinet cooling FAN has stopped running. Shutdown UV-OX and contact Piper Electric to swap out FAN with backup (they think they CAN free up someone today). Place GC1 on standby while UV-OX is offline.
↓ 0550	Reduce T-540/541 to BTS from 0.3 gpm to 0.2 gpm until BTS can adjust to the fresh MW38 source well water entering the system. ~~Sep~~ Set T-530 to start up to BTS at 0.2 gpm 6AM - 1PM daily (Tank @ 41%). Note: T-540/541 at 79%., solar well extraction good overnight. Will shutdown batch extraction later this morning.
1050	- working on weekly plants systems checks and calibrations today
1110	- Decant T-351 to bottom valve. wet well activated. water is clear NO color.
	- Clean AH-315 probe w/acid solution. check the HMI30 for oil or sheen: None observed. Spray down wash
	- check TP-130 for oil globules: None observed. water is very clear w/yellow-green stain.
1130	Shutdown MW38 source well batch extraction (T-540/541) @ 95% full.
1215	John Johanson of Piper Electric on site to swap out power cabinet FAN.
1220	Start MW38N's to T-540/541 to displace source well water in the raw source line to Tanks.
1310	Reboot KMFTVIEW1 to reset available temporary memory & to restart Virus software (was
↓ 1346	stuck while running a scan), online 1317.
	FAN replaced and working. Start UV-OX, warming up -
1400	- suspend plant discharge to calibrate AH-740 probe to 4+10 AHSTD's
1407	- resume normal discharge. continue with other plant pH probes calibrations to 4+10 AHSTD's ✓
	pH-113, 670, 310, 315, & 365, Grease sludge thickener motor bearings.
1440	- weekly plants system checks and calibrations complete.
1545	- Plants operations Good.
1820	- Log in remotely and switch MW38 NTS pumping wells to RWST. 610 gal flushed thru Altitude
	to displace any source well water.

Influent Sources and Flow Rates: @ 1110
NBBW – 6.8 gpm to RWST
North End On Site- 12.6 gpm
North End Off-Site – 8.6 gpm
RWST – 2.0 gpm
NTES – 0.47 gpm(10R only)
MW38 T-540/541 – 0.24 gpm(Source well and 38 pumping wells mix)
MW38 ~~N & S~~ – 3.3 gpm source well
COND/NTES T-530- 0.0 gpm(~~6am-1pm daily~~)
MW113 Area – 1.69 gpm

Operator: **Mike Gelwick / Chris Carlson**

APPENDIX A-2

NBBW SUMP GRAPH

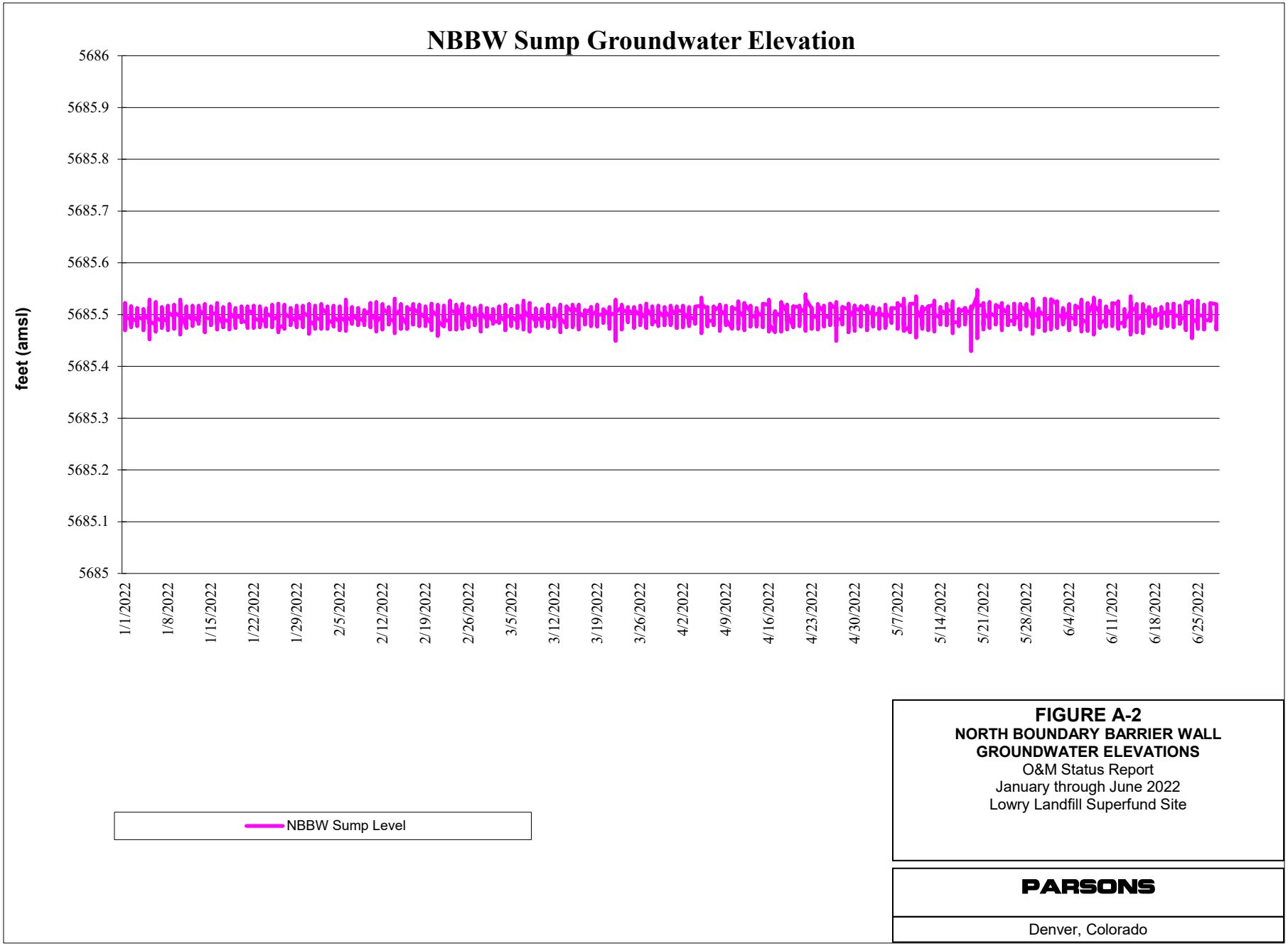


FIGURE A-2
NORTH BOUNDARY BARRIER WALL
GROUNDWATER ELEVATIONS
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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APPENDIX A-3

SLUDGE ANALYSIS DATA

APPENDIX A-3
WTP SLUDGE RESULTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Parameter Name	Method	Units[a/]	Regulatory Limit[b/]	WTP SLUDGE 3/14/2022	RL/Lc[c/]	WTP SLUDGE-1[d/] 3/14/22	Lc	WTP SLUDGE-2[d/] 3/14/22	Lc	WTP SLUDGE-3[d/] 3/14/22	Lc
Radium-228	EPA 901.1	pCi/g	5[e/]	NAn	NAn	0.71 +/- 0.50	0.48	0.79 +/- 0.54	0.48	0.73 +/- 0.30	0.23
Radium-226	EPA 901.1	pCi/g	5[e/]	NAn	NAn	0.56 +/- 0.36	0.27	0.57 +/- 0.33	0.30	0.53 +/- 0.24	0.22
Lead-210	EPA 901.1	pCi/g	5[e/]	NAn	NAn	0.07 +/- 0.18	0.15	0.087 +/- 0.15	0.12	0.028 +/- 0.17	0.13
Polonium-210	EML Po-2	pCi/g	5[e/]	NAn	NAn	0.11 +/- 0.10	0.014	0.13 +/- 0.12	0.00	0.093 +/- 0.09	0.014
Uranium-234	ASTM D2907	pCi/g	1590	15.82 +/- 2.29	0.024	NAn[f/]	NAn	NAn	NAn	NAn	NAn
Uranium-235	ASTM D2907	pCi/g	1800	0.61 +/- 0.26	0.013	NAn	NAn	NAn	NAn	NAn	NAn
Uranium-238	ASTM D2907	pCi/g	1940	11.77 +/- 1.77	0.014	NAn	NAn	NAn	NAn	NAn	NAn
Plutonium-238	EPA 600/7-79-081	pCi/g	540	0.042 +/- 0.07	0.22	NAn	NAn	NAn	NAn	NAn	NAn
Plutonium-239/240	EPA 600/7-79-081	pCi/g	1090	0.046 +/- 0.071	0.0065	NAn	NAn	NAn	NAn	NAn	NAn
Americium-241	ER110 LANL	pCi/g	646	-0.008 +/- 0.033	0.012	NAn	NAn	NAn	NAn	NAn	NAn
Arsenic	TCLP[g/]/6010B	mg/L	5	0.043 J	0.5	NAn	NAn	NAn	NAn	NAn	NAn
Barium	TCLP/6010B	mg/L	100	0.26 J	10	NAn	NAn	NAn	NAn	NAn	NAn
Cadmium	TCLP/6010B	mg/L	1	0.003 J	0.1	NAn	NAn	NAn	NAn	NAn	NAn
Chromium	TCLP/6010B	mg/L	6	0.5 U	0.5	NAn	NAn	NAn	NAn	NAn	NAn
Lead	TCLP/6010B	mg/L	5	0.5 U	0.5	NAn	NAn	NAn	NAn	NAn	NAn
Selenium	TCLP/6010B	mg/L	1	0.035 J	0.25	NAn	NAn	NAn	NAn	NAn	NAn
Silver	TCLP/6010B	mg/L	5	0.5 U	0.5	NAn	NAn	NAn	NAn	NAn	NAn
Mercury	TCLP/7470A	mg/L	0.2	0.002 U	0.002	NAn	NAn	NAn	NAn	NAn	NAn
2,4-D	TCLP/8151A	mg/L	10	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
1,1-Dichloroethene	TCLP/8260B	mg/L	0.7	0.01 U	0.01	NAn	NAn	NAn	NAn	NAn	NAn
1,2-Dichloroethane	TCLP/8260B	mg/L	0.5	0.01 U	0.01	NAn	NAn	NAn	NAn	NAn	NAn
2-Butanone (MEK)	TCLP/8260B	mg/L	200	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
Benzene	TCLP/8260B	mg/L	0.5	0.01 U	0.01	NAn	NAn	NAn	NAn	NAn	NAn
Carbon tetrachloride	TCLP/8260B	mg/L	0.5	0.01 U	0.01	NAn	NAn	NAn	NAn	NAn	NAn
Chlorobenzene	TCLP/8260B	mg/L	100	0.01 U	0.01	NAn	NAn	NAn	NAn	NAn	NAn
Chloroform	TCLP/8260B	mg/L	6	0.0018 J	0.01	NAn	NAn	NAn	NAn	NAn	NAn
Tetrachloroethene	TCLP/8260B	mg/L	0.7	0.01 U	0.01	NAn	NAn	NAn	NAn	NAn	NAn
Trichloroethene	TCLP/8260B	mg/L	0.5	0.01 U	0.01	NAn	NAn	NAn	NAn	NAn	NAn
Vinyl chloride	TCLP/8260B	mg/L	0.2	0.02 U	0.02	NAn	NAn	NAn	NAn	NAn	NAn
1,4-Dichlorobenzene	TCLP/8270C	mg/L	7.5	0.02 U	0.02	NAn	NAn	NAn	NAn	NAn	NAn
2,4,5-Trichlorophenol	TCLP/8270C	mg/L	400	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
2,4,6-Trichlorophenol	TCLP/8270C	mg/L	2	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
2,4-Dinitrotoluene	TCLP/8270C	mg/L	0.13	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
2-Methylphenol	TCLP/8270C	mg/L	200	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
3 & 4 Methylphenol	TCLP/8270C	mg/L	200	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
Hexachlorobenzene	TCLP/8270C	mg/L	0.13	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
Hexachlorobutadiene	TCLP/8270C	mg/L	0.5	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn

APPENDIX A-3
WTP SLUDGE RESULTS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Parameter Name	Method	Units[a/]	Regulatory Limit[b/]	WTP SLUDGE 3/14/2022	RL/Lc[c/]	WTP SLUDGE-1[d/] 3/14/22	Lc	WTP SLUDGE-2[d/] 3/14/22	Lc	WTP SLUDGE-3[d/] 3/14/22	Lc
Hexachloroethane	TCLP/8270C	mg/L	3	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
Nitrobenzene	TCLP/8270C	mg/L	2	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn
Pentachlorophenol	TCLP/8270C	mg/L	100	0.25 U	0.25	NAn	NAn	NAn	NAn	NAn	NAn
Pyridine	TCLP/8270C	mg/L	5	0.1 U	0.1	NAn	NAn	NAn	NAn	NAn	NAn
Total Cresols	TCLP/8270C	mg/L	200	0.05 U	0.05	NAn	NAn	NAn	NAn	NAn	NAn

a/ Units = mg/L = milligrams per liter
pCi/g = picoCuries per gram

b/ 40 CFR 261.24 Toxicity Characteristic and the Updated Waste Management Plan (EMSI/Parsons 2020)

c/ RL/Lc = Reporting Limit/Critical Value

d/ Sampled for Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) Assessment

e/ Exemption limit for disposal in landfills.

f/ Nan - Not analyzed for

g/ TCLP = Toxicity Characteristic Leaching Procedure

Qualifiers: U= The analyte was analyzed for and is not present above the level of the associated value.
The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

APPENDIX A-4

WTP WATER QUALITY DATA

APPENDIX A-4.1

SUMMARY OF WATER TREATMENT PLANT EFFLUENT (MP-001) WATER QUALITY

APPENDIX A-4.1.1

COMPLIANCE SUMMARY OF WATER TREATMENT PLANT EFFLUENT (MP-001)WATER QUALITY

1,4-DIOXANE

APPENDIX A-4.1.1

COMPLIANCE SUMMARY OF TREATMENT PLANT EFFLUENT (MP-001) WATER QUALITY
1,4-DIOXANE

Date→	1/3/2022	1/3/2022	1/3/2022	1/4/2022	1/4/2022	1/4/2022				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
Compound	Conc (ug/L[a/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	Volume per day[b/]	Total (lbs/day[c/])	Permit Limit (lbs/day)
1,4-Dioxane[d/]	14	13	13	13	13	14	13.33	46288	0.0052	0.032

Date→	2/1/2022	2/1/2022	2/1/2022	2/2/2022	2/2/2022	2/2/2022				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane[d/]	19	19	18	17	18	18	18.17	46524	0.0071	0.032

Date→	3/1/2022	3/1/2022	3/1/2022	3/2/2022	3/2/2022	3/2/2022				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane[d/]	15	14	14	14	14	13	14.00	46892	0.0055	0.032

Date→	4/4/2022	4/4/2022	4/4/2022	4/5/2022	4/5/2022	4/5/2022				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
Compound	Conc (ug/L[a/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane[d/]	12	13	12	12	13	12	12.33	45978	0.0047	0.032

Date→	5/2/2022	5/2/2022	5/2/2022	5/3/2022	5/3/2022	5/3/2022				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane[d/]	17	18	17	17	17	15	16.83	46878	0.0066	0.032

Date→	6/6/2022	6/6/2022	6/6/2022	6/7/2022	6/7/2022	6/7/2022				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane[d/]	11	10	11	11	11	11	10.83	47544	0.0043	0.032

a/ ug/L = micrograms per liter

b/ Volume per day recorded on Composite Sampling Record

c/ lbs/day = pounds per day

d/ 1,4-Dioxane analyzed by low-level method (SW8260SIM)

APPENDIX A-4.1.2

COMPLIANCE SUMMARY OF WATER TREATMENT PLANT EFFLUENT (MP-001)WATER QUALITY

VOLATILE ORGANIC COMPOUNDS AND NONYLPHENOL

APPENDIX A-4.1.2
COMPLIANCE SUMMARY OF TREATMENT PLANT EFFLUENT (MP-001) WATER QUALITY
VOLATILE ORGANIC COMPOUNDS AND NONYLPHENOL

Date/Time→	1/3/2022 12:00:00 PM	1/3/2022 4:00:00 PM	1/3/2022 8:00:00 PM	1/4/2022 12:00:00 AM	1/4/2022 4:00:00 AM	1/4/2022 8:00:00 AM			
Compound	**Conc (ug/L[a/])**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Average conc (ug/L)**	**Permit Limit (ug/L)**	**Max Value (ug/L)**
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA [b/]	0
1,1,1-Trichloroethane	8.9	9	8.9	8.7	9.3	8.7	8.92	NA	7.2
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,1-Dichloroethane	21	22	22	22	22	22	21.8	NA	22
1,1-Dichloroethene	1.1	1.1	0.97	1	1.1	1	1.0	NA	1.4
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	0	NA	0
1,2-Dibromoethane	5 U	5 U	5 U	5 U	5 U	5 U	0	NA	0
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0.75 J	NA	0.81 J
1,2-Dichloroethene	5	5.2	5.1	5.3	5.2	4.9	5.12	NA	5.3
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,4-Dioxane	20 U	20 U	20 U	20 U	20 U	20 U	0	NA	0
2-Butanone (MEK)	20 U	20 U	20 U	20 U	20 U	20 U	0	NA	0
2-Chloroethylvinylether	3 U	3 U	3 U	3 U	3 U	3 U	0	NA	0
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	0	NA	0
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	0	NA	0
Acetone	20 U	20 U	20 U	20 U	20 U	20 U	0	NA	0
Acrolein	20 U	20 U	20 U	20 U	20 U	20 U	0	NA	0
Acrylonitrile	20 U	20 U	20 U	20 U	20 U	20 U	0	NA	0
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Bromoform	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Bromomethane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Carbon Disulfide	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Carbon Tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Chloroethane	4 U	4 U	4 U	4 U	4 U	4 U	0	NA	0.52 J
Chloroform	1 U	1 U	0.44 J	0.41 J	0.4 J	0.38 J	0.27	NA	0
Chloromethane	2 U	2 U	2 U	2 U	2 U	2 U	0.00	NA	5.3
cis-1,2-Dichloroethene	5	5.2	5.1	5.3	5.2	4.9	5.12	NA	0
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Hexane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Methylene Chloride	5 U	5 U	5 U	5 U	5 U	5 U	0	NA	0
Methyl-t-butyl ether	5 U	5 U	5 U	5 U	5 U	5 U	0	NA	0
m-Xylene & p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	0	1500	0
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Tetrahydrofuran	7 U	7 U	7 U	7 U	7 U	7 U	0	NA	0
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Trichlorofluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Vinyl Acetate	3 U	3 U	3 U	3 U	3 U	3 U	0	NA	0
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Xylenes, Total	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Nonylphenol	4.9 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	0	NA	0

Date/Time→	2/1/2022 12:00:00 PM	2/1/2022 4:00:00 PM	2/1/2022 8:00:00 PM	2/2/2022 12:00:00 AM	2/2/2022 4:00:00 AM	2/2/2022 8:00:00 AM			
Compound	**Conc (ug/L[a/])**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Average conc (ug/L)**	**Permit Limit (ug/L)**	**Daily Max Value (ug/L)**
1,2,3-Trichloropropane	3 U	3 U	3 U	3 U	3 U	3 U	0	NA	0
Dichlorodifluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0

Date/Time→	4/4/2022 12:00:00 PM	4/4/2022 4:00:00 PM	4/4/2022 8:00:00 PM	4/5/2022 12:00:00 AM	4/5/2022 4:00:00 AM	4/5/2022 8:00:00 AM			
Compound	Conc (ug/L[a/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	Permit Limit (ug/L)	Daily Max Value (ug/L)
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA [b/]	0.0
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,1-Dichloroethane	5.6	5.8	5.9	6.9	7	6.8	6.3	NA	6.6
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,2,3-Trichloropropane	3 U	3 U	3 U	3 U	3 U	3 U	0.0	NA	0.0
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	0.0	NA	0.0
1,2-Dibromoethane	5 U	5 U	5 U	5 U	5 U	5 U	0.0	NA	0.0
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	0.22 J	0.04	NA	0.04
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
1,4-Dioxane	20 U	20 U	20 U	23	20 U	28	8.5	NA	8.5
2-Butanone (MEK)	20 U	20 U	20 U	20 U	20 U	20 U	0.0	NA	0.0
2-Chloroethylvinylether	3 U	3 U	3 U	3 U	3 U	3 U	0.0	NA	0.0
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	0.0	NA	0.0
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	0.0	NA	0.0
Acetone	20 U	20 U	20 U	20 U	20 U	20 U	0.0	NA	0.0
Acrolein	20 U	20 U	20 U	20 U	20 U	20 U	0.0	NA	0.0
Acrylonitrile	20 U	20 U	20 U	20 U	20 U	20 U	0.0	NA	0.0
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Bromoform	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
Bromomethane	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
Carbon Disulfide	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
Carbon Tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Chloroethane	4 U	4 U	4 U	4 U	4 U	4 U	0.0	NA	0.0
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Chloromethane	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	0.22 J	0.04	NA	0.04
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Dichlorodifluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Hexane	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
Methylene Chloride	5 U	5 U	5 U	5 U	5 U	5 U	0.0	NA	0.0
Methyl-t-butyl ether	5 U	5 U	5 U	5 U	5 U	5 U	0.0	NA	0.0
m-Xylene & p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	1500	0.0
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Tetrahydrofuran	0.56 J	7 U	7 U	7 U	7 U	7 U	0.0	NA	0.0
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Trichlorofluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0
Vinyl Acetate	3 U	3 U	3 U	3 U	3 U	3 U	0.0	NA	0.0
Vinyl Chloride	1 U	1 U	1 U	1 U	1 U	1 U	0.0	NA	0.0
Xylenes, Total	2 U	2 U	2 U	2 U	2 U	2 U	0.0	NA	0.0

Date/Time→	5/9/2022 12:00:00 PM	5/9/2022 4:00:00 PM	5/9/2022 8:00:00 PM	5/102022 12:00:00 AM	5/10/2022 4:00:00 AM	5/10/2022 8:00:00 AM			
Compound	**Conc (ug/L[a/])**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Conc (ug/L)**	**Average conc (ug/L)**	**Permit Limit (ug/L)**	**Daily Max Value (ug/L)**
Nonylphenol	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U	4.9 U	0.0	NA	0.0

a/ ug/L = micrograms per liter

b/ NA = Not applicable - No permit limit Quarterly

Frequency: Volatile Organic Compounds 8260B

Methods: Nonylphenol ASTM D7065

Qualifiers: U= The analyte was analyzed for and is not present above the level of the associated value.
The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

APPENDIX A-4.1.3

COMPLIANCE SUMMARY OF WATER TREATMENT PLANT EFFLUENT (MP-001) WATER QUALITY

METALS , pH
AND
SEMIVOLATILE ORGANIC COMPOUNDS

APPENDIX A-4.1.3
SUMMARY OF TREATMENT PLANT EFFLUENT WATER QUALITY
METALS and SEMIVOLATILE ORGANIC COMPOUNDS

				MP-001 Sample Date					
Compound	**Units**	**Permit Limit**	**Frequency**	**1/4/2022 8:00:00 AM**	**2/2/2022 8:00:00 AM**	**3/2/2022 8:00:00 AM**	**4/5/2022 8:00:00 AM**	**5/3/2022 8:00:00 AM**	**6/7/2022 8:00:00 AM**
1,2,4-Trichlorobenzene	ug/L[a/]	NA[b/]	Quarterly	3.8 U	NAn[c/]	NAn	3.8 U	NAn	NAn
2,4,6-Trichlorophenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
2,4-Dichlorophenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
2,4-Dimethylphenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
2,4-Dinitrophenol	ug/L	NA	Quarterly	28 U	NAn	NAn	28 U	NAn	NAn
2,4-Dinitrotoluene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
2,6-Dinitrotoluene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
2-Chloronaphthalene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
2-Chlorophenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 UJ-	NAn	NAn
2-Methylnaphthalene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
2-Nitrophenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
3,3'-Dichlorobenzidine	ug/L	NA	Quarterly	47 U	NAn	NAn	47 U	NAn	NAn
4,6-Dinitro-2-Methylphenol	ug/L	NA	Quarterly	47 U	NAn	NAn	47 U	NAn	NAn
4-Bromophenyl phenyl ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
4-Chloro-3-Methylphenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
4-Chlorophenyl phenyl ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
4-Nitrophenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Acenaphthene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Acenaphthylene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Acetophenone	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 UJ-	NAn	NAn
aniline	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Anthracene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Benzo(a)anthracene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Benzo(a)pyrene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Benzo(b)fluoranthene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Benzo(g,h,i)Perylene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Benzo(k)fluoranthene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Benzoic Acid	ug/L	NA	Quarterly	24 U	NAn	NAn	24 U	NAn	NAn
Bis(2-Chloroethoxy)methane	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Bis(2-Chloroethyl)Ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Bis(2-Chloroisopropyl) Ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
bis(2-Ethylhexyl)phthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Butyl benzyl phthalate	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
C10	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
C18	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Carbazole	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Chrysene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Dibenz(a,h)anthracene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Diethylphthalate	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Dimethylphthalate	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Di-N-Butylphthalate	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Di-n-octylphthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Fluoranthene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Fluorene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Hexachlorobenzene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Hexachlorobutadiene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Hexachlorocyclopentadiene	ug/L	NA	Quarterly	NAn	NAn	47 U	47 U	NAn	NAn
Hexachloroethane	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 UJ-	NAn	NAn

Compound	Units	Permit Limit	Frequency	1/4/2022 8:00:00 AM	2/2/2022 8:00:00 AM	3/2/2022 8:00:00 AM	4/5/2022 8:00:00 AM	5/3/2022 8:00:00 AM	6/7/2022 8:00:00 AM
Indeno(1,2,3-c,d)pyrene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Isophorone	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Naphthalene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Nitrobenzene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
N-Nitrosodimethylamine	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
N-Nitroso-Di-N-Propylamine	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 UJ-	NAn	NAn
N-Nitrosodiphenylamine	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Pentachlorophenol	ug/L	NA	Quarterly	47 U	NAn	NAn	47 U	NAn	NAn
Phenanthrene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn
Phenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Pyrene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.4 U	NAn	NAn
Pyridine	ug/L	NA	Quarterly	19 U	NAn	NAn	19 U	NAn	NAn
Cadmium	ug/L	3400	Yearly	NAn	NAn	NAn	1 U	NAn	NAn
Copper	ug/L	6100	Yearly	NAn	NAn	NAn	21	NAn	NAn
Molybdenum	ug/L	430	Monthly	13	13	14	14	15	17
Nickel	ug/L	5600	Yearly	NAn	NAn	NAn	3.5	NAn	NAn
Selenium	ug/L	660	Quarterly	19	NAn	NAn	17	NAn	NAn
Zinc	ug/L	15600	Quarterly	3.1 U	NAn	NAn	3.1 UJ+	NAn	NAn
Arsenic	ug/L	330	Yearly	NAn	NAn	NAn	15 U	NAn	NAn
Chromium	ug/L	3600	Yearly	NAn	NAn	NAn	10 U	NAn	NAn
Lead	ug/L	2200	Yearly	NAn	NAn	NAn	9 U	NAn	NAn
Silver	ug/L	2900	Yearly	NAn	NAn	NAn	10 U	NAn	NAn
Mercury	ug/L	130	Yearly	NAn	NAn	NAn	0.2 U	NAn	NAn
pH	pH Units	>5	Monthly	6.81	7.03	6.72	6.87	6.92	6.77

a/ ug/L = micrograms per liter

b/ NA = Not applicable - No permit limit

c/ Nan = Not analyzed

Qualifiers: U= The analyte was analyzed for and is not present above the level of the associated value.
The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ= The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

UJ-= Same as UJ qualification but with an indication of negative bias in the sample concentration.

UJ+= Same as UJ qualification but with an indication of positive bias in the sample concentration.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

APPENDIX A-4.1.4

COMPLIANCE SUMMARY OF WATER TREATMENT PLANT EFFLUENT (MP-001) WATER QUALITY RADIONUCLIDES

APPENDIX A-4.1.4
SUMMARY OF TREATMENT PLANT EFFLUENT WATER QUALITY
RADIONUCLIDES (MP-001)[a/]

Isotope	Sampling Date	Frequency	Conc (pCi/L)[b/]	FINAL Q	MDC[c/]	CSU[d/]	Result minus CSU	Daily Maximum Value (pCi/L)	Permit Limit (pCi/L)
Americium-241	1/4/2022	Quarterly	0.013	J	0.05838	0.029	-0.016	0.013	NA[e/]
Alpha, Gross	1/4/2022	Quarterly	15.029	UJ+	16.6457	5.891	9.138	15.029	NA
Beta, Gross	1/4/2022	Quarterly	9.33	U	14.2814	4.408	4.923	9.33	NA
Plutonium-238	1/4/2022	Quarterly	0.083	UJ	0.07212	0.072	0.011	0.083	NA
Plutonium-239/240	1/4/2022	Quarterly	0.049	J	0.0855	0.059	-0.011	0.049	NA
Radium-226	1/4/2022	Quarterly	0.419	J	0.2999	0.357	0.062	0.419	NA
Radium-228	1/4/2022	Quarterly	1.193	J	1.2751	0.714	0.48	1.193	NA
Total Radium	1/4/2022	Quarterly	0.367	J	0.33214	0.2	0.166	0.367	NA
Americium-241	4/5/2022	Quarterly	0	UJ	0.146	0.051	-0.051	0	NA
Alpha, Gross	4/5/2022	Quarterly	37.8	J+	11.3	7.36	30.44	37.8	NA
Beta, Gross	4/5/2022	Quarterly	15.3	U	14	4.85	10.45	15.3	NA
Plutonium-238	4/5/2022	Quarterly	-0.019	UJ	0.0988	0.033	-0.052	-0.019	NA
Plutonium-239/240	4/5/2022	Quarterly	0.005	UJ	0.0808	0.03	-0.026	0.005	NA
Radium-226	4/5/2022	Quarterly	0.341		0.116	0.165	0.176	0.341	NA
Radium-228	4/5/2022	Quarterly	0.461	J	0.398	0.234	0.227	0.461	NA
Total Radium	4/5/2022	Quarterly	0.185	U	0.217	0.127	0.058	0.185	NA

a/ 24 hour composite

b/ picoCuries per liter

c/ minimum detectable concentration

d/ Combined standard uncertainty

e/ NA = Not applicable - No permit limit

Qualifiers: U= The analyte was analyzed for and is not present above the level of the associated value.
The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ= The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

UJ-= Same as UJ qualification but with an indication of negative bias in the sample concentration.

UJ+= Same as UJ qualification but with an indication of positive bias in the sample concentration.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

APPENDIX A-4.2

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

APPENDIX A-4.2.1

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(VOLATILE ORGANIC COMPOUNDS)

INDIVIDUAL AND COMPOSITE DATA

APPENDIX A-4.2.1
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
(Volatile Organic Compounds)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

	Date→		1/3/2022							
			INFLUENT SOURCE CONCENTRATIONS							
	Sample Port→		TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP-170[f/]	TP3310[g/]	
	% of Flow ►		1.7%	21.5%	6.8%	37.6%	24.0%	5.6%	2.8%	
Parameter Name	**Permit Limit[h/]**	**Units**								**Composite Concentration**
1,1,1,2-Tetrachloroethane	NA[i/]	ug/L[j/]	< 0.8	< 2	< 0.2	< 0.2	< 0.2	< 0.2	< 20	0.00
1,1,1-Trichloroethane	NA	ug/L	28	83	< 0.2	2.3	< 0.2	< 0.2	< 20	17.81
1,1,2,2-Tetrachloroethane	NA	ug/L	< 0.5	< 1.2	< 0.12	< 0.12	< 0.12	< 0.12	< 12	0
1,1,2-Trichloroethane	NA	ug/L	< 0.93	< 2.3	< 0.23	< 0.23	< 0.23	< 0.23	< 23	0.00
1,1-Dichloroethane	NA	ug/L	77	220	12	5.2	< 0.2	< 0.2	93	50.54
1,1-Dichloroethene	NA	ug/L	24	71	< 0.24	3.4	< 0.24	< 0.24	< 24	15.77
1,2,3-Trichloropropane	NA	ug/L	< 1.2	< 2.9	< 0.29	< 0.29	< 0.29	< 0.29	< 29	0.00
1,2-Dibromo-3-chloropropane	NA	ug/L	< 1.5	< 3.8	< 0.38	< 0.38	< 0.38	< 0.38	< 38	0.00
1,2-Dibromoethane	NA	ug/L	< 0.87	< 2.2	< 0.22	< 0.22	< 0.22	< 0.22	< 22	0.00
1,2-Dichlorobenzene	NA	ug/L	< 0.67	< 1.7	< 0.17	< 0.17	< 0.17	< 0.17	< 17	0.00
1,2-Dichloroethane	NA	ug/L	< 0.68	< 1.7	< 0.17	< 0.17	< 0.17	< 0.17	4800	148.80
1,2-Dichloroethene	NA	ug/L	300	890	3.7	12	< 0.15	< 0.15	< 15	186.56
1,2-Dichloropropane	NA	ug/L	< 0.72	< 1.8	< 0.18	< 0.18	< 0.18	< 0.18	< 18	0.00
1,3-Dichlorobenzene	NA	ug/L	< 0.65	< 1.6	< 0.16	< 0.16	< 0.16	< 0.16	< 16	0.00
1,3-Dichloropropene	NA	ug/L	< 0.55	< 1.4	< 0.14	< 0.14	< 0.14	< 0.14	< 14	0.00
1,4-Dichlorobenzene	NA	ug/L	< 0.62	< 1.6	< 0.16	< 0.16	< 0.16	< 0.16	30	0.93
2-Butanone (MEK)	NA	ug/L	< 5.8	< 14	< 1.4	< 1.4	< 1.4	< 1.4	1300	40.30
2-Chloroethylvinylether	NA	ug/L	< 0.84	< 2.1	< 0.21	< 0.21	< 0.21	< 0.21	< 21	0.00
2-Hexanone	NA	ug/L	< 1.7	< 4.2	< 0.42	< 0.42	< 0.42	< 0.42	< 42	0.00
4-Methyl-2-pentanone (MIBK)	NA	ug/L	< 1.9	< 4.6	< 0.46	< 0.46	< 0.46	< 0.46	< 46	0.00
Acetone	NA	ug/L	< 32	< 80	< 8	< 8	< 8	< 8	1400	43.40
Acrolein	NA	ug/L	< 7.2	< 18	< 1.8	< 1.8	< 1.8	< 1.8	< 180	0.00
Acrylonitrile	NA	ug/L	< 4.4	< 11	< 1.1	< 1.1	< 1.1	< 1.1	< 110	0.00
Benzene	NA	ug/L	< 0.72	< 1.8	< 0.18	< 0.18	< 0.18	< 0.18	700	0.00
Bromodichloromethane	NA	ug/L	< 0.61	< 1.5	< 0.15	< 0.15	< 0.15	< 0.15	< 15	0.00
Bromoform	NA	ug/L	< 2.7	< 6.7	< 0.67	< 0.67	< 0.67	< 0.67	< 67	0.00
Bromomethane	NA	ug/L	< 4.4	< 11	< 1.1	< 1.1	< 1.1	< 1.1	< 110	0.00
Carbon Disulfide	NA	ug/L	< 1.3	< 3.2	< 0.32	< 0.32	< 0.32	< 0.32	< 32	0.00
Carbon Tetrachloride	NA	ug/L	< 0.95	< 2.4	< 0.24	< 0.24	< 0.24	< 0.24	< 24	0.00
Chlorobenzene	NA	ug/L	< 0.7	< 1.8	< 0.18	< 0.18	< 0.18	< 0.18	< 18	0.00
Chloroethane	NA	ug/L	< 1.4	< 3.6	< 0.36	< 0.36	< 0.36	< 0.36	< 36	0.00
Chloroform	NA	ug/L	1.6	< 2.2	4.3	< 0.22	< 0.22	< 0.22	< 22	0.29
Chloromethane	NA	ug/L	< 2.3	< 5.7	< 0.57	< 0.57	< 0.57	< 0.57	< 57	0.00
cis-1,2-Dichloroethene	NA	ug/L	300	890	3.7	12	< 0.15	< 0.15	< 15	186.56
cis-1,3-Dichloropropene	NA	ug/L	< 0.55	< 1.4	< 0.14	< 0.14	< 0.14	< 0.14	< 14	0.00
Dibromochloromethane	NA	ug/L	< 0.86	< 2.1	< 0.21	< 0.21	< 0.21	< 0.21	< 21	0.00
Dibromomethane	NA	ug/L	< 0.48	< 1.2	< 0.12	< 0.12	< 0.12	< 0.12	< 12	0.00
Dichlorodifluoromethane	NA	ug/L	< 1.4	< 3.5	< 0.35	< 0.35	< 0.35	< 0.35	< 35	0.00
Ethylbenzene	NA	ug/L	< 0.72	< 1.8	< 0.18	< 0.18	< 0.18	< 0.18	140	4.34
Hexane	NA	ug/L	< 1	< 2.6	< 0.26	< 0.26	< 0.26	< 0.26	< 26	0.00
Methylene Chloride	NA	ug/L	< 0.69	< 1.7	< 0.17	< 0.17	< 0.17	< 0.17	< 17	0.00
Methyl-t-butyl ether	NA	ug/L	< 0.64	< 1.6	< 0.16	< 0.16	< 0.16	< 0.16	< 16	0.00
m-Xylene & p-Xylene	NA	ug/L	< 0.81	< 2	< 0.2	< 0.2	< 0.2	< 0.2	280	8.68
Naphthalene	NA	ug/L	< 0.41	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 10	0.00
o-Xylene	NA	ug/L	< 0.84	< 2.1	< 0.21	< 0.21	< 0.21	< 0.21	160	4.96
Styrene	NA	ug/L	< 0.86	< 2.2	< 0.22	< 0.22	< 0.22	< 0.22	< 22	0.00
Tetrachloroethene	1500	ug/L	3.1	9.2	1.1	0.83	< 0.19	< 0.19	< 19	2.25
Tetrahydrofuran	NA	ug/L	17	53	< 0.53	< 0.53	< 0.53	< 0.53	22000	693.00
Toluene	NA	ug/L	< 0.96	< 2.4	< 0.24	< 0.24	< 0.24	< 0.24	63	1.95
Trans-1,2-Dichloroethene	NA	ug/L	< 0.84	< 2.1	< 0.21	< 0.21	< 0.21	< 0.21	< 21	0.00
Trans-1,3-Dichloropropene	NA	ug/L	< 0.7	< 1.8	< 0.18	< 0.18	< 0.18	< 0.18	< 18	0.00
Trichloroethene	NA	ug/L	2.3	6.6	2.9	< 0.18	< 0.18	< 0.18	< 18	1.52
Trichlorofluoromethane	NA	ug/L	< 0.81	< 2	< 0.2	< 0.2	< 0.2	< 0.2	< 20	0.00
Vinyl Acetate	NA	ug/L	< 3.8	< 9.4	< 0.94	< 0.94	< 0.94	< 0.94	< 94	0.00
Vinyl Chloride	NA	ug/L	< 1.1	< 2.8	< 0.28	< 0.28	< 0.28	< 0.28	< 28	0.00
Xylenes, Total	NA	ug/L	< 0.81	< 2	< 0.2	< 0.2	< 0.2	< 0.2	440	13.64
Nonylphenol	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	NAn	NA

APPENDIX A-4.2.1
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
(Volatile Organic Compounds)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

	Date→		4/4/2022							
			INFLUENT SOURCE CONCENTRATIONS							
	Sample Port→		TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP-170[f/]	TP3310[g/]	
	% of Flow►		1.7%	19.9%	6.2%	37.0%	23.2%	9.2%	2.8%	
Parameter Name	**Permit Limit[h/]**	**Units**								**Composite Concentration**
1,1,1,2-Tetrachloroethane	NA[i/]	ug/L[j/]	< 0.2	< 0.8	< 0.2	< 0.2	< 0.2	< 0.2	< 10	0.00
1,1,1-Trichloroethane	NA	ug/L	21	69	0.24	1.7	< 0.2	< 0.2	< 10	14.52
1,1,2,2-Tetrachloroethane	NA	ug/L	< 0.12	< 0.5	< 0.12	< 0.12	< 0.12	< 0.12	< 6.2	0.00
1,1,2-Trichloroethane	NA	ug/L	0.46	1.4	< 0.23	< 0.23	< 0.23	< 0.23	< 12	0.28
1,1-Dichloroethane	NA	ug/L	62	190	11	3.6	< 0.2	0.44	< 10	40.00
1,1-Dichloroethene	NA	ug/L	15	54	0.26	2.7	< 0.24	< 0.24	< 12	11.87
1,2,3-Trichloropropane	NA	ug/L	< 0.29	< 1.2	< 0.29	< 0.29	< 0.29	< 0.29	< 15	0.00
1,2-Dibromo-3-chloropropane	NA	ug/L	< 0.38	< 1.5	< 0.38	< 0.38	< 0.38	< 0.38	< 19	0.00
1,2-Dibromoethane	NA	ug/L	< 0.22	< 0.87	< 0.22	< 0.22	< 0.22	< 0.22	< 11	0.00
1,2-Dichlorobenzene	NA	ug/L	< 0.17	< 0.67	< 0.17	< 0.17	< 0.17	< 0.17	< 8.4	0.00
1,2-Dichloroethane	NA	ug/L	2.2	2.7	0.46	< 0.17	< 0.17	< 0.17	1900	54.00
1,2-Dichloroethene	NA	ug/L	230	750	3.6	9.4	< 0.15	< 0.15	< 7.4	154.43
1,2-Dichloropropane	NA	ug/L	0.86	2.5	< 0.18	< 0.18	< 0.18	< 0.18	< 9.1	0.50
1,3-Dichlorobenzene	NA	ug/L	< 0.16	< 0.65	< 0.16	< 0.16	< 0.16	< 0.16	< 8.2	0.00
1,3-Dichloropropene	NA	ug/L	< 0.14	< 0.55	< 0.14	< 0.14	< 0.14	< 0.14	< 6.9	0.00
1,4-Dichlorobenzene	NA	ug/L	< 0.16	< 0.62	< 0.16	< 0.16	< 0.16	< 0.16	< 7.8	0.00
2-Butanone (MEK)	NA	ug/L	< 1.4	< 5.8	< 1.4	< 1.4	< 1.4	< 1.4	1400	39.20
2-Chloroethylvinylether	NA	ug/L	< 0.21	< 0.84	< 0.21	< 0.21	< 0.21	< 0.21	< 11	0.00
2-Hexanone	NA	ug/L	< 0.42	< 1.7	< 0.42	< 0.42	< 0.42	< 0.42	< 21	0.00
4-Methyl-2-pentanone (MIBK)	NA	ug/L	< 0.46	< 1.9	< 0.46	< 0.46	< 0.46	< 0.46	< 23	0.00
Acetone	NA	ug/L	< 8	< 32	< 8	< 8	< 8	< 8	1200	33.60
Acrolein	NA	ug/L	< 1.8	< 7.2	< 1.8	< 1.8	< 1.8	< 1.8	< 90	0.00
Acrylonitrile	NA	ug/L	< 1.1	< 4.4	< 1.1	< 1.1	< 1.1	< 1.1	< 55	0.00
Benzene	NA	ug/L	< 0.18	< 0.72	< 0.18	< 0.18	< 0.18	< 0.18	770	21.50
Bromodichloromethane	NA	ug/L	< 0.15	< 0.61	< 0.15	< 0.15	< 0.15	< 0.15	< 7.7	0.00
Bromoform	NA	ug/L	< 0.67	< 2.7	< 0.67	< 0.67	< 0.67	< 0.67	< 34	0.00
Bromomethane	NA	ug/L	< 1.1	< 4.4	< 1.1	< 1.1	< 1.1	< 1.1	< 55	0.00
Carbon Disulfide	NA	ug/L	< 0.32	< 1.3	< 0.32	< 0.32	< 0.32	< 0.32	< 16	0.00
Carbon Tetrachloride	NA	ug/L	< 0.24	< 0.95	< 0.24	< 0.24	< 0.24	< 0.24	< 12	0.00
Chlorobenzene	NA	ug/L	< 0.18	< 0.7	< 0.18	< 0.18	< 0.18	< 0.18	< 8.8	0.00
Chloroethane	NA	ug/L	< 0.36	< 1.4	< 0.36	< 0.36	< 0.36	< 0.36	130	3.64
Chloroform	NA	ug/L	0.96	2.5	3.5	< 0.22	< 0.22	< 0.22	15	1.09
Chloromethane	NA	ug/L	< 0.57	< 2.3	< 0.57	< 0.57	< 0.57	< 0.57	< 28	0.00
cis-1,2-Dichloroethene	NA	ug/L	230	750	3.6	9.4	< 0.15	< 0.15	< 7.4	154.43
cis-1,3-Dichloropropene	NA	ug/L	< 0.14	< 0.55	< 0.14	< 0.14	< 0.14	< 0.14	< 6.9	0.00
Dibromochloromethane	NA	ug/L	< 0.21	< 0.86	< 0.21	< 0.21	< 0.21	< 0.21	< 11	0.00
Dibromomethane	NA	ug/L	< 0.12	< 0.48	< 0.12	< 0.12	< 0.12	< 0.12	< 6	0.00
Dichlorodifluoromethane	NA	ug/L	< 0.35	< 1.4	0.99	< 0.35	< 0.35	< 0.35	< 17	0.05
Ethylbenzene	NA	ug/L	< 0.18	< 0.72	< 0.18	< 0.18	< 0.18	< 0.18	140	3.92
Hexane	NA	ug/L	< 0.26	< 1	< 0.26	< 0.26	< 0.26	< 0.26	< 13	0.00
Methylene Chloride	NA	ug/L	< 0.17	< 0.69	< 0.17	< 0.17	< 0.17	< 0.17	< 8.7	0.00
Methyl-t-butyl ether	NA	ug/L	0.36	< 0.64	< 0.16	< 0.16	< 0.16	< 0.16	< 8.1	0.01
m-Xylene & p-Xylene	NA	ug/L	< 0.2	< 0.81	< 0.2	< 0.2	< 0.2	< 0.2	260	7.28
Naphthalene	NA	ug/L	< 0.1	< 0.41	< 0.1	< 0.1	< 0.1	< 0.1	< 5.2	0.00
o-Xylene	NA	ug/L	< 0.21	< 0.84	< 0.21	< 0.21	< 0.21	< 0.21	140	3.92
Styrene	NA	ug/L	< 0.22	< 0.86	< 0.22	< 0.22	< 0.22	< 0.22	< 11	0.00
Tetrachloroethene	1500	ug/L	2.5	8	1	0.82	< 0.19	< 0.19	< 9.7	1.97
Tetrahydrofuran	NA	ug/L	0.61	< 2.1	< 0.53	< 0.53	< 0.53	< 0.53	21000	588.01
Toluene	NA	ug/L	< 0.24	< 0.96	< 0.24	< 0.24	< 0.24	< 0.24	33	0.92
Trans-1,2-Dichloroethene	NA	ug/L	0.52	1.4	< 0.21	< 0.21	< 0.21	< 0.21	< 10	0.28
Trans-1,3-Dichloropropene	NA	ug/L	< 0.18	< 0.7	< 0.18	< 0.18	< 0.18	< 0.18	< 8.8	0.00
Trichloroethene	NA	ug/L	1.8	4.6	2.5	0.21	< 0.18	< 0.18	< 8.9	1.13
Trichlorofluoromethane	NA	ug/L	< 0.2	< 0.81	< 0.2	< 0.2	< 0.2	< 0.2	< 10	0.00
Vinyl Acetate	NA	ug/L	< 0.94	< 3.8	< 0.94	< 0.94	< 0.94	< 0.94	< 47	0.00
Vinyl Chloride	NA	ug/L	< 0.28	< 1.1	< 0.28	< 0.28	< 0.28	< 0.28	< 14	0.00
Xylenes, Total	NA	ug/L	< 0.2	< 0.81	< 0.2	< 0.2	< 0.2	< 0.2	400	11.20
Nonylphenol	NA	ug/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	0.00

Footnotes:

a/ RWST - Raw Water Storage Tank water

b/ NBBW - North Boundary Barrier Wall water

c/ MW38 Area water

d/ North End On-Site water

e/ North End Off-Site water

f/ MW113 Area water

g/ BTS Tank 3310 influent is comprised of North Toe Extraction System water and Landfill Gas Condensate

h/ Permit Limit - limit in ug/L for tetrachloroethene and pounds per day for 1,4-dioxane in discharge according to Industrial Discharge Permit No. 2360-6 issued by the Metro Wastewater Reclamation District (Metro), effective January 5, 2020.

i/ NA - Not Applicable - no limit listed in the Metro permit

j/ µg/L - micrograms per liter

APPENDIX A-4.2.2

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(1,4-DIOXANE)

APPENDIX A-4.2.2.1

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(1,4-DIOXANE)

INDIVIDUAL AND COMPOSITE RESULTS

APPENDIX A-4.2.2.1
SUMMARY OF EARLY WARNING INFLUENT WATER QUALITY
1,4-Dioxane
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Date→	1/3/2022	1/3/2022	1/3/2022	1/3/2022	1/3/2022	1/3/2022	1/3/2022				
% of Flow→	1.9%	19.8%	6.0%	36.8%	26.6%	5.9%	3.1%				
Sample Port→	TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP-170[f/]	TP3310[g/]				
Compound	Conc (ug/L[h/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	gpm[i/]	Total (lbs/day[j/])	Permit Limit[k/]
1,4-Dioxane[l/]	300	690	16	12	1.5	110	16000	651	32.3	0.25	0.032

Date→	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022				
% of Flow→	1.9%	19.4%	6.2%	37.9%	25.9%	5.6%	3.1%				
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	gpm	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	210	670	16	10	1.8	89	15000	609.00	32.4	0.24	0.032

Date→	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022				
% of Flow→	1.9%	19.2%	5.3%	38.0%	26.9%	5.7%	3.1%				
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170[l/]	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	gpm	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	310	680	18	13	2.3	100	17000	676.00	32.3	0.26	0.032

Date→	4/4/2022	4/4/2022	4/4/2022	4/4/2022	4/4/2022	4/4/2022	4/4/2022				
% of Flow→	1.9%	19.5%	4.7%	38.7%	27.0%	5.3%	2.8%				
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	gpm	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	340	750	18	11	1.8	100	20000	724	31.8	0.28	0.032

APPENDIX A-4.2.2.1
SUMMARY OF EARLY WARNING INFLUENT WATER QUALITY
1,4-Dioxane

Date→	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022				
% of Flow→	1.9%	19.3%	5.9%	38.0%	27.1%	5.3%	2.5%				
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	gpm	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	260	750	22	13	2.2	110	9600	402.00	32.1	0.16	0.032

Date→	6/6/2022	6/6/2022	6/6/2022	6/6/2022	6/6/2022	6/6/2022	6/6/2022				
% of Flow→	1.8%	19.8%	6.7%	37.7%	26.5%	5.1%	2.4%				
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	gpm	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	260	670	20	10	1.4	87	12000	435	32.9	0.17	0.032

Footnotes:

a/ RWST - Raw Water Storage Tank water

b/ NBBW - North Boundary Barrier Wall water

c/ MW38 Area water

d/ North End On-Site water

e/ North End Off-Site water

f/ MW113 Area water

g/ BTS Tank 3310 influent is comprised of North Toe Extraction System water and Landfill Gas Condensate

h/ ug/L = micrograms per liter

i/ gpm = gallons per minute

j/ lbs/day = pounds per day

k/ Permit Limit - limit in ug/L for discharge according to Industrial Discharge Permit No. 2360-6 issued by the Metro Wastewater Reclamation District (Metro), effective January 5, 2020.

l/ 1,4-Dioxane analyzed by low-level method (SW8260SIM) and SW8260B

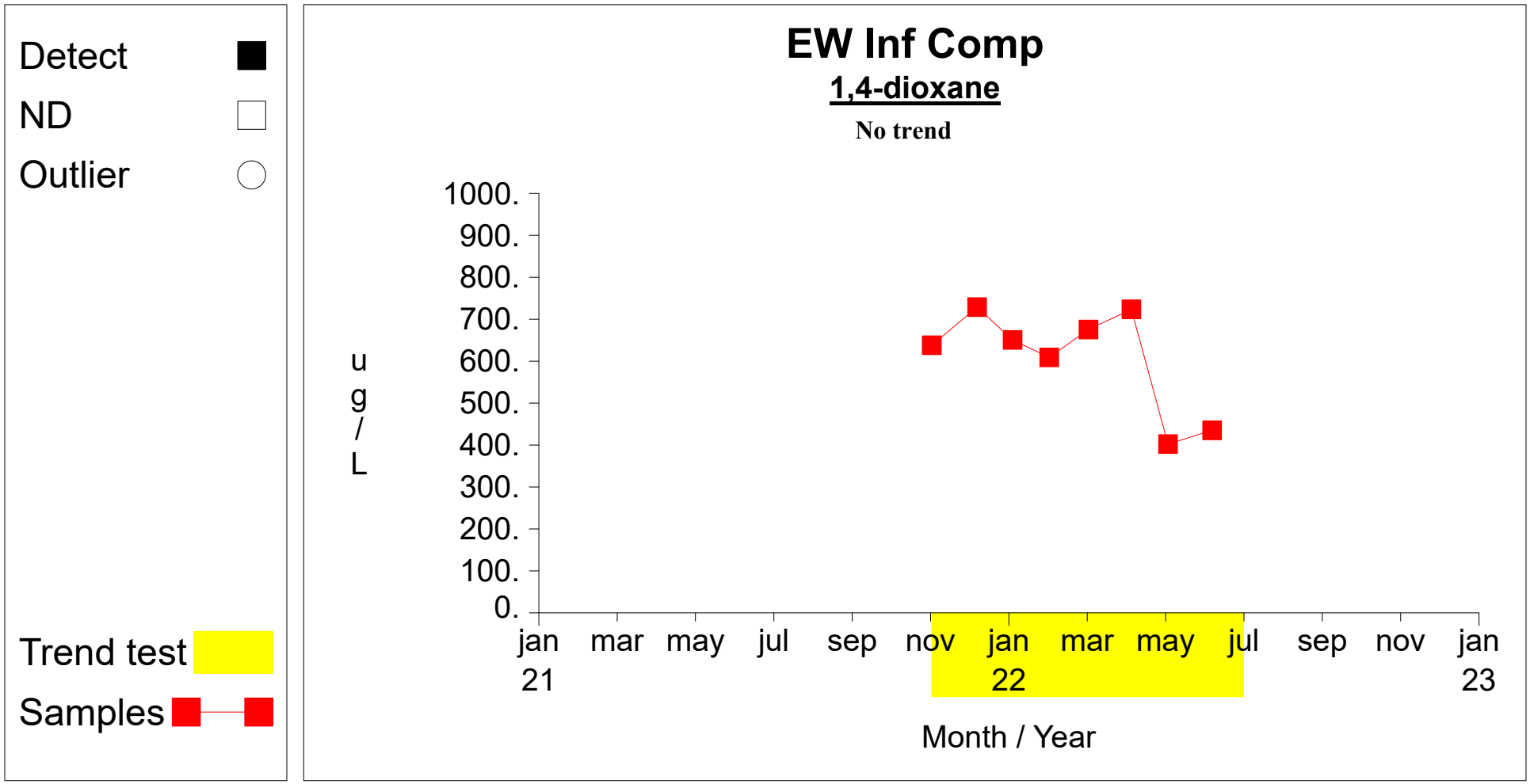
APPENDIX A-4.2.2.2

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(1,4-DIOXANE)

TREND ANALYSIS

APPENDIX A-4.2.2.2
1,4-DIOXANE
EARLY WARNING TREND ANALYSIS



Graph 1

Analysis prepared using DUMPSTAT and Sen's Test for trend

APPENDIX A-4.2.3

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

MOLYBDENUM

APPENDIX A-4.2.3.1

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(MOLYBDENUM)

INDIVIDUAL AND COMPOSITE RESULTS

APPENDIX A-4.2.3.1
SUMMARY OF EARLY WARNING INFLUENT WATER QUALITY
MOLYBDENUM
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Date→	1/3/2022	1/3/2022	1/3/2022	1/3/2022	1/3/2022	1/3/2022	1/3/2022		
% of Flow→	1.9%	19.8%	6.0%	36.8%	26.6%	5.9%	3.1%		
Sample Port→	TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP-170[f/]	TP3310[g/]		
Compound	Conc (ug/L[h/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Permit Limit[i/] (ug/L)
Molybdenum	0.67	0.65	3.6	1.9	2.1	5100	13	303	430

Date→	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022		
% of Flow→	1.9%	19.4%	6.2%	37.9%	25.9%	5.6%	3.1%		
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310		
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Permit Limit (ug/L)
Molybdenum	< 0.37	0.51	1	2	2.1	5600	9.9	315	430

Date→	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022		
% of Flow→	1.9%	19.2%	5.3%	38.0%	26.9%	5.7%	3.1%		
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170[l/]	TP3310		
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Permit Limit (ug/L)
Molybdenum	0.46	0.38	0.46	1.3	1.9	5800	17	332	430

APPENDIX A-4.2.3.1
SUMMARY OF EARLY WARNING INFLUENT WATER QUALITY
MOLYBDENUM

Date→	4/4/2022	4/4/2022	4/4/2022	4/4/2022	4/4/2022	4/4/2022	4/4/2022		
% of Flow→	1.9%	19.5%	4.7%	38.7%	27.0%	5.3%	2.8%		
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310		
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Sample Conc (ug/L)	Permit Limit (ug/L)
Molybdenum	NA	NA	NA	NA	NA	NA	NA	340[j/]	430

Date→	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022	5/2/2022		
% of Flow→	1.9%	19.3%	5.9%	38.0%	27.1%	5.3%	2.5%		
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310		
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Permit Limit (ug/L)
Molybdenum	1.8	0.54	1	3.2	1.9	6700	10	357	430

Date→	6/6/2022	6/6/2022	6/6/2022	6/6/2022	6/6/2022	6/6/2022	6/6/2022		
% of Flow→	1.8%	19.8%	6.7%	37.7%	26.5%	5.1%	2.4%		
Sample Port→	TP-110	TP-120	TP-140	TP-150	TP-160	TP-170	TP3310		
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Permit Limit (ug/L)
Molybdenum	0.6	0.46	1.1	1.7	2.5	7400	9.7	379	430

Footnotes:

a/ RWST - Raw Water Storage Tank wat
b/ NBBW - North Boundary Barrier Wall water
c/ MW38 Area water
d/ North End On-Site water
e/ North End Off-Site water
f/ MW113 Area water
g/ BTS Tank 3310 influent is comprised of North Toe Extraction System water and Landfill Gas Condensate
h/ ug/L = micrograms per liter
i/ Permit Limit - limit in ug/L for discharge according to Industrial Discharge Permit No. 2360-6 issued by the Metro Wastewater Reclamation District (Metro), effective January 5, 2020.
j/ Concentration of 24 hr composite sample

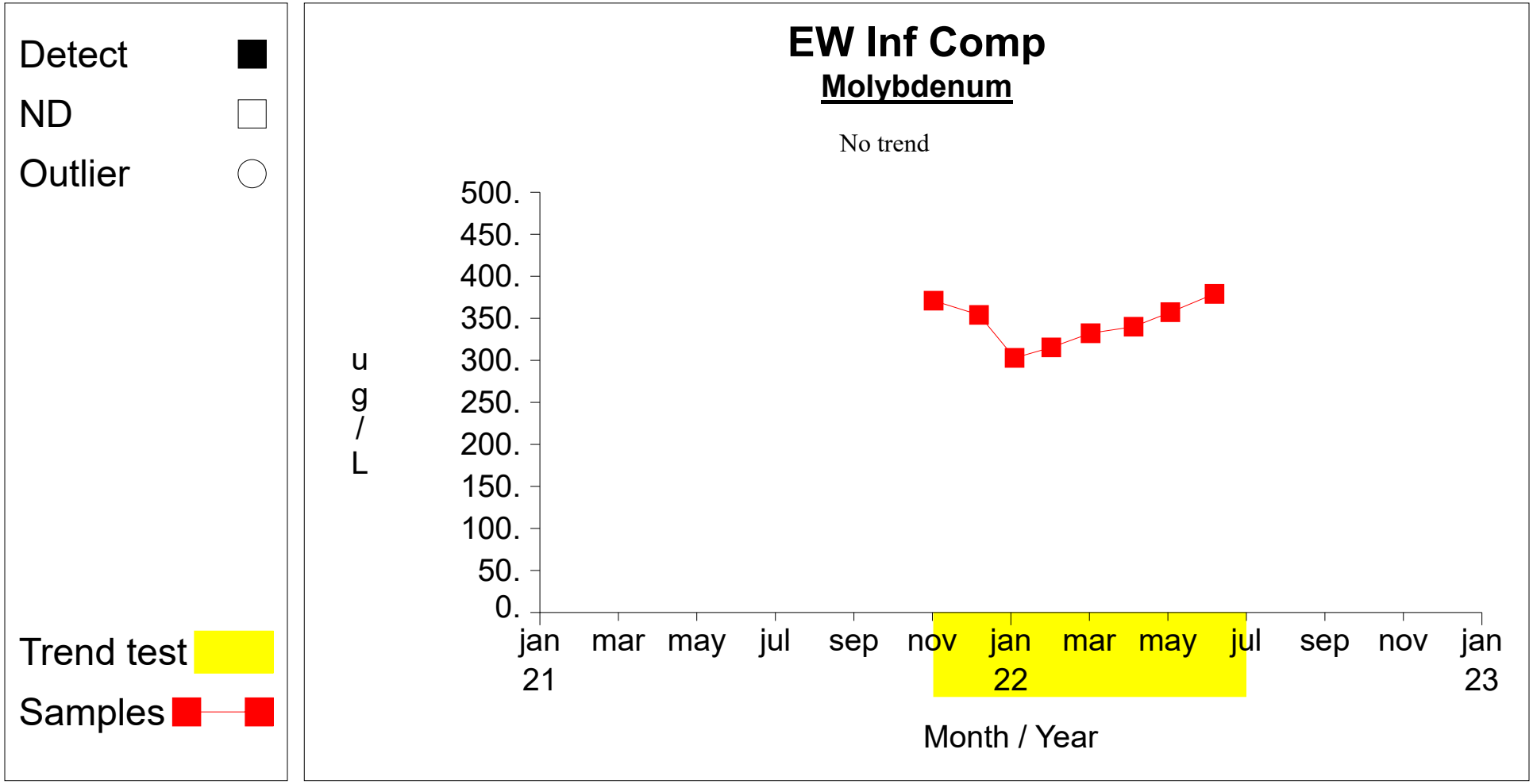
APPENDIX A-4.2.3.2

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(MOLYBDENUM)

TREND ANALYSIS

APPENDIX A-4.2.3.2
MOLYBDENUM
EARLY WARNING TREND ANALYSIS



Graph 2

Analysis prepared using DUMPSTAT and Sen's Test for trend

APPENDIX A-4.2.4

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

RADIONUCLIDES

APPENDIX A-4.2.4.1

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(RADIONUCLIDES)

APPENDIX A-4.2.4.1
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY RADIONUCLIDES
EARLY WARNING INFLUENT (COMPOSITE SAMPLE)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Method	Parameter Name[a/]	Permit Limit [b/]	Units[c/]	4/5/2021	Final Q[d/]
E.900.0	Alpha, Gross	NA[e/]	pCi/l	16.8 +/- 5.12	J+
E.900.0	Beta, Gross	NA	pCi/l	15.1 +/- 5.17	UJ+
EPA 600/7-79-081	Plutonium-238	NA	pCi/l	-0.008 +/- 0.025	UJ+
EPA 600/7-79-081	Plutonium-239/240	NA	pCi/l	0.023 +/- 0.04	J+
EPA-RA-05	Radium-228	NA	pCi/l	0.604 +/- 0.241	
ER110 LANL	Americium-241	NA	pCi/l	0.023 +/- 0.051	J+
SM 7500-RA-B	Radium-226	NA	pCi/l	0.418 +/- 0.163	
SM 7500-RA-B	Total Radium	NA	pCi/l	0.316 +/- 0.173	UJ+

a/ Radionuclide parameter list from the Metro permit.

b/ Permit Limit - limit for discharge according to Industrial Discharge Permit No. 2360-6 issued by the Metro Wastewater Reclamation District (Metro), effective January 5, 2020.

c/ Units : pCi/L = picoCuries per liter

d/ Qualifiers:

U= The analyte was analyzed for and is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ= The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

UJ-= Same as UJ qualification but with an indication of negative bias in the sample concentration.

UJ+= Same as UJ qualification but with an indication of positive bias in the sample concentration.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

e/ NA = Not applicable

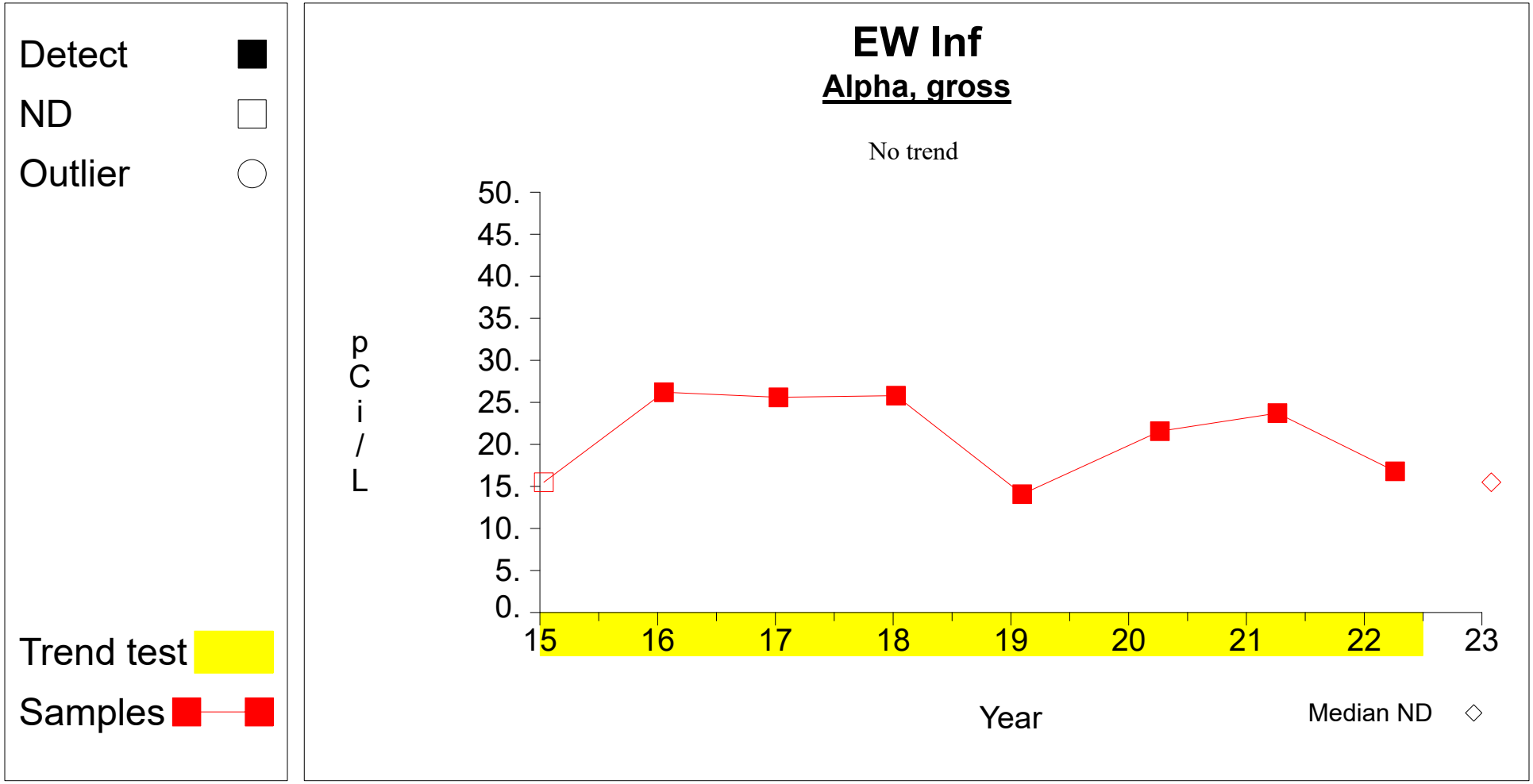
APPENDIX A-4.2.4.2

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

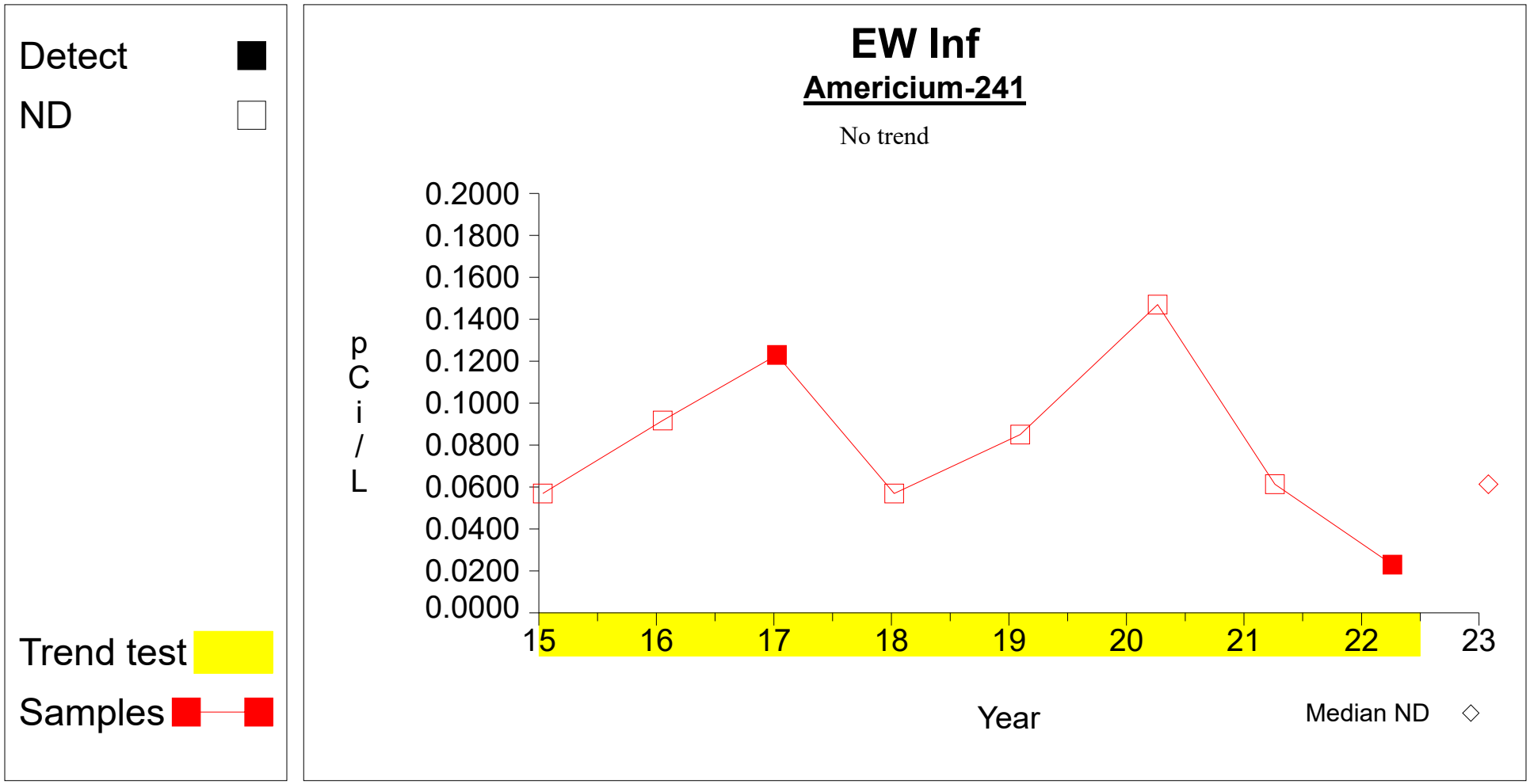
(RADIONUCLIDES)

TREND ANALYSIS

APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS

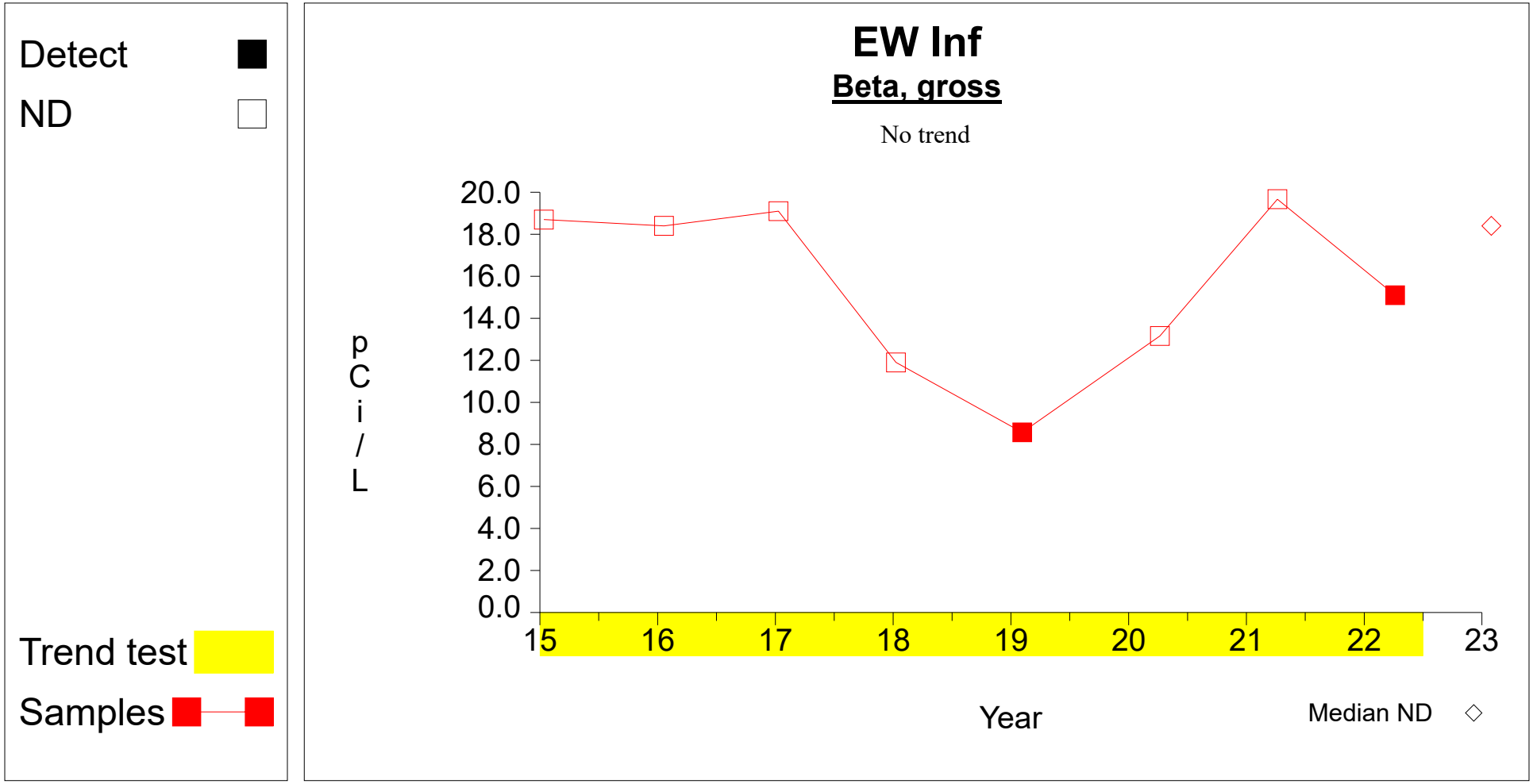


APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS



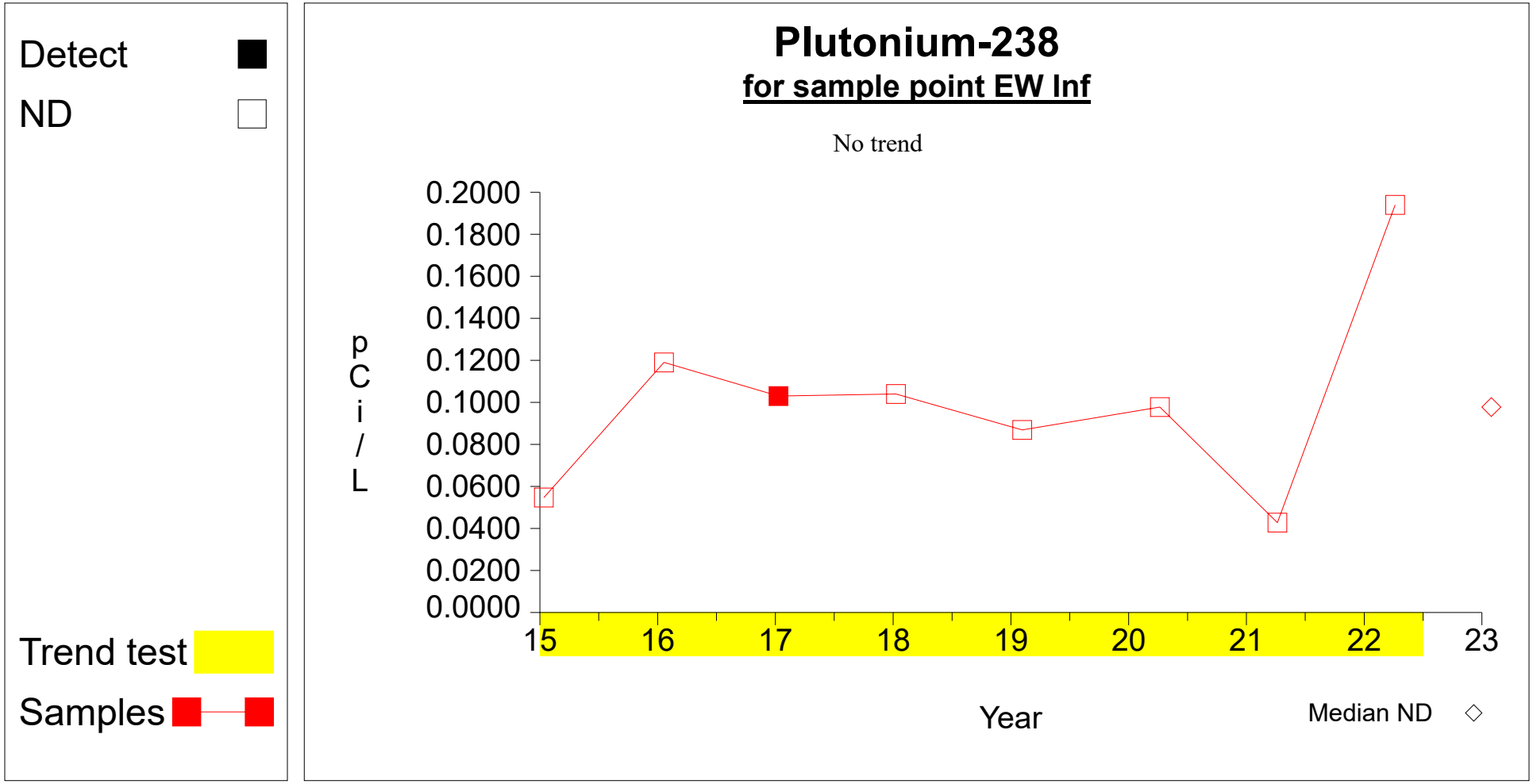
Analysis prepared using DUMPSTAT
and Sen's Test for trend

APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS



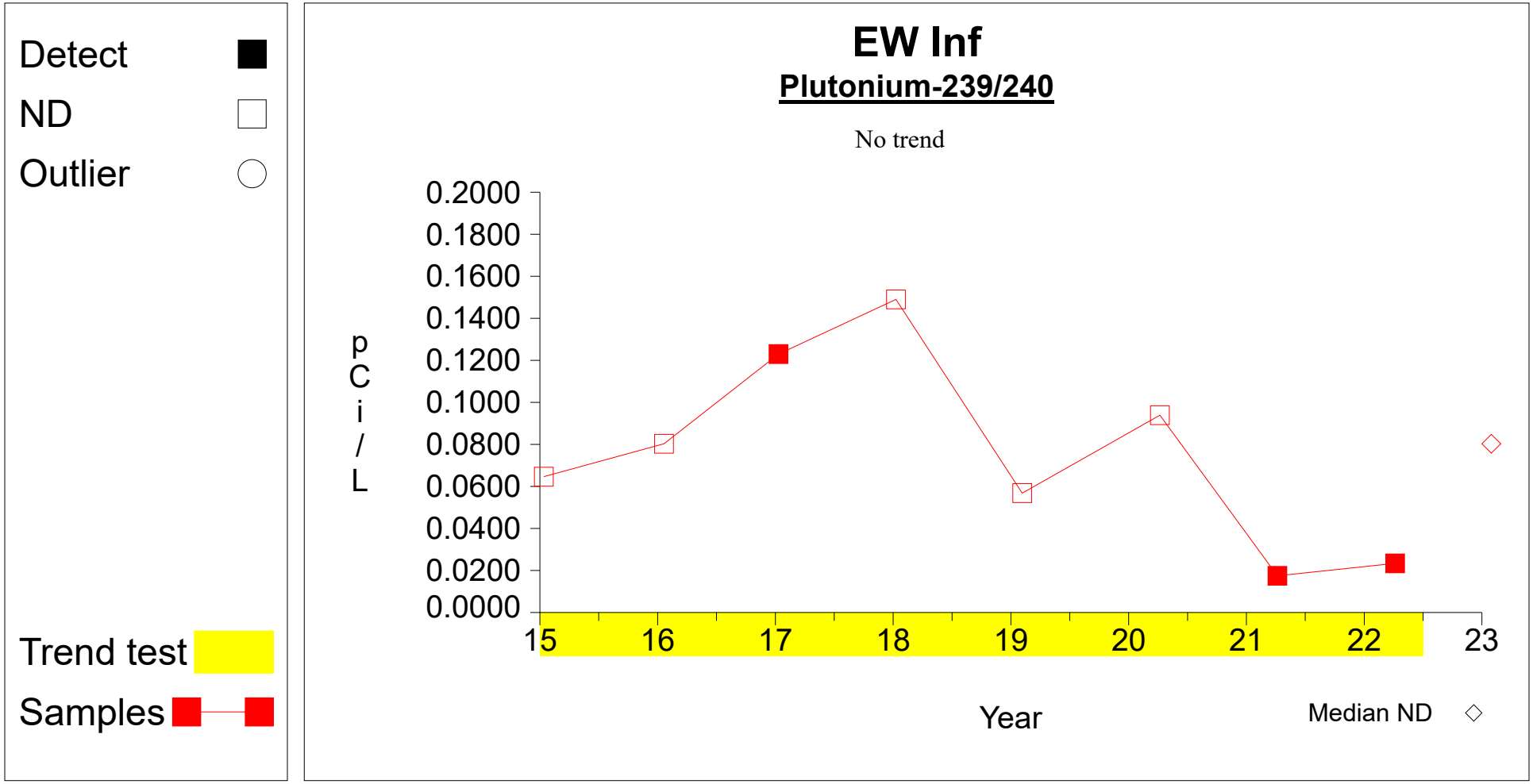
Analysis prepared using DUMPSTAT
and Sen's Test for trend

APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS



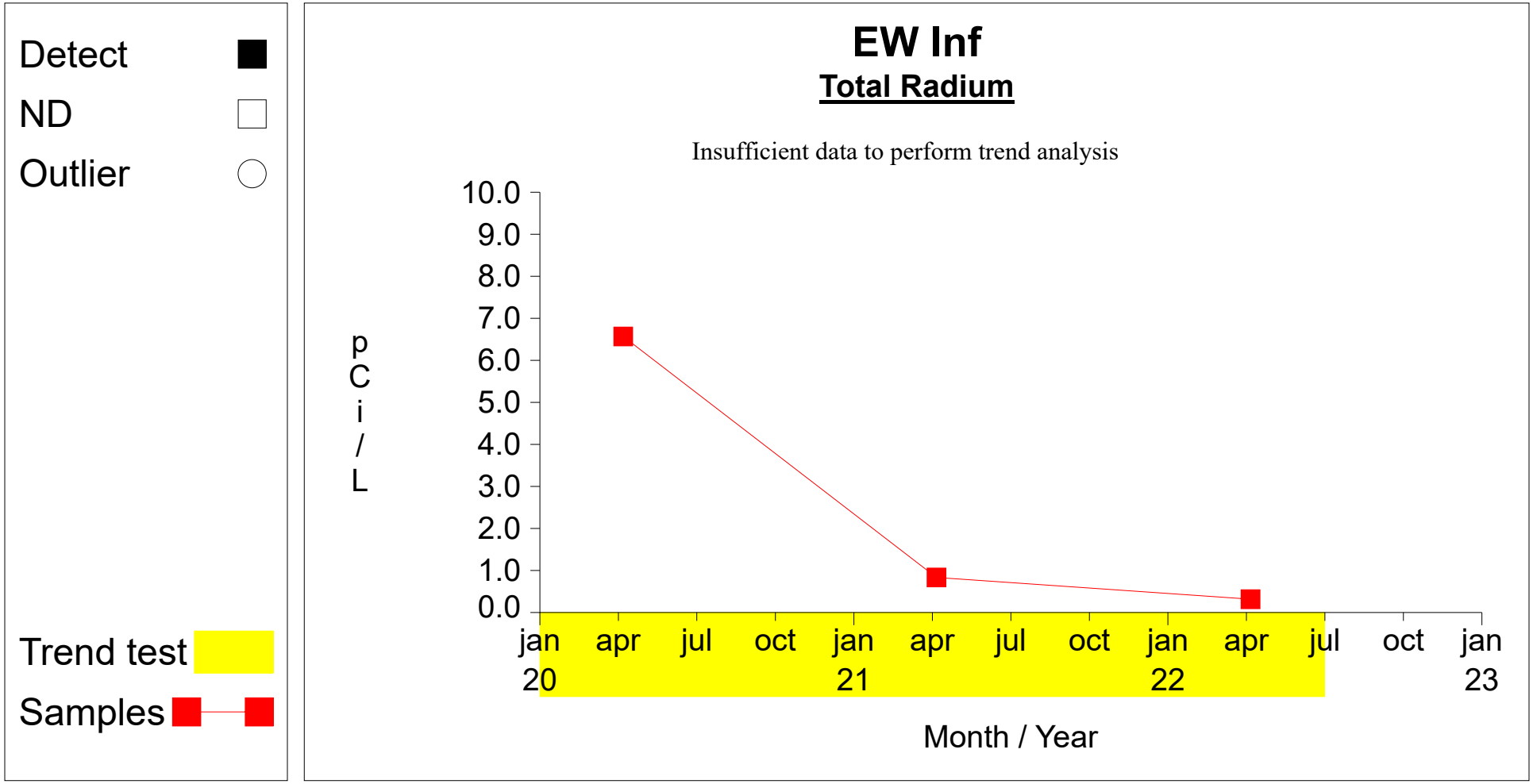
Graph 4

APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS



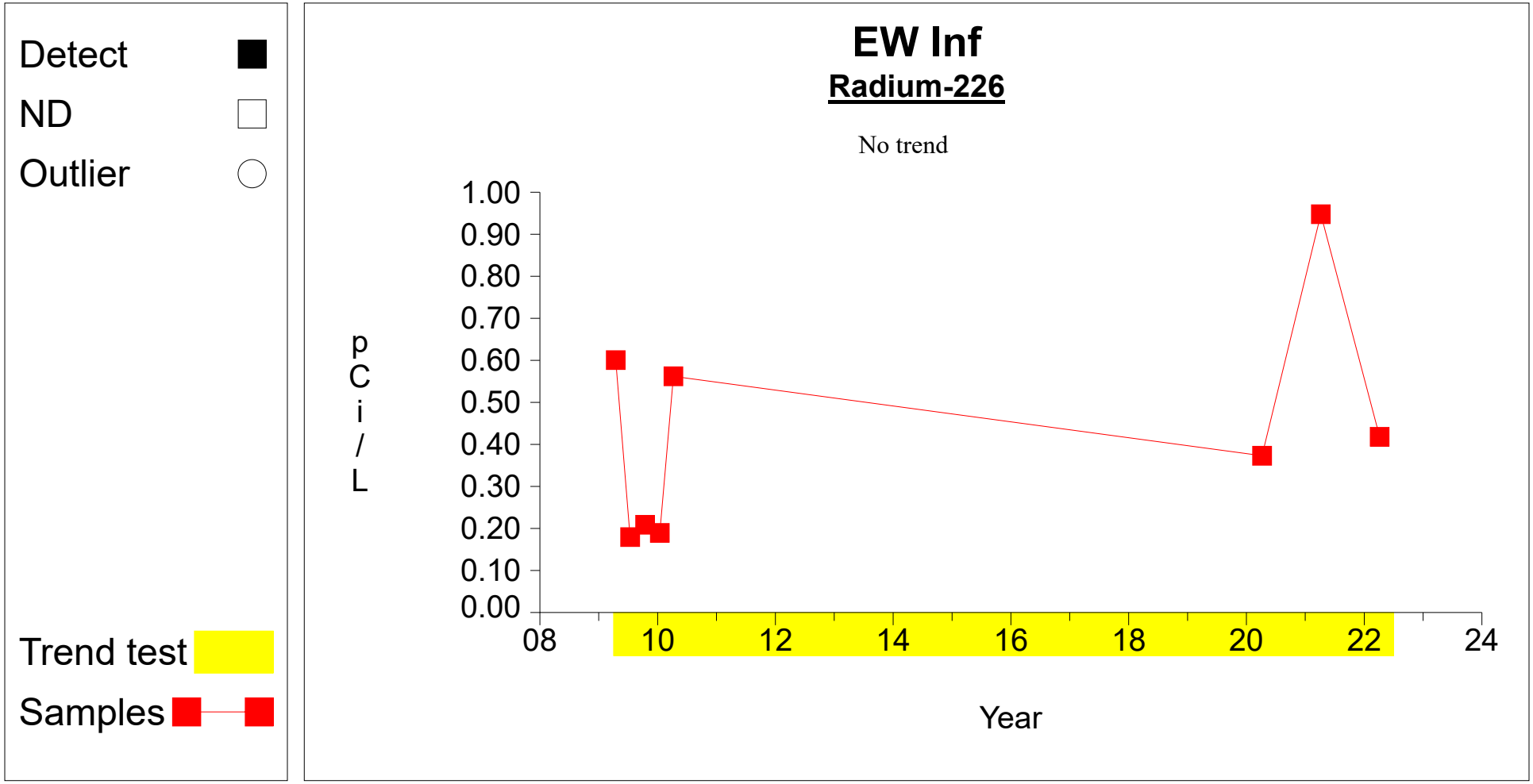
Analysis prepared using DUMPSTAT
and Sen's Test for trend

APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS



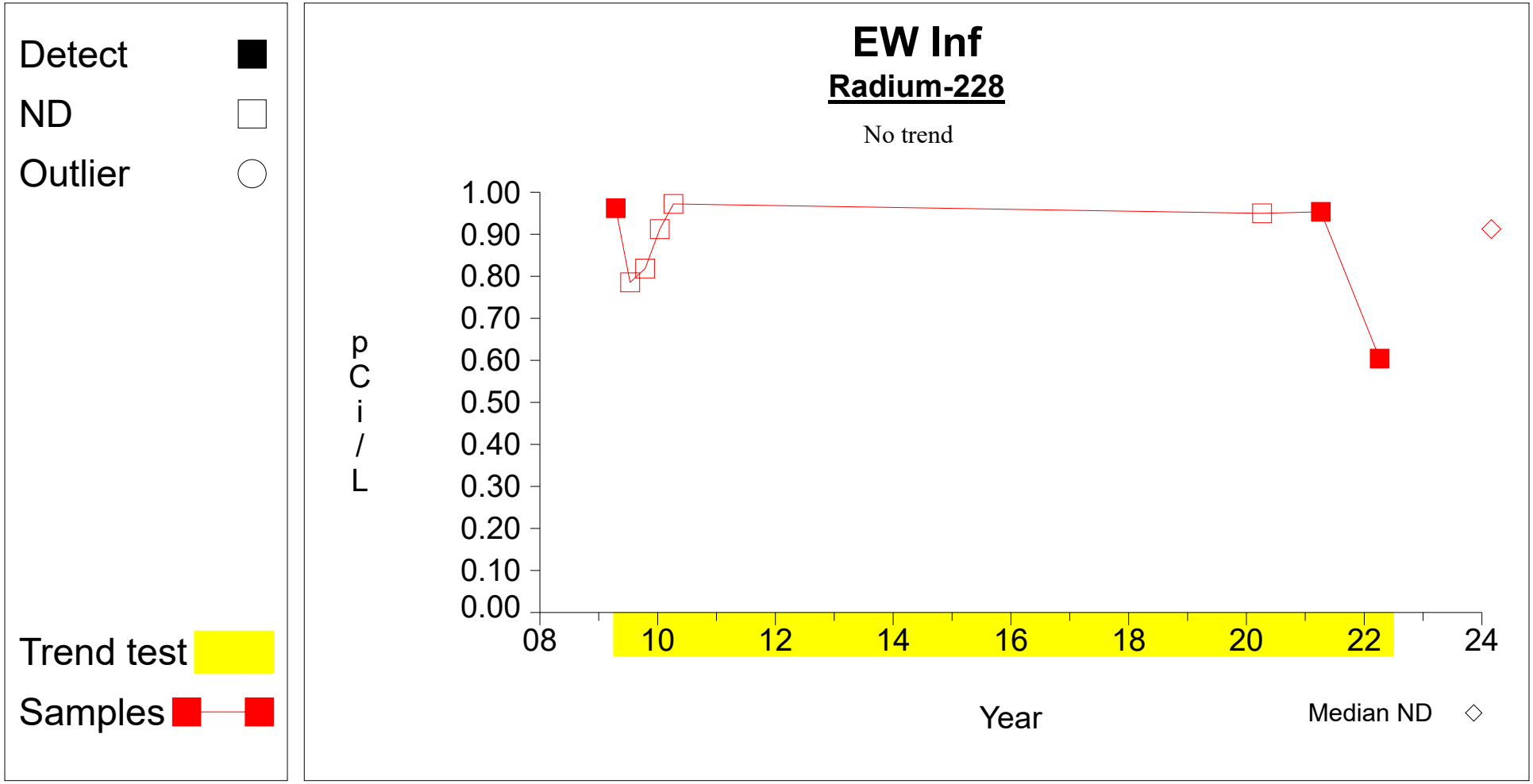
Analysis prepared using DUMPSTAT
and Sen's Test for trend

APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS



Analysis prepared using DUMPSTAT
and Sen's Test for trend

APPENDIX A-4.2.4.2
RADIONUCLIDES
EARLY WARNING TREND ANALYSIS



Analysis prepared using DUMPSTAT
and Sen's Test for trend

APPENDIX A-4.2.5

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(OTHER METALS AND SEMIVOLATILE ORGANIC COMPOUNDS)

APPENDIX A-4.2.5
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
METALS AND SVOCs
EARLY WARNING INFLUENT (COMPOSITE SAMPLE)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Method	Parameter Name[a/]	Permit Limit [b/]	Units[c/]	4/5/2021 Result	Final Q[d/]
Semivolatile Organic Compounds					
625	1,2,4-Trichlorobenzene	NA[e/]	ug/L	1.2	U
625	2,4,6-Trichlorophenol	NA	ug/L	0.53	U
625	2,4-Dichlorophenol	NA	ug/L	0.6	U
625	2,4-Dimethylphenol	NA	ug/L	11	
625	2,4-Dinitrophenol	NA	ug/L	9.4	U
625	2,4-Dinitrotoluene	NA	ug/L	1.6	U
625	2,6-Dinitrotoluene	NA	ug/L	1.8	U
625	2-Chloronaphthalene	NA	ug/L	0.5	U
625	2-Chlorophenol	NA	ug/L	0.91	U
625	2-Methylnaphthalene	NA	ug/L	1.4	U
625	2-Nitrophenol	NA	ug/L	1.3	U
625	3,3'-Dichlorobenzidine	NA	ug/L	2.9	U
625	4,6-Dinitro-2-Methylphenol	NA	ug/L	8.5	U
625	4-Bromophenyl phenyl ether	NA	ug/L	0.4	U
625	4-Chloro-3-Methylphenol	NA	ug/L	2.3	U
625	4-Chlorophenyl phenyl ether	NA	ug/L	1.6	U
625	4-Nitrophenol	NA	ug/L	3	U
625	Acenaphthene	NA	ug/L	0.59	U
625	Acenaphthylene	NA	ug/L	0.46	U
625	Acetophenone	NA	ug/L	0.4	U
625	aniline	NA	ug/L	1.9	U
625	Anthracene	NA	ug/L	0.39	U
625	Benzidine	NA	ug/L	47	U
625	Benzo(a)anthracene	NA	ug/L	0.85	U
625	Benzo(a)pyrene	NA	ug/L	0.68	U
625	Benzo(b)fluoranthene	NA	ug/L	1.2	U
625	Benzo(g,h,i)Perylene	NA	ug/L	0.47	U
625	Benzo(k)fluoranthene	NA	ug/L	0.43	U
625	Benzoic Acid	NA	ug/L	10	U
625	Bis(2-Chloroethoxy)methane	NA	ug/L	0.91	U
625	Bis(2-Chloroethyl)Ether	NA	ug/L	0.78	U
625	Bis(2-Chloroisopropyl) Ether	NA	ug/L	0.26	U
625	bis(2-Ethylhexyl)phthalate	NA	ug/L	2.3	U
625	Butyl benzyl phthalate	NA	ug/L	0.94	U
625	C10	NA	ug/L	0.82	U
625	C18	NA	ug/L	0.66	U
625	Carbazole	NA	ug/L	0.93	J
625	Chrysene	NA	ug/L	0.51	U
625	Dibenz(a,h)anthracene	NA	ug/L	2	U
625	Diethylphthalate	NA	ug/L	0.49	J
625	Dimethylphthalate	NA	ug/L	0.2	U
625	Di-N-Butylphthalate	NA	ug/L	1.1	U
625	Di-n-octylphthalate	NA	ug/L	3.8	U
625	Fluoranthene	NA	ug/L	0.84	U
625	Fluorene	NA	ug/L	0.29	U
625	Hexachlorobenzene	NA	ug/L	0.62	U
625	Hexachlorobutadiene	NA	ug/L	3.1	U
625	Hexachlorocyclopentadiene	NA	ug/L	2.9	U
625	Hexachloroethane	NA	ug/L	0.92	U
625	Indeno(1,2,3-c,d)pyrene	NA	ug/L	2.9	U
625	Isophorone	NA	ug/L	0.2	U
625	Naphthalene	NA	ug/L	0.29	J
625	Nitrobenzene	NA	ug/L	0.76	U
625	N-Nitrosodimethylamine	NA	ug/L	0.27	U
625	N-Nitroso-Di-N-Propylamine	NA	ug/L	0.33	U
625	N-Nitrosodiphenylamine	NA	ug/L	0.41	U

APPENDIX A-4.2.5
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
METALS AND SVOCs
EARLY WARNING INFLUENT (COMPOSITE SAMPLE)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Method	Parameter Name[a/]	Permit Limit [b/]	Units[c/]	4/5/2021 Result	Final Q[d/]
625	Pentachlorophenol	NA	ug/L	19	U
625	Phenanthrene	NA	ug/L	0.64	U
625	Phenol	NA	ug/L	1.9	U
625	Pyrene	NA	ug/L	0.35	U
625	Pyridine	NA	ug/L	1.6	U
Metals					
E200.8	Molybdenum	430	ug/L	340	
E200.8	Selenium	660	ug/L	18	
E200.8	Cadmium	3400	ug/L	0.088	U
E200.8	Copper	6100	ug/L	1.9	
E200.8	Zinc	15600	ug/L	7.3	
E200.8	Nickel	5600	ug/L	4.6	
EPA 200.7 Rev 4.4	Arsenic	330	ug/L	5.7	
EPA 200.7 Rev 4.4	Lead	2200	ug/L	2.7	U
EPA 200.7 Rev 4.4	Silver	2900	ug/L	2	U
EPA 200.7 Rev 4.4	Chromium	3600	ug/L	0.66	U
EPA 245.1	Mercury	130	ug/L	0.027	U

a/ Parameter list from the Metro permit.

b/ Permit Limit - limit in ug/L for discharge according to Industrial Discharge Permit No. 2360-6 issued by the Metro Wastewater Reclamation District (Metro), effective January 5, 2020.

c/ Units : µg/L = micrograms per liter

d/ Qualifiers: U= The analyte was analyzed for and is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ= The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

UJ-= Same as UJ qualification but with an indication of negative bias in the sample concentration.

UJ+= Same as UJ qualification but with an indication of positive bias in the sample concentration.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

e/ NA = Not applicable

APPENDIX B

WASTE DISPOSAL RECORDS

APPENDIX B-1

SUMMARY OF WASTE DISPOSED

TABLE B-1
SUMMARY OF WASTE DISPOSED AND TREATED OFFSITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Date	Manifest No.	Waste Description	Quantity	Units	Facility	EPA Authorization[a/]
4/6/2022	017390122FLE	Carbon From the Treatment of FO39 NTES Groundwater (Profile # CH599250)	8,750	lbs[b/]	Clean Harbors Kimball, NE	Yes
5/26/2022	10722502	WTP Sludge (Profile # 1004322)	15	CY[c/]	DADS[d/]	Not Required by WMP[e/]

a/ Acceptance of the treatment and disposal facility was obtained from EPA before shipment offsite.
EPA authorizations are maintained in the project files on site and are available for review.

b/ lbs = Pounds

c/ CY = cubic yards

d/ DADS = Denver Arapaho Disposal Site

e/ WMP = Waste Management Plan

APPENDIX B-2

WASTE MANIFESTS

V220416 33

Generator acknowledges that no material change has occurred either in the characteristics or in the process generating the material.

Please print or type. Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	COD980953723	1	(800) 483-3718	017390122 FLE

GENERATOR

5. Generator's Name and Mailing Address
Lowry Environmental Protection Cleanup Trust
7220 West Jefferson Avenue, Suite 406
Lakewood, CO 80235
Generator's Phone: (303) 940-3426 ATTN: Tim Shanahan

Generator's Site Address (if different than mailing address)
3500 South Gun Club Road
Aurora, CO 80118

FOLD LABEL AT DOTTED LINE. AFFIX TO RIGHT SIDE OF MANIFEST WINDOW. DO NOT TAPE THIS STUB OUT.

6. Transporter 1 Company Name
Clean Harbors Environmental Services, Inc.
U.S. EPA ID Number
MAD039322250

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Clean Harbors Environmental Services, Inc.
2247 South Highway 71
Kimball, NE 69145
Facility's Phone: (308) 235-4012
U.S. EPA ID Number
NED981723513

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. NA3077, HAZARDOUS WASTE, SOLID, N.O.S., (F039), 9, PG III	5	BAG	8750	P	F039
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1 CB599250 ERG#171

Contract retained by generator confers agency authority on initial transporter to add or substitute additional transporters on generator's behalf for purposes of transportation efficiency, convenience, or safety

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Dan Griffiths on behalf of Lowry Trust
Signature:
Month: 4 Day: 6 Year: 22

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Austen Traver
Signature:
Month: 4 Day: 6 Year: 22

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H040			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Thomas Clark
Signature:
Month: 4 Day: 12 Year: 22

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM

Clean Harbors has the appropriate permits for and will accept the waste the generator is shipping.

D9 2108332208 PPW

Clean Harbors
ENVIRONMENTAL SERVICES®

Land Disposal Restriction Notification Form

Printed Date :Apr 6, 2022

MANIFEST INFORMATION

Generator : Lowry Environmental Protection Cleanup Trust

Address: 3500 South Gun Club Road
Aurora,CO 80118

EPA ID #: C O D 9 8 0 9 5 3 7 2 3

Manifest Tracking Info.

017390122FLE

Sales Order No: 2108332208

LINE ITEM INFORMATION

Line Item:	Page No:	Profile No:	Treatability Group:	LDR Disposal Category
1.	1	CH599250	NON-WASTEWATER	2 (This is subject to LDR.)

EPA Waste Code	EPA Waste SubCategory
F039	NONE

LDR Chemical Data

Chemical	Underlying Hazardous Constituents	Constituents of Concern	Contaminants Subject to Treatment
1,1-DICHLOROETHANE	N	N	N
TRANS-1,2-DICHLOROETHYLENE	N	N	N

Certification	Applies to Manifest Line Items
Pursuant to 40 CFR 268.7(a), I hereby notify that this shipment contains waste restricted under 40 CFR Part 268.	1.

Waste analysis data, where available, is attached.

Signature : _____ Print Name Dan Griffis on behalf of Lowry Trust

Title : Supervising Contractor Date : 4/6/22

NON-HAZARDOUS MANIFEST

WASTE MANAGEMENT

12274

NON-HAZARDOUS MANIFEST	1. Generator's US EPA ID No. COD 980953723 Manifest Doc No.	2. Page 1 of 1	U019832

GENERATOR

3. Generator's Mailing Address: LOWRY ENVIRONMENTAL PROTECTION 3500 S GUN CLUB RD AURORA, CO 80018	Generator's Site Address (If different than mailing):	A. Manifest Number WMNA 10722502
4. Generator's Phone 303-710-9419		B. State Generator's ID

5. Transporter 1 Company Name Dad S	6. US EPA ID Number	C. State Transporter's ID
		D. Transporter's Phone
7. Transporter 2 Company Name	8. US EPA ID Number	E. State Transporter's ID
		F. Transporter's Phone
9. Designated Facility Name and Site Address DENVER ARAPAHOE DISPOSAL 3500 S GUNCLUB RD AURORA, CO 80018	10. US EPA ID Number	G. State Facility ID
		H. State Facility Phone 720-876-2620

11. Description of Waste Materials	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.	I. Misc. Comments
a. NON-REGULATED SOLID – **WATER TREATMENT PLANT SLUDGE** WM Profile # 1004322	R1606 ML	R-11-OFF	15	yd3	
b. WM Profile #					
c. WM Profile #					
REGULATORY AGENCY: **Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80222-1530**					

J. Additional Descriptions for Materials Listed Above	K. Disposal Location			
ACCT #: D 15317 CUST NAME: JDS PROFESSIONAL GROUP	Cell	329	Level	
	Grid			

15. Special Handling Instructions and Additional Information

Purchase Order # EMERGENCY CONTACT / PHONE NO.: 1-800-424-9300 24HR TOLL FREE

16. GENERATOR'S CERTIFICATE:

I hereby certify that the above-described materials are not hazardous wastes as defined by CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Printed Name	Signature "On behalf of"	Month	Day	Year
Daniel Griffiths as agent of and on behalf of the Lowry Trust		5	17	22

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials				
Printed Name Cory Foley	Signature Cory Foley	Month 5	Day 26	Year 22
18. Transporter 2 Acknowledgement of Receipt of Materials				
Printed Name	Signature	Month	Day	Year

FACILITY

19. Certificate of Final Treatment/Disposal

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.

20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.

Printed Name	Signature	Month	Day	Year
		5	26	22

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY

Pink- FACILITY USE ONLY

Blue- GENERATOR #2 COPY

Gold- TRANSPORTER #1 COPY

Yellow- GENERATOR #1 COPY

APPENDIX C

GROUNDWATER

APPENDIX C-1

NEW MONITORING WELL LOGS

NO NEW MONITORING WELLS WERE INSTALLED FROM JANUARY THROUGH JUNE 2022

APPENDIX C-2

MONITORING WELL HYDROGRAPHS

See folder Appendix C-2

APPENDIX C-3

COMPLIANCE EVALUATION STATISTICAL TESTING AND ANALYTE STATISTICAL TREND ANALYSIS PLOTS

The material contained in this appendix represents the output of the statistical evaluations completed EPA's ProUCL Software and manual calculations for regression analysis.

APPENDIX C-3.1

COMPLIANCE EVALUATION STATISTICAL TESTING

Data Summary Table

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
B-313[c/]	1,4-Dioxane	4/16/2019	14		ug/L	0.9
B-313[c/]	1,4-Dioxane	7/16/2019	2.3		ug/l	0.9
B-313[c/]	1,4-Dioxane	10/15/2019	7.2		ug/l	0.9
B-313[c/]	1,4-Dioxane	1/28/2020	20		ug/L	0.9
B-313[c/]	1,4-Dioxane	4/28/2020	21		ug/L	0.9
B-313[c/]	1,4-Dioxane	7/28/2020	18		ug/L	0.9
B-313[c/]	1,4-Dioxane	12/9/2020	17		ug/L	0.9
B-313[c/]	1,4-Dioxane	2/17/2021	16		ug/L	0.9
B-313[c/]	1,4-Dioxane	5/18/2021	15		ug/L	0.9
B-313[c/]	1,4-Dioxane	11/16/2021	17		ug/L	0.9
B-313[c/]	Nitrogen, Nitrate	1/3/2019	21000		ug/L	5000
B-313[c/]	Nitrogen, Nitrate	4/16/2019	22000		ug/L	10000
B-313[c/]	Nitrogen, Nitrate	7/16/2019	47000		ug/L	10000
B-313[c/]	Nitrogen, Nitrate	10/17/2019	40000		ug/L	2500
B-313[c/]	Nitrogen, Nitrate	1/28/2020	30000		ug/L	2500
B-313[c/]	Nitrogen, Nitrate	4/28/2020	28000		ug/L	10000
B-313[c/]	Nitrogen, Nitrate	7/28/2020	32000		ug/L	2500
B-313[c/]	Nitrogen, Nitrate	2/17/2021	22000		ug/L	2500
B-313[c/]	Nitrogen, Nitrate	5/18/2021	39000	J	ug/L	500
B-313[c/]	Nitrogen, Nitrate	8/12/2021	55000	J	ug/L	2500
B-326-UD	1,4-Dioxane	2/12/2020	7.7		ug/L	0.9
B-326-UD	1,4-Dioxane	5/27/2020	6.9		ug/L	0.9
B-326-UD	1,4-Dioxane	9/2/2020	6.7		ug/L	0.9
B-326-UD	1,4-Dioxane	12/10/2020	6.4		ug/L	0.9
B-326-UD	1,4-Dioxane	2/4/2021	6.7		ug/L	0.9
B-326-UD	1,4-Dioxane	6/1/2021	6		ug/L	0.9
B-326-UD	1,4-Dioxane	8/30/2021	6.1		ug/L	0.9
B-326-UD	1,4-Dioxane	10/12/2021	5		ug/L	0.9
B-326-UD	1,4-Dioxane	2/8/2022	4.5		ug/L	0.9
B-326-UD	1,4-Dioxane	4/14/2022	4.6		ug/L	0.9
B-326-UD	Nitrogen, Nitrate	4/28/2015	19000		ug/L	2500
B-326-UD	Nitrogen, Nitrate	5/1/2017	40000		ug/L	2500
B-326-UD	Nitrogen, Nitrate	7/31/2018	66000		ug/L	5000
B-326-UD	Nitrogen, Nitrate	3/21/2019	49000		ug/L	2500
B-326-UD	Nitrogen, Nitrate	6/17/2019	9300		ug/L	500
B-326-UD	Nitrogen, Nitrate	8/26/2019	990		ug/L	500
B-326-UD	Nitrogen, Nitrate	12/11/2019	700		ug/L	500
B-326-UD	Nitrogen, Nitrate	2/12/2020	730		ug/L	500
B-326-UD	Nitrogen, Nitrate	9/2/2020	90	U	ug/L	500
B-326-UD	Nitrogen, Nitrate	2/4/2021	90	U	ug/L	500
B-326-WD	1,4-Dioxane	2/12/2020	10		ug/L	0.9
B-326-WD	1,4-Dioxane	5/28/2020	11		ug/L	0.9
B-326-WD	1,4-Dioxane	8/26/2020	3.5		ug/L	0.9
B-326-WD	1,4-Dioxane	11/23/2020	3.9		ug/L	0.9
B-326-WD	1,4-Dioxane	2/3/2021	17		ug/L	0.9
B-326-WD	1,4-Dioxane	6/1/2021	7.5		ug/L	0.9
B-326-WD	1,4-Dioxane	8/30/2021	0.77	J	ug/L	0.9
B-326-WD	1,4-Dioxane	10/12/2021	1		ug/L	0.9
B-326-WD	1,4-Dioxane	2/8/2022	3.6		ug/L	0.9
B-326-WD	1,4-Dioxane	4/14/2022	3.2		ug/L	0.9
BM-11X-100N	Tetrachloroethene	10/20/2017	4.6		ug/L	1
BM-11X-100N	Tetrachloroethene	4/17/2018	5.9		ug/L	1

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
BM-11X-100N	Tetrachloroethene	10/12/2018	6.3		ug/L	1
BM-11X-100N	Tetrachloroethene	4/23/2019	6.5		ug/L	1
BM-11X-100N	Tetrachloroethene	10/14/2019	6.8		ug/L	1
BM-11X-100N	Tetrachloroethene	4/30/2020	6.9		ug/L	1
BM-11X-100N	Tetrachloroethene	11/16/2020	7.2		ug/L	1
BM-11X-100N	Tetrachloroethene	5/6/2021	6	J	ug/L	1
BM-11X-100N	Tetrachloroethene	10/28/2021	5.4		ug/L	1
BM-11X-100N	Tetrachloroethene	5/18/2022	4.9		ug/L	1
BM-11X-100N	Trichloroethene	10/20/2017	3.6		ug/L	1
BM-11X-100N	Trichloroethene	4/17/2018	4.7		ug/L	1
BM-11X-100N	Trichloroethene	10/12/2018	4.5		ug/L	1
BM-11X-100N	Trichloroethene	4/23/2019	4.3		ug/L	1
BM-11X-100N	Trichloroethene	10/14/2019	4.9		ug/L	1
BM-11X-100N	Trichloroethene	4/30/2020	5		ug/L	1
BM-11X-100N	Trichloroethene	11/16/2020	5.7		ug/L	1
BM-11X-100N	Trichloroethene	5/6/2021	5.5		ug/L	1
BM-11X-100N	Trichloroethene	10/28/2021	4.8		ug/L	1
BM-11X-100N	Trichloroethene	5/18/2022	4.4		ug/L	1
BM-15N6	Nitrogen, Nitrate	10/24/2017	43000		ug/L	2500
BM-15N6	Nitrogen, Nitrate	4/23/2018	42000		ug/L	5000
BM-15N6	Nitrogen, Nitrate	10/19/2018	49000		ug/L	10000
BM-15N6	Nitrogen, Nitrate	4/26/2019	35000		ug/L	10000
BM-15N6	Nitrogen, Nitrate	12/12/2019	42000	J	ug/L	500
BM-15N6	Nitrogen, Nitrate	5/13/2020	35000		ug/L	2500
BM-15N6	Nitrogen, Nitrate	2/23/2021	32000		ug/L	5000
BM-15N6	Nitrogen, Nitrate	4/22/2021	31000		ug/L	2500
BM-15N6	Nitrogen, Nitrate	10/13/2021	30000		ug/L	5000
BM-15N6	Nitrogen, Nitrate	4/25/2022	34000		ug/L	5000
GW-109[d/]	1,4-Dioxane	5/31/2016	2.1		ug/L	0.9
GW-109[d/]	1,4-Dioxane	11/2/2016	3.3		ug/L	0.9
GW-109[d/]	1,4-Dioxane	5/10/2017	0.76	J	ug/L	0.9
GW-109[d/]	1,4-Dioxane	10/27/2017	0.95		ug/L	0.9
GW-109[d/]	1,4-Dioxane	5/4/2018	0.54	J	ug/L	0.9
GW-109[d/]	1,4-Dioxane	7/31/2018	0.54	J	ug/L	0.9
GW-109[d/]	1,4-Dioxane	1/3/2019	0.53	J	ug/L	0.9
GW-109[d/]	1,4-Dioxane	4/16/2019	9.7		ug/L	0.9
GW-109[d/]	1,4-Dioxane	3/2/2020	41		ug/L	0.9
GW-109[d/]	1,4-Dioxane	6/1/2020	20		ug/L	0.9
GW-109[d/]	Bromodichloromethane	11/16/2015	2.8		ug/L	1
GW-109[d/]	Bromodichloromethane	5/31/2016	0.44	J	ug/L	1
GW-109[d/]	Bromodichloromethane	11/2/2016	0.17	U	ug/L	1
GW-109[d/]	Bromodichloromethane	5/10/2017	0.17	U	ug/L	1
GW-109[d/]	Bromodichloromethane	10/27/2017	0.17	U	ug/L	1
GW-109[d/]	Bromodichloromethane	5/4/2018	0.17	U	ug/L	1
GW-109[d/]	Bromodichloromethane	7/31/2018	0.17	U	ug/L	1
GW-109[d/]	Bromodichloromethane	1/3/2019	0.17	U	ug/L	1
GW-109[d/]	Bromodichloromethane	4/16/2019	0.17	U	ug/L	1
GW-109[d/]	Bromodichloromethane	6/1/2020	0.17	U	ug/L	1
GW-109[d/]	Chloroform	11/16/2015	4.4		ug/L	1
GW-109[d/]	Chloroform	5/31/2016	0.81	J	ug/L	1
GW-109[d/]	Chloroform	11/2/2016	0.3	J	ug/L	1
GW-109[d/]	Chloroform	5/10/2017	0.16	U	ug/L	1

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
GW-109[d/]	Chloroform	10/27/2017	0.16	U	ug/L	1
GW-109[d/]	Chloroform	5/4/2018	0.16	U	ug/L	1
GW-109[d/]	Chloroform	7/31/2018	0.16	U	ug/L	1
GW-109[d/]	Chloroform	1/3/2019	0.16	U	ug/L	1
GW-109[d/]	Chloroform	4/16/2019	0.16	U	ug/L	1
GW-109[d/]	Chloroform	6/1/2020	0.16	U	ug/L	1
MW106-UD	1,4-Dioxane	11/21/2006	0.5	U	ug/l	5
MW106-UD	1,4-Dioxane	2/28/2007	6.5		ug/l	5
MW106-UD	1,4-Dioxane	5/25/2007	0.5	U	ug/l	5
MW106-UD	1,4-Dioxane	8/12/2009	0.5	U	ug/l	5
MW106-UD	1,4-Dioxane	7/26/2011	0.5	U	ug/l	5
MW106-UD	1,4-Dioxane	8/1/2013	0.5	U	ug/l	5
MW106-UD	1,4-Dioxane	7/13/2015	0.5	U	ug/l	5
MW106-UD	1,4-Dioxane	7/26/2017	0.15	U	ug/L	0.9
MW106-UD	1,4-Dioxane	8/9/2018	0.15	U	ug/L	0.9
MW106-UD	1,4-Dioxane	8/26/2020	0.09	U	ug/L	0.9
MW23-C-SD	1,4-Dioxane	3/15/2006	0.5	U	ug/l	5
MW23-C-SD	1,4-Dioxane	8/21/2007	0.5	UJ	ug/l	5
MW23-C-SD	1,4-Dioxane	8/19/2009	0.5	U	ug/l	5
MW23-C-SD	1,4-Dioxane	8/11/2011	0.5	U	ug/l	5
MW23-C-SD	1,4-Dioxane	8/27/2013	0.5	U	ug/l	5
MW23-C-SD	1,4-Dioxane	9/2/2015	0.15	U	ug/L	0.9
MW23-C-SD	1,4-Dioxane	8/1/2017	0.15	U	ug/L	0.9
MW23-C-SD	1,4-Dioxane	7/31/2018	0.15	U	ug/L	0.9
MW23-C-SD	1,4-Dioxane	9/15/2020	1.4		ug/L	0.9
MW23-C-SD	1,4-Dioxane	2/18/2021	0.09	U	ug/L	0.9
MW38-830N-230E	1,4-Dioxane	11/1/2017	12		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	4/26/2018	9.3		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	8/7/2018	13		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	5/1/2019	7.1		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	10/22/2019	2.4		ug/l	0.9
MW38-830N-230E	1,4-Dioxane	1/28/2020	2		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	11/12/2020	2.1		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	4/15/2021	4.5		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	10/14/2021	4.6		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	4/13/2022	4.2		ug/L	0.9
MW38-830N-230E	Chloroform	11/1/2017	6.9		ug/L	1
MW38-830N-230E	Chloroform	4/26/2018	6.2		ug/L	1
MW38-830N-230E	Chloroform	8/7/2018	5.9		ug/L	1
MW38-830N-230E	Chloroform	5/1/2019	5.4		ug/L	1
MW38-830N-230E	Chloroform	10/22/2019	2.1		ug/L	1
MW38-830N-230E	Chloroform	1/28/2020	2.1		ug/L	1
MW38-830N-230E	Chloroform	11/12/2020	2.6		ug/L	1
MW38-830N-230E	Chloroform	4/15/2021	4.3		ug/L	1
MW38-830N-230E	Chloroform	10/14/2021	3.7		ug/L	1
MW38-830N-230E	Chloroform	4/13/2022	3.8		ug/L	1
MW62-WDR	1,4-Dioxane	3/7/2018	3.9		ug/L	0.9
MW62-WDR	1,4-Dioxane	5/10/2018	4.2		ug/L	0.9
MW62-WDR	1,4-Dioxane	7/31/2018	3.8		ug/L	0.9
MW62-WDR	1,4-Dioxane	5/14/2019	3.9		ug/L	0.9
MW62-WDR	1,4-Dioxane	12/17/2019	3.5		ug/l	0.9
MW62-WDR	1,4-Dioxane	5/14/2020	3.4		ug/L	0.9
MW62-WDR	1,4-Dioxane	11/11/2020	3.2		ug/L	0.9

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW62-WDR	1,4-Dioxane	4/27/2021	3.3		ug/L	0.9
MW62-WDR	1,4-Dioxane	10/27/2021	3.2		ug/L	0.9
MW62-WDR	1,4-Dioxane	4/19/2022	2.9		ug/L	0.9
MW62-WDR	Nitrogen, Nitrate	3/7/2018	110000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	5/10/2018	120000		ug/L	25000
MW62-WDR	Nitrogen, Nitrate	7/31/2018	120000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	5/14/2019	120000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	12/17/2019	120000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	5/14/2020	130000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	11/11/2020	130000	J	ug/L	2500
MW62-WDR	Nitrogen, Nitrate	4/27/2021	120000		ug/L	25000
MW62-WDR	Nitrogen, Nitrate	10/27/2021	110000		ug/L	25000
MW62-WDR	Nitrogen, Nitrate	4/19/2022	120000		ug/L	25000
MW62-WDR	Nitrogen, Nitrite	3/7/2018	5400		ug/L	1000
MW62-WDR	Nitrogen, Nitrite	5/10/2018	4000		ug/L	500
MW62-WDR	Nitrogen, Nitrite	7/31/2018	2400		ug/L	1000
MW62-WDR	Nitrogen, Nitrite	5/14/2019	1900		ug/L	1000
MW62-WDR	Nitrogen, Nitrite	12/17/2019	980	U	ug/L	10000
MW62-WDR	Nitrogen, Nitrite	5/14/2020	1500	J	ug/L	10000
MW62-WDR	Nitrogen, Nitrite	11/11/2020	890		ug/L	500
MW62-WDR	Nitrogen, Nitrite	4/27/2021	1800		ug/L	1000
MW62-WDR	Nitrogen, Nitrite	10/27/2021	2200		ug/L	500
MW62-WDR	Nitrogen, Nitrite	4/19/2022	2100	J	ug/L	2500
MW77-WD	1,4-Dioxane	10/26/2017	5.3		ug/L	0.9
MW77-WD	1,4-Dioxane	5/3/2018	9		ug/L	0.9
MW77-WD	1,4-Dioxane	8/2/2018	2.6		ug/L	0.9
MW77-WD	1,4-Dioxane	5/2/2019	3		ug/L	0.9
MW77-WD	1,4-Dioxane	10/22/2019	12		ug/l	0.9
MW77-WD	1,4-Dioxane	5/4/2020	5		ug/L	0.9
MW77-WD	1,4-Dioxane	10/28/2020	16		ug/L	0.9
MW77-WD	1,4-Dioxane	4/21/2021	4.3		ug/L	0.9
MW77-WD	1,4-Dioxane	10/27/2021	11		ug/L	0.9
MW77-WD	1,4-Dioxane	4/18/2022	12		ug/L	0.9

a/ Final Q definitions: U= The analyte was analyzed for and is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample. The associated value is the method detection limit as required by the statistical procedure in the GWMP

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

b/ µg/L = micrograms per liter

c/ B-313 is listed here because it exceeded the performance standard for 1,4-dioxane and nitrate in the last 10 samples collected. Statistics were not performed because the well was dry and no sample could be collected in 1st and 2nd quarter 2022.

d/ GW-109 is listed here because it exceeded the performance standard for 1,4-dioxane, bromodichloromethane, and chloroform in the last 10 samples collected. Statistics were not performed because the well was dry and no sample could be collected in 1st and 2nd quarter 2022. This well has been dry since 3rd quarter 2020.

APPENDIX C-3.2

COMPLIANCE EVALUATION STATISTICAL TESTING

Mann-Kendall Trend Analysis

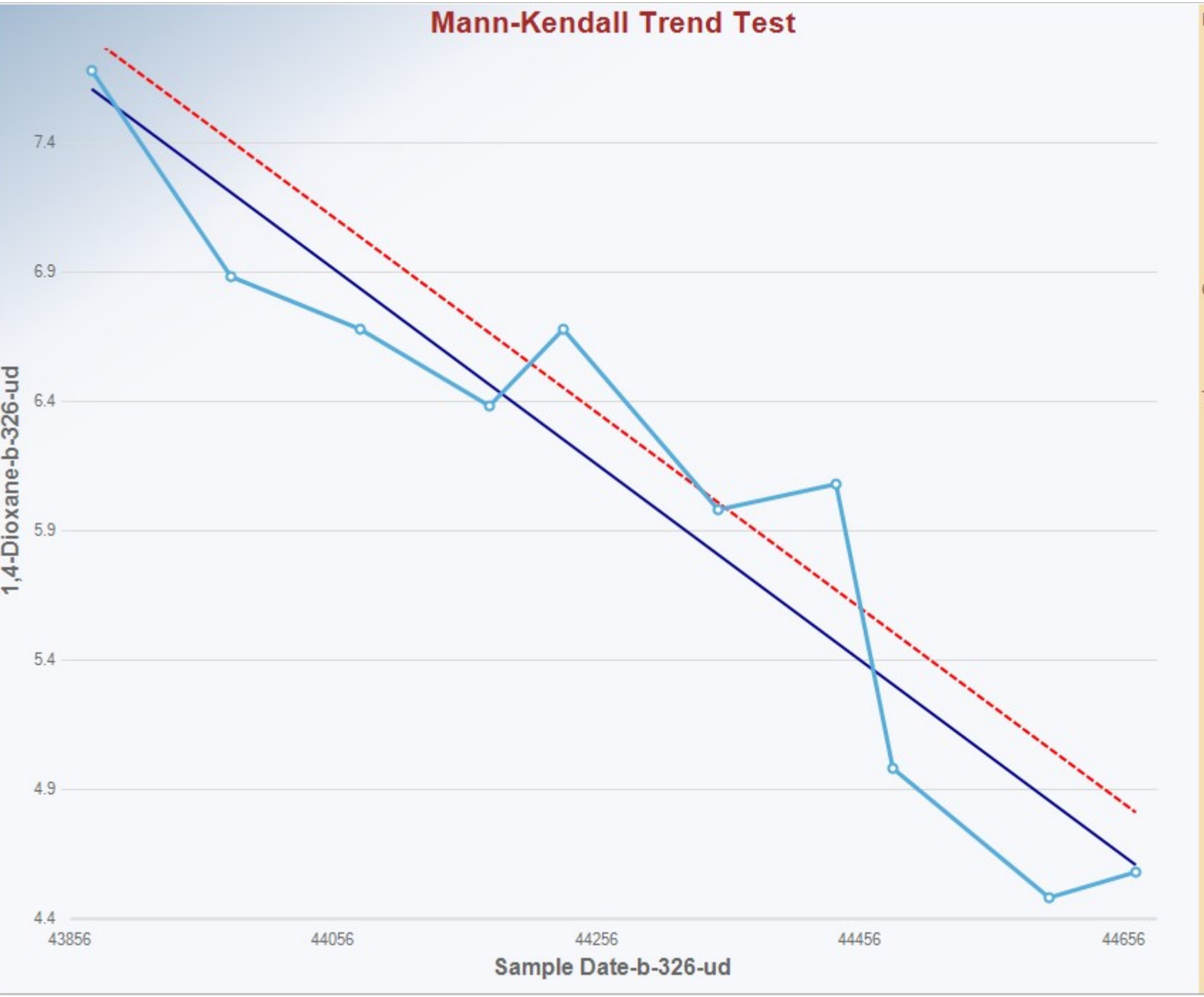
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:21:04 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-b-326-ud

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	4.5
Maximum	7.7
Mean	6.06
Geometric Mean	5.973
Median	6.25
Standard Deviation	1.055
Coefficient of Variation	0.174

Mann-Kendall Test	
M-K Test Value (S)	-38
Tabulated p-value	0
Standard Deviation of S	11.14
Standardized Value of S	-3.323
Approximate p-value	4.4576E-4

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-3.3227
M-K Test Value (S)	-38
Tabulated p-value	0.0000
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	-0.0038
OLS Regression Intercept	173.5760

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0038
Theil-Sen Intercept	173.5463

Statistically significant evidence of a decreasing trend at the specified level of significance.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:29:40 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-b-326-ud

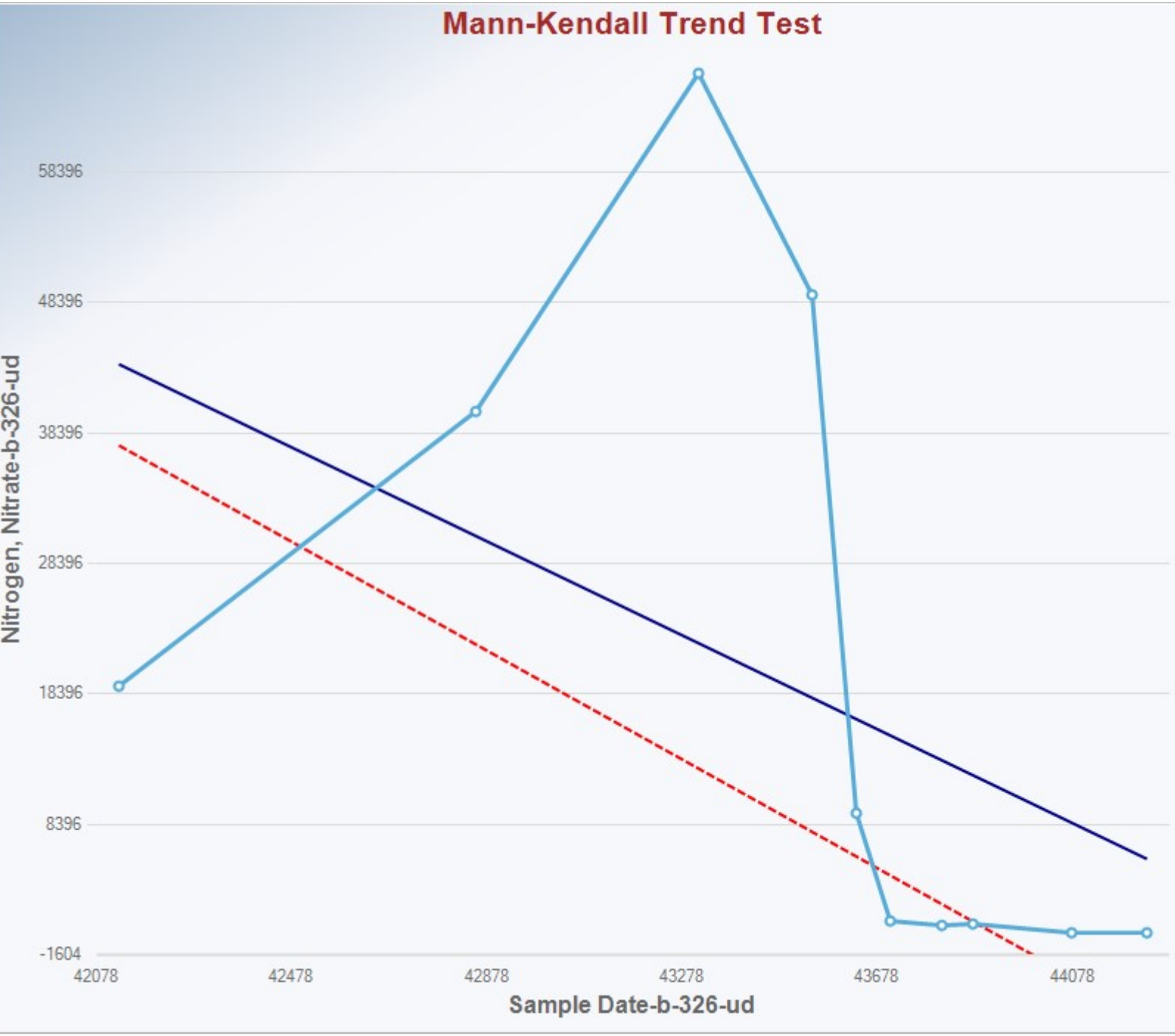
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	45
Maximum	66000
Mean	18581
Geometric Mean	2735
Median	5145
Standard Deviation	24390
Coefficient of Variation	1.313

Mann-Kendall Test

M-K Test Value (S)	-32
Tabulated p-value	0.001
Standard Deviation of S	11.14
Standardized Value of S	-2.784
Approximate p-value	0.00269

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-2.7839
M-K Test Value (S)	-32
Tabulated p-value	0.0010
Approximate p-value	0.0027

OLS Regression Line (Blue)

OLS Regression Slope	-17.9985
OLS Regression Intercept	801,804.6923

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-20.8916
Theil-Sen Intercept	917,441.4786

Statistically significant evidence of a decreasing trend at the specified level of significance.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:21:04 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-b-326-wd

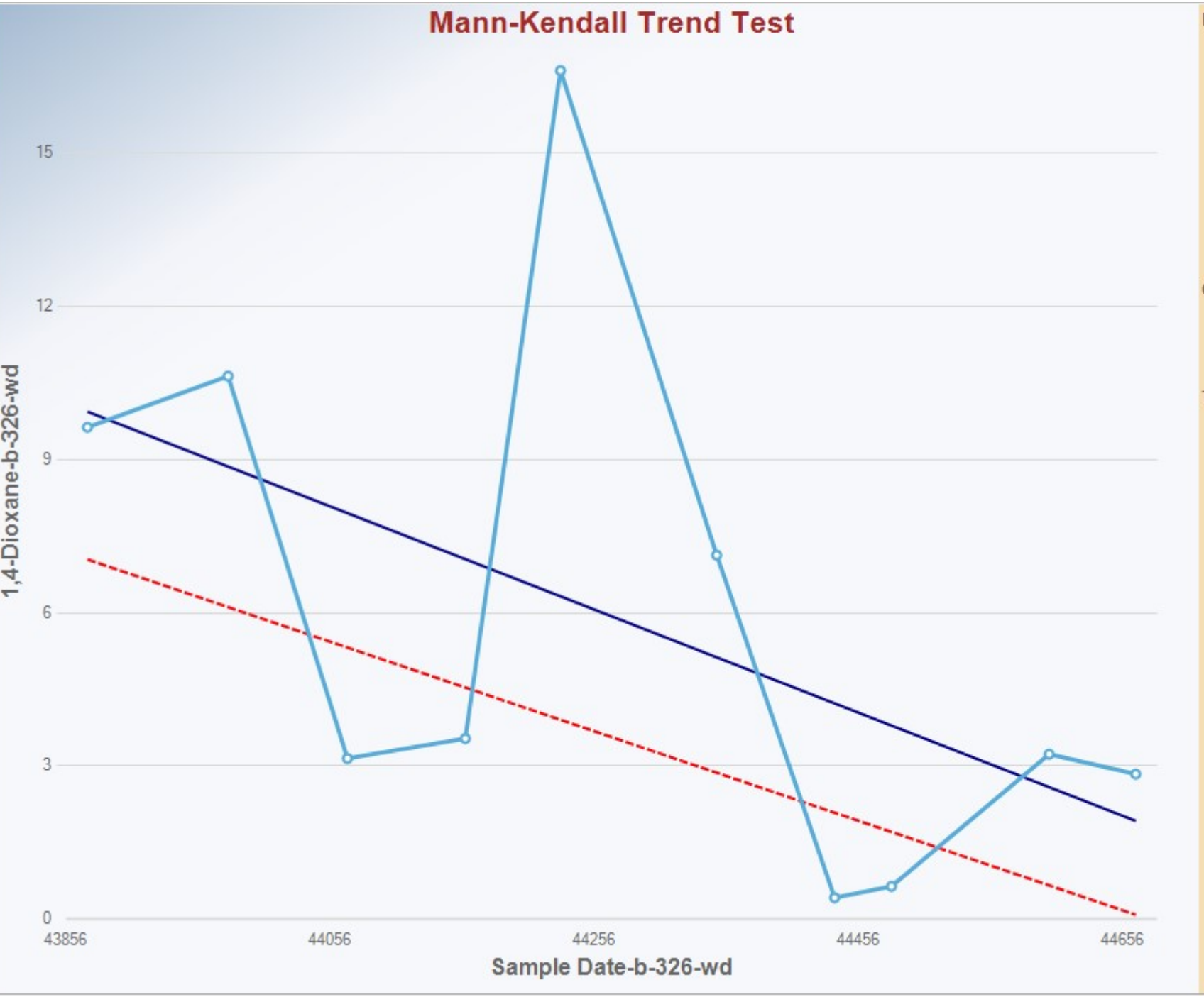
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.77
Maximum	17
Mean	6.147
Geometric Mean	4.198
Median	3.75
Standard Deviation	5.171
Coefficient of Variation	0.841

Mann-Kendall Test

M-K Test Value (S)	-17
Tabulated p-value	0.078
Standard Deviation of S	11.18
Standardized Value of S	-1.431
Approximate p-value	0.0762

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.4311
M-K Test Value (S)	-17
Tabulated p-value	0.0780
Approximate p-value	0.0762

OLS Regression Line (Blue)

OLS Regression Slope	-0.0101
OLS Regression Intercept	455.5521

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0088
Theil-Sen Intercept	393.6394

Insufficient statistical evidence of a significant trend at the specified level of significance.

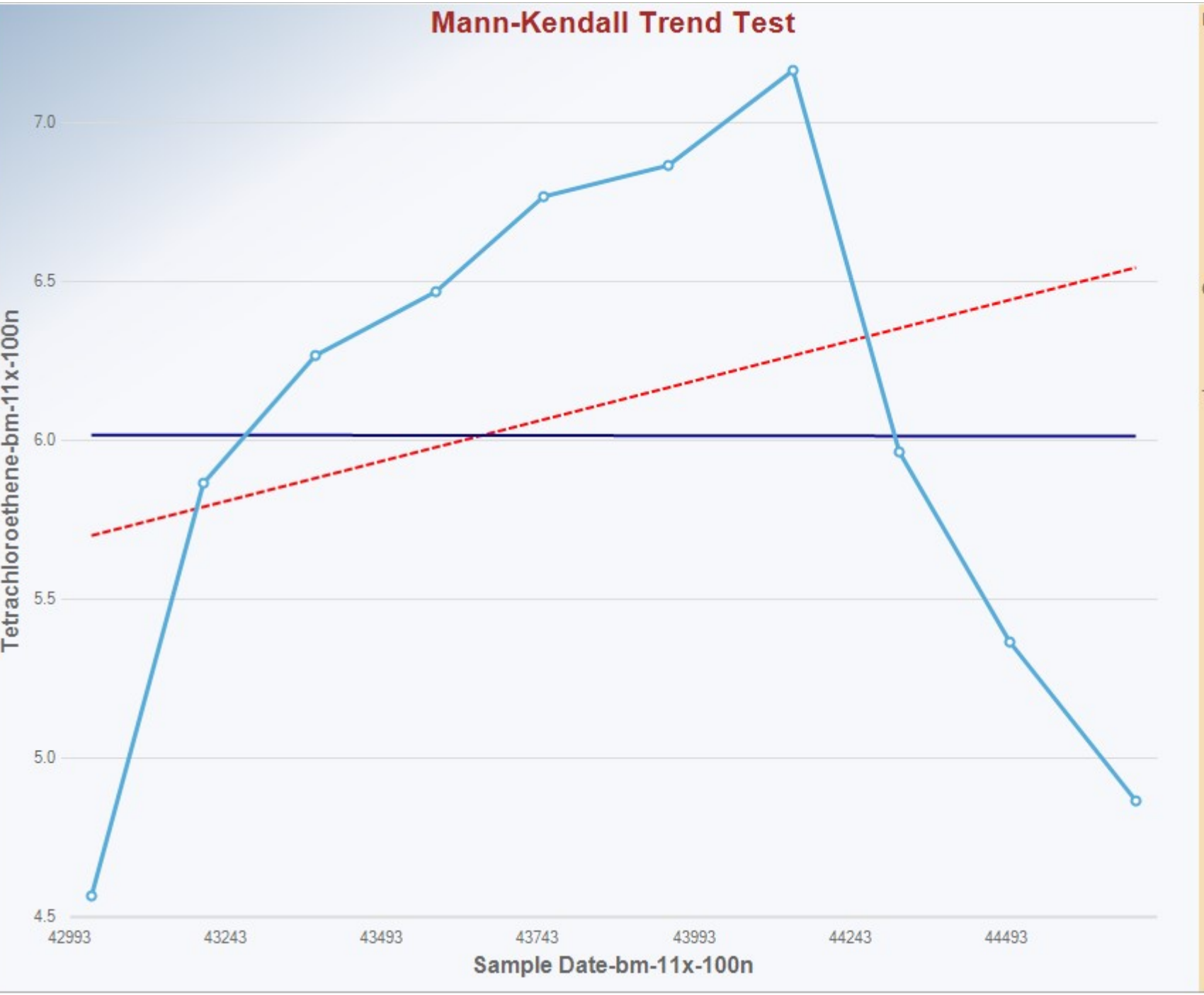
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:32:58 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK_e.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Tetrachloroethene-bm-11x-100n

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	4.6
Maximum	7.2
Mean	6.05
Geometric Mean	5.991
Median	6.15
Standard Deviation	0.866
Coefficient of Variation	0.143

Mann-Kendall Test	
M-K Test Value (S)	5
Tabulated p-value	0.364
Standard Deviation of S	11.18
Standardized Value of S	0.358
Approximate p-value	0.36

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.3578
M-K Test Value (S)	5
Tabulated p-value	0.3640
Approximate p-value	0.3603

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	6.2392

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0005
Theil-Sen Intercept	-15.8859

Insufficient statistical evidence of a significant trend at the specified level of significance.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:18:09 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK_f.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Trichloroethene-bm-11x-100n

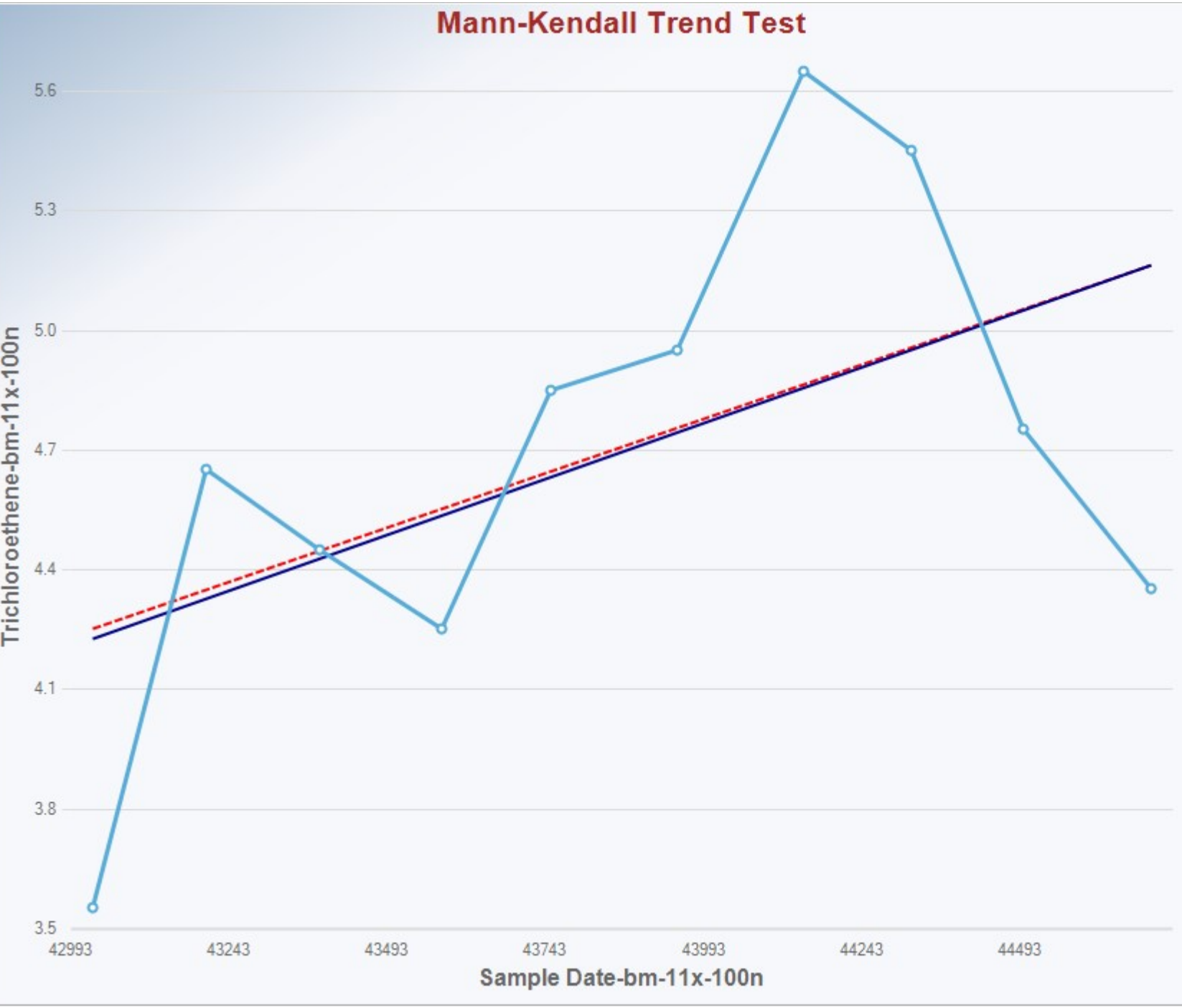
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	3.6
Maximum	5.7
Mean	4.74
Geometric Mean	4.705
Median	4.75
Standard Deviation	0.602
Coefficient of Variation	0.127

Mann-Kendall Test

M-K Test Value (S)	15
Tabulated p-value	0.108
Standard Deviation of S	11.18
Standardized Value of S	1.252
Approximate p-value	0.105

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.2522
M-K Test Value (S)	15
Tabulated p-value	0.1080
Approximate p-value	0.1052

OLS Regression Line (Blue)

OLS Regression Slope	0.0006
OLS Regression Intercept	-19.9074

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0005
Theil-Sen Intercept	-19.1083

Insufficient statistical evidence of a significant trend at the specified level of significance.

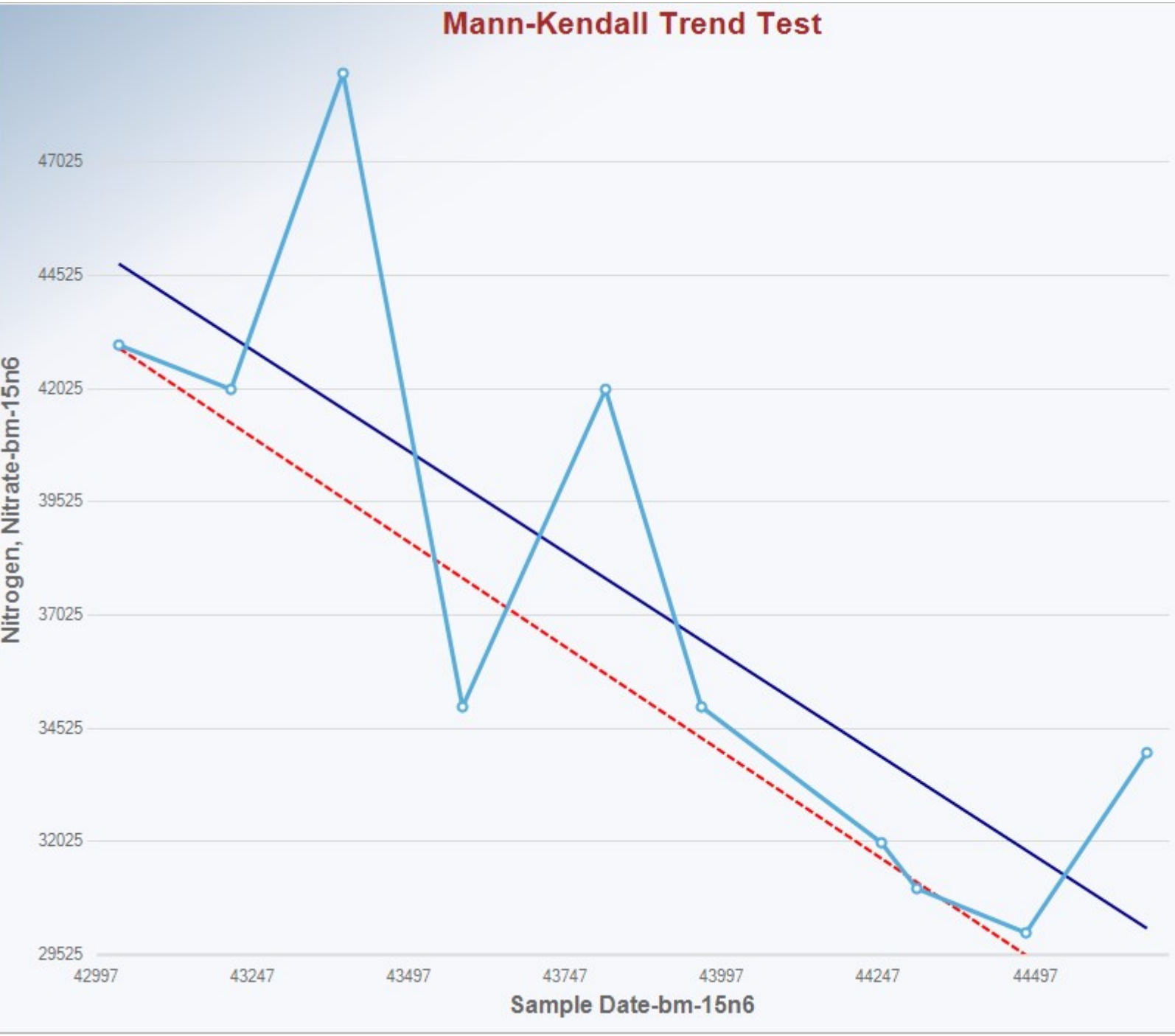
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:29:40 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-bm-15n6

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	30000
Maximum	49000
Mean	37300
Geometric Mean	36842
Median	35000
Standard Deviation	6290
Coefficient of Variation	0.169

Mann-Kendall Test	
M-K Test Value (S)	-31
Tabulated p-value	0.002
Standard Deviation of S	11.09
Standardized Value of S	-2.705
Approximate p-value	0.00342

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	-2.7050
M-K Test Value (S)	-31
Tabulated p-value	0.0020
Approximate p-value	0.0034

OLS Regression Line (Blue)

OLS Regression Slope	-8.9358
OLS Regression Intercept	429,321.2459

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-9.2486
Theil-Sen Intercept	440,895.9538

Statistically significant evidence of a decreasing trend at the specified level of significance.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:21:04 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw23-c-sd

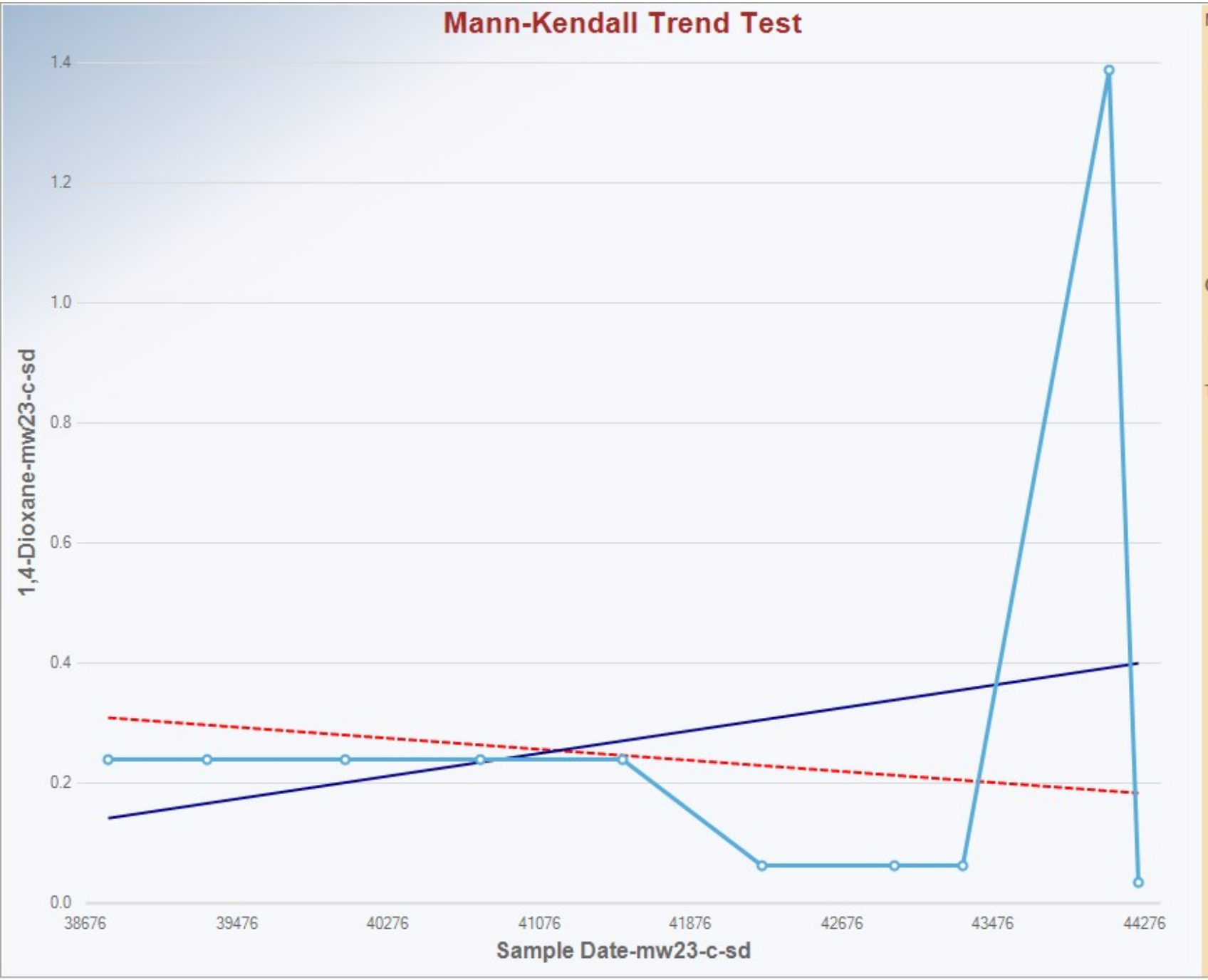
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.045
Maximum	1.4
Mean	0.292
Geometric Mean	0.174
Median	0.25
Standard Deviation	0.4
Coefficient of Variation	1.369

Mann-Kendall Test

M-K Test Value (S)	-16
Tabulated p-value	0.078
Standard Deviation of S	10.23
Standardized Value of S	-1.466
Approximate p-value	0.0713

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	10.2307
Standardized Value of S	-1.4662
M-K Test Value (S)	-16
Tabulated p-value	0.0780
Approximate p-value	0.0713

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	-1.6682

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	1.2187

Insufficient statistical evidence of a significant trend at the specified level of significance.

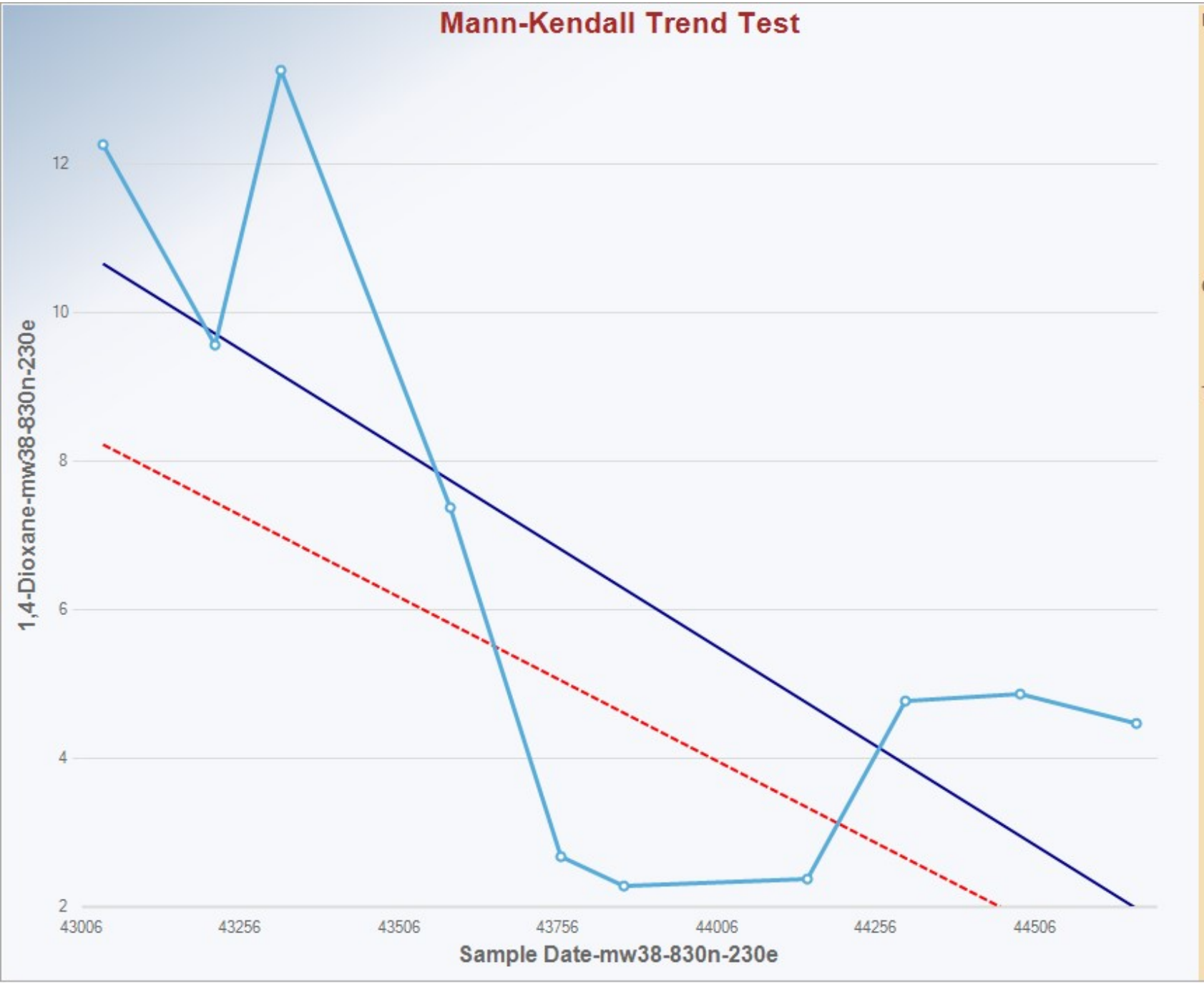
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:21:04 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw38-830n-230e

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	2
Maximum	13
Mean	6.12
Geometric Mean	4.961
Median	4.55
Standard Deviation	4.063
Coefficient of Variation	0.664

Mann-Kendall Test	
M-K Test Value (S)	-19
Tabulated p-value	0.054
Standard Deviation of S	11.18
Standardized Value of S	-1.61
Approximate p-value	0.0537

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.6100
M-K Test Value (S)	-19
Tabulated p-value	0.0540
Approximate p-value	0.0537

OLS Regression Line (Blue)

OLS Regression Slope	-0.0054
OLS Regression Intercept	240.8533

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0044
Theil-Sen Intercept	198.3594

Insufficient statistical evidence of a significant trend at the specified level of significance.

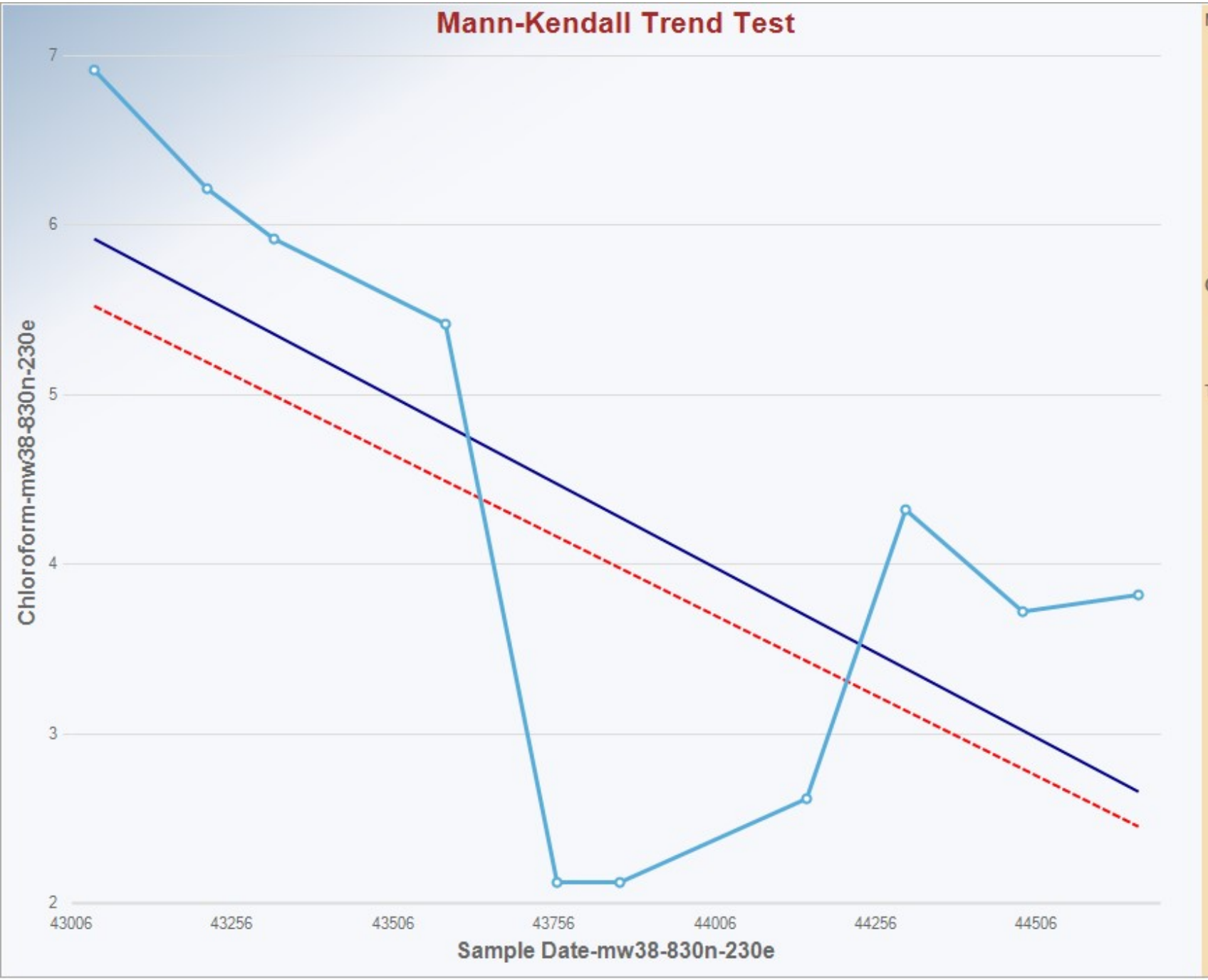
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:28:23 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK_b.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Chloroform-mw38-830n-230e

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	2.1
Maximum	6.9
Mean	4.3
Geometric Mean	3.959
Median	4.05
Standard Deviation	1.742
Coefficient of Variation	0.405

Mann-Kendall Test	
M-K Test Value (S)	-20
Tabulated p-value	0.036
Standard Deviation of S	11.14
Standardized Value of S	-1.706
Approximate p-value	0.044

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-1.7063
M-K Test Value (S)	-20
Tabulated p-value	0.0360
Approximate p-value	0.0440

OLS Regression Line (Blue)

OLS Regression Slope	-0.0020
OLS Regression Intercept	92.2838

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0019
Theil-Sen Intercept	87.0771

Statistically significant evidence of a decreasing trend at the specified level of significance.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:21:04 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw62-wdr

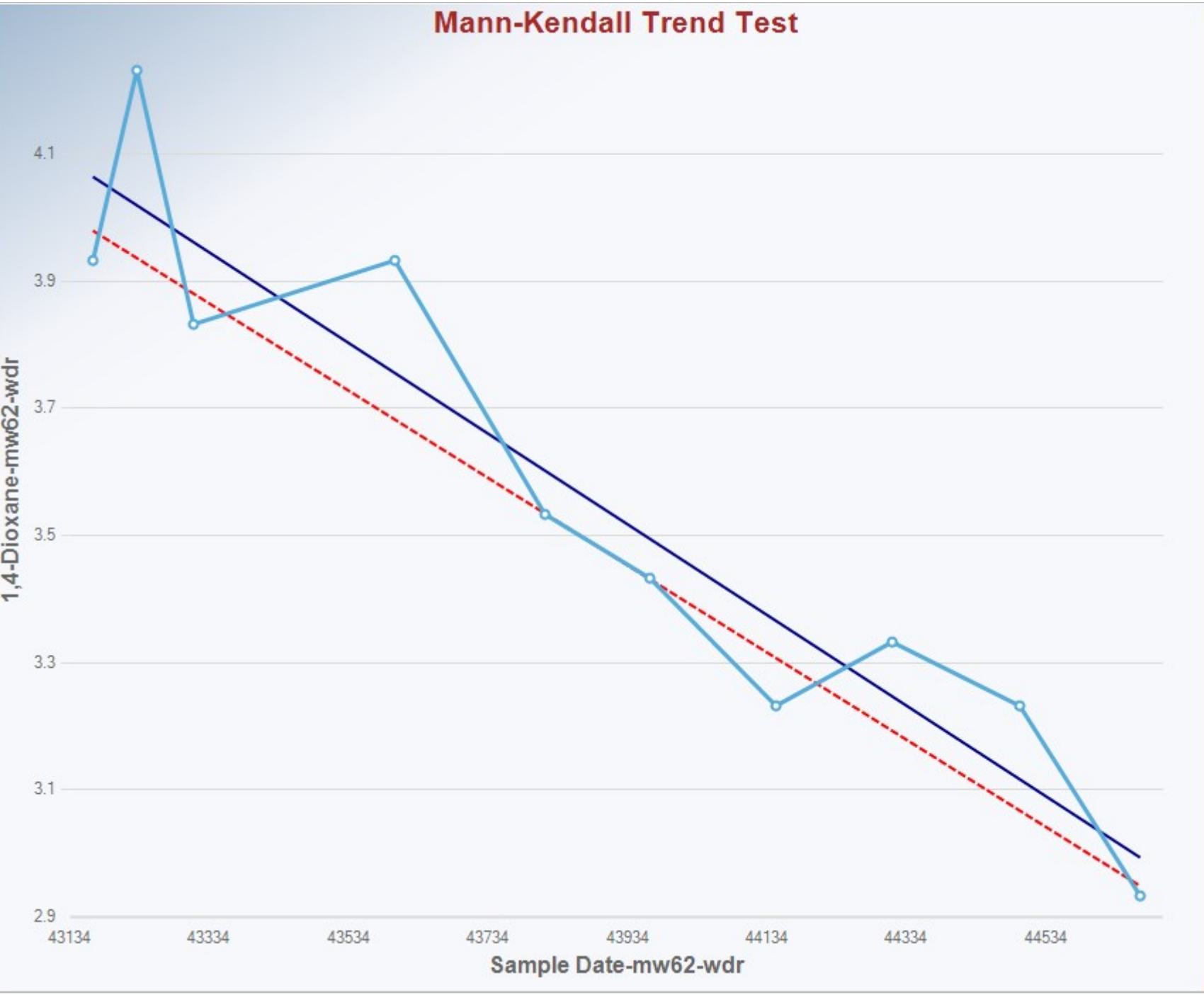
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	2.9
Maximum	4.2
Mean	3.53
Geometric Mean	3.509
Median	3.45
Standard Deviation	0.406
Coefficient of Variation	0.115

Mann-Kendall Test

M-K Test Value (S)	-37
Tabulated p-value	0
Standard Deviation of S	11.09
Standardized Value of S	-3.246
Approximate p-value	5.8517E-4

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	-3.2460
M-K Test Value (S)	-37
Tabulated p-value	0.0000
Approximate p-value	0.0006

OLS Regression Line (Blue)

OLS Regression Slope	-0.0007
OLS Regression Intercept	34.7469

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0007
Theil-Sen Intercept	33.5120

Statistically significant evidence of a decreasing trend at the specified level of significance.

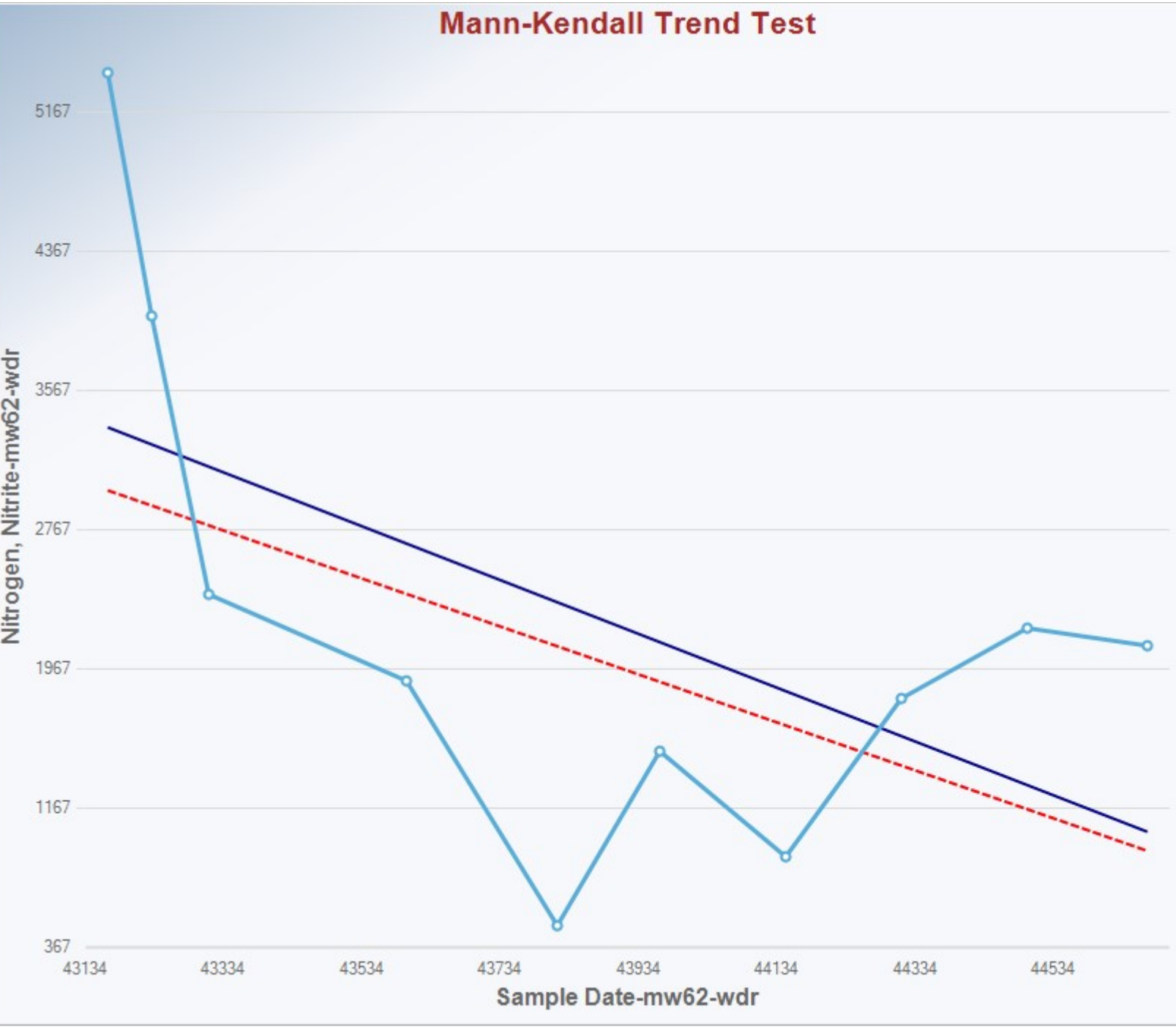
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:32:04 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK_d.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrite-mw62-wdr

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	490
Maximum	5400
Mean	2268
Geometric Mean	1875
Median	2000
Standard Deviation	1448
Coefficient of Variation	0.638

Mann-Kendall Test	
M-K Test Value (S)	-15
Tabulated p-value	0.108
Standard Deviation of S	11.18
Standardized Value of S	-1.252
Approximate p-value	0.105

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.2522
M-K Test Value (S)	-15
Tabulated p-value	0.1080
Approximate p-value	0.1052

OLS Regression Line (Blue)

OLS Regression Slope	-1.5459
OLS Regression Intercept	70,087.0966

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1.3783
Theil-Sen Intercept	62,492.2665

Insufficient statistical evidence of a significant trend at the specified level of significance.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:29:40 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-mw62-wdr

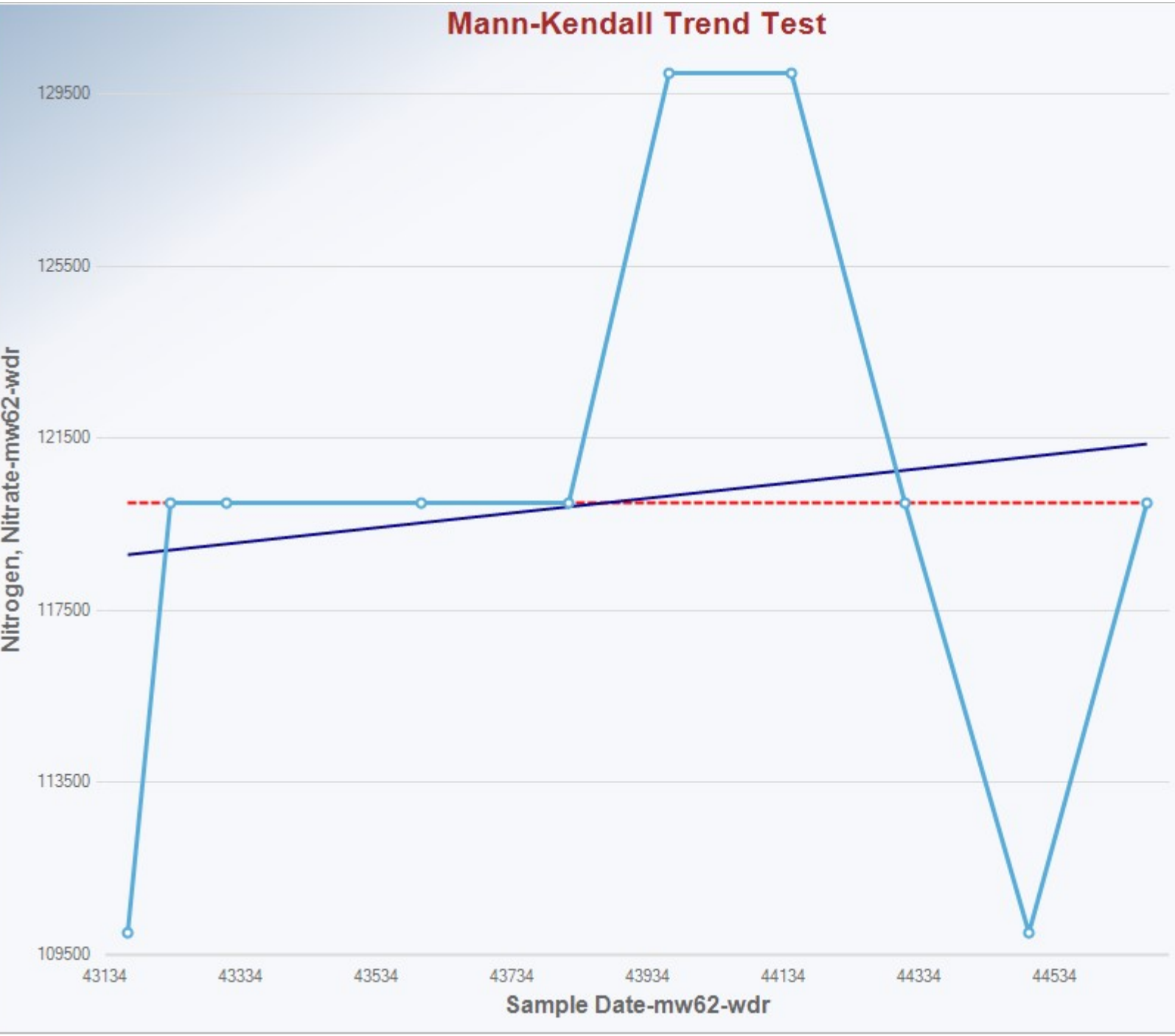
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	110000
Maximum	130000
Mean	120000
Geometric Mean	119833
Median	120000
Standard Deviation	6667
Coefficient of Variation	0.0556

Mann-Kendall Test

M-K Test Value (S)	6
Tabulated p-value	0.3
Standard Deviation of S	9.73
Standardized Value of S	0.514
Approximate p-value	0.304

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.7297
Standardized Value of S	0.5139
M-K Test Value (S)	6
Tabulated p-value	0.3000
Approximate p-value	0.3037

OLS Regression Line (Blue)

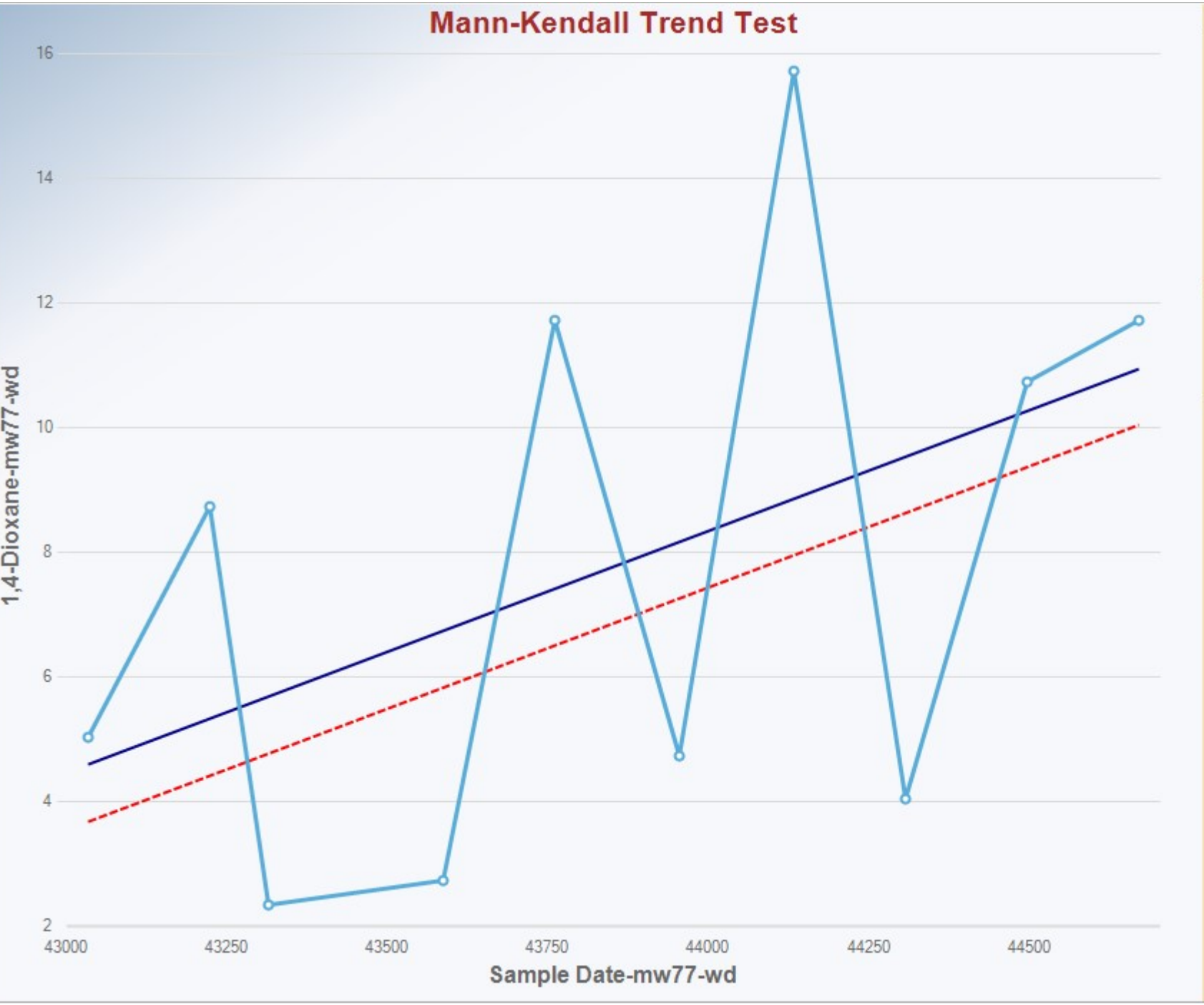
OLS Regression Slope	1.7228
OLS Regression Intercept	44,419.2108

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	120,000.0000

Insufficient statistical evidence of a significant trend at the specified level of significance.

1				**Mann-Kendall Trend Test Analysis**								
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.2 8/5/2022 8:21:04 AM								
4			From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	0.95								
7			Level of Significance	0.05								
8												
201			**1,4-Dioxane-mw77-wd**									
202												
203			**General Statistics**									
204			Number of Events Reported (m)	10								
205			Number of Missing Events	0								
206			Number or Reported Events Used	10								
207			Number Values Reported (n)	10								
208			Minimum	2.6								
209			Maximum	16								
210			Mean	8.02								
211			Geometric Mean	6.772								
212			Median	7.15								
213			Standard Deviation	4.596								
214			Coefficient of Variation	0.573								
215												
216			**Mann-Kendall Test**									
217			M-K Test Value (S)	14								
218			Tabulated p-value	0.108								
219			Standard Deviation of S	11.14								
220			Standardized Value of S	1.167								
221			Approximate p-value	0.122								
222												
223	**Insufficient evidence to identify a significant**											
224	**trend at the specified level of significance.**											



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	1.1674
M-K Test Value (S)	14
Tabulated p-value	0.1080
Approximate p-value	0.1215

OLS Regression Line (Blue)

OLS Regression Slope	0.0039
OLS Regression Intercept	-161.8531

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0039
Theil-Sen Intercept	-163.8403

Insufficient statistical evidence of a significant trend at the specified level of significance.

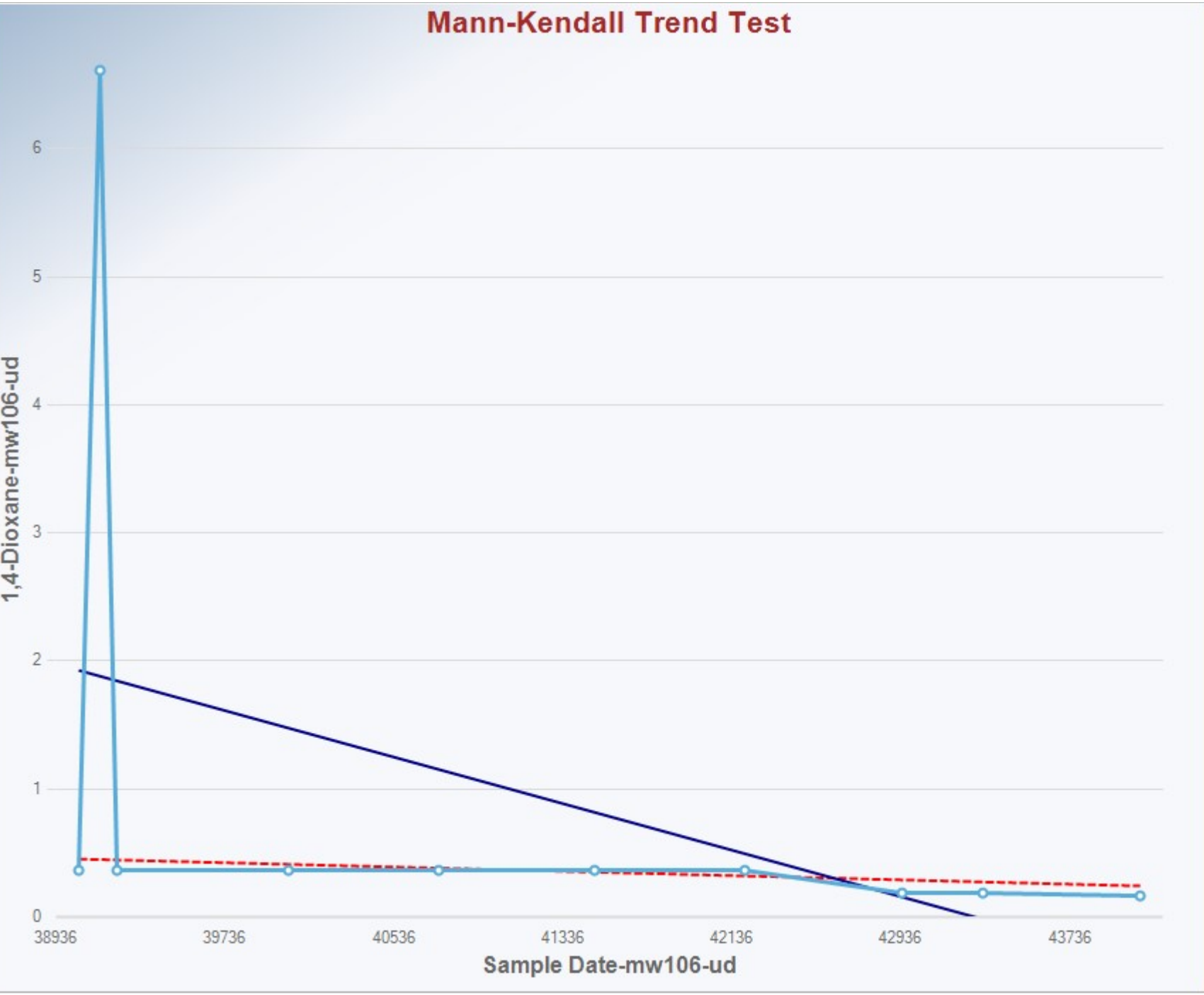
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 8:21:04 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS for MK.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw106-ud

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.045
Maximum	6.5
Mean	0.82
Geometric Mean	0.229
Median	0.25
Standard Deviation	1.998
Coefficient of Variation	2.438

Mann-Kendall Test	
M-K Test Value (S)	-27
Tabulated p-value	0.008
Standard Deviation of S	9.781
Standardized Value of S	-2.658
Approximate p-value	0.00393

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.7809
Standardized Value of S	-2.6582
M-K Test Value (S)	-27
Tabulated p-value	0.0080
Approximate p-value	0.0039

OLS Regression Line (Blue)

OLS Regression Slope	-0.0005
OLS Regression Intercept	19.6635

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	2.0076

Statistically significant evidence of a decreasing trend at the specified level of significance.

APPENDIX C-3.3

COMPLIANCE EVALUATION STATISTICAL TESTING

Goodness-of-Fit Testing

	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:23:05 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

1,4-Dioxane (b-326-wd)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	0.77
Maximum	17
Mean of Raw Data	6.147
Standard Deviation of Raw Data	5.171
Khat	1.455
Theta hat	4.225
Kstar	1.085
Theta star	5.665
Mean of Log Transformed Data	1.435
Standard Deviation of Log Transformed Data	1.002

Normal GOF Test Results

Correlation Coefficient R	0.939
Shapiro Wilk Test Statistic	0.881
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.133
Lilliefors Test Statistic	0.268
Lilliefors Critical (0.05) Value	0.262

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.987
A-D Test Statistic	0.302
A-D Critical (0.05) Value	0.74
K-S Test Statistic	0.188
K-S Critical(0.05) Value	0.271

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.528
Lilliefors Test Statistic	0.193
Lilliefors Critical (0.05) Value	0.262

Data appear Lognormal at (0.05) Significance Level

	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:33:08 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_e.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

Tetrachloroethene (bm-11x-100n)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	4.6
Maximum	7.2
Mean of Raw Data	6.05
Standard Deviation of Raw Data	0.866
Khat	51.55
Theta hat	0.117
Kstar	36.15
Theta star	0.167
Mean of Log Transformed Data	1.79
Standard Deviation of Log Transformed Data	0.149

Normal GOF Test Results	
Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.812
Lilliefors Test Statistic	0.131
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.973
A-D Test Statistic	0.291
A-D Critical (0.05) Value	0.724
K-S Test Statistic	0.147
K-S Critical(0.05) Value	0.266

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.597
Lilliefors Test Statistic	0.159
Lilliefors Critical (0.05) Value	0.262

Data appear Lognormal at (0.05) Significance Level

	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:34:15 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_f.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

Trichloroethene (bm-11x-100n)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	3.6
Maximum	5.7
Mean of Raw Data	4.74
Standard Deviation of Raw Data	0.602
Khat	66.77
Theta hat	0.071
Kstar	46.8
Theta star	0.101
Mean of Log Transformed Data	1.549
Standard Deviation of Log Transformed Data	0.13

Normal GOF Test Results	
Correlation Coefficient R	0.982
Shapiro Wilk Test Statistic	0.972
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.851
Lilliefors Test Statistic	0.133
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.98
A-D Test Statistic	0.22
A-D Critical (0.05) Value	0.724
K-S Test Statistic	0.129
K-S Critical(0.05) Value	0.266

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.68
Lilliefors Test Statistic	0.145
Lilliefors Critical (0.05) Value	0.262

Data appear Lognormal at (0.05) Significance Level

	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:23:05 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

1,4-Dioxane (mw38-830n-230e)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	2
Maximum	13
Mean of Raw Data	6.12
Standard Deviation of Raw Data	4.063
Khat	2.535
Theta hat	2.414
Kstar	1.841
Theta star	3.324
Mean of Log Transformed Data	1.602
Standard Deviation of Log Transformed Data	0.697

Normal GOF Test Results	
Correlation Coefficient R	0.946
Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.165
Lilliefors Test Statistic	0.246
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.971
A-D Test Statistic	0.38
A-D Critical (0.05) Value	0.734
K-S Test Statistic	0.187
K-S Critical(0.05) Value	0.269

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.972
Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.511
Lilliefors Test Statistic	0.151
Lilliefors Critical (0.05) Value	0.262

Data appear Lognormal at (0.05) Significance Level

	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:30:35 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_d.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

Nitrogen, Nitrite (mw62-wdr)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	890
Maximum	5400
Mean of Raw Data	2317
Standard Deviation of Raw Data	1388
Khat	3.665
Theta hat	632.2
Kstar	2.632
Theta star	880.2
Mean of Log Transformed Data	7.605
Standard Deviation of Log Transformed Data	0.555

Normal GOF Test Results	
Correlation Coefficient R	0.916
Shapiro Wilk Test Statistic	0.847
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.045
Lilliefors Test Statistic	0.276
Lilliefors Critical (0.05) Value	0.262

Data appear Approximate Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.971
A-D Test Statistic	0.361
A-D Critical (0.05) Value	0.73
K-S Test Statistic	0.204
K-S Critical(0.05) Value	0.268

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.978
Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.721
Lilliefors Test Statistic	0.174
Lilliefors Critical (0.05) Value	0.262

Data appear Lognormal at (0.05) Significance Level

	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:27:15 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

Nitrogen, Nitrate (mw62-wdr)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	3
Minimum	110000
Maximum	130000
Mean of Raw Data	120000
Standard Deviation of Raw Data	6667
Khat	358.9
Theta hat	334.3
Kstar	251.3
Theta star	477.5
Mean of Log Transformed Data	11.69
Standard Deviation of Log Transformed Data	0.0557

Normal GOF Test Results	
Correlation Coefficient R	0.903
Shapiro Wilk Test Statistic	0.815
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.0222
Lilliefors Test Statistic	0.3
Lilliefors Critical (0.05) Value	0.262

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.904
A-D Test Statistic	1.034
A-D Critical (0.05) Value	0.724
K-S Test Statistic	0.307
K-S Critical(0.05) Value	0.266

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results	
Correlation Coefficient R	0.902
Shapiro Wilk Test Statistic	0.815
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.0217
Lilliefors Test Statistic	0.31
Lilliefors Critical (0.05) Value	0.262

Data not Lognormal at (0.05) Significance Level

Non-parametric GOF Test Results

Data do not follow a discernible distribution at (0.05) Level of Significance

	Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:23:05 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

1,4-Dioxane (mw77-wd)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	2.6
Maximum	16
Mean of Raw Data	8.02
Standard Deviation of Raw Data	4.596
Khat	3.112
Theta hat	2.577
Kstar	2.245
Theta star	3.572
Mean of Log Transformed Data	1.913
Standard Deviation of Log Transformed Data	0.637

Normal GOF Test Results

Correlation Coefficient R	0.964
Shapiro Wilk Test Statistic	0.914
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.389
Lilliefors Test Statistic	0.223
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.965
A-D Test Statistic	0.4
A-D Critical (0.05) Value	0.732
K-S Test Statistic	0.187
K-S Critical(0.05) Value	0.268

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.971
Shapiro Wilk Test Statistic	0.925
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.52
Lilliefors Test Statistic	0.177
Lilliefors Critical (0.05) Value	0.262

Data appear Lognormal at (0.05) Significance Level

APPENDIX C-3.4

COMPLIANCE EVALUATION STATISTICAL TESTING

Outlier Testing

Outlier Tests for Selected Uncensored Variables		
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 9:47:15 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls	
Full Precision	OFF	

Dixon's Outlier Test for 1,4-Dioxane (b-326-ud)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 7.7 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.258

For 10% significance level, 7.7 is not an outlier.

For 5% significance level, 7.7 is not an outlier.

For 1% significance level, 7.7 is not an outlier.

2. Observation Value 4.5 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.042

For 10% significance level, 4.5 is not an outlier.

For 5% significance level, 4.5 is not an outlier.

For 1% significance level, 4.5 is not an outlier.

		Outlier Tests for Selected Variables replacing nondetects with 1/2 the Detection Limit
	User Selected Options	
Date/Time of Computation	ProUCL 5.2 8/5/2022 9:31:24 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_c.xls	
Full Precision	OFF	

Dixon's Outlier Test for Nitrogen, Nitrate (b-326-ud)

Total N = 10
Number NDs = 2
Number Detects = 8
Number Data (n) = 10
10% critical value: 0.409
5% critical value: 0.477
1% critical value: 0.597
Note: NDs replaced by DL/2 in Outlier Test

1. Data Value 66000 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.258

For 10% significance level, 66000 is not an outlier.
For 5% significance level, 66000 is not an outlier.
For 1% significance level, 66000 is not an outlier.

2. Data Value 45 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.000

For 10% significance level, 45 is not an outlier.
For 5% significance level, 45 is not an outlier.
For 1% significance level, 45 is not an outlier.

1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation	ProUCL 5.2 8/5/2022 9:47:15 AM								
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls							
5				Full Precision	OFF							
6												
55												
56				**Dixon's Outlier Test for 1,4-Dioxane (b-326-wd)**								
57												
58	Number of Observations = 10											
59	10% critical value: 0.409											
60	5% critical value: 0.477											
61	1% critical value: 0.597											
62												
63	**1. Observation Value 17 is a Potential Outlier (Upper Tail)?**											
64												
65	Test Statistic: 0.375											
66												
67	For 10% significance level, 17 is not an outlier.											
68	For 5% significance level, 17 is not an outlier.											
69	For 1% significance level, 17 is not an outlier.											
70												
71	**2. Observation Value 0.77 is a Potential Outlier (Lower Tail)?**											
72												
73	Test Statistic: 0.022											
74												
75	For 10% significance level, 0.77 is not an outlier.											
76	For 5% significance level, 0.77 is not an outlier.											
77	For 1% significance level, 0.77 is not an outlier.											
78												
79												

1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation	ProUCL 5.2 8/5/2022 9:50:22 AM								
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_e.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for Tetrachloroethene (bm-11x-100n)**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 7.2 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.130											
18												
19	For 10% significance level, 7.2 is not an outlier.											
20	For 5% significance level, 7.2 is not an outlier.											
21	For 1% significance level, 7.2 is not an outlier.											
22												
23	**2. Observation Value 4.6 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.130											
26												
27	For 10% significance level, 4.6 is not an outlier.											
28	For 5% significance level, 4.6 is not an outlier.											
29	For 1% significance level, 4.6 is not an outlier.											
30												

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 9:50:58 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_f.xls	
Full Precision	OFF	

Dixon's Outlier Test for Trichloroethene (bm-11x-100n)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 5.7 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.143

For 10% significance level, 5.7 is not an outlier.

For 5% significance level, 5.7 is not an outlier.

For 1% significance level, 5.7 is not an outlier.

2. Observation Value 3.6 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.368

For 10% significance level, 3.6 is not an outlier.

For 5% significance level, 3.6 is not an outlier.

For 1% significance level, 3.6 is not an outlier.

1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation	ProUCL 5.2	8/5/2022 9:51:31 AM							
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_c.xls							
5				Full Precision	OFF							
6												
7												
55												
56				**Dixon's Outlier Test for Nitrogen, Nitrate (bm-15n6)**								
57												
58	Number of Observations = 10											
59	10% critical value: 0.409											
60	5% critical value: 0.477											
61	1% critical value: 0.597											
62												
63	**1. Observation Value 49000 is a Potential Outlier (Upper Tail)?**											
64												
65	Test Statistic: 0.333											
66												
67	For 10% significance level, 49000 is not an outlier.											
68	For 5% significance level, 49000 is not an outlier.											
69	For 1% significance level, 49000 is not an outlier.											
70												
71	**2. Observation Value 30000 is a Potential Outlier (Lower Tail)?**											
72												
73	Test Statistic: 0.077											
74												
75	For 10% significance level, 30000 is not an outlier.											
76	For 5% significance level, 30000 is not an outlier.											
77	For 1% significance level, 30000 is not an outlier.											
78												
79												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation	ProUCL 5.2 8/5/2022 9:47:15 AM								
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls							
5				Full Precision	OFF							
6												
127												
128	**Dixon's Outlier Test for 1,4-Dioxane (mw23-c-sd)**											
129												
130	Number of Observations = 10											
131	10% critical value: 0.409											
132	5% critical value: 0.477											
133	1% critical value: 0.597											
134												
135	**1. Observation Value 1.4 is a Potential Outlier (Upper Tail)?**											
136												
137	Test Statistic: 0.720											
138												
139	For 10% significance level, 1.4 is an outlier.											
140	For 5% significance level, 1.4 is an outlier.											
141	For 1% significance level, 1.4 is an outlier.											
142												
143	**2. Observation Value 0.09 is a Potential Outlier (Lower Tail)?**											
144												
145	Test Statistic: 0.146											
146												
147	For 10% significance level, 0.09 is not an outlier.											
148	For 5% significance level, 0.09 is not an outlier.											
149	For 1% significance level, 0.09 is not an outlier.											
150												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.2 8/5/2022 9:47:15 AM							
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls							
5				Full Precision	OFF							
6												
151												
152	**Dixon's Outlier Test for 1,4-Dioxane (mw38-830n-230e)**											
153												
154	Number of Observations = 10											
155	10% critical value: 0.409											
156	5% critical value: 0.477											
157	1% critical value: 0.597											
158												
159	**1. Observation Value 13 is a Potential Outlier (Upper Tail)?**											
160												
161	Test Statistic: 0.092											
162												
163	For 10% significance level, 13 is not an outlier.											
164	For 5% significance level, 13 is not an outlier.											
165	For 1% significance level, 13 is not an outlier.											
166												
167	**2. Observation Value 2 is a Potential Outlier (Lower Tail)?**											
168												
169	Test Statistic: 0.010											
170												
171	For 10% significance level, 2 is not an outlier.											
172	For 5% significance level, 2 is not an outlier.											
173	For 1% significance level, 2 is not an outlier.											
174												

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 9:52:36 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_b.xls	
Full Precision	OFF	

Dixon's Outlier Test for Chloroform (mw38-830n-230e)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 6.9 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.146

For 10% significance level, 6.9 is not an outlier.

For 5% significance level, 6.9 is not an outlier.

For 1% significance level, 6.9 is not an outlier.

2. Observation Value 2.1 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.000

For 10% significance level, 2.1 is not an outlier.

For 5% significance level, 2.1 is not an outlier.

For 1% significance level, 2.1 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.2 8/5/2022 9:47:15 AM							
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls							
5				Full Precision	OFF							
6												
175												
176				**Dixon's Outlier Test for 1,4-Dioxane (mw62-wdr)**								
177												
178	Number of Observations = 10											
179	10% critical value: 0.409											
180	5% critical value: 0.477											
181	1% critical value: 0.597											
182												
183	**1. Observation Value 4.2 is a Potential Outlier (Upper Tail)?**											
184												
185	Test Statistic: 0.300											
186												
187	For 10% significance level, 4.2 is not an outlier.											
188	For 5% significance level, 4.2 is not an outlier.											
189	For 1% significance level, 4.2 is not an outlier.											
190												
191	**2. Observation Value 2.9 is a Potential Outlier (Lower Tail)?**											
192												
193	Test Statistic: 0.300											
194												
195	For 10% significance level, 2.9 is not an outlier.											
196	For 5% significance level, 2.9 is not an outlier.											
197	For 1% significance level, 2.9 is not an outlier.											
198												

		Outlier Tests for Selected Variables replacing nondetects with 1/2 the Detection Limit
	User Selected Options	
Date/Time of Computation	ProUCL 5.2 8/5/2022 9:30:27 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_d.xls	
Full Precision	OFF	

Dixon's Outlier Test for Nitrogen, Nitrite (mw62-wdr)

Total N = 10
Number NDs = 1
Number Detects = 9
Number Data (n) = 10
10% critical value: 0.409
5% critical value: 0.477
1% critical value: 0.597
Note: NDs replaced by DL/2 in Outlier Test

1. Data Value 5400 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.310

For 10% significance level, 5400 is not an outlier.
For 5% significance level, 5400 is not an outlier.
For 1% significance level, 5400 is not an outlier.

2. Data Value 490 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.114

For 10% significance level, 490 is not an outlier.
For 5% significance level, 490 is not an outlier.
For 1% significance level, 490 is not an outlier.

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.2	8/5/2022 9:51:31 AM
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_c.xls	
Full Precision	OFF	

Dixon's Outlier Test for Nitrogen, Nitrate (mw62-wdr)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 130000 is a Potential Outlier (Upper Ta

Test Statistic: 0.000

For 10% significance level, 130000 is not an outlier.

For 5% significance level, 130000 is not an outlier.

For 1% significance level, 130000 is not an outlier.

2. Observation Value 110000 is a Potential Outlier (Lower Ta

Test Statistic: 0.000

For 10% significance level, 110000 is not an outlier.

For 5% significance level, 110000 is not an outlier.

For 1% significance level, 110000 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation		ProUCL 5.2 8/5/2022 9:47:15 AM							
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls							
5				Full Precision	OFF							
6												
199												
200				**Dixon's Outlier Test for 1,4-Dioxane (mw77-wd)**								
201												
202	Number of Observations = 10											
203	10% critical value: 0.409											
204	5% critical value: 0.477											
205	1% critical value: 0.597											
206												
207	**1. Observation Value 16 is a Potential Outlier (Upper Tail)?**											
208												
209	Test Statistic: 0.308											
210												
211	For 10% significance level, 16 is not an outlier.											
212	For 5% significance level, 16 is not an outlier.											
213	For 1% significance level, 16 is not an outlier.											
214												
215	**2. Observation Value 2.6 is a Potential Outlier (Lower Tail)?**											
216												
217	Test Statistic: 0.043											
218												
219	For 10% significance level, 2.6 is not an outlier.											
220	For 5% significance level, 2.6 is not an outlier.											
221	For 1% significance level, 2.6 is not an outlier.											
222												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation	ProUCL 5.2 8/5/2022 9:47:15 AM								
4				From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls							
5				Full Precision	OFF							
6												
103												
104	**Dixon's Outlier Test for 1,4-Dioxane (mw106-ud)**											
105												
106	Number of Observations = 10											
107	10% critical value: 0.409											
108	5% critical value: 0.477											
109	1% critical value: 0.597											
110												
111	**1. Observation Value 6.5 is a Potential Outlier (Upper Tail)?**											
112												
113	Test Statistic: 0.945											
114												
115	For 10% significance level, 6.5 is an outlier.											
116	For 5% significance level, 6.5 is an outlier.											
117	For 1% significance level, 6.5 is an outlier.											
118												
119	**2. Observation Value 0.09 is a Potential Outlier (Lower Tail)?**											
120												
121	Test Statistic: 0.146											
122												
123	For 10% significance level, 0.09 is not an outlier.											
124	For 5% significance level, 0.09 is not an outlier.											
125	For 1% significance level, 0.09 is not an outlier.											
126												

APPENDIX C-3.5

COMPLIANCE EVALUATION STATISTICAL TESTING

Linear Regression Analysis

B-326-UD 1,4-DIOXANE

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.11/24/2022 10:08:16 AM
From File	COMPLIANCE DATA 2H2021.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	True
Display Regresion Tables	True
Title For Y vs X Plots	Classical Regression
Confidence Level for Regression Line	0.9
Display Confidence Band	True
Display Prediction Band	True

Dependendant Variable (Y-Data)	1,4-Dioxane_b-326-ud
Number Reported (Y values)	10
Independent Variable (x-data)	Sample Date_b-326-ud
Number Reported (x-values)	10

Regression Estimates and Inference Table

Parameter	Estimates	Std. Error	T-values	p-values
intercept	173.6	19.5	8.902	2.0090E-5
mple Date_b-326	-0.00378	4.4030E-4	-8.591	2.6053E-5

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	9.044	1	9.044	73.8	0.0000
Error	0.98	8	0.123		
Total	10.02	9			

R Square	0.902
Adjusted R Square	0.89
Sqrt(MSE) = Scale	0.35

Regression Table

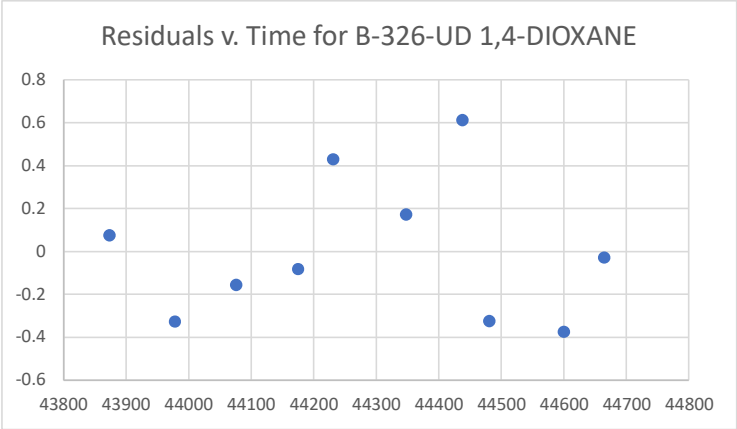
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	7.7	7.624	0.0759	0.217
2	6.9	7.227	-0.327	-0.934
3	6.7	6.856	-0.156	-0.446
4	6.4	6.482	-0.0818	-0.234
5	6.7	6.27	0.43	1.229
6	6	5.827	0.173	0.493
7	6.1	5.487	0.613	1.751
8	5	5.324	-0.324	-0.926
9	4.5	4.874	-0.374	-1.069
10	4.6	4.628	-0.0283	-0.0809

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	43873	7.7	7.624	0.213	0.41	7.228	8.02	6.862	8.386	0.0759
2	43978	6.9	7.227	0.175	0.391	6.901	7.553	6.499	7.955	-0.327
3	44076	6.7	6.856	0.144	0.379	6.588	7.125	6.152	7.56	-0.156

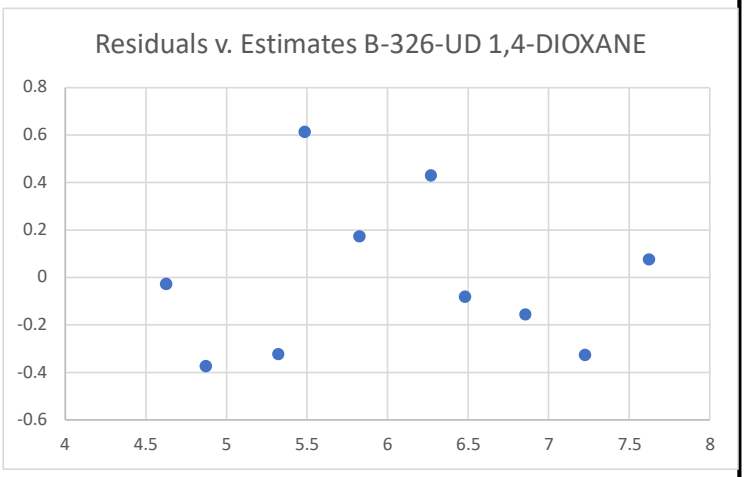
4	44175	6.4	6.482	0.121	0.37	6.257	6.707	5.793	7.171	-0.0818
5	44231	6.7	6.27	0.113	0.368	6.059	6.481	5.586	6.954	0.43
6	44348	6	5.827	0.114	0.368	5.615	6.039	5.143	6.512	0.173
7	44438	6.1	5.487	0.129	0.373	5.247	5.727	4.793	6.181	0.613
8	44481	5	5.324	0.14	0.377	5.064	5.585	4.623	6.025	-0.324
9	44600	4.5	4.874	0.177	0.392	4.545	5.203	4.145	5.604	-0.374
10	44665	4.6	4.628	0.2	0.403	4.256	5	3.879	5.378	-0.0283

X Vector	Residuals
43873	0.0759
43978	-0.327
44076	-0.156
44175	-0.0818
44231	0.43
44348	0.173
44438	0.613
44481	-0.324
44600	-0.374
44665	-0.0283



CONSTANT

Yhat	Residuals
7.624	0.0759
7.227	-0.327
6.856	-0.156
6.482	-0.0818
6.27	0.43
5.827	0.173
5.487	0.613
5.324	-0.324
4.874	-0.374
4.628	-0.0283



CONSTANT

Shapiro-Wilks Test for Normality

	Residuals	Residuals	Column C-l	Coeffiicien	
1	-0.374	0.613	0.987	0.5739	0.566439
2	-0.327	0.43	0.757	0.3291	0.249129
3	-0.324	0.173	0.497	0.2141	0.106408
4	-0.156	0.0759	0.2319	0.1224	0.028385
5	-0.0818	-0.0283	0.0535	0.0399	0.002135
6	-0.0283	-0.0818	-0.0535	b=	0.952495
7	0.0759	-0.156	-0.2319	StdDev=	0.265178
8	0.173	-0.324	-0.497	SW=	1.433532
9	0.43	-0.327	-0.757	Critical pt =	0.842 5%
10	0.613	-0.374	-0.987		

SW= Shapiro-Wilk Statistic

Assume Normal

B-326-UD NITRATE

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.11/24/2022 10:11:55 AM
From File	COMPLIANCE DATA 2H2021_b.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	True
Display Regresion Tables	True
Title For Y vs X Plots	Classical Regression
Confidence Level for Regression Line	0.9
Display Confidence Band	True
Display Prediction Band	True

Dependendant Variable (Y-Data)	Nitrogen, Nitrate_b-326-ud
Number Reported (Y values)	10
Independent Variable (x-data)	Sample Date_b-326-ud
Number Reported (x-values)	10

Regression Estimates and Inference Table

Parameter	Estimates	Std. Error	T-values	p-values
intercept	801102	533370	1.502	0.172
mple Date_b-326	-17.98	12.26	-1.467	0.18

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	1.135E+9	1	1.135E+9	2.153	0.1805
Error	4.216E+9	8	5.270E+8		
Total	5.351E+9	9			

R Square	0.212
Adjusted R Square	0.114
Sqrt(MSE) = Scale	22957

Regression Table

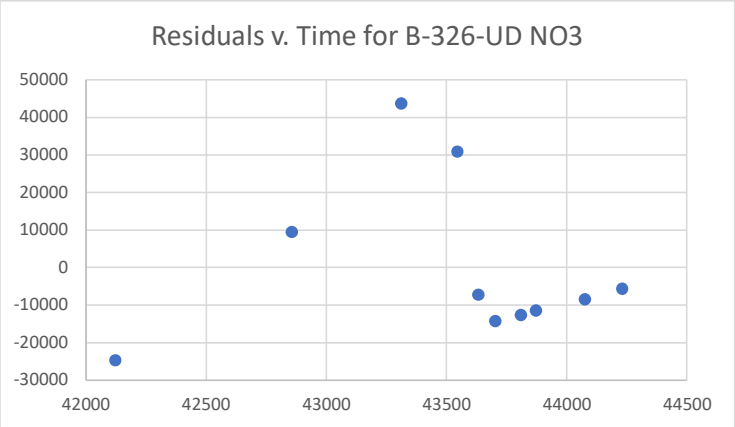
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	19000	43659	-24659	-1.074
2	40000	30460	9540	0.416
3	66000	22260	43740	1.905
4	49000	18070	30930	1.347
5	9300	16488	-7188	-0.313
6	990	15229	-14239	-0.62
7	700	13305	-12605	-0.549
8	730	12172	-11442	-0.498
9	90	8522	-8432	-0.367
10	90	5735	-5645	-0.246

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	42122	19000	43659	18564	29523	9138	78180	-11241	98559	-24659
2	42856	40000	30460	10870	25400	10247	50673	-16772	77692	9540
3	43312	66000	22260	7678	24207	7982	36539	-22753	67274	43740

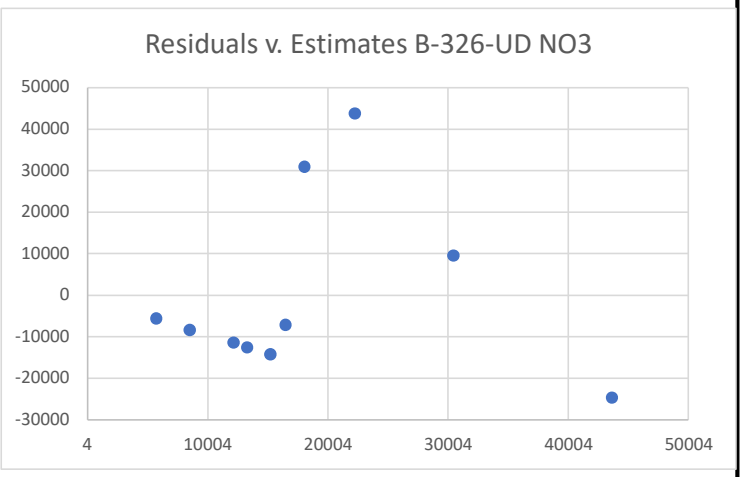
4	43545	49000	18070	7268	24080	4555	31586	-26707	62848	30930
5	43633	9300	16488	7400	24120	2728	30248	-28364	61340	-7188
6	43703	990	15229	7612	24186	1074	29385	-29746	60204	-14239
7	43810	700	13305	8104	24345	-1765	28375	-31966	58576	-12605
8	43873	730	12172	8475	24471	-3588	27933	-33333	57678	-11442
9	44076	90	8522	9989	25036	-10054	27098	-38034	55077	-8432
10	44231	90	5735	11378	25622	-15424	26893	-41910	53380	-5645

X Vector	Residuals
42122	-24659
42856	9540
43312	43740
43545	30930
43633	-7188
43703	-14239
43810	-12605
43873	-11442
44076	-8432
44231	-5645



NOT CONSTANT

Yhat	Residuals
43659	-24659
30460	9540
22260	43740
18070	30930
16488	-7188
15229	-14239
13305	-12605
12172	-11442
8522	-8432
5735	-5645



NOT CONSTANT

Shapiro-Wilks Test for Normality

SW= Shapiro-Wilk Statistic

	Residuals ascending	Residuals descending	Column C-l	Coeffiicient a	
1	-24659	43740	68399	0.5739	39254.19
2	-14239	30930	45169	0.3291	14865.12
3	-12605	9540	22145	0.2141	4741.245
4	-11442	-5645	5797	0.1224	709.5528
5	-8432	-7188	1244	0.0399	49.6356
6	-7188	-8432	-1244	b=	59619.74
7	-5645	-11442	-5797	StdDev=	16164.59
8	9540	-12605	-22145	SW=	1.511499
9	30930	-14239	-45169	Critical pt =	0.842 5%
10	43740	-24659	-68399		

Assume Normal

BM-15N6 NITRATE

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.11/24/2022 10:11:55 AM
From File	COMPLIANCE DATA 2H2021_b.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	True
Display Regresion Tables	True
Title For Y vs X Plots	Classical Regression
Confidence Level for Regression Line	0.9
Display Confidence Band	True
Display Prediction Band	True

Dependendant Variable (Y-Data)	Nitrogen, Nitrate_bm-15n6
Number Reported (Y values)	10
Independent Variable (x-data)	Sample Date_bm-15n6
Number Reported (x-values)	10

Regression Estimates and Inference Table

Parameter	Estimates	Std. Error	T-values	p-values
intercept	429321	105765	4.059	0.00364
mple Date_bm-1!	-8.936	2.411	-3.707	0.00598

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	2.251E+8	1	2.251E+8	13.74	0.0060
Error	1.310E+8	8	16379610		
Total	3.561E+8	9			

R Square	0.632
Adjusted R Square	0.586
Sqrt(MSE) = Scale	4047

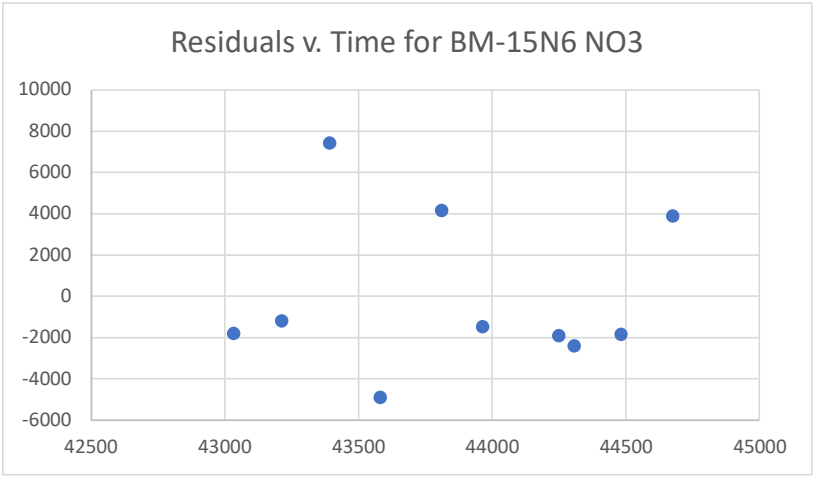
Regression Table

Obs	Y Vector	Yhat	Residuals	Res/Scale
1	43000	44796	-1796	-0.444
2	42000	43179	-1179	-0.291
3	49000	41579	7421	1.834
4	35000	39890	-4890	-1.208
5	42000	37835	4165	1.029
6	35000	36468	-1468	-0.363
7	32000	33912	-1912	-0.473
8	31000	33394	-2394	-0.592
9	30000	31839	-1839	-0.454
10	34000	30106	3894	0.962

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	43032	43000	44796	2393	4702	40346	49247	36053	53540	-1796
2	43213	42000	43179	2038	4531	39389	46969	34753	51605	-1179
3	43392	49000	41579	1724	4399	38374	44784	33399	49759	7421
4	43581	35000	39890	1458	4302	37179	42602	31891	47890	-4890
5	43811	42000	37835	1288	4247	35440	40230	29937	45733	4165
6	43964	35000	36468	1299	4251	34052	38884	28564	44372	-1468
7	44250	32000	33912	1573	4342	30988	36837	25838	41987	-1912
8	44308	31000	33394	1658	4374	30311	36477	25261	41527	-2394
9	44482	30000	31839	1951	4493	28211	35468	23484	40194	-1839
10	44676	34000	30106	2325	4667	25783	34429	21427	38785	3894

X Vector	Residuals
43032	-1796
43213	-1179
43392	7421
43581	-4890
43811	4165
43964	-1468
44250	-1912
44308	-2394
44482	-1839
44676	3894



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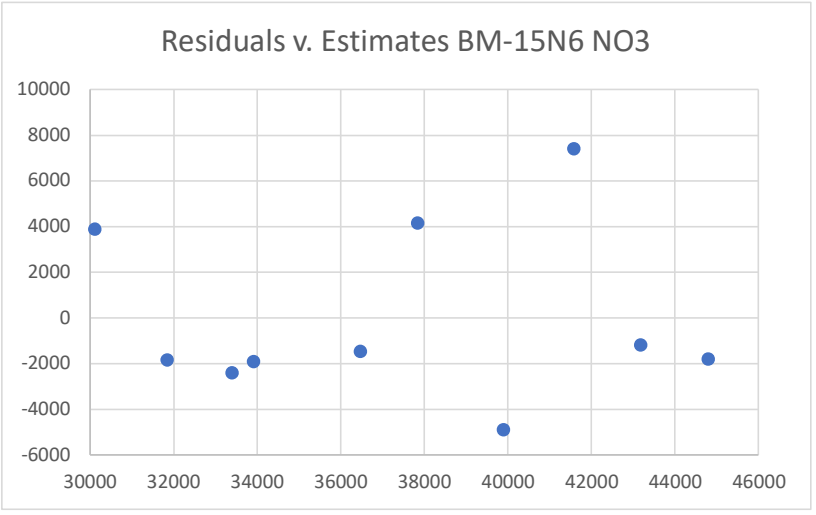
Yhat	Residuals
44796	-1796
43179	-1179
41579	7421
39890	-4890
37835	4165
36468	-1468
33912	-1912
33394	-2394
31839	-1839
30106	3894



NOT CONSTANT

Shapiro-Wilks Test for Normality

	Residuals ascending	Residuals descending	Column C-B	Coeffiicient a		
1	-4890	7421	12311	0.5739	7065.283	
2	-2394	4165	6559	0.3291	2158.567	
3	-1912	3894	5806	0.2141	1243.065	
4	-1839	-1179	660	0.1224	80.784	
5	-1796	-1468	328	0.0399	13.0872	
6	-1468	-1796	-328	b=	10560.79	
7	-1179	-1839	-660	StdDev=	2954.793	
8	3894	-1912	-5806	SW=	1.419371	
9	4165	-2394	-6559	Critical pt =	0.842	5%
10	7421	-4890	-12311			

SW= Shapiro-Wilk Statistic

Assume Normal

MW38-830N-230E CHLOROFORM

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.11/24/2022 10:10:48 AM
From File	COMPLIANCE DATA 2H2021_a.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	True
Display Regresion Tables	True
Title For Y vs X Plots	Classical Regression
Confidence Level for Regression Line	0.9
Display Confidence Band	True
Display Prediction Band	True

Dependendant Variable (Y-Data)	Chloroform_mw38-830n-230e
Number Reported (Y values)	10
Independent Variable (x-data)	Sample Date_mw38-830n-230e
Number Reported (x-values)	10

Regression Estimates and Inference Table

Parameter	Estimates	Std. Error	T-values	p-values
intercept	92.28	37.43	2.466	0.039
Date_mw38-83(	-0.00201	8.5369E-4	-2.351	0.0466

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	11.16	1	11.16	5.527	0.0466
Error	16.16	8	2.02		
Total	27.32	9			

R Square	0.409
Adjusted R Square	0.335
Sqrt(MSE) = Scale	1.421

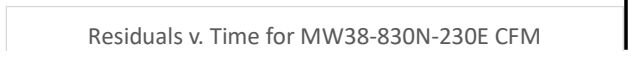
Regression Table

Obs	Y Vector	Yhat	Residuals	Res/Scale
1	6.9	5.9	1	0.703
2	6.2	5.547	0.653	0.459
3	5.9	5.34	0.56	0.394
4	5.4	4.805	0.595	0.419
5	2.1	4.455	-2.355	-1.657
6	2.1	4.259	-2.159	-1.519
7	2.6	3.679	-1.079	-0.759
8	4.3	3.37	0.93	0.655
9	3.7	3.004	0.696	0.49
10	3.8	2.641	1.159	0.816

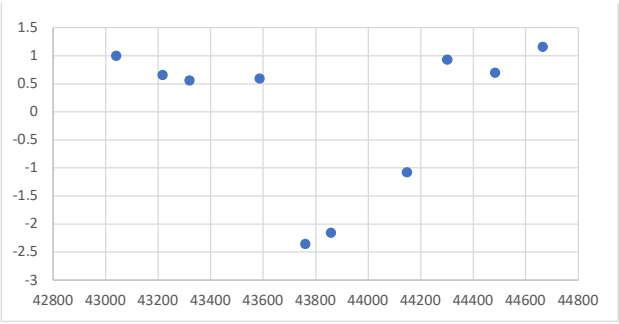
Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	43040	6.9	5.9	0.816	1.639	4.384	7.417	2.853	8.947	1
2	43216	6.2	5.547	0.695	1.582	4.254	6.84	2.605	8.489	0.653
3	43319	5.9	5.34	0.631	1.555	4.168	6.513	2.449	8.232	0.56
4	43586	5.4	4.805	0.498	1.506	3.878	5.731	2.004	7.605	0.595
5	43760	2.1	4.455	0.454	1.492	3.611	5.3	1.681	7.23	-2.355
6	43858	2.1	4.259	0.45	1.491	3.422	5.095	1.487	7.031	-2.159
7	44147	2.6	3.679	0.521	1.514	2.709	4.648	0.864	6.494	-1.079
8	44301	4.3	3.37	0.599	1.542	2.256	4.483	0.502	6.237	0.93
9	44483	3.7	3.004	0.711	1.589	1.682	4.327	0.0492	5.959	0.696
10	44664	3.8	2.641	0.837	1.649	1.085	4.197	-0.426	5.708	1.159

X Vector Residuals



43040	1
43216	0.653
43319	0.56
43586	0.595
43760	-2.355
43858	-2.159
44147	-1.079
44301	0.93
44483	0.696
44664	1.159



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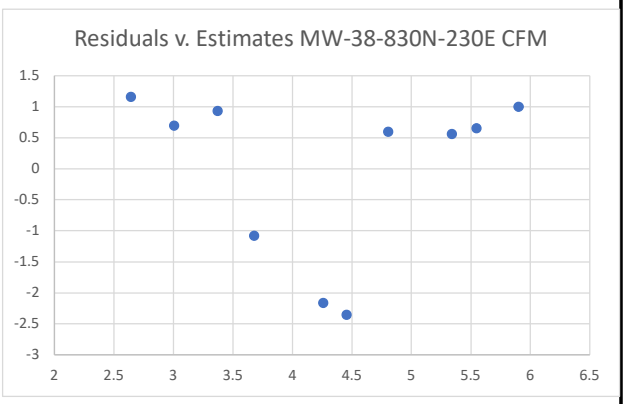
NOT CONSTANT

Yhat	Residuals
5.9	1
5.547	0.653
5.34	0.56
4.805	0.595
4.455	-2.355
4.259	-2.159
3.679	-1.079
3.37	0.93
3.004	0.696
2.641	1.159



NOT CONSTANT

Shapiro-Wilks Test for Normality

SW= Shapiro-Wilk Statistic

	Residuals ascending	Residuals descending	Column C-I	Coeffiicient	
1	-2.355	1.159	3.514	0.5739	2.016685
2	-2.159	1	3.159	0.3291	1.039627
3	-1.079	0.93	2.009	0.2141	0.430127
4	0.56	0.696	0.136	0.1224	0.016646
5	0.595	0.653	0.058	0.0399	0.002314
6	0.653	0.595	-0.058	b=	3.505399
7	0.696	0.56	-0.136	StdDev=	1.353959
8	0.93	-1.079	-2.009	SW=	0.744768
9	1	-2.159	-3.159	Critical pt =	0.842 5%
10	1.159	-2.355	-3.514		

MW62-WDR 1,4-DIOXANE

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.11/24/2022 10:08:16 AM
From File	COMPLIANCE DATA 2H2021.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	True
Display Regresion Tables	True
Title For Y vs X Plots	Classical Regression
Confidence Level for Regression Line	0.9
Display Confidence Band	True
Display Prediction Band	True

Dependendant Variable (Y-Data)	1,4-Dioxane_mw62-wdr
Number Reported (Y values)	10
Independent Variable (x-data)	Sample Date_mw62-wdr
Number Reported (x-values)	10

Regression Estimates and Inference Table

Parameter	Estimates	Std. Error	T-values	p-values
intercept	34.75	3.861	9.001	1.8522E-5
nple Date_mw62	-7.116E-4	8.7990E-5	-8.087	4.0403E-5

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	1.32	1	1.32	65.4	0.0000
Error	0.161	8	0.0202		
Total	1.481	9			

R Square	0.891
Adjusted R Square	0.877
Sqrt(MSE) = Scale	0.142

Regression Table

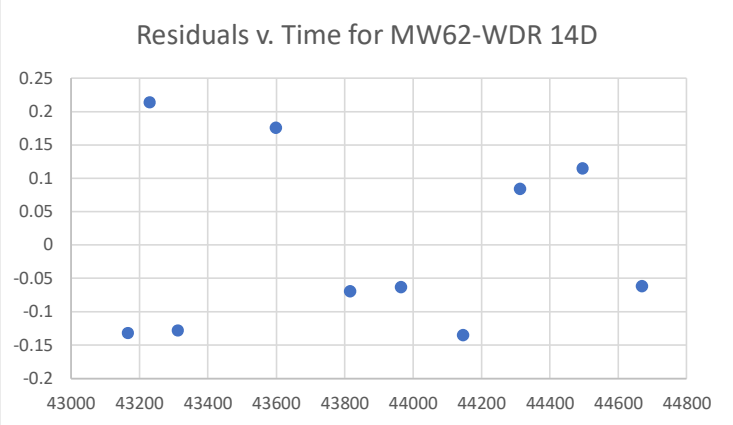
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	3.9	4.032	-0.132	-0.928
2	4.2	3.986	0.214	1.504
3	3.8	3.928	-0.128	-0.901
4	3.9	3.724	0.176	1.241
5	3.5	3.569	-0.0693	-0.488
6	3.4	3.463	-0.0633	-0.446
7	3.2	3.335	-0.135	-0.947
8	3.3	3.216	0.0843	0.593
9	3.2	3.085	0.115	0.806
10	2.9	2.962	-0.0617	-0.434

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	43166	3.9	4.032	0.0766	0.161	3.889	4.174	3.732	4.332	-0.132
2	43230	4.2	3.986	0.0721	0.159	3.852	4.12	3.69	4.283	0.214
3	43312	3.8	3.928	0.0666	0.157	3.804	4.052	3.636	4.22	-0.128

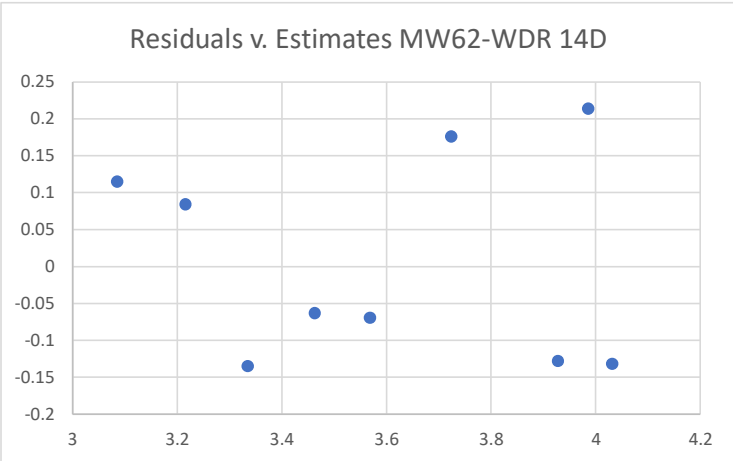
4	43599	3.9	3.724	0.0509	0.151	3.629	3.818	3.443	4.004	0.176
5	43816	3.5	3.569	0.0452	0.149	3.485	3.653	3.292	3.847	-0.0693
6	43965	3.4	3.463	0.0457	0.149	3.378	3.548	3.186	3.741	-0.0633
7	44146	3.2	3.335	0.051	0.151	3.24	3.429	3.054	3.615	-0.135
8	44313	3.3	3.216	0.0594	0.154	3.105	3.326	2.929	3.502	0.0843
9	44496	3.2	3.085	0.071	0.159	2.953	3.217	2.79	3.381	0.115
10	44670	2.9	2.962	0.0834	0.165	2.807	3.117	2.655	3.268	-0.0617

X Vector	Residuals
43166	-0.132
43230	0.214
43312	-0.128
43599	0.176
43816	-0.0693
43965	-0.0633
44146	-0.135
44313	0.0843
44496	0.115
44670	-0.0617



CONSTANT

Yhat	Residuals
4.032	-0.132
3.986	0.214
3.928	-0.128
3.724	0.176
3.569	-0.0693
3.463	-0.0633
3.335	-0.135
3.216	0.0843
3.085	0.115
2.962	-0.0617



CONSTANT

Shapiro-Wilks Test for Normality

	Residuals ascending	Residuals descending	Column C-I	Coeffiicient	
1	-0.135	0.214	0.349	0.5739	0.200291
2	-0.132	0.176	0.308	0.3291	0.101363
3	-0.128	0.115	0.243	0.2141	0.052026
4	-0.0693	0.0843	0.1536	0.1224	0.018801
5	-0.0633	-0.0617	0.0016	0.0399	6.38E-05
6	-0.0617	-0.0633	-0.0016	b=	0.372545
7	0.0843	-0.0693	-0.1536	StdDev=	0.117722
8	0.115	-0.128	-0.243	SW=	1.112748
9	0.176	-0.132	-0.308	Critical pt =	0.842
10	0.214	-0.135	-0.349		

SW= Shapiro-Wilk Statistic

5%

Assume Normal

MW106-UD 1,4-DIOXANE

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.11/24/2022 10:08:16 AM
From File	COMPLIANCE DATA 2H2021.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	True
Display Regresion Tables	True
Title For Y vs X Plots	Classical Regression
Confidence Level for Regression Line	0.9
Display Confidence Band	True
Display Prediction Band	True

Dependendant Variable (Y-Data)	1,4-Dioxane_mw106-ud
Number Reported (Y values)	10
Independent Variable (x-data)	Sample Date_mw106-ud
Number Reported (x-values)	10

Regression Estimates and Inference Table

Parameter	Estimates	Std. Error	T-values	p-values
intercept	20.8	13.53	1.538	0.163
ıple Date_mw10ı	-4.806E-4	3.2788E-4	-1.466	0.181

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	7.203	1	7.203	2.149	0.1809
Error	26.82	8	3.352		
Total	34.02	9			

R Square	0.212
Adjusted R Square	0.113
Sqrt(MSE) = Scale	1.831

Regression Table

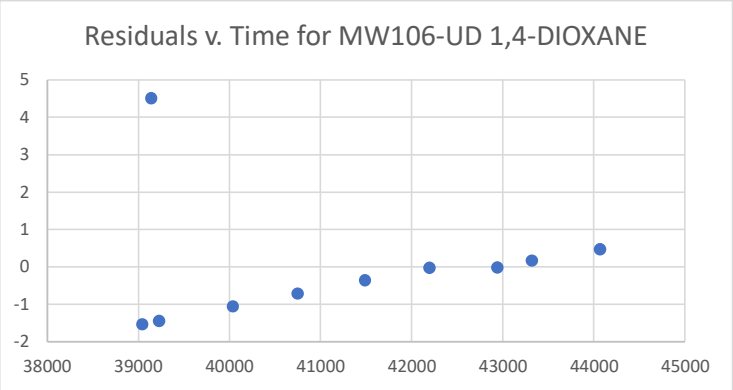
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	0.5	2.036	-1.536	-0.839
2	6.5	1.989	4.511	2.464
3	0.5	1.948	-1.448	-0.791
4	0.5	1.558	-1.058	-0.578
5	0.5	1.216	-0.716	-0.391
6	0.5	0.861	-0.361	-0.197
7	0.5	0.52	-0.0196	-0.0107
8	0.15	0.162	-0.012	-0.00658
9	0.15	-0.0201	0.17	0.0929
10	0.09	-0.38	0.47	0.256

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	39042	0.5	2.036	0.92	2.049	0.326	3.747	-1.774	5.847	-1.536
2	39141	6.5	1.989	0.895	2.038	0.325	3.653	-1.801	5.778	4.511
3	39227	0.5	1.948	0.873	2.029	0.323	3.572	-1.825	5.72	-1.448

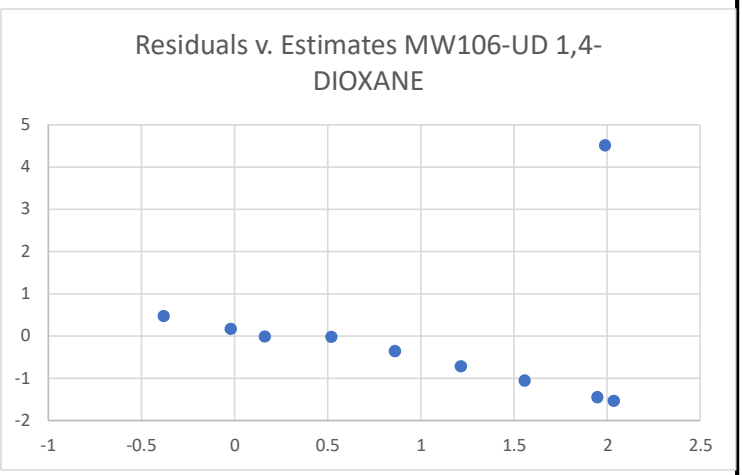
4	40037	0.5	1.558	0.697	1.959	0.262	2.855	-2.085	5.201	-1.058
5	40750	0.5	1.216	0.599	1.927	0.101	2.33	-2.367	4.798	-0.716
6	41487	0.5	0.861	0.586	1.922	-0.227	1.95	-2.713	4.436	-0.361
7	42198	0.5	0.52	0.662	1.947	-0.711	1.75	-3.101	4.14	-0.0196
8	42942	0.15	0.162	0.808	2.001	-1.341	1.665	-3.56	3.884	-0.012
9	43321	0.15	-0.0201	0.9	2.04	-1.693	1.653	-3.814	3.773	0.17
10	44069	0.09	-0.38	1.099	2.135	-2.423	1.663	-4.35	3.591	0.47

X Vector	Residuals
39042	-1.536
39141	4.511
39227	-1.448
40037	-1.058
40750	-0.716
41487	-0.361
42198	-0.0196
42942	-0.012
43321	0.17
44069	0.47



NOT CONSTANT

Yhat	Residuals
2.036	-1.536
1.989	4.511
1.948	-1.448
1.558	-1.058
1.216	-0.716
0.861	-0.361
0.52	-0.0196
0.162	-0.012
-0.0201	0.17
-0.38	0.47



NOT CONSTANT

Shapiro-Wilks Test for Normality

	Residuals ascending	Residuals descending	Column C-I	Coeffiicient a	
1	-1.536	4.511	6.047	0.5739	3.470373
2	-1.448	0.47	1.918	0.3291	0.631214
3	-1.058	0.17	1.228	0.2141	0.262915
4	-0.716	-0.012	0.704	0.1224	0.08617
5	-0.361	-0.0196	0.3414	0.0399	0.013622
6	-0.0196	-0.361	-0.3414	b=	4.464293
7	-0.012	-0.716	-0.704	StdDev=	0.725263
8	0.17	-1.058	-1.228	SW=	4.209896
9	0.47	-1.448	-1.918	Critical pt =	0.842
10	4.511	-1.536	-6.047		

5%

SW= Shapiro-Wilk Statistic

Assume Normal

APPENDIX C-3.6

COMPLIANCE EVALUATION STATISTICAL TESTING

Upper Control Limit Analysis for Data Without Trends

Normal UCL Statistics for Uncensored Full Data Sets		
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:57:43 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls	
Full Precision	OFF	
Confidence Coefficient	90%	

1,4-Dioxane (b-326-wd)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.77	Mean	6.147
Maximum	17	Median	3.75
SD	5.171	SD of logged Data	1.002
Coefficient of Variation	0.841	Skewness	1.093

Normal GOF Test

Shapiro Wilk Test Statistic	0.881	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.781	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.268	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.304	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	8.409	90% Adjusted-CLT UCL (Chen-1995)	8.646
		90% Modified-t UCL (Johnson-1978)	8.503

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.2 8/5/2022 11:03:09 AM
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_e.xls
Full Precision	OFF
Confidence Coefficient	90%

Tetrachloroethene (bm-11x-100n)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	4.6	Mean	6.05
Maximum	7.2	Median	6.15
SD	0.866	SD of logged Data	0.149
Coefficient of Variation	0.143	Skewness	-0.468

Normal GOF Test

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.781	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.131	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.304	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	6.429	90% Adjusted-CLT UCL (Chen-1995)	6.372
		90% Modified-t UCL (Johnson-1978)	6.422

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.2 8/5/2022 11:05:31 AM
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_f.xls
Full Precision	OFF
Confidence Coefficient	90%

Trichloroethene (bm-11x-100n)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	3.6	Mean	4.74
Maximum	5.7	Median	4.75
SD	0.602	SD of logged Data	0.13
Coefficient of Variation	0.127	Skewness	-0.174

Normal GOF Test

Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.781	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.133	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.304	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	5.003	90% Adjusted-CLT UCL (Chen-1995)	4.977
		90% Modified-t UCL (Johnson-1978)	5.002

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Normal UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.2 8/5/2022 10:57:43 AM								
5	From File			COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			90%								
8												
171												
172	**1,4-Dioxane (mw38-830n-230e)**											
173												
174	**General Statistics**											
175	Total Number of Observations					10		Number of Distinct Observations				10
176								Number of Missing Observations				0
177	Minimum					2		Mean				6.12
178	Maximum					13		Median				4.55
179	SD					4.063		SD of logged Data				0.697
180	Coefficient of Variation					0.664		Skewness				0.747
181												
182	**Normal GOF Test**											
183	Shapiro Wilk Test Statistic					0.876		**Shapiro Wilk GOF Test**				
184	1% Shapiro Wilk Critical Value					0.781		Data appear Normal at 1% Significance Level				
185	Lilliefors Test Statistic					0.246		**Lilliefors GOF Test**				
186	1% Lilliefors Critical Value					0.304		Data appear Normal at 1% Significance Level				
187	**Data appear Normal at 1% Significance Level**											
188												
189	**Assuming Normal Distribution**											
190	**90% Normal UCL**							**90% UCLs (Adjusted for Skewness)**				
191	90% Student's-t UCL					7.897		90% Adjusted-CLT UCL (Chen-1995)				7.983
192								90% Modified-t UCL (Johnson-1978)				7.948
193												
194	**Suggested UCL to Use**											
195	**Recommendation Provided only for 95% Confidence Coefficient**											
196												

Normal UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:40:03 AM
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_d.xls
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Nitrogen, Nitrite (mw62-wdr)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
Number of Detects	9	Number of Non-Detects	1
Number of Distinct Detects	9	Number of Distinct Non-Detects	1
Minimum Detect	890	Minimum Non-Detect	980
Maximum Detect	5400	Maximum Non-Detect	980
Variance Detects	1918928	Percent Non-Detects	10%
Mean Detects	2466	SD Detects	1385
Median Detects	2100	CV Detects	0.562
Skewness Detects	1.422	Kurtosis Detects	1.76
Mean of Logged Detects	7.685	SD of Logged Detects	0.524

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.764	Detected Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.297	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.316	Detected Data appear Normal at 1% Significance Level

Detected Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2308	KM Variance	444.8
KM SD	1326	KM Standard Error of Mean	1758556
95% KM (BCA) UCL	3060	97.5% KM (BCA) UCL	3277
90% KM (t) UCL	2923	90% KM (Percentile Bootstrap) UCL	2864
90% KM (z) UCL	2878	90% KM Bootstrap t UCL	3429
90% KM Chebyshev UCL	3642	95% KM Chebyshev UCL	4247
97.5% KM Chebyshev UCL	5086	99% KM Chebyshev UCL	6734

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2268	Mean in Log Scale	7.536
SD in Original Scale	1448	SD in Log Scale	0.683
90% t UCL (Assumes normality)	2901	90% H-Stat UCL	3552

DL/2 is not a recommended method, provided for comparisons and historical reasons

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Nonparametric UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.2 8/5/2022 11:13:02 AM
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS_c.xls
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Nitrogen, Nitrate (mw62-wdr)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	110000	Mean	120000
Maximum	130000	Median	120000
SD	6667	Std. Error of Mean	2108
Coefficient of Variation	0.0556	Skewness	0
Mean of logged Data	11.69	SD of logged Data	0.0557

Nonparametric Distribution Free UCL Statistics

Data appear Normal Distributed at 1% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	122916	90% Adjusted-CLT UCL (Chen-1995)	122702
		90% Modified-t UCL (Johnson-1978)	122916

Nonparametric Distribution Free UCLs

90% CLT UCL	122702	90% BCA Bootstrap UCL	N/A
90% Standard Bootstrap UCL	N/A	90% Bootstrap-t UCL	N/A
90% Hall's Bootstrap UCL	N/A	90% Percentile Bootstrap UCL	N/A
90% Chebyshev(Mean, Sd) UCL	126325	95% Chebyshev(Mean, Sd) UCL	129189
97.5% Chebyshev(Mean, Sd) UCL	133166	99% Chebyshev(Mean, Sd) UCL	140976

Suggested UCL to Use

Data appear Normal, May want to try Normal Distribution

Normal UCL Statistics for Uncensored Full Data Sets		
User Selected Options		
Date/Time of Computation	ProUCL 5.2 8/5/2022 10:57:43 AM	
From File	COMPLIANCE DATA by Constituent 1H2022 Pro UCL Input MJS.xls	
Full Precision	OFF	
Confidence Coefficient	90%	

1,4-Dioxane (mw77-wd)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	2.6	Mean	8.02
Maximum	16	Median	7.15
SD	4.596	SD of logged Data	0.637
Coefficient of Variation	0.573	Skewness	0.396

Normal GOF Test

Shapiro Wilk Test Statistic	0.914	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.781	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.223	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.304	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	10.03	90% Adjusted-CLT UCL (Chen-1995)	10.01
		90% Modified-t UCL (Johnson-1978)	10.06

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

APPENDIX C-4

EFFECTIVENESS ASSESSMENT

APPENDIX C-4.1

EFFECTIVENESS ASSESSMENT

Determination of Hydraulic Gradients

(PM-1I & X through PM-15I & X)

MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-1I	7/15/2020	5771.40	PM-1X	7/15/2020	5772.50		-1.10
PM-1I	10/8/2020	5771.57	PM-1X	10/8/2020	5772.23		-0.66
PM-1I	1/11/2021	5771.36	PM-1X	1/11/2021	5771.72		-0.36
PM-1I	4/5/2021	5770.76	PM-1X	4/5/2021	5771.07		-0.31
PM-1I	7/14/2021	5771.24	PM-1X	7/14/2021	5774.02		-2.78
PM-1I	10/7/2021	5771.72	PM-1X	10/7/2021	5773.19		-1.47
PM-1I	1/18/2022	5771.43	PM-1X	1/18/2022	5772.15		-0.72
PM-1I	4/6/2022	5770.70	PM-1X	4/6/2022	5771.33		-0.63

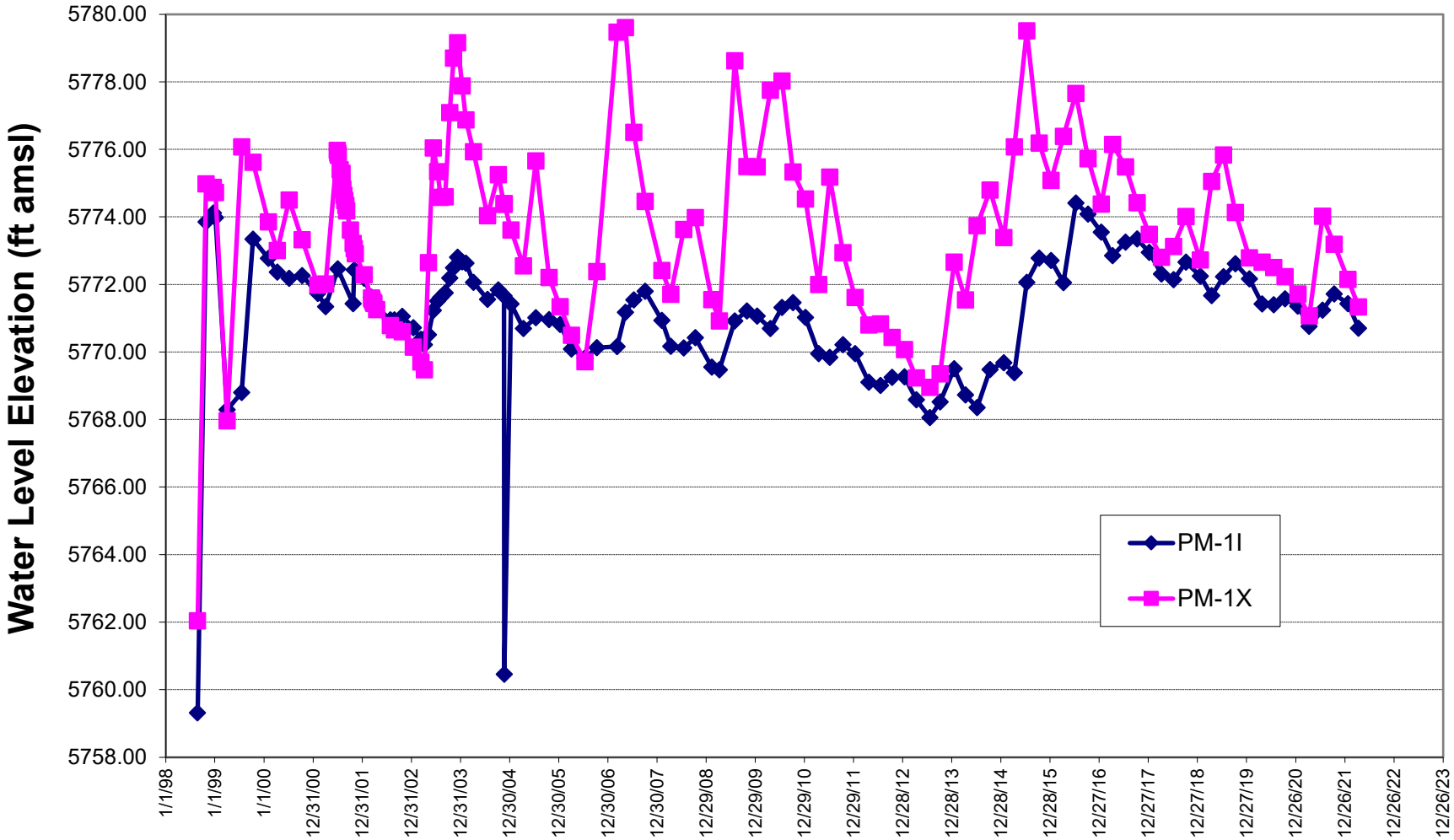
		Minimum	-2.78
		Maximum	-0.31
Mean Interior Water Level	5771.27	Avg. Diff	-1.00
Mean Exterior Water Level	5772.28	Diff of the Means	-1.00
Sum of the Squares of Deviations			
Interior	0.93		
Exterior	6.60		
Standard Deviation (pooled)	0.73		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.33	80% LCL	-1.33
95% Confidence Interval	0.69	95% UCL	-0.31

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-1 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-2I	7/13/2020	5770.2	PM-2X	7/13/2020	5777.21		-7.01
PM-2I	10/5/2020	5770.11	PM-2X	10/5/2020	5777.09		-6.98
PM-2I	1/6/2021	5770.08	PM-2X	1/6/2021	5777.06		-6.98
PM-2I	4/6/2021	5770.31	PM-2X	4/6/2021	5777.40		-7.09
PM-2I	7/6/2021	5769.95	PM-2X	7/6/2021	5776.96		-7.01
PM-2I	10/1/2021	5769.92	PM-2X	10/1/2021	5776.91		-6.99
PM-2I	1/6/2022	5770	PM-2X	1/6/2022	5777.02		-7.02
PM-2I	4/8/2022	5769.82	PM-2X	4/8/2022	5776.84		-7.02

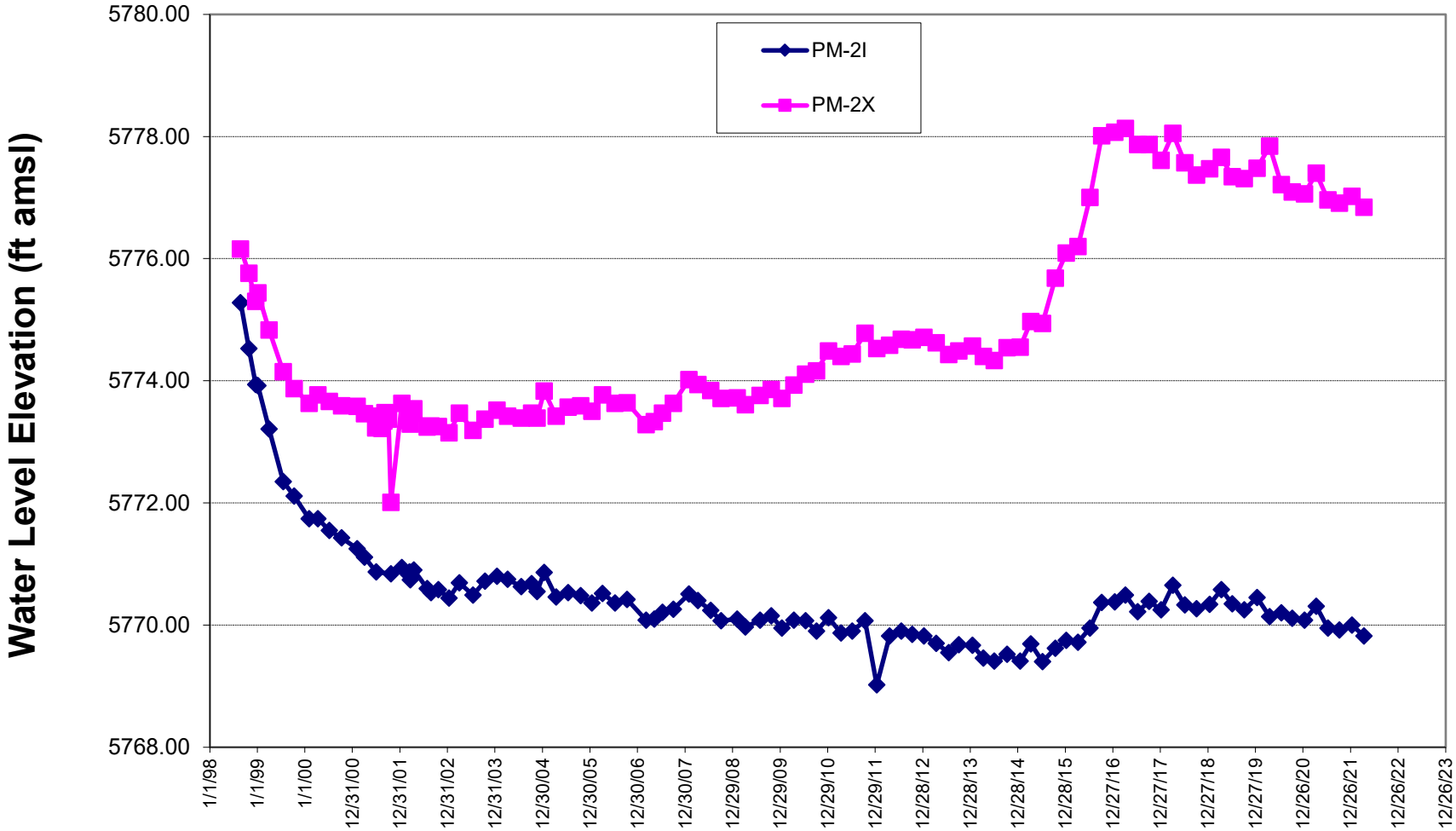
		Minimum	-7.09
		Maximum	-6.98
Mean Interior Water Level	5770.05	Avg. Diff	-7.01
Mean Exterior Water Level	5777.06	Diff of the Means	-7.01
Sum of the Squares of Deviations			
Interior	0.18		
Exterior	0.22		
Standard Deviation (pooled)	0.17		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.08	80% LCL	-7.09
95% Confidence Interval	0.16	95% UCL	-6.85

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-2 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-3I	7/13/2020	5779.12	PM-3X	7/13/2020	5778.40		0.72
PM-3I	10/5/2020	5778.96	PM-3X	10/5/2020	5778.24		0.72
PM-3I	1/6/2021	5778.91	PM-3X	1/6/2021	5778.18		0.73
PM-3I	4/6/2021	5779.22	PM-3X	4/6/2021	5778.57		0.65
PM-3I	7/6/2021	5778.64	PM-3X	7/6/2021	5778.07		0.57
PM-3I	10/1/2021	5778.60	PM-3X	10/1/2021	5778.13		0.47
PM-3I	1/6/2022	5778.74	PM-3X	1/6/2022	5778.39		0.35
PM-3I	4/8/2022	5778.46	PM-3X	4/8/2022	5778.29		0.17

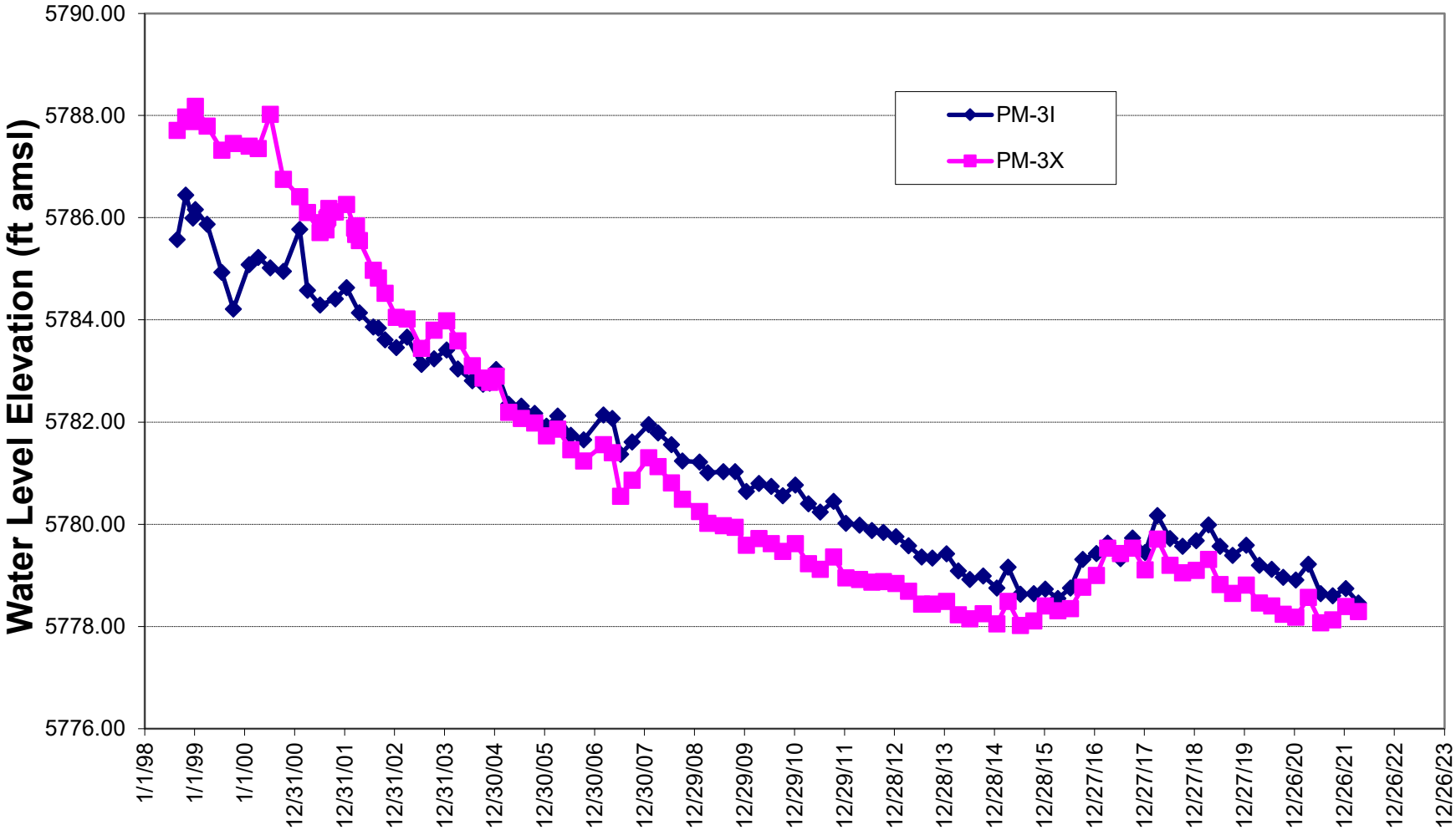
		Minimum	0.17
		Maximum	0.73
Mean Interior Water Level	5778.83	Avg. Diff	0.55
Mean Exterior Water Level	5778.28	Diff of the Means	0.55
Sum of the Squares of Deviations			
Interior	0.49		
Exterior	0.19		
Standard Deviation (pooled)	0.22		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.10	80% LCL	0.45
95% Cpnfidence Interval	0.21	95% UCL	0.76

Effectiveness Decision

Outward Gradient exists

Data Sufficiency

PM-3 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-4I	7/13/2020	5793.65	PM-4X	7/13/2020	5793.92		-0.27
PM-4I	10/5/2020	5793.41	PM-4X	10/5/2020	5793.70		-0.29
PM-4I	1/6/2021	5793.32	PM-4X	1/6/2021	5793.65		-0.33
PM-4I	4/6/2021	5793.43	PM-4X	4/6/2021	5793.77		-0.34
PM-4I	7/6/2021	5793.2	PM-4X	7/6/2021	5793.59		-0.39
PM-4I	10/1/2021	5793.14	PM-4X	10/1/2021	5793.52		-0.38
PM-4I	1/6/2022	5793.37	PM-4X	1/6/2022	5793.80		-0.43
PM-4I	4/8/2022	5793.31	PM-4X	4/8/2022	5793.85		-0.54

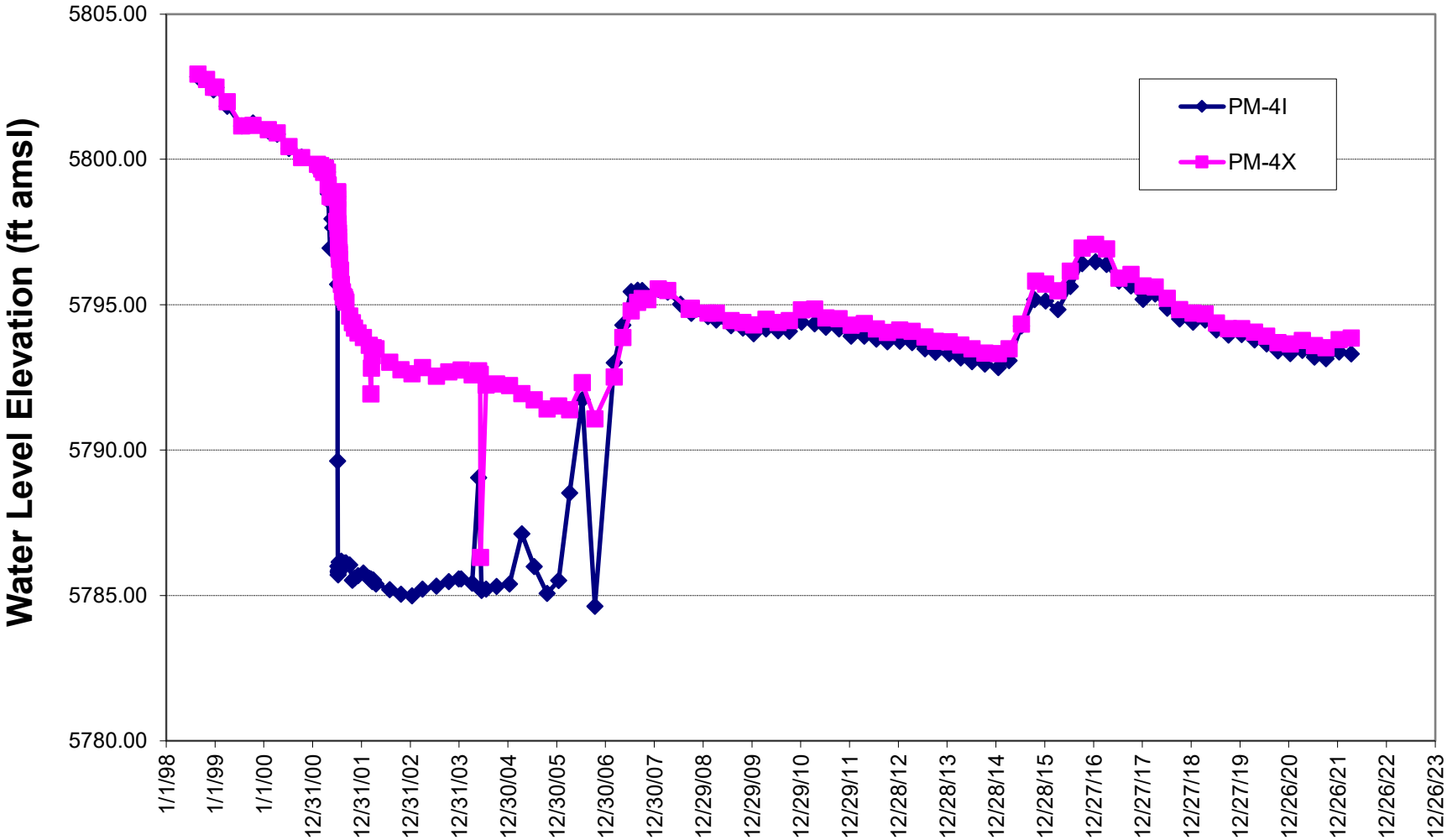
		Minimum	-0.54
		Maximum	-0.27
Mean Interior Water Level	5793.35	Avg. Diff	-0.37
Mean Exterior Water Level	5793.73	Diff of the Means	-0.37
Sum of the Squares of Deviations			
Interior	0.17		
Exterior	0.13		
Standard Deviation (pooled)	0.15		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.0653	80% LCL	-0.44
95% Confidence Interval	0.1380	95% UCL	-0.23

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-4 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-5I	7/13/2020	5799.19	PM-5X	7/13/2020	5799.54		-0.35
PM-5I	10/5/2020	5798.65	PM-5X	10/5/2020	5799.71		-1.06
PM-5I	1/6/2021	5798.24	PM-5X	1/6/2021	5799.46		-1.22
PM-5I	4/7/2021	5798.07	PM-5X	4/7/2021	5799.17		-1.10
PM-5I	7/6/2021	5799.84	PM-5X	7/6/2021	5799.81		0.03
PM-5I	10/1/2021	5799.04	PM-5X	10/1/2021	5799.93		-0.89
PM-5I	1/6/2022	5798.61	PM-5X	1/6/2022	5799.84		-1.23
PM-5I	4/8/2022	5798.17	PM-5X	4/8/2022	5799.29		-1.12

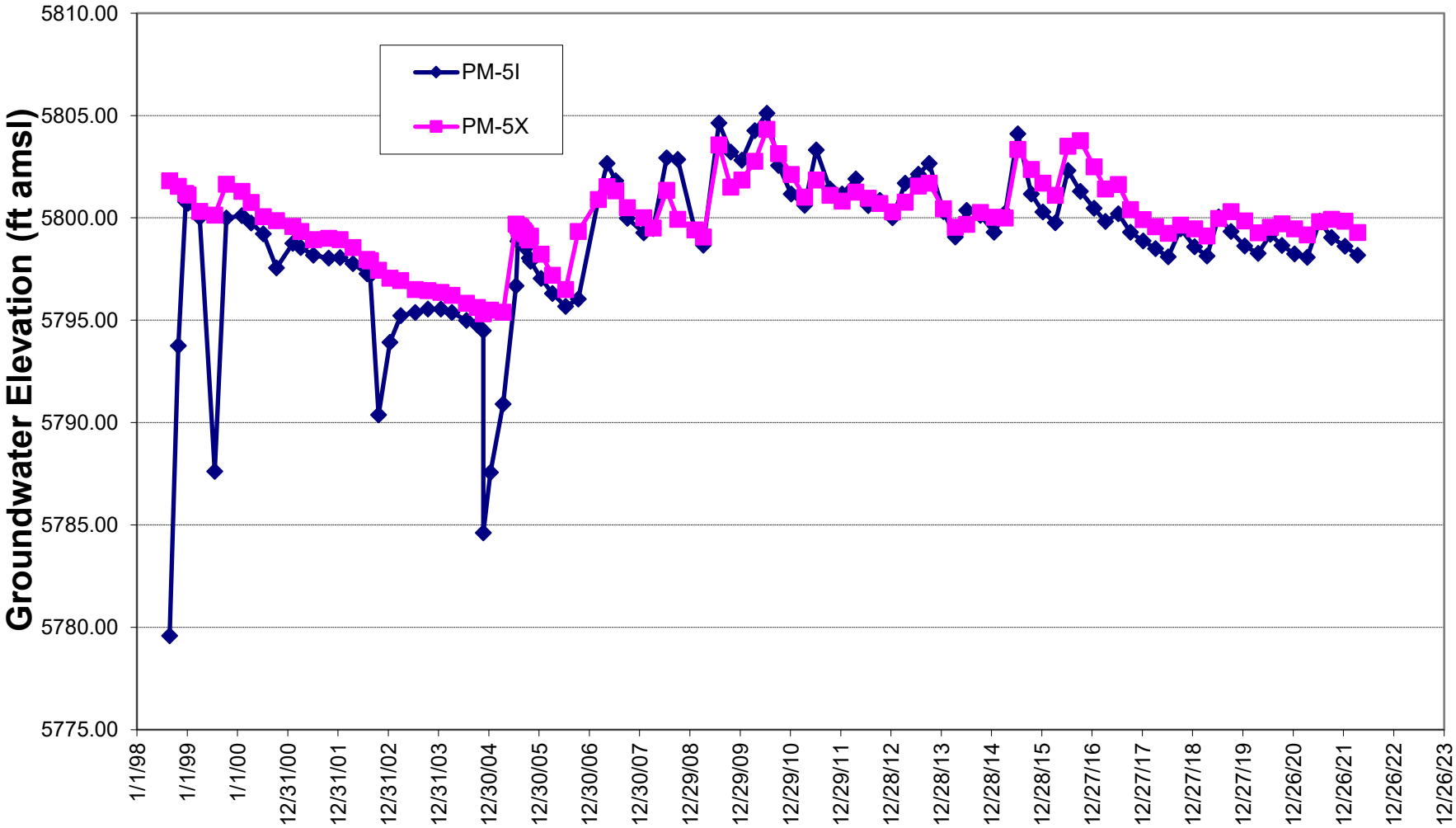
		Minimum	-1.23
		Maximum	0.03
Mean Interior Water Level	5798.73	Avg. Diff	-0.87
Mean Exterior Water Level	5799.59	Diff of the Means	-0.87
Sum of the Squares of Deviations			
Interior	2.55		
Exterior	0.53		
Standard Deviation (pooled)	0.47		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.21	80% LCL	-1.08
95% Confidence Interval	0.44	95% UCL	-0.42

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-5 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-6I	7/13/2020	5797.64	PM-6X	7/13/2020	5793.81		3.83
PM-6I	10/5/2020	5797.67	PM-6X	10/5/2020	5793.70		3.97
PM-6I	1/6/2021	5797.62	PM-6X	1/6/2021	5793.53		4.09
PM-6I	4/7/2021	5797.73	PM-6X	4/7/2021	5793.65		4.08
PM-6I	7/8/2021	5797.80	PM-6X	7/8/2021	5793.81		3.99
PM-6I	10/1/2021	5797.76	PM-6X	10/1/2021	5793.76		4
PM-6I	1/6/2022	5797.99	PM-6X	1/6/2022	5793.98		4.01
PM-6I	4/8/2022	5797.80	PM-6X	4/8/2022	5793.65		4.15

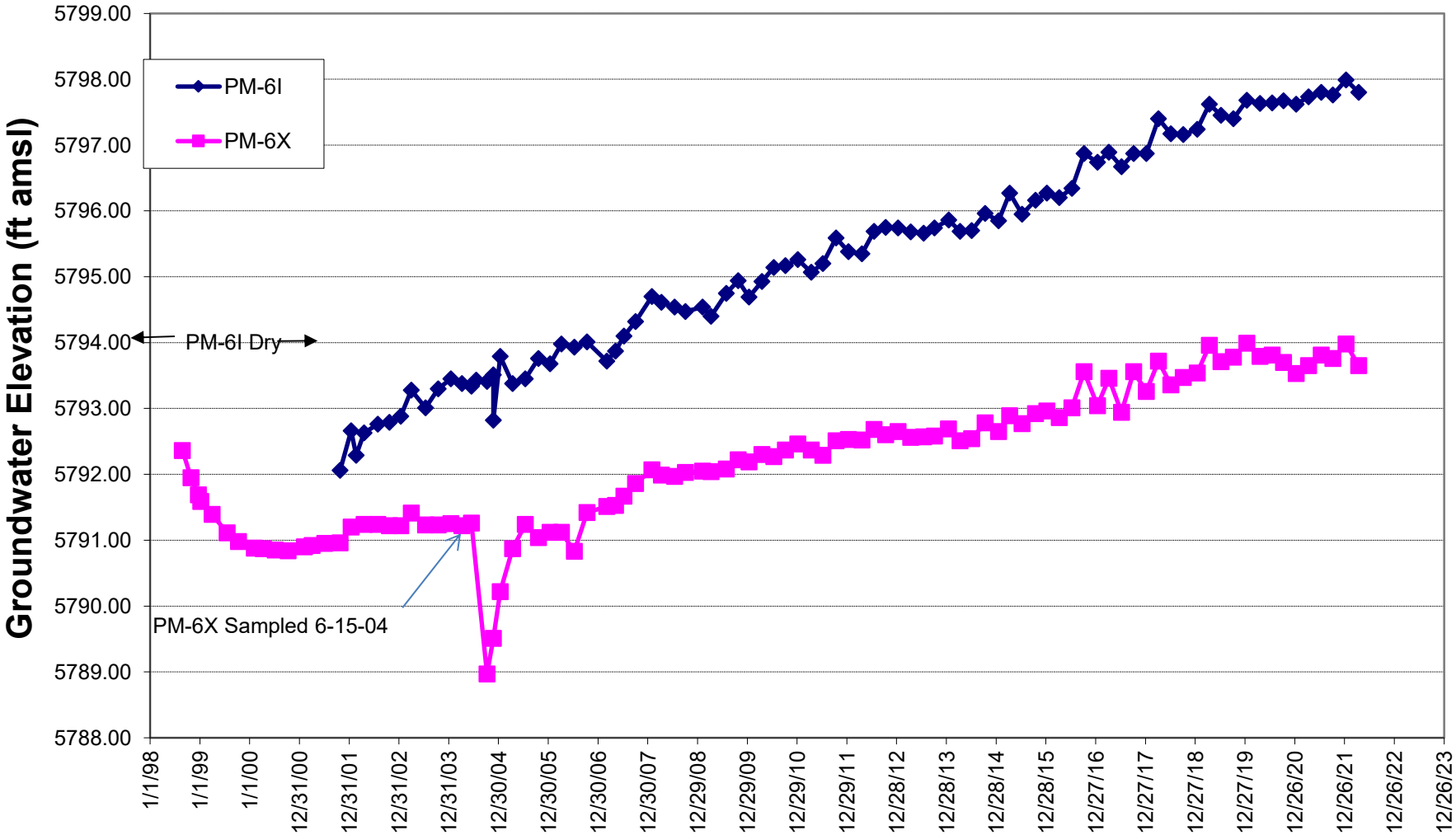
		Minimum	3.83
		Maximum	4.15
Mean Interior Water Level	5797.75	Avg. Diff	4.02
Mean Exterior Water Level	5793.74	Diff of the Means	4.01
Sum of the Squares of Deviations			
Interior	0.10		
Exterior	0.13		
Standard Deviation (pooled)	0.13		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.06	80% LCL	3.96
95% Cpnfidence Interval	0.12	95% UCL	4.14

Effectiveness Decision

Outward Gradient exists

Data Sufficiency

PM-6 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-7I	7/13/2020	5811.07	PM-7X	7/13/2020	5818.49		-7.42
PM-7I	10/5/2020	5811.04	PM-7X	10/5/2020	5818.22		-7.18
PM-7I	1/6/2021	5810.84	PM-7X	1/6/2021	5817.72		-6.88
PM-7I	4/7/2021	5810.75	PM-7X	4/7/2021	5817.29		-6.54
PM-7I	7/8/2021	5810.82	PM-7X	7/8/2021	5818.26		-7.44
PM-7I	10/1/2021	5810.79	PM-7X	10/1/2021	5818.13		-7.34
PM-7I	1/6/2022	5811.03	PM-7X	1/6/2022	5818.07		-7.04
PM-7I	4/8/2022	5810.48	PM-7X	4/8/2022	5817.1		-6.62

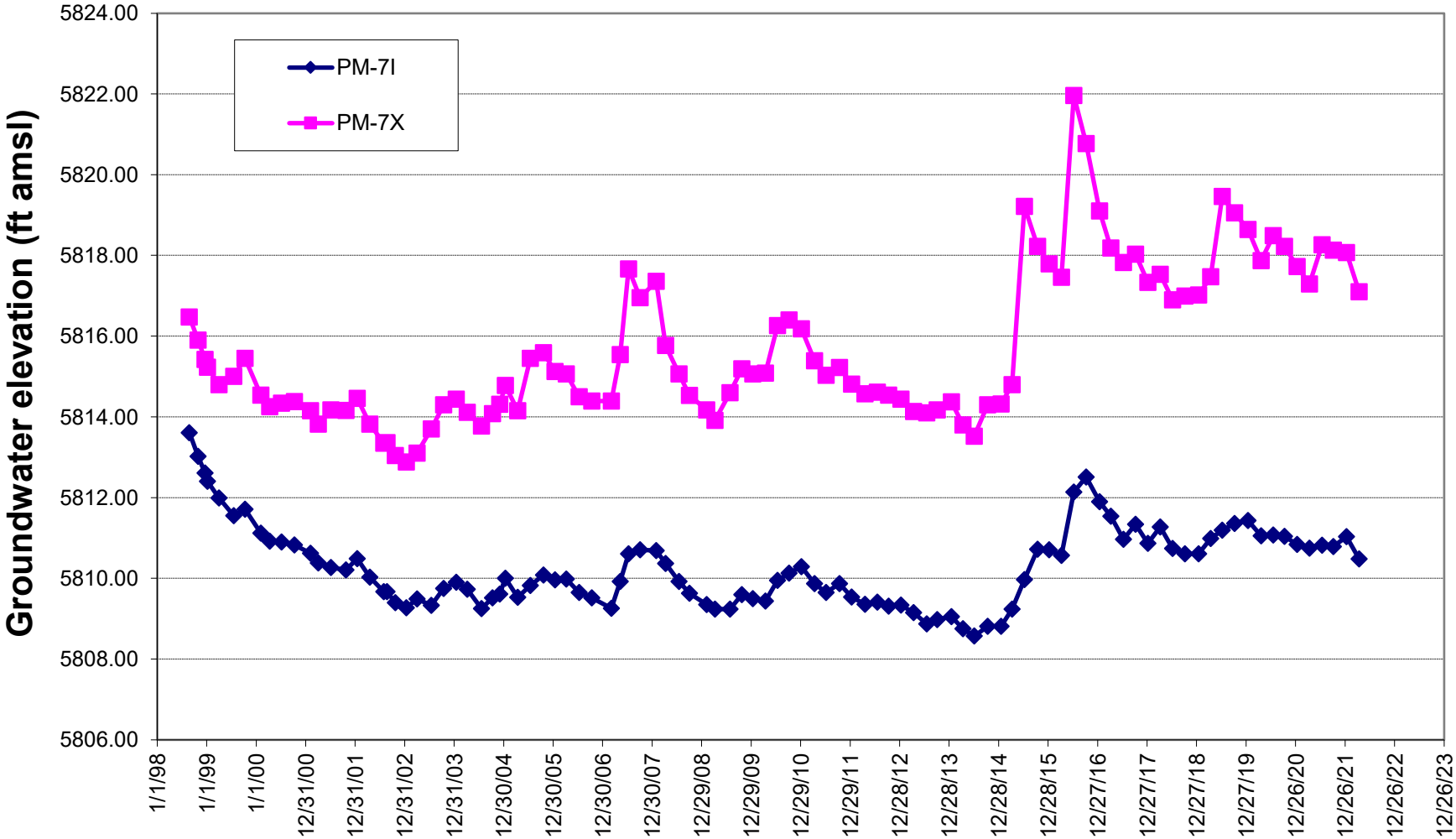
		Minimum	-7.44
		Maximum	-6.54
Mean Interior Water Level	5810.85	Avg. Diff	-7.06
Mean Exterior Water Level	5817.91	Diff of the Means	-7.06
Sum of the Squares of Deviations			
Interior	0.27		
Exterior	1.71		
Standard Deviation (pooled)	0.38		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.17	80% LCL	-7.23
95% Cpnfidence Interval	0.36	95% UCL	-6.70

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-7 well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-8I	7/13/2020	5817.07	PM-8X	7/13/2020	5826.39		-9.32
PM-8I	10/5/2020	5816.29	PM-8X	10/5/2020	5825.01		-8.72
PM-8I	1/6/2021	5815.59	PM-8X	1/6/2021	5824.34		-8.75
PM-8I	4/7/2021	5815.75	PM-8X	4/7/2021	5825.92		-10.17
PM-8I	7/8/2021	5816.84	PM-8X	7/8/2021	5826.77		-9.93
PM-8I	10/1/2021	5816.29	PM-8X	10/1/2021	5825.60		-9.31
PM-8I	1/6/2022	5816.07	PM-8X	1/6/2022	5825.26		-9.19
PM-8I	4/8/2022	5815.20	PM-8X	4/8/2022	5824.58		-9.38

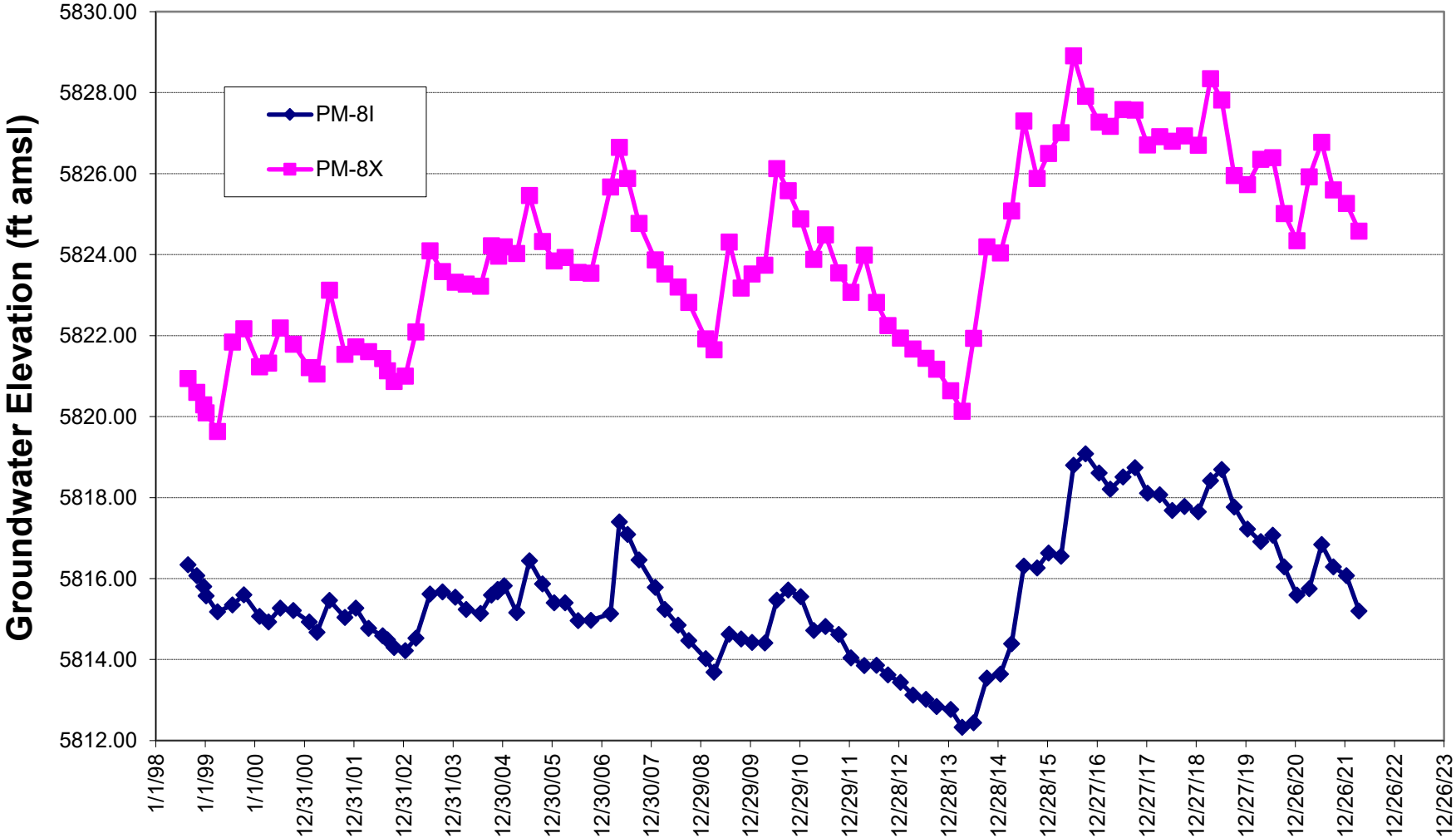
		Minimum	-10.17
		Maximum	-8.72
Mean Interior Water Level	5816.14	Avg. Diff	-9.35
Mean Exterior Water Level	5825.48	Diff of the Means	-9.35
Sum of the Squares of Deviations			
Interior	2.74		
Exterior	5.08		
Standard Deviation (pooled)	0.75		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.33	80% LCL	-9.68
95% Cpnfidence Interval	0.71	95% UCL	-8.64

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-8 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-9I	7/13/2020	5816.45	PM-9X	7/13/2020	5825.56		-9.11
PM-9I	10/5/2020	5815.96	PM-9X	10/5/2020	5824.30		-8.34
PM-9I	1/6/2021	5815.58	PM-9X	1/6/2021	5823.35		-7.77
PM-9I	4/7/2021	5815.89	PM-9X	4/7/2021	5826.79		-10.90
PM-9I	7/8/2021	5816.62	PM-9X	7/8/2021	5826.89		-10.27
PM-9I	10/1/2021	5816.02	PM-9X	10/1/2021	5824.98		-8.96
PM-9I	1/6/2022	5815.73	PM-9X	1/6/2022	5824.09		-8.36
PM-9I	4/8/2022	5815.33	PM-9X	4/8/2022	5823.48		-8.15

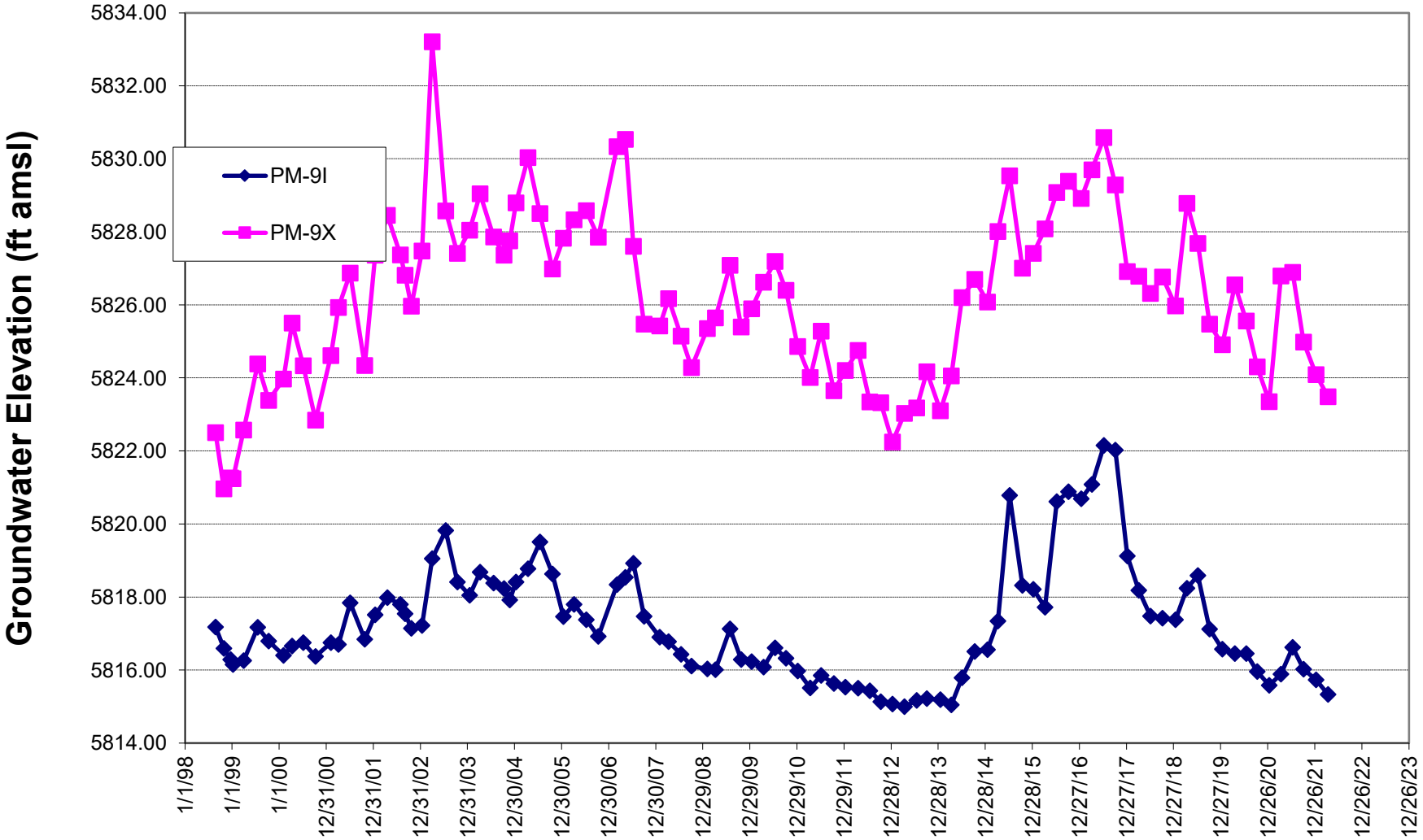
		Minimum	-10.90
		Maximum	-7.77
Mean Interior Water Level	5815.95	Avg. Diff	-8.98
Mean Exterior Water Level	5824.93	Diff of the Means	-8.98
Sum of the Squares of Deviations			
Interior	1.28		
Exterior	13.40		
Standard Deviation (pooled)	1.02		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.46	80% LCL	-9.44
95% Confidence Interval	0.97	95% UCL	-8.01

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-9 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-10I	7/13/2020	5814.87	PM-10X	7/13/2020	5820.08		-5.21
PM-10I	10/5/2020	5814.27	PM-10X	10/5/2020	5818.66		-4.39
PM-10I	1/6/2021	5813.83	PM-10X	1/6/2021	5817.19		-3.36
PM-10I	4/7/2021	5813.87	PM-10X	4/7/2021	5818.60		-4.73
PM-10I	7/8/2021	5815.01	PM-10X	7/8/2021	5820.68		-5.67
PM-10I	10/1/2021	5814.28	PM-10X	10/1/2021	5818.97		-4.69
PM-10I	1/6/2022	5813.88	PM-10X	1/6/2022	5817.52		-3.64
PM-10I	4/8/2022	5813.27	PM-10X	4/8/2022	5816.34		-3.07

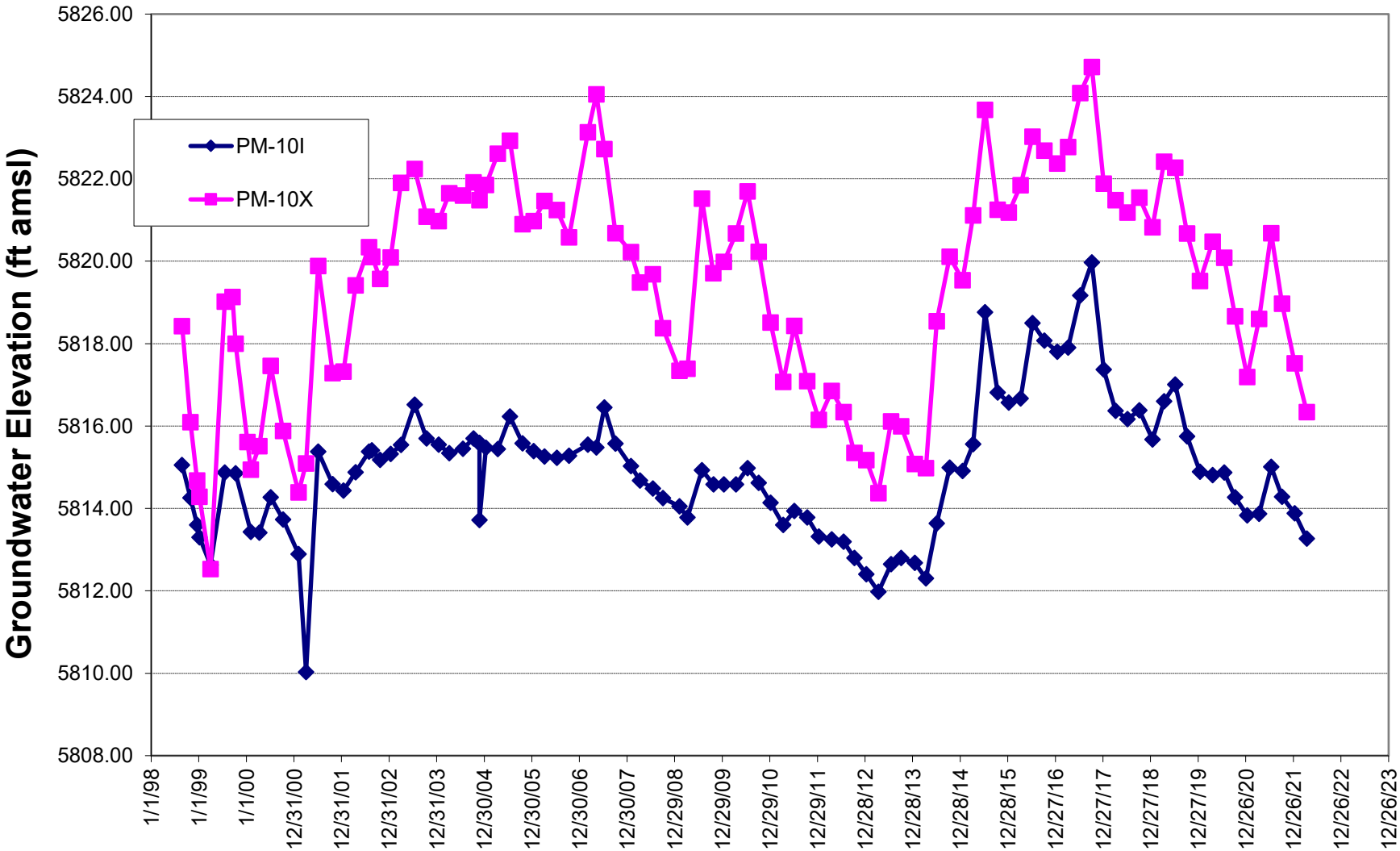
		Minimum	-5.67
		Maximum	-3.07
Mean Interior Water Level	5814.16	Avg. Diff	-4.35
Mean Exterior Water Level	5818.51	Diff of the Means	-4.35
Sum of the Squares of Deviations			
Interior	2.32		
Exterior	14.85		
Standard Deviation (pooled)	1.11		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.50	80% LCL	-4.84
95% Cpnfidence Interval	1.05	95% UCL	-3.30

Effectiveness Decision

Inward Gradient exists

Data Sufficiency

PM-10 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-11I	7/8/2020	5773.47	PM-11X	7/8/2020	5795.36		-21.89
PM-11I	10/12/2020	5773.37	PM-11X	10/12/2020	5794.84		-21.47
PM-11I	1/6/2021	5773.40	PM-11X	1/7/2021	5794.24		-20.84
PM-11I	4/9/2021	5773.73	PM-11X	4/9/2021	5793.74		-20.01
PM-11I	7/9/2021	5773.53	PM-11X	7/9/2021	5795.56		-22.03
PM-11I	10/5/2021	5773.39	PM-11X	10/5/2021	5794.85		-21.46
PM-11I	1/14/2022	5773.53	PM-11X	1/13/2022	5793.55		-20.02
PM-11I	4/7/2022	5773.74	PM-11X	4/7/2022	5792.79		-19.05

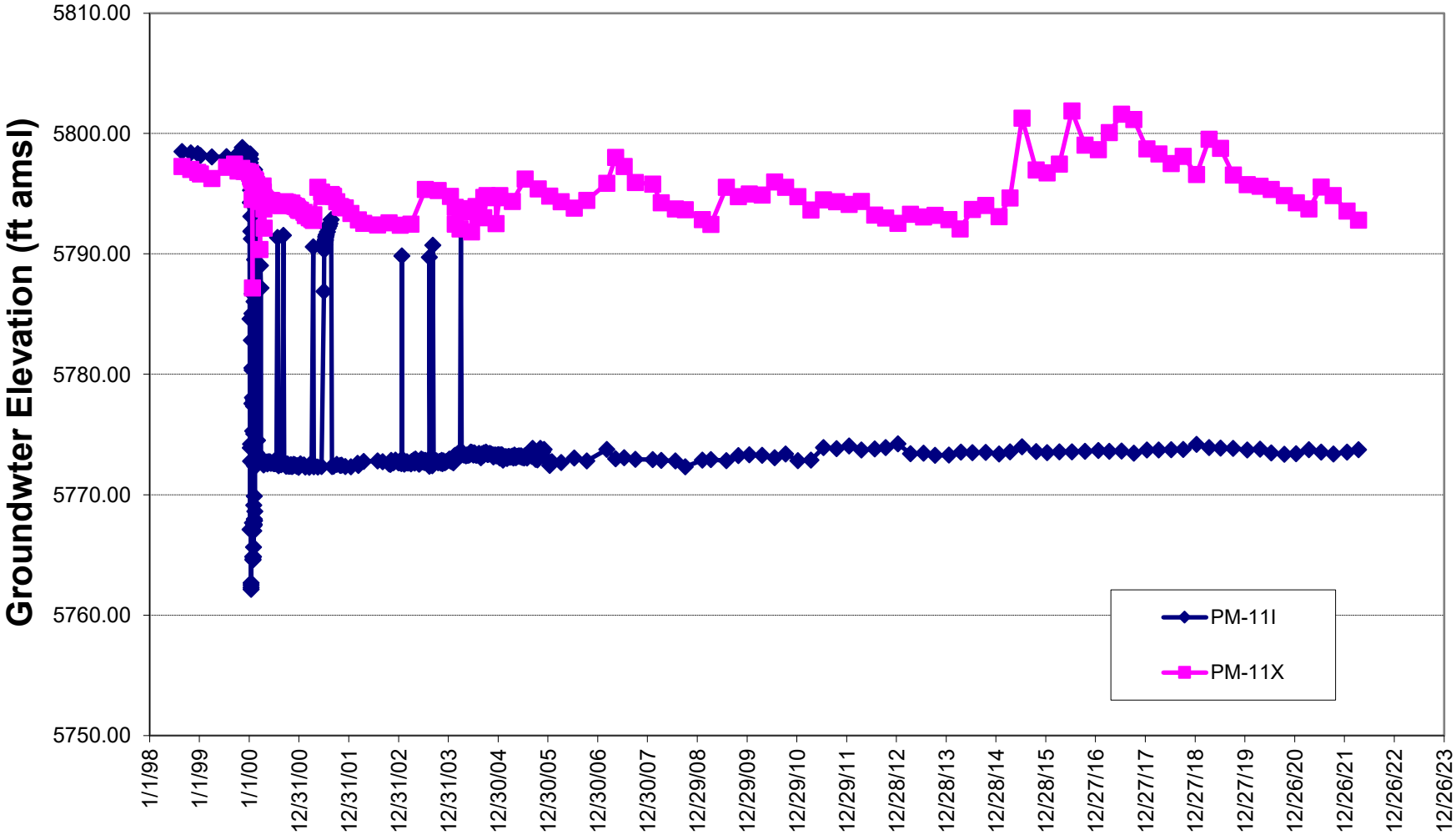
		Minimum	-22.03
		Maximum	-19.05
Mean Interior Water Level	5773.52	Avg. Diff	-20.85
Mean Exterior Water Level	5794.37	Diff of the Means	-20.85
Sum of the Squares of Deviations			
Interior	0.15		
Exterior	6.43		
Standard Deviation (pooled)	0.69		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.31	80% LCL	-21.15
95% Confidence Interval	0.65	95% UCL	-20.20

Effectiveness Decision

Inward Gradient exists

Data Sufficiency

PM-11 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-12I	7/8/2020	5763.08	PM-12X	7/8/2020	5767.99		-4.91
PM-12I	10/12/2020	5762.96	PM-12X	10/12/2020	5767.89		-4.93
PM-12I	1/7/2021	5762.91	PM-12X	1/7/2021	5768.02		-5.11
PM-12I	4/9/2021	5762.93	PM-12X	4/9/2021	5767.73		-4.80
PM-12I	7/9/2021	5762.86	PM-12X	7/9/2021	5767.15		-4.29
PM-12I	10/5/2021	5762.69	PM-12X	10/5/2021	5767.00		-4.31
PM-12I	1/13/2022	5762.65	PM-12X	1/13/2022	5767.38		-4.73
PM-12I	4/7/2022	5762.63	PM-12X	4/7/2022	5767.27		-4.64

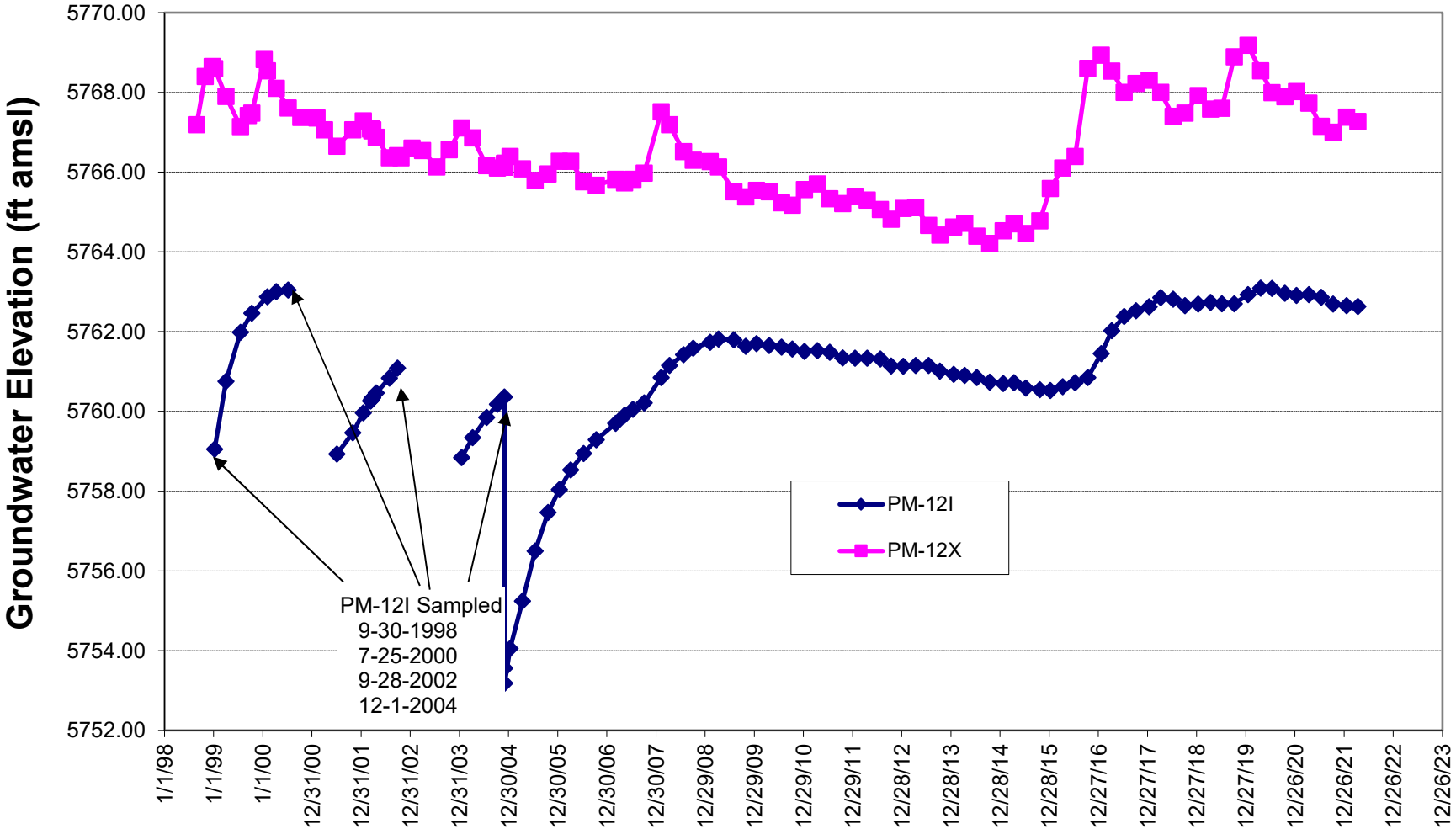
		Minimum	-5.11
		Maximum	-4.29
Mean Interior Water Level	5762.84	Avg. Diff	-4.72
Mean Exterior Water Level	5767.55	Diff of the Means	-4.71
Sum of the Squares of Deviations			
Interior	0.19		
Exterior	1.13		
Standard Deviation (pooled)	0.31		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.14	80% LCL	-4.85
95% Confidence Interval	0.29	95% UCL	-4.42

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-12 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-13I	7/8/2020	dry	PM-13X	7/8/2020	dry		not calculated
PM-13I	10/12/2020	dry	PM-13X	10/12/2020	dry		not calculated
PM-13I	1/7/2021	dry	PM-13X	1/7/2021	dry		not calculated
PM-13I	4/9/2021	dry	PM-13X	4/9/2021	5752.16		not calculated
PM-13I	7/9/2021	dry	PM-13X	7/9/2021	dry		not calculated
PM-13I	10/5/2021	dry	PM-13X	10/5/2021	5752.11		not calculated
PM-13I	1/13/2022	dry	PM-13X	1/13/2022	5752.11		not calculated
PM-13I	4/7/2022	dry	PM-13X	4/7/2022	5752.29		not calculated

		Minimum	not calculated
		Maximum	not calculated
Mean Interior Water Level	not calculated	Avg. Diff	not calculated
Mean Exterior Water Level	not calculated	Diff of the Means	not calculated

Sum of the Squares of Deviations	
Interior	not calculated
Exterior	not calculated
Standard Deviation (pooled)	not calculated

t-statistics	degrees of freedom =	7
	α = 5%	1.89
	α = 20%	0.90

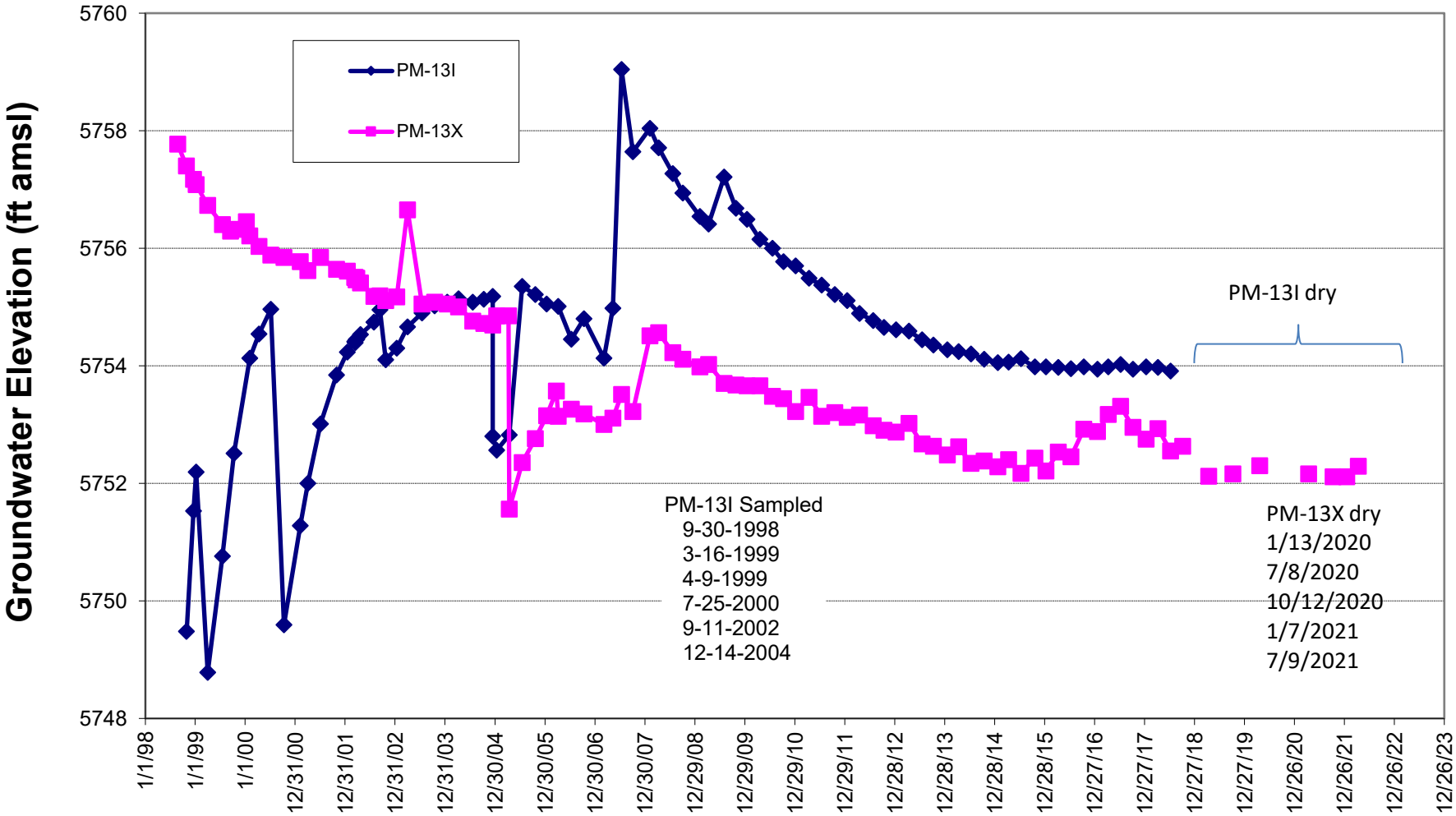
80% Confidence Interval	not calculated	80% LCL	not calculated
95% Confidence Interval	not calculated	95% UCL	not calculated

Effectiveness Decision

Data Sufficiency

Unable to calculate gradient

PM-13 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-14I	7/8/2020	5748.94	PM-14X	7/8/2020	5747.78		1.16
PM-14I	10/12/2020	5748.76	PM-14X	10/12/2020	5747.69		1.07
PM-14I	1/7/2021	5748.91	PM-14X	1/7/2021	5747.88		1.03
PM-14I	4/9/2021	5748.96	PM-14X	4/9/2021	5747.91		1.05
PM-14I	7/9/2021	5748.97	PM-14X	7/9/2021	5747.90		1.07
PM-14I	10/5/2021	5749.09	PM-14X	10/5/2021	5748.11		0.98
PM-14I	1/13/2022	5749.19	PM-14X	1/13/2022	5748.23		0.96
PM-14I	4/7/2022	5748.99	PM-14X	4/7/2022	5747.98		1.01

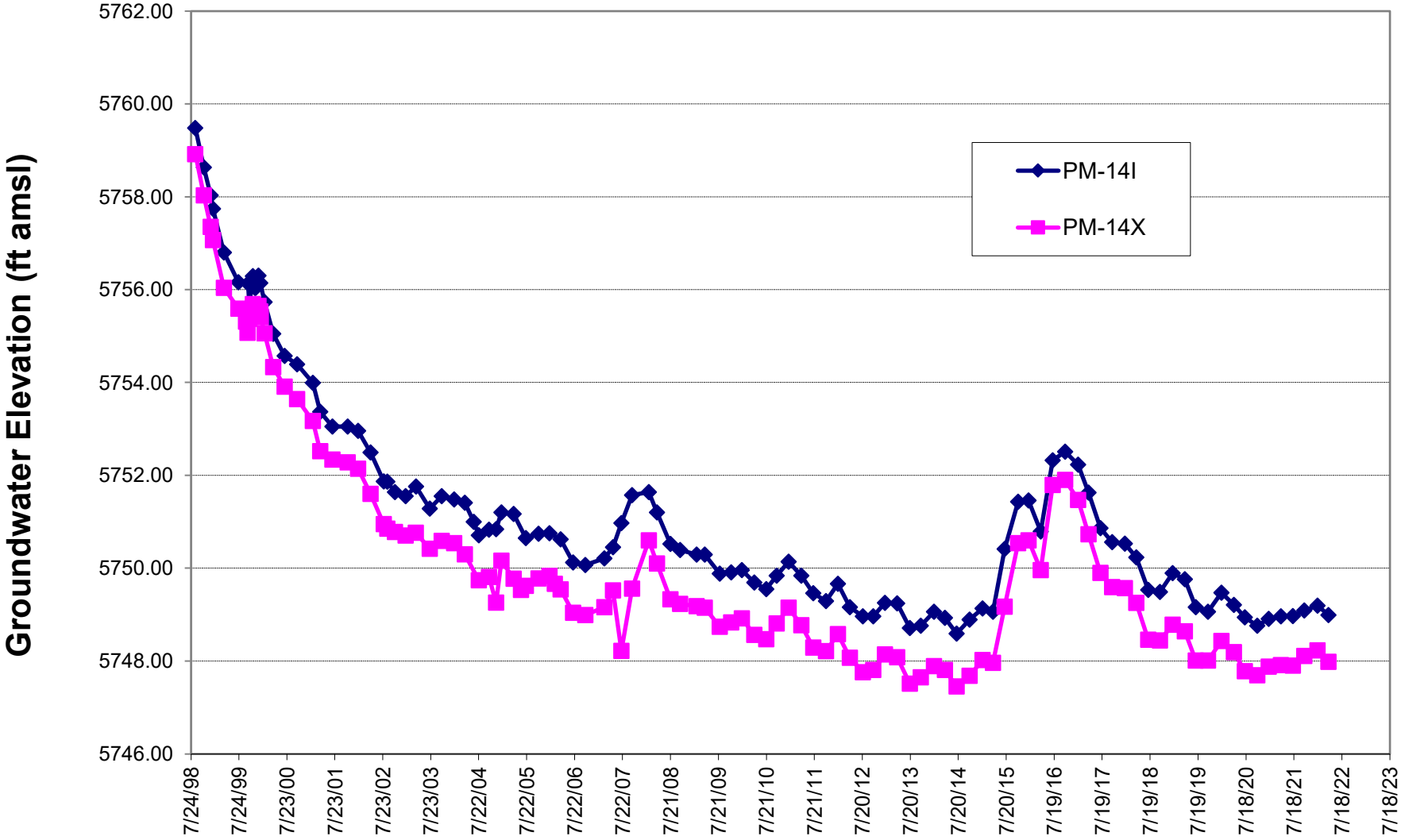
		Minimum	0.96
		Maximum	1.16
Mean Interior Water Level	5748.98	Avg. Diff	1.04
Mean Exterior Water Level	5747.94	Diff of the Means	1.04
Sum of the Squares of Deviations			
Interior	0.11		
Exterior	0.21		
Standard Deviation (pooled)	0.15		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.07	80% LCL	0.97
95% Cpnfidence Interval	0.14	95% UCL	1.18

Effectiveness Decision

Outward Gradient exists

Data Sufficiency

PM-14 Well Pair Hydrographs



MASTER LOC	Date	Water Elev	MASTER LOC	Date	Water Elev		Difference
PM-15I	7/8/2020	5723.59	PM-15X	7/9/2020	5735.85		-12.26
PM-15I	10/12/2020	5723.62	PM-15X	10/12/2020	5735.83		-12.21
PM-15I	1/6/2021	5723.63	PM-15X	1/7/2021	5735.76		-12.13
PM-15I	4/9/2021	5723.63	PM-15X	4/9/2021	5735.50		-11.87
PM-15I	7/9/2021	5723.61	PM-15X	7/9/2021	5736.91		-13.3
PM-15I	10/5/2021	5723.20	PM-15X	10/5/2021	5737.04		-13.84
PM-15I	1/14/2022	5723.21	PM-15X	1/13/2022	5736.48		-13.27
PM-15I	4/7/2022	5723.47	PM-15X	4/7/2022	5735.96		-12.49

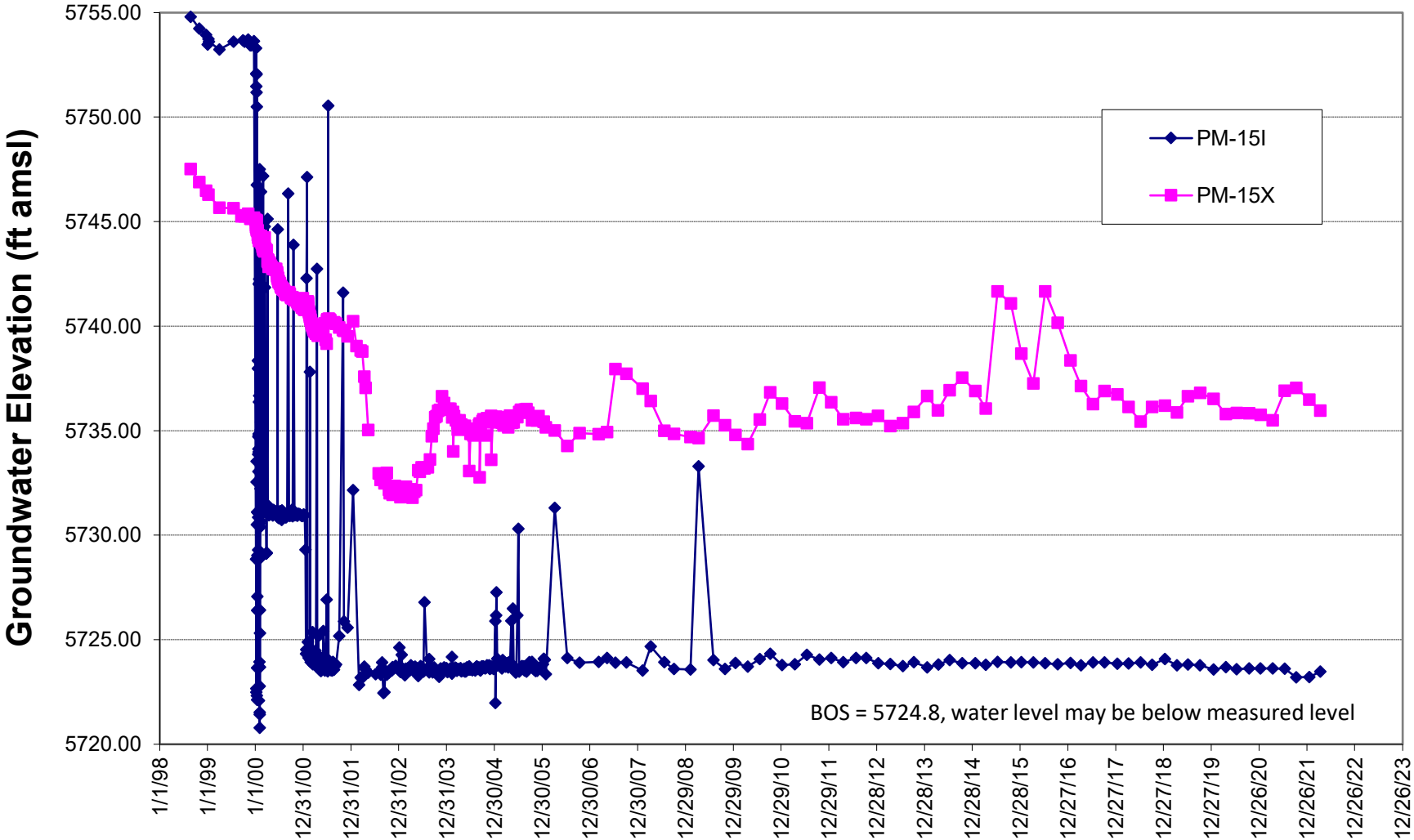
		Minimum	-13.84
		Maximum	-11.87
Mean Interior Water Level	5723.50	Avg. Diff	-12.67
Mean Exterior Water Level	5736.17	Diff of the Means	-12.67
Sum of the Squares of Deviations			
Interior	0.24		
Exterior	2.28		
Standard Deviation (pooled)	0.42		
t-statistics degrees of freedom =	7		
α = 5%	1.89		
α = 20%	0.90		
80% Confidence Interval	0.19	80% LCL	-12.86
95% Confidence Interval	0.40	95% UCL	-12.27

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-15 Well Pair Hydrographs



APPENDIX C-4.2

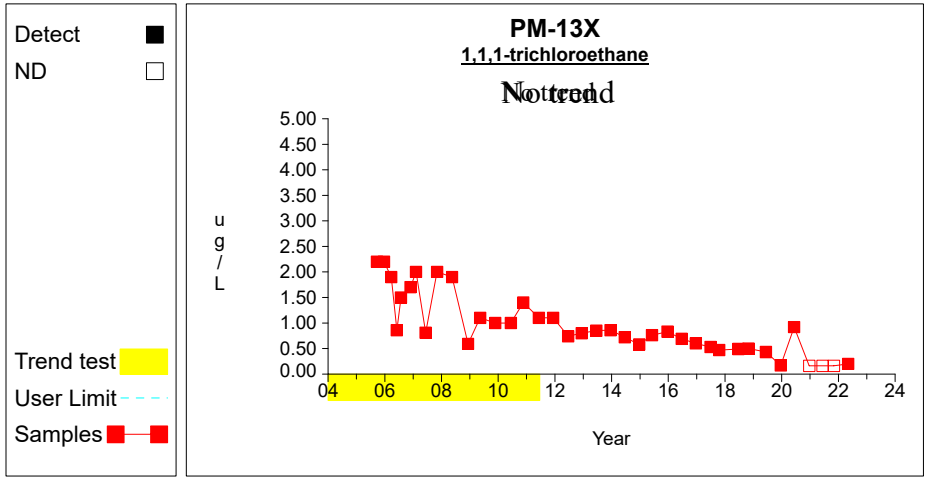
EFFECTIVENESS ASSESSMENT

Trend Analysis for Wells with Outward Gradients

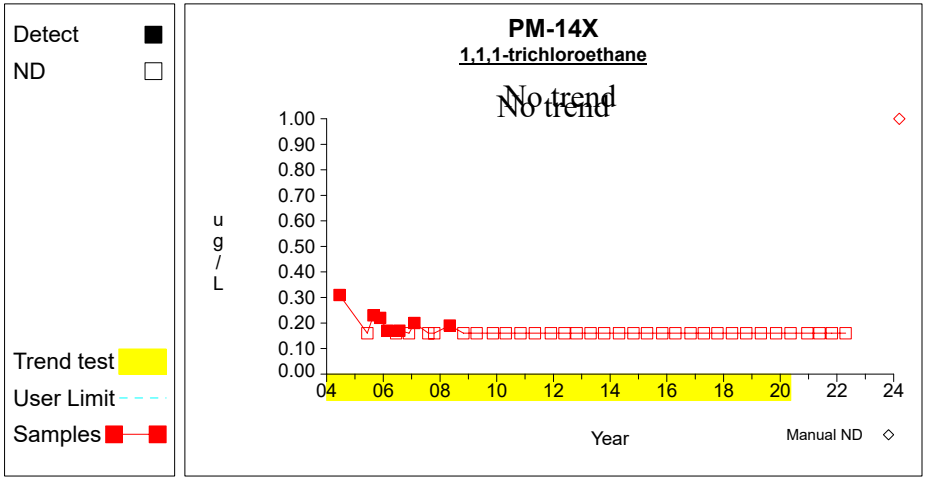
(PM-3X, PM-6X, PM-13X, and PM-14X)

(Baseline Data Set)

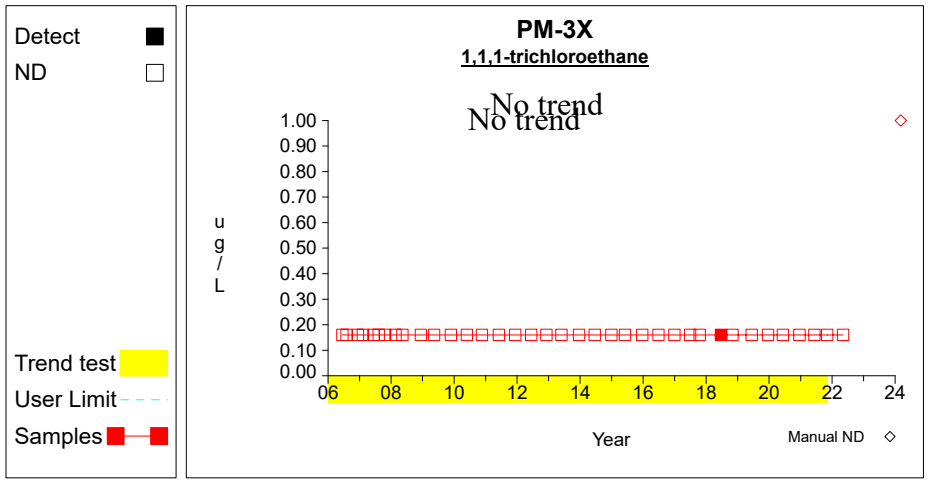
APPENDIX C-4.2
TREND ANALYSIS FOR WELLS WITH OUTWARD GRADIENTS
BASELINE DATA SET



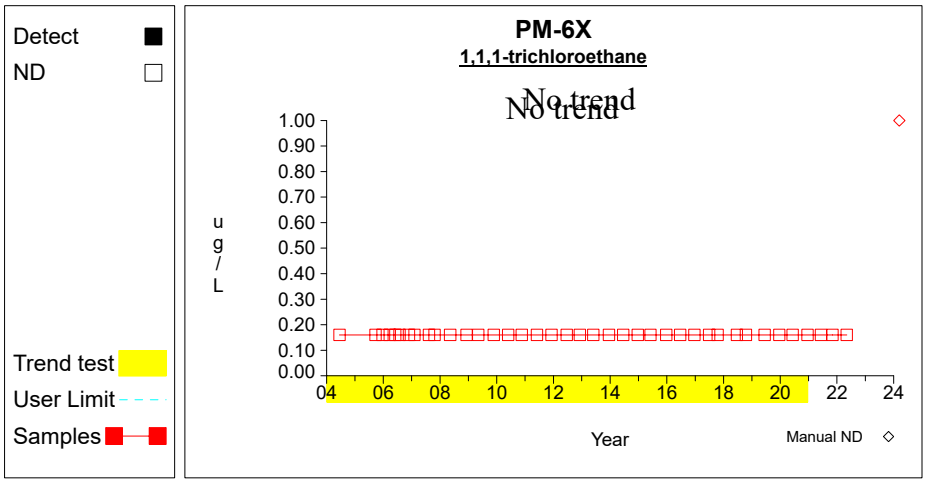
Graph 1



Graph 2



Graph 3

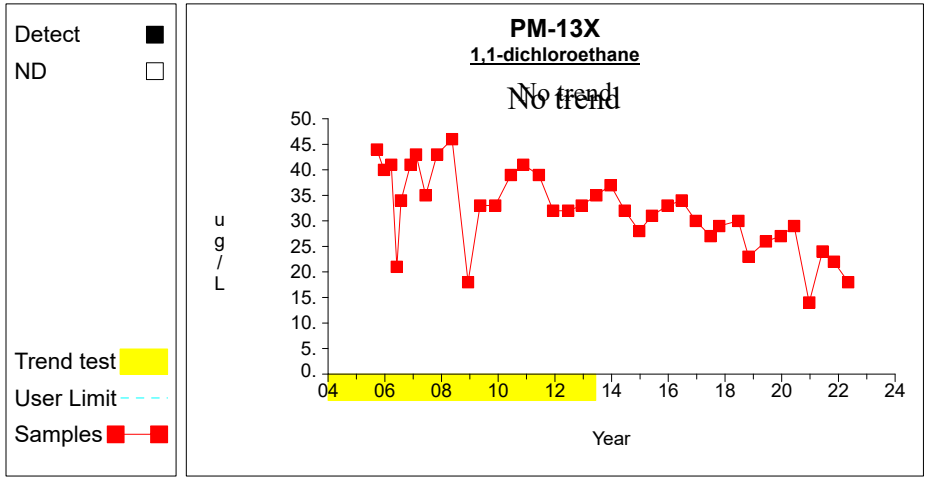


Graph 4

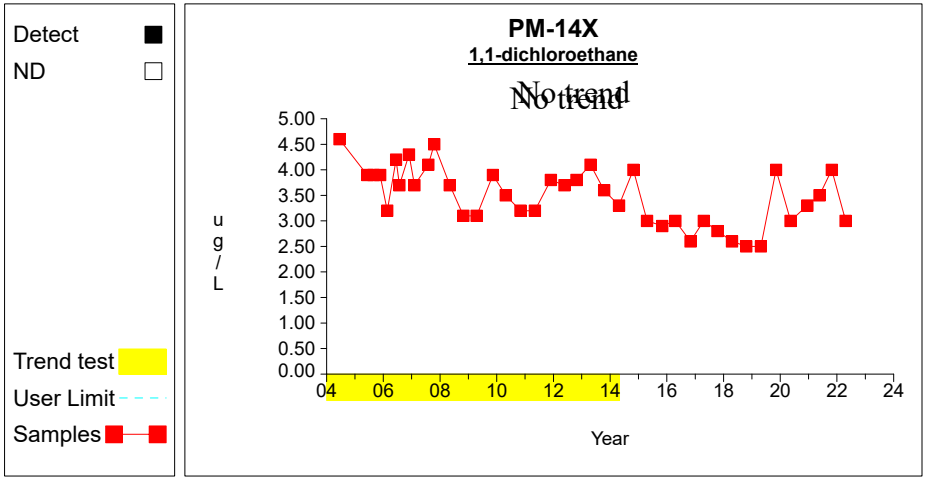
Analysis prepared using DUMPSTAT and Sen's Test for trend

Analysis prepared using DUMPSTAT and Sen's Test for trend

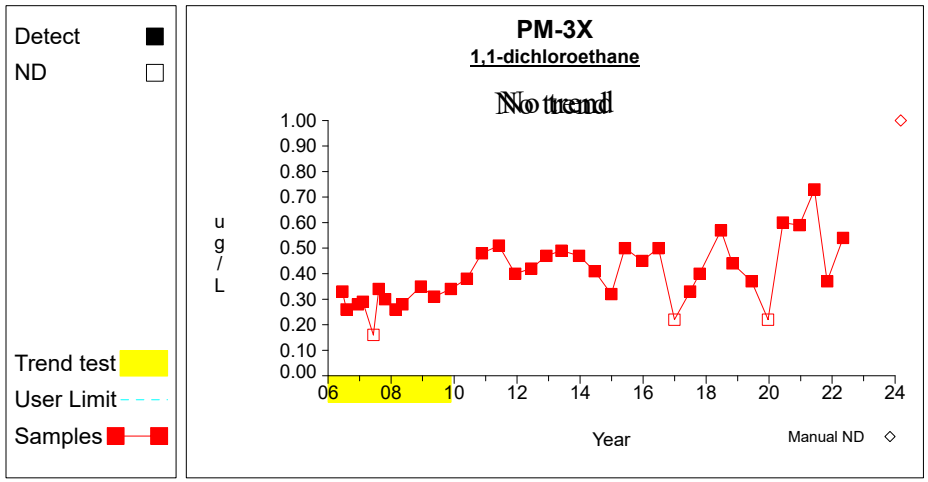
APPENDIX C-4.2
TREND ANALYSIS FOR WELLS WITH OUTWARD GRADIENTS
BASELINE DATA SET



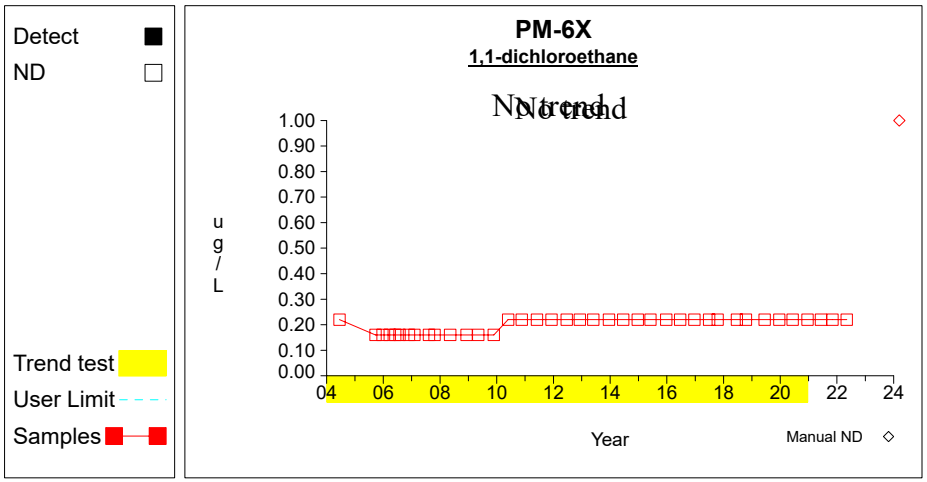
Graph 1



Graph 2



Graph 3

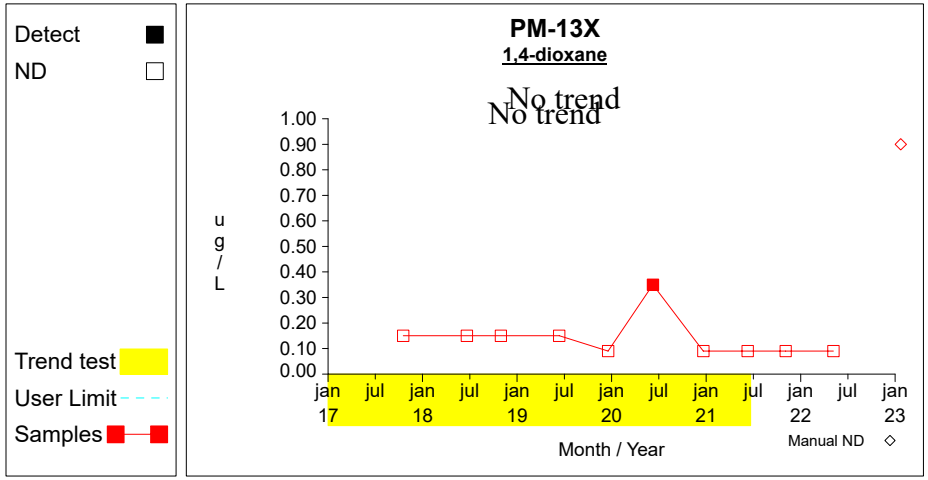


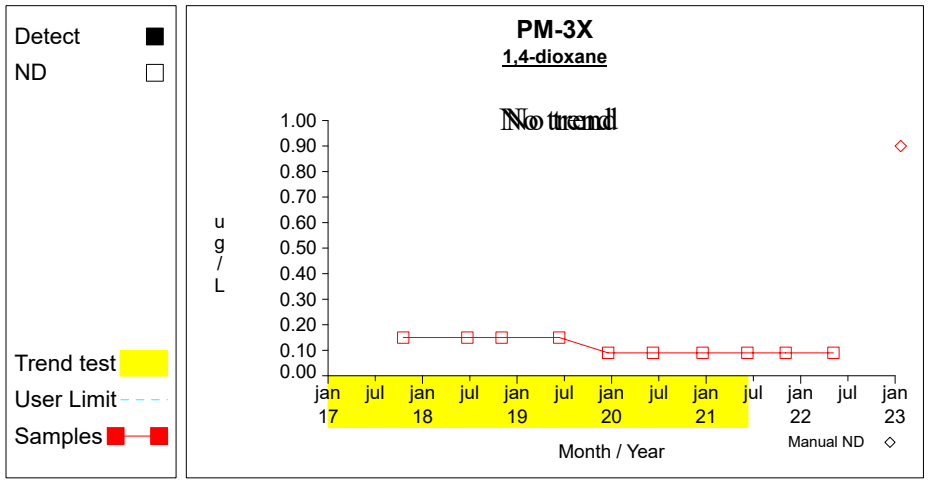
Graph 4

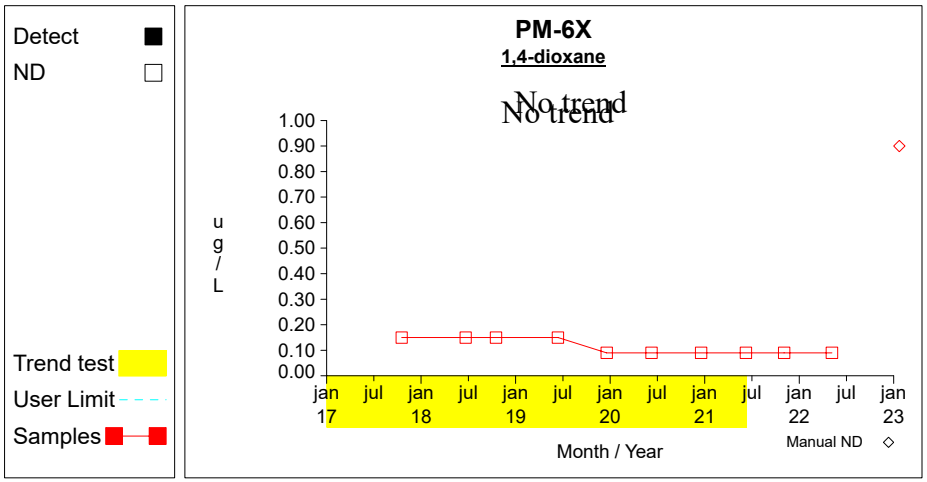
Analysis prepared using DUMPSTAT and Sen's Test for trend

Analysis prepared using DUMPSTAT and Sen's Test for trend

APPENDIX C-4.2
TREND ANALYSIS FOR WELLS WITH OUTWARD GRADIENTS
BASELINE DATA SET



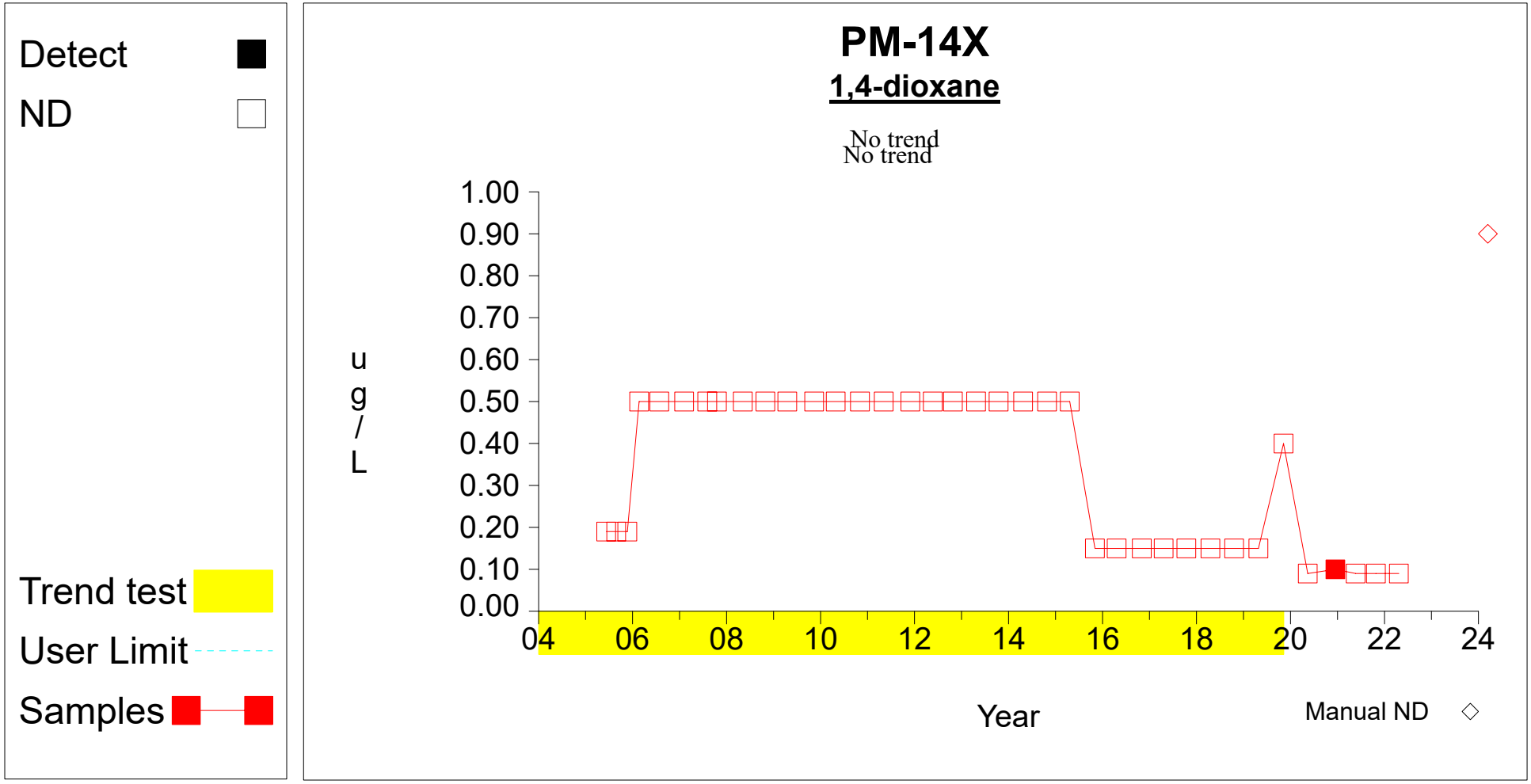




Analysis prepared using DUMPSTAT
and Sen's Test for trend

Analysis prepared using DUMPSTAT
and Sen's Test for trend

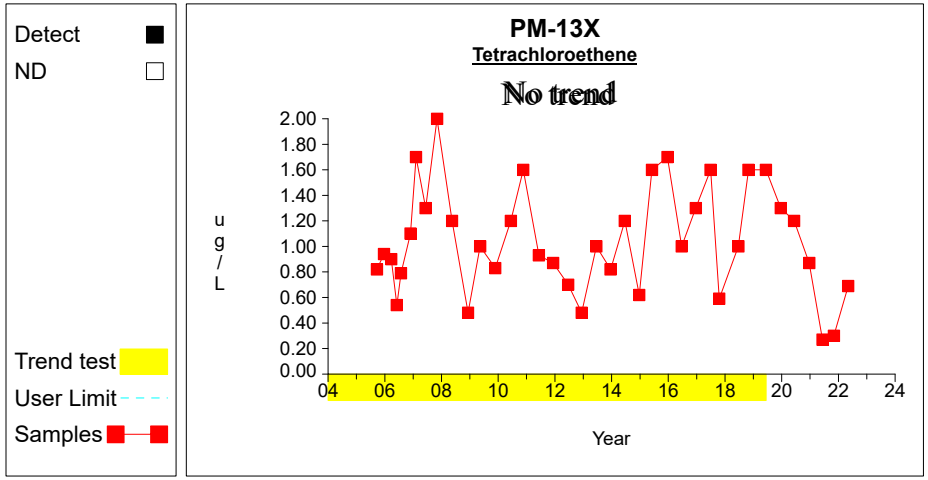
APPENDIX C-4.2
TREND ANALYSIS FOR WELLS WITH OUTWARD GRADIENTS
BASELINE DATA SET



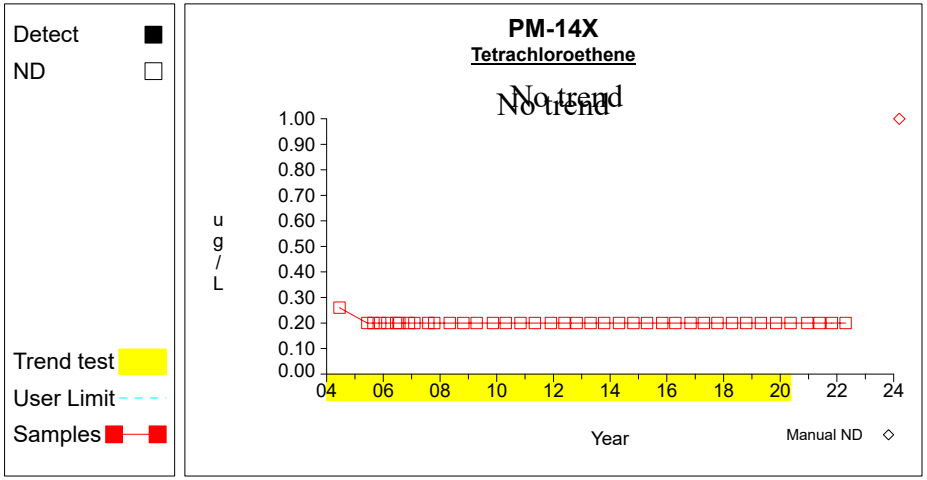
Analysis prepared using DUMPSTAT
and Sen's Test for trend

Analysis prepared using DUMPSTAT
and Sen's Test for trend

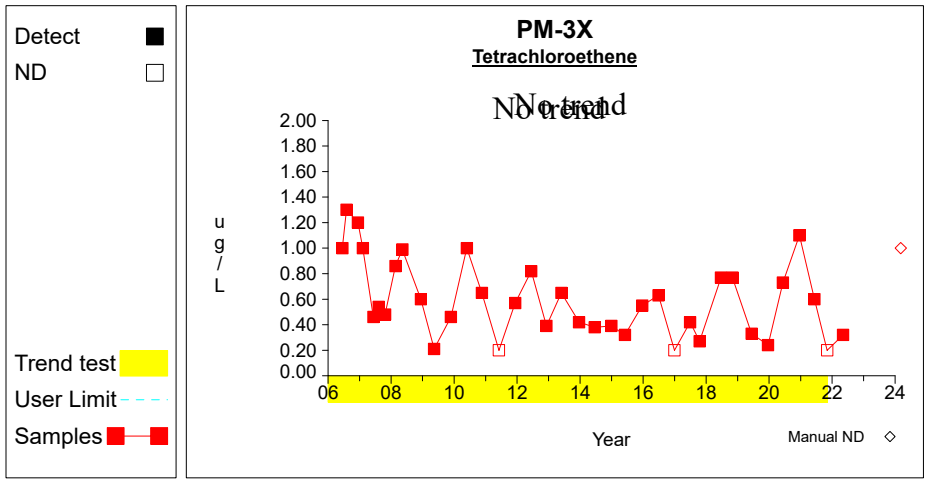
APPENDIX C-4.2
TREND ANALYSIS FOR WELLS WITH OUTWARD GRADIENTS
BASELINE DATA SET



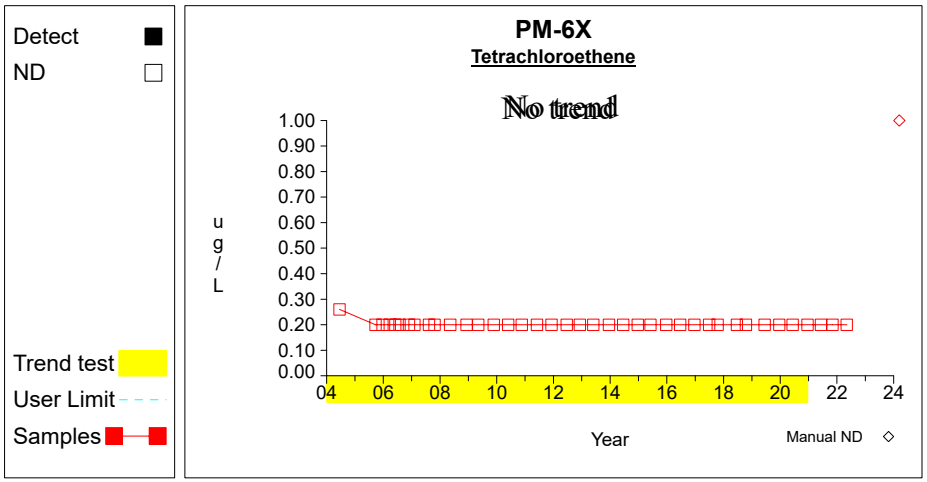
Graph 1



Graph 2



Graph 3

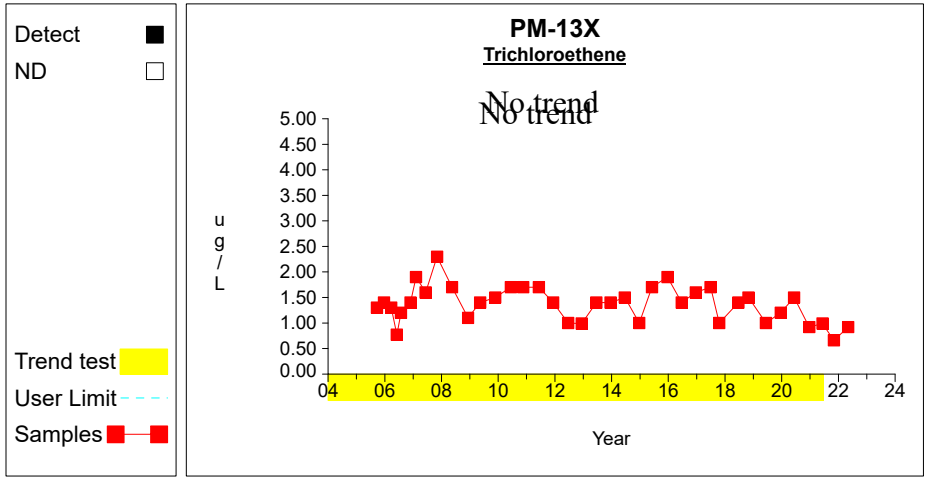


Graph 4

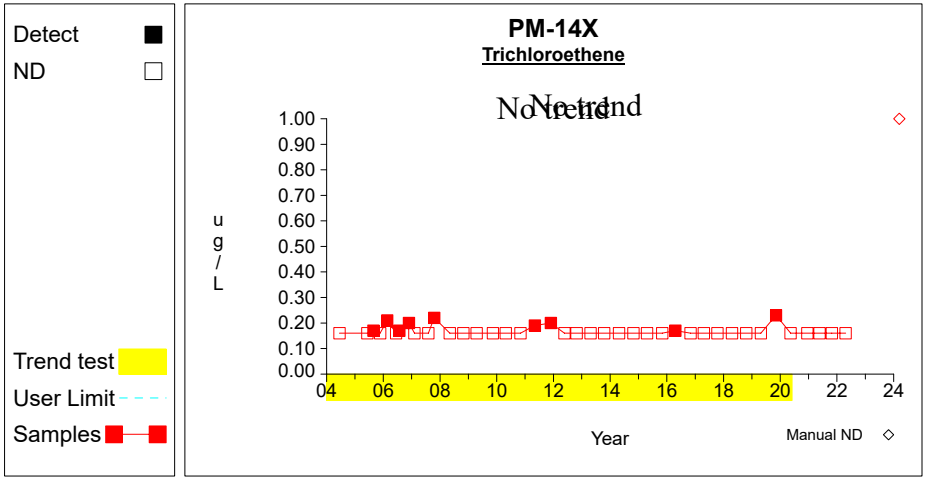
Analysis prepared using DUMPSTAT
and Sen's Test for trend

Analysis prepared using DUMPSTAT
and Sen's Test for trend

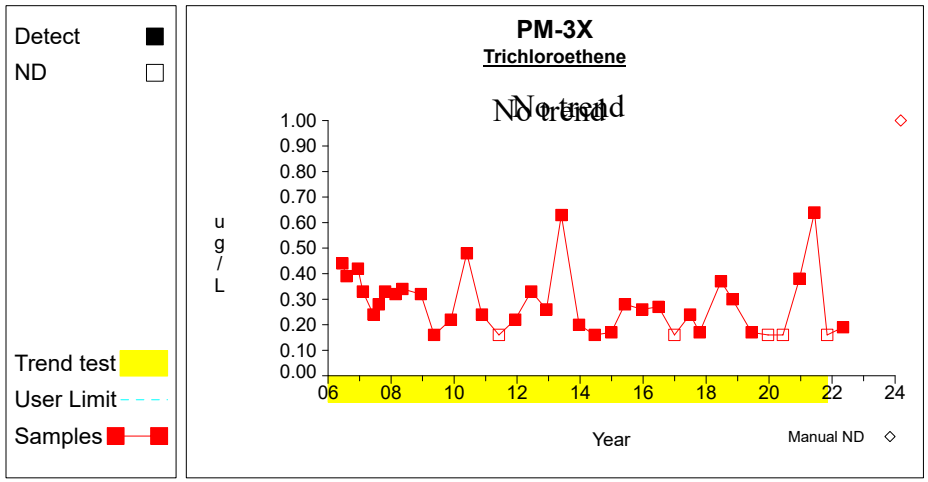
APPENDIX C-4.2
TREND ANALYSIS FOR WELLS WITH OUTWARD GRADIENTS
BASELINE DATA SET



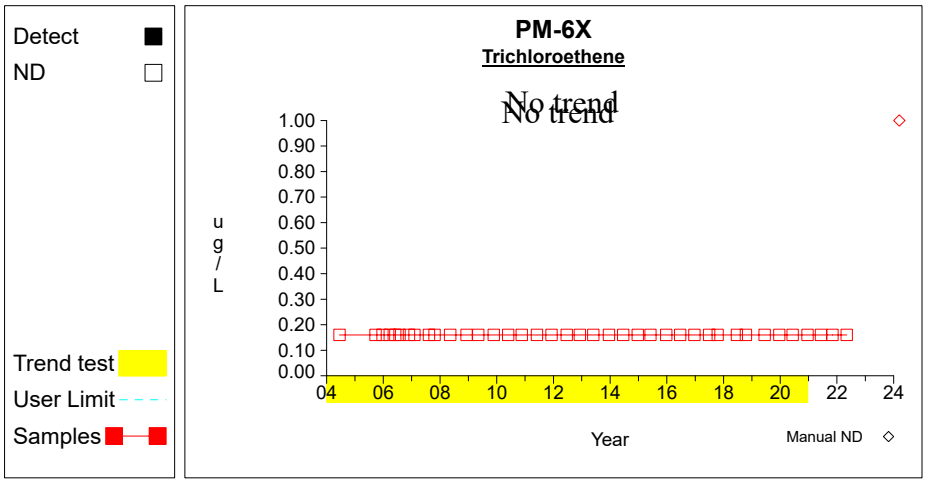
Graph 1



Graph 2



Graph 3



Graph 4

Analysis prepared using DUMPSTAT
and Sen's Test for trend

Analysis prepared using DUMPSTAT
and Sen's Test for trend

APPENDIX C-4.3

EFFECTIVENESS ASSESSMENT

Shewhart-CUSUM Test for Wells with Outward Gradients

(PM-3X, PM-6X, PM-13X, and PM-14X)

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
1,1,1-trichloroethane	ug/L	PM-13X	16	22	38	1.4538	0.5385	0.1600	0.2000	1.4538	1.4538	3.8770	normal		
1,1,1-trichloroethane	ug/L	PM-14X	36	4	40			0.1600	0.1600			1.0000	nonpar	.99	**
1,1,1-trichloroethane	ug/L	PM-3X	36	1	37			1.0000	0.1600			1.0000	nonpar	.99	**
1,1,1-trichloroethane	ug/L	PM-6X	36	3	39			0.1600	0.1600			1.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Analysis prepared using DUMPSTAT

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1,1-trichloroethane	ug/L	PM-13X	09/22/2005	yes	2.2000					
1,1,1-trichloroethane	ug/L	PM-13X	12/20/2005	yes	2.2000					
1,1,1-trichloroethane	ug/L	PM-13X	03/23/2006	yes	1.9000					
1,1,1-trichloroethane	ug/L	PM-13X	06/02/2006	yes	0.8600					
1,1,1-trichloroethane	ug/L	PM-13X	07/28/2006	yes	1.5000					
1,1,1-trichloroethane	ug/L	PM-13X	11/28/2006	yes	1.7000					
1,1,1-trichloroethane	ug/L	PM-13X	02/06/2007	yes	2.0000					
1,1,1-trichloroethane	ug/L	PM-13X	06/08/2007	yes	0.8100					
1,1,1-trichloroethane	ug/L	PM-13X	11/05/2007	yes	2.0000					
1,1,1-trichloroethane	ug/L	PM-13X	05/16/2008	yes	1.9000					
1,1,1-trichloroethane	ug/L	PM-13X	12/08/2008	yes	0.5900					
1,1,1-trichloroethane	ug/L	PM-13X	05/12/2009	yes	1.1000					
1,1,1-trichloroethane	ug/L	PM-13X	11/25/2009	yes	1.0000					
1,1,1-trichloroethane	ug/L	PM-13X	06/11/2010	yes	1.0000					
1,1,1-trichloroethane	ug/L	PM-13X	11/19/2010	yes	1.4000					
1,1,1-trichloroethane	ug/L	PM-13X	06/07/2011	yes	1.1000					
1,1,1-trichloroethane	ug/L	PM-13X	12/09/2011		1.1000			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/21/2012		0.7400			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	12/10/2012		0.8000			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/18/2013		0.8500			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	12/19/2013		0.8600			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/18/2014		0.7200			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	12/22/2014		0.5800			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/02/2015		0.7600			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	12/21/2015		0.8300			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/21/2016		0.6900			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	12/20/2016		0.6000			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/29/2017		0.5300			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	10/17/2017		0.4700			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/20/2018		0.4900			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	10/30/2018		0.5000			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/11/2019		0.4300			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	12/18/2019		0.1700			1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/08/2020		0.9200			1.4538		

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1,1-trichloroethane	ug/L	PM-13X	12/21/2020		0.1600	ND		1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	06/09/2021		0.1600	ND		1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	11/03/2021		0.1600	ND		1.4538		
1,1,1-trichloroethane	ug/L	PM-13X	05/05/2022		0.2000			1.4538		
1,1,1-trichloroethane	ug/L	PM-14X	06/15/2004	yes	0.3100					
1,1,1-trichloroethane	ug/L	PM-14X	06/08/2005	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	08/26/2005	yes	0.2300					
1,1,1-trichloroethane	ug/L	PM-14X	11/21/2005	yes	0.2200					
1,1,1-trichloroethane	ug/L	PM-14X	02/21/2006	yes	0.1700					
1,1,1-trichloroethane	ug/L	PM-14X	06/12/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	07/26/2006	yes	0.1700					
1,1,1-trichloroethane	ug/L	PM-14X	11/28/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	02/05/2007	yes	0.2000					
1,1,1-trichloroethane	ug/L	PM-14X	08/02/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	10/17/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	05/05/2008	yes	0.1900					
1,1,1-trichloroethane	ug/L	PM-14X	10/29/2008	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/16/2009	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	11/11/2009	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/27/2010	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	11/02/2010	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	05/04/2011	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	11/29/2011	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	05/21/2012	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	10/25/2012	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/23/2013	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	10/15/2013	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/24/2014	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	10/27/2014	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/20/2015	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	11/02/2015	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/20/2016	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	11/01/2016	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/20/2017	yes	0.1600	ND			1.0000	****

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1,1-trichloroethane	ug/L	PM-14X	10/13/2017	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/18/2018	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	10/19/2018	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	04/26/2019	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	11/07/2019	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	05/13/2020	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-14X	12/15/2020		0.1600	ND				
1,1,1-trichloroethane	ug/L	PM-14X	05/20/2021		0.1600	ND				
1,1,1-trichloroethane	ug/L	PM-14X	10/26/2021		0.1600	ND				
1,1,1-trichloroethane	ug/L	PM-14X	04/21/2022		0.1600	ND				
1,1,1-trichloroethane	ug/L	PM-3X	06/13/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	08/01/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/12/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	02/08/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/08/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	08/10/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	10/23/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	02/22/2008	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	05/09/2008	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/11/2008	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	05/12/2009	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	11/25/2009	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	05/27/2010	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	11/19/2010	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/02/2011	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/08/2011	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/12/2012	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/05/2012	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	05/28/2013	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/19/2013	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/18/2014	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/29/2014	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/03/2015	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/21/2015	yes	0.1600	ND			1.0000	****

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1,1-trichloroethane	ug/L	PM-3X	06/27/2016	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/29/2016	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/29/2017	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	10/17/2017	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/22/2018	yes	0.1600					
1,1,1-trichloroethane	ug/L	PM-3X	11/01/2018	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/11/2019	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/18/2019	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/08/2020	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	12/18/2020	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	06/08/2021	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	11/03/2021	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-3X	05/05/2022		0.1600	ND				
1,1,1-trichloroethane	ug/L	PM-6X	06/15/2004	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	09/22/2005	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/20/2005	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	03/23/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/02/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	07/28/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	11/28/2006	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	02/06/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	08/10/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	10/23/2007	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	05/09/2008	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/08/2008	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	05/05/2009	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	11/25/2009	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	05/27/2010	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	11/19/2010	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/02/2011	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/07/2011	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/21/2012	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/05/2012	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	05/28/2013	yes	0.1600	ND			1.0000	****

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

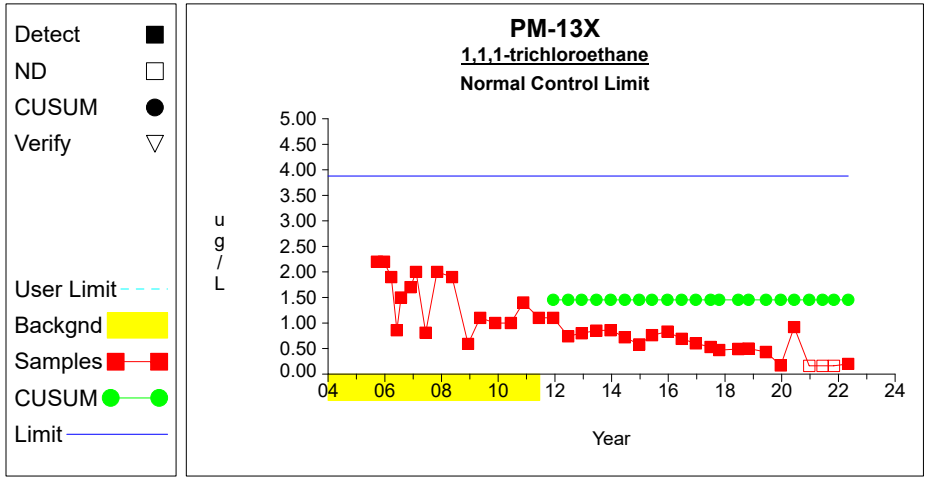
Table 2

Analytical Data and CUSUM Summary

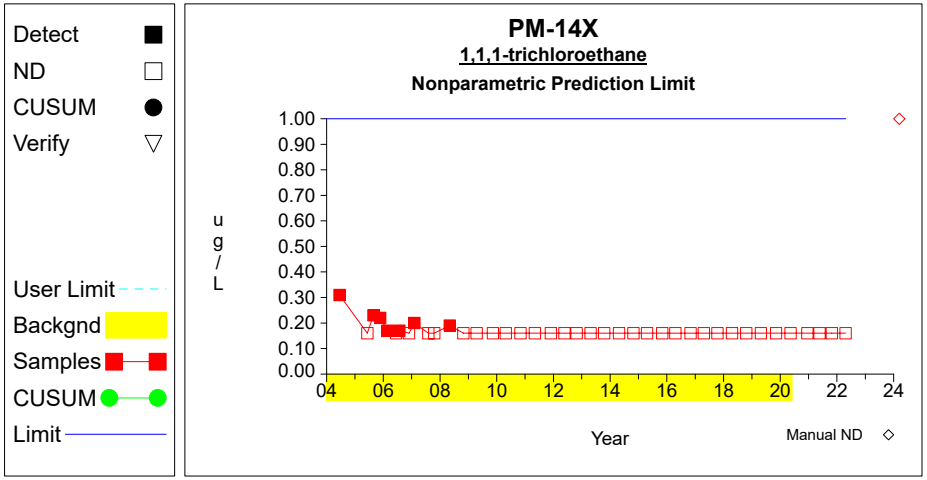
Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1,1-trichloroethane	ug/L	PM-6X	12/16/2013	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/17/2014	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/22/2014	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/02/2015	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/23/2015	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/21/2016	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/20/2016	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/29/2017	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	10/17/2017	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/21/2018	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	10/16/2018	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/12/2019	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/18/2019	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/08/2020	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	12/18/2020	yes	0.1600	ND			1.0000	****
1,1,1-trichloroethane	ug/L	PM-6X	06/08/2021		0.1600	ND				
1,1,1-trichloroethane	ug/L	PM-6X	11/03/2021		0.1600	ND				
1,1,1-trichloroethane	ug/L	PM-6X	05/05/2022		0.1600	ND				

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

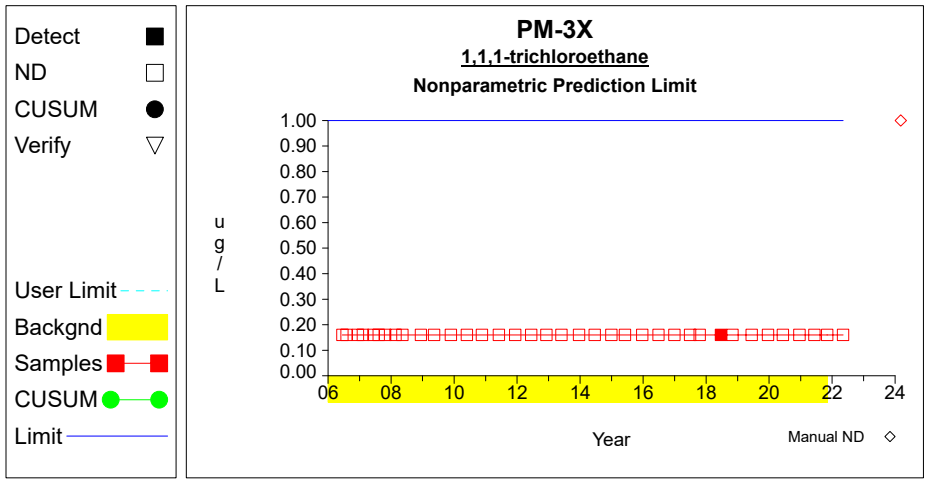
Intra-Well Control Charts / Prediction Limits



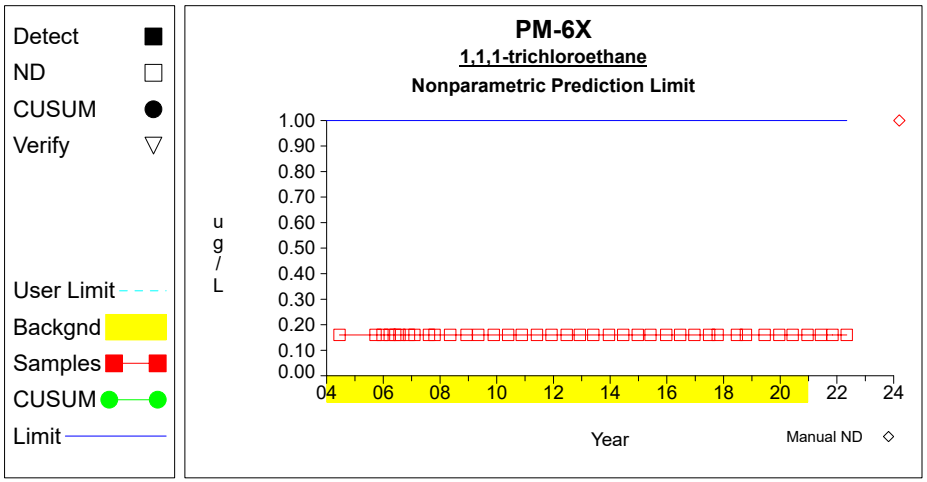
Graph 1



Graph 2



Graph 3



Graph 4

Analysis prepared using DUMPSTAT

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
1,1-dichloroethane	ug/L	PM-13X	19	19	38	36.2105	7.3905	22.0000	18.0000	36.2105	36.2105	69.4679	normal		
1,1-dichloroethane	ug/L	PM-14X	24	16	40	3.7500	0.4263	4.0000	3.0000	3.7500	3.7500	5.6684	normal		
1,1-dichloroethane	ug/L	PM-3X	12	25	37	0.3617	0.2034	0.3700	0.5400	0.5947	0.6205	1.2770	normal		
1,1-dichloroethane	ug/L	PM-6X	36	3	39			0.2200	0.2200			1.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1-dichloroethane	ug/L	PM-13X	09/22/2005	yes	44.0000					
1,1-dichloroethane	ug/L	PM-13X	12/20/2005	yes	40.0000					
1,1-dichloroethane	ug/L	PM-13X	03/23/2006	yes	41.0000					
1,1-dichloroethane	ug/L	PM-13X	06/02/2006	yes	21.0000					
1,1-dichloroethane	ug/L	PM-13X	07/28/2006	yes	34.0000					
1,1-dichloroethane	ug/L	PM-13X	11/28/2006	yes	41.0000					
1,1-dichloroethane	ug/L	PM-13X	02/06/2007	yes	43.0000					
1,1-dichloroethane	ug/L	PM-13X	06/08/2007	yes	35.0000					
1,1-dichloroethane	ug/L	PM-13X	11/05/2007	yes	43.0000					
1,1-dichloroethane	ug/L	PM-13X	05/16/2008	yes	46.0000					
1,1-dichloroethane	ug/L	PM-13X	12/08/2008	yes	18.0000					
1,1-dichloroethane	ug/L	PM-13X	05/12/2009	yes	33.0000					
1,1-dichloroethane	ug/L	PM-13X	11/25/2009	yes	33.0000					
1,1-dichloroethane	ug/L	PM-13X	06/11/2010	yes	39.0000					
1,1-dichloroethane	ug/L	PM-13X	11/19/2010	yes	41.0000					
1,1-dichloroethane	ug/L	PM-13X	06/07/2011	yes	39.0000					
1,1-dichloroethane	ug/L	PM-13X	12/09/2011	yes	32.0000					
1,1-dichloroethane	ug/L	PM-13X	06/21/2012	yes	32.0000					
1,1-dichloroethane	ug/L	PM-13X	12/10/2012	yes	33.0000					
1,1-dichloroethane	ug/L	PM-13X	06/18/2013		35.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	12/19/2013		37.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/18/2014		32.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	12/22/2014		28.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/02/2015		31.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	12/21/2015		33.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/21/2016		34.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	12/20/2016		30.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/29/2017		27.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	10/17/2017		29.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/20/2018		30.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	10/30/2018		23.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/11/2019		26.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	12/18/2019		27.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/08/2020		29.0000			36.2105		

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**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1-dichloroethane	ug/L	PM-13X	12/21/2020		14.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	06/09/2021		24.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	11/03/2021		22.0000			36.2105		
1,1-dichloroethane	ug/L	PM-13X	05/05/2022		18.0000			36.2105		
1,1-dichloroethane	ug/L	PM-14X	06/15/2004	yes	4.6000					
1,1-dichloroethane	ug/L	PM-14X	06/08/2005	yes	3.9000					
1,1-dichloroethane	ug/L	PM-14X	08/26/2005	yes	3.9000					
1,1-dichloroethane	ug/L	PM-14X	11/21/2005	yes	3.9000					
1,1-dichloroethane	ug/L	PM-14X	02/21/2006	yes	3.2000					
1,1-dichloroethane	ug/L	PM-14X	06/12/2006	yes	4.2000					
1,1-dichloroethane	ug/L	PM-14X	07/26/2006	yes	3.7000					
1,1-dichloroethane	ug/L	PM-14X	11/28/2006	yes	4.3000					
1,1-dichloroethane	ug/L	PM-14X	02/05/2007	yes	3.7000					
1,1-dichloroethane	ug/L	PM-14X	08/02/2007	yes	4.1000					
1,1-dichloroethane	ug/L	PM-14X	10/17/2007	yes	4.5000					
1,1-dichloroethane	ug/L	PM-14X	05/05/2008	yes	3.7000					
1,1-dichloroethane	ug/L	PM-14X	10/29/2008	yes	3.1000					
1,1-dichloroethane	ug/L	PM-14X	04/16/2009	yes	3.1000					
1,1-dichloroethane	ug/L	PM-14X	11/11/2009	yes	3.9000					
1,1-dichloroethane	ug/L	PM-14X	04/27/2010	yes	3.5000					
1,1-dichloroethane	ug/L	PM-14X	11/02/2010	yes	3.2000					
1,1-dichloroethane	ug/L	PM-14X	05/04/2011	yes	3.2000					
1,1-dichloroethane	ug/L	PM-14X	11/29/2011	yes	3.8000					
1,1-dichloroethane	ug/L	PM-14X	05/21/2012	yes	3.7000					
1,1-dichloroethane	ug/L	PM-14X	10/25/2012	yes	3.8000					
1,1-dichloroethane	ug/L	PM-14X	04/23/2013	yes	4.1000					
1,1-dichloroethane	ug/L	PM-14X	10/15/2013	yes	3.6000					
1,1-dichloroethane	ug/L	PM-14X	04/24/2014	yes	3.3000					
1,1-dichloroethane	ug/L	PM-14X	10/27/2014		4.0000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	04/20/2015		3.0000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	11/02/2015		2.9000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	04/20/2016		3.0000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	11/01/2016		2.6000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	04/20/2017		3.0000			3.7500		

* - Outlier for that well and constituent.
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*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1-dichloroethane	ug/L	PM-14X	10/13/2017		2.8000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	04/18/2018		2.6000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	10/19/2018		2.5000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	04/26/2019		2.5000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	11/07/2019		4.0000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	05/13/2020		3.0000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	12/15/2020		3.3000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	05/20/2021		3.5000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	10/26/2021		4.0000			3.7500		
1,1-dichloroethane	ug/L	PM-14X	04/21/2022		3.0000			3.7500		
1,1-dichloroethane	ug/L	PM-3X	06/13/2006	yes	0.3300					
1,1-dichloroethane	ug/L	PM-3X	08/01/2006	yes	0.2600					
1,1-dichloroethane	ug/L	PM-3X	12/12/2006	yes	0.2800					
1,1-dichloroethane	ug/L	PM-3X	02/08/2007	yes	0.2900					
1,1-dichloroethane	ug/L	PM-3X	06/08/2007	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-3X	08/10/2007	yes	0.3400					
1,1-dichloroethane	ug/L	PM-3X	10/23/2007	yes	0.3000					
1,1-dichloroethane	ug/L	PM-3X	02/22/2008	yes	0.2600					
1,1-dichloroethane	ug/L	PM-3X	05/09/2008	yes	0.2800					
1,1-dichloroethane	ug/L	PM-3X	12/11/2008	yes	0.3500					
1,1-dichloroethane	ug/L	PM-3X	05/12/2009	yes	0.3100					
1,1-dichloroethane	ug/L	PM-3X	11/25/2009	yes	0.3400					
1,1-dichloroethane	ug/L	PM-3X	05/27/2010		0.3800			0.3617		
1,1-dichloroethane	ug/L	PM-3X	11/19/2010		0.4800			0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/02/2011		0.5100			0.3617		
1,1-dichloroethane	ug/L	PM-3X	12/08/2011		0.4000			0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/12/2012		0.4200			0.3617		
1,1-dichloroethane	ug/L	PM-3X	12/05/2012		0.4700			0.3617		
1,1-dichloroethane	ug/L	PM-3X	05/28/2013		0.4900			0.3617		
1,1-dichloroethane	ug/L	PM-3X	12/19/2013		0.4700			0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/18/2014		0.4100			0.3617		
1,1-dichloroethane	ug/L	PM-3X	12/29/2014		0.3200			0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/03/2015		0.5000			0.3617		
1,1-dichloroethane	ug/L	PM-3X	12/21/2015		0.4500			0.3617		

* - Outlier for that well and constituent.
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*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1-dichloroethane	ug/L	PM-3X	06/27/2016		0.5000			0.3617		
1,1-dichloroethane	ug/L	PM-3X	12/29/2016		0.2200	ND		0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/29/2017		0.3300			0.3617		
1,1-dichloroethane	ug/L	PM-3X	10/17/2017		0.4000			0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/22/2018		0.5700			0.4174		
1,1-dichloroethane	ug/L	PM-3X	11/01/2018		0.4400			0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/11/2019		0.3700			0.3617		
1,1-dichloroethane	ug/L	PM-3X	12/18/2019		0.2200	ND		0.3617		
1,1-dichloroethane	ug/L	PM-3X	06/08/2020		0.6000			0.4474		
1,1-dichloroethane	ug/L	PM-3X	12/18/2020		0.5900			0.5232		
1,1-dichloroethane	ug/L	PM-3X	06/08/2021		0.7300			0.7390		
1,1-dichloroethane	ug/L	PM-3X	11/03/2021		0.3700			0.5947		
1,1-dichloroethane	ug/L	PM-3X	05/05/2022		0.5400			0.6205		
1,1-dichloroethane	ug/L	PM-6X	06/15/2004	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	09/22/2005	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/20/2005	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	03/23/2006	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/02/2006	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	07/28/2006	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	11/28/2006	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	02/06/2007	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	08/10/2007	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	10/23/2007	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	05/09/2008	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/08/2008	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	05/05/2009	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	11/25/2009	yes	0.1600	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	05/27/2010	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	11/19/2010	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/02/2011	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/07/2011	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/21/2012	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/05/2012	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	05/28/2013	yes	0.2200	ND			1.0000	****

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

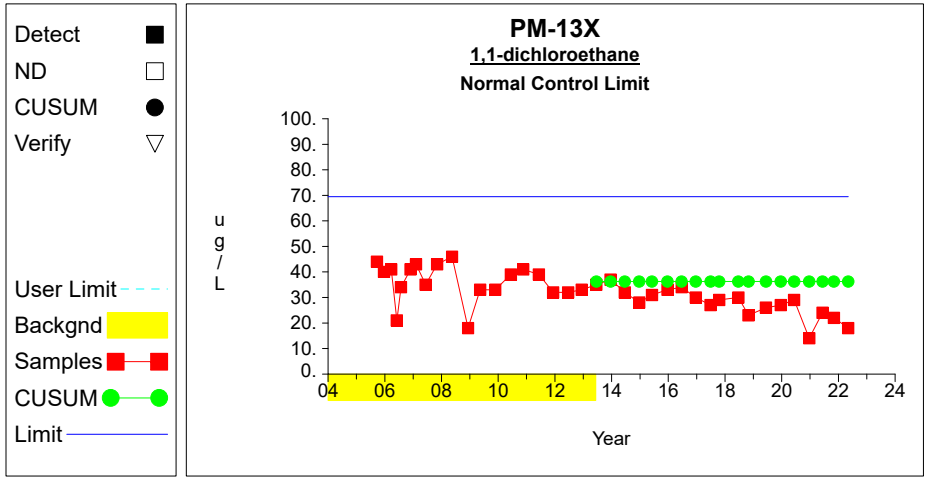
Table 2

Analytical Data and CUSUM Summary

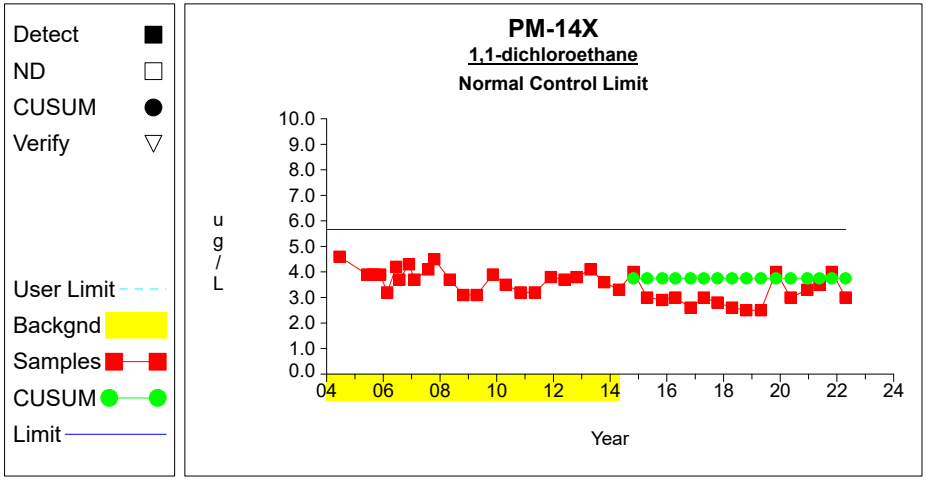
Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,1-dichloroethane	ug/L	PM-6X	12/16/2013	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/17/2014	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/22/2014	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/02/2015	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/23/2015	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/21/2016	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/20/2016	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/29/2017	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	10/17/2017	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/21/2018	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	10/16/2018	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/12/2019	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/18/2019	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/08/2020	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	12/18/2020	yes	0.2200	ND			1.0000	****
1,1-dichloroethane	ug/L	PM-6X	06/08/2021		0.2200	ND				
1,1-dichloroethane	ug/L	PM-6X	11/03/2021		0.2200	ND				
1,1-dichloroethane	ug/L	PM-6X	05/05/2022		0.2200	ND				

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

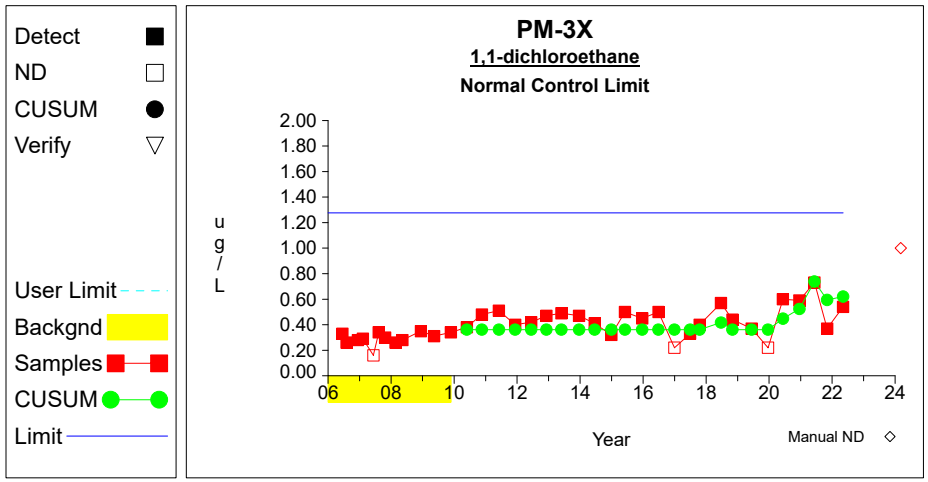
Intra-Well Control Charts / Prediction Limits



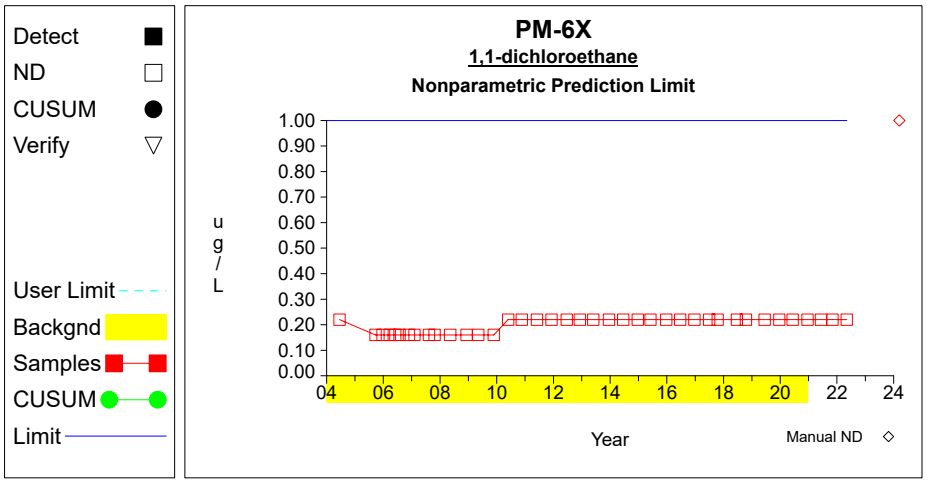
Graph 1



Graph 2



Graph 3



Graph 4

Analysis prepared using DUMPSTAT

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
1,4-dioxane	ug/L	PM-13X	8	2	10								nonpar *		**
1,4-dioxane	ug/L	PM-3X	8	2	10								nonpar *		**
1,4-dioxane	ug/L	PM-6X	8	2	10								nonpar *		**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
1,4-dioxane	ug/L	PM-14X	32	5	37			0.0900	0.0900			0.9000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,4-dioxane	ug/L	PM-14X	06/08/2005	yes	0.1900	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	08/26/2005	yes	0.1900	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	11/21/2005	yes	0.1900	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	02/21/2006	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	07/26/2006	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	02/05/2007	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	08/02/2007	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	10/17/2007	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	05/05/2008	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	10/29/2008	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/16/2009	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	11/11/2009	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/27/2010	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	11/02/2010	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	05/04/2011	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	11/29/2011	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	05/21/2012	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	10/25/2012	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/23/2013	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	10/15/2013	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/23/2014	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	10/27/2014	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/20/2015	yes	0.5000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	11/02/2015	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/20/2016	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	11/01/2016	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/20/2017	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	10/13/2017	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/18/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	10/19/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	04/26/2019	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	11/07/2019	yes	0.4000	ND			0.9000	****
1,4-dioxane	ug/L	PM-14X	05/13/2020		0.0900	ND				
1,4-dioxane	ug/L	PM-14X	12/15/2020		0.1000					

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,4-dioxane	ug/L	PM-14X	05/20/2021		0.0900	ND				
1,4-dioxane	ug/L	PM-14X	10/26/2021		0.0900	ND				
1,4-dioxane	ug/L	PM-14X	04/21/2022		0.0900	ND				

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,4-dioxane	ug/L	PM-13X	10/17/2017	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-13X	06/20/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-13X	10/30/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-13X	06/11/2019	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-13X	12/18/2019	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-13X	06/08/2020	yes	0.3500					
1,4-dioxane	ug/L	PM-13X	12/21/2020	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-13X	06/09/2021	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-13X	11/03/2021		0.0900	ND				
1,4-dioxane	ug/L	PM-13X	05/05/2022		0.0900	ND				

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**** - ND value replaced with manual RL.
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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
1,4-dioxane	ug/L	PM-3X	10/17/2017	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	06/22/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	11/01/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	06/11/2019	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	12/18/2019	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	06/08/2020	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	12/18/2020	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	06/08/2021	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-3X	11/03/2021		0.0900	ND				
1,4-dioxane	ug/L	PM-3X	05/05/2022		0.0900	ND				
1,4-dioxane	ug/L	PM-6X	10/17/2017	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	06/21/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	10/16/2018	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	06/12/2019	yes	0.1500	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	12/18/2019	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	06/08/2020	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	12/18/2020	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	06/08/2021	yes	0.0900	ND			0.9000	****
1,4-dioxane	ug/L	PM-6X	11/03/2021		0.0900	ND				
1,4-dioxane	ug/L	PM-6X	05/05/2022		0.0900	ND				

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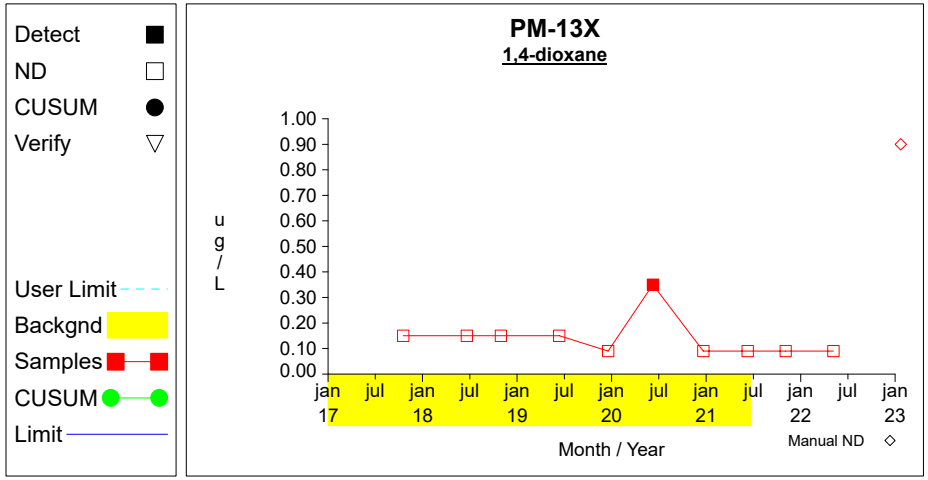
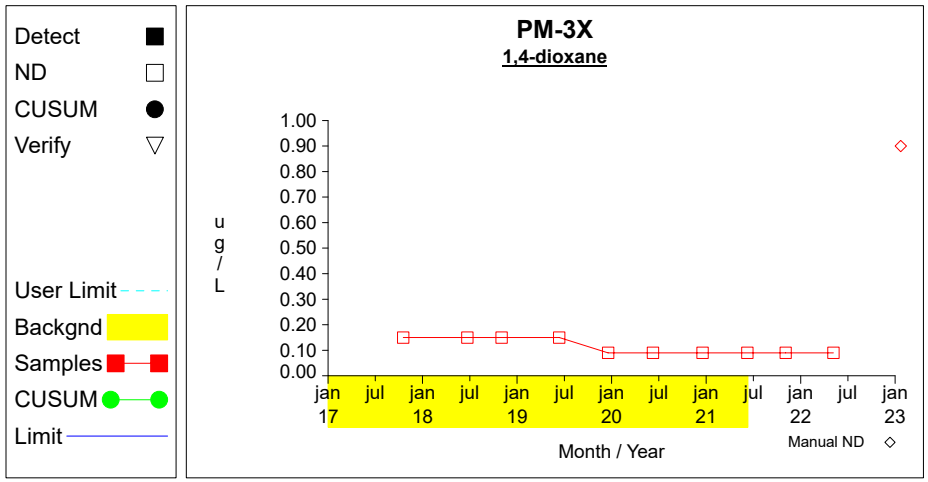
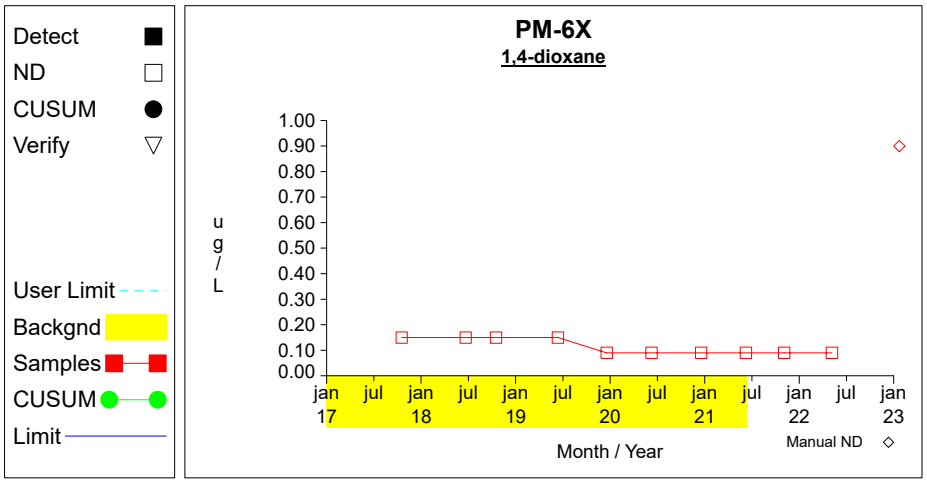
Intra-Well Control Charts / Prediction Limits

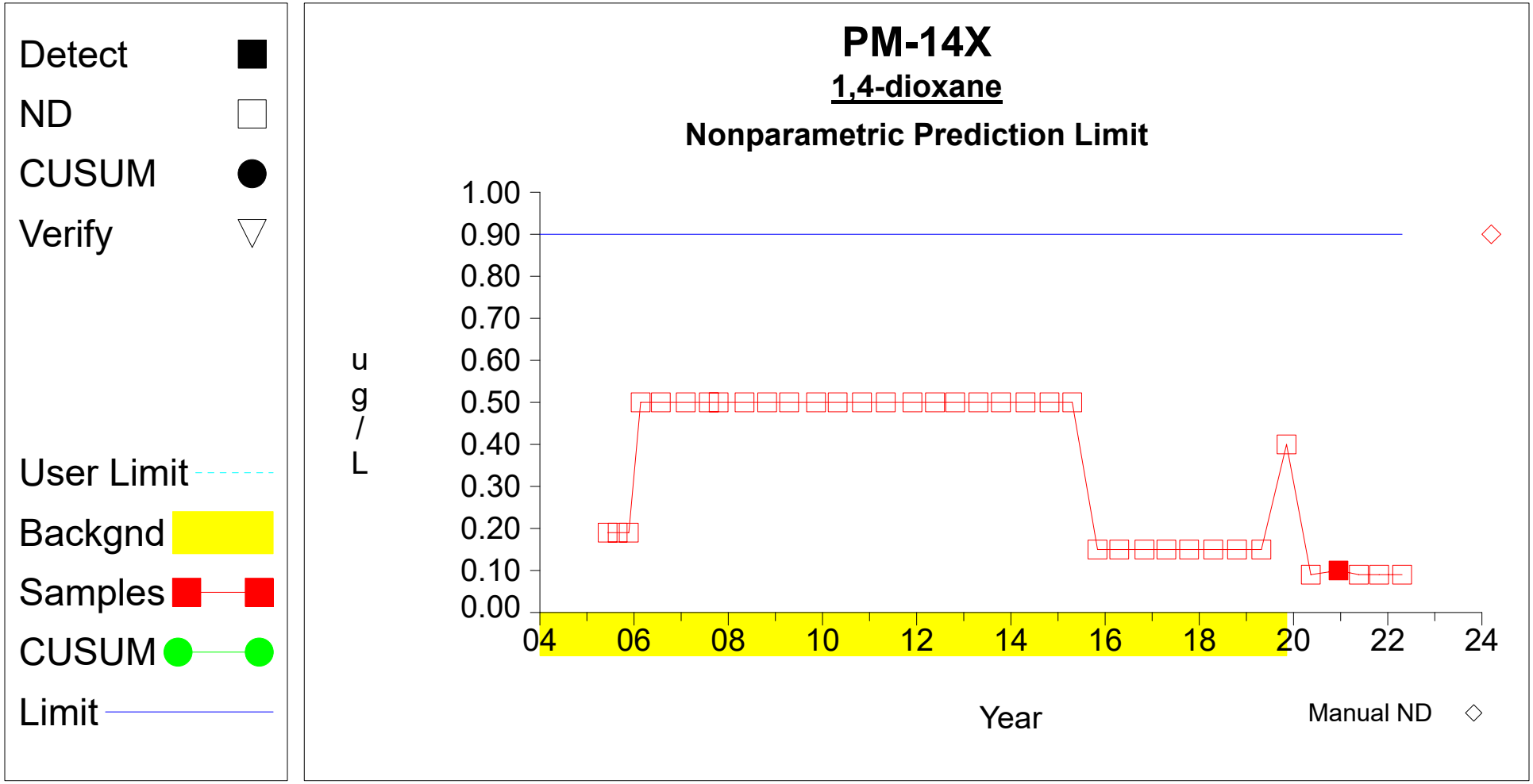






Analysis prepared using DUMPSTAT

Intra-Well Control Charts / Prediction Limits



Graph 1

Analysis prepared using DUMPSTAT

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Tetrachloroethene	ug/L	PM-13X	32	6	38	1.0941	0.4070	0.3000	0.6900	1.0941	1.0941	2.9255	normal		
Tetrachloroethene	ug/L	PM-14X	36	4	40			0.2000	0.2000			1.0000	nonpar	.99	**
Tetrachloroethene	ug/L	PM-3X	36	1	37	0.6694	0.2947	1.0000	0.3200		0.6694	1.9954	normal		
Tetrachloroethene	ug/L	PM-6X	36	3	39			0.2000	0.2000			1.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Tetrachloroethene	ug/L	PM-13X	09/22/2005	yes	0.8200					
Tetrachloroethene	ug/L	PM-13X	12/20/2005	yes	0.9400					
Tetrachloroethene	ug/L	PM-13X	03/23/2006	yes	0.9000					
Tetrachloroethene	ug/L	PM-13X	06/02/2006	yes	0.5400					
Tetrachloroethene	ug/L	PM-13X	07/28/2006	yes	0.7900					
Tetrachloroethene	ug/L	PM-13X	11/28/2006	yes	1.1000					
Tetrachloroethene	ug/L	PM-13X	02/06/2007	yes	1.7000					
Tetrachloroethene	ug/L	PM-13X	06/08/2007	yes	1.3000					
Tetrachloroethene	ug/L	PM-13X	11/05/2007	yes	2.0000					
Tetrachloroethene	ug/L	PM-13X	05/16/2008	yes	1.2000					
Tetrachloroethene	ug/L	PM-13X	12/08/2008	yes	0.4800					
Tetrachloroethene	ug/L	PM-13X	05/12/2009	yes	1.0000					
Tetrachloroethene	ug/L	PM-13X	11/25/2009	yes	0.8300					
Tetrachloroethene	ug/L	PM-13X	06/11/2010	yes	1.2000					
Tetrachloroethene	ug/L	PM-13X	11/19/2010	yes	1.6000					
Tetrachloroethene	ug/L	PM-13X	06/07/2011	yes	0.9300					
Tetrachloroethene	ug/L	PM-13X	12/09/2011	yes	0.8700					
Tetrachloroethene	ug/L	PM-13X	06/21/2012	yes	0.7000					
Tetrachloroethene	ug/L	PM-13X	12/10/2012	yes	0.4800					
Tetrachloroethene	ug/L	PM-13X	06/18/2013	yes	1.0000					
Tetrachloroethene	ug/L	PM-13X	12/19/2013	yes	0.8200					
Tetrachloroethene	ug/L	PM-13X	06/18/2014	yes	1.2000					
Tetrachloroethene	ug/L	PM-13X	12/22/2014	yes	0.6200					
Tetrachloroethene	ug/L	PM-13X	06/02/2015	yes	1.6000					
Tetrachloroethene	ug/L	PM-13X	12/21/2015	yes	1.7000					
Tetrachloroethene	ug/L	PM-13X	06/21/2016	yes	1.0000					
Tetrachloroethene	ug/L	PM-13X	12/20/2016	yes	1.3000					
Tetrachloroethene	ug/L	PM-13X	06/29/2017	yes	1.6000					
Tetrachloroethene	ug/L	PM-13X	10/17/2017	yes	0.5900					
Tetrachloroethene	ug/L	PM-13X	06/20/2018	yes	1.0000					
Tetrachloroethene	ug/L	PM-13X	10/30/2018	yes	1.6000					
Tetrachloroethene	ug/L	PM-13X	06/11/2019	yes	1.6000					
Tetrachloroethene	ug/L	PM-13X	12/18/2019		1.3000			1.0941		
Tetrachloroethene	ug/L	PM-13X	06/08/2020		1.2000			1.0941		

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Tetrachloroethene	ug/L	PM-13X	12/21/2020		0.8700			1.0941		
Tetrachloroethene	ug/L	PM-13X	06/09/2021		0.2700			1.0941		
Tetrachloroethene	ug/L	PM-13X	11/03/2021		0.3000			1.0941		
Tetrachloroethene	ug/L	PM-13X	05/05/2022		0.6900			1.0941		
Tetrachloroethene	ug/L	PM-14X	06/15/2004	yes	0.2600	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	06/08/2005	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	08/26/2005	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/21/2005	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	02/21/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	06/12/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	07/26/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/28/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	02/05/2007	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	08/02/2007	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	10/17/2007	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	05/05/2008	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	10/29/2008	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/16/2009	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/11/2009	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/27/2010	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/02/2010	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	05/04/2011	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/29/2011	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	05/21/2012	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	10/25/2012	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/23/2013	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	10/15/2013	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/24/2014	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	10/27/2014	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/20/2015	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/02/2015	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/20/2016	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/01/2016	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/20/2017	yes	0.2000	ND			1.0000	****

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Tetrachloroethene	ug/L	PM-14X	10/13/2017	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/18/2018	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	10/19/2018	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	04/26/2019	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	11/07/2019	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	05/13/2020	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-14X	12/15/2020		0.2000	ND				
Tetrachloroethene	ug/L	PM-14X	05/20/2021		0.2000	ND				
Tetrachloroethene	ug/L	PM-14X	10/26/2021		0.2000	ND				
Tetrachloroethene	ug/L	PM-14X	04/21/2022		0.2000	ND				
Tetrachloroethene	ug/L	PM-3X	06/13/2006	yes	1.0000					
Tetrachloroethene	ug/L	PM-3X	08/01/2006	yes	1.3000					
Tetrachloroethene	ug/L	PM-3X	12/12/2006	yes	1.2000					
Tetrachloroethene	ug/L	PM-3X	02/08/2007	yes	1.0000					
Tetrachloroethene	ug/L	PM-3X	06/08/2007	yes	0.4600					
Tetrachloroethene	ug/L	PM-3X	08/10/2007	yes	0.5400					
Tetrachloroethene	ug/L	PM-3X	10/23/2007	yes	0.4800					
Tetrachloroethene	ug/L	PM-3X	02/22/2008	yes	0.8600					
Tetrachloroethene	ug/L	PM-3X	05/09/2008	yes	0.9900					
Tetrachloroethene	ug/L	PM-3X	12/11/2008	yes	0.6000					
Tetrachloroethene	ug/L	PM-3X	05/12/2009	yes	0.2100					
Tetrachloroethene	ug/L	PM-3X	11/25/2009	yes	0.4600					
Tetrachloroethene	ug/L	PM-3X	05/27/2010	yes	1.0000					
Tetrachloroethene	ug/L	PM-3X	11/19/2010	yes	0.6500					
Tetrachloroethene	ug/L	PM-3X	06/02/2011	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-3X	12/08/2011	yes	0.5700					
Tetrachloroethene	ug/L	PM-3X	06/12/2012	yes	0.8200					
Tetrachloroethene	ug/L	PM-3X	12/05/2012	yes	0.3900					
Tetrachloroethene	ug/L	PM-3X	05/28/2013	yes	0.6500					
Tetrachloroethene	ug/L	PM-3X	12/19/2013	yes	0.4200					
Tetrachloroethene	ug/L	PM-3X	06/18/2014	yes	0.3800					
Tetrachloroethene	ug/L	PM-3X	12/29/2014	yes	0.3900					
Tetrachloroethene	ug/L	PM-3X	06/03/2015	yes	0.3200					
Tetrachloroethene	ug/L	PM-3X	12/21/2015	yes	0.5500					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Tetrachloroethene	ug/L	PM-3X	06/27/2016	yes	0.6300					
Tetrachloroethene	ug/L	PM-3X	12/29/2016	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-3X	06/29/2017	yes	0.4200					
Tetrachloroethene	ug/L	PM-3X	10/17/2017	yes	0.2700					
Tetrachloroethene	ug/L	PM-3X	06/22/2018	yes	0.7700					
Tetrachloroethene	ug/L	PM-3X	11/01/2018	yes	0.7700					
Tetrachloroethene	ug/L	PM-3X	06/11/2019	yes	0.3300					
Tetrachloroethene	ug/L	PM-3X	12/18/2019	yes	0.2400					
Tetrachloroethene	ug/L	PM-3X	06/08/2020	yes	0.7300					
Tetrachloroethene	ug/L	PM-3X	12/18/2020	yes	1.1000					
Tetrachloroethene	ug/L	PM-3X	06/08/2021	yes	0.6000					
Tetrachloroethene	ug/L	PM-3X	11/03/2021	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-3X	05/05/2022		0.3200			0.6694		
Tetrachloroethene	ug/L	PM-6X	06/15/2004	yes	0.2600	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	09/22/2005	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/20/2005	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	03/23/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/02/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	07/28/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	11/28/2006	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	02/06/2007	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	08/10/2007	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	10/23/2007	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	05/09/2008	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/08/2008	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	05/05/2009	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	11/25/2009	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	05/27/2010	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	11/19/2010	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/02/2011	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/07/2011	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/21/2012	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/05/2012	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	05/28/2013	yes	0.2000	ND			1.0000	****

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**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Tetrachloroethene	ug/L	PM-6X	12/16/2013	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/17/2014	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/22/2014	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/02/2015	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/23/2015	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/21/2016	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/20/2016	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/29/2017	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	10/17/2017	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/21/2018	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	10/16/2018	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/12/2019	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/18/2019	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/08/2020	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	12/18/2020	yes	0.2000	ND			1.0000	****
Tetrachloroethene	ug/L	PM-6X	06/08/2021		0.2000	ND				
Tetrachloroethene	ug/L	PM-6X	11/03/2021		0.2000	ND				
Tetrachloroethene	ug/L	PM-6X	05/05/2022		0.2000	ND				

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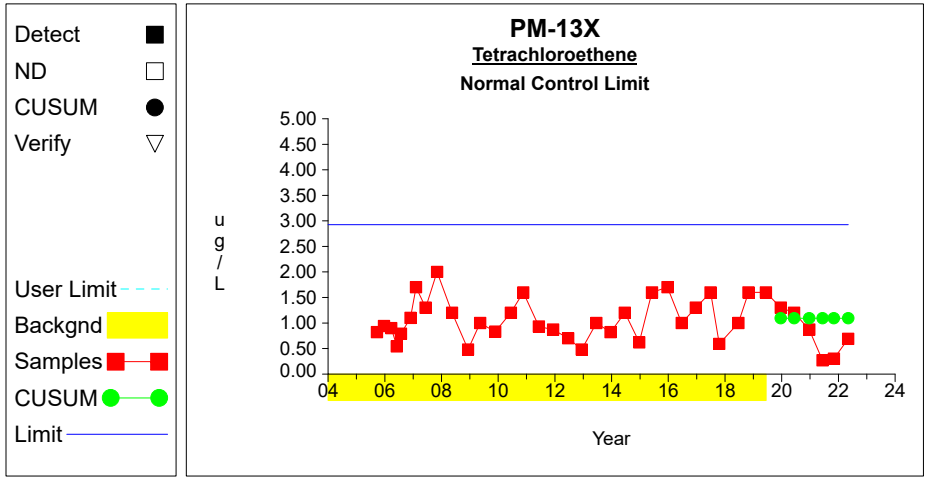
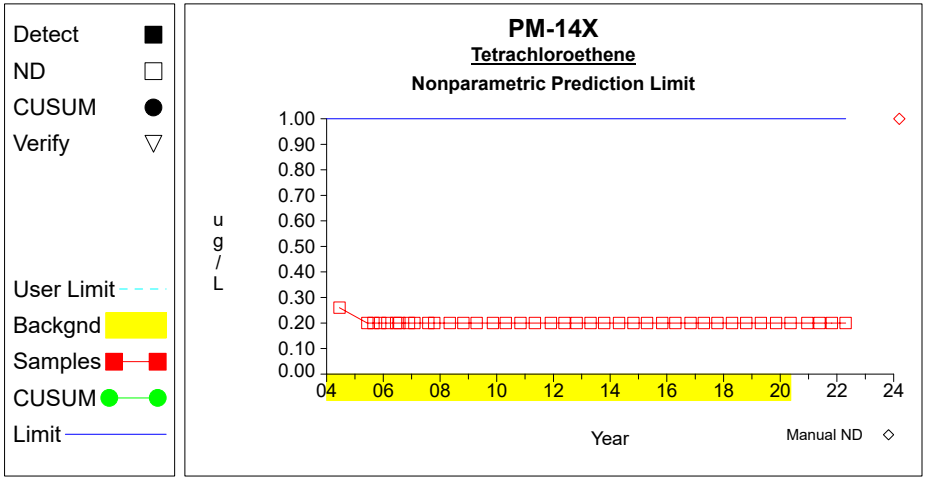
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

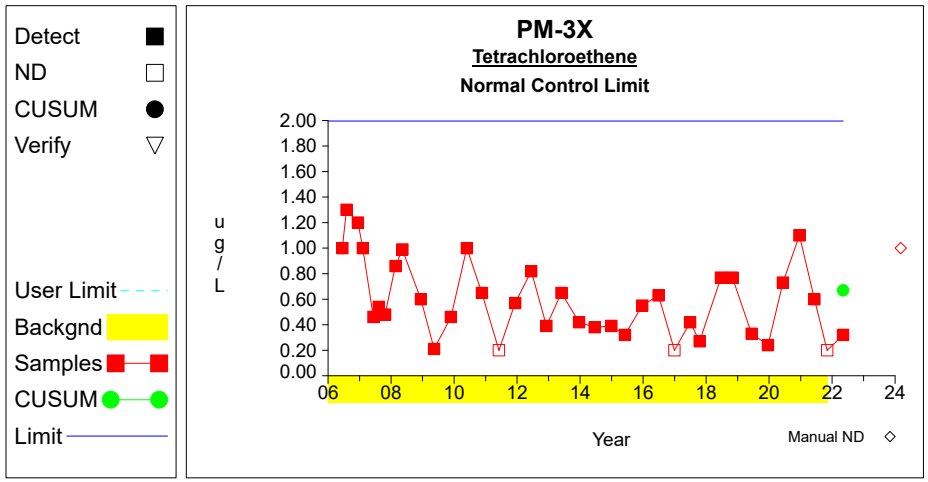
Intra-Well Control Charts / Prediction Limits



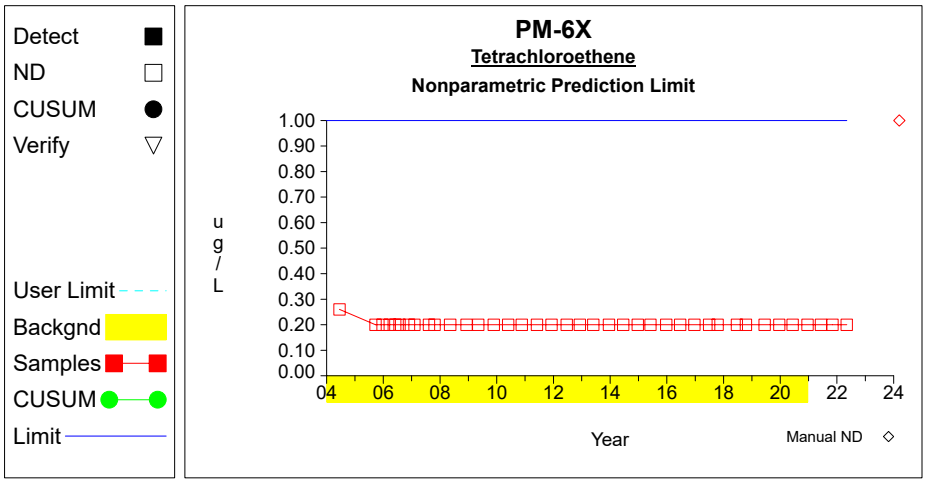
Graph 1



Graph 2



Graph 3



Graph 4

Analysis prepared using DUMPSTAT

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Trichloroethene	ug/L	PM-13X	36	2	38	1.4019	0.3279	0.6600	0.9200	1.4019	1.4019	2.8775	normal		
Trichloroethene	ug/L	PM-14X	36	4	40	0.7989	0.3534	0.1600	0.1600	0.7989	0.7989	2.3894	normal		
Trichloroethene	ug/L	PM-3X	36	1	37	0.4044	0.2673	1.0000	0.1900		0.4044	1.6074	normal		
Trichloroethene	ug/L	PM-6X	36	3	39			0.1600	0.1600			1.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Trichloroethene	ug/L	PM-13X	09/22/2005	yes	1.3000					
Trichloroethene	ug/L	PM-13X	12/20/2005	yes	1.4000					
Trichloroethene	ug/L	PM-13X	03/23/2006	yes	1.3000					
Trichloroethene	ug/L	PM-13X	06/02/2006	yes	0.7700					
Trichloroethene	ug/L	PM-13X	07/28/2006	yes	1.2000					
Trichloroethene	ug/L	PM-13X	11/28/2006	yes	1.4000					
Trichloroethene	ug/L	PM-13X	02/06/2007	yes	1.9000					
Trichloroethene	ug/L	PM-13X	06/08/2007	yes	1.6000					
Trichloroethene	ug/L	PM-13X	11/05/2007	yes	2.3000					
Trichloroethene	ug/L	PM-13X	05/16/2008	yes	1.7000					
Trichloroethene	ug/L	PM-13X	12/08/2008	yes	1.1000					
Trichloroethene	ug/L	PM-13X	05/12/2009	yes	1.4000					
Trichloroethene	ug/L	PM-13X	11/25/2009	yes	1.5000					
Trichloroethene	ug/L	PM-13X	06/11/2010	yes	1.7000					
Trichloroethene	ug/L	PM-13X	11/19/2010	yes	1.7000					
Trichloroethene	ug/L	PM-13X	06/07/2011	yes	1.7000					
Trichloroethene	ug/L	PM-13X	12/09/2011	yes	1.4000					
Trichloroethene	ug/L	PM-13X	06/21/2012	yes	1.0000					
Trichloroethene	ug/L	PM-13X	12/10/2012	yes	0.9900					
Trichloroethene	ug/L	PM-13X	06/18/2013	yes	1.4000					
Trichloroethene	ug/L	PM-13X	12/19/2013	yes	1.4000					
Trichloroethene	ug/L	PM-13X	06/18/2014	yes	1.5000					
Trichloroethene	ug/L	PM-13X	12/22/2014	yes	1.0000					
Trichloroethene	ug/L	PM-13X	06/02/2015	yes	1.7000					
Trichloroethene	ug/L	PM-13X	12/21/2015	yes	1.9000					
Trichloroethene	ug/L	PM-13X	06/21/2016	yes	1.4000					
Trichloroethene	ug/L	PM-13X	12/20/2016	yes	1.6000					
Trichloroethene	ug/L	PM-13X	06/29/2017	yes	1.7000					
Trichloroethene	ug/L	PM-13X	10/17/2017	yes	1.0000					
Trichloroethene	ug/L	PM-13X	06/20/2018	yes	1.4000					
Trichloroethene	ug/L	PM-13X	10/30/2018	yes	1.5000					
Trichloroethene	ug/L	PM-13X	06/11/2019	yes	1.0000					
Trichloroethene	ug/L	PM-13X	12/18/2019	yes	1.2000					
Trichloroethene	ug/L	PM-13X	06/08/2020	yes	1.5000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Trichloroethene	ug/L	PM-13X	12/21/2020	yes	0.9200					
Trichloroethene	ug/L	PM-13X	06/09/2021	yes	0.9900					
Trichloroethene	ug/L	PM-13X	11/03/2021		0.6600			1.4019		
Trichloroethene	ug/L	PM-13X	05/05/2022		0.9200			1.4019		
Trichloroethene	ug/L	PM-14X	06/15/2004	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	06/08/2005	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	08/26/2005	yes	0.1700					
Trichloroethene	ug/L	PM-14X	11/21/2005	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	02/21/2006	yes	0.2100					
Trichloroethene	ug/L	PM-14X	06/12/2006	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	07/26/2006	yes	0.1700					
Trichloroethene	ug/L	PM-14X	11/28/2006	yes	0.2000					
Trichloroethene	ug/L	PM-14X	02/05/2007	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	08/02/2007	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	10/17/2007	yes	0.2200					
Trichloroethene	ug/L	PM-14X	05/05/2008	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	10/29/2008	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/16/2009	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	11/11/2009	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/27/2010	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	11/02/2010	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	05/04/2011	yes	0.1900					
Trichloroethene	ug/L	PM-14X	11/29/2011	yes	0.2000					
Trichloroethene	ug/L	PM-14X	05/21/2012	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	10/25/2012	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/23/2013	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	10/15/2013	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/24/2014	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	10/27/2014	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/20/2015	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	11/02/2015	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/20/2016	yes	0.1700					
Trichloroethene	ug/L	PM-14X	11/01/2016	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/20/2017	yes	0.1600	ND			1.0000	****

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** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Trichloroethene	ug/L	PM-14X	10/13/2017	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/18/2018	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	10/19/2018	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	04/26/2019	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	11/07/2019	yes	0.2300					
Trichloroethene	ug/L	PM-14X	05/13/2020	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-14X	12/15/2020		0.1600	ND		0.7989		
Trichloroethene	ug/L	PM-14X	05/20/2021		0.1600	ND		0.7989		
Trichloroethene	ug/L	PM-14X	10/26/2021		0.1600	ND		0.7989		
Trichloroethene	ug/L	PM-14X	04/21/2022		0.1600	ND		0.7989		
Trichloroethene	ug/L	PM-3X	06/13/2006	yes	0.4400					
Trichloroethene	ug/L	PM-3X	08/01/2006	yes	0.3900					
Trichloroethene	ug/L	PM-3X	12/12/2006	yes	0.4200					
Trichloroethene	ug/L	PM-3X	02/08/2007	yes	0.3300					
Trichloroethene	ug/L	PM-3X	06/08/2007	yes	0.2400					
Trichloroethene	ug/L	PM-3X	08/10/2007	yes	0.2800					
Trichloroethene	ug/L	PM-3X	10/23/2007	yes	0.3300					
Trichloroethene	ug/L	PM-3X	02/22/2008	yes	0.3200					
Trichloroethene	ug/L	PM-3X	05/09/2008	yes	0.3400					
Trichloroethene	ug/L	PM-3X	12/11/2008	yes	0.3200					
Trichloroethene	ug/L	PM-3X	05/12/2009	yes	0.1600					
Trichloroethene	ug/L	PM-3X	11/25/2009	yes	0.2200					
Trichloroethene	ug/L	PM-3X	05/27/2010	yes	0.4800					
Trichloroethene	ug/L	PM-3X	11/19/2010	yes	0.2400					
Trichloroethene	ug/L	PM-3X	06/02/2011	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-3X	12/08/2011	yes	0.2200					
Trichloroethene	ug/L	PM-3X	06/12/2012	yes	0.3300					
Trichloroethene	ug/L	PM-3X	12/05/2012	yes	0.2600					
Trichloroethene	ug/L	PM-3X	05/28/2013	yes	0.6300					
Trichloroethene	ug/L	PM-3X	12/19/2013	yes	0.2000					
Trichloroethene	ug/L	PM-3X	06/18/2014	yes	0.1600					
Trichloroethene	ug/L	PM-3X	12/29/2014	yes	0.1700					
Trichloroethene	ug/L	PM-3X	06/03/2015	yes	0.2800					
Trichloroethene	ug/L	PM-3X	12/21/2015	yes	0.2600					

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Trichloroethene	ug/L	PM-3X	06/27/2016	yes	0.2700					
Trichloroethene	ug/L	PM-3X	12/29/2016	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-3X	06/29/2017	yes	0.2400					
Trichloroethene	ug/L	PM-3X	10/17/2017	yes	0.1700					
Trichloroethene	ug/L	PM-3X	06/22/2018	yes	0.3700					
Trichloroethene	ug/L	PM-3X	11/01/2018	yes	0.3000					
Trichloroethene	ug/L	PM-3X	06/11/2019	yes	0.1700					
Trichloroethene	ug/L	PM-3X	12/18/2019	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-3X	06/08/2020	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-3X	12/18/2020	yes	0.3800					
Trichloroethene	ug/L	PM-3X	06/08/2021	yes	0.6400					
Trichloroethene	ug/L	PM-3X	11/03/2021	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-3X	05/05/2022		0.1900			0.4044		
Trichloroethene	ug/L	PM-6X	06/15/2004	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	09/22/2005	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/20/2005	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	03/23/2006	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/02/2006	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	07/28/2006	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	11/28/2006	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	02/06/2007	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	08/10/2007	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	10/23/2007	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	05/09/2008	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/08/2008	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	05/05/2009	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	11/25/2009	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	05/27/2010	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	11/19/2010	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/02/2011	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/07/2011	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/21/2012	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/05/2012	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	05/28/2013	yes	0.1600	ND			1.0000	****

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

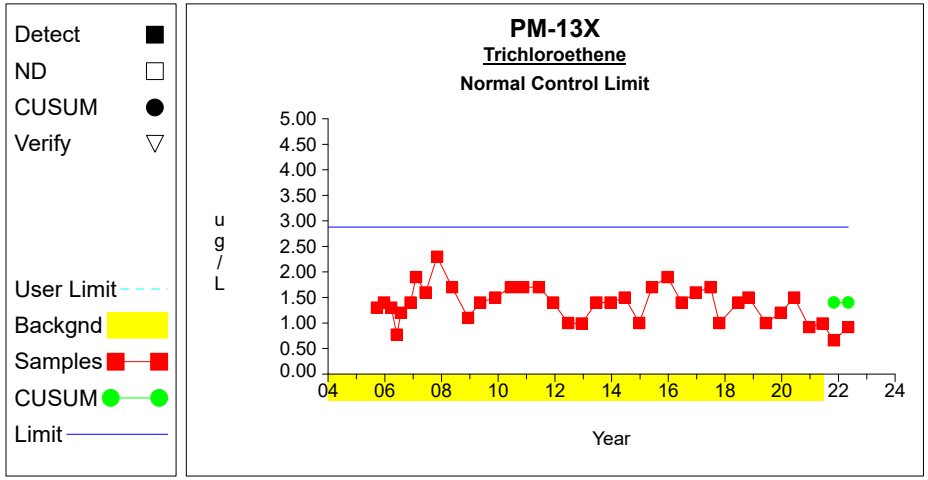
Table 2

Analytical Data and CUSUM Summary

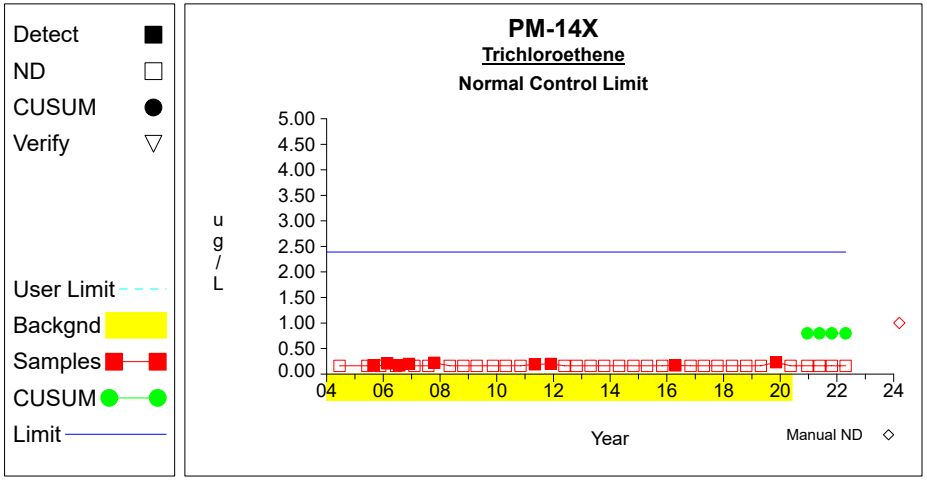
Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Trichloroethene	ug/L	PM-6X	12/16/2013	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/17/2014	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/22/2014	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/02/2015	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/23/2015	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/21/2016	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/20/2016	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/29/2017	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	10/17/2017	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/21/2018	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	10/16/2018	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/12/2019	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/18/2019	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/08/2020	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	12/18/2020	yes	0.1600	ND			1.0000	****
Trichloroethene	ug/L	PM-6X	06/08/2021		0.1600	ND				
Trichloroethene	ug/L	PM-6X	11/03/2021		0.1600	ND				
Trichloroethene	ug/L	PM-6X	05/05/2022		0.1600	ND				

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

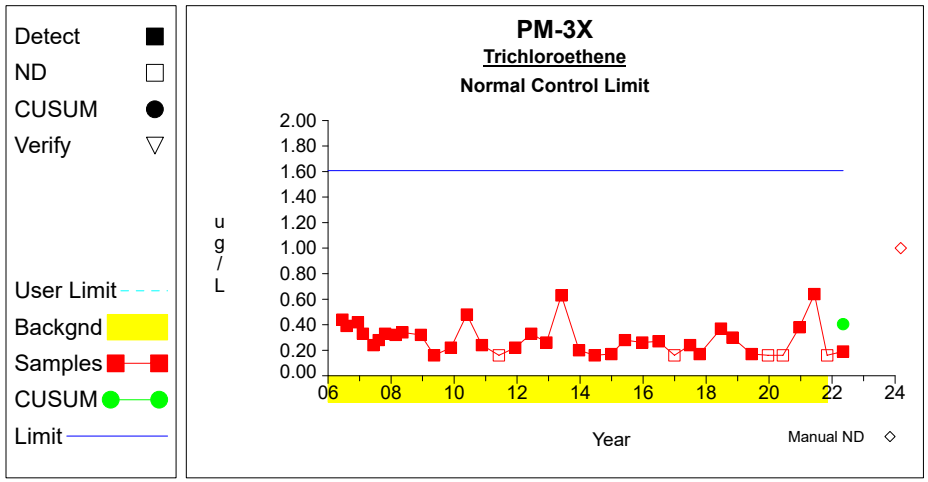
Intra-Well Control Charts / Prediction Limits



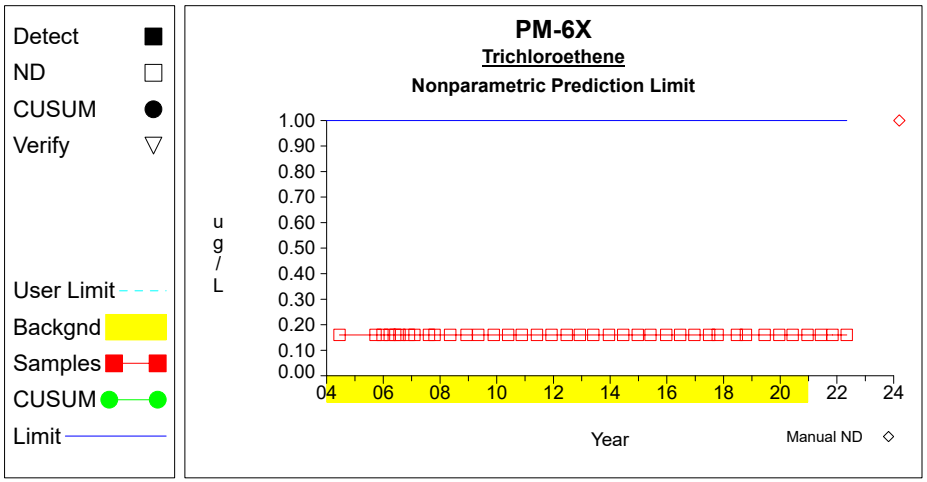
Graph 1



Graph 2



Graph 3



Graph 4

Analysis prepared using DUMPSTAT

APPENDIX C-5

VERTICAL MIGRATION ASSESSMENT

APPENDIX C-5.1

VERTICAL MIGRATION ASSESSMENT

Vertical Migration Well Data

TABLE C-5.1
VERTICAL MIGRATION WELL DATA
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS
REPORT LOWRY LANDFILL SUPERFUND SITE

Group-ID	Sample Date	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroetha	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dioxane	Acetone	Arsenic	Benzene	Bromodichloromethan	Bromoform	Cadmium	Carbon Tetrachloride	Chlorobenzene	Chloroform	cis-1,2-Dichloroethene	Dibromochloromethan	Ethylbenzene	Methylene Chloride	Naphthalene	Nitrogen, Nitrate	Nitrogen, Nitrite	Tetrachloroethene	Toluene	Trans-1,2-Dichloroeth	Trichloroethene	Vinyl Chloride
B-504A	9/9/2002										10 U				5 U															
B-504A	5/11/2005										10 U				5 U									500 U	500 U					
B-504A	9/13/2005	1 U	1 U	1 U	5.6	0.26 J	1 U	1 U	0.5 U	6.9 J		1 U	1 U	1 U		1 U	1 U	1 U	0.24 J	1 U	1 U	1 U	1 U	500 U	500 U	1 U	0.31 J	0.5 U	1 U	2 U
B-504A	12/12/2005	1 U	1 U	1 U	4.5	0.2 J	1 U	1 U	0.5 U	2.4 J		1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	90 J	500 U	1 U	0.23 J	0.5 U	1 U	2 U
B-504A	3/6/2006	1 U	1 U	1 U	4.8	0.19 J	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	0.4 J	1 U			1 U	0.21 J	0.5 U	1 U	2 U
B-504A	6/16/2006	1 U	1 U	1 U	3.1	0.15 J	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.33 J	500 U	500 U	1 U	0.18 J	0.5 U	1 U	2 U
B-504A	7/26/2006	1 U	1 U	1 U	4.9	0.24 J	1 U	1 U	5 U	2.4 J	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	0.17 J	1 U	1 U	1 U	1 U	500 U	500 U	1 U	0.22 J	0.5 U	1 U	2 U
B-504A	12/1/2006	1 U	1 U	1 U	11	0.47 J	1 U	1 U	5 U	3.6 J	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	0.37 J	1 U	1 U	1 U	1 U	500 U	500 U	1 U	0.53 J	0.5 U	1 U	0.39 J
B-504A	3/14/2007	1 U	1 U	1 U	3.9	0.17 J	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	0.17 J	1 U	1 U	0.42 J	1 U	500 U	500 U	1 U	0.19 J	0.5 U	1 U	2 U
B-504A	8/19/2010	1 U	1 U	1 U	5.6	0.29 J	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	0.32 J	0.5 U	1 U	2 U
B-504A	7/30/2015	1 U	1 U	1 U	11	1 U	1 U	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	0.19 J	1 U	1 U	1 U	1 U	500 U	500 U	1 U	0.77 J	0.5 U	1 U	0.28 J
B-504A	8/15/2018	1 U	1 U	1 U	1.5	1 U	1 U	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	7/24/2006	1 U	1 U	1 U	1 U	1 U	0.56 J	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	3/1/2007	1 U	1 U	1 U	1 U	1 U	0.47 J	1 U	0.95 J	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	110 J	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	5/29/2007	1 U	1 U	1 U	1 U	1 U	0.2 J	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	8/17/2009	1 U	1 U	1 U	1 U	1 U	0.63 J	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	7/21/2011	1 U	1 U	1 U	1 U	1 U	0.53 J	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	8/8/2013	1 U	1 U	1 U	1 U	1 U	0.71 J	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	7/27/2015	1 U	1 U	1 U	1 U	1 U	0.62 J	1 U	0.9 U	10 U	7.6 J	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	42 J	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	7/28/2017	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	8/21/2018	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	54 J	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	9/2/2020	1 U	1 U	1 U	1 U	1 U	0.48 J	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.56 J	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
C-702P3	9/12/2002	1 U	1 U	1 U	1 U	1 U	1 U	1 U			10 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U				1 U	1 U	0.5 U	1 U	2 U
C-702P3	5/12/2005	1 U	1 U	1 U	1 U	1 U	1 U	1 U		10 U	10 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
C-702P3	9/14/2005								0.5 U															40 J	500 U					
C-702P3	12/5/2005								0.5 U															500 U	500 U					
C-702P3	3/8/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	0.38 J	1 U			1 U	1 U	0.5 U	1 U	2 U
C-702P3	5/24/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U		10 U		1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U	0.5 U	1 U	2 U
C-702P3	6/15/2006								5 U		15 U				5 U									500 U	500 U					
C-702P3	7/26/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U

TABLE C-5.1
VERTICAL MIGRATION WELL DATA
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS
REPORT LOWRY LANDFILL SUPERFUND SITE

Group-ID	Sample Date	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroetha	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dioxane	Acetone	Arsenic	Benzene	Bromodichloromethan	Bromoform	Cadmium	Carbon Tetrachloride	Chlorobenzene	Chloroform	cis-1,2-Dichloroethene	Dibromochloromethan	Ethylbenzene	Methylene Chloride	Naphthalene	Nitrogen, Nitrate	Nitrogen, Nitrite	Tetrachloroethene	Toluene	Trans-1,2-Dichloroeth	Trichloroethene	Vinyl Chloride
C-702P3	11/27/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
C-702P3	2/28/2007	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
C-702P3	8/19/2010	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
C-702P3	7/14/2015	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	87 J	500 U	1 U	1 U	0.5 U	1 U	2 U
C-702P3	8/15/2018	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	59 J	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	9/12/2002										10 U				5 U															
GW-113	5/24/2005										10 U				5 U									500 UJ	500 UJ					
GW-113	9/13/2005	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	10 U	10 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	47 J	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	12/13/2005	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.5 U	10 U		1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	140 J	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	3/14/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U		1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U			1 U	1 U	0.5 U	1 U	2 U
GW-113	6/19/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	270 J	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	7/26/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	42 J	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	11/27/2006	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	43 J	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	3/1/2007	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	2.1 J	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	8/23/2010	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	50 J	1 U	1 U	0.5 U	1 U	2 U
GW-113	7/27/2015	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
GW-113	8/16/2018	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.9 U	10 U	15 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	57 J	500 U	1 U	1 U	0.5 U	1 U	2 U

Units= µg/L

Highlighted cell indicates a detected compound

Qualifiers: U= The analyte was analyzed for and is not present above the level of the associated value.
The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ= The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

UJ-= Same as UJ qualification but with an indication of negative bias in the sample concentration.

UJ+= Same as UJ qualification but with an indication of positive bias in the sample concentration.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

APPENDIX C-5.2

VERTICAL MIGRATION ASSESSMENT

Trend Analysis

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:33:53 AM	
From File	VERT MIG DATA.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,1-Dichloroethane-b-504a

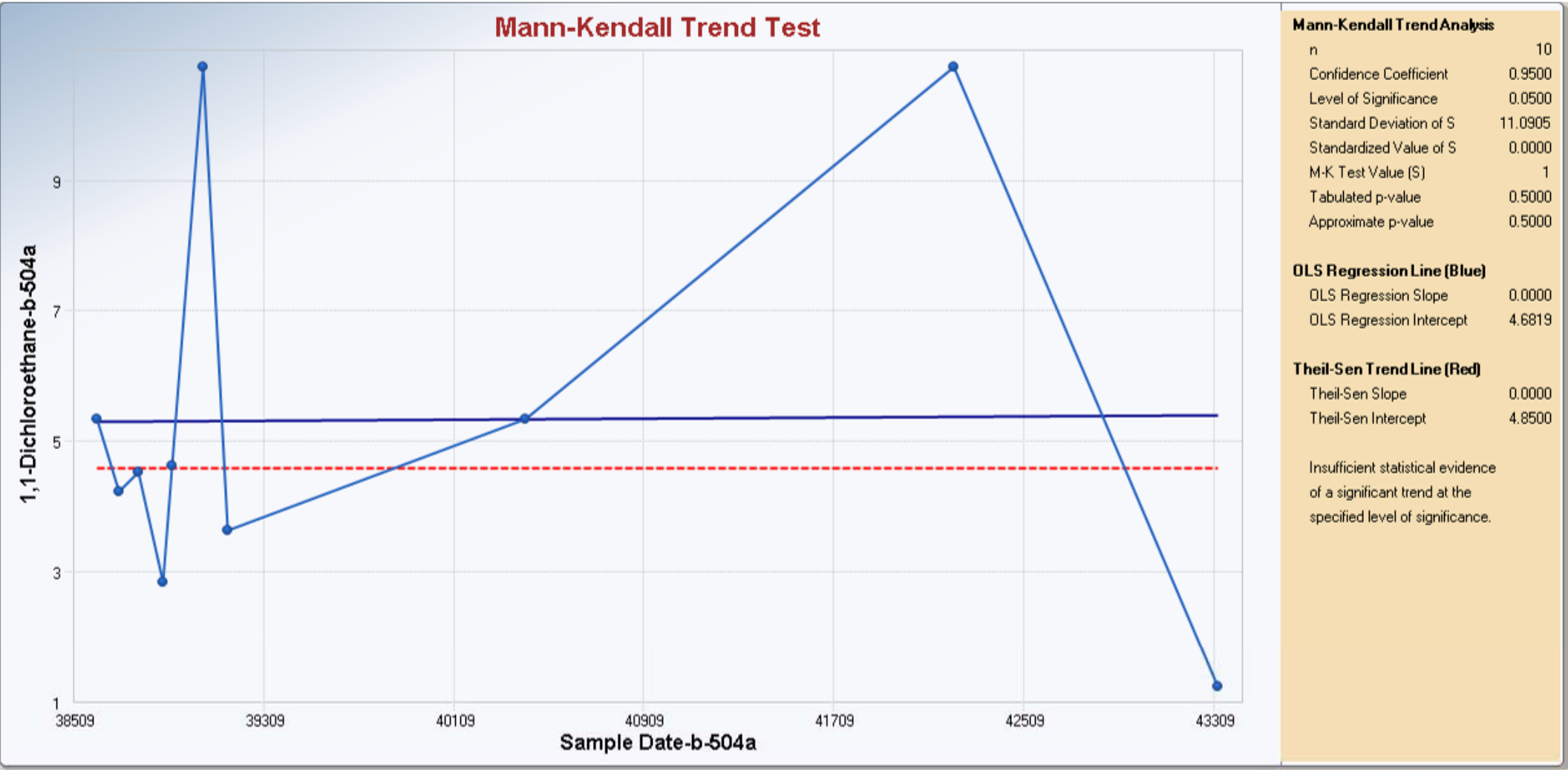
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	1.5
Maximum	11
Mean	5.59
Geometric Mean	4.855
Median	4.85
Standard Deviation	3.102
Coefficient of Variation	0.555

Mann-Kendall Test

M-K Test Value (S)	1
Tabulated p-value	0.5
Standard Deviation of S	11.09
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
1,1-Dichloroethane-b-504a
9
7
5
3
1
38509
39309
40109
40909
41709
42509
43309
Sample Date-b-504a
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 11.0905
Standardized Value of S 0.0000
M-K Test Value (S) 1
Tabulated p-value 0.5000
Approximate p-value 0.5000
OLS Regression Line (Blue)
OLS Regression Slope 0.0000
OLS Regression Intercept 4.6819
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 4.8500
Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:30:09 AM	
From File	VERT MIG DATA_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,1-Dichloroethene-b-504a

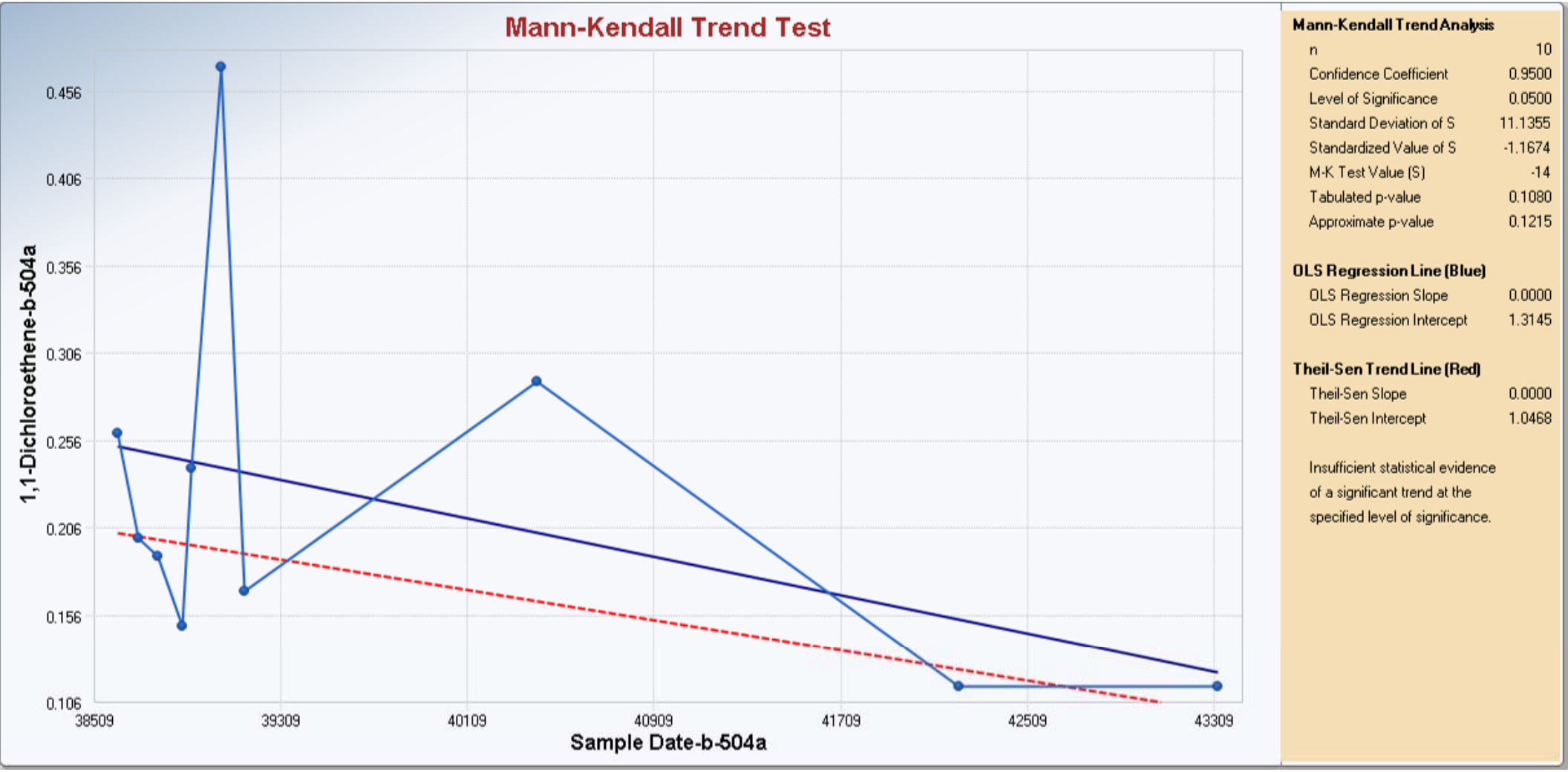
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.115
Maximum	0.47
Mean	0.22
Geometric Mean	0.201
Median	0.195
Standard Deviation	0.105
Coefficient of Variation	0.479

Mann-Kendall Test

M-K Test Value (S)	-14
Tabulated p-value	0.108
Standard Deviation of S	11.14
Standardized Value of S	-1.167
Approximate p-value	0.122

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
1,1-Dichloroethene-b-504a
0.456
0.406
0.356
0.306
0.256
0.206
0.156
0.106
38509
39309
40109
40909
41709
42509
43309
Sample Date-b-504a
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 11.1355
Standardized Value of S -1.1674
M-K Test Value (S) -14
Tabulated p-value 0.1080
Approximate p-value 0.1215
OLS Regression Line (Blue)
OLS Regression Slope 0.0000
OLS Regression Intercept 1.3145
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 1.0468
Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:28:31 AM	
From File	VERT MIG DATA_d.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Acetone-b-504a

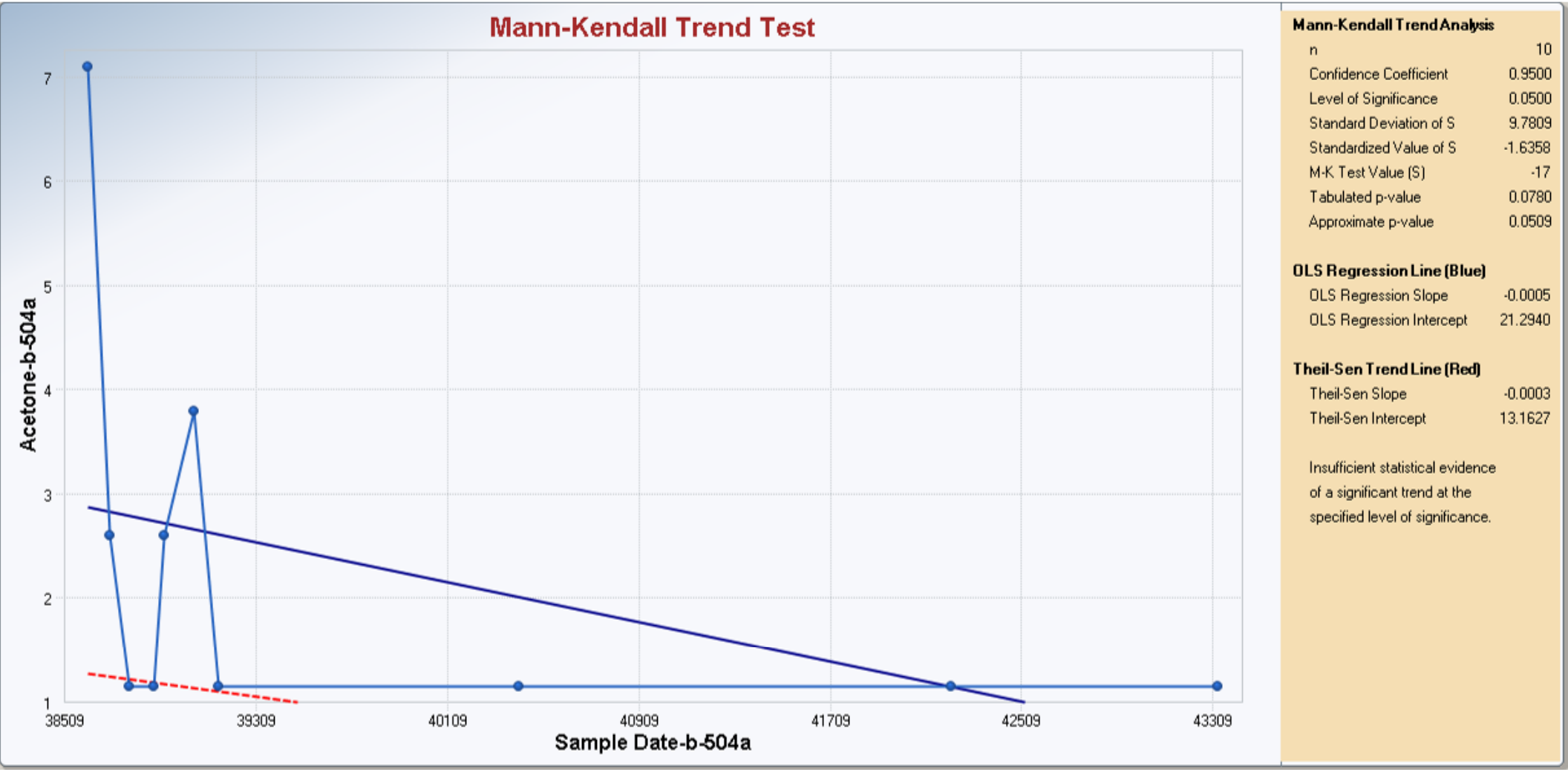
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.95
Maximum	6.9
Mean	2.1
Geometric Mean	1.593
Median	0.95
Standard Deviation	1.927
Coefficient of Variation	0.917

Mann-Kendall Test

M-K Test Value (S)	-17
Tabulated p-value	0.078
Standard Deviation of S	9.781
Standardized Value of S	-1.636
Approximate p-value	0.0509

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
Acetone-b-504a
7
6
5
4
3
2
1
38509
39309
40109
40909
41709
42509
43309
Sample Date-b-504a
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 9.7809
Standardized Value of S -1.6358
M-K Test Value (S) -17
Tabulated p-value 0.0780
Approximate p-value 0.0509
OLS Regression Line (Blue)
OLS Regression Slope -0.0005
OLS Regression Intercept 21.2940
Theil-Sen Trend Line (Red)
Theil-Sen Slope -0.0003
Theil-Sen Intercept 13.1627
Insufficient statistical evidence
of a significant trend at the
specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:27:07 AM	
From File	VERT MIG DATA_f.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

cis-1,2-Dichloroethene-b-504a

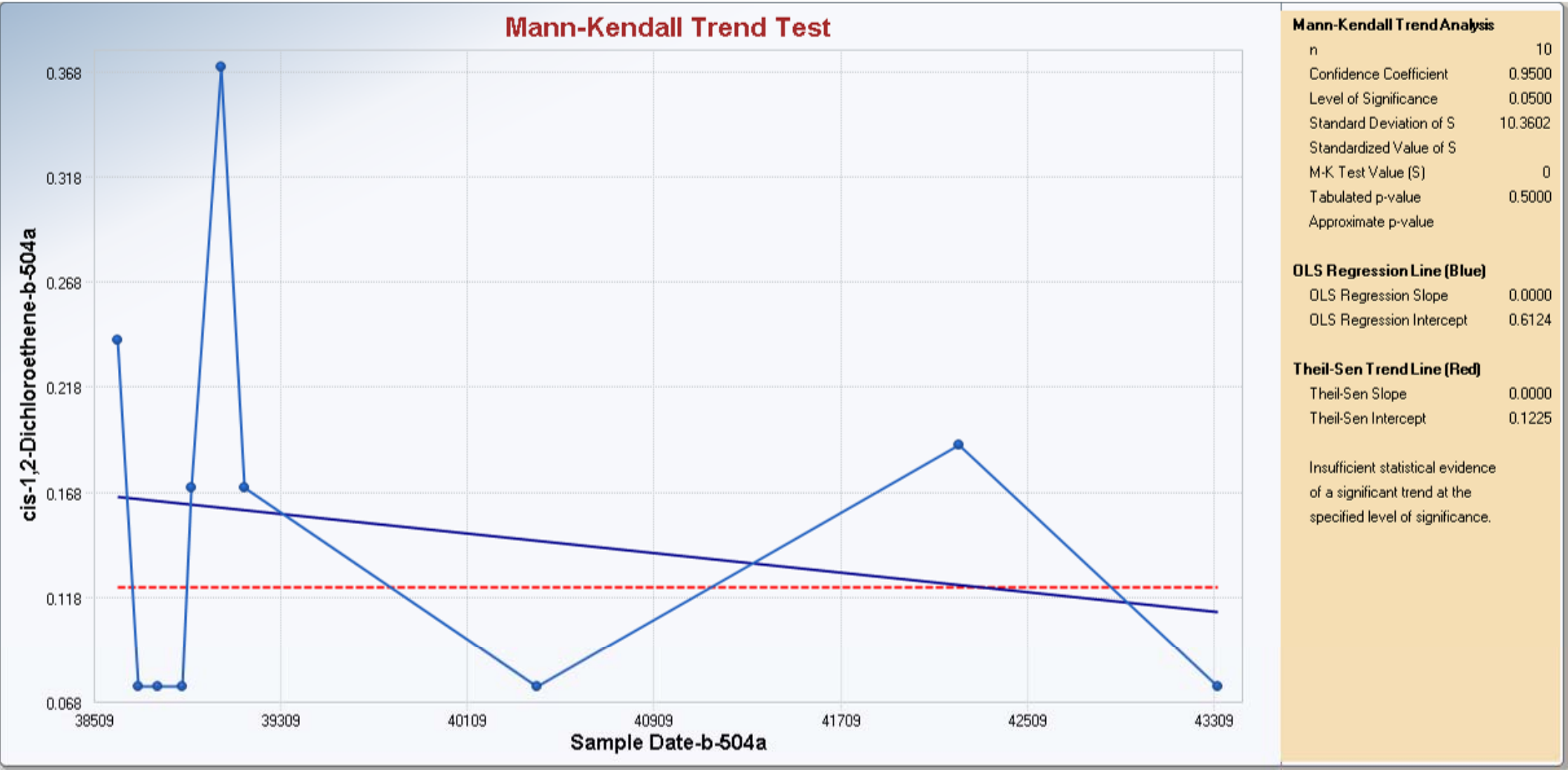
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.075
Maximum	0.37
Mean	0.152
Geometric Mean	0.128
Median	0.123
Standard Deviation	0.0983
Coefficient of Variation	0.649

Mann-Kendall Test

M-K Test Value (S)	0
Tabulated p-value	0.5
Standard Deviation of S	10.36
Standardized Value of S	N/A
Approximate p-value	N/A

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
cis-1,2-Dichloroethene-b-504a
0.368
0.318
0.268
0.218
0.168
0.118
0.068
38509
39309
40109
40909
41709
42509
43309
Sample Date-b-504a
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 10.3602
Standardized Value of S
M-K Test Value (S) 0
Tabulated p-value 0.5000
Approximate p-value
OLS Regression Line (Blue)
OLS Regression Slope 0.0000
OLS Regression Intercept 0.6124
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 0.1225
Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:26:14 AM	
From File	VERT MIG DATA_g.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Methylene Chloride-b-504a

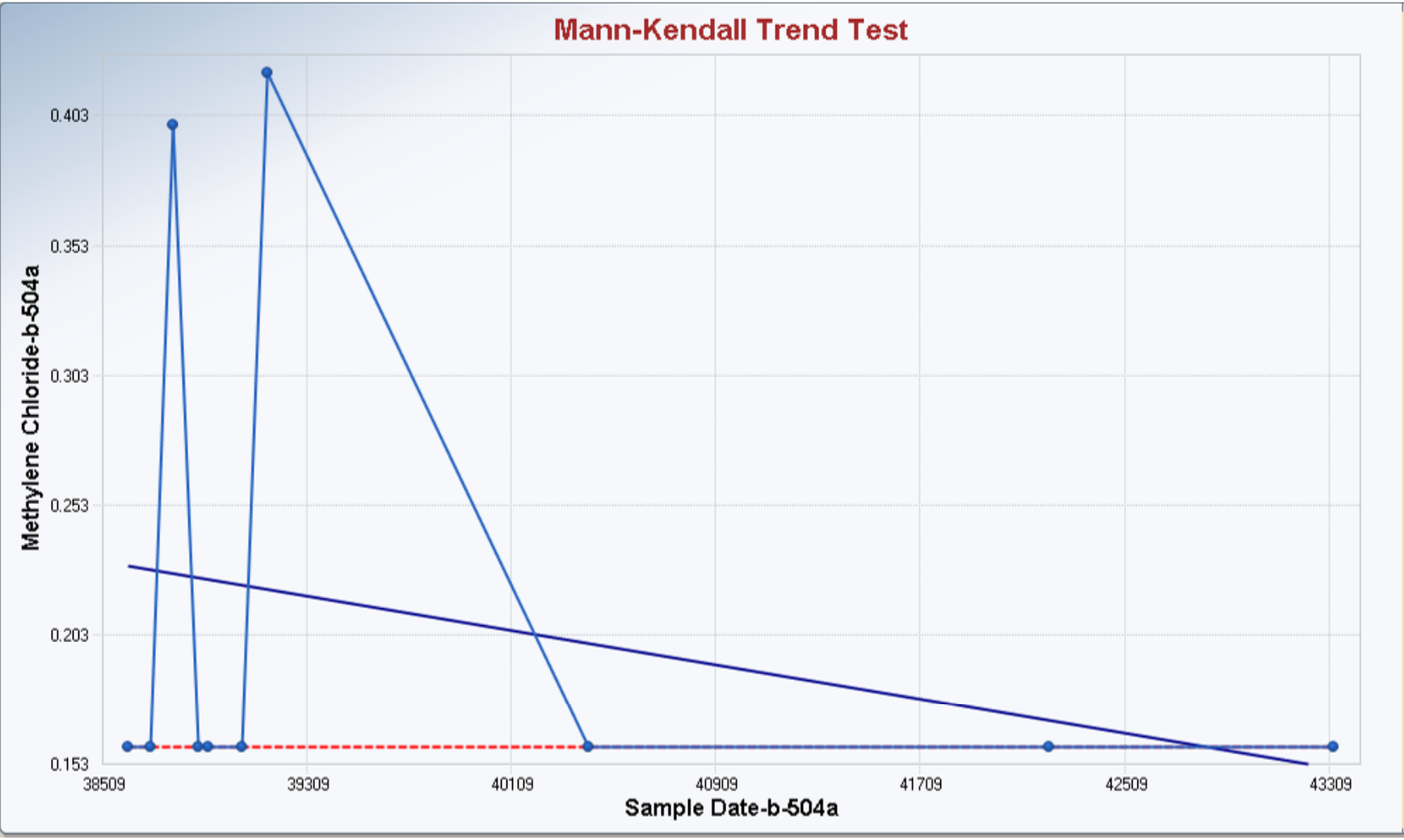
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.16
Maximum	0.42
Mean	0.21
Geometric Mean	0.193
Median	0.16
Standard Deviation	0.106
Coefficient of Variation	0.502

Mann-Kendall Test

M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	7.724
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	7.7244
Standardized Value of S	0.0000
M-K Test Value (S)	-1
Tabulated p-value	0.5000
Approximate p-value	0.5000

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.8731

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	0.1600

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:25:41 AM	
From File	VERT MIG DATA_h.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Naphthalene-b-504a

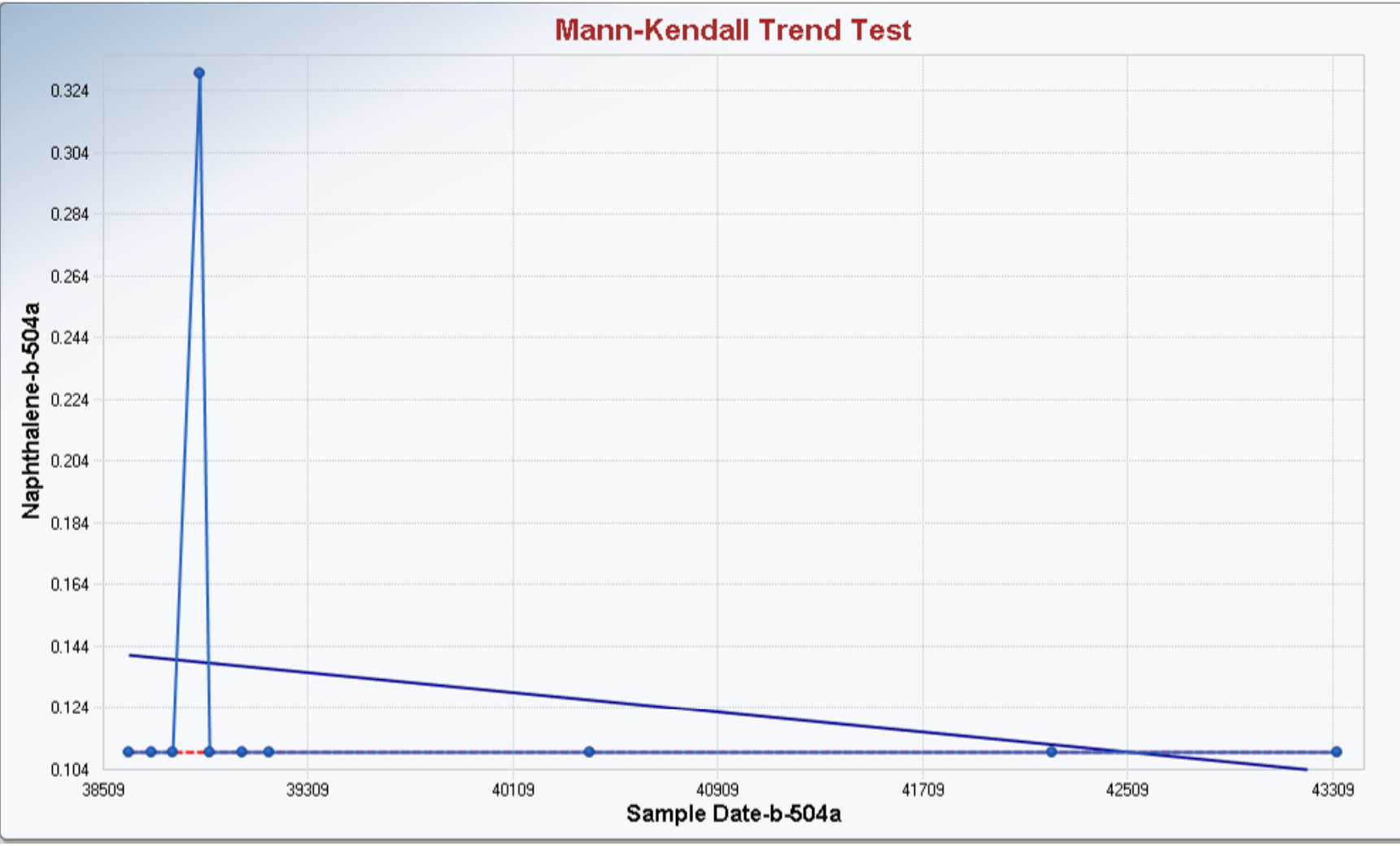
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.11
Maximum	0.33
Mean	0.132
Geometric Mean	0.123
Median	0.11
Standard Deviation	0.0696
Coefficient of Variation	0.527

Mann-Kendall Test

M-K Test Value (S)	-3
Tabulated p-value	0.431
Standard Deviation of S	5.745
Standardized Value of S	-0.348
Approximate p-value	0.364

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.7446
Standardized Value of S	-0.3482
M-K Test Value (S)	-3
Tabulated p-value	0.4310
Approximate p-value	0.3639

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	0.4561

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	0.1100

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:24:11 AM	
From File	VERT MIG DATA_i.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-b-504a

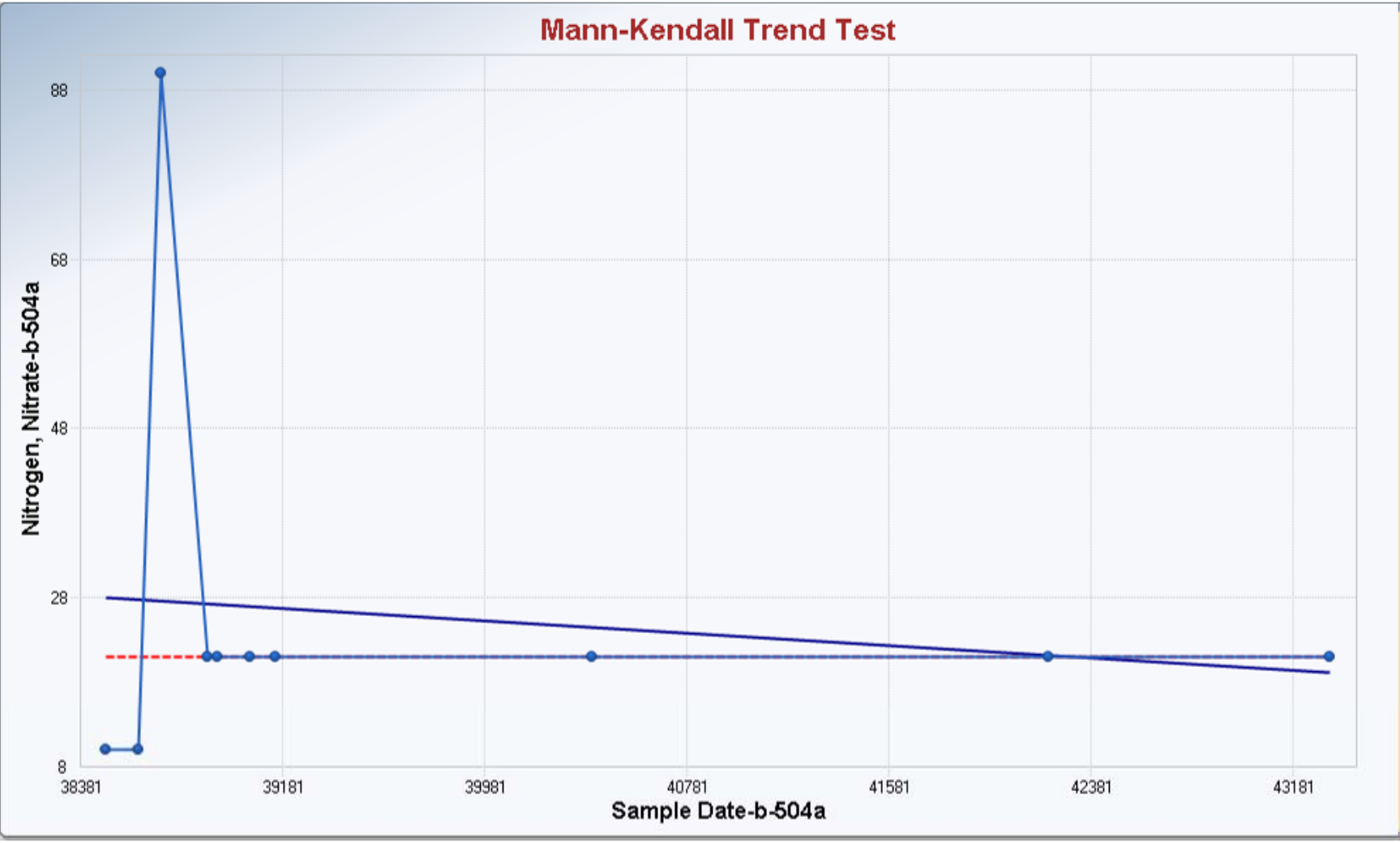
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	10
Maximum	90
Mean	25.7
Geometric Mean	20.94
Median	21
Standard Deviation	23.05
Coefficient of Variation	0.897

Mann-Kendall Test

M-K Test Value (S)	9
Tabulated p-value	0.242
Standard Deviation of S	8.926
Standardized Value of S	0.896
Approximate p-value	0.185

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	8.9256
Standardized Value of S	0.8963
M-K Test Value (S)	9
Tabulated p-value	0.2420
Approximate p-value	0.1850

OLS Regression Line (Blue)

OLS Regression Slope	-0.0018
OLS Regression Intercept	99.2049

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	21.0000

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:22:52 AM	
From File	VERT MIG DATA_k.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Toluene-b-504a

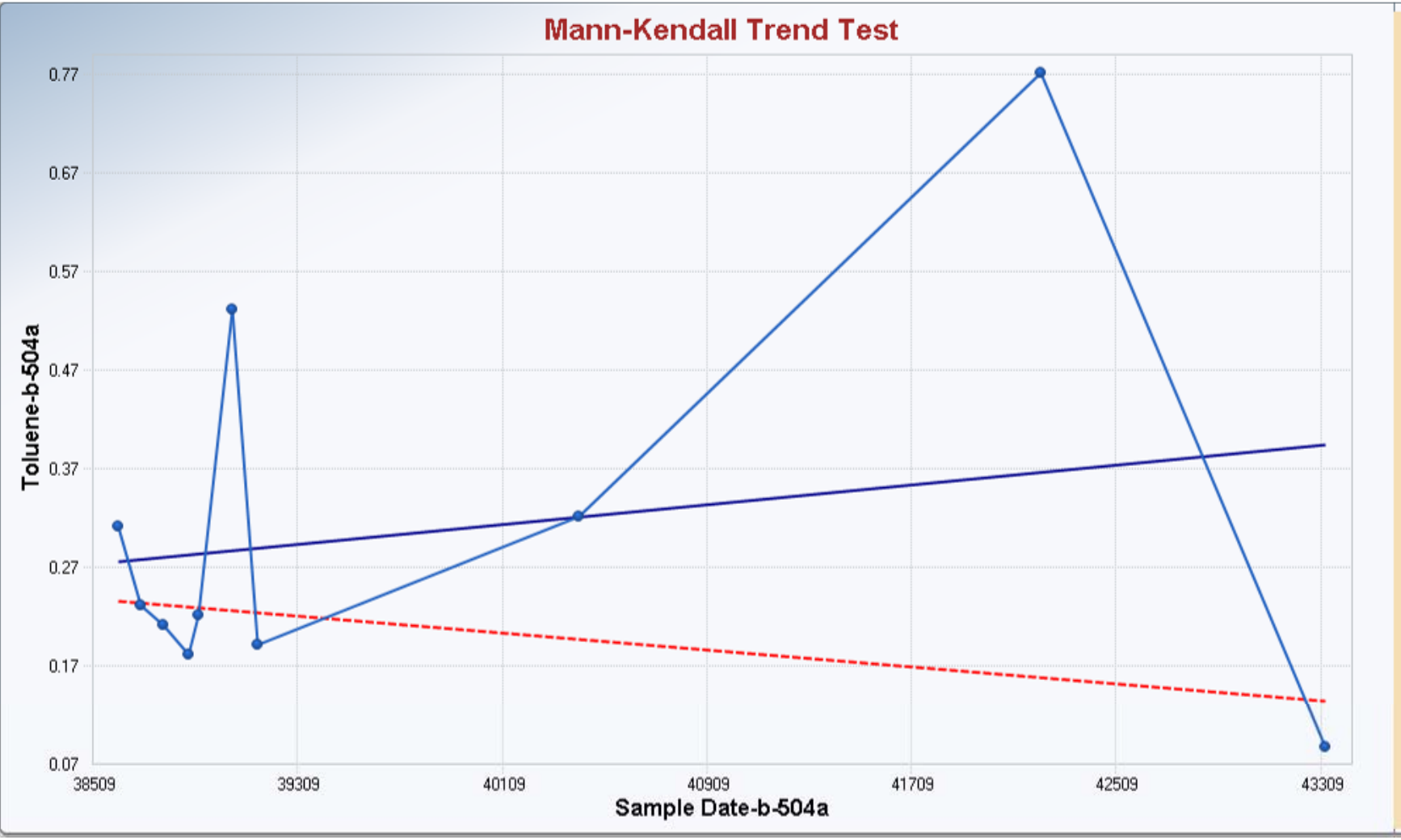
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.085
Maximum	0.77
Mean	0.305
Geometric Mean	0.257
Median	0.225
Standard Deviation	0.202
Coefficient of Variation	0.662

Mann-Kendall Test

M-K Test Value (S)	-1
Tabulated p-value	0.5
Standard Deviation of S	11.18
Standardized Value of S	0
Approximate p-value	0.5

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.0000
M-K Test Value (S)	-1
Tabulated p-value	0.5000
Approximate p-value	0.5000

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	-0.6939

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	1.0586

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:21:39 AM	
From File	VERT MIG DATA_I.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Vinyl Chloride-b-504a

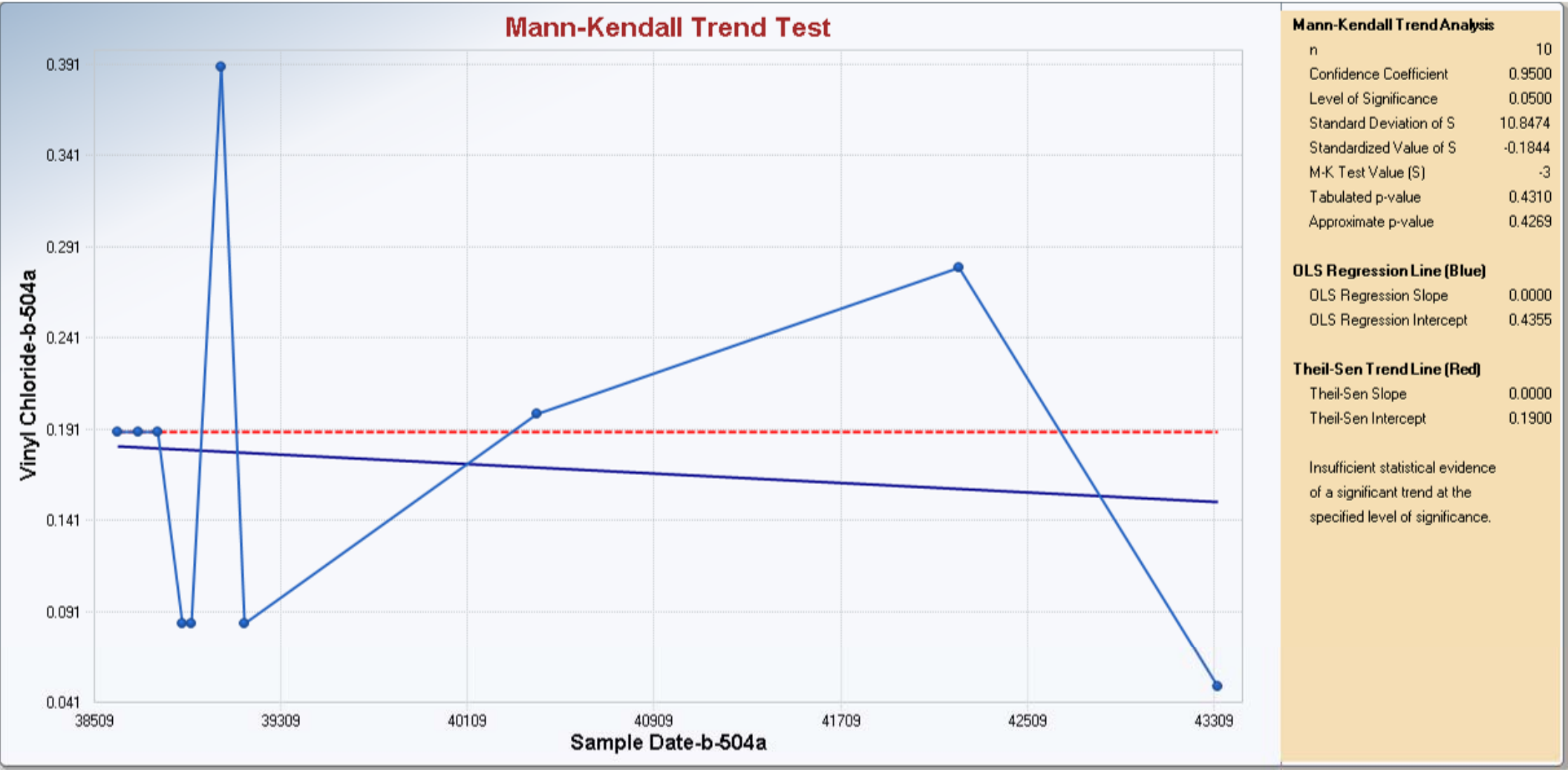
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.05
Maximum	0.39
Mean	0.175
Geometric Mean	0.147
Median	0.19
Standard Deviation	0.105
Coefficient of Variation	0.599

Mann-Kendall Test

M-K Test Value (S)	-3
Tabulated p-value	0.431
Standard Deviation of S	10.85
Standardized Value of S	-0.184
Approximate p-value	0.427

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
Vinyl Chloride-b-504a
0.391
0.341
0.291
0.241
0.191
0.141
0.091
0.041
38509
39309
40109
40909
41709
42509
43309
Sample Date-b-504a
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 10.8474
Standardized Value of S -0.1844
M-K Test Value (S) -3
Tabulated p-value 0.4310
Approximate p-value 0.4269
OLS Regression Line (Blue)
OLS Regression Slope 0.0000
OLS Regression Intercept 0.4355
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 0.1900
Insufficient statistical evidence of a significant trend at the specified level of significance.

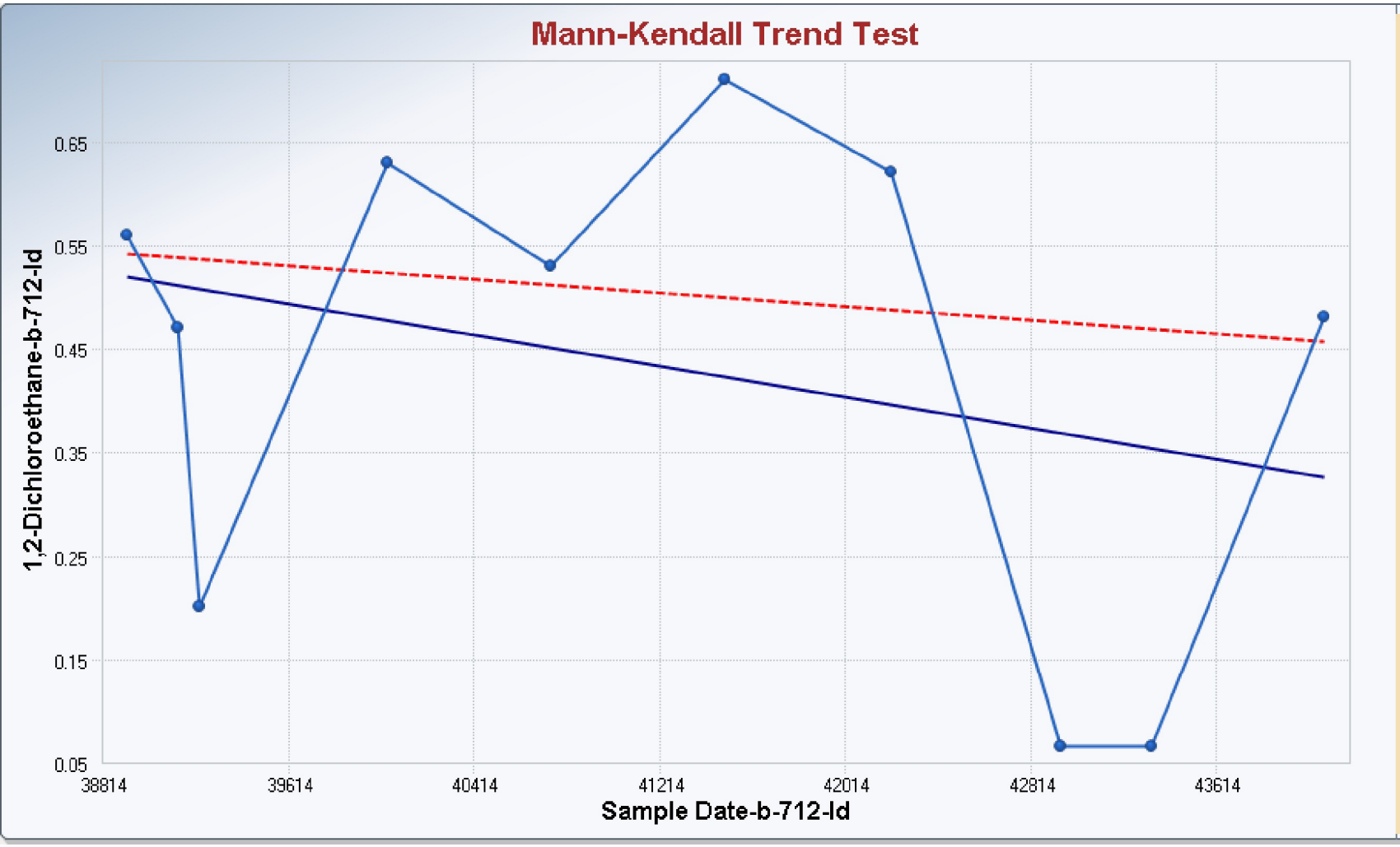
Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.12/19/2021 10:41:55 AM	
From File	VERT MIG DATA - B-712-LD ONLY.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,2-Dichloroethane-b-712-ld

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.065
Maximum	0.71
Mean	0.433
Geometric Mean	0.331
Median	0.505
Standard Deviation	0.237
Coefficient of Variation	0.547

Mann-Kendall Test	
M-K Test Value (S)	-8
Tabulated p-value	0.242
Standard Deviation of S	11.14
Standardized Value of S	-0.629
Approximate p-value	0.265

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-0.6286
M-K Test Value (S)	-8
Tabulated p-value	0.2420
Approximate p-value	0.2648

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	1.9870

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	1.1817

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.12/19/2021 10:46:19 AM	
From File	VERT MIG DATA - B-712-LD ONLY_b.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Arsenic-b-712-ld

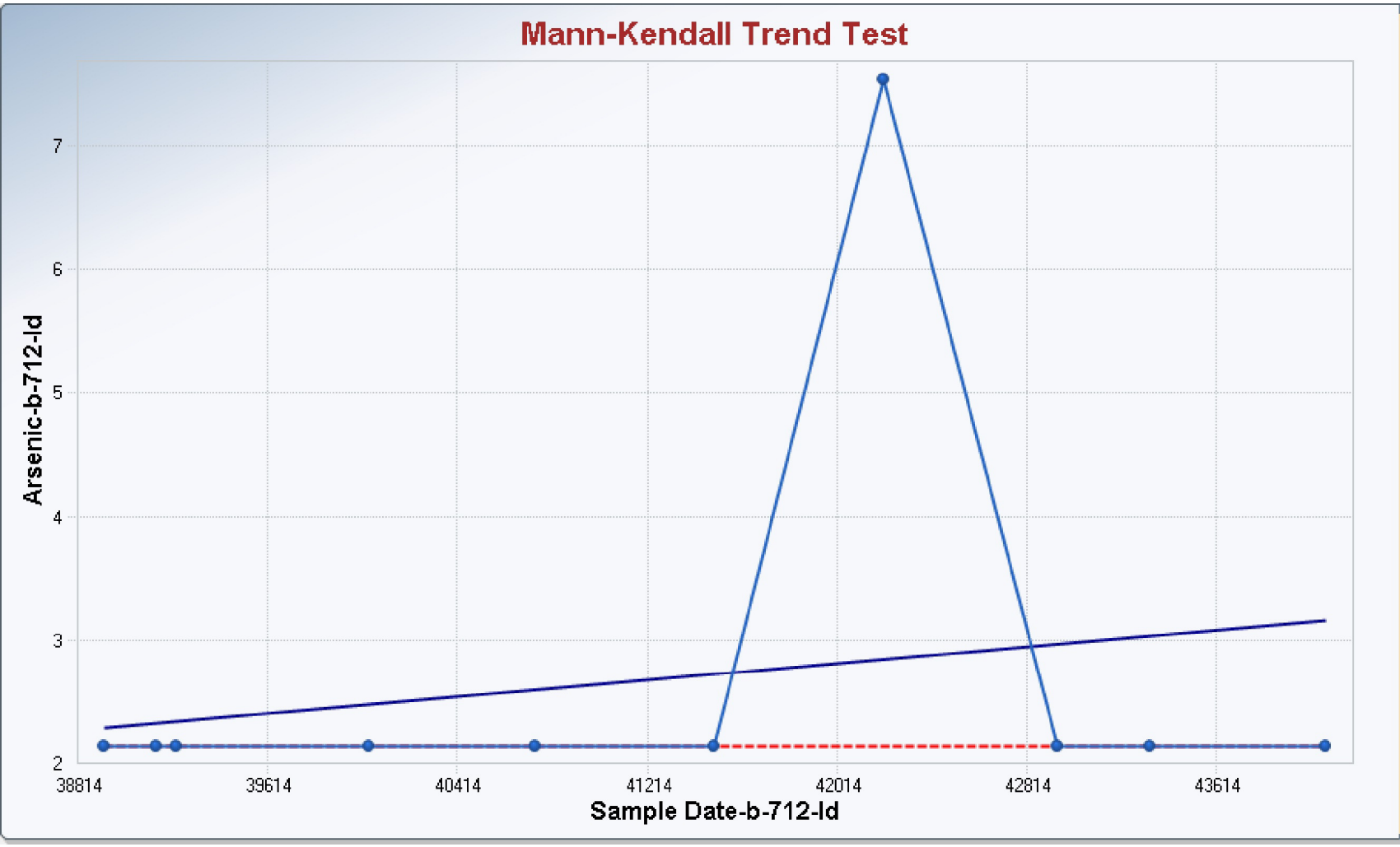
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	2.2
Maximum	7.6
Mean	2.74
Geometric Mean	2.49
Median	2.2
Standard Deviation	1.708
Coefficient of Variation	0.623

Mann-Kendall Test

M-K Test Value (S)	3
Tabulated p-value	0.431
Standard Deviation of S	5.745
Standardized Value of S	0.348
Approximate p-value	0.364

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.7446
Standardized Value of S	0.3482
M-K Test Value (S)	3
Tabulated p-value	0.4310
Approximate p-value	0.3639

OLS Regression Line (Blue)

OLS Regression Slope	0.0002
OLS Regression Intercept	-4.2394

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	2.2000

Insufficient statistical evidence of a significant trend at the specified level of significance.

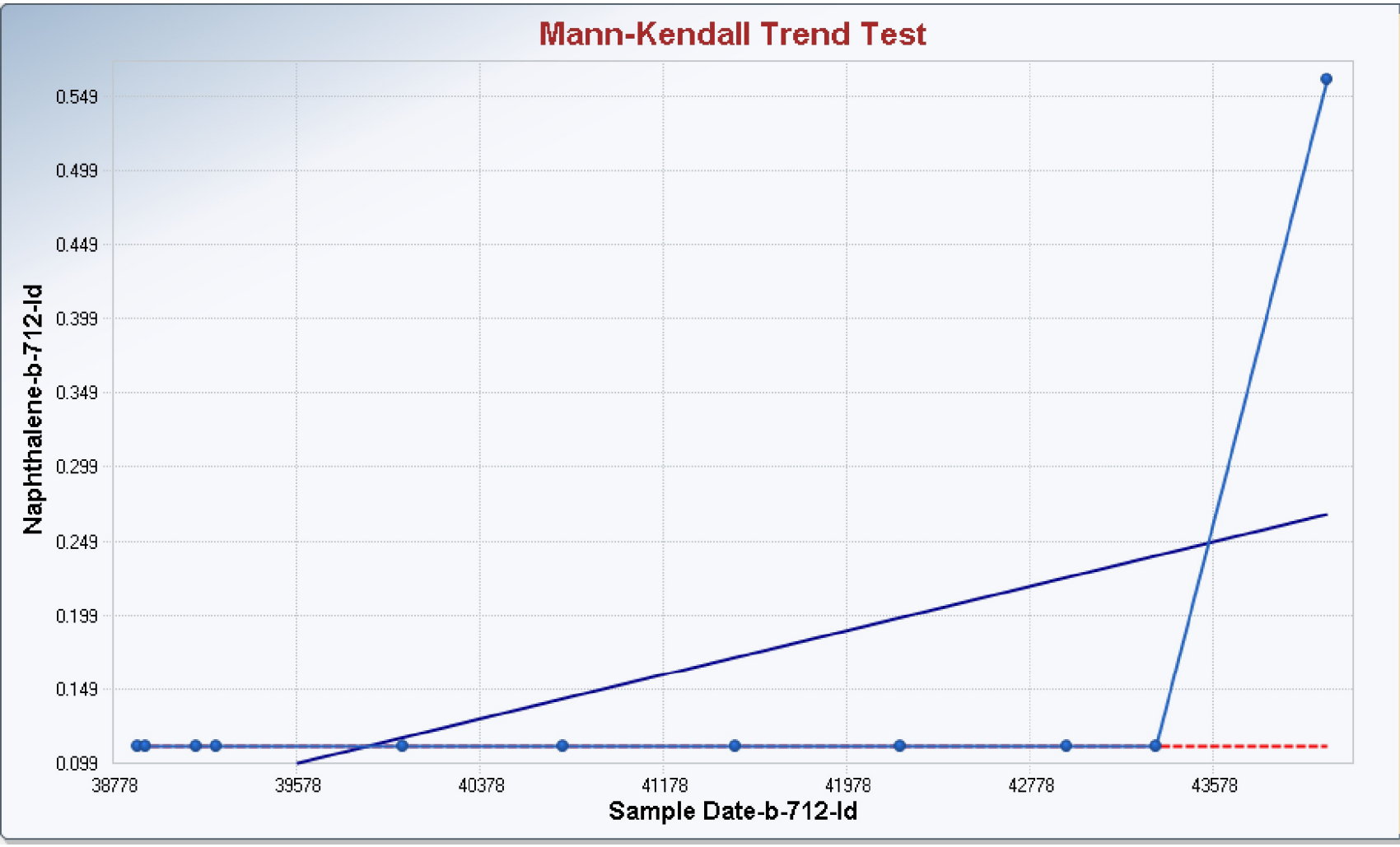
Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.12/19/2021 10:51:27 AM	
From File	VERT MIG DATA - B-712-LD ONLY_d.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Naphthalene-b-712-ld

General Statistics	
Number of Events Reported (m)	11
Number of Missing Events	0
Number or Reported Events Used	11
Number Values Reported (n)	11
Minimum	0.11
Maximum	0.56
Mean	0.151
Geometric Mean	0.128
Median	0.11
Standard Deviation	0.136
Coefficient of Variation	0.899

Mann-Kendall Test	
M-K Test Value (S)	10
Tabulated p-value	0.223
Standard Deviation of S	6.325
Standardized Value of S	1.423
Approximate p-value	0.0774

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	11
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	6.3246
Standardized Value of S	1.4230
M-K Test Value (S)	10
Tabulated p-value	0.2230
Approximate p-value	0.0774

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	-1.3924

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	0.1100

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.12/19/2021 10:49:35 AM	
From File	VERT MIG DATA - B-712-LD ONLY_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-b-712-ld

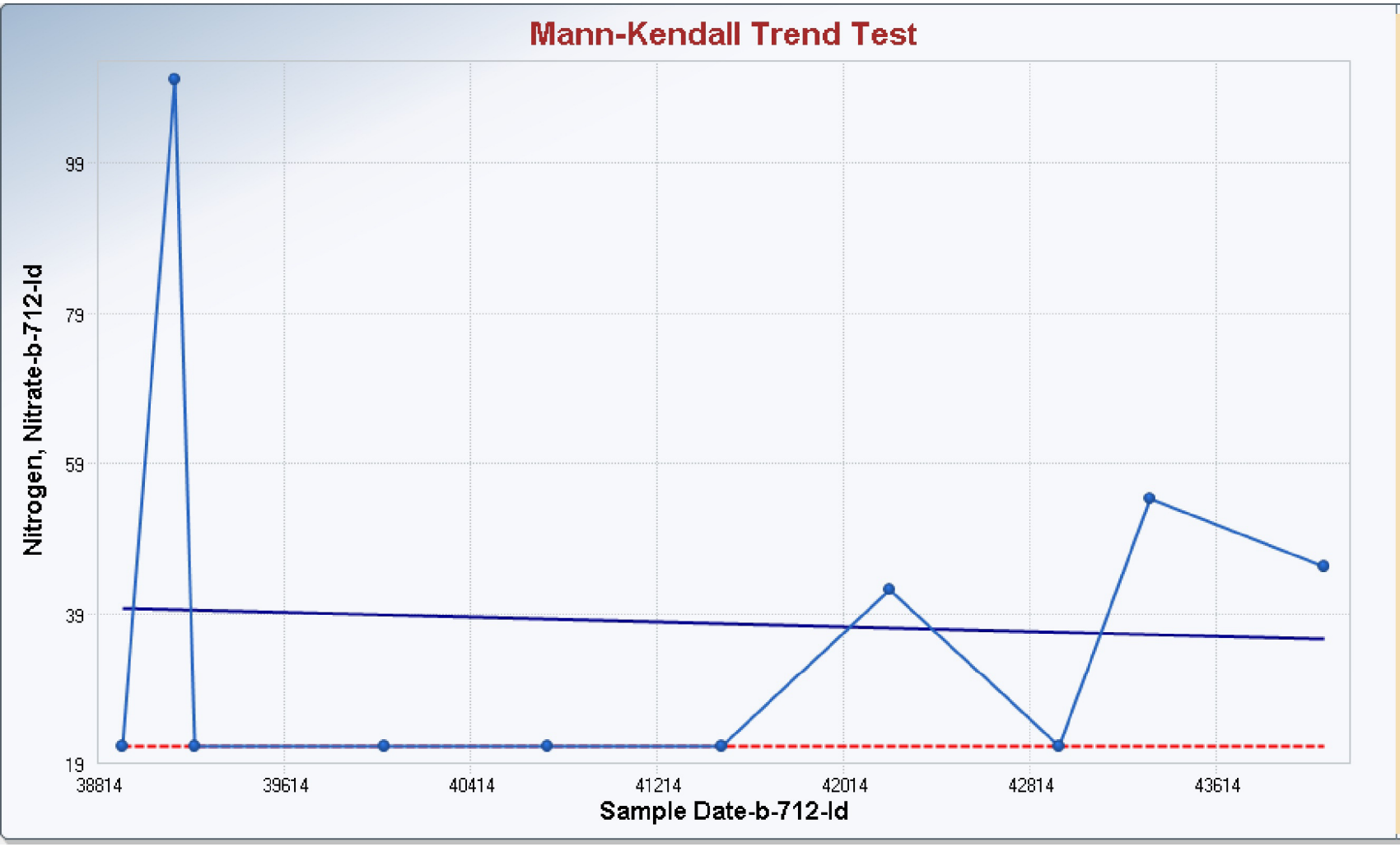
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	21
Maximum	110
Mean	37.7
Geometric Mean	31.5
Median	21
Standard Deviation	28.36
Coefficient of Variation	0.752

Mann-Kendall Test

M-K Test Value (S)	10
Tabulated p-value	0.19
Standard Deviation of S	9.832
Standardized Value of S	0.915
Approximate p-value	0.18

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.8319
Standardized Value of S	0.9154
M-K Test Value (S)	10
Tabulated p-value	0.1900
Approximate p-value	0.1800

OLS Regression Line (Blue)

OLS Regression Slope	-0.0008
OLS Regression Intercept	69.8878

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	21.0000

Insufficient statistical evidence of a significant trend at the specified level of significance.

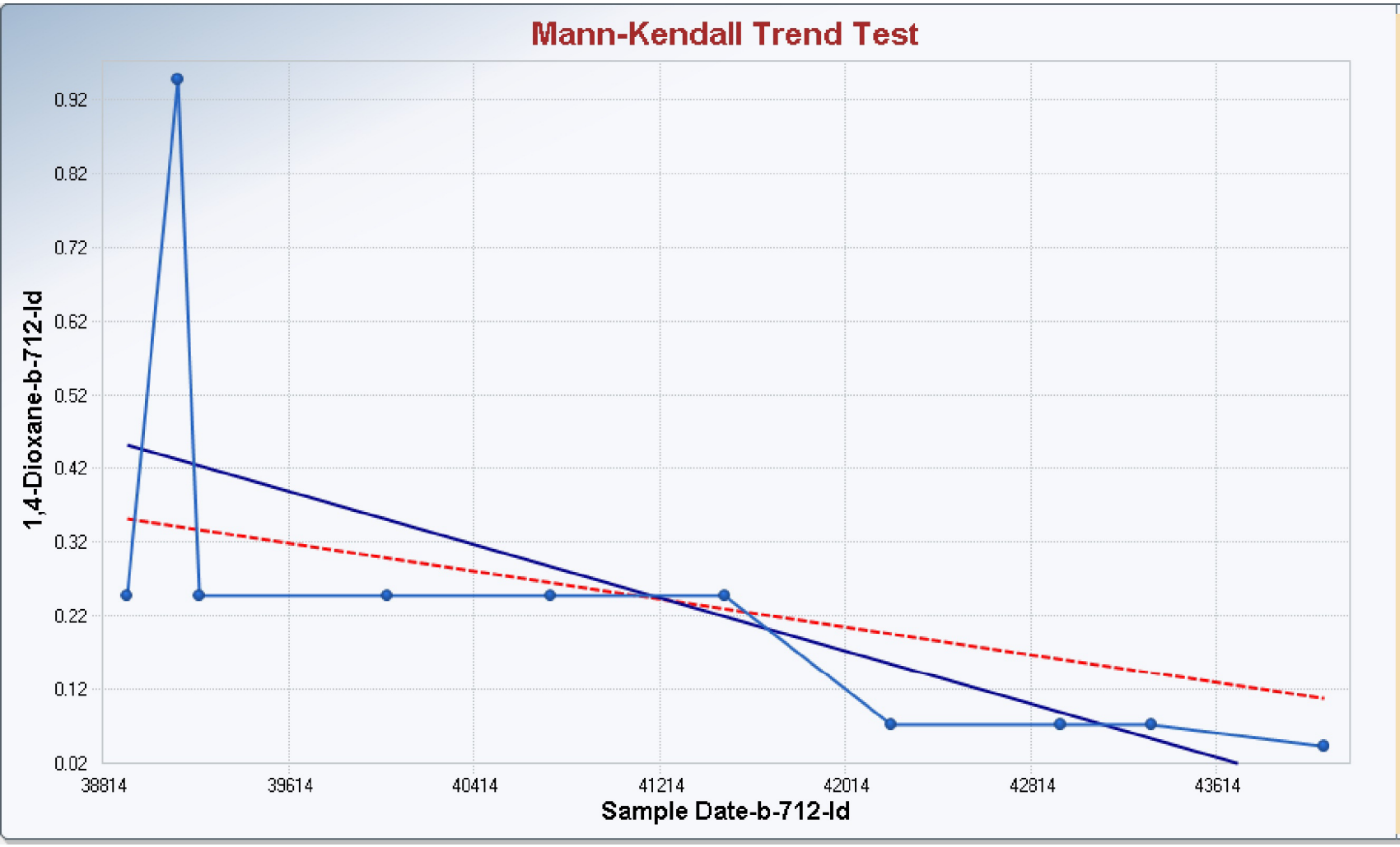
Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.12/15/2021 12:25:59 PM	
From File	COMPLIANCE DATA For TREND- 1H2020.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-b-712-ld

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.045
Maximum	0.95
Mean	0.247
Geometric Mean	0.168
Median	0.25
Standard Deviation	0.263
Coefficient of Variation	1.066

Mann-Kendall Test	
M-K Test Value (S)	-30
Tabulated p-value	0.002
Standard Deviation of S	10.23
Standardized Value of S	-2.835
Approximate p-value	0.00229

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	10.2307
Standardized Value of S	-2.8346
M-K Test Value (S)	-30
Tabulated p-value	0.0020
Approximate p-value	0.0023

OLS Regression Line (Blue)

OLS Regression Slope	-0.0001
OLS Regression Intercept	3.9841

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	2.1880

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:26:14 AM	
From File	VERT MIG DATA_g.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Methylene Chloride-c-702p3

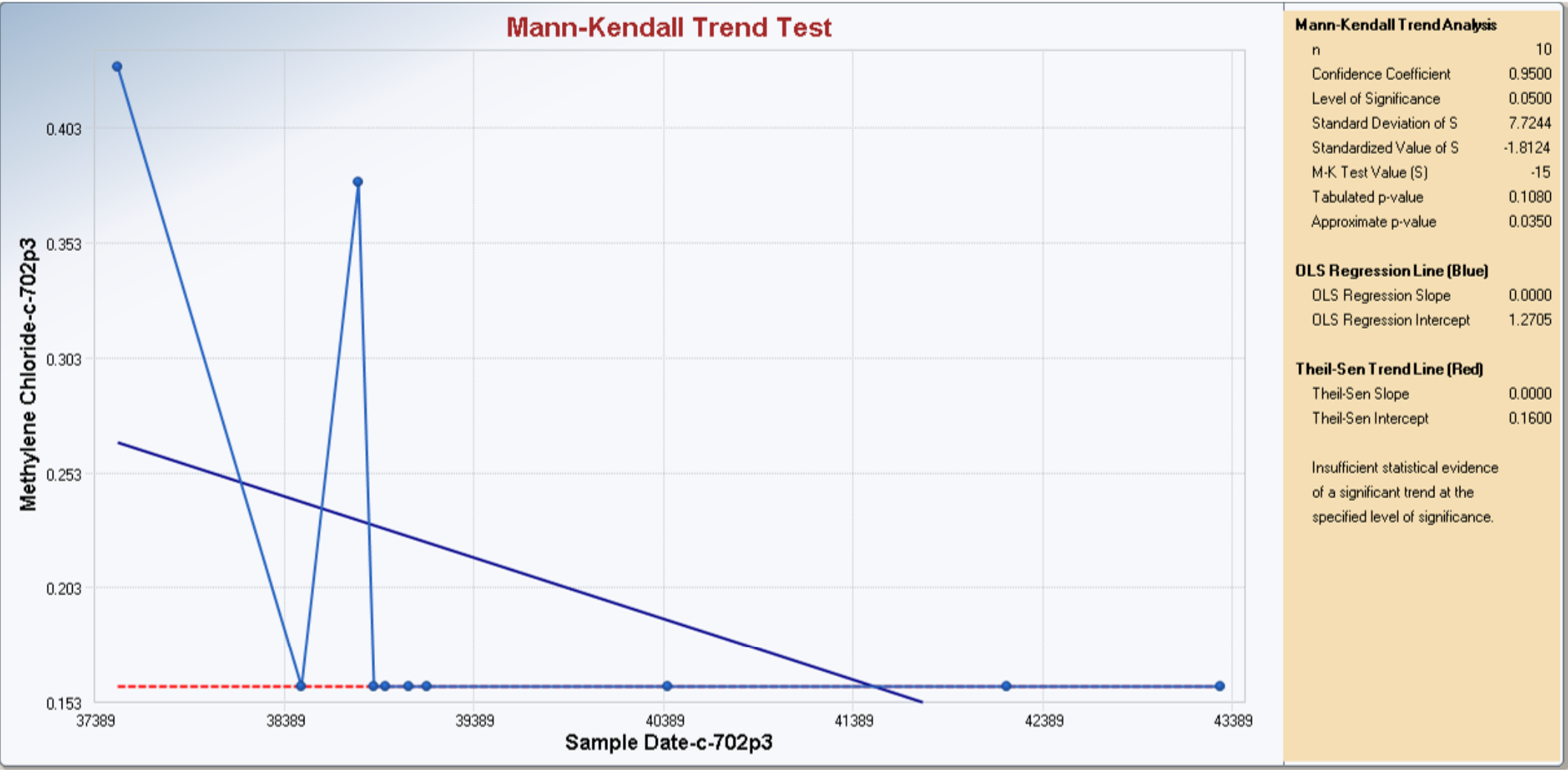
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.16
Maximum	0.43
Mean	0.209
Geometric Mean	0.193
Median	0.16
Standard Deviation	0.104
Coefficient of Variation	0.497

Mann-Kendall Test

M-K Test Value (S)	-15
Tabulated p-value	0.108
Standard Deviation of S	7.724
Standardized Value of S	-1.812
Approximate p-value	0.035

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
Methylene Chloride-c-702p3
0.403
0.353
0.303
0.253
0.203
0.153
37389
38389
39389
40389
41389
42389
43389
Sample Date-c-702p3
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 7.7244
Standardized Value of S -1.8124
M-K Test Value (S) -15
Tabulated p-value 0.1080
Approximate p-value 0.0350
OLS Regression Line (Blue)
OLS Regression Slope 0.0000
OLS Regression Intercept 1.2705
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 0.1600
Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:24:11 AM	
From File	VERT MIG DATA_i.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-c-702p3

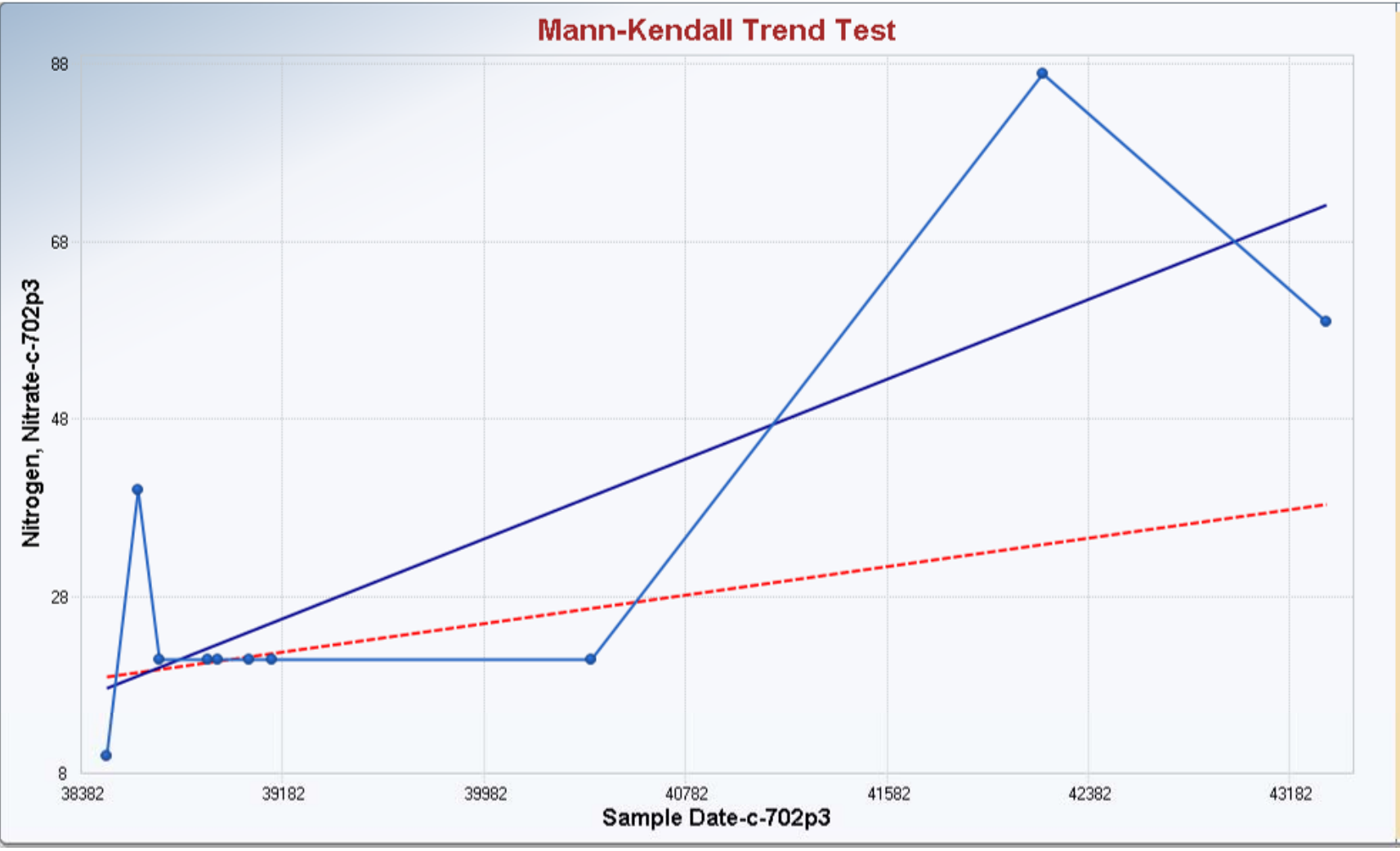
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	10
Maximum	87
Mean	32.2
Geometric Mean	26.58
Median	21
Standard Deviation	23.64
Coefficient of Variation	0.734

Mann-Kendall Test

M-K Test Value (S)	16
Tabulated p-value	0.078
Standard Deviation of S	9.832
Standardized Value of S	1.526
Approximate p-value	0.0635

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.8319
Standardized Value of S	1.5256
M-K Test Value (S)	16
Tabulated p-value	0.0780
Approximate p-value	0.0635

OLS Regression Line (Blue)

OLS Regression Slope	0.0113
OLS Regression Intercept	-415.2403

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0040
Theil-Sen Intercept	-136.0017

Insufficient statistical evidence of a significant trend at the specified level of significance.

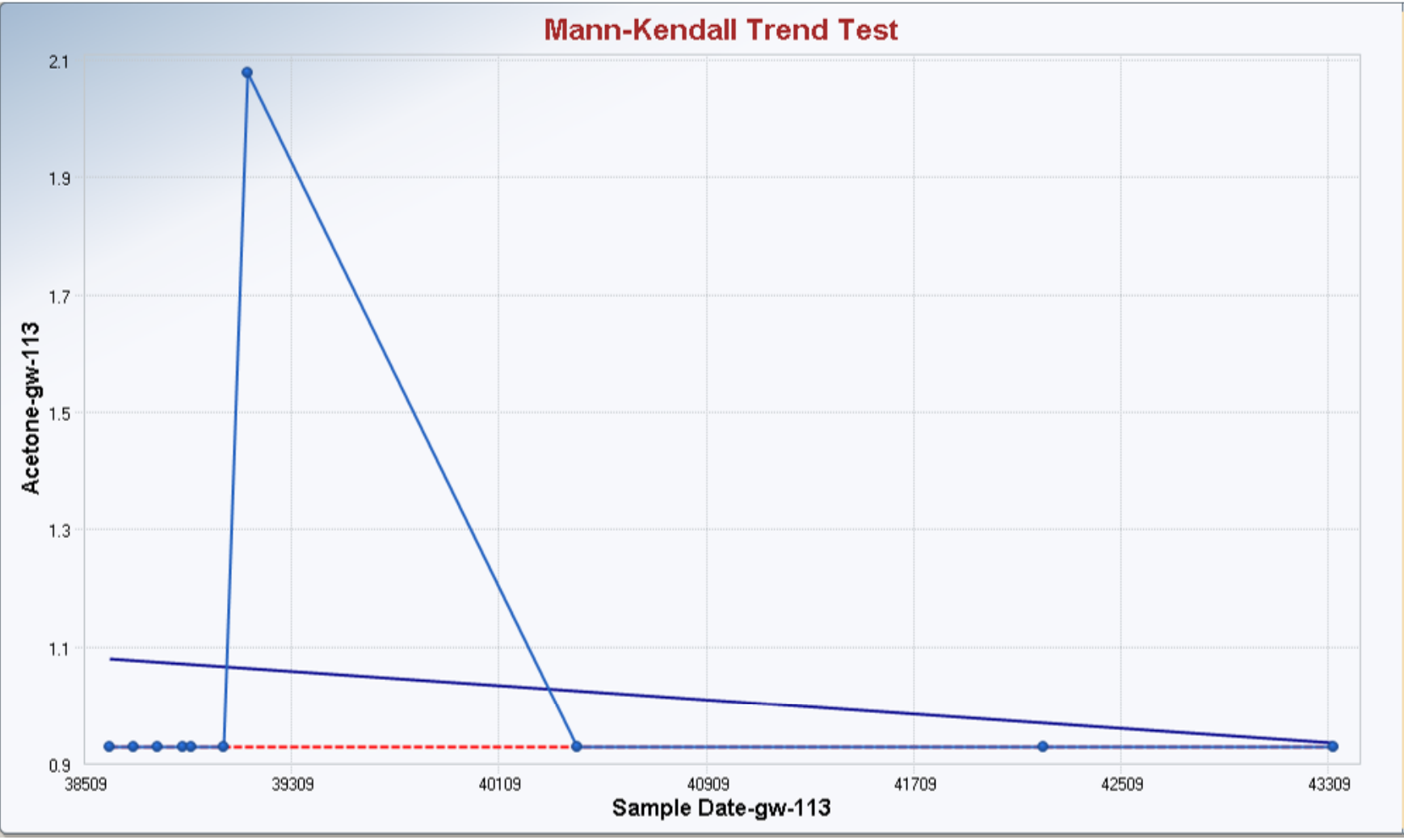
	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:28:31 AM	
From File	VERT MIG DATA_d.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Acetone-gw-113

General Statistics	
Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.95
Maximum	2.1
Mean	1.065
Geometric Mean	1.028
Median	0.95
Standard Deviation	0.364
Coefficient of Variation	0.341

Mann-Kendall Test	
M-K Test Value (S)	3
Tabulated p-value	0.431
Standard Deviation of S	5.745
Standardized Value of S	0.348
Approximate p-value	0.364

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	5.7446
Standardized Value of S	0.3482
M-K Test Value (S)	3
Tabulated p-value	0.4310
Approximate p-value	0.3639

OLS Regression Line (Blue)

OLS Regression Slope	0.0000
OLS Regression Intercept	2.2844

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	0.9500

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:23:27 AM	
From File	VERT MIG DATA_j.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrite-gw-113

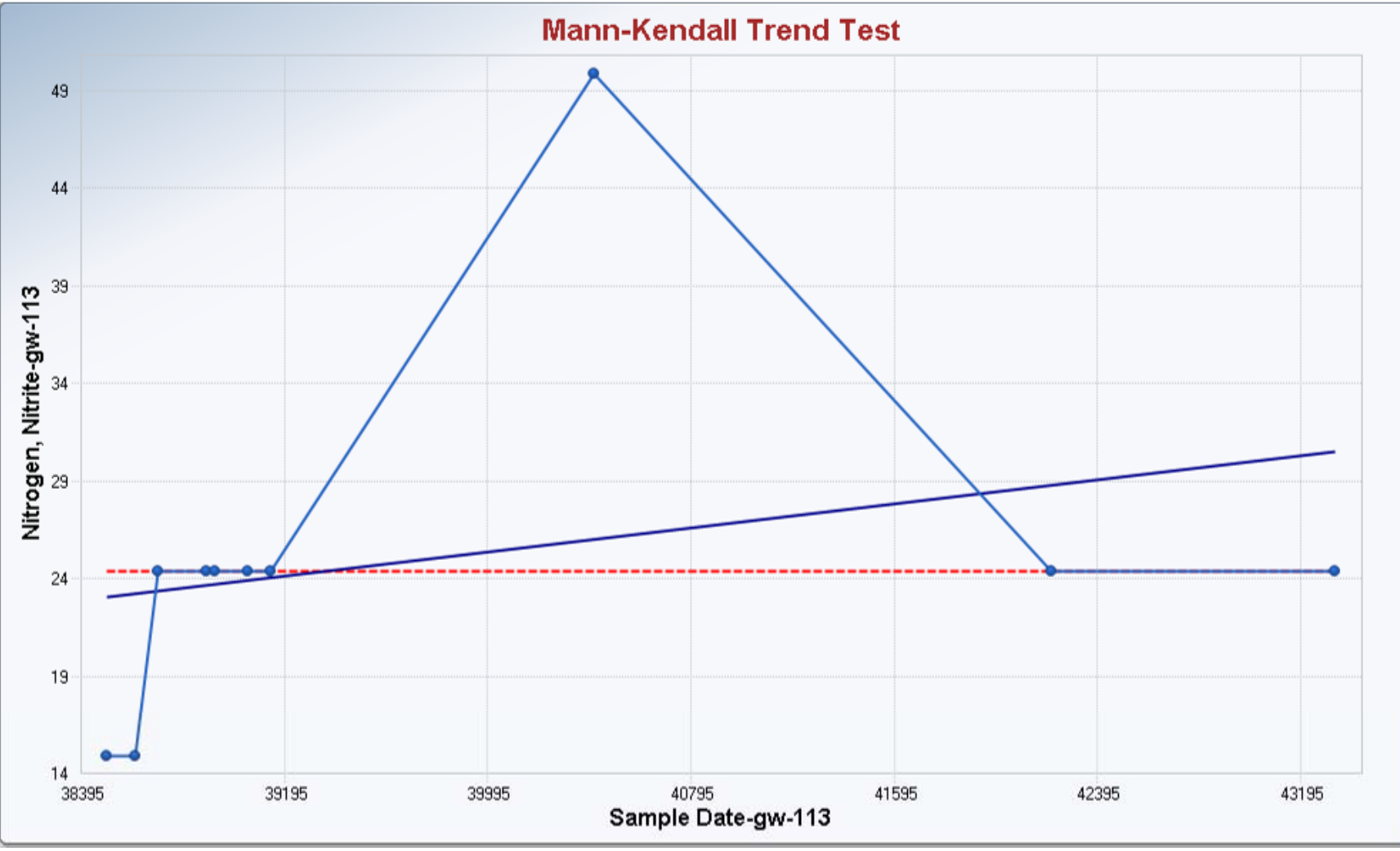
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	15
Maximum	50
Mean	25.15
Geometric Mean	23.85
Median	24.5
Standard Deviation	9.583
Coefficient of Variation	0.381

Mann-Kendall Test

M-K Test Value (S)	19
Tabulated p-value	0.054
Standard Deviation of S	8.926
Standardized Value of S	2.017
Approximate p-value	0.0219

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	8.9256
Standardized Value of S	2.0167
M-K Test Value (S)	19
Tabulated p-value	0.0540
Approximate p-value	0.0219

OLS Regression Line (Blue)

OLS Regression Slope	0.0015
OLS Regression Intercept	-36.3034

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	24.5000

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:24:11 AM	
From File	VERT MIG DATA_i.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-gw-113

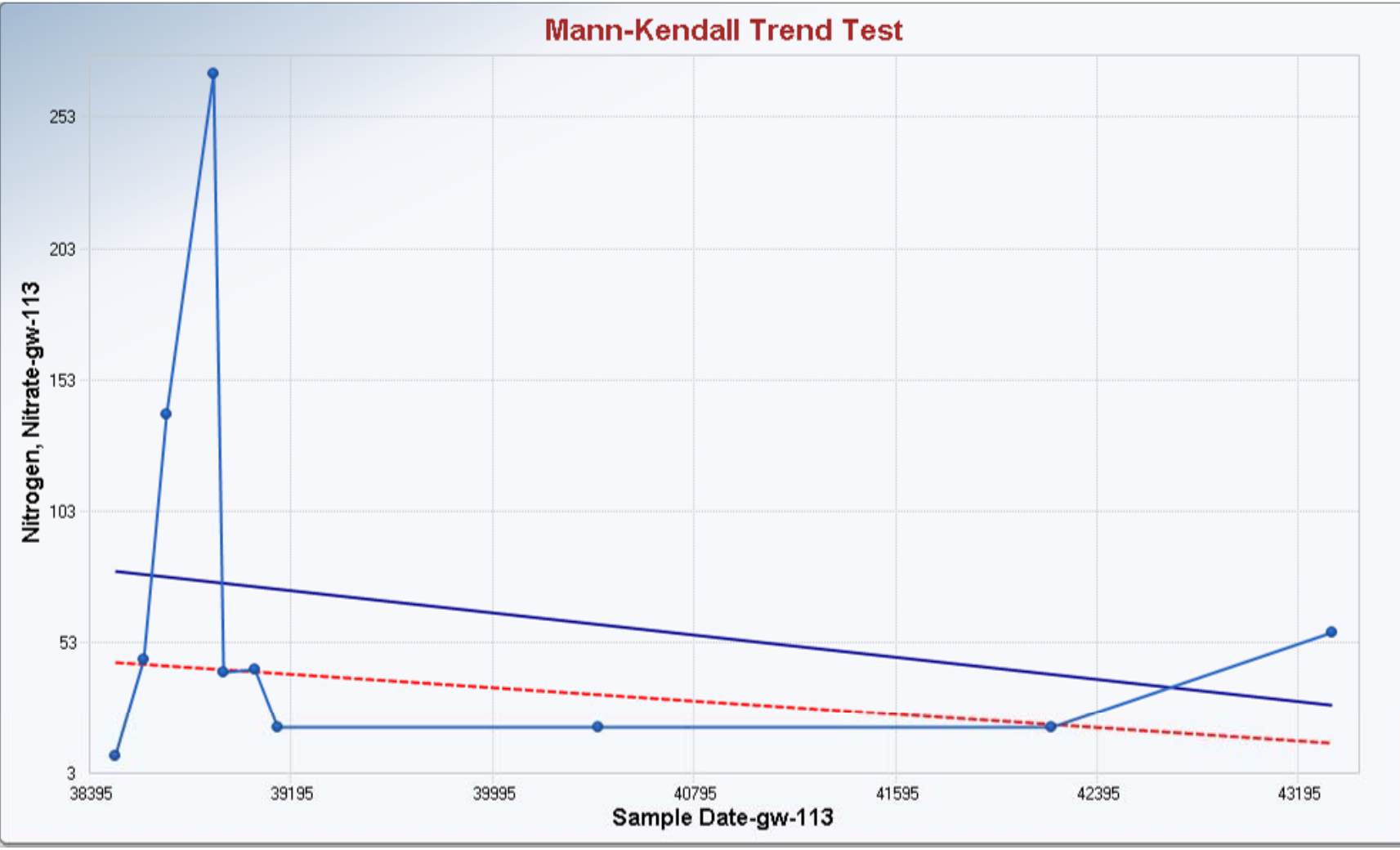
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	10
Maximum	270
Mean	67.2
Geometric Mean	41.96
Median	42.5
Standard Deviation	80.16
Coefficient of Variation	1.193

Mann-Kendall Test

M-K Test Value (S)	-4
Tabulated p-value	0.364
Standard Deviation of S	11.02
Standardized Value of S	-0.272
Approximate p-value	0.393

Insufficient evidence to identify a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0151
Standardized Value of S	-0.2724
M-K Test Value (S)	-4
Tabulated p-value	0.3640
Approximate p-value	0.3927

OLS Regression Line (Blue)

OLS Regression Slope	-0.0106
OLS Regression Intercept	489.9055

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0064
Theil-Sen Intercept	291.4982

Insufficient statistical evidence of a significant trend at the specified level of significance.

APPENDIX C-5.3

VERTICAL MIGRATION ASSESSMENT

Dixon's Test for Outliers

	Outlier Tests for Selected Variables replacing nondetects with 1/2 the Detection Limit	
User Selected Options		
Date/Time of Computation	ProUCL 5.12/19/2021 11:06:07 AM	
From File	VERT MIG DATA - B-712-LD ONLY FOR DIXON'S.xls	
Full Precision	OFF	

Dixon's Outlier Test for 1,4-Dioxane (b-712-ld)

Total N = 10

Number NDs = 9

Number Detects = 1

Number Data (n) = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

Note: NDs replaced by DL/2 in Outlier Test

1. Data Value 0.95 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.800

For 10% significance level, 0.95 is an outlier.

For 5% significance level, 0.95 is an outlier.

For 1% significance level, 0.95 is an outlier.

2. Data Value 0.045 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.146

For 10% significance level, 0.045 is not an outlier.

For 5% significance level, 0.045 is not an outlier.

For 1% significance level, 0.045 is not an outlier.

APPENDIX C-6

NORTH END MONITORING AND RESPONSE ACTIONS

APPENDIX C-6.1

NORTH END – ALL ORGANICS AND NITRATE DATA

APPENDIX C-6.1
NORTH END - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 22 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
31	B-314	Nitrogen, Nitrate	4/13/2022	890	
31	B-314	Nitrogen, Nitrite	4/13/2022	500	U
31	B-314	1,4-Dioxane	4/13/2022	0.9	U
31	B-314	1,1,1-Trichloroethane	4/13/2022	1	U
31	B-314	1,1,2,2-Tetrachloroethane	4/13/2022	1	U
31	B-314	1,1,2-Trichloroethane	4/13/2022	1	U
31	B-314	1,1-Dichloroethane	4/13/2022	1.5	
31	B-314	1,1-Dichloroethene	4/13/2022	1	U
31	B-314	1,2-Dichloroethane	4/13/2022	1	U
31	B-314	1,2-Dichloropropane	4/13/2022	1	U
31	B-314	1,4-Dioxane	4/13/2022	200	U
31	B-314	Acetone	4/13/2022	10	U
31	B-314	Benzene	4/13/2022	1	U
31	B-314	Bromodichloromethane	4/13/2022	1	U
31	B-314	Bromoform	4/13/2022	1	U
31	B-314	Carbon Tetrachloride	4/13/2022	1	U
31	B-314	Chlorobenzene	4/13/2022	1	U
31	B-314	Chloroform	4/13/2022	1	U
31	B-314	cis-1,2-Dichloroethene	4/13/2022	1	U
31	B-314	Dibromochloromethane	4/13/2022	1	U
31	B-314	Ethylbenzene	4/13/2022	1	U
31	B-314	Methylene Chloride	4/13/2022	1	U
31	B-314	Naphthalene	4/13/2022	1	U
31	B-314	Tetrachloroethene	4/13/2022	1	U
31	B-314	Toluene	4/13/2022	1	U
31	B-314	Trans-1,2-Dichloroethene	4/13/2022	0.5	U
31	B-314	Trichloroethene	4/13/2022	1	U
31	B-314	Vinyl Chloride	4/13/2022	2	U
31	B-326-UD	1,4-Dioxane	2/8/2022	4.5	
31	B-326-UD	1,4-Dioxane	4/14/2022	4.6	
31	B-326-WD	Nitrogen, Nitrate	4/14/2022	360	J
31	B-326-WD	Nitrogen, Nitrite	4/14/2022	500	U
31	B-326-WD	1,4-Dioxane	2/8/2022	3.6	
31	B-326-WD	1,4-Dioxane	4/14/2022	3.2	
31	B-326-WD	1,1,1-Trichloroethane	4/14/2022	1	U
31	B-326-WD	1,1,2,2-Tetrachloroethane	4/14/2022	1	U
31	B-326-WD	1,1,2-Trichloroethane	4/14/2022	1	U
31	B-326-WD	1,1-Dichloroethane	4/14/2022	1	U
31	B-326-WD	1,1-Dichloroethene	4/14/2022	1	U
31	B-326-WD	1,2-Dichloroethane	4/14/2022	1	U
31	B-326-WD	1,2-Dichloropropane	4/14/2022	1	U
31	B-326-WD	1,4-Dioxane	4/14/2022	200	U
31	B-326-WD	Acetone	4/14/2022	10	U
31	B-326-WD	Benzene	4/14/2022	1	U
31	B-326-WD	Bromodichloromethane	4/14/2022	1	U
31	B-326-WD	Bromoform	4/14/2022	1	U
31	B-326-WD	Carbon Tetrachloride	4/14/2022	1	U
31	B-326-WD	Chlorobenzene	4/14/2022	1	U
31	B-326-WD	Chloroform	4/14/2022	1	U
31	B-326-WD	cis-1,2-Dichloroethene	4/14/2022	1	U
31	B-326-WD	Dibromochloromethane	4/14/2022	1	U
31	B-326-WD	Ethylbenzene	4/14/2022	1	U
31	B-326-WD	Methylene Chloride	4/14/2022	1	U

APPENDIX C-6.1
NORTH END - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 22 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
31	B-326-WD	Naphthalene	4/14/2022	1	U
31	B-326-WD	Tetrachloroethene	4/14/2022	1	U
31	B-326-WD	Toluene	4/14/2022	1	U
31	B-326-WD	Trans-1,2-Dichloroethene	4/14/2022	0.5	U
31	B-326-WD	Trichloroethene	4/14/2022	1	U
31	B-326-WD	Vinyl Chloride	4/14/2022	2	U
31	MW05-WD	1,4-Dioxane	3/1/2022	3.6	
31	MW113-EW-1	Nitrogen, Nitrate	1/25/2022	210	J
31	MW113-EW-1	Nitrogen, Nitrate	4/19/2022	150	J
31	MW113-EW-1	1,4-Dioxane	1/25/2022	99	
31	MW113-EW-1	1,4-Dioxane	4/19/2022	89	
31	MW113-UD	1,4-Dioxane	1/25/2022	59	
31	MW113-UD	1,4-Dioxane	5/17/2022	57	
31	MW113-WD	1,4-Dioxane	5/3/2022	36	
31	MW114-WD	1,4-Dioxane	1/20/2022	0.96	
31	MW114-WD	1,4-Dioxane	5/9/2022	0.89	J
31	MW117-WD	1,4-Dioxane	1/20/2022	1.3	
31	MW117-WD	1,4-Dioxane	5/9/2022	1.2	
31	MW118-WD	1,4-Dioxane	1/20/2022	0.28	J
31	MW118-WD	1,4-Dioxane	5/9/2022	0.22	J
31	MW121-WDR	1,4-Dioxane	1/26/2022	0.77	J
31	MW122-WDR	1,4-Dioxane	1/26/2022	1.9	
31	MW123-WD	1,4-Dioxane	1/26/2022	1.7	
31	MW124-WD	1,4-Dioxane	1/27/2022	0.48	J
31	MW125-WD	1,4-Dioxane	1/27/2022	0.34	J
31	MW129-WD	1,4-Dioxane	2/28/2022	4.7	
31	MW132-WD	1,4-Dioxane	1/31/2022	15	
31	MW132-WD	1,4-Dioxane	5/10/2022	10	
30	MW135-WD	1,4-Dioxane	2/23/2022	5.1	
30	MW141-WD	1,4-Dioxane	2/15/2022	2.2	
19	MW142-WD	1,4-Dioxane	2/23/2022	1.4	
24	MW144-WD	1,4-Dioxane	2/15/2022	0.9	U
31	MW151-WD	1,4-Dioxane	1/31/2022	4.8	
31	MW151-WD	1,4-Dioxane	5/16/2022	1.8	
31	MW153-EW-1	1,4-Dioxane	1/27/2022	3.3	
31	MW153-EW-1	1,4-Dioxane	4/27/2022	2.3	
31	MW154-EW-1	1,4-Dioxane	1/27/2022	1.7	
31	MW154-EW-1	1,4-Dioxane	4/28/2022	2.6	
31	MW155-EW-1	1,4-Dioxane	1/31/2022	0.49	J
31	MW155-EW-1	1,4-Dioxane	5/2/2022	1.5	
31	MW156-EW-1	1,4-Dioxane	2/9/2022	0.45	J
31	MW156-EW-1	1,4-Dioxane	5/2/2022	0.6	J
31	MW156-WD	1,4-Dioxane	2/10/2022	0.19	J
31	MW156-WD	1,4-Dioxane	5/16/2022	0.51	J
31	MW157-WD	1,4-Dioxane	2/10/2022	0.9	U
31	MW157-WD	1,4-Dioxane	5/16/2022	0.9	U
31	MW160-WD	1,4-Dioxane	1/31/2022	3.7	
31	MW160-WD	1,4-Dioxane	4/26/2022	2.9	
13	MW176-DEN	1,4-Dioxane	2/15/2022	0.52	J
31	MW179-UDEN	1,4-Dioxane	3/1/2022	0.9	U
19	Private Well 1	1,4-Dioxane	6/7/2022	0.9	U
30	Private Well 2	1,4-Dioxane	6/7/2022	0.9	U
31	PTP-12	1,4-Dioxane	2/14/2022	7.1	

APPENDIX C-6.1
NORTH END - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 22 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
31	PTP-12	1,4-Dioxane	5/11/2022	4.8	
31	PTP-13	1,4-Dioxane	3/1/2022	8.2	
31	PTP-13	1,4-Dioxane	5/12/2022	6.3	

a/ µg/L = micrograms per liter

b/ Final Q definitions:

Qualifiers: U= The analyte was analyzed for and is not present above the level of the associated value.

UJ-= Same as UJ qualification but with an indication of negative bias in the sample concentration.

UJ+= Same as UJ qualification but with an indication of positive bias in the sample concentration.

UJ= The analyte analyzed for was not present above the level of the associated value. The associated

J= The analyte was analyzed for, and was positively identified, but the associated numerical value

The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

APPENDIX C-6.2

MW77 AREA – ALL ORGANICS AND NITRATE DATA

TABLE C-6.2
MW77 AREA - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (ug/L)[a/]	Qualifier[b/]
31	MW102-WD	1,4-Dioxane	1/24/2022	0.92	
31	MW102-WD	1,4-Dioxane	4/28/2022	1.2	
31	MW103-WD	1,4-Dioxane	2/7/2022	0.35	J
31	MW103-WD	1,4-Dioxane	5/9/2022	0.27	J
31	MW170-EW-1	1,1,1-Trichloroethane	1/25/2022	1.8	
31	MW170-EW-1	1,1,1-Trichloroethane	5/10/2022	1.3	
31	MW170-EW-1	1,1,2,2-Tetrachloroethane	1/25/2022	1	U
31	MW170-EW-1	1,1,2,2-Tetrachloroethane	5/10/2022	1	U
31	MW170-EW-1	1,1,2-Trichloroethane	1/25/2022	1	U
31	MW170-EW-1	1,1,2-Trichloroethane	5/10/2022	1	U
31	MW170-EW-1	1,1-Dichloroethane	1/25/2022	3.7	
31	MW170-EW-1	1,1-Dichloroethane	5/10/2022	3.3	
31	MW170-EW-1	1,1-Dichloroethene	1/25/2022	3	
31	MW170-EW-1	1,1-Dichloroethene	5/10/2022	2.4	
31	MW170-EW-1	1,2-Dichloroethane	1/25/2022	1	U
31	MW170-EW-1	1,2-Dichloroethane	5/10/2022	1	U
31	MW170-EW-1	1,2-Dichloropropane	1/25/2022	1	U
31	MW170-EW-1	1,2-Dichloropropane	5/10/2022	1	U
31	MW170-EW-1	1,4-Dioxane	1/25/2022	14	
31	MW170-EW-1	1,4-Dioxane	1/25/2022	200	U
31	MW170-EW-1	1,4-Dioxane	5/10/2022	11	
31	MW170-EW-1	1,4-Dioxane	5/10/2022	200	U
31	MW170-EW-1	Acetone	1/25/2022	10	U
31	MW170-EW-1	Acetone	5/10/2022	4.4	J
31	MW170-EW-1	Benzene	1/25/2022	1	U
31	MW170-EW-1	Benzene	5/10/2022	1	U
31	MW170-EW-1	Bromodichloromethane	1/25/2022	1	U
31	MW170-EW-1	Bromodichloromethane	5/10/2022	1	U
31	MW170-EW-1	Bromoform	1/25/2022	1	U
31	MW170-EW-1	Bromoform	5/10/2022	1	U
31	MW170-EW-1	Carbon Tetrachloride	1/25/2022	1	U
31	MW170-EW-1	Carbon Tetrachloride	5/10/2022	1	U
31	MW170-EW-1	Chlorobenzene	1/25/2022	1	U
31	MW170-EW-1	Chlorobenzene	5/10/2022	1	U
31	MW170-EW-1	Chloroform	1/25/2022	1	U
31	MW170-EW-1	Chloroform	5/10/2022	1	U
31	MW170-EW-1	cis-1,2-Dichloroethene	1/25/2022	9	
31	MW170-EW-1	cis-1,2-Dichloroethene	5/10/2022	8.2	
31	MW170-EW-1	Dibromochloromethane	1/25/2022	1	U
31	MW170-EW-1	Dibromochloromethane	5/10/2022	1	U
31	MW170-EW-1	Ethylbenzene	1/25/2022	1	U
31	MW170-EW-1	Ethylbenzene	5/10/2022	1	U
31	MW170-EW-1	Methylene Chloride	1/25/2022	1	U
31	MW170-EW-1	Methylene Chloride	5/10/2022	1	U
31	MW170-EW-1	Naphthalene	1/25/2022	1	U
31	MW170-EW-1	Naphthalene	5/10/2022	1	U
31	MW170-EW-1	Nitrogen, Nitrate	1/25/2022	11000	
31	MW170-EW-1	Nitrogen, Nitrate	5/10/2022	9700	
31	MW170-EW-1	Nitrogen, Nitrite	5/10/2022	500	U
31	MW170-EW-1	Tetrachloroethene	1/25/2022	1.2	
31	MW170-EW-1	Tetrachloroethene	5/10/2022	0.7	J
31	MW170-EW-1	Toluene	1/25/2022	1	U
31	MW170-EW-1	Toluene	5/10/2022	1	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	1/25/2022	0.5	U

TABLE C-6.2
MW77 AREA - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (ug/L)[a/]	Qualifier[b/]
31	MW170-EW-1	Trans-1,2-Dichloroethene	5/10/2022	0.5	U
31	MW170-EW-1	Trichloroethene	1/25/2022	0.49	J
31	MW170-EW-1	Trichloroethene	5/10/2022	0.51	J
31	MW170-EW-1	Vinyl Chloride	1/25/2022	2	U
31	MW170-EW-1	Vinyl Chloride	5/10/2022	2	U
31	MW23-UPPER-C	1,1,1-Trichloroethane	4/20/2022	1	U
31	MW23-UPPER-C	1,1,2,2-Tetrachloroethane	4/20/2022	1	U
31	MW23-UPPER-C	1,1,2-Trichloroethane	4/20/2022	1	U
31	MW23-UPPER-C	1,1-Dichloroethane	4/20/2022	1	U
31	MW23-UPPER-C	1,1-Dichloroethene	4/20/2022	1	U
31	MW23-UPPER-C	1,2-Dichloroethane	4/20/2022	1	U
31	MW23-UPPER-C	1,2-Dichloropropane	4/20/2022	1	U
31	MW23-UPPER-C	1,4-Dioxane	4/20/2022	0.9	U
31	MW23-UPPER-C	1,4-Dioxane	4/20/2022	200	U
31	MW23-UPPER-C	Acetone	4/20/2022	10	U
31	MW23-UPPER-C	Benzene	4/20/2022	1	U
31	MW23-UPPER-C	Bromodichloromethane	4/20/2022	1	U
31	MW23-UPPER-C	Bromoform	4/20/2022	1	U
31	MW23-UPPER-C	Carbon Tetrachloride	4/20/2022	1	U
31	MW23-UPPER-C	Chlorobenzene	4/20/2022	1	U
31	MW23-UPPER-C	Chloroform	4/20/2022	1	U
31	MW23-UPPER-C	cis-1,2-Dichloroethene	4/20/2022	1	U
31	MW23-UPPER-C	Dibromochloromethane	4/20/2022	1	U
31	MW23-UPPER-C	Ethylbenzene	4/20/2022	1	U
31	MW23-UPPER-C	Methylene Chloride	4/20/2022	1	U
31	MW23-UPPER-C	Naphthalene	4/20/2022	1	U
31	MW23-UPPER-C	Nitrogen, Nitrate	4/20/2022	120	J
31	MW23-UPPER-C	Nitrogen, Nitrite	4/20/2022	340	J
31	MW23-UPPER-C	Tetrachloroethene	4/20/2022	1	U
31	MW23-UPPER-C	Toluene	4/20/2022	1	U
31	MW23-UPPER-C	Trans-1,2-Dichloroethene	4/20/2022	0.5	U
31	MW23-UPPER-C	Trichloroethene	4/20/2022	1	U
31	MW23-UPPER-C	Vinyl Chloride	4/20/2022	2	U
31	MW77-EW-1	1,4-Dioxane	1/24/2022	2.5	
31	MW77-EW-1	1,4-Dioxane	4/28/2022	2.7	
31	MW77-EW-2	1,4-Dioxane	1/24/2022	0.09	J
31	MW77-EW-2	1,4-Dioxane	4/28/2022	0.9	U
31	MW77-WD	1,1,1-Trichloroethane	4/18/2022	1	U
31	MW77-WD	1,1,2,2-Tetrachloroethane	4/18/2022	1	U
31	MW77-WD	1,1,2-Trichloroethane	4/18/2022	1	U
31	MW77-WD	1,1-Dichloroethane	4/18/2022	1	U
31	MW77-WD	1,1-Dichloroethene	4/18/2022	0.66	J
31	MW77-WD	1,2-Dichloroethane	4/18/2022	1	U
31	MW77-WD	1,2-Dichloropropane	4/18/2022	1	U
31	MW77-WD	1,4-Dioxane	4/18/2022	12	
31	MW77-WD	1,4-Dioxane	4/18/2022	200	U
31	MW77-WD	Acetone	4/18/2022	10	U
31	MW77-WD	Benzene	4/18/2022	1	U
31	MW77-WD	Bromodichloromethane	4/18/2022	1	U
31	MW77-WD	Bromoform	4/18/2022	1	U
31	MW77-WD	Carbon Tetrachloride	4/18/2022	1	U
31	MW77-WD	Chlorobenzene	4/18/2022	1	U
31	MW77-WD	Chloroform	4/18/2022	1	U
31	MW77-WD	cis-1,2-Dichloroethene	4/18/2022	1	U

TABLE C-6.2
MW77 AREA - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (ug/L)[a/]	Qualifier[b/]
31	MW77-WD	Dibromochloromethane	4/18/2022	1	U
31	MW77-WD	Ethylbenzene	4/18/2022	1	U
31	MW77-WD	Methylene Chloride	4/18/2022	1	U
31	MW77-WD	Naphthalene	4/18/2022	1	U
31	MW77-WD	Nitrogen, Nitrate	4/18/2022	13000	J
31	MW77-WD	Nitrogen, Nitrite	4/18/2022	500	U
31	MW77-WD	Tetrachloroethene	4/18/2022	0.74	J
31	MW77-WD	Toluene	4/18/2022	1	U
31	MW77-WD	Trans-1,2-Dichloroethene	4/18/2022	0.5	U
31	MW77-WD	Trichloroethene	4/18/2022	1	U
31	MW77-WD	Vinyl Chloride	4/18/2022	2	U
31	MW98-WD	1,4-Dioxane	1/24/2022	5.9	
31	MW98-WD	1,4-Dioxane	4/28/2022	7.8	

a/ ug/L = micrograms per liter

b/ Qualifiers:

U= The analyte was analyzed for and is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ= The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

UJ-= Same as UJ qualification but with an indication of negative bias in the sample concentration.

UJ+= Same as UJ qualification but with an indication of positive bias in the sample concentration.

J-= Same as J qualification but with an indication of negative bias in the sample concentration.

J+= Same as J qualification but with an indication of positive bias in the sample concentration.

J= The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

APPENDIX C-7

WELL PERMIT INVENTORY WITHIN FIVE MILES OF THE SITE

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
758	434	277683-	3629584O	Owner	Well Constructed	AURORA CITY OF	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	25	10
745	476	276337-	3624266F	Owner	Well Constructed	AURORA CITY OF	5	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	16	6
63	536	42559-MH	0042559A	Owner	Well Constructed	US GEOLOGICAL SURVEY	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	23	23	13
756	549	277679-	3629584K	Owner	Well Constructed	AURORA CITY OF	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	21	11
613	573	55021-F	0469523A	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	8	Well (Construction Report)	General Purpose	LOWER ARAPAHOE	Commercial, Industrial	1663	1620	1420
744	578	276336-	3624266E	Owner	Well Constructed	AURORA CITY OF	8	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	16	6
667	584	250517-	0514425C	Owner	Well Constructed	US GEOLOGICAL SURVEY	8	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	29	28	18
67	640	42699-MH	42699	Owner	Well Constructed	US GEOLOGICAL SURVEY	32	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	25	15
761	667	277686-	3629584R	Owner	Well Constructed	AURORA CITY OF	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	16	13	3
759	698	277684-	3629584P	Owner	Well Constructed	AURORA CITY OF	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	28	18
61	799	42224-MH	42224	Owner	Well Constructed	US GEOLOGICAL SURVEY	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	18	18	9
750	929	276343-	3624266L	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	36	30	20
661	930	59432-F	505380	Owner	Well Constructed	AURORA CITY OF	9	Well (Application/Permit)	General Purpose	UPPER ARAPAHOE		2285		
64	940	42561-MH	42561	Owner	Well Constructed	US GEOLOGICAL SURVEY	4	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	38	38	28
118	987	276381-	0047606X	Owner	Well Constructed	AURORA CITY OF	28	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	16	13	8
757	991	277681-	3629584M	Owner	Well Constructed	AURORA CITY OF	33	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	36	35	25
752	1042	277671-	3629584C	Owner	Well Constructed	AURORA CITY OF	28	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	26	16

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
66	1064	42563-MH	42563	Owner	Well Constructed	US GEOLOGICAL SURVEY	9	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	29	28	18
762	1085	277687-	3629584S	Owner	Well Constructed	SANCHEZ, JOSE D.	4	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	22	12
749	1113	276342-	3624266K	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	15	5
62	1177	42238-MH	0042238A	Owner	Well Constructed	US GEOLOGICAL SURVEY	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	48	48	39
141	1178	52455-MH	52455	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WSD	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	73	73	63
751	1254	277670-	3629584B	Owner	Well Constructed	AURORA CITY OF	3	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	18	8
830	1278	68772--A	3676249	Owner	Well Constructed	THOMPSON, LEO I	22	Well (Application/Permit)	Residential	DENVER	Domestic	415	415	335
795	1317	78279--A	3655678	Owner	Well Constructed	GLENN, ALYSSA	22	Well (Application/Permit)	Residential	DENVER	Domestic	485	485	305
797	1344	70905--A	3657129	Owner	Well Constructed	HANCOCK, DALE	22	Well (Application/Permit)	Residential	DENVER	Domestic	380	380	320
748	1367	276341-	3624266J	Owner	Well Constructed	AURORA CITY OF	22	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	15	5
142	1380	52456-MH	52456	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WSD	15	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	25	25	15
56	1387	42218-MH	42218	Owner	Well Constructed	US GEOLOGICAL SURVEY	3	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	38	37	27
760	1432	277685-	3629584Q	Owner	Well Constructed	AURORA CITY OF	27	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	21	11
188	1473	98064-	0089396A	Owner	Well Constructed	ANNA TRUST	22	Well (Application/Permit)	Residential	DENVER	Domestic	280	280	220
206	1473	105123-	101907	Owner	Well Constructed	KRUKOV, DANILA	22	Well (Application/Permit)	Residential	DENVER	Domestic	190	190	160
82	1496	46392-MH	46392	Owner	Well Constructed	AURORA CITY OF	34	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	18	18	8
747	1497	276340-	3624266I	Owner	Well Constructed	AURORA CITY OF	34	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	26	18	8

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
743	1573	276335-	3624266D	Owner	Well Constructed	AURORA CITY OF	3	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	15	5
143	1575	52457-MH	52457	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WSD	10	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	8
234	1583	122785-	219886	Owner	Well Constructed	BROWN, KATHLEEN A.	22	Well (Construction Report)	Residential	DENVER	Domestic	370	370	210
235	1583	122785-	219886	Owner	Well Constructed	BROWN, ROBERT H.	22	Well (Construction Report)	Residential	DENVER	Domestic	370	370	210
1019	1591	94021-	9007730	Owner	Well Constructed	HAM J GARY & LOU R	27	Well (Construction Report)	Residential	LOWER DAWSON	Domestic			
753	1609	277673-	3629584E	Owner	Well Constructed	AURORA CITY OF	27	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	27	17
144	1652	52458-MH	52458	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WSD	11	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	38	38	23
588	1672	52128-F	0445522C	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SAN DST	11	Well (Construction Report)	General Purpose	ARAPAHOE	Municipal	1670	1650	1116
803	1689	291854-	3660285C	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	44	44	24
805	1692	291856-	3660285E	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	39	39	24
807	1695	291858-	3660285G	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	38	38	18
804	1703	291855-	3660285D	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	39	39	24
806	1705	291857-	3660285F	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	15
802	1711	291853-	3660285B	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	34	34	19
801	1715	291852-	3660285A	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	34	34	16
145	1721	52792-MH	52792	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WSD	11	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	38	38	23
746	1749	276339-	3624266H	Owner	Well Constructed	AURORA CITY OF	35	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	16	11	6

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
115	1762	276375-	0047606R	Owner	Well Constructed	AURORA CITY OF	26	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	26	19	9
113	1772	276373-	0047606P	Owner	Well Constructed	AURORA CITY OF	23	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	23	15	5
111	1774	276362-	0047606E	Owner	Well Constructed	AURORA CITY OF	23	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	46	38	28
114	1777	276374-	0047606Q	Owner	Well Constructed	AURORA CITY OF	23	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	26	19	9
212	1787	108742-	106239	Owner	Well Constructed	THOMPSON, LOGAN R.	26	Well (Application/Permit)	Residential	DAWSON	Domestic	505	505	405
4	1793	129785-	8319	Owner	Well Constructed	BLAIR, DAVID	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	460	430	330
100	1794	46672-MH	46672	Owner	Well Constructed	AURORA CITY OF	26	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	24	14
146	1798	52793-MH	52793	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WSD	11	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	20	20	10
248	1823	131345-	235418	Owner	Well Constructed	COOK, JACK	26	Well (Application/Permit)	Residential	DAWSON	Domestic	480	480	440
766	1825	279154-	3634514C	Owner	Well Constructed	AURORA CITY OF	26	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	26	23	13
663	1831	59422-F	507052	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SAN	2	Well (Application/Permit)	General Purpose	LOWER ARAPAHOE	Municipal	1630		
808	1836	291669-	3660478	Owner	Well Constructed	EDIGER, CLAY	26	Well (Application/Permit)	Residential	DENVER	Domestic	480	480	400
193	1854	97709-	90027	Owner	Well Constructed	WHALEN PETER & RUTH	26	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	415	415	245
147	1874	52795-MH	52795	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WSD	2	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	45	45	25
968	**1879**	79792-	9007471	**Owner**	**Well Constructed**	**HEINTZ, F E**	**11**	Well (Construction Report)	Residential	**ALL UNNAMED AQUIFERS**	**Domestic**			
754	1925	277677-	3629584I	Owner	Well Constructed	AURORA CITY OF	24	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	16	8	3

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
97	1932	46579-MH	46579	Owner	Well Constructed	AURORA CITY OF	24	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	19	19	14
50	1936	41782-MH	41782	Owner	Well Constructed	AURORA CITY OF	25	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	22
116	1948	276377-	0047606T	Owner	Well Constructed	AURORA CITY OF	25	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	31	26	21
764	1950	279152-	3634514A	Owner	Well Constructed	AURORA CITY OF	25	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	14	4
765	1966	279153-	3634514B	Owner	Well Constructed	AURORA CITY OF	25	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	15	5
755	1967	277678-	3629584J	Owner	Well Constructed	AURORA CITY OF	24	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	21	16	11
117	**2027**	276378-	0047606U	**Owner**	**Well Constructed**	**AURORA CITY OF**	**19**	Well (Application/Permit)	Monitoring/Observation	**ALLUVIAL**	**Monitoring/Sampling**	**31**	**23**	**18**
873	2046	13203-F	9006038	Owner	Well Constructed	BEILHARTZ LUCILLE M & WILLIAM E	18	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Irrigation	22	22	12
784	2056	284096-	3647360	Owner	Well Constructed	GARCIA SERGIO & OLGA	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1100	1100	926
658	2059	244862-	496440	Owner	Well Constructed	DMYTRYK PETER & KAEKO O	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1000	1000	920
660	2070	55457--A	504336	Owner	Well Constructed	WEBBER, SHAWN	18	Well (Application/Permit)	Residential	DENVER	Domestic	880	880	795
933	2135	51343-	9007097	Owner	Well Constructed	WELTER ADRIAN D & J KAREN	18	Well (Application/Permit)	Residential	DENVER	Domestic			
740	2138	276332-	3624266A	Owner	Well Constructed	AURORA CITY OF	18	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	15	5
789	2140	287615-	3653757A	Owner	Well Constructed	FREUND, LINDA J	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock			
662	2141	249188-	505897	Owner	Well Constructed	YEE, KINNEY	18	Well (Application/Permit)	Residential	DENVER	Household use only	480	480	360
964	2144	76321-	9007423	Owner	Well Constructed	HIGGINS W JACQUE	18	Well (Application/Permit)	Residential	DENVER	Domestic			

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
778	2202	283005-	3644688E	Owner	Well Constructed	NEMEC, JEFF	19	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	40	40	35
779	2222	283006-	3644688F	Owner	Well Constructed	NEMEC, JEFF	19	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling			
742	2285	276334-	3624266C	Owner	Well Constructed	AURORA CITY OF	30	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	36	27	17
229	2295	117733-	209970	Owner	Well Constructed	WEILAND ELIZABETH ANN	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic, Stock	1080	1080	820
197	2323	98976-	91837	Owner	Well Constructed	JONES, NORMAN L	7	Well (Application/Permit)	Residential	DENVER	Domestic	634	634	234
218	2338	110844-	109772	Owner	Well Constructed	PATE, R W	7	Well (Application/Permit)	Residential	DENVER	Domestic			
796	2367	289274-	3656821	Owner	Well Constructed	JONES ARTHUR AND DIANE	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic	1100	110	930
213	2368	109090-	106550	Owner	Well Constructed	JONES, A L	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic			
810	2369	293059-	3662327	Owner	Well Constructed	ADUAN, NORALDINE	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	1030	1020	900
767	2384	279916-	3637606	Owner	Well Constructed	JETTER, JUDITH A	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1060	1060	915
112	2390	276371-	0047606N	Owner	Well Constructed	AURORA CITY OF	19	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	26	19	14
49	2399	99307--A	0040796A	Owner	Well Constructed	POOR, DONALD	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	1003	1003	820
293	2404	141969-	259082	Owner	Well Constructed	WALKER, VICTOR	7	Well (Application/Permit)	Residential	DENVER	Domestic	700	680	500
741	2414	276333-	3624266B	Owner	Well Constructed	AURORA CITY OF	7	Well (Application/Permit)	Monitoring/Observation	ALLUVIAL	Monitoring/Sampling	21	12	7
268	2431	136118-	245731	Owner	Well Constructed	ANDERSON, ALBERT L.	7	Well (Construction Report)	Residential	DENVER	Domestic	650	650	590
43	2453	40582-MH	40582	Owner	Well Constructed	WASTE, MANAGEMENT	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	32	23	13
41	2471	40580-MH	40580	Owner	Well Constructed	WASTE, MANAGEMENT	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	20	10

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
972	2519	83240-	9007519	Owner	Well Constructed	SMITH MARVIN E & BARBARA F	29	Well (Application/Permit)	Residential	DENVER	Domestic	707	707	476
976	2540	85519-	9007563	Owner	Well Constructed	SMITH, PAUL H	20	Well (Application/Permit)	Residential	DENVER	Domestic	705		
231	2567	120499-	215107	Owner	Well Constructed	SMITH, E G	28	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	640	640	400
768	2578	281421-	3637674A	Owner	Well Constructed	AURORA CITY OF	9	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	24	14
770	2579	281423-	3637674C	Owner	Well Constructed	AURORA CITY OF	9	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	35	34	24
771	2583	281424-	3637674D	Owner	Well Constructed	AURORA CITY OF	9	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	24	14
769	2598	281422-	3637674B	Owner	Well Constructed	AURORA CITY OF	9	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	24	14
791	2616	287561-	3654042A	Owner	Well Constructed	AURORA CITY OF	15	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	156	146	136
792	2630	287562-	3654042B	Owner	Well Constructed	AURORA CITY OF	14	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	98	88	78
793	2631	287563-	3654042C	Owner	Well Constructed	AURORA CITY OF	14	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	36	33	23
1	2680	102873-	3789	Owner	Well Constructed	ZERFOSS, JESSEY S.	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock	280	280	240
2	2681	102873-	3789	Owner	Well Constructed	BEER ZERFOSS, ASHLEY	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock	280	280	240
3	2682	128814-	8199	Owner	Well Constructed	BANKENSTEIN ROBERT & SHARON	18	Well (Application/Permit)	Residential	ARAPAHOE	Domestic, Stock	600	600	440
5	2684	133281-	9126	Owner	Well Constructed	STOPA, HILDA A	22	Well (Application/Permit)	Residential	DAWSON	Domestic	380	380	300
6	2685	132837-	9127	Owner	Well Constructed	BRIDGEMAN DAVID W /DEBRA E COOK	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	398	400	260
7	2686	141363-	10683	Owner	Well Constructed	HULTS, CLARENCE	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1100	1100	970
8	2687	141967-	10732	Owner	Well Constructed	CONNER WARREN & RAMONA	7	Well (Application/Permit)	Residential	DENVER	Domestic	932	932	800

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
9	2688	119294-	13354	Owner	Well Constructed	SUTTON, DONALD O	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1160		
10	2689	89425-VE	15363	Owner	Well Constructed	GLENN, MIKE	27	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Domestic	320	320	280
11	2690	15619-MH	0015619A	Owner	Well Constructed	MDC LAND CORP	22	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling			
12	2691	90038-VE	15810	Owner	Well Constructed	CUNNINGHAM, GEORGE	26	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Domestic	337	337	277
13	2692	104061-	17157	Owner	Well Constructed	THACKER, ELBERT	12	Well (Application/Permit)	Residential	DENVER	Domestic	220	220	180
14	2693	178112-	0022500D	Owner	Well Constructed	STATE BOARD OF LAND COMMISSIONERS	2	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Stock	80	80	20
15	2694	94122-VE	22741	Owner	Well Constructed	SMITH, WILBUR	17	Well (Application/Permit)	Unknown	UPPER ARAPAHOE	Domestic, Stock	1040	1040	920
16	2695	94230-VE	23087	Owner	Well Constructed	EVERHART, JERRY	22	Well (Application/Permit)	Unknown	DENVER	Domestic, Stock	325	325	285
17	2696	27025-MH	27025	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	51	51	41
18	2697	27027-MH	27027	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	7	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	49	48	39
19	2698	27028-MH	27028	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	59	58	39
20	2699	27029-MH	27029	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	53	53	33
21	2700	27030-MH	27030	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	7	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	61	60	30
22	2701	27031-MH	27031	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	67	67	47
23	2702	28319-MH	28319	Owner	Well Constructed	CO DEPT MILITARY AFFAIRS	15	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	57	57	47
24	2703	96318-VE	28632	Owner	Well Constructed	WHITE, BARBARA	7	Well (Application/Permit)	Unknown	ARAPAHOE	Domestic	720	720	560
25	2704	96355-VE	28854	Owner	Well Constructed	MCCONVILLE, TOM	7	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Domestic	727	727	580

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
26	2705	96369-VE	28915	Owner	Well Constructed	LITTLESTONE, RICHARD	26	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Domestic	457	457	377
27	2706	29306-MH	29306	Owner	Well Constructed	AURORA CITY OF	8	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	20	10
28	2707	96520-VE	29640	Owner	Well Constructed	QUICK, ELEANORE	18	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Stock	350	350	220
29	2708	96519-VE	29641	Owner	Well Constructed	QUICK, ELANA	7	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Domestic	630	630	350
30	2709	97027-VE	29962	Owner	Well Constructed	ALPERT, LELAND	21	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Domestic	605	605	505
31	2710	97131-VE	30556	Owner	Well Constructed	ASCHENBRENNER, CRYSTAL M	26	Well (Application/Permit)	Unknown	ALL UNNAMED AQUIFERS	Domestic	420	420	300
32	2711	114231--A	0031737A	Owner	Well Constructed	LACRUE, TRACI	7	Well (Application/Permit)	Residential	DENVER	Domestic	630	630	530
33	2712	211517-	0033595I	Owner	Well Constructed	COLO DEPT OF MILITARY AFFAIRS	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	60	58	48
34	2713	50392-F	0033889A	Owner	Well Constructed	STATE BOARD OF LAND COMMISSIONERS	33	Well (Construction Report)	General Purpose	ARAPAHOE	Municipal	1520	1500	990
35	2714	35788-MH	35788	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN	12	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	LARAMIE FOX HILLS	Monitoring/Sampling	216	2110	1945
36	2715	38001-MH	38001	Owner	Well Constructed	WASTE MANAGEMENT OF CO	31	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	25	9
37	2716	54367-F	0038715B	Owner	Well Constructed	STATE BOARD OF LAND COMMISSIONERS	14	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1628	1548	1055
38	2717	40128-MH	40128	Owner	Well Constructed	CONOCO INC	3	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	15	5
39	2718	40578-MH	40578	Owner	Well Constructed	WASTE, MANAGEMENT	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	44	44	24
40	2719	40579-MH	40579	Owner	Well Constructed	WASTE, MANAGEMENT	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	17	7
42	2721	40581-MH	40581	Owner	Well Constructed	WASTE, MANAGEMENT	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	53	52	32
44	2723	40657-MH	40657	Owner	Well Constructed	DENVER CITY & COUNTY OF	32	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	58	56	46

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
45	2724	40699-MH	40699	Owner	Well Constructed	DENVER CITY & COUNTY OF	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	36	35	20
46	2725	40700-MH	40700	Owner	Well Constructed	DENVER CITY & COUNTY OF	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	80	79	39
47	2726	40701-MH	40701	Owner	Well Constructed	DENVER CITY & COUNTY OF	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	35	35	15
48	2727	40702-MH	40702	Owner	Well Constructed	DENVER CITY & COUNTY OF	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	25	10
51	2730	17500-F	0042174A	Owner	Well Constructed	SMOKY HILLS VENTURE CO	23	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2410	2320	2032
52	2731	17499-F	0042174B	Owner	Well Constructed	SMOKY HILLS VENTURE CO	16	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2286	2286	1969
53	2732	17498-F	0042174C	Owner	Well Constructed	SMOKY HILLS VENTURE CO	16	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2331	2331	2007
54	2733	17494-F	0042174G	Owner	Well Constructed	SMOKY HILLS VENTURE CO	14	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2291	2231	1994
55	2734	17485-F	0042174N	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WTR & SAN	22	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2326	2296	1967
57	2736	42219-MH	42219	Owner	Well Constructed	US GEOLOGICAL SURVEY	2	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	23	23	13
58	2737	42220-MH	42220	Owner	Well Constructed	US GEOLOGICAL SURVEY	10	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	28	28	18
59	2738	42222-MH	42222	Owner	Well Constructed	US GEOLOGICAL SURVEY	14	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	23	23	13
60	2739	42223-MH	42223	Owner	Well Constructed	US GEOLOGICAL SURVEY	15	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	42	41	32
65	2744	42562-MH	42562	Owner	Well Constructed	US GEOLOGICAL SURVEY	3	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	43	43	33
68	2747	44732-MH	44732	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	40	30	
69	2748	44733-MH	0044733A	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	DAWSON	Monitoring/Sampling	40	40	30
70	2749	44739-MH	0044739A	Owner	Well Constructed	7 ELEVEN	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	40	40	10

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
71	2750	45132-MH	45132	Owner	Well Constructed	7 ELEVEN INC	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	10
72	2751	45288-MH	45288	Owner	Well Constructed	7 ELEVEN INC	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	12	12	4
73	2752	45667-MH	0045667A	Owner	Well Constructed	AURORA CITY OF	9	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	50	50	30
74	2753	45669-MH	0045669A	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	35	30	25
75	2754	45670-MH	45670	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	59	59	49
76	2755	45997-MH	45997	Owner	Well Constructed	ARAPAHOE COUNTY	2	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	31	21
77	2756	45998-MH	45998	Owner	Well Constructed	ARAPAHOE COUNTY	2	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	20
78	2757	45999-MH	45999	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	20	10
79	2758	46388-MH	46388	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	20
80	2759	46389-MH	46389	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	15	15	5
81	2760	46390-MH	46390	Owner	Well Constructed	AURORA CITY OF	22	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	15	15	5
84	2763	46396-MH	46396	Owner	Well Constructed	AURORA CITY OF	5	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	16	16	6
85	2764	46408-MH	46408	Owner	Well Constructed	AURORA CITY OF	8	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	16	16	6
86	2765	46409-MH	46409	Owner	Well Constructed	AURORA CITY OF	3	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	15	15	5
87	2766	46410-MH	46410	Owner	Well Constructed	AURORA CITY OF	30	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	27	27	17
88	2767	46411-MH	46411	Owner	Well Constructed	AURORA CITY OF	7	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	12	12	7
89	2768	46412-MH	46412	Owner	Well Constructed	AURORA CITY OF	18	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	15	15	8

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
90	2769	46414-MH	46414	Owner	Well Constructed	AURORA CITY OF	19	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	19	14
91	2770	46481-MH	46481	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	29	27	17
93	2772	46575-MH	46575	Owner	Well Constructed	AURORA CITY OF	26	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	19	19	9
94	2773	46576-MH	46576	Owner	Well Constructed	AURORA CITY OF	23	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	19	9
95	2774	46577-MH	46577	Owner	Well Constructed	AURORA CITY OF	23	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	46	38	28
96	2775	46578-MH	46578	Owner	Well Constructed	AURORA CITY OF	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	20	10
98	2777	46581-MH	46581	Owner	Well Constructed	AURORA CITY OF	23	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	23	15	5
99	2778	46665-MH	46665	Owner	Well Constructed	AURORA CITY OF	28	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	16	13	8
101	2780	46980-MH	46980	Owner	Well Constructed	AURORA CITY OF	3	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	18	18	8
102	2781	46981-MH	46981	Owner	Well Constructed	AURORA CITY OF	28	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	26	16
103	2782	46983-MH	46983	Owner	Well Constructed	AURORA CITY OF	27	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	27	27	17
104	2783	47002-MH	47002	Owner	Well Constructed	AURORA CITY OF	24	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	16	8	3
105	2784	47003-MH	0047003A	Owner	Well Constructed	AURORA CITY OF	24	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	21	16	11
106	2785	47315-MH	47315	Owner	Well Constructed	AURORA CITY OF	32	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	26	21	11
107	2786	47366-MH	47366	Owner	Well Constructed	AURORA CITY OF	33	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	36	35	25
108	2787	47371-MH	47371	Owner	Well Constructed	AURORA CITY OF	32	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	30	28	18

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
109	2788	47372-MH	47372	Owner	Well Constructed	AURORA CITY OF	27	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	26	21	11
110	2789	47374-MH	47374	Owner	Well Constructed	AURORA CITY OF	32	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	13	13	3
119	2798	48012-MH	48012	Owner	Well Constructed	AURORA CITY OF	25	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	21	14	4
120	2799	48013-MH	0048013A	Owner	Well Constructed	AURORA CITY OF	25	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	21	15	5
121	2800	48014-MH	0048014A	Owner	Well Constructed	AURORA CITY OF	26	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	26	23	13
122	2801	282758-	0049083T	Owner	Well Constructed	STATE BOARD OF LAND COMMISSIONERS	11	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	32	31	26
123	2802	49537-MH	49537	Owner	Well Constructed	MATRIX GROUP INC	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	20	10
124	2803	51330-MH	51330	Owner	Well Constructed	UNITED WATER & SANITATION DISTRICT	14	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	65	65	55
125	2804	51331-MH	51331	Owner	Well Constructed	UNITED WATER & SANITATION DISTRICT	14	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	67	67	57
126	2805	51675-MH	51675	Owner	Well Constructed	7-ELEVEN INC	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	15
127	2806	51713-MH	51713	Owner	Well Constructed	BRADLEY PETROLUEM INC	10	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	22		
128	2807	293774-	0052301R	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	38	38	13
129	2808	293775-	0052301S	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	34	34	9
130	2809	293776-	0052301T	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	34	34	9
131	2810	293777-	0052301U	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	39	39	14
132	2811	293778-	0052301V	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	65	65	25

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
133	2812	293779-	0052301W	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	59	59	25
134	2813	293780-	0052301X	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	33	33	13
135	2814	293781-	0052301Y	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	16	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	39	39	9
136	2815	293782-	0052301Z	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	16	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	35	35	10
137	2816	293784-	0052302A	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	34	34	9
138	2817	293785-	0052302B	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	31	6
139	2818	293786-	0052302C	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	70	70	35
140	2819	293787-	0052302D	Owner	Well Constructed	BUCKLEY AFB SCOTT WILSON	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	60	60	45
148	2827	53131-MH	53131	Owner	Well Constructed	ARAPAHOE COUNTY WATER & WASTEWATER AUTH	26	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	19	19	9
149	2828	53132-MH	53132	Owner	Well Constructed	ARAPAHOE COUNTY WATER & WASTEWATER AUTH	27	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	14	14	4
150	2829	53139-MH	53139	Owner	Well Constructed	ACWWA	26	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	22	22	12
151	2830	53591-MH	53591	Owner	Well Constructed	7 ELEVEN INC	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	15
152	2831	54350-MH	54350	Owner	Well Constructed	AURORA CITY OF	14	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	156	154	139
153	2832	54351-MH	54351	Owner	Well Constructed	AURORA CITY OF	22	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	21	19	9
154	2833	55224-MH	55224	Owner	Well Constructed	7-ELEVEN INC	29	Well (Application/Permit)	Monitoring Hole (Notice of Intent)	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	31	18
155	2834	305253-	0056645G	Owner	Well Constructed	BUCKLEY, AFB	14	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30		

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
156	2835	305254-	0056645H	Owner	Well Constructed	BUCKLEY, AFB	15	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	19		
157	2836	305255-	0056645I	Owner	Well Constructed	BUCKLEY, AFB	15	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	40		
158	2837	305256-	0056645J	Owner	Well Constructed	BUCKLEY, AFB	15	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20		
159	2838	305258-	0056645L	Owner	Well Constructed	BUCKLEY, AFB	23	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	55		
160	2839	57531-MH	57531	Owner	Well Constructed	CITY OF AURORA	4	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	50		
161	2840	58556-MH	58556	Agent	Well Constructed	AURORA WATER	25	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	20		
162	2841	58556-MH	58556	Agent	Well Constructed	BRIERLEY ASSOCIATES (BAILEY, SEAN)	25	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	20		
163	2842	58559-MH	58559	Agent	Well Constructed	AURORA WATER	24	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	40		
164	2843	58559-MH	58559	Agent	Well Constructed	BRIERLEY ASSOCIATES (BAILEY, SEAN)	24	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	40		
165	2844	59071-MH	59071	Owner	Well Constructed	7-ELEVEN INC (STORE #19075)	29	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	22		
166	2845	59485-MH	59485	Owner	Well Constructed	ARAPAHOE PARKS AND RECREATION DISTRICT	1	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	22		
167	2846	59766-MH	59766	Owner	Well Constructed	SOUTH METRO WATER SUPPLY AUTHORITY	9	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	30		
168	2847	60005-MH	60005	Owner	Well Constructed	SOUTH METRO WATER SUPPLY AUTHORITY	18	Well (Construction Report)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	30		
169	2848	60012-MH	60012	Owner	Well Constructed	SOUTH METRO WATER SUPPLY AUTHORITY	18	Well (Construction Report)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	30		
170	2849	60238-MH	60238	Owner	Well Constructed	CITY OF AURORA	24	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	47		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

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171	2850	60243-MH	60243	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	30		
172	2851	60765-MH	60765	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring Hole (Notice of Intent)	DENVER	Monitoring/Sampling	100		
173	2852	61137-MH	61137	Owner	Well Constructed	CITY OF AURORA	16	Well (Construction Report)	Monitoring Hole (Notice of Intent)	QUATERNARY ALLUVIUM	Monitoring/Sampling	37		
174	2853	61417-MH	61417	Owner	Well Constructed	CITY OF AURORA	8	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	20		
175	2854	62220-MH	62220	Owner	Well Constructed	SERENITY RIDGE HOA	29	Well (Construction Report)	Monitoring Hole (Notice of Intent)		Monitoring/Sampling	6		
176	2855	62895-MH	62895	Owner	Well Constructed	CITY OF AURORA	9	Well (Construction Report)	Monitoring Hole (Notice of Intent)	ALLUVIAL	Monitoring/Sampling	35		
177	2856	63108-MH	63108	Owner	Well Constructed	CIVITAS RESOURCES INC	17	Well (Construction Report)	Monitoring Hole (Notice of Intent)	LARAMIE-FOX HILLS	Monitoring/Sampling	1856	1780	680
178	2857	63313-MH	63313	Owner	Well Constructed	SMITH, DEVIN	3	Well (Construction Report)	Monitoring Hole (Notice of Intent)	ALLUVIAL	Monitoring/Sampling	25		
179	2858	90942-	80556	Owner	Well Constructed	CHRISTIANSON LES & LINDA	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
180	2859	91710-	81740	Owner	Well Constructed	ROBERTS, J	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	217	207	177
181	2860	91750-	81972	Owner	Well Constructed	RODAN, J	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	220	220	200
182	2861	92479-	82563	Owner	Well Constructed	NOSEWICZ LEONARD A & PATRICIA V	26	Well (Application/Permit)	Residential	DENVER	Domestic			
183	2862	93815-	84383	Owner	Well Constructed	PIERCE DONALD JR	22	Well (Application/Permit)	Residential	DENVER	Domestic	250	250	220
184	2863	94773-	86174	Owner	Well Constructed	STAUCH THOMAS & ANITA	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
185	2864	95722-	87223	Owner	Well Constructed	MAHR, CLAIR	9	Well (Application/Permit)	Residential	DENVER	Domestic			

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

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186	2865	96648-	0088271B	Owner	Well Constructed	HENDERSON ROGER A & VONICA F	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	204	204	154
187	2866	97044-	0088648A	Owner	Well Constructed	SHEILA ELLERBRUCH ELDON S	26	Well (Application/Permit)	Residential	DENVER	Domestic			
189	2868	101936-	89481	Owner	Well Constructed	BASHOR, THOMAS C	26	Well (Application/Permit)	Residential	DENVER	Domestic	344	344	304
190	2869	97706-	90024	Owner	Well Constructed	JOHNSON MAUREEN ANN	26	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	320	320	240
191	2870	97707-	90025	Owner	Well Constructed	BUCKLEY, NICHOLAS M.	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock	273	273	193
192	2871	97707-	90025	Owner	Well Constructed	BUCKLEY, JENNIFER G.	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock	273	273	193
194	2873	98162-	90789	Owner	Well Constructed	SMITH, GARY E	22	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	415	415	255
195	2874	98450-	91085	Owner	Well Constructed	EDLING KEVIN & STACY	22	Well (Application/Permit)	Residential	DAWSON	Domestic	295	295	255
196	2875	98635-	91736	Owner	Well Constructed	WHEELER, C R	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	500	500	400
198	2877	99114-	0092091C	Owner	Well Constructed	STEPHENS, ARTHUR	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock	324	324	264
199	2878	100827-	92815	Owner	Well Constructed	FREUND MICHAEL R & TAMARA STOFFEL	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	264	264	204
200	2879	101686-	95768	Owner	Well Constructed	COWGILL COURTNEY & JOHN EDWARD CASE	22	Well (Application/Permit)	Residential	DENVER	Domestic	310	310	270
201	2880	102288-	0096950B	Owner	Well Constructed	HARTMAN DAVID & ROBIN	26	Well (Application/Permit)	Residential	DENVER	Domestic	354	354	294
202	2881	102290-	0096950D	Owner	Well Constructed	HILINE BLDR IN	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	300	300	260
203	2882	101542-	0097056B	Owner	Well Constructed	SEYBOLD JEFFREY G & MARISA	7	Well (Application/Permit)	Residential	DENVER	Domestic	690	650	550
204	2883	103727-	99324	Owner	Well Constructed	CHANG MAN HO	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock		324	180
205	2884	103739-	99384	Owner	Well Constructed	RAPP WILLIAM M & CAROLYN	7	Well (Application/Permit)	Residential	DENVER	Domestic	729	729	629

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
207	2886	104869-	101938	Owner	Well Constructed	WOLTHUIS, REBECCA F.	22	Well (Application/Permit)	Residential	DENVER	Household use only	420	420	280
208	2887	105877-	102425	Owner	Well Constructed	OLIVA, MICHAEL	22	Well (Application/Permit)	Residential	DENVER	Domestic	334	334	214
209	2888	105701-	102909	Owner	Well Constructed	ADAMS, MELVIN D	7	Well (Application/Permit)	Residential	DENVER	Domestic	750	750	630
210	2889	106749-	103482	Owner	Well Constructed	BULLOCK, MICHAEL	22	Well (Application/Permit)	Residential	DENVER	Domestic	200	200	150
211	2890	107417-	104270	Owner	Well Constructed	VINNES, WILLIAM B	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	240	240	180
214	2893	109074-	107180	Owner	Well Constructed	BONO, RICHARD	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	480	480	380
215	2894	109363-	107498	Owner	Well Constructed	SCHAUMBURG, ARTHUR	22	Well (Construction Report)	Residential	LOWER DAWSON	Domestic	354	354	314
216	2895	110342-	108703	Owner	Well Constructed	SMITH, C E	22	Well (Construction Report)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock			
217	2896	110150-	108741	Owner	Well Constructed	FESTER, M	25	Well (Application/Permit)	Residential	DENVER	Domestic	564		
219	2898	113710-	202753	Owner	Well Constructed	GUERRERO, ERIK	27	Well (Construction Report)	Residential	ALL UNNAMED AQUIFERS	Domestic	373	373	300
220	2899	113710-	202753	Owner	Well Constructed	GUERRERO, TANISHA M.	27	Well (Construction Report)	Residential	ALL UNNAMED AQUIFERS	Domestic	373	373	300
221	2900	115848-	206531	Owner	Well Constructed	MCKISSICK, KEITH	7	Well (Construction Report)	Residential	DENVER	Domestic	670	670	630
222	2901	115848-	206531	Owner	Well Constructed	MCKISSICK, JACKIE	7	Well (Construction Report)	Residential	DENVER	Domestic	670	670	630
223	2902	115848-	206531	Owner	Well Constructed	MCKISSICK, BRYAN	7	Well (Construction Report)	Residential	DENVER	Domestic	670	670	630
224	2903	116021-	206923	Owner	Well Constructed	MOORE, J M	22	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	370		
225	2904	116831-	208548	Owner	Well Constructed	WEBSTER RONALD P & CARLA D WILLIAMS	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	350	350	250
226	2905	116832-	208618	Owner	Well Constructed	VIGIL, RAYMOND B	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	402	402	302

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
227	2906	23891-F	0209430A	Owner	Well Constructed	E CHERRY CRK V	13	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	462	400	222
228	2907	23888-F	0209430B	Owner	Well Constructed	E CHERRY CRK V	13	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	1100	970	711
230	2909	117661-	210084	Owner	Well Constructed	ESTATE OF RALPH WILBUR NELSON JR. (NELSON, DENNIS)	7	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	755	755	700
232	2911	121288-	217459	Owner	Well Constructed	ADAMS DANNY R & PATRICIA M	18	Well (Application/Permit)	Residential	DENVER	Domestic	520	460	350
233	2912	121687-	217909	Owner	Well Constructed	RAINS, D E	29	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	640	640	400
236	2915	123645-	221488	Owner	Well Constructed	DOBLER, B	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	342	342	182
237	2916	124300-	221908	Owner	Well Constructed	MACDONALD, D D	24	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	460		
238	2917	128343-	227577	Owner	Well Constructed	DENNY ENTERPEISES INC	26	Well (Application/Permit)	Residential	DENVER	Domestic	490	490	450
239	2918	127399-	228783	Owner	Well Constructed	HEDDEN JERRY J JR & LIZA I	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	300	300	200
240	2919	128207-	229878	Owner	Well Constructed	PARADIS, GREGORY J.	22	Well (Application/Permit)	Residential	DENVER	Domestic	320	320	220
241	2920	128766-	230537	Owner	Well Constructed	ALEXANDER, J	22	Well (Application/Permit)	Residential	DENVER	Domestic	400	400	320
242	2921	128511--A	231394	Owner	Well Constructed	MCDANIEL, ELVIN	11	Well (Construction Report)	Residential	ALL UNNAMED AQUIFERS	Domestic	560	560	340
244	2923	130378-	234600	Owner	Well Constructed	SUMMERS, C F	24	Well (Construction Report)	Residential	DENVER	Household use only	403	403	303
245	2924	28491-F	0234728A	Owner	Well Constructed	ALPERT CORP	3	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1600	1516	1025
246	2925	27523-F	0234728C	Owner	Well Constructed	EAST CHERRY CREEK VALLEY W & S DIST	3	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2052	2022	1632
247	2926	29939-F	0234728D	Owner	Well Constructed	ALPERT CORP	3	Well (Application/Permit)	General Purpose	DENVER	Municipal	939	914	556
249	2928	131497-	235428	Owner	Well Constructed	MARTIN, JOHN L	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	820	820	620

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
250	2929	131538-	236049	Owner	Well Constructed	GUERIN STEPHEN A & BRIDGET K DUGAN	26	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	440	440	340
251	2930	131304-	236277	Owner	Well Constructed	MOORE REX & JULIE	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	1100	1100	900
252	2931	131757-	236447	Owner	Well Constructed	HARTER, ART	26	Well (Application/Permit)	Residential	DAWSON	Domestic	298	298	160
253	2932	131775-	236725	Owner	Well Constructed	BYRNE, JOSEPH F.	26	Well (Application/Permit)	Residential	DENVER	Domestic	400	400	360
254	2933	132966-	238242	Owner	Well Constructed	VERNON, P B	27	Well (Application/Permit)	Residential	DENVER	Domestic	417	417	337
255	2934	97627--A	238648	Owner	Well Constructed	SHIRACK MICHAEL D & DIANE J	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	383	383	283
256	2935	133261-	239483	Owner	Well Constructed	BLAIR, DAVID	26	Well (Application/Permit)	Residential	DAWSON	Domestic	523	523	423
257	2936	133947-	241184	Owner	Well Constructed	SCHOECK WILLIAM W & CHRISTINE	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	300	300	260
258	2937	27142-F	241351	Owner	Well Constructed	MELODY HOMES	10	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1610	1090	1530
259	2938	138283-	242849	Owner	Well Constructed	REID, LEROY	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	720	720	540
260	2939	134905-	243938	Owner	Well Constructed	ORILEY PATRICK M & GOULDMAN BEVERLY S	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	810	810	650
261	2940	135429-	244575	Owner	Well Constructed	RONNE, D W	18	Well (Construction Report)	Residential	DENVER	Domestic	500	500	280
262	2941	135946-	245266	Owner	Well Constructed	CHAMPLIN, DAVID	18	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	320	320	280
263	2942	135946-	245266	Owner	Well Constructed	CHAMPLIN, ELIZABETH A.	18	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	320	320	280
264	2943	136116-	245532	Owner	Well Constructed	STONE BRADLEY & KAREN	27	Well (Application/Permit)	Residential	DENVER	Domestic	390	390	290
265	2944	28406-F	0245547A	Owner	Well Constructed	TRUSSELL, HUGH H	29	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Domestic	285		
266	2945	28406-F-R	0245547B	Owner	Well Constructed	TRUSSELL, HUGH H	29	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Irrigation	358		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
267	2946	135522-	245603	Owner	Well Constructed	SAZERA, VINCE	26	Well (Application/Permit)	Residential	DAWSON	Domestic	300	300	270
270	2949	136411-	246089	Owner	Well Constructed	HODACK, JUDE T.	26	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	380	380	160
271	2950	136411-	246089	Owner	Well Constructed	HODACK, WENDI R.	26	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	380	380	160
272	2951	137505-	247761	Owner	Well Constructed	FLUGUM, JAMES I	24	Well (Application/Permit)	Residential	DENVER	Domestic	581	582	422
273	2952	139517-	253199	Owner	Well Constructed	BOTVINICK, JORI L.	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	400	400	200
274	2953	139517-	253199	Owner	Well Constructed	TRAHAN, ROBERT L.	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	400	400	200
275	2954	139215-	253307	Owner	Well Constructed	MASIH EDWARD J & AMRITPAL	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	1000	1000	820
276	2955	28213-M	0253335E	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	85	80	60
277	2956	28209-M	0253335F	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	180	160	140
278	2957	28207-M	0253335L	Owner	Well Constructed	DENVER CITY & CNTY OF	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	120	115	95
279	2958	28199-M	0253335S	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	55	53	43
280	2959	28200-M	0253335T	Owner	Well Constructed	DENVER CITY & CNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	60	58	48
281	2960	139216-	0253439A	Owner	Well Constructed	ISOM, ANDREW	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic	1040	1040	830
282	2961	139653-	253743	Owner	Well Constructed	ELDRED, RON	26	Well (Application/Permit)	Residential	DAWSON	Domestic	280	280	240
283	2962	139978-	254399	Owner	Well Constructed	LEARY, B	25	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	400	400	320
284	2963	139977-	254632	Owner	Well Constructed	WAHL, JOY	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	600	600	500
285	2964	140171-	255042	Owner	Well Constructed	ORRELAS, ALICIA	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1160	1160	900

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
286	2965	140291-	255761	Owner	Well Constructed	MASIH EDWARD J & AMRITPAL	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic, Stock	1000	1000	800
287	2966	140785-	256951	Owner	Well Constructed	CURRY, T	25	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	260	260	100
288	2967	140923-	257222	Owner	Well Constructed	PAPROSKI JOE & JANET	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1003	1003	875
289	2968	140924-	257488	Owner	Well Constructed	BATES, STEPHEN C	18	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	405	405	390
290	2969	141092-	257756	Owner	Well Constructed	WOOTERS, R	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	650	640	500
291	2970	141097-	257873	Owner	Well Constructed	REDDY, KAY A	26	Well (Application/Permit)	Residential	DAWSON	Domestic	281	281	201
292	2971	31259-F	0258188A	Owner	Well Constructed	ALPERT CORP	3	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2070	2052	1600
294	2973	29606-F	261260	Owner	Well Constructed	EAST CHERRY CREEK WATER & SAN DIST	13	Well (Application/Permit)	General Purpose	LARAMIE FOX HILLS	Municipal	2365		
295	2974	66892--A	261328	Owner	Well Constructed	MARKER, EDWIN	18	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	620	620	500
296	2975	142865-	261689	Owner	Well Constructed	BONIS, TOM	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	240	240	180
297	2976	98635--A	262144	Owner	Well Constructed	BRUSH, DEBORAH	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	700	700	460
298	2977	143868-	262249	Owner	Well Constructed	HURD, SUMNER K	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1030	1030	930
299	2978	144232-	263767	Owner	Well Constructed	KARAUS, MITCHELL	18	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	375	475	375
300	2979	144232-	263767	Owner	Well Constructed	WATSON, BRENDA	18	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	375	475	375
301	2980	144227-	263911	Owner	Well Constructed	DEHERRERA GUILLERMO A & ROSEMARY Y	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock		820	520
302	2981	30322-F	0263986B	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	DENVER	Municipal	1220	1150	373
303	2982	30323-F	0263986C	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	DENVER	Municipal	1235	1153	397

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
304	2983	30324-F	0263986D	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1757	1686	1245
305	2984	30325-F	0263986E	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1690	1660	1226
306	2985	30326-F	0263986F	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1739	1680	1239
307	2986	144683-	265179	Owner	Well Constructed	HANNEMAN, DUANE	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	800	800	500
308	2987	144797-	265420	Owner	Well Constructed	BROCK L /BOONE C	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	400	400	280
309	2988	145734-	265842	Owner	Well Constructed	FLEITH JR STEFAN	27	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	240	240	140
310	2989	145743-	268177	Owner	Well Constructed	SMITH, MALLORY	18	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	475	475	375
311	2990	30501-M	0268221A	Owner	Well Constructed	CHEMICAL WASTE MANAGEMENT	32	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	116	16	76
312	2991	30500-M	0268221B	Owner	Well Constructed	CHEMICAL WASTE MANAGEMENT	32	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	123	123	103
313	2992	30499-M	0268221C	Owner	Well Constructed	CHEMICAL WASTE MANAGEMENT	32	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	128	128	78
314	2993	30496-M	0268221F	Owner	Well Constructed	CHEMICAL WASTE MANAGEMENT	32	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	20	22	17
315	2994	30493-M	0268221I	Owner	Well Constructed	CHEMICAL WASTE MANAGEMENT	32	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	25	25	20
316	2995	30492-M	0268221J	Owner	Well Constructed	CHEMICAL WASTE MANAGEMENT	32	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	52	52	47
317	2996	146567-	269057	Owner	Well Constructed	ANDERSON E DINA	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1015		
318	2997	147380-	269769	Owner	Well Constructed	BENTZONI, TOM	26	Well (Application/Permit)	Residential	DENVER	Domestic	410	410	350
319	2998	146758-	270822	Owner	Well Constructed	WOLFF, CHARLES	26	Well (Construction Report)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	620	620	520
320	2999	31171-M	0271774A	Owner	Well Constructed	CHEMICAL, WASTE	32	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	69	69	64

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
321	3000	31800-M	275993	Owner	Well Constructed	DENVER CITY & COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	35	35	30
322	3001	31809-M	0275993I	Owner	Well Constructed	DENVER CITY AND COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	107	107	56
323	3002	31819-M	0275993S	Owner	Well Constructed	DENVER CITY AND COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	20	20	5
324	3003	31827-M	275994	Owner	Well Constructed	DENVER CITY & COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	100	100	90
325	3004	31829-M	0275994B	Owner	Well Constructed	DENVER CITY AND COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	201	201	196
326	3005	31830-M	0275994C	Owner	Well Constructed	DENVER CITY & COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	52	52	47
327	3006	31832-M	0275994E	Owner	Well Constructed	DENVER CITY & COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DENVER	Monitoring/Sampling	229	229	219
328	3007	31839-M	0275994L	Owner	Well Constructed	DENVER CITY & COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	83	83	68
329	3008	31843-M	0275994P	Owner	Well Constructed	DENVER CITY AND COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	132	132	122
330	3009	31845-M	0275994R	Owner	Well Constructed	DENVER CITY & COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	115	115	105
331	3010	31851-M	0275994X	Owner	Well Constructed	DENVER CITY & COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	69	69	64
332	3011	31852-M	0275994Y	Owner	Well Constructed	DENVER CITY AND COUNTY	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	98	98	93
333	3012	148399--A	0276096B	Owner	Well Constructed	GRIMM, ALBERT F	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	780	780	680
334	3013	148555-	276757	Owner	Well Constructed	BELTEZORE, LISA L.	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1060	1028	920
335	3014	148555-	276757	Owner	Well Constructed	SHENGLE, CAROLINE A.	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1060	1028	920
336	3015	149075-	276776	Owner	Well Constructed	LADO FRANCIS & RENEE	25	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	520	520	420
337	3016	32333-F	279391	Owner	Well Constructed	MONROE, HELEN	18	Well (Application/Permit)	General Purpose	UPPER ARAPAHOE	Domestic, Stock	1040	1038	920

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
338	3017	149921-	281269	Owner	Well Constructed	MC COWAN BRADFORD	18	Well (Application/Permit)	Residential	DENVER	Domestic	600	600	500
339	3018	150224-	282735	Owner	Well Constructed	GLAU, DEAN	22	Well (Application/Permit)	Residential	DENVER	Domestic	380	380	280
340	3019	150732-	285483	Owner	Well Constructed	LA FOE JAMES	22	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	340	340	290
341	3020	151120-	286755	Owner	Well Constructed	TOBEY, CAROL M	22	Well (Application/Permit)	Residential	DENVER	Domestic	370	370	160
342	3021	151476-	287364	Owner	Well Constructed	OLETA PROPERTIES, LLC (MUELLER, SUSAN P.)	26	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	400	400	300
343	3022	151466-	288128	Owner	Well Constructed	CHRISTENSEN DAVID & JUDITH	26	Well (Construction Report)	Residential	DENVER	Domestic	560	560	480
344	3023	151885-	289947	Owner	Well Constructed	PEMBROOK, JAMES	18	Well (Application/Permit)	Residential	DENVER	Domestic	560	560	260
345	3024	141967--A	291265	Owner	Well Constructed	CONNER, WARREN	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	900	900	605
346	3025	23609-F	0291544A	Owner	Well Constructed	PARK, FUNDING	23	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Domestic, Stock	992	965	606
347	3026	23610-F	0291544B	Owner	Well Constructed	PARK, FUNDING	23	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Domestic, Stock	1053	1030	600
348	3027	23611-F	0291544C	Owner	Well Constructed	PARK, FUNDING	24	Well (Application/Permit)	General Purpose	DENVER	Domestic, Stock	957	950	698
349	3028	23612-F	0291544D	Owner	Well Constructed	PARK, FUNDING	24	Well (Application/Permit)	General Purpose	DENVER	Domestic, Stock	1040	990	807
350	3029	34248-F	293107	Owner	Well Constructed	EAST CHERRY CREEK VALLEY	10	Well (Application/Permit)	General Purpose	LARAMIE FOX HILLS	Municipal	2121	2061	1914
351	3030	153261-	294978	Owner	Well Constructed	HOLLADAY, NICHOLAS L.	18	Well (Application/Permit)	Residential	DENVER	Domestic	620	590	510
352	3031	153261-	294978	Owner	Well Constructed	HOLLADAY, TIFFANY L.	18	Well (Application/Permit)	Residential	DENVER	Domestic	620	590	510
353	3032	153427-	296666	Owner	Well Constructed	LAMBERT, JOEY	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	441	480	220
354	3033	23889-F	0297564A	Owner	Well Constructed	SMOKY HILL LAND CO	14	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	860	810	679

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
355	3034	23886-F	0297564C	Owner	Well Constructed	SMOKY HILL LAND CO	13	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	1012	974	843
356	3035	23885-F	0297564D	Owner	Well Constructed	SMOKY HILL LAND CO	14	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	940	870	738
357	3036	23894-F	0297564G	Owner	Well Constructed	SMOKY HILL LAND CO	14	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	465	430	361
358	3037	23892-F	0297564I	Owner	Well Constructed	SMOKY HILL LAND CO	13	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	272	240	200
359	3038	23895-F	0297564J	Owner	Well Constructed	SMOKY HILL LAND CO	14	Well (Application/Permit)	General Purpose	DAWSON	Municipal	592	572	366
360	3039	23893-F	0297564K	Owner	Well Constructed	SMOKY HILL LAND CO	13	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	632	534	262
361	3040	23896-F	0297564L	Owner	Well Constructed	SMOKY HILL LAND CO	24	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	573	537	238
362	3041	154567-	300828	Owner	Well Constructed	POLICHIO, JOSEPH	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	1100	1100	922
363	3042	158007-	304218	Owner	Well Constructed	AURORA GUN CLUB	13	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Commercial	738	738	638
364	3043	155427-	305040	Owner	Well Constructed	MAXSON, LISA L	27	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	320	320	280
365	3044	17492-F-R	305091	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WTR	14	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1700	1626	1152
366	3045	155823-	306389	Owner	Well Constructed	WEBSTER, JAMES M	26	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	420	420	300
367	3046	156529-	310135	Owner	Well Constructed	LOO, PHIL	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	586	586	476
368	3047	36612-M	311912	Owner	Well Constructed	WASTE, MANAGEMENT	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	58	57	47
369	3048	158034-	312932	Owner	Well Constructed	HSU, ANNIE	26	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	425	425	285
370	3049	157767-	313386	Owner	Well Constructed	CUMMINGHAM JR GEORGE S	26	Well (Application/Permit)	Residential	DENVER	Domestic	337	337	277
371	3050	158416-	315111	Owner	Well Constructed	GRIDLEY JASON & AMY	25	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	525	525	460

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
372	3051	158866-	318532	Owner	Well Constructed	MYERS CHARLES B & VICKI L	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1080	1065	950
373	3052	17491-F-R	319344	Owner	Well Constructed	EAST CHERRY CREEK VLY WTR-SAN DIST	16	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1654		
374	3053	159106-	320065	Owner	Well Constructed	DEELENA DAVID & CONNIE SCHULTEJANN	25	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	420	420	320
375	3054	38733-M	0322682A	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25		
376	3055	38734-M	0322682B	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26		
377	3056	38735-M	0322682C	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26		
378	3057	38736-M	0322682D	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31		
379	3058	38737-M	0322682E	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	40		
380	3059	38738-M	0322682F	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	16		
381	3060	38739-M	0322682G	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	17		
382	3061	38740-M	0322682H	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	15		
383	3062	38741-M	0322682I	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13		
384	3063	38742-M	0322682J	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	12		
385	3064	159931-	323664	Owner	Well Constructed	COLLINS MITCHELL & MICHELLE	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	397	397	287
386	3065	159914-	324034	Owner	Well Constructed	ALLEN, LEESANNE	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	470	470	370
387	3066	159914-	324034	Owner	Well Constructed	BECKER, DEREK	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	470	470	370
388	3067	39071-M	0324061B	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	6	Well (Application/Permit)	Monitoring/Sampling	DAWSON	Monitoring/Sampling	145		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
389	3068	39072-M	0324061C	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	183		
390	3069	39073-M	0324061D	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	55		
391	3070	39075-M	0324061F	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	6	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	70		
392	3071	39076-M	0324061G	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	33		
393	3072	39077-M	0324061H	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	30		
394	3073	39078-M	0324061I	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	45		
395	3074	39079-M	0324061J	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	21		
396	3075	39080-M	0324061K	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	58		
397	3076	39081-M	0324061L	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	103		
398	3077	39082-M	0324061M	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	56		
399	3078	39354-M	0326384C	Owner	Well Constructed	CHERRY CREEK SCHOOL DIST #5	8	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31		
400	3079	160962-	326674	Owner	Well Constructed	CHILDS, DAVID W	22	Well (Construction Report)	Residential	ALL UNNAMED AQUIFERS	Domestic	380	380	280
401	3080	161324-	327387	Owner	Well Constructed	PEABODY, MARGARET	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	695	695	595
402	3081	161324-	327387	Owner	Well Constructed	PEABODY, BRIAN	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	695	695	595
403	3082	161419-	328169	Owner	Well Constructed	BEEN KARL & ROSEMARY	26	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	440	440	280
404	3083	161920-	328931	Owner	Well Constructed	KRAUS, GEORGE T.	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic			
405	3084	162112-	330070	Owner	Well Constructed	CITY CORP MORTGAGE	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	790	790	530

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
406	3085	162287-	331540	Owner	Well Constructed	CARTER NORM OR KAREN	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1060	1060	940
407	3086	41219-F	334203	Owner	Well Constructed	MDC LAND CORPORATION	22	Well (Application/Permit)	General Purpose	DENVER	Municipal	1000	975	753
408	3087	163305-	0335693H	Owner	Well Constructed	VOLTURA SCOTT A & NANCY LEE LIVING TRUST	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	980		
409	3088	163304-	0335693I	Owner	Well Constructed	FREUND INVESTMENTS	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1070		
410	3089	163857-	337067	Owner	Well Constructed	SHELTON, DEVELOPMENT	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	420	420	260
411	3090	171246-	337114	Owner	Well Constructed	FARRINGTON MICHAIL & KAYLEIGH	18	Well (Construction Report)	Residential	DENVER	Domestic	590	580	320
412	3091	163876-	337117	Owner	Well Constructed	SEXTON AMY MANERBINO	26	Well (Application/Permit)	Residential	DENVER	Domestic	340	340	282
413	3092	164215-	337157	Owner	Well Constructed	YOUNG FRANK C & SHARON R	24	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	500	500	420
414	3093	165211-	339822	Owner	Well Constructed	PETERSON SCOTT & JERILEE	26	Well (Application/Permit)	Residential	DENVER	Domestic	460	460	400
415	3094	165151-	0340004A	Owner	Well Constructed	WASTE MGMT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	19	9
416	3095	165152-	0340004B	Owner	Well Constructed	WASTE MGMT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	39	25	15
417	3096	165154-	0340004D	Owner	Well Constructed	WASTE MGMT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	84	82	62
418	3097	165157-	0340005C	Owner	Well Constructed	WASTE MGMT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	29	24	9
419	3098	165158-	0340005D	Owner	Well Constructed	WASTE MGMT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	29	24	9
420	3099	165159-	0340005E	Owner	Well Constructed	WASTE MGMT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	40	35	20
421	3100	165378-	340204	Owner	Well Constructed	SHAH, MABEL	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1080	1080	940
422	3101	165533-	341219	Owner	Well Constructed	BRADSHAW, GERALD	18	Well (Application/Permit)	Residential	DENVER	Domestic	420	420	270

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
423	3102	41421-F	0341379A	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	2	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1554	1500	1028
424	3103	41420-F	0341379B	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	2	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2069	2029	1874
425	3104	166200-	0342056A	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	38	38	28
426	3105	166201-	0342056B	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	18	18	8
427	3106	166202-	0342056C	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	47	47	37
428	3107	166203-	0342056D	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	28	28	18
429	3108	166204-	0342056E	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	53	53	43
430	3109	166205-	0342056F	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	33	33	23
431	3110	166206-	0342056G	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	18	18	8
432	3111	166207-	0342056H	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	23	23	13
433	3112	166208-	0342056I	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	38	38	28
434	3113	166209-	0342056J	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	58	58	48
435	3114	166210-	0342056K	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	18	18	8
436	3115	165972-	342271	Owner	Well Constructed	BROWN, ROBERT G	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1050	1050	930
437	3116	166815-	343880	Owner	Well Constructed	ARAPAHOE CUSTOM HOMES	25	Well (Construction Report)	Residential	DENVER	Domestic	525	525	445
438	3117	166540-	343915	Owner	Well Constructed	SEWARD, FREDERICK W	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic, Stock	1005	1005	900
439	3118	166857-	344800	Owner	Well Constructed	HORNE, TERRY	25	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	401	401	321

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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
440	3119	167513-	0345214A	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	4
441	3120	167514-	0345214B	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
442	3121	167515-	0345214C	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
443	3122	167516-	0345214D	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
444	3123	167517-	0345214E	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
445	3124	167518-	0345214F	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
446	3125	167519-	0345214G	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
447	3126	167520-	0345214H	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
448	3127	167521-	0345214I	Owner	Well Constructed	DENVER CITY & COUNTY OF	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	13	13	3
449	3128	167864-	346252	Owner	Well Constructed	STORMER MICHAEL S & AMY E	22	Well (Application/Permit)	Residential	DENVER	Domestic	400	400	220
450	3129	167867-	346504	Owner	Well Constructed	US HOUSING TECH	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	455	455	200
451	3130	167895-	346638	Owner	Well Constructed	BURGESON BENJAMIN A & MONICA D	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	240	240	180
452	3131	169251-	348675	Owner	Well Constructed	SHANKSTER, THOMAS G	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1055	1055	940
453	3132	170097-	349471	Owner	Well Constructed	MINIKUS, MICKEY G	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	890	890	660
454	3133	169983-	349491	Owner	Well Constructed	PACHL BRANDON & KIMBERLY	26	Well (Application/Permit)	Residential	DENVER	Domestic	360	360	300
455	3134	170155-	351411	Owner	Well Constructed	AKERS JOHN K H & FRANCINE M PLOURDE	26	Well (Application/Permit)	Residential	DENVER	Domestic	399	399	339
456	3135	42398-F	0351634A	Owner	Well Constructed	EAST CHERRY CRK VLY WTR & SAN DIST	25	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1686	1656	1251

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
457	3136	42399-F	0351634B	Owner	Well Constructed	EAST CHERRY CRK VLY WTR & SAN DIST	25	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2373	2343	2104
458	3137	42400-F	0351634C	Owner	Well Constructed	EAST CHERRY CRK VLY WTR & SAN DIST	13	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2160	2120	2070
459	3138	42401-F	0351634D	Owner	Well Constructed	EAST CHERRY CRK VLY WTR & SAN DIST	13	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1657	1625	1199
460	3139	42402-F	0351634E	Owner	Well Constructed	EAST CHERRY CRK VLY WTR & SAN DIST	22	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1770	1740	1323
461	3140	42403-F	0351634F	Owner	Well Constructed	EAST CHERRY CRK VLY WTR & SAN DIST	22	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	2455	2425	2103
462	3141	81536--A	351755	Owner	Well Constructed	MADDOX DAVID & LINDA	22	Well (Application/Permit)	Residential	DENVER	Domestic	400	320	260
463	3142	171645-	353201	Owner	Well Constructed	JACKSON, KENDRY T.	22	Well (Application/Permit)	Residential	DENVER	Domestic	418	418	298
464	3143	171645-	353201	Owner	Well Constructed	JACKSON, STEPHANIE M.	22	Well (Application/Permit)	Residential	DENVER	Domestic	418	418	298
465	3144	171897-	355632	Owner	Well Constructed	GARNER, LYNN J	22	Well (Construction Report)	Residential	DENVER	Domestic	400	400	300
466	3145	172503-	0357826A	Owner	Well Constructed	ARAPAHOE CUSTOM HOMES	26	Well (Application/Permit)	Residential	DENVER	Domestic	420	420	360
467	3146	172504-	0357826B	Owner	Well Constructed	YEAGER BRAD & LISA	26	Well (Application/Permit)	Residential	DENVER	Domestic	325	325	225
468	3147	173691-	358188	Owner	Well Constructed	FRAHM, STAN	27	Well (Application/Permit)	Residential	DENVER	Domestic	360	360	260
469	3148	177254-	358690	Owner	Well Constructed	MICKENS ALBERT JR	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1104	1100	980
470	3149	172934-	358988	Owner	Well Constructed	DENEAU, GERALD O	22	Well (Application/Permit)	Residential	DENVER	Domestic	405	405	345
471	3150	172919-	359206	Owner	Well Constructed	FORTUNA, TERRANCE J.	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic, Stock	1043	1043	923
472	3151	172919-	359206	Owner	Well Constructed	FORTUNA, ETSUKO	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic, Stock	1043	1043	923
473	3152	174815-	359773	Owner	Well Constructed	PARSONS, PAUL	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1100	1100	975

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
474	3153	173878-	360801	Owner	Well Constructed	LUND RONALD & RITA & JASON	18	Well (Application/Permit)	Residential	DENVER	Domestic	580	580	460
475	3154	174373-	361151	Owner	Well Constructed	KUCHARSKI JIM OR GAIL	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1040	1040	910
476	3155	173967-	0361348A	Owner	Well Constructed	DENVER CITY & COUNTY OF	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	55	40	2
477	3156	173968-	0361348B	Owner	Well Constructed	DENVER CITY & COUNTY OF	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	68	54	2
478	3157	173969-	0361348C	Owner	Well Constructed	DENVER CITY & COUNTY OF	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	28	28	2
479	3158	173970-	0361348D	Owner	Well Constructed	DENVER CITY & COUNTY OF	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	71	50	3
480	3159	173971-	0361348E	Owner	Well Constructed	DENVER CITY & COUNTY OF	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	105	89	2
481	3160	173972-	0361348F	Owner	Well Constructed	DENVER CITY & COUNTY OF	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	75	55	2
482	3161	173973-	0361348G	Owner	Well Constructed	DENVER CITY & COUNTY OF	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	16	2
483	3162	175284-	361899	Owner	Well Constructed	THOMAS BRAD AND SUE	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic, Stock	1070	1070	940
484	3163	176182-	362519	Owner	Well Constructed	TRAVIS BRIAN E & DENIELLE C	22	Well (Application/Permit)	Residential	DENVER	Domestic	325	325	305
485	3164	176782-	364062	Owner	Well Constructed	SMITH, LAVERNA	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	415	415	295
486	3165	75258--A	364530	Owner	Well Constructed	JACOBSEN, ROY	22	Well (Application/Permit)	Residential	DENVER	Domestic	350	350	210
487	3166	178378-	365362	Owner	Well Constructed	HOMBURGER, KEITH	22	Well (Application/Permit)	Residential	DENVER	Domestic	320	320	200
488	3167	177877-	365800	Owner	Well Constructed	BROCK, LOGAN	7	Well (Application/Permit)	Residential	DENVER	Domestic	830	830	690
489	3168	177877-	365800	Owner	Well Constructed	BROCK, JENNIFER	7	Well (Application/Permit)	Residential	DENVER	Domestic	830	830	690
490	3169	178534-	366640	Owner	Well Constructed	LINDEMANIS, DENISE R	18	Well (Application/Permit)	Residential	DENVER	Domestic	585	585	565

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
491	3170	178721-	366772	Owner	Well Constructed	REVERCOMB, MATTHEW S.	26	Well (Application/Permit)	Residential	DENVER	Domestic	600	600	520
492	3171	178721-	366772	Owner	Well Constructed	REVERCOMB, LONI T.	26	Well (Application/Permit)	Residential	DENVER	Domestic	600	600	520
493	3172	179024-	367217	Owner	Well Constructed	MOUNTAIN PLAIN HOMES INC	18	Well (Application/Permit)	Residential	DENVER	Domestic	400	400	280
494	3173	44252-F	0368769A	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal			
495	3174	44253-F	0368769B	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal			
496	3175	44254-F	0368769C	Owner	Well Constructed	AURORA CITY OF	21	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal			
497	3176	180372-	369428	Owner	Well Constructed	TOMASSI, HECTOR V	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1050	1050	930
498	3177	181828-	370272	Owner	Well Constructed	SMITH, ALMA S	17	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1040	1040	920
499	3178	180431-	371265	Owner	Well Constructed	MEIER CHRISTOPHER & CHRISTINE	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1020	1020	920
500	3179	133281--A	371555	Owner	Well Constructed	NEW HOPE MINISTRIES	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	400	257	137
501	3180	94247-VE	0371555A	Owner	Well Constructed	LOBENSTEIN, JAMES	22	Well (Application/Permit)	Unknown	DENVER	Domestic	400	257	217
502	3181	81715--A	371989	Owner	Well Constructed	EVERHART, JERRY	22	Well (Application/Permit)	Residential	DENVER	Domestic	325	325	175
503	3182	184214-	372564	Owner	Well Constructed	SIMONS WILLIAM & VERNA	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	1010	1010	900
504	3183	182102-	373582	Owner	Well Constructed	OLIVER THOMAS KENT	7	Well (Application/Permit)	Residential	DENVER	Domestic	780	840	660
505	3184	182187-	373974	Owner	Well Constructed	GOODSON, GLENN	18	Well (Application/Permit)	Residential	DENVER	Domestic	394	394	294
506	3185	183851-	376593	Owner	Well Constructed	KARSH, JOSHUA M.	18	Well (Construction Report)	Residential	DENVER	Domestic	440	440	280
507	3186	183851-	376593	Owner	Well Constructed	KARSH, CARIE N.	18	Well (Construction Report)	Residential	DENVER	Domestic	440	440	280

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
508	3187	184063-	377104	Owner	Well Constructed	MCGARRAHAN, PETER	22	Well (Construction Report)	Residential	DENVER	Domestic	380	380	260
509	3188	184188-	377359	Owner	Well Constructed	LUNDE, TODD	18	Well (Application/Permit)	Residential	DENVER	Domestic	570	570	460
510	3189	184188-	377359	Owner	Well Constructed	LUNDE, ANDREA	18	Well (Application/Permit)	Residential	DENVER	Domestic	570	570	460
511	3190	184042-	377528	Owner	Well Constructed	HARRIS, JOHN	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1020	1020	920
512	3191	44466-F	378406	Owner	Well Constructed	KRUPA, JOHN	18	Well (Construction Report)	General Purpose	UPPER ARAPAHOE	Irrigation	1035	1035	903
513	3192	185463-	380186	Owner	Well Constructed	ARAPAHOE CUSTOM HOMES	25	Well (Application/Permit)	Residential	DENVER	Domestic	640	640	340
514	3193	185092-	380261	Owner	Well Constructed	MONARCH HOMES	18	Well (Application/Permit)	Residential	DENVER	Domestic	440	440	260
515	3194	185345-	380511	Owner	Well Constructed	PUREWAL, GURMIT	18	Well (Application/Permit)	Residential	DENVER	Domestic	600	600	540
516	3195	185325-	381356	Owner	Well Constructed	DAHL, GARY	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1083	1083	963
517	3196	186150-	381930	Owner	Well Constructed	MERIDIAN HOMES LLC	24	Well (Application/Permit)	Residential	DENVER	Domestic	640	640	420
518	3197	186356-	383179	Owner	Well Constructed	MCDONALD STEVEN & MONDRA	18	Well (Application/Permit)	Residential	DENVER	Domestic	443	443	283
519	3198	186823-	383294	Owner	Well Constructed	VELASQUEZ, FRANCISCO	18	Well (Application/Permit)	Residential	DENVER	Domestic	420	420	280
520	3199	187632-	383781	Owner	Well Constructed	CAMPBELL AUGUST A JANICE L	7	Well (Application/Permit)	Residential	DENVER	Domestic	830	830	722
521	3200	187269-	384035	Owner	Well Constructed	MOUNTAIN PLAIN HOMES	18	Well (Application/Permit)	Residential	DENVER	Domestic	580	580	300
522	3201	191053-	389593	Owner	Well Constructed	MUILENBURG, MARK	18	Well (Construction Report)	Residential	DENVER	Domestic	697	657	400
523	3202	191838-	392581	Owner	Well Constructed	BECKER, DAVID W	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1060	1060	960
524	3203	193290-	396395	Owner	Well Constructed	SHANNON, ROBERT	25	Well (Application/Permit)	Residential	DENVER	Domestic	461	461	381

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
525	3204	68439--A	396810	Owner	Well Constructed	REUL, GHEORGHE	22	Well (Application/Permit)	Residential	DENVER	Domestic	380	380	215
526	3205	194022-	0397828B	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	61	60	30
527	3206	194023-	0397828C	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	7	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	49	49	39
528	3207	194024-	0397828D	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	68	67	48
529	3208	194026-	0397828F	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	59	59	39
530	3209	194027-	0397828G	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	51	51	41
531	3210	194029-	0397828I	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVICES	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	17	17	7
532	3211	196184-	400936	Owner	Well Constructed	GONZALEZ ROBERTO M & HILDA M	18	Well (Application/Permit)	Residential	DENVER	Domestic	420	420	305
533	3212	196187-	401049	Owner	Well Constructed	COPE, FRANKLIN	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	715	695	555
534	3213	196990-	402084	Owner	Well Constructed	HELLING WILHELM III & BRENDA J	18	Well (Application/Permit)	Residential	DENVER	Domestic	560	560	300
535	3214	197063-	402099	Owner	Well Constructed	BUEHLER STANLEY & JENNIFER	18	Well (Application/Permit)	Residential	DENVER	Domestic	503	503	360
536	3215	197829-	403295	Owner	Well Constructed	TRAN ANH & THUY NGA	18	Well (Application/Permit)	Residential	DENVER	Domestic	380	380	240
537	3216	197828-	403301	Owner	Well Constructed	JONES, JONI	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1020	1020	930
538	3217	197582-	0403813B	Owner	Well Constructed	PLATTE RIVER CONSTRUCTORS LTD	13	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	32	32	22
539	3218	97800--A	403846	Owner	Well Constructed	WHITE, BARBARA	7	Well (Construction Report)	Residential	DENVER	Domestic	720	720	560
540	3219	198274-	404708	Owner	Well Constructed	BARRETT IV, THOMAS R.	26	Well (Application/Permit)	Residential	DENVER	Domestic	433	433	393
541	3220	198274-	404708	Owner	Well Constructed	BARRETT, TARA F.	26	Well (Application/Permit)	Residential	DENVER	Domestic	433	433	393

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
542	3221	198510-	404843	Owner	Well Constructed	WEAVER, RANDALL	26	Well (Construction Report)	Residential	DENVER	Domestic	457	457	377
543	3222	198514-	404918	Owner	Well Constructed	OPPERUD, BEV	18	Well (Application/Permit)	Residential	DENVER	Domestic	405	405	330
544	3223	109366--A	404977	Owner	Well Constructed	VILLARREAL RUDY & SARAH	7	Well (Application/Permit)	Residential	DENVER	Domestic	727	727	580
545	3224	198908-	405613	Owner	Well Constructed	PORRAS, JESUS R.	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1060	1060	960
546	3225	199220-	406352	Owner	Well Constructed	FERGUSON, JESSICA M.	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1045	1045	970
547	3226	199220-	406352	Owner	Well Constructed	FERGUSON, ANTHONY L.	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1045	1045	970
548	3227	199203-	406517	Owner	Well Constructed	CAM, RICHARD D	18	Well (Application/Permit)	Residential	DENVER	Domestic	465	465	335
549	3228	200448-	408140	Owner	Well Constructed	PLATTE RIVER CONSTRUCTORS LTD	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Commercial	680	680	340
550	3229	199938-	408298	Owner	Well Constructed	KIRKPATRICK ROBERT D & KAREN L	7	Well (Application/Permit)	Residential	DENVER	Domestic	835	835	680
551	3230	200111-	408517	Owner	Well Constructed	SAVIAGE, TIFFANY N.	22	Well (Application/Permit)	Residential	DENVER	Domestic	405	405	260
552	3231	189727--A	408621	Owner	Well Constructed	QUICK, ELEANOR	7	Well (Application/Permit)	Residential	DENVER	Domestic	630	630	350
553	3232	200744-	408622	Owner	Well Constructed	QUICK, ELEANOR	18	Well (Application/Permit)	Residential	DENVER	Stock	350	350	220
554	3233	47700-F	0409358A	Owner	Well Constructed	STATE BOARD OF LAND COMMISSIONERS	15	Well (Application/Permit)	General Purpose	ARAPAHOE	Commercial, Municipal			
555	3234	200896-	410185	Owner	Well Constructed	MURATA PERRY & SHIGEKO	26	Well (Application/Permit)	Residential	DENVER	Domestic	438	438	318
556	3235	201927-	411843	Owner	Well Constructed	ACJ PARTNERSHIP	21	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	605	605	505
557	3236	48145-F	413437	Owner	Well Constructed	RANGEVIEW METRO DIST	11	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Industrial	25		
558	3237	202973-	414067	Owner	Well Constructed	LANDSIEDEL ROGER & FRISBIE ALICIA	18	Well (Application/Permit)	Residential	DENVER	Domestic	420	420	340

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

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559	3238	203685-	415023	Owner	Well Constructed	ASCHENBRENNER, CRYSTAL M	26	Well (Application/Permit)	Residential	DENVER	Domestic	420	420	300
560	3239	204742-	416555	Owner	Well Constructed	AURORA PUBLIC SCHOOLS	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1035	1035	900
561	3240	205527-	418899	Owner	Well Constructed	MUILENBURG, MARK	18	Well (Application/Permit)	Residential	DENVER	Domestic	620	620	400
562	3241	205225-	418968	Owner	Well Constructed	HOTT ROBERT T & GRUEL-HOTT RONDA	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	590	590	210
563	3242	205260-	420672	Owner	Well Constructed	RISHAVY JIM & JOY	26	Well (Application/Permit)	Residential	DENVER	Domestic	577	577	437
564	3243	207461-	0422455E	Owner	Well Constructed	AURORA UTILITIES DEPT	8	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	20	10
565	3244	49395-F	0423253A	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WTR & SAN	15	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS		2480	2440	2112
566	3245	49396-F	0423253B	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WTR & SAN	15	Well (Application/Permit)	General Purpose	ARAPAHOE		1755	1724	1278
567	3246	49667-F	424943	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER	1	Well (Application/Permit)	General Purpose	ARAPAHOE	Municipal	1581	1551	1110
568	3247	208051-	424972	Owner	Well Constructed	NGUYEN DUY TIEN & PHI PHI HOANG	18	Well (Application/Permit)	Residential	DENVER	Domestic	440	440	360
569	3248	209655-	429343	Owner	Well Constructed	STURTZ, MICHAEL E	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1080	1080	960
570	3249	211505-	430333	Owner	Well Constructed	BRANDT PAUL R & JENNIE W	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1023	1023	843
571	3250	211266-	431672	Owner	Well Constructed	MUILENBURG, MARK	18	Well (Application/Permit)	Residential	DENVER	Domestic	620	600	320
572	3251	212997-	432444	Owner	Well Constructed	PROGRESS CIRCLE TRUST	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	560	560	360
573	3252	50579-F	0433513A	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER AND	14	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Irrigation, Municipal	2470	2409	2071
574	3253	50580-F	0433513B	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER AND	14	Well (Application/Permit)	General Purpose	ARAPAHOE	Irrigation, Municipal	1748	1698	1266
575	3254	50581-F	0433513C	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER AND	13	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Irrigation, Municipal	2510	2460	2100

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
576	3255	50582-F	0433513D	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER AND	13	Well (Application/Permit)	General Purpose	ARAPAHOE	Irrigation, Municipal	1798	1748	1277
577	3256	50583-F	0433513E	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER AND	16	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Irrigation, Municipal	2259	2219	2030
578	3257	50584-F	0433513F	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER AND	16	Well (Application/Permit)	General Purpose	ARAPAHOE	Irrigation, Municipal	1686	1636	1215
579	3258	213653-	0435307A	Owner	Well Constructed	MOORE, DANIEL	26	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1160	1160	1000
580	3259	213652-	0435307B	Owner	Well Constructed	ARABADJIEV, ROSSEN	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	740	740	660
581	3260	213652-	0435307B	Owner	Well Constructed	ARABADJIEV, ASYA	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	740	740	660
582	3261	214570-	436857	Owner	Well Constructed	HOMESTEAD LAND LEASE INC	18	Well (Application/Permit)	Residential	DENVER	Domestic	510	510	350
583	3262	214559-	437488	Owner	Well Constructed	GHORI, SHOAIB	18	Well (Application/Permit)	Residential	DENVER	Domestic	400	400	300
584	3263	214554-	438460	Owner	Well Constructed	KRAUS, TIMOTHY D	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1100	1100	990
585	3264	216026-	440409	Owner	Well Constructed	JAHNKE, DEMAR W	27	Well (Application/Permit)	Residential	DENVER	Domestic	440	440	280
586	3265	216807-	442459	Owner	Well Constructed	CROWLEY, LARRY E	18	Well (Construction Report)	Residential	DENVER	Domestic	500	500	400
587	3266	51681-F	442658	Owner	Well Constructed	EAST CHERRY CREEK VALLEY W&S DIST	12	Well (Application/Permit)	General Purpose	LARAMIE FOX HILLS	Commercial, Municipal	2160		
589	3268	52129-F	0445522D	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SAN DST	11	Well (Application/Permit)	General Purpose	LARAMIE FOX HILLS	Municipal	2357	2340	1955
590	3269	217528-	0445582A	Owner	Well Constructed	WILSEY LYNN & SUZANNE	16	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	280		
591	3270	217528--A	0445582B	Owner	Well Constructed	ROBLES, PATRICIA	16	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	478	458	398
592	3271	217528--A	0445582B	Owner	Well Constructed	HERNANDEZ, VICTOR	16	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	478	458	398
593	3272	218427-	445616	Owner	Well Constructed	FAKHARZADEH, JALAL	27	Well (Application/Permit)	Residential	DENVER	Domestic	523	523	383

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
594	3273	219000-	446581	Owner	Well Constructed	TOWNS, HARRY	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	535	535	375
595	3274	220518-	450176	Owner	Well Constructed	WOODS DAVID E & JANET I	26	Well (Application/Permit)	Residential	DENVER	Domestic	398	398	278
596	3275	222013-	0450484K	Owner	Well Constructed	ATC ASSOCIATES INC	15	Well (Application/Permit)	Monitoring/Observation	UNCONFINED SAN LUIS VALLEY AQUIFER	Monitoring/Sampling	17	17	2
597	3276	222014-	0450484L	Owner	Well Constructed	ATC ASSOCIATES INC	15	Well (Application/Permit)	Monitoring/Observation	UNCONFINED SAN LUIS VALLEY AQUIFER	Monitoring/Sampling	19	19	4
598	3277	222015-	0450484M	Owner	Well Constructed	ATC ASSOCIATES INC	15	Well (Application/Permit)	Monitoring/Observation	UNCONFINED SAN LUIS VALLEY AQUIFER	Monitoring/Sampling	19	19	4
599	3278	222016-	0450484N	Owner	Well Constructed	ATC ASSOCIATES INC	15	Well (Application/Permit)	Monitoring/Observation	UNCONFINED SAN LUIS VALLEY AQUIFER	Monitoring/Sampling	25	25	15
600	3279	222017-	0450484O	Owner	Well Constructed	ATC ASSOCIATES INC	15	Well (Application/Permit)	Monitoring/Observation	UNCONFINED SAN LUIS VALLEY AQUIFER	Monitoring/Sampling	25	25	15
601	3280	222480-	452854	Owner	Well Constructed	DUFFY RYAN & KELLY	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1062	1062	940
602	3281	223190-	454660	Owner	Well Constructed	KELLY, JERRY	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1057	1057	906
603	3282	53201-F	455229	Owner	Well Constructed	FREUND & COMPANY/FREUND INVESTMENTS	18	Well (Application/Permit)	General Purpose	UPPER ARAPAHOE	Commercial, Industrial	1034	1034	907
604	3283	223174-	455384	Owner	Well Constructed	SCHOONHOOVEN, ALEXANDER	18	Well (Application/Permit)	Residential	DENVER	Domestic	460	460	300
605	3284	224904-	0458136E	Owner	Well Constructed	PEC MIDWEST LLC	36	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	15		
606	3285	78897--A	461046	Owner	Well Constructed	THIEMES, SAM	22	Well (Application/Permit)	Residential	DENVER	Domestic	480	480	180
607	3286	226534-	461961	Owner	Well Constructed	BARNES JEANNETTE M & DUNCAN E	22	Well (Application/Permit)	Residential	DENVER	Domestic	443	443	343
608	3287	72418--A	462224	Owner	Well Constructed	KINGHT, MICHAEL T	22	Well (Application/Permit)	Residential	DENVER	Domestic	400	400	325

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
609	3288	228817-	465151	Owner	Well Constructed	SOMA, ANDREW	27	Well (Application/Permit)	Residential	DENVER	Domestic	518	518	398
610	3289	229172-	465695	Owner	Well Constructed	NGUYEN, JOHN T	26	Well (Application/Permit)	Residential	DENVER	Domestic	538	538	318
611	3290	230319-	0468041B	Owner	Well Constructed	WALKER, DOUGLAS	22	Well (Application/Permit)	Residential	DENVER	Domestic	410	410	310
612	3291	17488-F-R	469231	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	24	Well (Application/Permit)	General Purpose	ARAPAHOE	Commercial, Industrial	2000	1960	1454
614	3293	55022-F	0469523B	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	8	Well (Application/Permit)	General Purpose	UPPER ARAPAHOE	Commercial, Industrial	1379	1339	1157
615	3294	55023-F	0469523C	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	8	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Commercial, Industrial	2409	2355	2010
616	3295	230527-	470332	Owner	Well Constructed	PAPPAS JAMES & PAPADIMITPOULOS MADELINE	26	Well (Application/Permit)	Residential	DENVER	Domestic	583	583	303
617	3296	55867-F	0470416C	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	2	Well (Application/Permit)	General Purpose	ARAPAHOE	Commercial, Industrial	1630	1555	1204
618	3297	55864-F	0470416D	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	2	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Commercial, Industrial	2315	2254	1874
619	3298	55865-F	0470416E	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	12	Well (Application/Permit)	General Purpose	ARAPAHOE	Commercial, Industrial	1720	1620	1191
620	3299	55866-F	0470416F	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	12	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Commercial, Industrial	2360	2320	1924
621	3300	232007-	472852	Owner	Well Constructed	SCHIVELY GARY J & CHERI D	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic	1085	1090	950
622	3301	233242-	474017	Owner	Well Constructed	DUFF, LARRY	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1085	1085	940
623	3302	234171-	475379	Owner	Well Constructed	WASTE MANAGEMENT OF CO	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	30	10
624	3303	234446-	478716	Owner	Well Constructed	BIBEAU, JOHN	22	Well (Application/Permit)	Residential	DENVER	Domestic	518	518	418
625	3304	115632--A	478862	Owner	Well Constructed	JERNIGON, DAVE	18	Well (Application/Permit)	Residential	DAWSON	Domestic	740	640	265
626	3305	56280-F	479417	Owner	Well Constructed	DENVER CITY & COUNTY OF	31	Well (Application/Permit)	General Purpose	LOWER ARAPAHOE	Industrial, Irrigation	1470	1550	50

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
627	3306	235779-	479743	Owner	Well Constructed	HASKELL PAUL K & DARLENE M	22	Well (Application/Permit)	Residential	DENVER	Domestic	275	275	285
628	3307	235090-	479947	Owner	Well Constructed	MALCHOW-WEBER, BENJAMIN	22	Well (Application/Permit)	Residential	DENVER	Domestic	720		
629	3308	235090-	479947	Owner	Well Constructed	MALCHOW-WEBER, SHANNON	22	Well (Application/Permit)	Residential	DENVER	Domestic	720		
630	3309	97708--A	482746	Owner	Well Constructed	CRUM ROBERT & LISA	26	Well (Application/Permit)	Residential	DENVER	Domestic	598		
631	3310	115622--A	482761	Owner	Well Constructed	VALENZUELA-GARDEA, CRISTIAN	18	Well (Application/Permit)	Residential	DENVER	Domestic	905	901	421
632	3311	115622--A	482761	Owner	Well Constructed	COB OS MENDEZ, SERGIO R.	18	Well (Application/Permit)	Residential	DENVER	Domestic	905	901	421
633	**3312**	236752-	0482931A	**Owner**	**Well Constructed**	**COMPTON, JIMMIE L**	**11**	Well (Application/Permit)	Residential	**ALL UNNAMED AQUIFERS**	**Domestic**			
634	**3313**	236752--A	0482931B	**Owner**	**Well Constructed**	**COMPTON, JIMMIE L**	**11**	Well (Application/Permit)	Residential	**ALL UNNAMED AQUIFERS**	**Domestic**	**60**	**60**	**23**
635	3314	236751-	482947	Owner	Well Constructed	MEYER, DAVID A	22	Well (Application/Permit)	Residential	DENVER	Domestic	200	540	260
636	3315	238177-	0484623A	Owner	Well Constructed	BUCKLEY AIR FORCE BASE	11	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	25	16
637	3316	238178-	0484623B	Owner	Well Constructed	BUCKLEY AIR FORCE BASE	11	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	20
638	3317	238179-	0484623C	Owner	Well Constructed	BUCKLEY AIR FORCE BASE	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	45	45	35
639	3318	238180-	0484623D	Owner	Well Constructed	BUCKLEY AIR FORCE BASE	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	45	43	33
640	3319	238189-	485361	Owner	Well Constructed	QUINONES, MARTA	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1102		
641	3320	58192-F	0485544A	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SAN	22	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Industrial, Municipal	2477		
642	3321	58191-F	0485544C	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SANITATION	22	Well (Application/Permit)	General Purpose	ARAPAHOE	Industrial, Municipal	1725		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
643	3322	239555-	488433	Owner	Well Constructed	NEWTON PATRICK M AND ASHLEY M	22	Well (Application/Permit)	Residential	DENVER	Domestic	540	540	320
644	3323	57308-F	489058	Owner	Well Constructed	RACING ASSOCIATION OF CO LTD	17	Well (Application/Permit)	General Purpose	ARAPAHOE	Industrial, Municipal	1755	1755	515
645	3324	57719-F	493198	Owner	Well Constructed	ST SIMEON CEMETARY ASSOCIATION	13	Well (Application/Permit)	General Purpose	UPPER ARAPAHOE		990	980	910
646	3325	242713-	493271	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	58	56	46
647	3326	244959-	0493286A	Owner	Well Constructed	DENVER DEPT OF PUBLIC HEALTH	5	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	35	35	15
648	3327	242725-	0493286B	Owner	Well Constructed	DENVER DEPT OF PUBLIC HEALTH	5	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	36	35	20
649	3328	242726-	0493286C	Owner	Well Constructed	DENVER DEPT OF PUBLIC HEALTH	5	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	0		
650	3329	244960-	0493286D	Owner	Well Constructed	DENVER DEPT OF PUBLIC HEALTH	5	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	65	65	40
651	3330	244961-	0493286E	Owner	Well Constructed	DENVER DEPT OF PUBLIC HEALTH	5	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	80	79	39
652	3331	241645-	493593	Owner	Well Constructed	STOLL, BENTON L.	22	Well (Application/Permit)	Residential	DENVER	Domestic	463	463	343
653	3332	241645-	493593	Owner	Well Constructed	HAMOR, SHARON R.	22	Well (Application/Permit)	Residential	DENVER	Domestic	463	463	343
654	3333	243820-	495642	Owner	Well Constructed	LORENZ, MATTHEW J	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic, Stock	1106	1106	956
655	3334	243705-	495698	Owner	Well Constructed	RICHART, GEORGE	25	Well (Application/Permit)	Residential	DENVER	Domestic	618	618	498
656	3335	65782--A	495734	Owner	Well Constructed	MADDOX, LOUISE	22	Well (Application/Permit)	Residential	DENVER	Domestic	398	398	218
657	3336	61226-F	496044	Owner	Well Constructed	RANGEVIEW METROPLITAN DIST	33	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS		19		
659	3338	94812--A	496723	Owner	Well Constructed	WARD ROBERT & HIROKO	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	360	260	180
664	3343	59424-F	507054	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SAN	2	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Municipal	2295		

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
665	3344	250415-	508208	Owner	Well Constructed	MADERA, ABEL	7	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	1035	1035	915
666	3345	251833-	512484	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	43	43	33
668	3347	252659-	0514426D	Owner	Well Constructed	US GEOLOGICAL SURVEY	16	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	48	48	39
669	3348	252660-	0514426E	Owner	Well Constructed	US GEOLOGICAL SURVEY	16	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	18	18	9
670	3349	248439-	0514426G	Owner	Well Constructed	US GEOLOGICAL SURVEY	15	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	42	42	32
671	3350	252662-	0514426H	Owner	Well Constructed	US GEOLOGICAL SURVEY	14	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	23	23	13
672	3351	252663-	0514426I	Owner	Well Constructed	US GEOLOGICAL SURVEY	10	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	28	28	18
673	3352	252664-	0514426J	Owner	Well Constructed	US GEOLOGICAL SURVEY	2	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	23	23	13
674	3353	249240-	0514426K	Owner	Well Constructed	US GEOLOGICAL SURVEY	3	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	37	37	30
675	3354	252936-	515342	Owner	Well Constructed	MOULD FRED B & BARBARA J	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1090	1090	960
676	3355	253956-	517120	Owner	Well Constructed	NGUYEN THUY & LAN LE	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1100	1100	970
677	3356	256340-	0518177A	Owner	Well Constructed	US GEOLOGICAL SURVEY	5	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling			
678	3357	254402-	0518177B	Owner	Well Constructed	US GEOLOGICAL SURVEY	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26	25	15
679	3358	254403-	0518177C	Owner	Well Constructed	US GEOLOGICAL SURVEY	4	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	38	38	28
680	3359	254404-	0518177D	Owner	Well Constructed	US GEOLOGICAL SURVEY	3	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	43	43	33
681	3360	254405-	0518177E	Owner	Well Constructed	US GEOLOGICAL SURVEY	9	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	29	28	18
682	3361	61038-F	523605	Owner	Well Constructed	AURORA CITY OF	25	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Irrigation	36		

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
683	3362	258132-	524899	Owner	Well Constructed	COLSON DAVID A & JESSICA B	26	Well (Application/Permit)	Residential	DENVER	Domestic	620	620	300
684	3363	258581-	526481	Owner	Well Constructed	ANDERSON DAMON & CHRISTIE	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic			
685	3364	259432-	527745	Owner	Well Constructed	PEACEMAKER, RICHARD W	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1062	2065	920
686	3365	262996-	537937	Owner	Well Constructed	HANRAHAN DENNIS & JEANIE	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic	1046	1046	896
687	3366	265471-	0538343A	Owner	Well Constructed	PEACEMAKER, RICHARD	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	55		
688	3367	264051-	540047	Owner	Well Constructed	GILLARD, ELIZABETH	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1090	1090	950
689	3368	265101-	540458	Owner	Well Constructed	ASHBY JR DONALD	22	Well (Application/Permit)	Residential	DENVER	Domestic	598	458	298
690	3369	265192-	540682	Owner	Well Constructed	HILLSIDE COUNTRY HOMES	18	Well (Construction Report)	Residential	DENVER	Domestic	495	475	335
691	3370	265296-	540883	Owner	Well Constructed	WASTE MANAGEMENT OF CO	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	31	21
692	3371	265421-	541554	Owner	Well Constructed	MCCARTHY, TRICIA	25	Well (Application/Permit)	Residential	DENVER	Domestic	550	550	315
693	3372	138283--A	542654	Owner	Well Constructed	REID, ANN	18	Well (Application/Permit)	Residential	DENVER	Domestic	900	900	360
694	3373	266627-	544152	Owner	Well Constructed	WILMER STANLEY E & CHERYL A	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1050	1050	920
695	3374	265920-	544265	Owner	Well Constructed	LIGHTHOUSE, BUILDERS	22	Well (Application/Permit)	Residential	DENVER	Domestic	398	398	278
696	3375	265898-	544318	Owner	Well Constructed	KIM, THOMAS M.	22	Well (Construction Report)	Residential	DENVER	Domestic	398	398	338
697	3376	265898-	544318	Owner	Well Constructed	KIM, REBECCA K.	22	Well (Construction Report)	Residential	DENVER	Domestic	398	398	338
698	3377	63493-F	545128	Owner	Well Constructed	STATE BOARD OF LAND COMMISSIONERS	3	Well (Application/Permit)	General Purpose	ARAPAHOE	Industrial, Municipal	1538	1498	996
699	3378	267553-	546659	Owner	Well Constructed	DAVIDSON, GREGORY	18	Well (Application/Permit)	Residential	DENVER	Domestic	598	598	318

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
700	3379	98930--A	547294	Owner	Well Constructed	LAVERENZ, BETH	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	420	420	380
701	3380	84212-F	10000159	Owner	Well Constructed	FREUND, KENNETH J.	11	Well (Construction Report)	General Purpose	UPPER ARAPAHOE	Augmentation, Commercial, Fire, Industrial, Irrigation, Other	1020		
702	3381	317418-	10003610	Owner	Well Constructed	7-ELEVEN INC (STORE #26803)	29	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	22		
703	3382	319268-	10005966	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	30		
704	3383	319269-	10005967	Owner	Well Constructed	CITY OF AURORA	24	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	47		
705	**3384**	319270-	10005968	**Owner**	**Well Constructed**	**CITY OF AURORA**	**24**	Well (Construction Report)	Monitoring/Observation		**Monitoring/Sampling**	**45**		
706	**3385**	319272-	10005969	**Owner**	**Well Constructed**	**CITY OF AURORA**	**24**	Well (Construction Report)	Monitoring/Observation		**Monitoring/Sampling**	**35**		
707	3386	319273-	10005970	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	35		
708	3387	319274-	10005971	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	20		
709	**3388**	319275-	10005972	**Owner**	**Well Constructed**	**CITY OF AURORA**	**13**	Well (Construction Report)	Monitoring/Observation		**Monitoring/Sampling**	**18**		
710	3389	319656-	10005973	Owner	Well Constructed	CITY OF AURORA	24	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	35		
711	3390	319725-	10007055	Owner	Well Constructed	BEHM, ROSS	18	Well (Construction Report)	Residential	DENVER	Domestic	420		
712	3391	320175-	10007667	Owner	Well Constructed	CITY OF AURORA	8	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	20		
713	3392	68752--A	10009993	Owner	Well Constructed	FOLKERDS, JOSHUA	22	Well (Construction Report)	Residential	LOWER DAWSON	Domestic	235	235	35

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
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OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
714	3393	321423-	10010195	Owner	Well Constructed	GILCHRIST, PHILIP	26	Well (Construction Report)	Residential	DENVER	Domestic	340		
715	3394	321423-	10010195	Owner	Well Constructed	TESANOVIC, BARBARA	26	Well (Construction Report)	Residential	DENVER	Domestic	340		
716	3395	321096-	10010488	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	22		
717	3396	322403-	10011151	Owner	Well Constructed	MADDOX, LOUISE	22	Well (Construction Report)	Residential	DENVER	Domestic	345		
718	3397	69255--A	10018351	Owner	Well Constructed	VINCENT, ELAINE	18	Well (Construction Report)	Residential	DENVER	Domestic	690		
719	3398	50985--A	10021339	Owner	Well Constructed	BROADHURST, KENNETH L.	22	Well (Construction Report)	Residential	DENVER	Domestic	480		
720	3399	74891--A	3608855	Owner	Well Constructed	GOLDEN BRIAN J & MARILYN E	22	Well (Application/Permit)	Residential	DENVER	Domestic	578	558	478
721	3400	271458-	3609262	Owner	Well Constructed	MARGINEANU GHEORGHE CORNELIU	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	865	1080	940
722	3401	271109-	3609585	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	29	27	17
723	3402	271433-	3610296A	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	30	30	20
724	3403	271434-	3610296B	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	35	35	25
725	3404	271435-	3610296C	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	40	39	24
726	3405	271436-	3610296D	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	60	60	50
727	3406	271441-	3610296I	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	40	40	30
728	3407	271442-	3610296J	Owner	Well Constructed	AURORA CITY OF	16	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	50	40	30
729	3408	271443-	3610296K	Owner	Well Constructed	AURORA CITY OF	9	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	25	25	15
730	3409	273574-	3614833	Owner	Well Constructed	GLAU, DEAN	22	Well (Application/Permit)	Residential	DENVER	Domestic	365	365	325

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

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731	3410	274153-	3617896A	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	5	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	55	44	24
732	3411	274154-	3617896B	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	5	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	25	17	7
733	3412	274155-	3617896C	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	5	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	51	20	10
734	3413	274156-	3617896D	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	5	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	61	52	32
735	3414	274157-	3617896E	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	5	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	35	23	13
736	3415	146709--A	3619942	Owner	Well Constructed	BLANEY, MARSHALL	24	Well (Application/Permit)	Residential	DENVER	Household use only	563	563	443
737	3416	275451-	3621679	Owner	Well Constructed	CHAPMAN, WENDELL	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1080	1080	925
738	3417	275812-	3621946	Owner	Well Constructed	GEORGE MIKE & PATTY	22	Well (Construction Report)	Residential	DENVER	Domestic	545	545	325
739	3418	276285-	3624196	Owner	Well Constructed	CRUICKSHANK, JAMES	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1100	1100	970
763	3442	123652--A	3631987	Owner	Well Constructed	LUCERO, DONALD	22	Well (Application/Permit)	Residential	DENVER	Domestic	600	600	340
772	3451	67968-F	3638215	Owner	Well Constructed	STATE BOARD OF LAND COMMISSIONERS	11	Well (Application/Permit)	General Purpose	ALLUVIAL	Industrial	43	38	11
773	3452	282102-	3643157	Owner	Well Constructed	STREETMAN, NANCY	26	Well (Application/Permit)	Residential	LOWER DAWSON	Household use only			
774	3453	70012-F	3644688A	Owner	Well Constructed	NEMEC, JEFF	19	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Other	48	46	26
775	3454	70013-F	3644688B	Owner	Well Constructed	NEMEC, JEFF	19	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Other	45	45	25
776	3455	70014-F	3644688C	Owner	Well Constructed	NEMEC, JEFF	19	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Other			
777	3456	70015-F	3644688D	Owner	Well Constructed	NEMEC, JEFF	19	Well (Construction Report)	General Purpose	ALL UNNAMED AQUIFERS	Other	38	35	15
780	3459	283007-	3644688G	Owner	Well Constructed	NEMEC, JEFF	19	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	49	49	44

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

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781	3460	283008-	3644688H	Owner	Well Constructed	NEMEC, JEFF	19	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	50	50	45
782	3461	69656-F	3645723A	Owner	Well Constructed	DENVER CITY & CNTY DEPT OF ENV HEALTH	6	Well (Application/Permit)	General Purpose	ALLUVIAL	Other			
783	3462	69657-F	3645723B	Owner	Well Constructed	DENVER CITY & CNTY DEPT OF ENV HEALTH	31	Well (Application/Permit)	General Purpose	ALLUVIAL	Other			
785	3464	60327--A	3647743	Owner	Well Constructed	TRUE CREEK LLC (ROEPKE, AMY L.)	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	55	55	19
786	3465	285176-	3649160	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	25	15
787	3466	285874-	3650534	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO INC	31	Well (Application/Permit)	Monitoring/Observation	DAWSON	Monitoring/Sampling	49	49	39
788	3467	75887-F	3653309	Owner	Well Constructed	FREUND LINDA J & KENNETH J FREUND, SR	18	Well (Application/Permit)	General Purpose	UPPER ARAPAHOE	Industrial, Municipal	1034		
790	3469	287616-	3653757B	Owner	Well Constructed	FREUND KENNETH J SR	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	27		
798	3477	290508-	3659064A	Owner	Well Constructed	WEMLINGER WATER TREATMENT PLANT	9	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	25	25	15
799	3478	290509-	3659064B	Owner	Well Constructed	WEMLINGER WATER TREATMENT PLANT	9	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	21	21	10
800	3479	290510-	3659064C	Owner	Well Constructed	WEMLINGER WATER TREATMENT PLANT	4	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31	31	20
809	3488	77650-F	3661872B	Owner	Well Constructed	ARAPAHOE COUNTY OPEN SPACE	8	Well (Application/Permit)	General Purpose	UPPER ARAPAHOE	Industrial, Irrigation	1345	1305	1180
811	3490	293423-	3663433	Owner	Well Constructed	CARNAHAN, BENJAMIN K.	18	Well (Application/Permit)	Residential	DENVER	Domestic			
812	3491	293423-	3663433	Owner	Well Constructed	CARNAHAN, RACHEL L.	18	Well (Application/Permit)	Residential	DENVER	Domestic			
813	3492	77883-F	3663460	Owner	Well Constructed	RANGEVIEW METROPOLITAN DISTRICT	11	Well (Application/Permit)	General Purpose	LARAMIE-FOX HILLS	Industrial, Municipal	2047	2000	1790
814	3493	294215-	3664287	Owner	Well Constructed	GOOD BRIAN & CASSIE	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1085	1085	940
815	3494	236034--A	3665429	Owner	Well Constructed	NELSON GARY AND KAREN	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1110	1110	945

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LOWRY LANDFILL SUPERFUND SITE

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816	3495	296780-	3668174	Owner	Well Constructed	7-ELEVEN INC - STORE #20909	29	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30	30	15
817	3496	230526--A	3668176	Owner	Well Constructed	REID, MARIO S.	22	Well (Application/Permit)	Residential	DENVER	Domestic	460	460	400
818	3497	230526--A	3668176	Owner	Well Constructed	CONNER, SHAUNA S.	22	Well (Application/Permit)	Residential	DENVER	Domestic	460	460	400
819	3498	296831-	3668284	Owner	Well Constructed	BAIRD GAIL & LAWRENCE	18	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1106	1106	980
820	3499	297322-	3668829H	Owner	Well Constructed	EAST CHERRY CR VALLEY WATER & SAN DIST	2	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	45	45	25
821	3500	79010-F	3669230	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SAN	24	Well (Application/Permit)	General Purpose	ARAPAHOE	Industrial, Municipal, Other	1944		
822	3501	297458-	3669473	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER AND	24	Well (Application/Permit)	Monitoring/Observation	ARAPAHOE	Monitoring/Sampling	1957		
824	3503	298210--A	3670682B	Owner	Well Constructed	HERNANDEZ CUTBERTO & MARTHA	11	Well (Construction Report)	Residential	DENVER	Domestic	580	580	420
825	3504	300339-	3673311	Owner	Well Constructed	ACEVEDO MARIO & JUANA	18	Well (Construction Report)	Residential	ARAPAHOE	Domestic	10		
826	3505	300594-	3673388A	Owner	Well Constructed	PETROLEUM (BRADLEY PETROLEUM)	10	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	22		
827	3506	300595-	3673388B	Owner	Well Constructed	PETROLEUM (BRADLEY PETROLEUM)	10	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	22		
828	3507	302207-	3675246	Owner	Well Constructed	CMH HOMES INC DBA	7	Well (Construction Report)	Residential	DENVER	Domestic	860		
829	3508	138725--A	3676105	Owner	Well Constructed	HULL DONALD & CYNTHIA	7	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	1110	1110	870
831	3510	302794-	3676343	Owner	Well Constructed	SMITH, JERRY E	26	Well (Application/Permit)	Residential	DENVER	Domestic	680	680	560
832	3511	303413-	3676388	Owner	Well Constructed	WASTE MANAGEMENT OF COLORADO	32	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	99		
833	3512	304010-	3677074D	Owner	Well Constructed	7-ELEVEN INC (STORE #26803)	29	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30		
834	3513	304011-	3677074E	Owner	Well Constructed	7-ELEVEN INC (STORE #26803)	29	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30		

APPENDIX C-7
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LOWRY LANDFILL SUPERFUND SITE

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835	3514	304012-	3677074F	Owner	Well Constructed	7-ELEVEN INC (STORE #26803)	29	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30		
836	3515	304013-	3677074G	Owner	Well Constructed	7-ELEVEN INC (STORE #26803)	29	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	30		
837	3516	307537-	3683428	Owner	Well Constructed	GUZMAN, JOSE J.	18	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic	1108		
838	3517	308060-	3683715	Owner	Well Constructed	YOHN, CODY	18	Well (Construction Report)	Residential		Domestic, Stock	1109		
839	3518	165972--A	3684192	Owner	Well Constructed	MARTINEZ, JASON	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic	1080		
840	3519	17489-F-R	3685945	Owner	Well Constructed	EAST CHERRY CREEK VALLEY WATER & SANITATION	23	Well (Construction Report)	General Purpose	ARAPAHOE	Commercial, Domestic, Fire, Fishery, Industrial, Irrigation, Municipal, Recreation, Stock, Wildlife	1724		
841	3520	271458--A	3688129	Owner	Well Constructed	CORNELIU, MARGINEANU G.	7	Well (Construction Report)	Residential	UPPER ARAPAHOE	Domestic	1050		
842	3521	311804-	3688683	Owner	Well Constructed	HENRY, WILLIAM	23	Well (Construction Report)	Residential	UPPER DAWSON	Domestic	380		
843	3522	313871-	3690290A	Owner	Well Constructed	CITY OF AURORA	7	Well (Construction Report)	Monitoring/Observation	DENVER	Monitoring/Sampling	36		
844	3523	313874-	3690290D	Owner	Well Constructed	CITY OF AURORA	8	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	26		
845	3524	313876-	3690290F	Owner	Well Constructed	CITY OF AURORA	8	Well (Construction Report)	Monitoring/Observation	DENVER	Monitoring/Sampling	41		
846	3525	313884-	3690290N	Owner	Well Constructed	CITY OF AURORA	20	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	41		
847	3526	313885-	3690290O	Owner	Well Constructed	CITY OF AURORA	21	Well (Construction Report)	Monitoring/Observation	DAWSON	Monitoring/Sampling	41		
848	3527	313886-	3690290P	Owner	Well Constructed	CITY OF AURORA	28	Well (Construction Report)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	31		
849	3528	37665-F-R	3691563	Owner	Well Constructed	CITY & COUNTY OF DENVER DEPT OF PUBLIC HEALTH & EN (DELILLIO, DIANE)	6	Well (Construction Report)	General Purpose	UPPER ARAPAHOE	Industrial	1260		

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LOWRY LANDFILL SUPERFUND SITE

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850	3529	320953-	3691716A	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	35		
851	3530	320954-	3691716B	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	27		
852	3531	320955-	3691716C	Owner	Well Constructed	CITY OF AURORA	13	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	25		
853	3532	320956-	3691716D	Owner	Well Constructed	CITY OF AURORA	24	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	38		
854	3533	320957-	3691716E	Owner	Well Constructed	CITY OF AURORA	24	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	42		
855	3534	320958-	3691716F	Owner	Well Constructed	CITY OF AURORA	24	Well (Construction Report)	Monitoring/Observation		Monitoring/Sampling	33		
856	3535	314851-	3693665	Owner	Well Constructed	LOERA, MAURO	15	Well (Construction Report)	Residential	LOWER DAWSON	Domestic	505	505	425
857	3536	97703--A	3693670	Owner	Well Constructed	POLADSKY, JULIA	22	Well (Construction Report)	Residential	DENVER	Domestic	580		
858	3537	97703--A	3693670	Owner	Well Constructed	DRISCOLL, MICHAEL	22	Well (Construction Report)	Residential	DENVER	Domestic	580		
859	3538	230-	9005311	Owner	Well Constructed	CIVIL AERONAUTCS ADM	29	Well (Application/Permit)	Residential	DENVER	Domestic			
860	3539	667-	9005351	Owner	Well Constructed	PRUTTING, KENNETH C	23	Well (Application/Permit)	Residential	DENVER	Domestic	425	425	225
861	3540	2406-F	9005464	Owner	Well Constructed	US GOVERNMENT	5	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Other	1570		
862	3541	3080-	9005529	Owner	Well Constructed	MILLER, BERT	15	Well (Application/Permit)	Residential	DENVER	Domestic	490		
863	3542	3201-	9005539	Owner	Well Constructed	COOPER, H E	18	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	790		
864	3543	4821-F	9005654	Owner	Well Constructed	SMITH, WILBUR W	17	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Irrigation	25		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
865	3544	6671-	9005756	Owner	Well Constructed	MAYS, WILLIE	19	Well (Application/Permit)	Residential	DENVER	Domestic	595		
866	3545	10401-	9005904	Owner	Well Constructed	ABRAHAMSEN, MARTIN	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Stock	45		
867	3546	11192-F	9005947	Owner	Well Constructed	FREUND & COMPANY	18	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Irrigation	27	27	17
868	3547	12763-	9006010	Owner	Well Constructed	MAYES, WILLIE	19	Well (Application/Permit)	Residential	DENVER	Domestic	237		
869	3548	12883-	9006016	Owner	Well Constructed	WILLIAMS, KATHLEEN	28	Well (Application/Permit)	Residential	DENVER	Domestic	612		
870	3549	13027-	9006022	Owner	Well Constructed	DAVIDSON, HOWARD	24	Well (Application/Permit)	Residential	DENVER	Stock	185		
871	3550	13179-	9006036	Owner	Well Constructed	SMITH, PAUL	20	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Stock	44		
872	3551	13180-	9006037	Owner	Well Constructed	CASSELL, BOB	3	Well (Application/Permit)	Residential	DENVER	Domestic	223		
874	**3553**	13445-	9006055	**Owner**	**Well Constructed**	**CHAPPELL, CHARLES W**	**11**	Well (Application/Permit)	Residential	**ALL UNNAMED AQUIFERS**	**Domestic**	**40**		
875	3554	13447-F	9006056	Owner	Well Constructed	SMITH, WILBAR	17	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Irrigation	27		
876	3555	14344-	9006099	Owner	Well Constructed	DIXON, LESTER	4	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	95		
877	3556	14661-	9006113	Owner	Well Constructed	WEST ARAPAHOE SOIL CONSERVA	25	Well (Application/Permit)	Residential	QUATERNARY ALLUVIUM	Stock	57		
878	3557	17491-F	9006272	Owner	Well Constructed	SMOKY HILLS VENTURE CO	16	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	1688		
879	3558	17492-F	9006273	Owner	Well Constructed	SMOKY HILLS VENTURE CO	14	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Municipal	1687		
880	3559	20192-F	9006395	Owner	Well Constructed	AURORA PUBLIC SCHOOLS (AURORA PUBLIC SCHOOLS)	28	Well (Application/Permit)	General Purpose	ALL UNNAMED AQUIFERS	Irrigation	1360		
881	3560	20987-	9006444	Owner	Well Constructed	ARNOLD, VIRGIL E	19	Well (Application/Permit)	Residential	DENVER	Domestic	600		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
882	**3561**	22246-	9006472	**Owner**	**Well Constructed**	**BUCKLEY INVESTMENT COMP**	**30**	Well (Application/Permit)	Residential	**ALL UNNAMED AQUIFERS**	**Stock**	**70**		
883	3562	22724-	9006481	Owner	Well Constructed	COOPER, THOMAS	18	Well (Application/Permit)	Residential	DENVER	Domestic	665	662	553
884	3563	23500-	9006509	Owner	Well Constructed	LLOYD, FRANCIS	1	Well (Application/Permit)	Residential	DENVER	Stock	270		
885	3564	27087-	9006582	Owner	Well Constructed	DOELL, RICHARD	18	Well (Application/Permit)	Residential	DENVER	Domestic	735	697	560
886	3565	27284-	9006592	Owner	Well Constructed	HUBBARD, H S	11	Well (Application/Permit)	Residential	DENVER	Domestic	100		
887	3566	27387-	9006593	Owner	Well Constructed	SMITH, B E	12	Well (Application/Permit)	Residential	DENVER	Domestic	140		
888	3567	28195-M	9006619	Owner	Well Constructed	DENVER ENVIRONMENTAL SRVCS	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	20	28	18
889	3568	28210-M	9006625	Owner	Well Constructed	DENVER ENVIRONMENTAL SRVCS	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	355	350	310
890	3569	28212-M	9006627	Owner	Well Constructed	DENVER ENVIRONMENTAL SRVCS	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	100	95	75
891	3570	28214-M	9006629	Owner	Well Constructed	DENVER ENVIRONMENTAL SRVCS	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling	155	145	125
892	3571	31068-	9006674	Owner	Well Constructed	MILLER, BURT	29	Well (Application/Permit)	Residential	UPPER DAWSON	Stock	224		
893	3572	31073-	9006675	Owner	Well Constructed	NEMNICK, LOUIS A	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	40	40	20
894	3573	31351-	9006683	Owner	Well Constructed	MOSS, HOWARD	29	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	1007		
895	3574	31356-	9006684	Owner	Well Constructed	WILEY, BERTHA	11	Well (Application/Permit)	Residential	DENVER	Domestic	250		
896	3575	31822-M	9006714	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVCE	31	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling			
897	3576	31826-M	9006718	Owner	Well Constructed	DENVER ENVIRONMENTAL SERVCE	6	Well (Application/Permit)	Monitoring/Observation	ALL UNNAMED AQUIFERS	Monitoring/Sampling			

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
898	3577	31905-	9006735	Owner	Well Constructed	VINCENT MURPHY CHEV CO INC	8	Well (Application/Permit)	Residential	LOWER DAWSON	Stock	356		
899	3578	32277-	9006743	Owner	Well Constructed	BIG BAIT CO INC	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Stock	30		
900	3579	34195--A	9006773A	Owner	Well Constructed	CITY OF AURORA (GODWIN, JOSHUA)	35	Well (Construction Report)	Residential	DENVER	Domestic	400		
901	3580	34482-	9006776	Owner	Well Constructed	NASH, BENNIE	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	35	35	5
902	3581	35635-	9006798	Owner	Well Constructed	SMITH, PAUL H	16	Well (Application/Permit)	Residential	DENVER	Stock	688		
903	3582	36105-	9006802	Owner	Well Constructed	RIPPE, EMIL	25	Well (Application/Permit)	Residential	DENVER	Stock	541		
904	3583	36817-	9006822	Owner	Well Constructed	SEELEY HARVEY E JR	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Stock	30	30	10
905	3584	37743-	9006832	Owner	Well Constructed	MILLER, VERNON S	14	Well (Application/Permit)	Residential	DENVER	Domestic	570		
906	3585	37867-	9006834	Owner	Well Constructed	EAST BAYAUD PARTNERS LLC	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	45	45	18
907	3586	40172-	9006866	Owner	Well Constructed	STARLING RYAN C & LORI L MCNEILLY	18	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	703	690	361
908	3587	40228-	9006868	Owner	Well Constructed	BECKER, HERBERT	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock	32		
909	3588	41075-	9006895	Owner	Well Constructed	SMITH, MARVIN E	30	Well (Application/Permit)	Residential	DENVER	Domestic	573		
910	3589	42112-	9006918	Owner	Well Constructed	FIX, MAURICE J	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	42		
911	3590	42163-	9006919	Owner	Well Constructed	TAYLOR, DAVID D	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	40		
912	3591	42926-	9006935	Owner	Well Constructed	MONROE, HELEN	18	Well (Application/Permit)	Residential	DENVER	Domestic	822	822	668
913	3592	43732-	9006947	Owner	Well Constructed	ARMATO, MIKE	28	Well (Application/Permit)	Residential	DENVER	Domestic	635		
914	3593	44424-	9006960	Owner	Well Constructed	GRIMM, ALBERT	23	Well (Application/Permit)	Residential	DENVER	Domestic	748		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

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915	3594	44768-	9006965	Owner	Well Constructed	WICKHAM, J E	15	Well (Application/Permit)	Residential	DENVER	Domestic	550		
916	3595	45116-	9006971	Owner	Well Constructed	JOHNSON, NORMAN D	16	Well (Application/Permit)	Residential	DENVER	Domestic	351		
917	3596	45188-	9006972	Owner	Well Constructed	TORRES, MAX D	12	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	54		
918	3597	45276-	9006974	Owner	Well Constructed	TEPPER, EUGENE X	29	Well (Application/Permit)	Residential	UPPER DAWSON	Domestic	228		
919	3598	45338-	9006977	Owner	Well Constructed	HENDRICK, K E	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic			
920	3599	46126-	9006996	Owner	Well Constructed	MUNOZ, ROGELIO	18	Well (Application/Permit)	Residential	DENVER	Domestic	840	840	320
921	3600	48010-	9007028	Owner	Well Constructed	RAINS, DONALD	29	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	36		
922	3601	48177-	9007030	Owner	Well Constructed	ELVEAN, CLYDE W	18	Well (Application/Permit)	Residential	DENVER	Domestic	600	600	540
923	3602	48208-	9007031	Owner	Well Constructed	SMITH, PAUL H	20	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	32		
924	3603	48417-	9007034	Owner	Well Constructed	WELLS, RAYMOND R	18	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	670	670	320
925	3604	48820-	9007045	Owner	Well Constructed	BUCHER, JACK E	23	Well (Application/Permit)	Residential	DENVER	Domestic	200		
926	3605	49186-	9007060	Owner	Well Constructed	SEELEY HARVEY E JR	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Stock	28	28	15
927	3606	49187-	9007061	Owner	Well Constructed	SEELEY HARVEY E JR	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	28	28	9
928	3607	49851-	9007069	Owner	Well Constructed	JACKSON J M & BETTY	15	Well (Application/Permit)	Residential	DENVER	Domestic	454	454	334
929	3608	49876-	9007070	Owner	Well Constructed	ATTEBERRY, HAROLD	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Stock	30	30	10
930	3609	50228-	9007077	Owner	Well Constructed	HAINES, CARL J	14	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	713		
931	3610	50376-	9007078	Owner	Well Constructed	KIBBLE, ALBERT F	15	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic	630		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

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932	3611	50801-	9007086	Owner	Well Constructed	EAST, JOE C	18	Well (Application/Permit)	Residential	DENVER	Domestic	733	733	630
934	3613	56580-	9007158	Owner	Well Constructed	LUNA-LLANES REALTY LLC (LUNA-LLANES, FERNANDO)	18	Well (Application/Permit)	Residential	DENVER	Domestic	605	605	350
935	3614	58067-	9007172	Owner	Well Constructed	MCCLURE, JOHN E	18	Well (Application/Permit)	Residential	DENVER	Domestic	620	620	450
936	3615	61239-	9007204	Owner	Well Constructed	ALLMAN, JOHN H	18	Well (Application/Permit)	Residential	DENVER	Domestic	620	620	450
937	3616	63258-	9007236	Owner	Well Constructed	BILLERA CHARLES & DEBORAH	22	Well (Application/Permit)	Residential	DENVER	Domestic	280	280	120
938	3617	63491-	9007241	Owner	Well Constructed	MANN, ROBERT B	18	Well (Application/Permit)	Residential	DENVER	Domestic	630	630	500
939	3618	63894-	9007248	Owner	Well Constructed	CAMERON, DUNCAN W	19	Well (Application/Permit)	Residential	DENVER	Domestic	527	527	240
940	3619	66570-	9007267	Owner	Well Constructed	MUELLER, LYNA	22	Well (Application/Permit)	Residential	DENVER	Domestic	250	250	140
941	3620	66879-	9007276	Owner	Well Constructed	ESPINOZA, RAFAEL R.	18	Well (Application/Permit)	Residential	DENVER	Domestic	750	750	485
942	3621	66879-	9007276	Owner	Well Constructed	VARELA, MARIA DE ROCIO V.	18	Well (Application/Permit)	Residential	DENVER	Domestic	750	750	485
943	3622	66892-	9007277	Owner	Well Constructed	MCCLURE, JOHN E	18	Well (Application/Permit)	Residential	DENVER	Domestic	620	620	360
944	3623	67504-	9007283	Owner	Well Constructed	NASH, BENNIE E	18	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	720	720	310
945	3624	67524-	9007284	Owner	Well Constructed	KARCZEWSKI CASMIR & MARIA	18	Well (Application/Permit)	Residential	DENVER	Domestic			
946	3625	67859-	9007291	Owner	Well Constructed	POOL, ROBERT L	18	Well (Construction Report)	Residential	DENVER	Domestic			
947	3626	68350-	9007298	Owner	Well Constructed	CARPENTER, PATSY P	18	Well (Application/Permit)	Residential	DENVER	Stock			
948	3627	68576-	9007304	Owner	Well Constructed	MOCK, EDWARD F	22	Well (Application/Permit)	Residential	DENVER	Domestic			
949	3628	68620-	9007306	Owner	Well Constructed	FOSTER, DAVID I	22	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

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950	3629	68750-	9007308	Owner	Well Constructed	MORTON, JOHN W.	22	Well (Application/Permit)	Residential	DENVER	Domestic			
951	3630	68751-	9007309	Owner	Well Constructed	FERGUSON DAVID & KATHY	22	Well (Application/Permit)	Residential	DENVER	Domestic			
952	3631	68753-	9007311	Owner	Well Constructed	BERRY LYNDON G & BERRY CHARLOTTE A	22	Well (Application/Permit)	Residential	DENVER	Domestic			
953	3632	69255-	9007320	Owner	Well Constructed	VINCENT ELAINE F & BEATRICE M	18	Well (Application/Permit)	Residential	DENVER	Domestic			
954	3633	69964-	9007331	Owner	Well Constructed	HOLWELL RAYMOND V JR	22	Well (Application/Permit)	Residential	DENVER	Domestic	240	240	160
955	3634	71155-	9007347	Owner	Well Constructed	FIGG, IRIS J	11	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Domestic, Stock			
956	3635	71335-	9007351	Owner	Well Constructed	PASTERNAK RONALD C & ELSIE L	22	Well (Construction Report)	Residential	DENVER	Domestic			
957	3636	71350-	9007352	Owner	Well Constructed	BONO, RICHARD J	18	Well (Application/Permit)	Residential	DENVER	Domestic			
958	3637	72417-	9007362	Owner	Well Constructed	SHACKELFORD W MONTE	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
959	3638	72555-	9007366	Owner	Well Constructed	OVERSTREET, ROBERT L	18	Well (Application/Permit)	Residential	DENVER	Domestic	489	480	400
960	3639	74043-	9007384	Owner	Well Constructed	TORLUEMKE, G D	22	Well (Application/Permit)	Residential	DENVER	Domestic	220	220	120
961	3640	74774-	9007391	Owner	Well Constructed	LONG, JOHN G	18	Well (Application/Permit)	Residential	ALL UNNAMED AQUIFERS	Household use only	30	30	10
962	3641	75107-	9007400	Owner	Well Constructed	SCHLEY, ROBERT	18	Well (Application/Permit)	Residential	DENVER	Domestic			
963	3642	75491-	9007409	Owner	Well Constructed	QUICK, CALVIN J	30	Well (Application/Permit)	Residential	UPPER DAWSON	Stock			
965	3644	76356-	9007425	Owner	Well Constructed	COLORADO PARKS AND WILDLIFE	17	Well (Application/Permit)	Residential	UPPER DAWSON	Domestic	182		
966	3645	79290-	9007465	Owner	Well Constructed	LOEHR JAMES & CYNTHIA	22	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	130	130	100
967	3646	79295-	9007466	Owner	Well Constructed	SAS HEALTH SERVICES LLC	7	Well (Application/Permit)	Residential	DENVER	Domestic	605	605	325

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

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969	3648	80116-	9007475	Owner	Well Constructed	CRANE, DONALD	22	Well (Application/Permit)	Residential	DENVER	Domestic	275		
970	3649	81536-	9007499	Owner	Well Constructed	MADDOX DAVID & LYNDA	22	Well (Application/Permit)	Residential	DENVER	Domestic	280	280	240
971	3650	81715-	9007502	Owner	Well Constructed	KLEIN, SIGI	22	Well (Application/Permit)	Residential	DENVER	Domestic	320	320	300
973	3652	83399-	9007523	Owner	Well Constructed	MOSS, HAROLD B	22	Well (Application/Permit)	Residential	DENVER	Domestic	328	328	288
974	3653	84987-	9007556	Owner	Well Constructed	HERMES, TIMOTHY	22	Well (Application/Permit)	Residential	DENVER	Domestic	368		
975	3654	84989-	9007557	Owner	Well Constructed	HERMES, KENNETH J	22	Well (Application/Permit)	Residential	DENVER	Domestic	315		
977	3656	86189-	9007571	Owner	Well Constructed	OLIVARES, GABRIEL P.	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
978	3657	86189-	9007571	Owner	Well Constructed	OLIVARES, CATHERINE S.	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
979	3658	86313-	9007575	Owner	Well Constructed	MILLER, STEVEN G	22	Well (Application/Permit)	Residential	DENVER	Domestic			
980	3659	86378-	9007576	Owner	Well Constructed	CARLEVATO, NORMAN J	27	Well (Application/Permit)	Residential	DENVER	Domestic			
981	3660	86379-	9007577	Owner	Well Constructed	SMALL, BONNIE	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
982	3661	86380-	9007578	Owner	Well Constructed	HADDON WILLIAM R & CATHY R	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
983	3662	86381-	9007579	Owner	Well Constructed	RADI, MOHAMED	26	Well (Application/Permit)	Residential	DENVER	Domestic			
984	3663	86443-	9007580	Owner	Well Constructed	MUNDHENKE, HANS	22	Well (Application/Permit)	Residential	DENVER	Domestic			
985	3664	86717-	9007583	Owner	Well Constructed	MILES, LEONARD V	22	Well (Application/Permit)	Residential	DENVER	Domestic			
986	3665	87449-	9007592	Owner	Well Constructed	FLORER, DICK	7	Well (Application/Permit)	Residential	DENVER	Domestic			
987	3666	87593-	9007595	Owner	Well Constructed	MOFFITT, WILLIAM M	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	275	275	235

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
988	3667	87626-	9007596	Owner	Well Constructed	HAMNER, ROBERT J	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock			
989	3668	87834-	9007604	Owner	Well Constructed	CARLSON, LEE M	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
990	3669	88037-	9007609	Owner	Well Constructed	CARLSON, DOUGLAS	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
991	3670	88366-	9007613	Owner	Well Constructed	LOPEZ, PERRY	22	Well (Application/Permit)	Residential	DENVER	Domestic			
992	3671	88367-	9007614	Owner	Well Constructed	BRANTLEY ELIZABETH A & FAULK DANIEL	22	Well (Application/Permit)	Residential	DENVER	Domestic			
993	3672	89040-	9007624	Owner	Well Constructed	HENDERSON, ALLEN G	22	Well (Construction Report)	Residential	DENVER	Domestic			
994	3673	89133-	9007625	Owner	Well Constructed	SULTANOF, HARRY	27	Well (Application/Permit)	Residential	DENVER	Domestic			
995	3674	89138-	9007626	Owner	Well Constructed	SEDBROOK, JOHN	27	Well (Construction Report)	Residential	DENVER	Domestic			
996	3675	89540-	9007636	Owner	Well Constructed	PREESE JASON R & JANIS L	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
997	3676	89775-	9007641	Owner	Well Constructed	WALLNER, FRED	22	Well (Application/Permit)	Residential	DENVER	Domestic			
998	3677	89836-	9007645	Owner	Well Constructed	HERNDON, DUSTIN J.	26	Well (Application/Permit)	Residential	DAWSON	Domestic	415		
999	3678	89836-	9007645	Owner	Well Constructed	HERNDON, AMANDA J.	26	Well (Application/Permit)	Residential	DAWSON	Domestic	415		
1000	3679	89836-	9007645	Owner	Well Constructed	SHIRACK, MICHAEL D.	26	Well (Application/Permit)	Residential	DAWSON	Domestic	415		
1001	3680	90939-	9007663	Owner	Well Constructed	SIPP PEGGY & JOHNSON VANCE M	22	Well (Application/Permit)	Residential	DENVER	Domestic			
1002	3681	90940-	9007664	Owner	Well Constructed	PIXLER, WILLIAM	22	Well (Construction Report)	Residential	DENVER	Domestic			
1003	3682	90941-	9007665	Owner	Well Constructed	BENSON, FRED	22	Well (Application/Permit)	Residential	DENVER	Domestic			
1004	3683	91175-	9007676	Owner	Well Constructed	MEAD, JOAN S	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
1005	3684	91705-	9007682	Owner	Well Constructed	GROSVENOR, TODD	27	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
1006	3685	91705-	9007682	Owner	Well Constructed	GROSVENOR, DANNA	27	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
1007	3686	91707-	9007683	Owner	Well Constructed	POLLOCK JAMES E & CARROL SUE	22	Well (Application/Permit)	Residential	DENVER	Domestic			
1008	3687	91709-	9007684	Owner	Well Constructed	KUSCHNEREIT RODY & CONNIE	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
1009	3688	91711-	9007686	Owner	Well Constructed	SWINNEY ROGER & CHRISTINE	26	Well (Application/Permit)	Residential	DENVER	Domestic			
1010	3689	92256-	9007698	Owner	Well Constructed	POPE JR JAMES E	18	Well (Application/Permit)	Residential	DENVER	Domestic			
1011	3690	92901-	9007708	Owner	Well Constructed	ANDERS, WILLIAM J	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
1012	3691	92947-	9007711	Owner	Well Constructed	SCHLAGETER VALERIE & GARY	22	Well (Application/Permit)	Residential	DENVER	Domestic			
1013	3692	93173-	9007714	Owner	Well Constructed	MABIE BRENDA K & PHILLIP G	7	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	604	604	464
1014	3693	93671-	9007719	Owner	Well Constructed	GILL, JASON	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock			
1015	3694	93671-	9007719	Owner	Well Constructed	GILL, SHARON	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock			
1016	3695	93673-	9007720	Owner	Well Constructed	SCHEEL, DENNIS	26	Well (Application/Permit)	Residential	DAWSON	Domestic	404	404	204
1017	3696	93816-	9007724	Owner	Well Constructed	ZUKOWSKI, BARBARA J	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
1018	3697	94020-	9007729	Owner	Well Constructed	BUSBY, RICHARD C	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
1020	3699	94022-	9007731	Owner	Well Constructed	BIGHORN, GINA R.	27	Well (Application/Permit)	Residential	DENVER	Domestic			
1021	3700	94022-	9007731	Owner	Well Constructed	BIGHORN, DANIEL C.	27	Well (Application/Permit)	Residential	DENVER	Domestic			
1022	3701	94041-	9007734	Owner	Well Constructed	RACHAL, ROBERT M.	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
1023	3702	94457-	9007740	Owner	Well Constructed	SLAGLE ELRIE VAN	16	Well (Application/Permit)	Residential	DENVER	Domestic			
1024	3703	95393-	9007754	Owner	Well Constructed	REED, JOHN	29	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
1025	3704	95907-	9007763	Owner	Well Constructed	POWERS, EDWARD D	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock			
1026	3705	96292-	9007777	Owner	Well Constructed	CLYMER, DON	26	Well (Application/Permit)	Residential	DENVER	Domestic			
1027	3706	96548-	9007780	Owner	Well Constructed	NIXON DAVE &NORMA	26	Well (Application/Permit)	Residential	DAWSON	Domestic	344	344	304
1028	3707	96554-	9007781	Owner	Well Constructed	SMITH, WALTER	27	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic			
1029	3708	96647-	9007786	Owner	Well Constructed	PIETZ, RUSSELL	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	324	324	164
1030	3709	97045-	9007800	Owner	Well Constructed	PERRY JR LOUIS & JULIE	26	Well (Construction Report)	Residential	DENVER	Domestic			
1031	3710	97201-	9007803	Owner	Well Constructed	FALISE KHRISTOPHER J & JESSICA A	26	Well (Application/Permit)	Residential	DAWSON	Domestic	204	204	164
1032	3711	97425-	9007811	Owner	Well Constructed	SECTION 16 LTD	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	310	310	180
1033	3712	97629-	9007816	Owner	Well Constructed	HERNANDEZ, JOEL	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	398	398	358
1034	3713	97629-	9007816	Owner	Well Constructed	HERNANDEZ, ERIKA	26	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	398	398	358
1035	3714	97703-	9007819	Owner	Well Constructed	HOLFORD, DAVID L	22	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	205	205	150
1036	3715	97710-	9007824	Owner	Well Constructed	CYR, PAMELA	26	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	360	360	200
1037	3716	98326-	9007846	Owner	Well Constructed	PARSONS, PAUL	18	Well (Application/Permit)	Residential	DENVER	Domestic	495	495	395
1038	3717	98927-	9007859	Owner	Well Constructed	KUNTAE, KIM	7	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	684	684	484
1039	3718	98965-	9007863	Owner	Well Constructed	KLEIN, JACQUELINE	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic, Stock	324	324	244

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
1040	3719	100133-	9007897	Owner	Well Constructed	MALONE, JAMES R	26	Well (Application/Permit)	Residential	DAWSON	Domestic, Stock	354	354	304
1041	3720	100162-	9007898	Owner	Well Constructed	YOHN, SONNY L.	18	Well (Application/Permit)	Residential	DENVER	Domestic	641	641	580
1042	3721	100162-	9007898	Owner	Well Constructed	SCMIDT, JESSICA	18	Well (Application/Permit)	Residential	DENVER	Domestic	641	641	580
1043	3722	100165-	9007899	Owner	Well Constructed	LUCAS, MICHAEL	26	Well (Application/Permit)	Residential	LOWER DAWSON	Domestic	265	265	205
1044	3723	100552-	9007905	Owner	Well Constructed	THORP RICK & DON BLAIR	7	Well (Application/Permit)	Residential	DAWSON	Domestic	657	657	420
1045	3724	101008-	9007910	Owner	Well Constructed	GUZMAN, JOSE J.	18	Well (Application/Permit)	Residential	DENVER	Domestic	490	490	410
1046	3725	101541-	9007914	Owner	Well Constructed	RESIDENTIAL FRAMING INC	7	Well (Application/Permit)	Residential	DENVER	Domestic	610	610	450
1047	3726	101792-	9007920	Owner	Well Constructed	LANDWEHR JOHN & CHRISTY	18	Well (Application/Permit)	Residential	ARAPAHOE	Domestic	655	635	500
1048	3727	101793-	9007921	Owner	Well Constructed	DURKIN, THOMAS F	7	Well (Application/Permit)	Residential	DENVER	Domestic	708	708	566
1049	3728	101794-	9007922	Owner	Well Constructed	IMES JOHN S & SUSAN	7	Well (Application/Permit)	Residential	DENVER	Domestic	631	631	451
1050	3729	101802-	9007925	Owner	Well Constructed	MOTHERSHED, ROBERT L.	26	Well (Application/Permit)	Residential	DENVER	Domestic	382	382	322
1051	3730	101802-	9007925	Owner	Well Constructed	MOTHERSHED, GEEHAE L.	26	Well (Application/Permit)	Residential	DENVER	Domestic	382	382	322
1052	3731	102118-	9007927	Owner	Well Constructed	DOXEY, LAWRY E	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	325	325	290
1053	3732	102133-	9007931	Owner	Well Constructed	HILLMAN ROBERT I & KATHRYN M	22	Well (Application/Permit)	Residential	DENVER	Domestic	355	355	335
1054	3733	102329-	9007942	Owner	Well Constructed	PASILLAS ESTEBAN & SILVIA	18	Well (Application/Permit)	Residential	DENVER	Domestic			
1055	3734	102885-	9007945	Owner	Well Constructed	HANSEN, HAROLD	8	Well (Application/Permit)	Residential	DENVER	Domestic			
1056	3735	102890-	9007946	Owner	Well Constructed	HANSEN, HAROLD	8	Well (Application/Permit)	Residential	DENVER	Domestic			

APPENDIX C-7
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JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
1057	3736	103040-	9007948	Owner	Well Constructed	BERGNER, BROOKS B	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	220	220	160
1058	3737	104266-	9007956	Owner	Well Constructed	ALCALA AUGIE & LOMA J	7	Well (Application/Permit)	Residential	DENVER	Domestic	709	709	609
1059	3738	110966-	9007993	Owner	Well Constructed	INGRAM FRANKLIN & GLADYS D	7	Well (Application/Permit)	Residential	DENVER	Domestic	655		
1060	3739	114231-	9008005	Owner	Well Constructed	BRALEY, ROBERT J	7	Well (Application/Permit)	Residential	DENVER	Domestic			
1061	3740	123271-	9008054	Owner	Well Constructed	GORMELY, JOHN E	24	Well (Application/Permit)	Residential	DENVER	Domestic	440		
1062	3741	125610-	9008061	Owner	Well Constructed	SU, CHI	22	Well (Application/Permit)	Residential	DENVER	Domestic, Stock	352		
1063	3742	136562-	9008089	Owner	Well Constructed	JAMES RALPH & MCDOWELL CAROL	18	Well (Construction Report)	Residential	DENVER	Domestic			
1064	3743	141968-	9008099	Owner	Well Constructed	BOWERS LESTER & LESTER MRS	7	Well (Application/Permit)	Residential	DENVER	Household use only	666		
1065	3744	143860-	9008105	Owner	Well Constructed	LOMBARDO, MARC A	7	Well (Application/Permit)	Residential	UPPER ARAPAHOE	Domestic	1030	1030	930
1066	3745	40-WCB	C030040	Owner	Well Constructed	PELTON, GEORGE A	22	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS	Domestic	170	170	116
1067	3746	43-WCB	C030043	Owner	Well Constructed	MALONE, FLORA L	26	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		82		
1069	3748	136-WCB	C030136	Owner	Well Constructed	MALONE, J B	29	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		149		
1070	3749	280-WCB	C030280	Owner	Well Constructed	HAINES, O J	14	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		713		
1071	3750	332-WCB	C030332	Owner	Well Constructed	HANSEN, HAROLD	8	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		272		
1072	3751	418-WCB	C030418	Owner	Well Constructed	QUICK, WILLIAM V	19	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		120		
1073	3752	430-WCB	C030430	Owner	Well Constructed	ROUNTREE, RUSSELL E	19	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		350		
1075	3754	435-WCB	C030435	Owner	Well Constructed	MALONE, FLORA L	26	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		90		

APPENDIX C-7
SUMMARY OF PERMITTED WATER WELLS LOCATED WITHIN FIVE MILES OF THE SITE
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LOWRY LANDFILL SUPERFUND SITE

OID	Map ID [a/]	PermitNumber	Receipt	AssocType	PermitStatus	ContactName	Section	LocationType	PermitCategory	aquifer1_name	Use1	CompletedWell Depth	PerforatedCasingBottom	PerforatedCasingTop
1076	3755	535-WCB	C030535	Owner	Well Constructed	CLINKINBEARD, F L	12	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		585		
1077	3756	550-WCB	C030550	Owner	Well Constructed	GUNTHER, ROBERT	3	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		420		
1078	3757	552-WCB	C030552	Owner	Well Constructed	GIBSON, JAMES L	30	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS	Domestic	246	244	158
1079	3758	565-WCB	C030565	Owner	Well Constructed	ANDERSON, KEITH	13	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		1192		
1080	3759	590-WCB	C030590	Owner	Well Constructed	SETCHELL, FRED	24	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS		424		
1081	3760	716-WCB	C030716	Owner	Well Constructed	SMITH, HAROLD H	21	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS	Domestic, Stock	29		
1082	3761	388-WCB	C620388	Owner	Well Constructed	TRAUTWEIN, A H	7	Well (Application/Permit)	Colorado Water Conservation Board	ALL UNNAMED AQUIFERS	Domestic	77		

a/ Location number on Figure 4.43
In drainage basin
On Figure 4.43

APPENDIX D

LANDFILL GAS

APPENDIX D-1

LFG QUALITY AND EXTRACTION WELL PRESSURES

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWEW30A	1/13/22 8:01	56.1	35.2	0.7	8.0	77.3	-1.36	-1.48	-11.49	9.0	24.66	Inc. Flow/Vac.
LOWEW30A	2/25/22 12:42	52.4	33.8	0.5	13.3	75.4	-0.30	-0.29	-24.75	8.0	24.34	No Adj. Made
LOWEW30A	3/29/22 8:37	46.0	33.2	0.0	20.8	76.0	-0.57	-0.56	-24.98	13.0	23.81	No Adj. Made
LOWEW30A	4/25/22 12:15	37.3	29.7	0.0	33.0	76.8	-0.33	-0.29	-24.06	13.0	24.43	No Adj. Made
LOWEW30A	5/20/22 9:34	44.5	33.1	0.0	22.4	74.5	-1.19	-1.18	-24.55	14.0	24.00	No Adj. Made
LOWEW30A	6/6/22 10:26	40.5	30.3	0.0	29.2	77.4	-0.93	-0.90	-24.33	14.0	24.20	No Adj. Made
LOWEW34A	1/13/22 8:37	54.0	32.2	0.8	13.0	59.8	-4.50	-5.10	-7.31	3.2	24.20	Inc. Flow/Vac.
LOWEW34A	2/25/22 13:13	39.5	30.3	0.0	30.2	62.4	-3.63	-3.63	-24.11	5.8	24.32	No Adj. Made
LOWEW34A	3/29/22 8:58	38.5	29.6	0.1	31.8	60.5	-3.55	-3.52	-21.67	5.7	23.80	No Adj. Made
LOWEW34A	4/26/22 9:53	40.6	28.9	0.0	30.5	65.8	-3.05	-3.06	-20.94	6.1	24.32	No Adj. Made
LOWEW34A	5/20/22 10:02	41.2	30.5	0.0	28.3	60.0	-4.52	-4.46	-22.54	8.1	24.01	Dec. Flow/Vac.
LOWEW34A	6/6/22 10:50	40.0	28.3	0.0	31.7	71.4	-3.69	-3.65	-19.84	6.4	24.20	No Adj. Made
LOWEW40A	1/11/22 10:03	53.1	39.1	1.0	6.8	55.6	-0.96	-1.09	-11.70	3.2	24.31	Inc. Flow/Vac.
LOWEW40A	2/25/22 11:25	48.9	38.4	0.2	12.5	53.4	-1.29	-1.27	-26.34	4.4	24.38	No Adj. Made
LOWEW40A	3/23/22 9:28	45.8	37.5	0.1	16.6	54.4	-0.91	-0.88	-25.02	4.8	24.22	No Adj. Made
LOWEW40A	4/25/22 10:48	39.2	35.6	0.0	25.2	58.5	-1.09	-1.06	-24.37	4.4	24.45	No Adj. Made
LOWEW40A	5/18/22 12:20	45.9	36.2	0.0	17.9	83.7	-0.68	-0.63	-24.28	4.7	24.30	No Adj. Made
LOWEW40A	6/6/22 9:32	46.5	37.2	0.0	16.3	72.5	-1.58	-1.57	-23.86	4.8	24.21	No Adj. Made
LOWREW01	1/13/22 10:19	14.9	29.8	0.2	55.1	61.8	-0.30	-0.50	-13.36	1.4	24.22	No Adj. Made
LOWREW01	2/28/22 10:15	19.0	29.6	0.0	51.4	60.6	-0.10	-0.08	-28.97	2.6	24.46	No Adj. Made
LOWREW01	3/29/22 10:29	15.1	29.9	0.0	55.0	51.9	-0.28	-0.22	-25.78	2.6	23.76	No Adj. Made
LOWREW01	4/26/22 11:18	15.6	27.3	0.4	56.7	67.6	-0.33	-0.30	-25.76	2.5	24.33	No Adj. Made
LOWREW01	5/20/22 11:12	15.6	30.5	0.0	53.9	49.9	-0.84	-0.79	-26.89	2.7	24.01	No Adj. Made
LOWREW01	6/6/22 11:58	15.7	26.0	0.0	58.3	79.0	-0.31	-0.29	-24.62	2.4	24.21	No Adj. Made
LOWREW02	1/13/22 10:14	6.5	27.9	0.3	65.3	64.9	-0.87	-0.95	-12.44	1.9	24.22	No Adj. Made
LOWREW02	2/28/22 10:12	7.1	25.0	0.6	67.3	67.2	-0.04	-0.04	-27.94	2.1	24.45	No Adj. Made
LOWREW02	3/29/22 10:26	7.2	27.1	0.0	65.7	57.1	-0.07	-0.07	-26.26	2.0	23.76	No Adj. Made
LOWREW02	4/26/22 11:15	6.5	24.1	0.3	69.1	69.8	-0.34	-0.30	-25.52	1.9	24.33	No Adj. Made
LOWREW02	5/20/22 11:09	3.9	24.3	1.6	70.2	56.8	-0.70	-0.66	-25.30	2.2	24.01	No Adj. Made
LOWREW02	6/6/22 11:56	5.9	23.1	0.5	70.5	80.6	-0.29	-0.27	-25.29	1.9	24.21	No Adj. Made
LOWREW03	1/13/22 10:09	24.0	33.9	0.4	41.7	60.9	-0.70	-0.70	-9.43	1.5	24.22	No Adj. Made
LOWREW03	2/28/22 10:08	23.7	31.3	0.0	45.0	62.5	-0.08	-0.07	-25.24	2.9	24.46	No Adj. Made
LOWREW03	3/29/22 10:24	21.0	31.8	0.0	47.2	57.2	-0.28	-0.22	-24.46	3.3	23.76	No Adj. Made
LOWREW03	4/26/22 11:12	19.5	28.5	0.0	52.0	71.7	-0.13	-0.12	-21.76	3.5	24.33	No Adj. Made
LOWREW03	5/20/22 11:05	19.4	31.3	0.0	49.3	54.6	-0.50	-0.55	-23.02	3.5	24.00	No Adj. Made
LOWREW03	6/6/22 11:53	18.7	27.1	0.0	54.2	79.5	-0.26	-0.24	-22.20	3.3	24.20	No Adj. Made
LOWREW04	1/13/22 10:05	23.1	33.4	0.6	42.9	54.9	-0.09	-0.03	-10.11	2.1	24.22	No Adj. Made

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW04	2/28/22 10:05	16.4	28.4	0.1	55.1	59.6	-0.09	-0.09	-26.36	1.9	24.45	No Adj. Made
LOWREW04	3/29/22 10:21	18.3	30.7	0.0	51.0	51.9	-0.17	-0.11	-23.78	2.0	23.76	No Adj. Made
LOWREW04	4/26/22 11:09	15.7	27.2	0.4	56.7	69.8	-0.21	-0.17	-23.61	1.7	24.33	No Adj. Made
LOWREW04	5/20/22 11:01	12.3	28.4	0.0	59.3	48.0	-0.77	-0.77	-22.81	2.2	24.01	No Adj. Made
LOWREW04	6/6/22 11:50	12.6	25.4	0.0	62.0	80.8	-0.33	-0.31	-21.45	1.7	24.20	No Adj. Made
LOWREW05	1/13/22 9:56	27.0	32.1	0.8	40.1	57.6	-0.20	-0.30	-10.06	1.8	24.22	No Adj. Made
LOWREW05	2/28/22 9:58	23.4	29.8	0.0	46.8	60.7	-0.09	-0.09	-25.45	4.2	24.45	No Adj. Made
LOWREW05	3/29/22 10:15	24.3	31.7	0.0	44.0	57.5	-0.07	-0.09	-23.12	1.4	23.76	No Adj. Made
LOWREW05	4/26/22 11:02	19.2	27.6	0.0	53.2	67.0	-0.16	-0.12	-21.68	1.7	24.33	No Adj. Made
LOWREW05	5/20/22 10:55	21.9	30.9	0.0	47.2	44.7	-0.90	-0.87	-22.58	1.8	24.00	No Adj. Made
LOWREW05	6/6/22 11:45	21.8	28.2	0.0	50.0	77.1	-0.35	-0.32	-21.43	1.4	24.21	No Adj. Made
LOWREW06	1/13/22 9:51	7.8	22.6	3.9	65.7	58.0	-0.70	-0.83	-9.95	1.5	24.21	No Adj. Made
LOWREW06	2/28/22 9:54	10.1	25.5	0.2	64.2	64.1	-0.03	-0.03	-25.72	2.2	24.45	No Adj. Made
LOWREW06	3/29/22 10:12	11.8	27.6	0.0	60.6	53.6	-0.10	-0.06	-22.22	2.0	23.76	No Adj. Made
LOWREW06	4/26/22 10:59	10.0	24.6	0.0	65.4	68.4	-0.25	-0.24	-21.68	2.0	24.33	No Adj. Made
LOWREW06	5/20/22 10:51	7.6	25.7	0.2	66.5	51.5	-0.77	-0.74	-22.56	2.9	24.00	No Adj. Made
LOWREW06	6/6/22 11:42	8.9	23.4	0.0	67.7	76.6	-0.37	-0.33	-22.19	1.9	24.20	No Adj. Made
LOWREW07	1/13/22 9:46	31.1	34.0	0.1	34.8	54.3	-0.10	-0.10	-10.14	2.3	24.22	No Adj. Made
LOWREW07	2/28/22 9:50	37.4	33.4	0.0	29.2	60.1	-0.24	-0.21	-25.54	4.9	24.45	No Adj. Made
LOWREW07	3/29/22 10:09	35.5	35.1	0.0	29.4	54.2	-0.15	-0.10	-22.37	2.5	23.76	No Adj. Made
LOWREW07	4/26/22 10:55	36.5	32.8	0.5	30.2	65.6	-0.23	-0.21	-21.80	2.5	24.32	No Adj. Made
LOWREW07	5/20/22 10:47	30.7	33.1	0.0	36.2	46.0	-0.89	-0.87	-22.04	2.5	24.00	No Adj. Made
LOWREW07	6/6/22 11:39	33.9	31.8	0.2	34.1	73.6	-0.38	-0.35	-21.45	1.9	24.20	No Adj. Made
LOWREW08	1/13/22 8:47	16.7	29.2	0.7	53.4	52.4	-0.64	-0.65	-9.30	1.8	24.19	No Adj. Made
LOWREW08	2/25/22 13:24	20.8	30.9	0.0	48.3	51.2	-0.05	-0.03	-24.59	3.3	24.32	No Adj. Made
LOWREW08	3/29/22 9:04	18.1	29.7	0.0	52.2	50.6	-0.19	-0.16	-22.67	2.9	23.80	No Adj. Made
LOWREW08	4/26/22 10:03	19.1	28.5	0.0	52.4	63.8	-0.16	-0.13	-21.31	3.0	24.32	No Adj. Made
LOWREW08	5/20/22 10:08	17.4	28.8	0.0	53.8	48.0	-1.02	-0.96	-22.20	3.1	23.99	No Adj. Made
LOWREW08	6/6/22 10:55	16.9	26.9	0.0	56.2	75.0	-0.58	-0.62	-21.86	2.6	24.20	No Adj. Made
LOWREW09	1/13/22 8:42	2.7	23.8	1.9	71.6	48.4	-0.10	-0.10	-9.54	0.6	24.18	Fully Closed
LOWREW09	2/28/22 11:19	0.7	19.6	1.5	78.2	71.0	-0.03	0.00	-24.03	5.6	24.42	Fully Closed
LOWREW09	3/29/22 9:02	10.4	25.0	0.2	64.4	48.4	-0.36	0.03	-21.82	3.3	23.80	Fully Closed
LOWREW09	4/29/22 10:26	6.9	21.3	1.3	70.5	72.9	-0.16	-0.02	-21.52	2.8	23.89	Fully Closed
LOWREW09	5/19/22 11:59	4.7	21.5	0.9	72.9	95.0	-0.05	-0.02	-21.78	5.1	23.93	Fully Closed
LOWREW09	6/6/22 10:53	2.3	19.0	1.0	77.7	78.4	-0.19	-0.01	-20.86	3.2	24.20	Fully Closed
LOWREW10	1/11/22 10:57	9.1	20.2	4.6	66.1	68.8	-0.69	-0.61	-9.90	3.4	24.29	Fully Closed
LOWREW10	2/28/22 11:03	9.3	25.4	0.4	64.9	74.7	-0.09	-0.01	-25.52	3.1	24.42	Fully Closed

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW10	3/23/22 10:03	5.2	21.1	6.0	67.7	62.5	-0.61	-0.01	-24.02	8.7	24.21	Fully Closed
LOWREW10	4/29/22 10:20	10.8	24.1	0.3	64.8	78.1	-0.14	-0.02	-23.20	1.7	23.89	Fully Closed
LOWREW10	5/19/22 11:30	10.7	23.6	0.5	65.2	91.1	-0.22	-0.03	-23.01	0.6	23.92	Fully Closed
LOWREW10	6/6/22 10:03	5.9	19.1	4.2	70.8	85.2	-0.30	-0.01	-19.84	3.9	24.20	Fully Closed
LOWREW11	1/11/22 10:51	18.6	28.1	0.1	53.2	64.3	-0.60	-0.60	-10.08	1.1	24.28	No Adj. Made
LOWREW11	2/25/22 12:05	14.4	28.0	0.1	57.5	57.3	-0.06	-0.05	-24.29	2.7	24.35	No Adj. Made
LOWREW11	3/23/22 9:59	14.4	27.8	0.1	57.7	53.3	-0.23	-0.21	-23.80	2.2	24.20	No Adj. Made
LOWREW11	4/25/22 11:26	15.0	25.8	0.0	59.2	64.0	-0.07	-0.09	-23.75	2.1	24.42	No Adj. Made
LOWREW11	5/19/22 11:25	15.2	26.6	0.1	58.1	86.3	-0.05	-0.08	-23.96	1.7	23.92	No Adj. Made
LOWREW11	6/6/22 9:59	12.6	25.2	0.0	62.2	77.0	-0.51	-0.46	-24.23	2.0	24.19	No Adj. Made
LOWREW12	1/11/22 10:41	20.2	28.9	1.0	49.9	56.5	-1.52	-1.50	-10.01	2.2	24.29	No Adj. Made
LOWREW12	2/25/22 11:53	14.7	27.1	0.0	58.2	49.3	-1.75	-1.72	-24.30	2.2	24.34	No Adj. Made
LOWREW12	3/23/22 9:52	13.6	26.7	0.1	59.6	48.0	-2.09	-2.06	-24.10	2.0	24.21	No Adj. Made
LOWREW12	4/25/22 11:18	11.9	25.0	0.0	63.1	58.4	-1.76	-1.77	-23.77	1.9	24.43	No Adj. Made
LOWREW12	5/19/22 11:14	14.2	25.0	0.0	60.8	86.2	-1.78	-1.73	-24.03	1.8	23.92	No Adj. Made
LOWREW12	6/6/22 9:52	12.6	23.6	0.0	63.8	78.7	-1.99	-1.97	-23.58	1.7	24.19	No Adj. Made
LOWREW13	1/11/22 10:35	29.2	32.0	0.6	38.2	63.5	-0.40	-0.40	-9.74	5.9	24.29	No Adj. Made
LOWREW13	2/25/22 11:49	20.9	29.1	0.1	49.9	58.4	-0.16	-0.17	-22.50	1.8	24.35	No Adj. Made
LOWREW13	3/23/22 9:49	18.7	28.7	0.0	52.6	54.8	-0.25	-0.24	-21.91	2.2	24.21	No Adj. Made
LOWREW13	4/25/22 11:10	17.8	26.9	0.0	55.3	62.6	-0.20	-0.18	-21.93	1.8	24.43	No Adj. Made
LOWREW13	5/19/22 11:11	17.3	27.4	0.0	55.3	84.2	-0.07	-0.03	-23.66	2.5	24.00	No Adj. Made
LOWREW13	6/6/22 9:50	16.9	26.8	0.0	56.3	78.5	-0.48	-0.47	-23.90	2.2	24.19	No Adj. Made
LOWREW14	1/11/22 9:31	34.2	31.7	0.8	33.3	59.0	-0.38	-0.38	-10.40	2.7	24.29	No Adj. Made
LOWREW14	2/25/22 10:59	26.2	30.0	0.1	43.7	56.0	-0.26	-0.25	-24.80	2.8	24.36	No Adj. Made
LOWREW14	3/23/22 9:13	23.2	29.3	0.1	47.4	50.3	-0.30	-0.25	-23.91	2.5	24.21	No Adj. Made
LOWREW14	4/25/22 10:30	21.8	27.0	0.0	51.2	58.0	-0.42	-0.36	-23.36	2.5	24.43	No Adj. Made
LOWREW14	5/18/22 11:55	22.2	27.5	0.2	50.1	82.0	-0.08	-0.04	-24.18	2.6	24.29	No Adj. Made
LOWREW14	6/6/22 9:15	22.3	26.5	0.0	51.2	74.7	-0.73	-0.66	-24.11	2.7	24.20	No Adj. Made
LOWREW15	1/11/22 9:25	34.0	29.4	0.1	36.5	56.3	-0.70	-0.70	-10.70	1.2	24.29	No Adj. Made
LOWREW15	2/25/22 10:53	22.2	27.5	0.0	50.3	56.2	-0.31	-0.32	-24.76	2.0	24.36	No Adj. Made
LOWREW15	3/23/22 9:11	22.4	27.8	0.1	49.7	51.5	-0.31	-0.28	-24.14	1.7	24.22	No Adj. Made
LOWREW15	4/25/22 10:27	21.6	25.7	0.0	52.7	58.4	-0.26	-0.25	-23.64	2.0	24.44	No Adj. Made
LOWREW15	5/18/22 11:52	22.1	25.0	0.0	52.9	84.5	-0.05	-0.03	-24.12	1.4	24.30	No Adj. Made
LOWREW15	6/6/22 9:13	21.2	24.8	0.0	54.0	74.8	-0.67	-0.65	-24.07	2.6	24.20	No Adj. Made
LOWREW16	1/11/22 9:15	32.3	33.4	0.2	34.1	56.2	-0.61	-0.62	-10.08	2.3	24.29	No Adj. Made
LOWREW16	2/25/22 10:45	23.2	31.0	0.1	45.7	50.5	-0.30	-0.25	-24.79	4.1	24.36	No Adj. Made
LOWREW16	3/23/22 9:05	21.5	30.5	0.0	48.0	46.9	-0.13	-0.10	-24.42	1.8	24.23	No Adj. Made

APPENDIX D-1
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ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW16	4/25/22 10:20	18.6	26.6	0.0	54.8	58.1	-0.19	-0.16	-23.63	1.7	24.45	No Adj. Made
LOWREW16	5/18/22 11:45	20.2	28.0	0.0	51.8	85.2	-0.06	-0.03	-23.48	1.5	24.31	No Adj. Made
LOWREW16	6/6/22 9:07	19.5	27.3	0.0	53.2	74.6	-0.60	-0.53	-22.07	1.6	24.20	Dec. Flow/Vac.
LOWREW17	1/11/22 9:04	16.1	27.7	0.5	55.7	55.3	-0.80	-0.80	-11.35	1.3	24.18	No Adj. Made
LOWREW17	2/25/22 10:36	9.2	24.8	0.1	65.9	54.1	-0.23	-0.22	-25.29	2.6	24.37	No Adj. Made
LOWREW17	3/23/22 9:00	8.7	24.2	0.2	66.9	52.1	-0.39	-0.37	-24.74	3.0	24.24	No Adj. Made
LOWREW17	4/25/22 10:13	7.6	22.0	0.0	70.4	59.6	-0.19	-0.18	-23.96	3.3	24.45	No Adj. Made
LOWREW17	5/18/22 11:39	7.3	22.0	0.2	70.5	78.4	-0.27	-0.25	-23.98	2.2	24.31	No Adj. Made
LOWREW17	6/6/22 9:01	7.3	22.7	0.0	70.0	70.3	-0.42	-0.38	-24.21	3.4	24.21	No Adj. Made
LOWREW18	1/11/22 8:53	12.5	26.8	0.9	59.8	52.2	-0.51	-0.56	-11.37	2.4	24.32	No Adj. Made
LOWREW18	2/23/22 12:03	9.1	24.3	0.0	66.6	43.8	-0.09	-0.12	-15.73	3.5	24.21	No Adj. Made
LOWREW18	3/23/22 8:54	8.4	23.9	0.0	67.7	47.1	-0.31	-0.26	-25.49	2.1	24.26	No Adj. Made
LOWREW18	4/25/22 10:04	7.6	22.5	0.0	69.9	55.5	-0.34	-0.30	-24.37	2.1	24.47	No Adj. Made
LOWREW18	5/18/22 11:31	7.8	21.7	0.4	70.1	82.4	-0.38	-0.31	-23.93	1.9	24.33	No Adj. Made
LOWREW18	6/6/22 8:54	7.6	22.7	0.0	69.7	72.3	-0.36	-0.33	-24.25	2.0	24.02	No Adj. Made
LOWREW19	1/11/22 8:48	13.9	26.7	0.6	58.8	51.3	-0.20	-0.20	-11.46	1.2	24.32	No Adj. Made
LOWREW19	2/23/22 11:57	20.9	29.4	0.0	49.7	48.3	-0.03	-0.03	-15.65	2.2	24.22	No Adj. Made
LOWREW19	3/23/22 8:52	19.3	27.2	0.3	53.2	47.2	-0.16	-0.10	-25.23	2.2	24.26	No Adj. Made
LOWREW19	4/25/22 10:00	17.6	27.5	0.0	54.9	57.5	-0.29	-0.21	-23.19	1.2	24.48	No Adj. Made
LOWREW19	5/18/22 11:28	18.9	27.5	0.6	53.0	87.7	-0.14	-0.11	-22.67	0.8	24.33	No Adj. Made
LOWREW19	6/6/22 8:51	17.1	27.3	0.0	55.6	72.6	-0.23	-0.22	-22.97	1.1	24.23	No Adj. Made
LOWREW20	1/11/22 8:42	20.8	27.9	0.2	51.1	55.1	-0.14	-0.13	-10.65	2.7	24.38	No Adj. Made
LOWREW20	2/23/22 11:51	39.9	35.8	0.1	24.2	50.2	-0.04	-0.04	-15.74	2.7	24.22	No Adj. Made
LOWREW20	3/23/22 8:49	25.6	27.4	0.3	46.7	48.0	-0.08	-0.01	-24.05	1.8	24.27	No Adj. Made
LOWREW20	4/25/22 9:56	22.7	28.9	0.0	48.4	55.2	-0.03	-0.03	-23.08	2.2	24.49	No Adj. Made
LOWREW20	5/18/22 11:25	29.5	31.4	0.3	38.8	80.1	-0.30	-0.21	-22.82	2.0	24.42	No Adj. Made
LOWREW20	6/6/22 8:48	20.3	27.8	0.1	51.8	68.6	-0.26	-0.21	-22.81	2.1	24.27	No Adj. Made
LOWREW21	1/13/22 9:23	21.3	33.4	0.4	44.9	56.7	-0.10	-0.10	-11.83	2.3	24.20	No Adj. Made
LOWREW21	2/28/22 9:26	18.3	30.2	0.1	51.4	63.3	-0.19	-0.19	-26.51	4.0	24.44	No Adj. Made
LOWREW21	3/29/22 9:48	23.8	35.3	0.2	40.7	58.4	-0.14	-0.14	-24.58	2.3	23.76	No Adj. Made
LOWREW21	4/26/22 10:34	19.4	30.6	0.3	49.7	67.9	-0.04	-0.02	-23.02	2.2	24.32	No Adj. Made
LOWREW21	5/20/22 10:34	15.4	30.3	0.0	54.3	50.3	-0.92	-0.88	-24.98	2.6	24.00	No Adj. Made
LOWREW21	6/6/22 11:19	15.5	26.0	0.0	58.5	75.0	-0.43	-0.38	-24.65	2.4	24.20	No Adj. Made
LOWREW22	1/13/22 9:28	14.3	30.2	0.5	55.0	58.0	-0.13	-0.18	-9.39	3.1	24.22	No Adj. Made
LOWREW22	2/28/22 9:29	17.5	29.1	0.0	53.4	63.7	-0.27	-0.22	-24.12	5.8	24.45	No Adj. Made
LOWREW22	3/29/22 9:52	27.9	35.0	0.0	37.1	61.4	-0.02	-0.01	-23.94	3.3	23.76	No Adj. Made
LOWREW22	4/26/22 10:37	20.5	29.5	0.0	50.0	68.4	-0.14	-0.10	-22.76	1.0	24.32	No Adj. Made

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW22	5/20/22 10:38	16.3	29.5	0.0	54.2	49.7	-0.73	-0.73	-22.98	2.9	24.00	No Adj. Made
LOWREW22	6/6/22 11:22	10.0	24.3	0.0	65.7	73.8	-0.36	-0.32	-22.15	1.9	24.20	No Adj. Made
LOWREW23	1/13/22 9:33	4.5	22.0	14.7	58.8	91.3	-0.90	-0.60	-9.76	6.4	24.21	Fully Closed
LOWREW23	2/28/22 11:29	10.4	24.2	0.5	64.9	102.9	-0.07	0.01	-24.31	7.4	24.42	Fully Closed
LOWREW23	3/29/22 9:59	21.5	33.4	0.0	45.1	93.8	-0.37	0.01	-22.77	6.0	23.76	Fully Closed
LOWREW23	4/29/22 10:39	12.3	22.7	2.7	62.3	92.8	-0.22	-0.02	-21.53	2.6	23.90	Fully Closed
LOWREW23	5/19/22 12:09	10.5	21.4	1.7	66.4	101.3	-0.06	-0.01	-21.65	18.6	23.92	Fully Closed
LOWREW23	6/6/22 11:30	2.0	16.7	7.1	74.2	100.8	-0.48	-0.02	-20.88	1.5	24.20	Fully Closed
LOWREW24	1/13/22 9:37	17.8	29.9	0.9	51.4	57.1	-0.90	-0.89	-8.66	1.1	24.21	No Adj. Made
LOWREW24	2/28/22 9:43	11.2	27.5	0.0	61.3	62.5	-0.04	-0.05	-21.20	1.6	24.44	No Adj. Made
LOWREW24	3/29/22 10:04	28.5	33.6	0.0	37.9	60.4	-0.11	-0.06	-20.20	1.9	23.76	No Adj. Made
LOWREW24	4/26/22 10:48	14.6	27.3	0.4	57.7	68.4	-0.13	-0.12	-17.65	2.4	24.32	No Adj. Made
LOWREW24	5/20/22 10:41	13.5	29.2	0.0	57.3	50.1	-0.91	-0.90	-19.52	2.9	24.00	No Adj. Made
LOWREW24	6/6/22 11:33	9.2	25.4	0.0	65.4	76.8	-0.33	-0.28	-17.42	3.0	24.20	No Adj. Made
LOWREW25	1/13/22 9:42	6.7	26.6	0.2	66.5	51.6	-0.70	-0.80	-10.21	0.6	24.21	Inc. Flow/Vac.
LOWREW25	2/28/22 9:47	7.7	25.6	0.0	66.7	58.5	-0.15	-0.14	-24.58	3.0	24.44	No Adj. Made
LOWREW25	3/29/22 10:06	8.2	26.7	0.0	65.1	53.2	-0.18	-0.15	-22.87	2.9	23.76	No Adj. Made
LOWREW25	4/26/22 10:51	6.8	23.7	0.0	69.5	65.6	-0.26	-0.23	-20.86	2.8	24.32	No Adj. Made
LOWREW25	5/20/22 10:44	7.0	25.7	0.0	67.3	51.4	-0.72	-0.72	-22.71	2.9	24.00	No Adj. Made
LOWREW25	6/6/22 11:36	7.0	23.3	0.0	69.7	74.5	-0.41	-0.39	-21.77	2.9	24.20	No Adj. Made
LOWREW26	1/13/22 9:19	35.8	36.5	0.4	27.3	60.6	-0.26	-0.37	-12.28	1.9	24.19	No Adj. Made
LOWREW26	2/28/22 9:22	27.1	32.6	0.0	40.3	63.5	-0.40	-0.39	-28.56	3.7	24.44	No Adj. Made
LOWREW26	3/29/22 9:37	27.8	34.7	0.0	37.5	59.2	-0.10	-0.02	-26.62	3.7	23.75	No Adj. Made
LOWREW26	4/26/22 10:30	23.9	31.1	0.2	44.8	67.0	-0.19	-0.14	-25.42	4.4	24.31	No Adj. Made
LOWREW26	5/20/22 10:30	25.9	33.0	0.0	41.1	55.6	-1.20	-1.20	-25.88	4.1	23.99	No Adj. Made
LOWREW26	6/6/22 11:16	24.8	30.7	0.0	44.5	72.2	-0.66	-0.64	-25.94	4.3	24.19	No Adj. Made
LOWREW27	1/13/22 9:10	22.8	32.7	0.5	44.0	59.0	-0.50	-0.50	-9.52	1.9	24.19	No Adj. Made
LOWREW27	2/28/22 9:11	14.2	28.8	0.0	57.0	61.4	-0.56	-0.53	-24.87	5.5	24.45	No Adj. Made
LOWREW27	3/29/22 9:32	19.0	31.4	0.3	49.3	58.1	-0.04	-0.02	-22.34	2.2	23.77	No Adj. Made
LOWREW27	4/26/22 10:24	12.0	26.4	0.7	60.9	65.2	-0.14	-0.10	-21.97	4.3	24.32	No Adj. Made
LOWREW27	5/20/22 10:24	14.4	29.7	0.0	55.9	55.4	-1.25	-1.21	-22.22	4.4	23.99	No Adj. Made
LOWREW27	6/6/22 11:11	12.4	26.5	0.2	60.9	71.2	-0.61	-0.58	-20.89	2.5	24.19	No Adj. Made
LOWREW28	1/13/22 9:00	14.3	30.0	0.4	55.3	56.4	-0.33	-0.36	-9.69	2.4	24.18	No Adj. Made
LOWREW28	2/28/22 9:03	14.3	28.1	0.1	57.5	60.4	-0.56	-0.51	-24.67	3.6	24.45	No Adj. Made
LOWREW28	3/29/22 9:26	31.8	32.9	0.0	35.3	55.2	-0.25	-0.21	-22.96	3.5	23.78	No Adj. Made
LOWREW28	4/26/22 10:14	24.6	29.3	0.0	46.1	64.9	-0.11	-0.09	-21.68	3.4	24.31	No Adj. Made
LOWREW28	5/20/22 10:18	9.1	26.3	0.0	64.6	52.8	-1.41	-1.35	-22.32	4.0	23.99	No Adj. Made

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ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW28	6/6/22 11:04	7.1	24.3	0.0	68.6	71.9	-0.73	-0.72	-21.77	2.5	24.19	No Adj. Made
LOWREW29	1/13/22 8:51	43.8	34.3	0.8	21.1	55.8	-0.70	-0.70	-10.79	1.2	24.19	No Adj. Made
LOWREW29	2/25/22 13:31	28.1	30.3	0.0	41.6	56.8	-0.08	-0.09	-24.04	3.1	24.32	No Adj. Made
LOWREW29	3/29/22 9:21	27.2	30.5	0.0	42.3	53.8	-0.24	-0.19	-22.64	2.6	23.80	No Adj. Made
LOWREW29	4/26/22 10:07	26.7	28.6	0.2	44.5	62.9	-0.01	-0.03	-21.22	2.6	24.31	No Adj. Made
LOWREW29	5/20/22 10:11	19.9	28.9	0.0	51.2	53.2	-1.45	-1.38	-22.57	2.6	24.00	No Adj. Made
LOWREW29	6/6/22 10:58	11.8	25.0	0.0	63.2	71.7	-0.98	-0.49	-22.21	2.2	24.07	No Adj. Made
LOWREW30	1/13/22 7:56	43.1	35.3	0.6	21.0	66.8	-0.71	-0.71	-11.62	1.8	24.31	No Adj. Made
LOWREW30	2/25/22 12:39	28.1	31.4	0.3	40.2	64.0	-0.04	-0.04	-25.12	4.4	24.35	No Adj. Made
LOWREW30	3/29/22 8:35	25.5	28.2	0.1	46.2	67.7	-0.39	-0.26	-24.84	4.8	23.81	No Adj. Made
LOWREW30	4/25/22 12:13	25.8	30.1	0.0	44.1	68.4	-0.10	-0.05	-23.46	3.8	24.54	No Adj. Made
LOWREW30	5/20/22 9:32	22.2	30.5	0.1	47.2	56.7	-0.76	-0.71	-24.42	2.9	24.15	No Adj. Made
LOWREW30	6/6/22 10:24	22.3	28.0	0.0	49.7	74.1	-0.55	-0.50	-23.64	1.8	24.21	No Adj. Made
LOWREW31	1/13/22 8:05	40.0	33.4	0.2	26.4	69.1	-0.90	-0.80	-9.38	1.8	24.30	No Adj. Made
LOWREW31	2/25/22 12:47	18.5	29.1	0.8	51.6	67.7	-0.18	-0.17	-22.57	3.7	24.34	No Adj. Made
LOWREW31	3/29/22 8:39	29.3	30.0	0.0	40.7	63.9	-0.36	-0.29	-22.50	3.5	23.81	No Adj. Made
LOWREW31	4/26/22 9:21	17.9	28.7	0.3	53.1	68.9	-0.13	-0.09	-21.52	1.4	24.33	No Adj. Made
LOWREW31	5/20/22 9:39	21.4	29.7	0.0	48.9	51.4	-0.97	-0.95	-20.41	2.7	24.00	No Adj. Made
LOWREW31	6/6/22 10:29	15.9	27.3	0.0	56.8	75.5	-0.73	-0.67	-21.16	1.5	24.20	No Adj. Made
LOWREW32	1/13/22 8:14	34.5	33.6	0.4	31.5	64.6	-0.98	-1.04	-7.61	3.5	24.20	No Adj. Made
LOWREW32	2/25/22 12:55	26.2	30.3	0.6	42.9	68.4	-0.05	-0.06	-19.26	3.7	24.33	No Adj. Made
LOWREW32	3/29/22 8:46	35.7	32.3	0.0	32.0	68.2	-0.59	-0.20	-19.24	3.5	23.81	No Adj. Made
LOWREW32	4/26/22 9:35	27.7	30.4	0.2	41.7	71.6	-0.16	-0.12	-18.56	3.2	24.34	No Adj. Made
LOWREW32	5/20/22 9:46	21.5	30.5	0.0	48.0	67.0	-1.25	-1.21	-21.37	3.5	24.00	No Adj. Made
LOWREW32	6/6/22 10:35	19.2	28.0	0.0	52.8	74.9	-0.81	-0.80	-19.36	2.6	24.20	No Adj. Made
LOWREW33	1/13/22 8:24	32.8	32.5	0.2	34.5	66.8	-0.70	-0.70	-11.17	7.1	24.20	No Adj. Made
LOWREW33	2/25/22 13:02	27.9	29.8	0.7	41.6	65.1	-0.20	-0.19	-22.09	5.4	24.33	No Adj. Made
LOWREW33	3/29/22 8:51	26.3	29.3	0.0	44.4	63.2	-0.37	-0.34	-22.59	4.8	23.80	No Adj. Made
LOWREW33	4/26/22 9:44	25.2	29.4	0.0	45.4	70.7	-0.13	-0.10	-22.22	4.7	24.31	No Adj. Made
LOWREW33	5/20/22 9:52	23.6	29.4	0.0	47.0	61.6	-1.28	-1.24	-23.36	4.8	24.00	No Adj. Made
LOWREW33	6/6/22 10:41	22.4	27.4	0.2	50.0	74.1	-0.58	-0.57	-22.63	4.6	24.19	No Adj. Made
LOWREW34	1/13/22 8:33	14.6	28.1	0.7	56.6	58.9	-0.04	-0.10	-7.33	2.4	23.98	No Adj. Made
LOWREW34	2/25/22 13:09	9.4	25.9	0.0	64.7	59.8	-0.06	-0.06	-24.04	3.2	24.33	No Adj. Made
LOWREW34	3/29/22 8:56	12.4	25.6	0.1	61.9	58.8	-0.33	-0.26	-21.46	2.6	23.79	No Adj. Made
LOWREW34	4/26/22 9:51	9.8	25.0	0.0	65.2	66.3	-0.24	-0.20	-21.07	1.6	24.31	No Adj. Made
LOWREW34	5/20/22 9:59	11.1	26.4	0.0	62.5	53.4	-0.84	-0.80	-22.29	2.3	24.00	No Adj. Made
LOWREW34	6/6/22 10:47	10.1	24.0	0.0	65.9	74.0	-0.41	-0.38	-20.30	1.5	24.19	No Adj. Made

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ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW35	1/11/22 11:02	19.4	26.6	0.6	53.4	61.5	-0.90	-0.90	-10.06	0.7	24.29	No Adj. Made
LOWREW35	2/25/22 12:15	15.4	29.0	0.0	55.6	57.5	-0.23	-0.21	-24.11	1.9	24.35	No Adj. Made
LOWREW35	3/23/22 10:07	21.3	29.6	0.0	49.1	57.3	-0.36	-0.33	-23.93	2.2	24.24	No Adj. Made
LOWREW35	4/25/22 11:40	13.2	22.1	0.0	64.7	65.3	-0.49	-0.45	-21.91	2.0	24.43	No Adj. Made
LOWREW35	5/19/22 11:35	28.4	29.3	0.0	42.3	76.7	-0.15	-0.15	-20.91	0.8	23.92	No Adj. Made
LOWREW35	6/6/22 10:06	14.1	24.5	0.0	61.4	67.1	-0.94	-0.89	-22.02	5.7	24.20	No Adj. Made
LOWREW36	1/11/22 11:29	43.0	35.4	0.6	21.0	68.5	-0.35	-0.37	-11.58	3.9	24.31	No Adj. Made
LOWREW36	2/25/22 12:34	34.6	33.5	0.4	31.5	64.5	-0.14	-0.14	-26.87	4.7	24.35	No Adj. Made
LOWREW36	3/23/22 10:24	33.9	33.2	0.1	32.8	63.0	-0.61	-0.45	-26.15	4.5	24.23	No Adj. Made
LOWREW36	4/25/22 11:56	36.9	31.6	0.0	31.5	65.5	-0.21	-0.17	-25.14	3.2	24.43	No Adj. Made
LOWREW36	5/19/22 11:53	36.8	31.6	0.0	31.6	85.1	-0.09	-0.09	-24.12	1.8	23.93	No Adj. Made
LOWREW36	6/6/22 10:21	30.7	29.8	0.0	39.5	70.6	-0.57	-0.55	-24.93	3.2	24.21	No Adj. Made
LOWREW37	1/11/22 11:18	41.3	34.7	0.8	23.2	64.6	-0.50	-0.50	-12.25	2.4	24.30	No Adj. Made
LOWREW37	2/25/22 12:27	35.9	34.5	0.0	29.6	59.2	-0.07	-0.08	-24.01	3.9	24.34	No Adj. Made
LOWREW37	3/23/22 10:19	36.1	34.1	0.0	29.8	59.7	-0.40	-0.37	-22.01	3.9	24.22	No Adj. Made
LOWREW37	4/25/22 11:48	31.3	30.1	0.0	38.6	66.1	-0.36	-0.30	-23.20	3.9	24.43	No Adj. Made
LOWREW37	5/19/22 11:46	40.3	30.5	0.0	29.2	83.1	-0.17	-0.17	-23.30	3.6	23.92	No Adj. Made
LOWREW37	6/6/22 10:15	32.8	30.8	0.0	36.4	72.5	-0.75	-0.69	-24.15	4.2	24.21	No Adj. Made
LOWREW38	1/11/22 11:08	46.2	33.0	0.1	20.7	69.1	-1.34	-1.34	-10.15	3.1	24.29	No Adj. Made
LOWREW38	2/25/22 12:20	41.4	32.7	0.0	25.9	61.4	-0.07	-0.07	-20.38	4.7	24.34	No Adj. Made
LOWREW38	3/23/22 10:10	46.4	33.3	0.0	20.3	60.9	-0.18	-0.15	-22.37	4.8	24.21	No Adj. Made
LOWREW38	4/25/22 11:43	40.4	31.3	0.0	28.3	67.0	-0.25	-0.19	-23.17	4.8	24.44	No Adj. Made
LOWREW38	5/19/22 11:39	58.3	33.2	0.0	8.5	83.6	-0.07	-0.09	-23.70	4.4	23.92	No Adj. Made
LOWREW38	6/6/22 10:10	31.3	29.8	0.0	38.9	74.2	-0.65	-0.60	-25.63	4.8	24.20	No Adj. Made
LOWREW39	1/11/22 10:46	50.2	35.6	0.3	13.9	64.6	-1.20	-1.20	-10.23	3.2	24.29	No Adj. Made
LOWREW39	2/25/22 11:59	49.4	35.0	0.0	15.6	59.8	-0.12	-0.11	-24.58	5.0	24.35	No Adj. Made
LOWREW39	3/23/22 9:56	40.8	34.7	0.0	24.5	59.6	-0.17	-0.13	-23.47	4.5	24.22	No Adj. Made
LOWREW39	4/25/22 11:24	43.1	33.5	0.0	23.4	64.5	-0.36	-0.32	-23.25	4.5	24.42	No Adj. Made
LOWREW39	5/19/22 11:21	42.6	33.5	0.1	23.8	78.8	-0.19	-0.19	-24.58	3.4	23.91	No Adj. Made
LOWREW39	6/6/22 9:56	39.2	33.2	0.0	27.6	73.0	-0.87	-0.79	-23.69	4.3	24.19	No Adj. Made
LOWREW40	1/11/22 9:58	29.5	33.5	0.3	36.7	56.2	-0.16	-0.17	-11.73	1.7	24.30	No Adj. Made
LOWREW40	2/25/22 11:22	20.5	31.1	0.0	48.4	51.3	-0.10	-0.10	-26.20	1.7	24.38	No Adj. Made
LOWREW40	3/23/22 9:27	22.3	31.9	0.0	45.8	48.5	-0.11	-0.09	-24.84	1.9	24.23	No Adj. Made
LOWREW40	4/25/22 10:46	19.1	29.1	0.0	51.8	60.1	-0.29	-0.25	-24.26	1.7	24.45	No Adj. Made
LOWREW40	5/18/22 12:19	20.9	29.8	0.0	49.3	90.3	-0.03	-0.04	-24.43	1.4	24.30	No Adj. Made
LOWREW40	6/6/22 9:30	18.6	29.4	0.0	52.0	77.4	-0.49	-0.45	-24.54	1.6	24.21	No Adj. Made
LOWREW41	1/11/22 10:14	28.7	33.0	0.9	37.4	59.1	-1.20	-1.20	-11.78	0.5	24.31	No Adj. Made

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LOWREW41	2/25/22 11:34	18.4	29.7	0.0	51.9	53.7	-0.19	-0.27	-25.68	1.9	24.38	No Adj. Made
LOWREW41	3/23/22 9:37	24.7	31.1	0.2	44.0	51.0	-0.19	-0.19	-25.05	2.0	24.22	No Adj. Made
LOWREW41	4/25/22 10:56	20.5	27.5	0.0	52.0	61.0	-0.30	-0.29	-24.47	1.9	24.44	No Adj. Made
LOWREW41	5/18/22 12:32	21.6	28.3	0.1	50.0	89.1	-0.03	-0.01	-24.62	1.8	24.29	No Adj. Made
LOWREW41	6/6/22 9:38	15.5	26.2	0.0	58.3	70.7	-0.77	-0.74	-24.50	1.8	24.21	No Adj. Made
LOWREW42	1/11/22 10:25	25.7	31.2	0.9	42.2	72.1	-0.76	-0.77	-5.94	4.3	24.30	No Adj. Made
LOWREW42	2/25/22 11:41	17.1	28.4	0.0	54.5	68.5	-0.23	-0.22	-21.09	1.5	24.37	No Adj. Made
LOWREW42	3/23/22 9:42	22.5	29.4	0.1	48.0	63.4	-0.27	-0.16	-21.37	3.2	24.22	No Adj. Made
LOWREW42	4/25/22 11:02	17.8	26.3	0.0	55.9	68.9	-0.21	-0.20	-19.69	1.9	24.44	No Adj. Made
LOWREW42	5/18/22 12:41	18.9	26.1	0.1	54.9	87.1	-0.18	-0.14	-17.51	1.4	24.28	No Adj. Made
LOWREW42	6/6/22 9:44	12.7	26.0	0.0	61.3	82.2	-0.57	-0.55	-19.29	4.1	24.20	No Adj. Made
LOWREW43	1/11/22 10:30	30.0	31.6	0.2	38.2	62.2	-0.90	-0.90	-8.85	0.6	24.30	No Adj. Made
LOWREW43	2/25/22 11:45	23.9	28.6	0.0	47.5	59.0	-0.18	-0.18	-21.49	2.3	24.37	No Adj. Made
LOWREW43	3/23/22 9:45	41.5	32.5	0.0	26.0	57.2	-0.02	-0.02	-21.52	3.0	24.21	No Adj. Made
LOWREW43	4/25/22 11:05	20.6	26.6	0.0	52.8	63.0	-0.13	-0.15	-20.31	2.2	24.44	No Adj. Made
LOWREW43	5/18/22 12:45	35.3	29.4	0.0	35.3	80.1	-0.07	-0.05	-20.84	2.0	24.28	No Adj. Made
LOWREW43	6/6/22 9:47	18.9	26.6	0.0	54.5	75.0	-0.68	-0.63	-22.55	2.7	24.20	No Adj. Made
LOWREW44	1/11/22 9:36	45.8	36.8	0.6	16.8	57.6	-1.09	-1.08	-6.76	2.4	24.28	No Adj. Made
LOWREW44	2/25/22 11:08	38.4	35.3	0.0	26.3	55.9	-0.34	-0.34	-22.40	3.7	24.36	No Adj. Made
LOWREW44	3/23/22 9:16	35.0	33.5	0.1	31.4	53.1	-0.07	-0.06	-20.98	3.7	24.21	No Adj. Made
LOWREW44	4/25/22 10:35	31.1	30.7	0.0	38.2	59.5	-0.20	-0.20	-20.20	3.3	24.43	No Adj. Made
LOWREW44	5/18/22 12:00	36.0	32.4	0.0	31.6	78.1	-0.07	-0.01	-20.56	3.3	24.30	No Adj. Made
LOWREW44	6/6/22 9:19	34.3	33.2	0.0	32.5	71.8	-0.81	-0.75	-19.16	3.3	24.20	No Adj. Made
LOWREW45	1/11/22 9:52	35.9	34.3	0.2	29.6	59.3	-1.00	-1.00	-11.40	0.8	24.30	No Adj. Made
LOWREW45	2/25/22 11:18	27.1	32.7	0.0	40.2	55.9	-0.14	-0.13	-26.10	1.8	24.38	No Adj. Made
LOWREW45	3/23/22 9:24	26.4	32.6	0.0	41.0	52.4	-0.15	-0.12	-25.28	3.3	24.22	No Adj. Made
LOWREW45	4/25/22 10:43	25.6	29.8	0.0	44.6	61.4	-0.06	-0.06	-24.24	3.4	24.44	No Adj. Made
LOWREW45	5/18/22 12:15	27.9	31.1	0.0	41.0	84.0	-0.05	-0.01	-24.86	1.8	24.30	No Adj. Made
LOWREW45	6/6/22 9:26	22.7	28.6	0.0	48.7	72.5	-0.50	-0.45	-23.07	2.4	24.21	No Adj. Made
LOWREW46	1/11/22 9:47	40.5	35.9	0.5	23.1	62.0	-0.18	-0.18	-11.79	2.5	24.29	No Adj. Made
LOWREW46	2/25/22 11:14	34.2	33.6	0.0	32.2	57.0	-0.17	-0.16	-26.47	2.7	24.37	No Adj. Made
LOWREW46	3/23/22 9:21	34.6	34.2	0.0	31.2	53.9	-0.14	-0.05	-25.04	2.6	24.21	No Adj. Made
LOWREW46	4/25/22 10:40	29.1	30.0	0.0	40.9	62.5	-0.26	-0.22	-24.51	2.9	24.44	No Adj. Made
LOWREW46	5/18/22 12:08	33.5	32.1	0.0	34.4	76.6	-0.03	-0.06	-24.65	1.1	24.29	No Adj. Made
LOWREW46	6/6/22 9:24	28.3	29.1	0.0	42.6	70.7	-0.49	-0.46	-25.04	2.9	24.20	No Adj. Made
LOWREW47	1/11/22 9:41	29.8	33.2	0.7	36.3	53.3	-0.60	-0.60	-11.64	0.6	24.29	No Adj. Made
LOWREW47	2/25/22 11:11	21.9	30.6	0.0	47.5	51.4	-0.23	-0.22	-26.49	2.6	24.36	No Adj. Made

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW47	3/23/22 9:19	23.6	31.0	0.0	45.4	50.6	-0.07	-0.05	-25.81	2.8	24.21	No Adj. Made
LOWREW47	4/25/22 10:37	22.4	28.8	0.0	48.8	59.7	-0.32	-0.28	-24.10	2.1	24.43	No Adj. Made
LOWREW47	5/18/22 12:05	21.8	28.9	0.2	49.1	83.5	-0.05	-0.05	-24.57	0.7	24.29	No Adj. Made
LOWREW47	6/6/22 9:21	22.7	27.9	0.0	49.4	75.0	-0.58	-0.55	-25.04	2.0	24.20	No Adj. Made
LOWREW48	1/11/22 8:58	19.9	29.3	0.1	50.7	58.0	-0.71	-0.71	-11.37	2.3	24.31	No Adj. Made
LOWREW48	2/25/22 10:33	13.8	28.4	0.3	57.5	59.0	-0.14	-0.16	-26.01	2.9	24.37	No Adj. Made
LOWREW48	3/23/22 8:57	20.7	29.6	0.1	49.6	53.5	-0.23	-0.19	-25.57	2.5	24.25	No Adj. Made
LOWREW48	4/25/22 10:10	12.7	25.1	0.0	62.2	61.9	-0.25	-0.22	-24.35	2.3	24.46	No Adj. Made
LOWREW48	5/18/22 11:36	17.9	27.7	0.2	54.2	80.1	-0.19	-0.16	-24.40	2.2	24.32	No Adj. Made
LOWREW48	6/6/22 8:58	9.9	25.6	0.0	64.5	72.8	-0.41	-0.38	-24.49	2.3	24.21	No Adj. Made
LOWREW49	1/11/22 9:09	25.3	31.7	0.9	42.1	57.3	-0.30	-0.30	-10.74	1.1	24.31	No Adj. Made
LOWREW49	2/25/22 10:40	16.5	29.1	0.0	54.4	57.0	-0.31	-0.30	-25.24	1.8	24.37	No Adj. Made
LOWREW49	3/23/22 9:02	23.4	30.1	0.1	46.4	52.6	-0.18	-0.16	-25.11	2.3	24.25	No Adj. Made
LOWREW49	4/25/22 10:17	13.1	24.8	0.0	62.1	61.3	-0.11	-0.10	-23.75	2.3	24.45	No Adj. Made
LOWREW49	5/18/22 11:42	23.1	28.3	0.3	48.3	83.0	-0.16	-0.12	-24.11	1.7	24.31	No Adj. Made
LOWREW49	6/6/22 9:05	14.7	26.2	0.0	59.1	73.7	-0.41	-0.40	-24.26	2.6	24.20	No Adj. Made
LOWREW50	1/11/22 9:20	22.0	30.0	0.3	47.7	64.6	-0.93	-0.96	-10.09	3.3	24.29	No Adj. Made
LOWREW50	2/25/22 10:49	25.5	30.7	0.0	43.8	59.6	-0.44	-0.45	-24.40	1.7	24.36	No Adj. Made
LOWREW50	3/23/22 9:08	33.5	33.1	0.0	33.4	58.0	-0.57	-0.50	-23.32	3.2	24.22	No Adj. Made
LOWREW50	4/25/22 10:23	28.3	28.6	0.0	43.1	64.5	-0.47	-0.45	-20.96	3.3	24.44	No Adj. Made
LOWREW50	5/18/22 11:49	33.6	30.2	0.1	36.1	82.8	-0.31	-0.26	-23.14	3.4	24.29	No Adj. Made
LOWREW50	6/6/22 9:10	25.2	28.3	0.0	46.5	76.6	-0.88	-0.85	-19.30	3.1	24.19	No Adj. Made
LOWREW55	1/11/22 10:08	53.4	37.8	0.2	8.6	68.4	-1.90	-2.00	-11.72	2.9	24.31	No Adj. Made
LOWREW55	2/25/22 11:30	50.6	37.7	0.0	11.7	66.7	-2.11	-2.08	-26.80	9.8	24.38	No Adj. Made
LOWREW55	3/23/22 9:35	49.5	37.3	0.0	13.2	66.5	-1.45	-1.43	-25.20	10.9	24.24	No Adj. Made
LOWREW55	4/25/22 10:54	44.5	34.3	0.0	21.2	69.1	-1.72	-1.72	-24.04	11.1	24.45	No Adj. Made
LOWREW55	5/18/22 12:29	46.7	35.8	0.2	17.3	76.4	-1.18	-1.19	-24.95	8.5	24.33	No Adj. Made
LOWREW55	6/6/22 9:36	44.0	33.2	0.0	22.8	72.3	-2.33	-2.31	-24.52	11.7	24.21	No Adj. Made
LOWREW56	1/11/22 10:19	36.7	32.9	0.2	30.2	66.3	-1.00	-0.99	-6.62	2.3	24.30	No Adj. Made
LOWREW56	2/25/22 11:38	35.0	32.7	0.0	32.3	64.2	-0.57	-0.55	-22.93	5.1	24.37	No Adj. Made
LOWREW56	3/23/22 9:40	40.8	34.5	0.1	24.6	59.6	-0.39	-0.34	-20.22	2.8	24.23	No Adj. Made
LOWREW56	4/25/22 10:59	26.1	28.3	0.0	45.6	65.7	-0.57	-0.49	-19.44	3.7	24.44	No Adj. Made
LOWREW56	5/18/22 12:36	38.1	32.0	0.0	29.9	83.0	-0.10	-0.05	-20.44	2.4	24.29	No Adj. Made
LOWREW56	6/6/22 9:41	26.9	28.2	0.0	44.9	73.2	-0.92	-0.89	-20.57	2.5	24.20	No Adj. Made
LOWREW57	1/11/22 11:24	51.3	35.8	0.8	12.1	73.5	-3.00	-2.90	-11.83	3.6	24.31	No Adj. Made
LOWREW57	2/25/22 12:30	48.8	36.2	0.0	15.0	73.4	-1.19	-1.19	-26.95	5.8	24.35	No Adj. Made
LOWREW57	3/23/22 10:22	46.1	35.3	0.1	18.5	71.5	-1.31	-1.23	-25.69	6.0	24.23	No Adj. Made

APPENDIX D-1
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ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW57	4/25/22 11:53	43.9	32.4	0.0	23.7	74.1	-1.03	-0.98	-24.94	5.3	24.44	No Adj. Made
LOWREW57	5/19/22 11:50	47.5	33.9	0.0	18.6	87.4	-0.14	-0.14	-24.70	3.1	23.93	No Adj. Made
LOWREW57	6/6/22 10:19	46.2	34.6	0.0	19.2	77.7	-2.04	-1.98	-25.56	6.9	24.21	No Adj. Made
LOWREW58	1/11/22 11:13	39.8	31.1	0.8	28.3	68.6	-0.24	-0.24	-11.96	3.4	24.30	No Adj. Made
LOWREW58	2/25/22 12:23	30.7	30.2	0.0	39.1	63.5	-0.05	-0.05	-24.19	4.3	24.27	No Adj. Made
LOWREW58	3/23/22 10:13	30.0	29.7	0.1	40.2	61.4	-0.36	-0.26	-23.23	2.6	24.21	No Adj. Made
LOWREW58	4/25/22 11:45	28.0	27.2	0.0	44.8	68.5	-0.21	-0.18	-22.14	2.4	24.43	No Adj. Made
LOWREW58	5/19/22 11:42	31.8	27.6	0.0	40.6	87.5	-0.12	-0.12	-23.47	2.6	23.92	No Adj. Made
LOWREW58	6/6/22 10:13	29.8	27.2	0.0	43.0	73.4	-0.76	-0.72	-22.10	7.2	24.20	No Adj. Made
LOWREW59	1/13/22 8:19	49.4	34.4	1.0	15.2	61.9	-1.00	-0.90	-10.55	3.2	24.20	No Adj. Made
LOWREW59	2/25/22 12:59	39.3	31.5	0.4	28.8	64.0	-0.06	-0.08	-23.09	8.9	24.33	No Adj. Made
LOWREW59	3/29/22 8:48	42.0	32.1	0.0	25.9	64.0	-0.34	-0.29	-24.18	6.2	23.80	No Adj. Made
LOWREW59	4/26/22 9:40	36.3	30.1	0.5	33.1	68.1	-0.05	-0.04	-21.40	4.7	24.32	No Adj. Made
LOWREW59	5/20/22 9:50	40.9	32.6	0.0	26.5	61.9	-1.34	-1.23	-22.99	6.2	24.00	No Adj. Made
LOWREW59	6/6/22 10:38	40.7	30.3	0.0	29.0	72.7	-0.69	-0.65	-22.33	4.6	24.20	No Adj. Made
LOWREW5A	1/13/22 10:00	29.8	35.0	0.8	34.4	53.6	-0.17	-0.18	-10.09	2.0	24.23	No Adj. Made
LOWREW5A	2/28/22 10:01	30.7	31.5	0.0	37.8	57.2	-0.20	-0.21	-25.49	1.7	24.45	No Adj. Made
LOWREW5A	3/29/22 10:17	26.8	33.4	0.0	39.8	54.9	-0.26	-0.20	-22.81	1.9	23.76	No Adj. Made
LOWREW5A	4/26/22 11:04	26.8	30.3	0.2	42.7	64.2	-0.28	-0.25	-22.34	1.8	24.33	No Adj. Made
LOWREW5A	5/20/22 10:57	25.8	32.4	0.0	41.8	46.7	-1.33	-1.29	-22.06	2.0	24.00	No Adj. Made
LOWREW5A	6/6/22 11:47	25.8	28.0	0.0	46.2	77.0	-0.62	-0.60	-21.42	1.7	24.20	No Adj. Made
LOWREW60	1/13/22 8:10	57.8	36.9	1.0	4.3	62.3	-0.80	-0.80	-8.79	3.4	24.30	No Adj. Made
LOWREW60	2/25/22 12:52	45.5	33.9	0.6	20.0	64.1	-0.21	-0.20	-21.77	1.7	24.34	No Adj. Made
LOWREW60	3/29/22 8:42	44.7	33.4	0.0	21.9	62.2	-0.30	-0.26	-22.11	5.0	23.81	No Adj. Made
LOWREW60	4/26/22 9:30	43.8	33.4	0.0	22.8	70.2	-0.10	-0.04	-20.81	2.6	24.32	No Adj. Made
LOWREW60	5/20/22 9:42	42.7	34.4	0.0	22.9	57.0	-1.22	-1.18	-21.02	3.4	24.00	No Adj. Made
LOWREW60	6/6/22 10:31	40.3	32.3	0.0	27.4	74.1	-0.77	-0.72	-20.74	2.6	24.20	No Adj. Made
LOWREW61	1/13/22 8:56	43.5	33.3	0.1	23.1	63.6	-1.21	-1.25	-9.66	5.0	24.19	No Adj. Made
LOWREW61	2/28/22 8:57	43.6	33.0	0.2	23.2	65.5	-0.47	-0.46	-23.61	6.7	24.45	No Adj. Made
LOWREW61	3/29/22 9:23	40.7	32.6	0.0	26.7	62.3	-0.12	-0.09	-22.60	6.0	23.78	No Adj. Made
LOWREW61	4/26/22 10:11	40.1	31.3	0.2	28.4	67.9	-0.04	-0.05	-21.58	3.3	24.31	No Adj. Made
LOWREW61	5/20/22 10:15	40.5	33.1	0.0	26.4	60.8	-1.38	-1.32	-24.13	6.2	24.00	No Adj. Made
LOWREW61	6/6/22 11:01	41.3	31.5	0.0	27.2	70.5	-0.69	-0.58	-21.69	3.3	24.19	No Adj. Made
LOWREW62	1/13/22 8:28	46.4	32.3	0.3	21.0	61.0	-1.40	-1.40	-7.28	2.6	24.20	No Adj. Made
LOWREW62	2/25/22 13:06	40.6	31.3	0.0	28.1	63.3	-0.36	-0.29	-23.79	6.4	24.32	No Adj. Made
LOWREW62	3/29/22 8:53	41.0	31.0	0.0	28.0	57.6	-0.44	-0.42	-22.63	1.3	23.80	No Adj. Made
LOWREW62	4/26/22 9:47	41.3	29.7	0.4	28.6	69.5	-0.11	-0.07	-20.17	1.6	24.31	No Adj. Made

APPENDIX D-1
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ID	Date/Time	Methane (%)[a/]	Carbon Dioxide (%)	Oxygen (%)	Balance (%)	Initial Temperature (°F)[b/]	Initial Static Pressure ("H_2O)[c/]	Adjusted Static Pressure ("H_2O)	Header Pressure ("H_2O)	Initial Flow (scfm)[d/]	Barometric Pressure ("Hg)[e/]	Comments
LOWREW62	5/20/22 9:55	39.6	31.2	0.0	29.2	56.4	-1.53	-1.50	-22.52	3.1	24.00	No Adj. Made
LOWREW62	6/6/22 10:44	40.2	29.2	0.0	30.6	76.0	-0.76	-0.74	-20.66	2.1	24.19	No Adj. Made
LOWREW63	1/13/22 9:14	35.4	37.4	0.0	27.2	58.0	-0.47	-0.47	-12.45	3.9	24.19	No Adj. Made
LOWREW63	2/28/22 9:16	40.1	37.0	0.0	22.9	60.9	-0.91	-0.85	-28.67	4.9	24.44	No Adj. Made
LOWREW63	3/29/22 9:34	39.1	38.2	0.0	22.7	52.9	-0.09	-0.06	-26.28	3.4	23.76	No Adj. Made
LOWREW63	4/26/22 10:27	39.5	36.6	0.4	23.5	63.5	-0.15	-0.09	-25.51	3.4	24.31	No Adj. Made
LOWREW63	5/20/22 10:27	29.8	34.8	0.0	35.4	51.1	-1.73	-1.69	-25.01	4.0	23.99	No Adj. Made
LOWREW63	6/6/22 11:13	28.4	30.6	0.0	41.0	71.5	-1.01	-0.98	-25.78	2.7	24.19	No Adj. Made
LOWREW64	1/13/22 9:05	41.4	38.9	0.2	19.5	54.8	-1.50	-1.40	-9.83	1.4	24.19	No Adj. Made
LOWREW64	2/28/22 9:07	42.1	37.6	0.0	20.3	59.5	-2.35	-2.35	-24.69	3.8	24.45	No Adj. Made
LOWREW64	3/29/22 9:28	39.2	37.4	0.0	23.4	53.6	-1.75	-1.69	-21.63	3.7	23.78	No Adj. Made
LOWREW64	4/26/22 10:18	37.9	35.4	0.5	26.2	65.6	-1.44	-1.40	-21.55	3.9	24.31	No Adj. Made
LOWREW64	5/20/22 10:21	37.9	37.6	0.0	24.5	51.2	-3.55	-3.49	-23.47	4.4	24.00	No Adj. Made
LOWREW64	6/6/22 11:07	37.6	36.0	0.0	26.4	72.0	-2.51	-2.50	-21.75	3.0	24.19	No Adj. Made

a/ % = Percent
b/ Deg F = Degrees Fahrenheit
c/ " H2O = Inches of water
d/ scfm = Standard cubic feet per minute
e/ " Hg = Inches of mercury

APPENDIX D-2

FLARE/GAS-TO-ENERGY PLANT STATION MONITORING

APPENDIX D-2.1

FLARE STATION MONITORING

LOWRY INLET

APPENDIX D-2.1
FLARE STATION MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

Lowry Inlet

Sample Point	Date and Time	% Methane	% Carbon Dioxide	% Oxygen	% Balance Gas	Static Pressure ("H_2O)[a/]	Temp (°F)[b/]	Flow (scfm)[c/]	Current * Power (BTU/h)[d/]	Comments
LOWRINLT	1/5/2022 13:35	31.3	30.0	2.2	36.5	-12.80	49.0	138	2622.74	
LOWRINLT	1/14/2022 15:53	25.1	27.2	3.0	44.7	-21.11	49.0	184	2804.29	
LOWRINLT	1/21/2022 13:23	24.4	27.8	3.2	44.6	-34.65	48.0	224	3318.71	
LOWRINLT	1/27/2022 14:42	25.3	26.8	3.0	44.9	-32.08	47.2	218	3342.9	
LOWRINLT	1/31/2022 14:02	37.3	30.0	2.1	30.6	-34.28	46.6	219	4964.2	
LOWRINLT	2/4/2022 14:28	31.8	29.6	1.5	37.1	-33.41	46.4	218	4210.1	
LOWRINLT	2/8/2022 15:31	32.9	29.2	1.3	36.6	-33.72	49.0	216	4313.8	
LOWRINLT	2/14/2022 14:54	37.2	30.0	1.7	31.1	-34.86	45.6	226	5106.4	
LOWRINLT	2/18/2022 14:29	27.4	23.8	3.6	45.2	-33.53	45.6	227	3777.2	
LOWRINLT	2/23/2022 15:10	32.4	27.1	2.4	38.1	-19.26	45.0	204	4018.2	
LOWRINLT	2/24/2022 14:58	30.7	27.9	2.3	39.1	-34.81	44.9	224	4169.7	
LOWRINLT	2/28/2022 15:09	36.9	29.6	1.5	32.0	-34.89	45.1	214	4794.3	
LOWRINLT	3/7/2022 15:14	34.8	29.4	1.4	34.4	-34.98	45.1	215	4521.45	
LOWRINLT	3/10/2022 14:26	30.0	27.6	3.2	39.2	-33.83	45.0	216	3930.1	
LOWRINLT	3/14/2022 14:43	26.9	26.0	2.5	44.6	-34.24	45.0	217	3540.2	
LOWRINLT	3/22/2022 16:08	25.7	26.0	2.6	45.7	-33.03	44.9	211	3298.3	
LOWRINLT	3/25/2022 12:15	24.1	27.1	2.4	46.4	-32.98	45.0	206	3020.6	
LOWRINLT	4/6/2022 15:50	23.9	25.6	2.8	47.7	-32.54	46.4	191	2767.2	
LOWRINLT	4/8/2022 16:01	30.6	29.2	1.3	38.9	-31.46	46.6	194	3604.4	
LOWRINLT	4/15/2022 17:14	26.7	26.9	2.5	43.9	-31.15	47.4	186	3014.9	
LOWRINLT	4/22/2022 15:31	33.4	30.5	1.4	34.7	-30.80	48.3	183	3715.5	
LOWRINLT	4/29/2022 13:49	26.2	26.8	2.8	44.2	-30.51	49.4	183	2914.8	
LOWRINLT	5/3/2022 16:35	30.6	28.4	2.1	38.9	-35.89	49.8	191	3551.1	
LOWRINLT	5/6/2022 15:32	29.4	28.1	2.0	40.5	-35.88	50.1	194	3468.4	
LOWRINLT	5/9/2022 16:00	26.8	27.1	2.5	43.6	-35.52	50.4	184	2995.6	
LOWRINLT	5/13/2022 16:16	27.4	29.2	1.8	41.6	-35.40	51.1	190	3163.4	
LOWRINLT	5/16/2022 16:01	30.1	27.9	2.1	39.9	-35.65	51.6	192	3514.9	
LOWRINLT	5/19/2022 15:36	32.4	29.2	1.5	36.9	-33.49	52.1	196	3859.1	
LOWRINLT	5/23/2022 16:01	28.0	27.9	2.0	42.1	-33.75	53.1	201	3412.9	
LOWRINLT	5/26/2022 14:34	27.0	25.4	2.1	45.5	-33.04	53.3	200	3282.5	
LOWRINLT	5/31/2022 15:43	23.4	26.2	2.5	47.9	-30.92	53.7	198	2810.3	
LOWRINLT	6/3/2022 12:56	28.2	26.6	1.8	43.4	-30.61	54.0	196	3351.7	
LOWRINLT	6/6/2022 14:43	31.1	28.0	1.5	39.4	-31.51	54.4	194	3664.4	
LOWRINLT	6/14/2022 16:27	28.1	25.5	2.8	43.6	-29.60	55.9	191	3254.8	

APPENDIX D-2.1
FLARE STATION MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

Lowry Inlet

Sample Point	Date and Time	% Methane	% Carbon Dioxide	% Oxygen	% Balance Gas	Static Pressure ("H_2O)[a/]	Temp (°F)[b/]	Flow (scfm)[c/]	Current * Power (BTU/h)[d/]	Comments
LOWRINLT	6/16/2022 16:03	31.8	25.2	1.7	41.3	-29.00	56.4	184	3553.7	
LOWRINLT	6/24/2022 15:22	27.6	27.2	2.2	43.0	-28.68	58.4	177	2963.3	

* Note: The BTU calculation is based upon a methane value of **1009.7** BTU/scf at standard conditions. This data is taken from the petroleum industry book "Gas Processors Association Engineering Data Book", Ninth Edition, Tulsa OK, 1972.

a/ "H_2O=inches of water

b/ °F= Degrees Fahrenheit

c/ scfm= standard cubic feet per minute

d/ BTU/h= British Thermal Unit per hour

APPENDIX D-2.2

FLARE STATION MONITORING

DADS BLOWER FLARE

APPENDIX D-2.2
GAS-TO-ENERGY PLANT MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

DADS Blower Flare

Location	Sample Point	Date and Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Balance Gas (%)	Initial Static Pressure (" H2O)[a/]	Initial Temperature (° F)[b/]	Initial Flow (scfm)[c/]	Initial Power (BTU/h)[d/]	Comments
DADS Blower Flare	DASPFLR1	1/5/2022 13:42	42.4	35.3	0.4	21.9	7.30	80	501	12898.4	
DADS Blower Flare	DASPFLR1	1/27/2022 14:55	32.6	32.4	1.3	33.7	7.04	91	503	9968.0	
DADS Blower Flare	DASPFLR1	2/4/2022 14:43	39.5	33.6	0.5	26.4	7.50	34	513	12305.2	
DADS Blower Flare	DASPFLR1	2/8/2022 15:43	41.3	33.5	0.4	24.8	7.23	32	513	12864.9	
DADS Blower Flare	DASPFLR1	2/14/2022 15:44	49.1	35.0	0.6	15.3	7.49	97	507	15121.4	
DADS Blower Flare	DASPFLR1	2/18/2022 14:41	36.0	30.0	0.8	33.2	7.41	97	504	11012.3	
DADS Blower Flare	DASPFLR1	2/23/2022 15:23	43.4	33.6	0.6	22.4	7.13	76	494	13028.2	
DADS Blower Flare	DASPFLR1	3/7/2022 15:24	43.4	34.1	0.5	22.0	7.47	98	501	13198.0	
DADS Blower Flare	DASPFLR1	3/14/2022 14:51	34.3	30.7	0.7	34.3	7.68	102	500	10400.8	
DADS Blower Flare	DASPFLR1	3/22/2022 16:19	34.9	31.5	0.8	32.8	7.09	93	497	10531.1	
DADS Blower Flare	DASPFLR1	3/25/2022 12:23	34.1	31.7	0.6	33.6	7.37	102	498	10299.6	
DADS Blower Flare	DASPFLR1	4/6/2022 15:58	31.1	30.6	0.9	37.4	7.44	97	497	9394.5	
DADS Blower Flare	DASPFLR1	4/8/2022 16:07	41.2	34.4	0.0	24.4	7.62	99	504	12623.6	
DADS Blower Flare	DASPFLR1	4/22/2022 15:39	44.3	35.0	0.5	20.2	7.84	100	499	13435.1	
DADS Blower Flare	DASPFLR1	5/3/2022 16:42	41.7	33.8	0.7	23.8	7.60	109	499	12630.1	
DADS Blower Flare	DASPFLR1	5/6/2022 15:39	38.4	32.7	0.6	28.3	7.51	110	503	11721.2	
DADS Blower Flare	DASPFLR1	5/9/2022 16:07	34.9	31.7	0.8	32.6	7.51	112	501	10625.4	
DADS Blower Flare	DASPFLR1	5/13/2022 16:22	34.6	34.0	0.5	30.9	7.85	114	500	10497.0	
DADS Blower Flare	DASPFLR1	5/19/2022 15:42	43.3	33.8	0.6	22.3	7.67	110	498	13096.0	
DADS Blower Flare	DASPFLR1	5/23/2022 16:08	36.7	32.4	0.7	30.2	7.51	107	505	11267.9	
DADS Blower Flare	DASPFLR1	5/26/2022 14:40	34.9	29.0	0.8	35.3	7.84	112	504	10684.1	
DADS Blower Flare	DASPFLR1	6/3/2022 13:05	37.6	30.9	0.5	31.0	7.85	0.1	497	11336.5	
DADS Blower Flare	DASPFLR1	6/6/2022 14:51	38.8	30.8	0.5	29.9	7.55	108	497	11703.2	
DADS Blower Flare	DASPFLR1	6/16/2022 16:10	41.1	30.0	0.6	28.3	7.83	110	506	12630.4	
DADS Blower Flare	DASPFLR1	6/24/2022 15:30	35.9	31.8	0.7	31.6	7.67	106	506	11022.0	

* Note: The BTU calculation is based upon a methane value of **1009.7** BTU/scf at standard conditions. This data is taken from the petroleum industry book "Gas Processors Association Engineering Data Book", Ninth Edition, Tulsa OK, 1972.

a/ "H_2O= inches water

b/ ° F= Degrees Fahrenheit

c/ scfm= standard cubic feet per minute

d/ BTU/h= British Thermal Unit per hour

APPENDIX D-2.3

FLARE STATION MONITORING

FLARE STATION 3

APPENDIX D-2.3
GAS-TO-ENERGY PLANT MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

Flare Station 3 - Candlestick Flare

Location	Sample Point	Date Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Balance Gas (%)	Initial Static Pressure (" H2O)[a/]	Initial Temperature (° F)[b/]	Initial Flow (scfm)[c/]	Initial Power (BTU/h)[d/]	Comments
Flare Station 3	DASPFLR3	1/5/2022 13:49	48.7	37.3	0.7	13.3	3.94	84	883	26110.9	
Flare Station 3	DASPFLR3	1/21/2022 13:31	32.9	32.3	1.2	33.6	7.32	96	507	10128.3	
Flare Station 3	DASPFLR3	1/27/2022 15:11	47.7	39	1.2	12.1	15.28	92	1862	34140.8	
Flare Station 3	DASPFLR3	2/4/2022 14:58	48.5	38.6	0.5	12.4	3.09	53	932	27473.6	
Flare Station 3	DASPFLR3	2/8/2022 15:56	49.6	37.9	0.5	12	3.19	79	951	28642.0	
Flare Station 3	DASPFLR3	2/14/2022 15:59	52.2	37.9	0.6	9.3	3.12	84	937	29698.7	
Flare Station 3	DASPFLR3	2/18/2022 14:53	44	33.3	0.5	22.2	2.8	78	807	21536.3	
Flare Station 3	DASPFLR3	3/7/2022 15:34	51.4	38.6	0.5	9.5	7.28	81	1322	34140.8	
Flare Station 3	DASPFLR3	3/14/2022 15:06	46.7	36.7	0.6	16	6.36	87	1187	33667.6	
Flare Station 3	DASPFLR3	3/22/2022 16:30	45.3	37	1	16.7	5.92	75	1153	31696.1	
Flare Station 3	DASPFLR3	3/25/2022 12:39	44.5	36.5	0.6	18.4	5.61	85	1152	31113.8	
Flare Station 3	DASPFLR3	4/6/2022 16:06	41.6	34.2	0.9	23.3	4.33	79	954	24121.8	
Flare Station 3	DASPFLR3	4/8/2022 16:15	49.9	37.7	0	12.4	4.97	90	1100	33334.8	
Flare Station 3	DASPFLR3	4/22/2022 15:55	50.6	36.8	0.6	12	5.64	97	1127	34140.8	
Flare Station 3	DASPFLR3	5/3/2022 16:50	46.2	36.3	0.7	16.8	5.85	87	1116	31293.6	
Flare Station 3	DASPFLR3	5/6/2022 15:49	46.4	36.3	0.6	16.7	4.28	96	1051	29613.4	
Flare Station 3	DASPFLR3	5/9/2022 16:16	45.6	35.7	0.8	17.9	4.23	93	986	27301.2	
Flare Station 3	DASPFLR3	5/13/2022 16:33	42.1	38	0.6	19.3	4.9	96	1048	26779.6	
Flare Station 3	DASPFLR3	5/19/2022 15:50	48.9	35.3	1	14.8	9.69	103	1381	34140.8	
Flare Station 3	DASPFLR3	5/23/2022 16:18	42.8	34	1.3	21.9	4.13	88	1047	27226.1	
Flare Station 3	DASPFLR3	5/26/2022 14:48	42.2	31.1	0.7	26	4.7	100	1030	26399.5	
Flare Station 3	DASPFLR3	6/3/2022 13:14	43.7	32.9	0.5	22.9	5.12	99	1067	27008.6	
Flare Station 3	DASPFLR3	6/6/2022 15:00	47.7	36.6	0.3	15.4	4.71	99	1030	29836.3	
Flare Station 3	DASPFLR3	6/16/2022 16:19	50.9	33.9	0.4	14.8	4.86	100	1044	32290.7	
Flare Station 3	DASPFLR3	6/24/2022 15:40	42.7	34.7	0.7	21.9	5.15	98	967	25063.2	

***** Note: The BTU calculation is based upon a methane value of **1009.7** BTU/scf at standard conditions. This data is taken from the petroleum industry book "Gas Processors Association Engineering Data Book", Ninth Edition, Tulsa OK, 1972

a/ "H_2O= inches water

b/ ° F= Degrees Fahrenheit

c/ scfm= standard cubic feet per minute

d/ BTU/h= British Thermal Unit per hour

APPENDIX D-2.4

FLARE STATION MONITORING

COMBINED SOURCES AT GAS-TO-ENERGY PLANT

APPENDIX D-2.4
GAS-TO-ENERGY PLANT MONITORING
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE REPORT
LOWRY LANDFILL SUPERFUND SITE

Gas-to-Energy Plant

Location	Sample Point	Date and Time	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Balance Gas (%)	Initial Static Pressure (" H_2O)[a/]	Initial Temperature (° F)[b/]	Initial Flow (scfm)[c/]	Initial Power (BTU/h)[d/]	Comments
Gas Plant	DASPGAP1	1/5/2022 13:55	54.0	39.7	0.4	5.9	69.25	86.0	1013	33201.9	
Gas Plant	DASPGAP1	1/21/2022 13:46	40.0	35.4	1.1	23.5	2.30	71.0	747	18143.1	
Gas Plant	DASPGAP1	1/21/2022 13:51	49.7	38.9	0.9	10.5	69.86	95.0	1084	32718.8	
Gas Plant	DASPGAP1	2/4/2022 15:08	56.3	40.3	0.4	3.0	70.24	91.9	1010	34140.8	
Gas Plant	DASPGAP1	2/8/2022 16:07	56.3	40.1	0.4	3.2	69.19	97.1	1004	34140.8	
Gas Plant	DASPGAP1	2/14/2022 16:07	58.8	40.7	0.5	0.0	69.33	75.0	1030	34140.8	
Gas Plant	DASPGAP1	2/18/2022 14:59	55.0	37.6	0.3	7.1	67.82	109.0	1012	33784.9	
Gas Plant	DASPGAP1	2/23/2022 15:43	56.3	38.8	0.3	4.6	65.66	56.6	972	33221.1	
Gas Plant	DASPGAP1	3/7/2022 15:44	56.5	40.6	0.5	2.4	67.77	95.7	842	28893.0	
Gas Plant	DASPGAP1	3/14/2022 15:12	52.8	39.5	0.5	7.2	56.18	93.3	1059	33968.0	
Gas Plant	DASPGAP1	3/22/2022 16:37	48.3	38.0	1.1	12.6	67.16	64.9	1072	31419.4	
Gas Plant	DASPGAP1	3/25/2022 12:46	49.2	38.5	0.6	11.7	66.98	88.5	1058	31621.8	
Gas Plant	DASPGAP1	4/6/2022 16:16	47.4	38.2	0.7	13.7	66.41	79.7	1106	31810.5	
Gas Plant	DASPGAP1	4/8/2022 16:22	52.4	39.6	0.0	8.0	66.79	82.0	1025	32620.5	
Gas Plant	DASPGAP1	4/22/2022 16:02	52.2	38.6	0.5	8.7	66.37	96.7	1026	32553.1	
Gas Plant	DASPGAP1	5/3/2022 16:55	50.6	38.5	0.6	10.3	66.59	69.0	1107	33978.9	
Gas Plant	DASPGAP1	5/6/2022 15:55	49.2	37.6	0.5	12.7	66.52	80.1	1067	31857.0	
Gas Plant	DASPGAP1	5/9/2022 16:25	48.8	37.7	0.8	12.7	64.92	73.5	1090	32294.8	
Gas Plant	DASPGAP1	5/13/2022 16:38	45.8	40.0	0.5	13.7	67.17	74.8	1073	29849.7	
Gas Plant	DASPGAP1	5/19/2022 15:55	50.6	37.1	1.0	11.3	67.12	85.1	791	24321.6	
Gas Plant	DASPGAP1	5/23/2022 16:24	47.9	36.3	1.4	14.4	66.35	72.0	1143	33269.2	
Gas Plant	DASPGAP1	5/26/2022 14:54	47.6	34.5	0.6	17.3	67.13	81.8	1063	30689.3	
Gas Plant	DASPGAP1	6/3/2022 13:25	48.6	35.3	0.4	15.7	0.22	77.4	1050	30998.3	
Gas Plant	DASPGAP1	6/6/2022 15:07	51.1	38.3	0.2	10.4	64.98	92.0	1050	32584.7	
Gas Plant	DASPGAP1	6/16/2022 16:23	53.1	35.5	0.3	11.1	66.90	95.7	1081	34140.8	
Gas Plant	DASPGAP1	6/24/2022 15:46	46.7	36.4	0.6	16.3	63.33	81.4	1110	31492.8	
			58.8								

* Note: The BTU calculation is based upon a methane value of 1009.7 BTU/scf at standard conditions. This data is taken from the petroleum industry book "Gas Processors Association Engineering Data Book", Ninth Edition, Tulsa OK, 1972.

a/ "H_2O= inches water
b/ ° F= Degrees Fahrenheit
c/ scfm= standard cubic feet per minute
d/ BTU/h= British Thermal Unit per hour

APPENDIX D-2.5

FLARE STATION MONITORING

DAILY FIELD NOTES

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)			02/15/22		
Lowry Header - Monitoring					
Time (hh:mm)			1333		
Technician (Initials)			BS		
Control Panel - Digital Recorder					
Flow Rate (SCFM)			138		
Gas Temperature (F)			49.0		
Flare 2 - Monitoring					
Time (hh:mm)			1338		
Technician (Initials)			BS		
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☑	☐	☐
Heating/Cooling OK (Check for Yes)	☐	☐	☑	☐	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☑	☐	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)			18.1		
*Flare DP (inWC)			5.08		
*Flare Flame Temperature (F)			111.1		
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			71		
*Gas Handling Skid Inlet Temperature (F)			52		
*Recirculation Valve Position (%Closed)			70		
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			521		
*Total Flow (MMSCF)			1061.85		
*Flow Pressure (inWC)			6.2		
*Flow Temperature (F)			80		
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			75.22		
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			39662		
*Blower 301 Vibration (in/Sec)			0.21		
*Blower 301 Speed (%Max)			70		
*Blower 301 Inlet Bearing Temp (F)			44		
*Blower 301 Outlet Bearing Temp (F)			91		
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			10.3		
Gas Handling Skid					
*Demister Inlet Pressure (inWC)			-15.6		
*Demister Outlet Pressure (inWC)			-20.8		
*Demister DP (inWC)			+2.2		
*Flame Arrester Inlet Pressure (inWC)			+7.1		
*Flame Arrester Outlet Pressure (inWC)			+4.4		
*Flame Arrester DP (inWC)			+2.7		
Flare					
*Visible Emissions (Yes/No, If yes explain)			No		
*Spiralator Position (%Open)			50		
*Manual Louver 1 Position (%Open)			50		
*Manual Louver 2 Position (%Open)			50		
Other					
Heat Trace OK (Check for Yes)	☐	☐	☑	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☑ ☑	☐ ☐	☐ ☐
Flare 3 - Monitoring					
Time (hh:mm)			1344		
Technician (Initials)			BS		
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☑	☐	☐
*Heating/Cooling OK (Check for Yes)	☐	☐	☑	☐	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☑	☐	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)			39.8		
*Gas Handling Skid Inlet Temperature (F)			54		
*Panel Temperature (F)			75		
*Recirculation Valve Position (%Closed)			100		
*Flare Flame Temperature (F)			1325		
*Flame Arrestor Temperature (F)			81		
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			302 → 3270		
*Blower Speed (Blower | Speed (%Max))			44		
*Blower Vibration (Blower | Vibration (in/Sec))			0.01		
*Blower Current (Blower | Current (Amps))			28.0		
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			883		
*Total Flow (MMSCF)			442.60		
*Flow Pressure (inWC)			3.2		
*Flow Temperature (F)			84		
*Flow DP (inWC)			1.87		
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			442.60		
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☑	☐	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)			-40.4		
*Demister Outlet Pressure (inWC)			-41.3		
*Demister DP (inWC)			+0.9		
*Flame Arrester Inlet Pressure (inWC)			+3.9		
*Flame Arrester Outlet Pressure (inWC)			+3.5		
*Flame Arrester DP (inWC)			+0.4		
*Fail-Close Valve Air Pressure (psi)			10.5		
Flare					
*Visible Emissions (Yes/No, If yes explain)			No		
*Spiralator Position (%Open)			50		
*Manual Louver 1 Position (%Open)			50		
*Manual Louver 2 Position (%Open)			50		
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☑	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☑ ☑	☐ ☐	☐ ☐
Engine Plant 1 - Monitoring					
Time (hh mm)			1351		
Technician (Initials)			CS		
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			693 700		
*Power Setpoint (kWh) (Engine #2 | #1)			689 691		
Control Room - Laptop					
*Flow Total (MSCF)			503268.2		
*Flow Rate (SCFM)					
*Discharge Gas Temperature (F)			861.0		
Engine Bay/Control Room Window			1012.6		
*Inlet Gas Pressure (inWC)			-42.3		
Other					
*Visible Emissions (Yes/No, If yes explain)			NO		
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)					12/19/21
Lowry Header - Monitoring					
Time (hh:mm)					1557
Technician (Initials)					CB
Control Panel - Digital Recorder					
Flow Rate (SCFM)					154
Gas Temperature (F)					409
Flare 2 - Monitoring					
Time (hh:mm)					1554
Technician (Initials)					CB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	✓
Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	✓
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☐	☐	✓
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)					25.1
*Flare DP (inWC)					5.71
*Flare Flame Temperature (F)					1810
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					42
*Gas Handling Skid Inlet Temperature (F)					47
*Recirculation Valve Position (%Closed)					70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					561
*Total Flow (MMSCF)					16,548.44
*Flow Pressure (inWC)					6.3
*Flow Temperature (F)					79
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					724.11
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					3285.1
*Blower 301 Vibration (in/Sec)					0.20
*Blower 301 Speed (%Max)					77
*Blower 301 Inlet Bearing Temp (F)					92
*Blower 301 Outlet Bearing Temp (F)					92
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					12.2
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-27.4
*Demister Outlet Pressure (inWC)					-31.9
*Demister DP (inWC)					+4.3
*Flame Arrester Inlet Pressure (inWC)					+6.9
*Flame Arrester Outlet Pressure (inWC)					+4.5
*Flame Arrester DP (inWC)					+2.4
Flare					
*Visible Emissions (Yes/No, If yes explain)					No
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
Heat Trace OK (Check for Yes)	☐	☐	☐	☐	✓
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	✓ ✓
Flare 3 - Monitoring					
Time (hh:mm)					1607
Technician (Initials)					CB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	✓
*Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	✓
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☐	■	✓

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)					37.1
*Gas Handling Skid Inlet Temperature (F)					54
*Panel Temperature (F)					52
*Recirculation Valve Position (%Closed)					95
*Flare Flame Temperature (F)					1229
*Flame Arrestor Temperature (F)					43
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))					3022 3165
*Blower Speed (Blower | Speed (%Max))					50
*Blower Vibration (Blower | Vibration (in/Sec))					0.01
*Blower Current (Blower | Current (Amps))					24.5
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)					659
*Total Flow (MMSCF)					451.05
*Flow Pressure (inWC)					1.2
*Flow Temperature (F)					66
*Flow DP (inWC)					1.15
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)					451.05
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☐	☑	☑
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-40.7
*Demister Outlet Pressure (inWC)					-41.7
*Demister DP (inWC)					+0.4
*Flame Arrester Inlet Pressure (inWC)					+2.6
*Flame Arrester Outlet Pressure (inWC)					+1.5
*Flame Arrester DP (inWC)					+0.2
*Fail-Close Valve Air Pressure (psi)					105
Flare					
*Visible Emissions (Yes/No, If yes explain)					NO
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☐	☑	☑
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☑	☑ ☑
Engine Plant 1 - Monitoring					
Time (hh mm)					1618
Technician (Initials)					CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					693 688
*Power Setpoint (kWh) (Engine #2 | #1)					699 688
Control Room - Laptop					
*Flow Total (MSCF)					5173405
*Flow Rate (SCFM)					1122.5
*Discharge Gas Temperature (F)					91.0
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)					-40.1
Other					
*Visible Emissions (Yes/No, If yes explain)					NO
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)					01/24/22
Lowry Header - Monitoring					
Time (hh mm)					1319
Technician (Initials)					CZ
Control Panel - Digital Recorder					
Flow Rate (SCFM)					227.3
Gas Temperature (F)					476.
Flare 2 - Monitoring					
Time (hh:mm)					1324
Technician (Initials)					CZ
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	✓
Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	✓
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☐	☐	✓
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)					42.5
*Flare DP (inWC)					8.35
*Flare Flame Temperature (F)					1196
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					67
*Gas Handling Skid Inlet Temperature (F)					72
*Recirculation Valve Position (%Closed)					72
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					507
*Total Flow (MMSCF)					1073.39
*Flow Pressure (inWC)					6.2
*Flow Temperature (F)					96
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					729.95
*Reset Date/Time (mm/dd/yy hh.mm.ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					4044
*Blower 301 Vibration (in/Sec)					0.27
*Blower 301 Speed (%Max)					87
*Blower 301 Inlet Bearing Temp (F)					81
*Blower 301 Outlet Bearing Temp (F)					82
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					13.3
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-42.7
*Demister Outlet Pressure (inWC)					-45.1
*Demister DP (inWC)					+2.4
*Flame Arrester Inlet Pressure (inWC)					+7.2
*Flame Arrester Outlet Pressure (inWC)					+4.6
*Flame Arrester DP (inWC)					+2.8
Flare					
*Visible Emissions (Yes/No, If yes explain)					NO
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
Heat Trace OK (Check for Yes)	☐	☐	☐	☐	✓
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	✓ ✓
Flare 3 - Monitoring					
Time (hh.mm)					1335
Technician (Initials)					CZ
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	✓
*Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	✓
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☐	☐	✓

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (InWC)					40.4
*Gas Handling Skid Inlet Temperature (F)					54
*Panel Temperature (F)					50
*Recirculation Valve Position (%Closed)					100
*Flare Flame Temperature (F)					1249
*Flame Arrestor Temperature (F)					1216
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))					302 | 3588
*Blower Speed (Blower | Speed (%Max))					59
*Blower Vibration (Blower | Vibration (In/Sec))					0.9
*Blower Current (Blower | Current (Amps))					24.8
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)					747
*Total Flow (MMSCF)					457.21
*Flow Pressure (InWC)					1.4
*Flow Temperature (F)					71
*Flow DP (InWC)					1.22
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)					457.21
*Reset Date/Time (mm/dd/yy hh mm ss)					
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☐	☐	☑
Gas Handling Skid					
*Demister Inlet Pressure (InWC)					-40.4
*Demister Outlet Pressure (InWC)					-41.5
*Demister DP (InWC)					+1.1
*Flame Arrester Inlet Pressure (InWC)					+2.4
*Flame Arrester Outlet Pressure (InWC)					+2.0
*Flame Arrester DP (InWC)					+0.4
*Fail-Close Valve Air Pressure (psi)					105
Flare					
*Visible Emissions (Yes/No, If yes explain)					NO
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☑
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☑ ☑
Engine Plant 1 - Monitoring					
Time (hh mm)					1348
Technician (Initials)					NL
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					695 698
*Power Setpoint (kWh) (Engine #2 | #1)					703 680
Control Room - Laptop					
*Flow Total (MSCF)					57810.9
*Flow Rate (SCFM)					784.2
*Discharge Gas Temperature (F)					45.0
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)					43.1
Other					
*Visible Emissions (Yes/No, If yes explain)					NO
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)				1/27/22	
Lowry Header - Monitoring					
Time (hh:mm)				1440	
Technician (Initials)				DB	
Control Panel - Digital Recorder					
Flow Rate (SCFM)				218	
Gas Temperature (F)				47.2	
Flare 2 - Monitoring					
Time (hh:mm)				1445	
Technician (Initials)				DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☒	☐
Heating/Cooling OK (Check for Yes)	☐	☐	☐	☒	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☐	☒	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)			✗	39.6	
*Flare DP (InWC)				5.19	
*Flare Flame Temperature (F)			✗	1160	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				65	
*Gas Handling Skid Inlet Temperature (F)			✗	38	
*Recirculation Valve Position (%Closed)				70	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			✗	503	
*Total Flow (MMSCF)				1077.76	
*Flow Pressure (InWC)			✗	6.2	
*Flow Temperature (F)			✗	91	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				734.0937	
*Reset Date/Time (mm/dd/yy hh:mm:ss)				—	
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				40171	
*Blower 301 Vibration (In/Sec)				0.21	
*Blower 301 Speed (%Max)				84	
*Blower 301 Inlet Bearing Temp (F)				31	
*Blower 301 Outlet Bearing Temp (F)				86	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.2	
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-39.95	
*Demister Outlet Pressure (InWC)				-42.55	
*Demister DP (InWC)			✗	+2.6	
*Flame Arrester Inlet Pressure (InWC)				+7.39	
*Flame Arrester Outlet Pressure (InWC)				+4.60	
*Flame Arrester DP (InWC)			>	+2.79	
Flare					
*Visible Emissions (Yes/No, If yes explain)				NO	
*Spiralator Position (%Open)				50	
*Manual Louver 1 Position (%Open)				50	
*Manual Louver 2 Position (%Open)				50	
Other					
Heat Trace OK (Check for Yes)	☐	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☒ ☒	☐ ☐
Flare 3 - Monitoring					
Time (hh:mm)				1500	
Technician (Initials)				DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☒	☐
*Heating/Cooling OK (Check for Yes)	☐	☐	☐	☒	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☐	☒	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)			a'	38.4	
*Gas Handling Skid Inlet Temperature (F)			✓	55	
*Panel Temperature (F)				51	
*Recirculation Valve Position (%Closed)				100	
*Flare Flame Temperature (F)			✓	1169	
*Flame Arrestor Temperature (F)			✓	88	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				3734	
*Blower Speed (Blower | Speed (%Max))				83	
*Blower Vibration (Blower | Vibration (in/Sec))				0.03	
*Blower Current (Blower | Current (Amps))				58.7	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			✓	1862	
*Total Flow (MMSCF)				468.16	
*Flow Pressure (inWC)			✓	13.0	
*Flow Temperature (F)			✓	92	
*Flow DP (inWC)			✓	8.21	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				468.1587	
*Reset Date/Time (mm/dd/yy hh:mm ss)				—	
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☐	☒	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)				-39.27	
*Demister Outlet Pressure (inWC)				-42.05	
*Demister DP (inWC)			✓	+2.8	
*Flame Arrester Inlet Pressure (inWC)				+14.41	
*Flame Arrester Outlet Pressure (inWC)				+13.18	
*Flame Arrester DP (inWC)			✓	+1.23	
*Fail-Close Valve Air Pressure (psi)				105	
Flare					
*Visible Emissions (Yes/No, If yes explain)				NO	
*Spiralator Position (%Open)				50	
*Manual Louver 1 Position (%Open)				50	
*Manual Louver 2 Position (%Open)				50	
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☒ ☒	☐ ☐
Engine Plant 1 - Monitoring					
Time (hh mm)					
Technician (Initials)					
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					
*Power Setpoint (kWh) (Engine #2 | #1)					
Control Room - Laptop					
*Flow Total (MSCF)					
*Flow Rate (SCFM)					
*Discharge Gas Temperature (F)					
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)					
Other					
*Visible Emissions (Yes/No, If yes explain)					
Note * Collect during device operation only				SD for MAINT	

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	1/31/22				
Lowry Header - Monitoring					
Time (hh mm)	14:00				
Technician (Initials)	DB				
Control Panel - Digital Recorder					
Flow Rate (SCFM)	219				
Gas Temperature (F)	46.6				
Flare 2 - Monitoring					
Time (hh:mm)	14:05				
Technician (Initials)	DB				
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☐
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)	41.9				
*Flare DP (InWC)	5.10				
*Flare Flame Temperature (F)	1270				
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	89				
*Gas Handling Skid Inlet Temperature (F)	20				
*Recirculation Valve Position (%Closed)	70				
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	493				
*Total Flow (MMSCF)	1080.62				
*Flow Pressure (InWC)	6.7				
*Flow Temperature (F)	102				
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	736.9570				
*Reset Date/Time (mm/dd/yy hh.mm.ss)	—				
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	40286				
*Blower 301 Vibration (In/Sec)	0.24				
*Blower 301 Speed (%Max)	90				
*Blower 301 Inlet Bearing Temp (F)	54				
*Blower 301 Outlet Bearing Temp (F)	112				
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	13.4				
Gas Handling Skid					
*Demister Inlet Pressure (InWC)	-42.3				
*Demister Outlet Pressure (InWC)	-45.1				
*Demister DP (InWC)	+2.8				
*Flame Arrester Inlet Pressure (InWC)	+7.40				
*Flame Arrester Outlet Pressure (InWC)	+4.65				
*Flame Arrester DP (InWC)	+2.75				
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				
*Spiralator Position (%Open)	50				
*Manual Louver 1 Position (%Open)	50				
*Manual Louver 2 Position (%Open)	50				
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ | ☒	☐ | ☐	☐ | ☐	☐ | ☐	☐ | ☐
Flare 3 - Monitoring					
Time (hh:mm)	14:20				
Technician (Initials)	DB				
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☐
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☐	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-40.9				
*Gas Handling Skid Inlet Temperature (F)	58				
*Panel Temperature (F)	79				
*Recirculation Valve Position (%Closed)	100				
*Flare Flame Temperature (F)	1313				
*Flame Arrestor Temperature (F)	89				
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower 1 | Runtime (Hours))	302 | 3829				
*Blower Speed (Blower 1 | Speed (%Max))	66				
*Blower Vibration (Blower 1 | Vibration (in/Sec))	0.01				
*Blower Current (Blower 1 | Current (Amps))	31.0				
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	1096				
*Total Flow (MMSCF)	475.59				
*Flow Pressure (inWC)	4.3				
*Flow Temperature (F)	91				
*Flow DP (inWC)	2.96				
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	475.5925				
*Reset Date/Time (mm/dd/yy hh:mm ss)	—				
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☒	☐	☐	☐	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-40.60				
*Demister Outlet Pressure (inWC)	-41.60				
*Demister DP (inWC)	+1.0				
*Flame Arrester Inlet Pressure (inWC)	+5.60				
*Flame Arrester Outlet Pressure (inWC)	+5.13				
*Flame Arrester DP (inWC)	+0.47				
*Fail-Close Valve Air Pressure (psi)	107				
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				
*Spiralator Position (%Open)	50				
*Manual Louver 1 Position (%Open)	50				
*Manual Louver 2 Position (%Open)	50				
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Engine Plant 1 - Monitoring					
Time (hh mm)	14:30				
Technician (Initials)	DB				
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	668 | 688				
*Power Setpoint (kWh) (Engine #2 | #1)	693 | 688				
Control Room - Laptop					
*Flow Total (MSCF)	537015.8				
*Flow Rate (SCFM)	966.3				
*Discharge Gas Temperature (F)	69.1				
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-44.0				
Other					
*Visible Emissions (Yes/No, If yes explain)	NO				

Note * Collect during device operation only

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)					2/4/22
Lowry Header - Monitoring					
Time (hh:mm)					1430
Technician (Initials)					DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)					218
Gas Temperature (F)					46.4
Flare 2 - Monitoring					
Time (hh:mm)					~~DB~~ 1435
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	☒
Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)					41.1
*Flare DP (inWC)					5.20
*Flare Flame Temperature (F)					1190
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					69
*Gas Handling Skid Inlet Temperature (F)					34
*Recirculation Valve Position (%Closed)					70%
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					513
*Total Flow (MMSCF)					1083.52
*Flow Pressure (inWC)					6.4
*Flow Temperature (F)					96
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					739.8548
*Reset Date/Time (mm/dd/yy hh.mm.ss)					———
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					40383
*Blower 301 Vibration (in/Sec)					0.24
*Blower 301 Speed (%Max)					85%
*Blower 301 Inlet Bearing Temp (F)					40
*Blower 301 Outlet Bearing Temp (F)					96
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					13.2
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-40.5
*Demister Outlet Pressure (inWC)					-42.5
*Demister DP (inWC)					+2.0
*Flame Arrester Inlet Pressure (inWC)					+7.6
*Flame Arrester Outlet Pressure (inWC)					+4.7
*Flame Arrester DP (inWC)					+2.9
Flare					
*Visible Emissions (Yes/No, If yes explain)					NO
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒
Flare 3 - Monitoring					
Time (hh:mm)					1450
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)					41.2
*Gas Handling Skid Inlet Temperature (F)					53
*Panel Temperature (F)					63
*Recirculation Valve Position (%Closed)					100'L
*Flare Flame Temperature (F)					1153
*Flame Arrestor Temperature (F)					73
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))					302 | 3926
*Blower Speed (Blower | Speed (%Max))					61'L
*Blower Vibration (Blower | Vibration (In/Sec))					0.01
*Blower Current (Blower | Current (Amps))					26.7
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)					932
*Total Flow (MMSCF)					480.78
*Flow Pressure (inWC)					2.0
*Flow Temperature (F)					76
*Flow DP (inWC)					2.02
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)					480.7836
*Reset Date/Time (mm/dd/yy hh mm ss)					—
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☐	☐	X
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-39.90
*Demister Outlet Pressure (inWC)					-40.70
*Demister DP (inWC)					+0.80
*Flame Arrester Inlet Pressure (inWC)					-4.05
*Flame Arrester Outlet Pressure (inWC)					+2.80
*Flame Arrester DP (inWC)					+1.25
*Fail-Close Valve Air Pressure (psi)					110
Flare					
*Visible Emissions (Yes/No, If yes explain)					No
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	X | ☒
Engine Plant 1 - Monitoring					
Time (hh mm)					1500
Technician (Initials)					DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					679 | 697
*Power Setpoint (kWh) (Engine #2 | #1)					692 | 683
Control Room - Laptop					
*Flow Total (MSCF)					~~1011.5~~ 945.80
*Flow Rate (SCFM)					1010.4
*Discharge Gas Temperature (F)					91.9
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)					-43.7
Other					
*Visible Emissions (Yes/No, If yes explain)					
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)		2/8/22			
Lowry Header - Monitoring					
Time (hh mm)		DB			
Technician (Initials)		1530			
Control Panel - Digital Recorder					
Flow Rate (SCFM)		216			
Gas Temperature (F)		49.0			
Flare 2 - Monitoring					
Time (hh:mm)		1535			
Technician (Initials)		DB			
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☒	☐	☐	☐
Heating/Cooling OK (Check for Yes)	☐	☒	☐	☐	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☒	☐	☐	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)		-41.8			
*Flare DP (InWC)		5.15			
*Flare Flame Temperature (F)		1256			
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		77			
*Gas Handling Skid Inlet Temperature (F)		32			
*Recirculation Valve Position (%Closed)		70%			
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		513			
*Total Flow (MMSCF)		1026.43			
*Flow Pressure (InWC)		6.8			
*Flow Temperature (F)		96			
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		742.7681			
*Reset Date/Time (mm/dd/yy hh:mm:ss)		—			
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		40480			
*Blower 301 Vibration (In/Sec)		0.27			
*Blower 301 Speed (%Max)		85%			
*Blower 301 Inlet Bearing Temp (F)		42			
*Blower 301 Outlet Bearing Temp (F)		94			
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.3			
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-40.5			
*Demister Outlet Pressure (InWC)		-42.0			
*Demister DP (InWC)		+1.5			
*Flame Arrester Inlet Pressure (InWC)		+7.40			
*Flame Arrester Outlet Pressure (InWC)		+4.55			
*Flame Arrester DP (InWC)		+2.85			
Flare					
*Visible Emissions (Yes/No, If yes explain)		NO			
*Spiralator Position (%Open)		50			
*Manual Louver 1 Position (%Open)		50			
*Manual Louver 2 Position (%Open)		50			
Other					
Heat Trace OK (Check for Yes)	☐	☒	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☒ ☒	☐ ☐	☐ ☐	☐ ☐
Flare 3 - Monitoring					
Time (hh:mm)		1545			
Technician (Initials)		DB			
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☒	☐	☐	☐
*Heating/Cooling OK (Check for Yes)	☐	☒	☐	☐	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☒	☐	☐	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)		-39.5			
*Gas Handling Skid Inlet Temperature (F)		54			
*Panel Temperature (F)		74			
*Recirculation Valve Position (%Closed)		100%			
*Flare Flame Temperature (F)		998			
*Flame Arrestor Temperature (F)		76			
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		302 | 4023			
*Blower Speed (Blower | Speed (%Max))		62%			
*Blower Vibration (Blower | Vibration (in/Sec))		0.01			
*Blower Current (Blower | Current (Amps))		26.5			
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		951			
*Total Flow (MMSCF)		485.81			
*Flow Pressure (inWC)		3.4			
*Flow Temperature (F)		79			
*Flow DP (inWC)		2.02			
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		485.8170			
*Reset Date/Time (mm/dd/yy hh:mm:ss)		—			
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☒	☐	☐	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)		-40.4			
*Demister Outlet Pressure (inWC)		-42.8			
*Demister DP (inWC)		+2.4			
*Flame Arrester Inlet Pressure (inWC)		+3.2			
*Flame Arrester Outlet Pressure (inWC)		+2.8			
*Flame Arrester DP (inWC)		+0.4			
*Fail-Close Valve Air Pressure (psi)		110			
Flare					
*Visible Emissions (Yes/No, If yes explain)		NO			
*Spiralator Position (%Open)		50			
*Manual Louver 1 Position (%Open)		50			
*Manual Louver 2 Position (%Open)		50			
Other					
*Heat Trace OK (Check for Yes)	☐	☒	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☒ ☒	☐ ☐	☐ ☐	☐ ☐
Engine Plant 1 - Monitoring					
Time (hh mm)		1600			
Technician (Initials)		DB			
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	[illegible]	689 | 692			
*Power Setpoint (kWh) (Engine #2 | #1)		696 | 688			
Control Room - Laptop					
*Flow Total (MSCF)		548787.9			
*Flow Rate (SCFM)		1003.801			
*Discharge Gas Temperature (F)		97.1			
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)		-43.5			
Other					
*Visible Emissions (Yes/No, If yes explain)		NO			
Note * Collect during device operation only					

Remarks

Denver Arapahoe Disposal Site
Aurora, Colorado 80012

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	2/14/22				2/18/22
Lowry Header - Monitoring					
Time (hh:mm)	14:55				14:25
Technician (Initials)	DA				DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)	226				227
Gas Temperature (F)	45.6				45.6
Flare 2 - Monitoring					
Time (hh:mm)	15:40				14:35
Technician (Initials)	DB				DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☒
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)	-42.9				-42.1
*Flare DP (InWC)	5.22				5.11
*Flare Flame Temperature (F)	1232				1194
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	91				72
*Gas Handling Skid Inlet Temperature (F)	25				33
*Recirculation Valve Position (%Closed)	70%				70%
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	507				504
*Total Flow (MMSCF)	1090.75				1093.58
*Flow Pressure (InWC)	6.9				6.5
*Flow Temperature (F)	97				97
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	747.0923				749.9217
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—				—
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	40624				40718
*Blower 301 Vibration (In/Sec)	0.19				0.27
*Blower 301 Speed (%Max)	89%				87%
*Blower 301 Inlet Bearing Temp (F)	51				~~105~~ 44
*Blower 301 Outlet Bearing Temp (F)	99				105
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	13.1				13.6
Gas Handling Skid					
*Demister Inlet Pressure (InWC)	-43.3				-41.3
*Demister Outlet Pressure (InWC)	-44.7				-44.0
*Demister DP (InWC)	+1.4				+2.7
*Flame Arrester Inlet Pressure (InWC)	+7.35				+7.70
*Flame Arrester Outlet Pressure (InWC)	+4.50				+4.50
*Flame Arrester DP (InWC)	+2.85				+3.20
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				NO
*Spiralator Position (%Open)	50				50
*Manual Louver 1 Position (%Open)	50				50
*Manual Louver 2 Position (%Open)	50				50
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☒ ☒
Flare 3 - Monitoring					
Time (hh:mm)	15:50				14:45
Technician (Initials)	DB				DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-41.4				-39.6
*Gas Handling Skid Inlet Temperature (F)	55				52
*Panel Temperature (F)	78				69
*Recirculation Valve Position (%Closed)	100 C				100 C
*Flare Flame Temperature (F)	1739				1275
*Flame Arrestor Temperature (F)	83				76
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))	301 ~~4167~~ 4167				302 4249
*Blower Speed (Blower | Speed (%Max))	63%				61%
*Blower Vibration (Blower | Vibration (in/Sec))	0.01				0.01
*Blower Current (Blower | Current (Amps))	27.1				29.3
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	937				807
*Total Flow (MMSCF)	~~17.17100~~	494.29			498.61
*Flow Pressure (inWC)	2.7				2.5
*Flow Temperature (F)	84				78
*Flow DP (inWC)	2.12				1.95
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	494.2908				494.6078
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—				—
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	2/9/22 ☐	☐	☐	☐	☐
Gas Handling Skid	10:12 10:43 FORCED AI FLOW				
*Demister Inlet Pressure (inWC)	-41.0				-40.3
*Demister Outlet Pressure (inWC)	-41.5				-42.8
*Demister DP (inWC)	+0.5				+2.5
*Flame Arrester Inlet Pressure (inWC)	+3.2				+2.8
*Flame Arrester Outlet Pressure (inWC)	+3.2				+2.65
*Flame Arrester DP (inWC)	+0.5				+0.15
*Fail-Close Valve Air Pressure (psi)	115				115
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				NO
*Spiralator Position (%Open)	50				50
*Manual Louver 1 Position (%Open)	50				50
*Manual Louver 2 Position (%Open)	50				50
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☒ ◯
Engine Plant 1 - Monitoring					
Time (hh mm)	16:05				14:55
Technician (Initials)	DB				DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	694 676				695 673
*Power Setpoint (kWh) (Engine #2 | #1)	709 673				687 691
Control Room - Laptop					
*Flow Total (MSCF)	557205.5				563159.1
*Flow Rate (SCFM)	1030.0				1012.0
*Discharge Gas Temperature (F)	75				109
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-45.5				-45.2
Other					
*Visible Emissions (Yes/No, If yes explain)	NO				NO
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)			2/23/22	2/24/22	
Lowry Header - Monitoring					
Time (hh mm)			1510	1500	
Technician (Initials)			DA	DB	
Control Panel - Digital Recorder					
Flow Rate (SCFM)			204	224	
Gas Temperature (F)			45.0	44.9	
Flare 2 - Monitoring					
Time (hh:mm)			1513	1505	
Technician (Initials)			DB	DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☒	☒	☐
Heating/Cooling OK (Check for Yes)	☐	☐	☒	☒	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☒	☒	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)			25.3	42.7	
*Flare DP (InWC)			4.97	5.23	
*Flare Flame Temperature (F)			1116	1200	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			53	67	
*Gas Handling Skid Inlet Temperature (F)			41	33	
*Recirculation Valve Position (%Closed)			70%	70%	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			494	503	
*Total Flow (MMSCF)			1096.75	1097.46	
*Flow Pressure (InWC)			6.1	6.5	
*Flow Temperature (F)			76	97	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			753.0912	753.8021	
*Reset Date/Time (mm/dd/yy hh:mm:ss)			—	—	
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			40824	40847	
*Blower 301 Vibration (In/Sec)			0.17	0.50	
*Blower 301 Speed (%Max)			74%	85%	
*Blower 301 Inlet Bearing Temp (F)			27	28	
*Blower 301 Outlet Bearing Temp (F)			66	95	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			11.2	13.8	
Gas Handling Skid					
*Demister Inlet Pressure (InWC)			-25.56	-43.1	
*Demister Outlet Pressure (InWC)			-28.90	-45.8	
*Demister DP (InWC)			+2.64	+2.7	
*Flame Arrester Inlet Pressure (InWC)			+7.11	+7.7	
*Flame Arrester Outlet Pressure (InWC)			+4.31	+4.6	
*Flame Arrester DP (InWC)			+2.8	+3.1	
Flare					
*Visible Emissions (Yes/No, If yes explain)			NO	NO	
*Spiralator Position (%Open)			50	50	
*Manual Louver 1 Position (%Open)			50	50	
*Manual Louver 2 Position (%Open)			50	50	
Other					
Heat Trace OK (Check for Yes)	☐	☐	☒	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☒ ☒	☒ ☒	☐ ☐
Flare 3 - Monitoring					
Time (hh:mm)			1530	1510	
Technician (Initials)			DB	DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☒	☒	☐
*Heating/Cooling OK (Check for Yes)	☐	☐	☒	☒	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☒	☒	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)			-21.8	-40.4	
*Gas Handling Skid Inlet Temperature (F)			24	51	
*Panel Temperature (F)			56	58	
*Recirculation Valve Position (%Closed)			65.1	66.6	
*Flare Flame Temperature (F)			21	1172	
*Flame Arrestor Temperature (F)			27	21	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			302 | 4324	302 | 4327	
*Blower Speed (Blower | Speed (%Max))			0	75%	
*Blower Vibration (Blower | Vibration (in/Sec))			0	0.01	
*Blower Current (Blower | Current (Amps))			0	41.5	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			~~0~~	1540	
*Total Flow (MMSCF)			26.35202	~~26.35526~~	50278
*Flow Pressure (inWC)			0	8.3	
*Flow Temperature (F)			22	0.3	
*Flow DP (inWC)			0	5.7	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			502.5460	502.7828	
*Reset Date/Time (mm/dd/yy hh:mm:ss)			—	—	
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☒	☒	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)			-23.5	-40.5	
*Demister Outlet Pressure (inWC)			-22.9	-43.1	
*Demister DP (inWC)			+0.6	+2.6	
*Flame Arrester Inlet Pressure (inWC)			-0.1	+9.7	
*Flame Arrester Outlet Pressure (inWC)			-0.1	+9.0	
*Flame Arrester DP (inWC)			0	+0.7	
*Fail-Close Valve Air Pressure (psi)			110	115	
Flare					
*Visible Emissions (Yes/No, If yes explain)			NO	NO	
*Spiralator Position (%Open)			50	50	
*Manual Louver 1 Position (%Open)			50	50	
*Manual Louver 2 Position (%Open)			50	50	
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☒	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☒ ☐	☒ ☐	☐ ☐
Engine Plant 1 - Monitoring					
Time (hh mm)			1540	1520	
Technician (Initials)			DB	DB	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			682 | 692	678 | 652	
*Power Setpoint (kWh) (Engine #2 | #1)			691 | 685	695 | 712	
Control Room - Laptop					
*Flow Total (MSCF)			~~971.5~~	5704159	5715885
*Flow Rate (SCFM)			971.5	1060.8	
*Discharge Gas Temperature (F)			56.6	80.6	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)			-24.5	-39.3	
Other					
*Visible Emissions (Yes/No, If yes explain)			NO	NO	

Note * Collect during device operation only

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	2/28/22				
Lowry Header - Monitoring					
Time (hh:mm)	1405				
Technician (Initials)	DB				
Control Panel - Digital Recorder					
Flow Rate (SCFM)	214				
Gas Temperature (F)	45.1				
Flare 2 - Monitoring					
Time (hh:mm)	1515				
Technician (Initials)	DB				
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☐
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)	-42.3				
*Flare DP (inWC)	5.13				
*Flare Flame Temperature (F)	1236				
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	95				
*Gas Handling Skid Inlet Temperature (F)	21				
*Recirculation Valve Position (%Closed)	76				
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	500				
*Total Flow (MMSCF)	1100.35				
*Flow Pressure (inWC)	6.5				
*Flow Temperature (F)	97				
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	756.6902				
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—				
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	40944				
*Blower 301 Vibration (in/Sec)	0.23				
*Blower 301 Speed (%Max)	82				
*Blower 301 Inlet Bearing Temp (F)	56				
*Blower 301 Outlet Bearing Temp (F)	113				
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	13.5				
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-42.0				
*Demister Outlet Pressure (inWC)	-44.5				
*Demister DP (inWC)	+2.5				
*Flame Arrester Inlet Pressure (inWC)	+7.6				
*Flame Arrester Outlet Pressure (inWC)	+4.7				
*Flame Arrester DP (inWC)	+2.9				
Flare					
*Visible Emissions (Yes/No, If yes explain)	No				
*Spiralator Position (%Open)	50				
*Manual Louver 1 Position (%Open)	50				
*Manual Louver 2 Position (%Open)	50				
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Flare 3 - Monitoring					
Time (hh:mm)	1530				
Technician (Initials)	DB				
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☐
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☐	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-39.9				
*Gas Handling Skid Inlet Temperature (F)	55				
*Panel Temperature (F)	81				
*Recirculation Valve Position (%Closed)	100				
*Flare Flame Temperature (F)	1260				
*Flame Arrestor Temperature (F)	91				
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))	302 | 4424				
*Blower Speed (Blower | Speed (%Max))	71				
*Blower Vibration (Blower | Vibration (in/Sec))	0.02				
*Blower Current (Blower | Current (Amps))	36.9				
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	1371				
*Total Flow (MMSCF)	510.74				
*Flow Pressure (inWC)	7.5				
*Flow Temperature (F)	92				
*Flow DP (inWC)	4.65				
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	500.7395				
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—				
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☒	☐	☐	☐	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-39.7				
*Demister Outlet Pressure (inWC)	-41.5				
*Demister DP (inWC)	+1.8				
*Flame Arrester Inlet Pressure (inWC)	+8.9				
*Flame Arrester Outlet Pressure (inWC)	+8.1				
*Flame Arrester DP (inWC)	+0.8				
*Fail-Close Valve Air Pressure (psi)	115				
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				
*Spiralator Position (%Open)	50				
*Manual Louver 1 Position (%Open)	50				
*Manual Louver 2 Position (%Open)	50				
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Engine Plant 1 - Monitoring					
Time (hh mm)	1540				
Technician (Initials)	DE				
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	680 | 682				
*Power Setpoint (kWh) (Engine #2 | #1)	688 | 693				
Control Room - Laptop					
*Flow Total (MSCF)	577868.6				
*Flow Rate (SCFM)	1068.1				
*Discharge Gas Temperature (F)	97.6				
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-43.8				
Other					
*Visible Emissions (Yes/No, If yes explain)	NO				
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	3/7/22			3/10/22	~~3/11/22~~
Lowry Header - Monitoring					
Time (hh:mm)	1515			1425	
Technician (Initials)	DB			DB	DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)	215			216	
Gas Temperature (F)	45.1			45.0	
Flare 2 - Monitoring					
Time (hh:mm)	1520			1430	
Technician (Initials)	DB			DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☒	☐
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)	-42.3			-38.3	
*Flare DP (inWC)	5.21			5.15	
*Flare Flame Temperature (F)	1224			1121	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	69			68	
*Gas Handling Skid Inlet Temperature (F)	34			33	
*Recirculation Valve Position (%Closed)	70.1			70.1	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	501			500	
*Total Flow (MMSCF)	1105.46			1107.54	
*Flow Pressure (inWC)	6.5			6.3	
*Flow Temperature (F)	96			93	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Flower Data)*					
*Resettable Total Flow (MMSCF)	761.7406			763.8779	
*Reset Date/Time (mm/dd/yy hh.mm.ss)	—			—	
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	41112			41183	
*Blower 301 Vibration (in/Sec)	0.27			0.27	
*Blower 301 Speed (%Max)	98%			87%	
*Blower 301 Inlet Bearing Temp (F)	33			24	
*Blower 301 Outlet Bearing Temp (F)	100			94	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	13.6			13.5	
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-42.4			-42.3	
*Demister Outlet Pressure (inWC)	-45.1			-44.7	
*Demister DP (inWC)	+2.7			+2.4	
*Flame Arrester Inlet Pressure (inWC)	+7.5			+7.4	
*Flame Arrester Outlet Pressure (inWC)	+4.6			+4.5	
*Flame Arrester DP (inWC)	+2.9			+2.9	
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	
*Spiralator Position (%Open)	50			50	
*Manual Louver 1 Position (%Open)	50			50	
*Manual Louver 2 Position (%Open)	50			50	
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ | ☒	☐ | ☐	☐ | ☐	☒ | ☒	☐ | ☐
Flare 3 - Monitoring					
Time (hh:mm)	1530			1440	
Technician (Initials)	DB			DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☒	☐
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☒	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-40.2			-39.9	
*Gas Handling Skid Inlet Temperature (F)	52			52	
*Panel Temperature (F)	62			55	
*Recirculation Valve Position (%Closed)	100.2			100.2	
*Flare Flame Temperature (F)	1247			1261	
*Flame Arrestor Temperature (F)	79			75	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))	302 | 4592			302 | 4663	
*Blower Speed (Blower | Speed (%Max))	70.2			68.2	
*Blower Vibration (Blower | Vibration (in/Sec))	0.01			0.01	
*Blower Current (Blower | Current (Amps))	35.5			34.4	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	1322			1276	
*Total Flow (MMSCF)	524.68			530.24	
*Flow Pressure (inWC)	6.4			5.6	
*Flow Temperature (F)	81			77	
*Flow DP (inWC)	4.28			3.9	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	524.6897			530.2406	
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—			—	
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☒	☐	☐	☒	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-40.1			-40.0	
*Demister Outlet Pressure (inWC)	-41.8			-41.8	
*Demister DP (inWC)	+1.7			+1.8	
*Flame Arrester Inlet Pressure (inWC)	+7.4			+6.6	
*Flame Arrester Outlet Pressure (inWC)	+6.8			+5.3	
*Flame Arrester DP (inWC)	+0.6			+1.3	
*Fail-Close Valve Air Pressure (psi)	110			110	
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	
*Spiralator Position (%Open)	50			50	
*Manual Louver 1 Position (%Open)	50			50	
*Manual Louver 2 Position (%Open)	50			50	
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☐	☐ ☐	☐ ☐	☒ ☐	☐ ☐
Engine Plant 1 - Monitoring					
Time (hh mm)	1540			1450	
Technician (Initials)	DB			DB	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	698 | 684			699 | 684	
*Power Setpoint (kWh) (Engine #2 | #1)	703 | 691			693 | 688	
Control Room - Laptop					
*Flow Total (MSCF)	587484			592171.5	
*Flow Rate (SCFM)	841.9			1017.8	
*Discharge Gas Temperature (F)	95.7			95.1	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-41.0			-31.5	
Other					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	

Note * Collect during device operation only

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	3/14/22				
Lowry Header - Monitoring					
Time (hh mm)	1440				
Technician (Initials)	DB				
Control Panel - Digital Recorder					
Flow Rate (SCFM)	217				
Gas Temperature (F)	45.0				
Flare 2 - Monitoring					
Time (hh:mm)	1445				
Technician (Initials)	DS				
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☐
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)	-41.4				
*Flare DP (inWC)	5.18				
*Flare Flame Temperature (F)	1129				
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	73				
*Gas Handling Skid Inlet Temperature (F)	33				
*Recirculation Valve Position (%Closed)	70 %				
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	500				
*Total Flow (MMSCF)	1110.40				
*Flow Pressure (inWC)	6.7				
*Flow Temperature (F)	102				
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	766.7411				
*Reset Date/Time (mm/dd/yy hh.mm:ss)	—				
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	41278				
*Blower 301 Vibration (in/Sec)	0.28				
*Blower 301 Speed (%Max)	87%				
*Blower 301 Inlet Bearing Temp (F)	51				
*Blower 301 Outlet Bearing Temp (F)	113				
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	13.6				
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-41.6				
*Demister Outlet Pressure (inWC)	-43.9				
*Demister DP (inWC)	+2.3				
*Flame Arrester Inlet Pressure (inWC)	+7.7				
*Flame Arrester Outlet Pressure (inWC)	+4.9				
*Flame Arrester DP (inWC)	-2.8				
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				
*Spiralator Position (%Open)	50				
*Manual Louver 1 Position (%Open)	50				
*Manual Louver 2 Position (%Open)	50				
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Flare 3 - Monitoring					
Time (hh.mm)	1560				
Technician (Initials)	DB				
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☐
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☐	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-39.9				
*Gas Handling Skid Inlet Temperature (F)	55				
*Panel Temperature (F)	71				
*Recirculation Valve Position (%Closed)	100 C				
*Flare Flame Temperature (F)	1280				
*Flame Arrestor Temperature (F)	85				
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))	302 | 4758				
*Blower Speed (Blower | Speed (%Max))	CLC				
*Blower Vibration (Blower | Vibration (in/Sec))	0.01				
*Blower Current (Blower | Current (Amps))	32.1				
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	1187				
*Total Flow (MMSCF)	537.64				
*Flow Pressure (inWC)	5.6				
*Flow Temperature (F)	87				
*Flow DP (inWC)	3.41				
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	537.6439				
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—				
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☒	☐	☐	■	■
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-39.5				
*Demister Outlet Pressure (inWC)	-40.7				
*Demister DP (inWC)	+1.2				
*Flame Arrester Inlet Pressure (inWC)	-6.3				
*Flame Arrester Outlet Pressure (inWC)	+5.7				
*Flame Arrester DP (inWC)	+0.6				
*Fail-Close Valve Air Pressure (psi)	110				
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				
*Spiralator Position (%Open)	50				
*Manual Louver 1 Position (%Open)	50				
*Manual Louver 2 Position (%Open)	50				
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ | ☒	☐ | ☐	☐ | ☐	☐ | ☐	☐ | ☐
Engine Plant 1 - Monitoring					
Time (hh mm)	1510				
Technician (Initials)	DB				
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	677 | 664				
*Power Setpoint (kWh) (Engine #2 | #1)	680 | 699				
Control Room - Laptop					
*Flow Total (MSCF)	598039.5				
*Flow Rate (SCFM)	1059.0				
*Discharge Gas Temperature (F)	93.3				
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-43.1				
Other					
*Visible Emissions (Yes/No, If yes explain)	NO				
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)		3/22/22			3/25/22
Lowry Header - Monitoring					
Time (hh mm)		1605			1215
Technician (Initials)		DB			DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)		211			206
Gas Temperature (F)		44.9			45.0
Flare 2 - Monitoring					
Time (hh:mm)		1610			1220
Technician (Initials)		DB			DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☒	☐	☐	☒
Heating/Cooling OK (Check for Yes)	☐	☒	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☒	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)		-39.8			-39.9
*Flare DP (InWC)		5.06			6.3
*Flare Flame Temperature (F)		1007			1270
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		63			73
*Gas Handling Skid Inlet Temperature (F)		38			35
*Recirculation Valve Position (%Closed)		70%			70%
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		497			498
*Total Flow (MMSCF)		1115.52			1117.37
*Flow Pressure (InWC)		6.3			6.4
*Flow Temperature (F)		93			102
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		771.9565			773.9035
*Reset Date/Time (mm/dd/yy hh.mm.ss)		—			—
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		41444			41517
*Blower 301 Vibration (in/Sec)		0.27			0.29
*Blower 301 Speed (%Max)		85%			86%
*Blower 301 Inlet Bearing Temp (F)		39			54
*Blower 301 Outlet Bearing Temp (F)		90			92
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.3			13.3
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-40.2			-39.8
*Demister Outlet Pressure (InWC)		-42.1			-42.3
*Demister DP (InWC)		+0.9			+2.5
*Flame Arrester Inlet Pressure (InWC)		-7.3			+7.5
*Flame Arrester Outlet Pressure (InWC)		+4.4			+4.5
*Flame Arrester DP (InWC)		+2.9			+3.0
Flare					
*Visible Emissions (Yes/No, If yes explain)		NO			NO
*Spiralator Position (%Open)		50			50
*Manual Louver 1 Position (%Open)		50			50
*Manual Louver 2 Position (%Open)		50			50
Other					
Heat Trace OK (Check for Yes)	☐	☒	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☒ ☒	☐ ☐	☐ ☐	☒ ☒
Flare 3 - Monitoring					
Time (hh.mm)		1225			1235
Technician (Initials)		DG			DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☒	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	☐	☒	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☒	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (InWC)		-39.9			-39.9
*Gas Handling Skid Inlet Temperature (F)		54			54
*Panel Temperature (F)		51			73
*Recirculation Valve Position (%Closed)		100 %			100 %
*Flare Flame Temperature (F)		1240			1202
*Flame Arrestor Temperature (F)		72			84
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		302 | 4951			302 | 5020
*Blower Speed (Blower | Speed (%Max))		66			66
*Blower Vibration (Blower | Vibration (in/Sec))		0.01			0.01
*Blower Current (Blower | Current (Amps))		31.6			31.5
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1153			1152
*Total Flow (MMSCF)		553.11			558.06
*Flow Pressure (InWC)		5.2			4.8
*Flow Temperature (F)		75			85
*Flow DP (InWC)		3.08			3.26
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		553.1113			558.0627
*Reset Date/Time (mm/dd/yy hh:mm:ss)		—			—
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☒	☐	☐	☒
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-40.1			-39.8
*Demister Outlet Pressure (InWC)		-41.9			-41.1
*Demister DP (InWC)		+1.8			+1.3
*Flame Arrester Inlet Pressure (InWC)		+6.0			+5.4
*Flame Arrester Outlet Pressure (InWC)		+5.3			+5.0
*Flame Arrester DP (InWC)		+0.7			+0.4
*Fail-Close Valve Air Pressure (psi)		110			110
Flare					
*Visible Emissions (Yes/No, If yes explain)		NO			NO
*Spiralator Position (%Open)		50			50
*Manual Louver 1 Position (%Open)		50			50
*Manual Louver 2 Position (%Open)		50			50
Other					
*Heat Trace OK (Check for Yes)	☐	☒	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ | ☐	☒ | ☒	☐ | ☐	☐ | ☐	☒ | ☒
Engine Plant 1 - Monitoring					
Time (hh mm)		1655			1245
Technician (Initials)		DB			DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		692 | 672			680 | 692
*Power Setpoint (kWh) (Engine #2 | #1)		682 | 684			685 | 696
Control Room - Laptop					
*Flow Total (MSCF)		609741.5			613943.5
*Flow Rate (SCFM)		1072.2			1057.7
*Discharge Gas Temperature (F)		64.9			88.5
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)		-41.3			-41.8
Other					
*Visible Emissions (Yes/No, If yes explain)		NO			NO
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)					4/29/22
Lowry Header - Monitoring					
Time (hh mm)					1350
Technician (Initials)					DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)					183
Gas Temperature (F)					49.4
Flare 2 - Monitoring					
Time (hh:mm)					1355
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	☒
Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)					-36.8
*Flare DP (inWC)					5.32
*Flare Flame Temperature (F)					1166
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					77
*Gas Handling Skid Inlet Temperature (F)					45
*Recirculation Valve Position (%Closed)					70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					503
*Total Flow (MMSCF)					1142.84
*Flow Pressure (inWC)					6.3
*Flow Temperature (F)					103
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					799.1806
*Reset Date/Time (mm/dd/yy hh:mm:ss)					—
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					42359
*Blower 301 Vibration (In/Sec)					0.25
*Blower 301 Speed (%Max)					65%
*Blower 301 Inlet Bearing Temp (F)					58
*Blower 301 Outlet Bearing Temp (F)					99
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					13.1
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-38.2
*Demister Outlet Pressure (inWC)					-39.5
*Demister DP (inWC)					+1.3
*Flame Arrester Inlet Pressure (inWC)					+7.4
*Flame Arrester Outlet Pressure (inWC)					+4.5
*Flame Arrester DP (inWC)					+2.9
Flare					
*Visible Emissions (Yes/No, If yes explain)					NO
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒
Flare 3 - Monitoring					
Time (hh:mm)					1405
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)					-40.5
*Gas Handling Skid Inlet Temperature (F)					60
*Panel Temperature (F)					68
*Recirculation Valve Position (%Closed)					100 %
*Flare Flame Temperature (F)					1404
*Flame Arrestor Temperature (F)					81
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower 1 Runtime (Hours))					302 | 5861
*Blower Speed (Blower 1 Speed (%Max))					63.6
*Blower Vibration (Blower 1 Vibration (In/Sec))					0.02
*Blower Current (Blower 1 Current (Amps))					27.3
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)					956
*Total Flow (MMSCF)					613.48
*Flow Pressure (inWC)					4.2
*Flow Temperature (F)					82
*Flow DP (inWC)					2.14
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)					613.4785
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☐	☐	☒
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-40.6
*Demister Outlet Pressure (inWC)					-41.4
*Demister DP (inWC)					+0.8
*Flame Arrester Inlet Pressure (inWC)					+4.2
*Flame Arrester Outlet Pressure (inWC)					+3.9
*Flame Arrester DP (inWC)					+0.3
*Fail-Close Valve Air Pressure (psi)					107
Flare					
*Visible Emissions (Yes/No, If yes explain)					NO
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒
Engine Plant 1 - Monitoring					
Time (hh mm)					1410
Technician (Initials)					DS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					667 | 685
*Power Setpoint (kWh) (Engine #2 | #1)					691 | 673
Control Room - Laptop					
*Flow Total (MSCF)					164921.4
*Flow Rate (SCFM)					1099.3
*Discharge Gas Temperature (F)					73.2
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)					-42.7
Other					
*Visible Emissions (Yes/No, If yes explain)					NO
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)					4/22/22
Lowry Header - Monitoring					
Time (hh mm)					1530
Technician (Initials)					DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)					183
Gas Temperature (F)					48.3
Flare 2 - Monitoring					
Time (hh:mm)					1535
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐		☐	☒
Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)					-37.6
*Flare DP (InWC)					5.25
*Flare Flame Temperature (F)					1091
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					103
*Gas Handling Skid Inlet Temperature (F)					28
*Recirculation Valve Position (%Closed)					70%
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					499
*Total Flow (MMSCF)					1137.85
*Flow Pressure (InWC)					6.7
*Flow Temperature (F)					100
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					794.1852
*Reset Date/Time (mm/dd/yy hh:mm:ss)					—
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					42192
*Blower 301 Vibration (in/Sec)					0.28
*Blower 301 Speed (%Max)					88%
*Blower 301 Inlet Bearing Temp (F)					75
*Blower 301 Outlet Bearing Temp (F)					96
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					13.2
Gas Handling Skid					
*Demister Inlet Pressure (InWC)					-37.2
*Demister Outlet Pressure (InWC)					-40.0
*Demister DP (InWC)					+2.8
*Flame Arrester Inlet Pressure (InWC)					+7.4
*Flame Arrester Outlet Pressure (InWC)					+4.8
*Flame Arrester DP (InWC)					+2.6
Flare					
*Visible Emissions (Yes/No, If yes explain)					No
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ | ☐	☐ | ☐	☐ | ☐	☐ | ☐	☒ | ☒
Flare 3 - Monitoring					
Time (hh:mm)					1545
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)					-40.5
*Gas Handling Skid Inlet Temperature (F)					61
*Panel Temperature (F)					85
*Recirculation Valve Position (%Closed)					~~100~~ 100
*Flare Flame Temperature (F)					1205
*Flame Arrestor Temperature (F)					95
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower 1 | Runtime (Hours))					302 | 5695
*Blower Speed (Blower 1 | Speed (%Max))					68%
*Blower Vibration (Blower 1 | Vibration (in/Sec))					0.02
*Blower Current (Blower 1 | Current (Amps))					31.1
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)					1127
*Total Flow (MMSCF)					603.74
*Flow Pressure (inWC)					4.8
*Flow Temperature (F)					97
*Flow DP (inWC)					3.18
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)					603.7443
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☐	☐	☒
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-40.4
*Demister Outlet Pressure (inWC)					-41.4
*Demister DP (inWC)					+1.0
*Flame Arrester Inlet Pressure (inWC)					+5.6
*Flame Arrester Outlet Pressure (inWC)					+5.4
*Flame Arrester DP (inWC)					+0.2
*Fail-Close Valve Air Pressure (psi)					107
Flare					
*Visible Emissions (Yes/No, If yes explain)					no
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒
Engine Plant 1 - Monitoring					
Time (hh mm)					1600
Technician (initials)					DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					674 | 680
*Power Setpoint (kWh) (Engine #2 | #1)					681 | 674
Control Room - Laptop					
*Flow Total (MSCF)					~~1626.2~~ 654007.5
*Flow Rate (SCFM)					1626.2
*Discharge Gas Temperature (F)					96.7
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)					-44.0
Other					
*Visible Emissions (Yes/No, If yes explain)					
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)					4/15/22
Lowry Header - Monitoring					
Time (hh mm)					1715
Technician (Initials)					DO
Control Panel - Digital Recorder					
Flow Rate (SCFM)					186
Gas Temperature (F)					47.4
Flare 2 - Monitoring					
Time (hh:mm)					1720
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	☒
Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)					-38.1
*Flare DP (inWC)					~~1187~~ 5.18
*Flare Flame Temperature (F)					1187
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					81
*Gas Handling Skid Inlet Temperature (F)					35
*Recirculation Valve Position (%Closed)					70%
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					496
*Total Flow (MMSCF)					1132.85
*Flow Pressure (inWC)					6.4
*Flow Temperature (F)					98
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					789.1899
*Reset Date/Time (mm/dd/yy hh:mm:ss)					—
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					42026
*Blower 301 Vibration (in/Sec)					0.25
*Blower 301 Speed (%Max)					85%
*Blower 301 Inlet Bearing Temp (F)					53
*Blower 301 Outlet Bearing Temp (F)					95
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					12.9
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-37.9
*Demister Outlet Pressure (inWC)					-40.8
*Demister DP (inWC)					+2.9
*Flame Arrester Inlet Pressure (inWC)					-7.6
*Flame Arrester Outlet Pressure (inWC)					-4.5
*Flame Arrester DP (inWC)					+3.1
Flare					
*Visible Emissions (Yes/No, If yes explain)					No
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK [T1 | T2 (Check for Yes)]	☐ | ☐	☐ | ☐	☐ | ☐	☐ | ☐	☒ | ☒
Flare 3 - Monitoring					
Time (hh:mm)					1730
Technician (Initials)					DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	☐	☐	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)					-40.5
*Gas Handling Skid Inlet Temperature (F)					~~37~~ 56
*Panel Temperature (F)					76
*Recirculation Valve Position (%Closed)					60%
*Flare Flame Temperature (F)					1126
*Flame Arrestor Temperature (F)					86
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower 1 | Runtime (Hours))					302 | 5529
*Blower Speed (Blower 1 | Speed (%Max))					68%
*Blower Vibration (Blower 1 | Vibration (in/Sec))					0.61
*Blower Current (Blower 1 | Current (Amps))					33.3
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)					1231
*Total Flow (MMSCF)					592.77
*Flow Pressure (inWC)					5.6
*Flow Temperature (F)					88
*Flow DP (inWC)					3.76
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)					592.7672
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☐	☐	☒
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-39.0
*Demister Outlet Pressure (inWC)					-40.8
*Demister DP (inWC)					-1.8
*Flame Arrester Inlet Pressure (inWC)					-6.4
*Flame Arrester Outlet Pressure (inWC)					-6.0
*Flame Arrester DP (inWC)					-0.4
*Fail-Close Valve Air Pressure (psi)					115
Flare					
*Visible Emissions (Yes/No, If yes explain)					NO
*Spiralator Position (%Open)					50
*Manual Louver 1 Position (%Open)					50
*Manual Louver 2 Position (%Open)					50
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	☒ ☒
Engine Plant 1 - Monitoring					
Time (hh:mm)					1735
Technician (Initials)					DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					668 | 691
*Power Setpoint (kWh) (Engine #2 | #1)					676 | 682
Control Room - Laptop					
*Flow Total (MSCF)					~~to6in.~~ 644624.5
*Flow Rate (SCFM)					1090.6
*Discharge Gas Temperature (F)					98.5
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)					-44.5
Other					
*Visible Emissions (Yes/No, If yes explain)					NO
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)			4/6/22		4/8/22
Lowry Header - Monitoring					
Time (hh mm)			1550		1600
Technician (Initials)			DB		DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)			191		194
Gas Temperature (F)			46.4		46.6
Flare 2 - Monitoring					
Time (hh:mm)			1555		1605
Technician (Initials)			DB		DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☒	☐	☒
Heating/Cooling OK (Check for Yes)	☐	☐	☒	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☐	☒	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)			-38.5		-38.5
*Flare DP (inWC)			5.16		5.22
*Flare Flame Temperature (F)			1179		1249
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			69		88
*Gas Handling Skid Inlet Temperature (F)			39		30
*Recirculation Valve Position (%Closed)			70		70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			497		504
*Total Flow (MMSCF)			1126.32		1127.77
*Flow Pressure (inWC)			6.4		6.5
*Flow Temperature (F)			97		99
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			782.6580		784.1094
*Reset Date/Time (mm/dd/yy hh.mm.ss)			—		
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			41808		41857
*Blower 301 Vibration (in/Sec)			0.27		0.26
*Blower 301 Speed (%Max)			85.2		86.2
*Blower 301 Inlet Bearing Temp (F)			46		59
*Blower 301 Outlet Bearing Temp (F)			92		111
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			13.2		13.1
Gas Handling Skid					
*Demister Inlet Pressure (inWC)			-39.5		-39.5
*Demister Outlet Pressure (inWC)			-41.8		-40.5
*Demister DP (inWC)			+2.3		+1.0
*Flame Arrester Inlet Pressure (inWC)			+7.5		+7.7
*Flame Arrester Outlet Pressure (inWC)			+4.2		+4.6
*Flame Arrester DP (inWC)			+2.3		+3.1
Flare					
*Visible Emissions (Yes/No, If yes explain)			NO		NO
*Spiralator Position (%Open)			50		50
*Manual Louver 1 Position (%Open)			50		50
*Manual Louver 2 Position (%Open)			50		50
Other					
Heat Trace OK (Check for Yes)	☐	☐	☒	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ | ☐	☐ | ☐	☒ | X	☐ | ☐	☒ | ☒
Flare 3 - Monitoring					
Time (hh:mm)			1600		1610
Technician (Initials)			DB		DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☐	☒	☐	☒
*Heating/Cooling OK (Check for Yes)	☐	☐	☒	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☐	☒	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)			-40.6		-39.7
*Gas Handling Skid Inlet Temperature (F)			55		57
*Panel Temperature (F)			61		81
*Recirculation Valve Position (%Closed)			100 %		100 %
*Flare Flame Temperature (F)			1364		1234
*Flame Arrestor Temperature (F)			76		89
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower 1 | Runtime (Hours))			302 | 5311		302 | 5359
*Blower Speed (Blower 1 | Speed (%Max))			62 %		166 %
*Blower Vibration (Blower 1 | Vibration (in/Sec))			0.01		0.01
*Blower Current (Blower 1 | Current (Amps))			26.8		29.7
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			954		1100
*Total Flow (MMSCF)			577.09		579.94
*Flow Pressure (inWC)			3.9		4.3
*Flow Temperature (F)			79		90
*Flow DP (inWC)			2.18		3.01
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			577.0911		579.9435
*Reset Date/Time (mm/dd/yy hh:mm:ss)			—		—
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☐	☒	☐	☒
Gas Handling Skid					
*Demister Inlet Pressure (inWC)			-39.8		-40.0
*Demister Outlet Pressure (inWC)			-40.4		-40.6
*Demister DP (inWC)			+1.1		+0.6
*Flame Arrester Inlet Pressure (inWC)			+4.6		+5.1
*Flame Arrester Outlet Pressure (inWC)			+4.1		+4.7
*Flame Arrester DP (inWC)			+0.5		+0.4
*Fail-Close Valve Air Pressure (psi)			110		110
Flare					
*Visible Emissions (Yes/No, If yes explain)			NO		NO
*Spiralator Position (%Open)			50		50
*Manual Louver 1 Position (%Open)			50		50
*Manual Louver 2 Position (%Open)			50		50
Other					
*Heat Trace OK (Check for Yes)	☐	☐	☒	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	☒ ☒	☐ ☐	☒ ☒
Engine Plant 1 - Monitoring					
Time (hh mm)					1620
Technician (Initials)			1610 DB		DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			700 | 672		690 | 664
*Power Setpoint (kWh) (Engine #2 | #1)			644 | 700		662 | 697
Control Room - Laptop					
*Flow Total (MSCF)			632292.1		635450.4
*Flow Rate (SCFM)			1106.3		1625.3
*Discharge Gas Temperature (F)			79.7		82.0
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)			-41.8		-42.5
Other					
*Visible Emissions (Yes/No, If yes explain)					
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)		5/3/22			5/6/22
Lowry Header - Monitoring					
Time (hh mm)		1635			1530
Technician (Initials)		DB			DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)		191			194
Gas Temperature (F)		49.8			50.1
Flare 2 - Monitoring					
Time (hh:mm)		1640			1535
Technician (Initials)		DB			DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☐	☒	☐	☐	☒
Heating/Cooling OK (Check for Yes)	☐	☒	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☐	☒	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)		-42.7			-42.8
*Flare DP (InWC)		5.29			5.35
*Flare Flame Temperature (F)		1188			1281
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		78			105
*Gas Handling Skid Inlet Temperature (F)		43			29
*Recirculation Valve Position (%Closed)		70%			70%
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		499			503
*Total Flow (MMSCF)		1145.81			1147.94
*Flow Pressure (InWC)		6.5			6.7
*Flow Temperature (F)		109			110
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		802.1434			804.2755
*Reset Date/Time (mm/dd/yy hh:mm:ss)		—			—
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		42457			42528
*Blower 301 Vibration (in/Sec)		0.25			0.24
*Blower 301 Speed (%Max)		90%			91%
*Blower 301 Inlet Bearing Temp (F)		56			81
*Blower 301 Outlet Bearing Temp (F)		111			115
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.8			14.0
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-43.0			-43.4
*Demister Outlet Pressure (InWC)		-45.7			-45.6
*Demister DP (InWC)		+2.7			+2.2
*Flame Arrester Inlet Pressure (InWC)		+7.6			+7.5
*Flame Arrester Outlet Pressure (InWC)		+4.6			+4.5
*Flame Arrester DP (InWC)		+3.0			+3.0
Flare					
*Visible Emissions (Yes/No, If yes explain)		NO			NO
*Spiralator Position (%Open)		50			50
*Manual Louver 1 Position (%Open)		50			50
*Manual Louver 2 Position (%Open)		50			50
Other					
Heat Trace OK (Check for Yes)	☐	☒	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☒ ☒	☐ ☐	☐ ☐	☒ ☒
Flare 3 - Monitoring					
Time (hh:mm)		1645			1545
Technician (Initials)		DB			DB
Control Panel					
*Indicator Lights OK (Check for Yes)	■	☒	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	■	☒	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☐	☒	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (InWC)		-40.1			-40.0
*Gas Handling Skid Inlet Temperature (F)		60			62
*Panel Temperature (F)		74			80
*Recirculation Valve Position (%Closed)		100			100
*Flare Flame Temperature (F)		1329			1272
*Flame Arrestor Temperature (F)		85			95
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower 1 Runtime (Hours))		3013244			3013315
*Blower Speed (Blower 1 Speed (%Max))		66%			65%
*Blower Vibration (Blower 1 Vibration (In/Sec))		0.01			0.02
*Blower Current (Blower 1 Current (Amps))		32.1			30.3
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1116			1051
*Total Flow (MMSCF)		619.77			624.12
*Flow Pressure (InWC)		5.0			4.4
*Flow Temperature (F)		87			96
*Flow DP (InWC)		3.10			2.69
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		619.7168			624.1151
*Reset Date/Time (mm/dd/yy hh:mm:ss)		—			—
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☐	☒	☐	☐	☒
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-39.7			-39.4
*Demister Outlet Pressure (InWC)		-40.8			-40.8
*Demister DP (InWC)		+1.1			+1.4
*Flame Arrester Inlet Pressure (InWC)		+6.0			+4.9
*Flame Arrester Outlet Pressure (InWC)		+5.5			+4.4
*Flame Arrester DP (InWC)		+0.5			+0.5
*Fail-Close Valve Air Pressure (psi)		107			107
Flare					
*Visible Emissions (Yes/No, If yes explain)		NO			NO
*Spiralator Position (%Open)		50			50
*Manual Louver 1 Position (%Open)		50			50
*Manual Louver 2 Position (%Open)		50			50
Other					
*Heat Trace OK (Check for Yes)	☐	☒	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☒ ☒	☐ ☐	☐ ☐	☒ ☒
Engine Plant 1 - Monitoring					
Time (hh mm)		1650			1555
Technician (Initials)		DB			DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		670 678			687 692
*Power Setpoint (kWh) (Engine #2 | #1)		693 681			685 685
Control Room - Laptop					
*Flow Total (MSCF)		671001.6			675735.1
*Flow Rate (SCFM)		11070			1066.8
*Discharge Gas Temperature (F)		69.0			80.1
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)		-43.8			-45.2
Other					
*Visible Emissions (Yes/No, If yes explain)		NO			NO
Note * Collect during device operation only					

Remarks

BLR 2 → 1 ON 5/3/22

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	5/9/22				5/13/22
Lowry Header - Monitoring					
Time (hh:mm)	1600				1610
Technician (Initials)	DB				DB
Control Panel - Digital Recorder					
Flow Rate (SCFM)	184				190
Gas Temperature (F)	50.4				51.1
Flare 2 - Monitoring					
Time (hh:mm)	1605				1620
Technician (Initials)	DB				DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☒
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☒
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☐	☒
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)	-42.9				-42.3
*Flare DP (InWC)	5.33				5.29
*Flare Flame Temperature (F)	932				1253
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	90				100
*Gas Handling Skid Inlet Temperature (F)	39				36
*Recirculation Valve Position (%Closed)	70 C				70 C
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	501				500
*Total Flow (MMSCF)	1150.11				1153.00
*Flow Pressure (InWC)	6.8				6.8
*Flow Temperature (F)	112				114
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	806.4481				809.3409
*Reset Date/Time (mm/dd/yy hh.mm.ss)	—				—
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	42601				42697
*Blower 301 Vibration (in/Sec)	0.23 ~~0.27~~				0.24
*Blower 301 Speed (%Max)	91 C				90%
*Blower 301 Inlet Bearing Temp (F)	68				77
*Blower 301 Outlet Bearing Temp (F)	110				117
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	14.0				13.8
Gas Handling Skid					
*Demister Inlet Pressure (InWC)	-43.3				-42.5
*Demister Outlet Pressure (InWC)	-45.7				-44.9
*Demister DP (InWC)	+2.4				+2.4
*Flame Arrester Inlet Pressure (InWC)	+7.5				+8.0
*Flame Arrester Outlet Pressure (InWC)	+4.4				+4.8
*Flame Arrester DP (InWC)	+3.1				+3.2
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				NO
*Spiralator Position (%Open)	50				50
*Manual Louver 1 Position (%Open)	50				50
*Manual Louver 2 Position (%Open)	50				50
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ | ☒	☐ | ☐	☐ | ☐	☐ | ☐	☒ | ☒
Flare 3 - Monitoring					
Time (hh:mm)	1610				
Technician (Initials)	DB				DB
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☐	☒
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☐	☒
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☐	☒

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-40.2				-39.8
*Gas Handling Skid Inlet Temperature (F)	62				64
*Panel Temperature (F)	79				80
*Recirculation Valve Position (%Closed)	100%				100 %
*Flare Flame Temperature (F)	1319				1290
*Flame Arrestor Temperature (F)	91				95
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))	301 | 3387				301 | 3483
*Blower Speed (Blower | Speed (%Max))	64%				65%
*Blower Vibration (Blower | Vibration (in/Sec))	0.02				0.02
*Blower Current (Blower | Current (Amps))	29.3				30.3
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	986				1048
*Total Flow (MMSCF)	628.73				634.75
*Flow Pressure (inWC)	3.7				4.2
*Flow Temperature (F)	93				96
*Flow DP (inWC)	2.43				2.72
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	628.7277				634.7548
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—				—
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☒	☐	☐	☐	☒
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-39.6				-39.5
*Demister Outlet Pressure (inWC)	-40.6				-40.6
*Demister DP (inWC)	+1.0				+1.1
*Flame Arrester Inlet Pressure (inWC)	+4.2				+5.0
*Flame Arrester Outlet Pressure (inWC)	+3.8				+4.3
*Flame Arrester DP (inWC)	+0.4				+0.7
*Fail-Close Valve Air Pressure (psi)	107				108
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO				NO
*Spiralator Position (%Open)	50				50
*Manual Louver 1 Position (%Open)	50				50
*Manual Louver 2 Position (%Open)	50				50
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☐	☒
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☒	☐ ☐	☐ ☐	☐ ☐	☒ ☒
Engine Plant 1 - Monitoring					
Time (hh:mm)	1620				1635
Technician (Initials)	DB				DB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	696 | 673				670 | 661
*Power Setpoint (kWh) (Engine #2 | #1)	681 | 667				663 | 674
Control Room - Laptop					
*Flow Total (MSCF)	680489.5				6866758
*Flow Rate (SCFM)	1089.5				1072.6
*Discharge Gas Temperature (F)	73.5				74.8
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-44.1				-43.9
Other					
*Visible Emissions (Yes/No, If yes explain)	NO				NO
Note * Collect during device operation only					

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	5/16/22			5/19/22	
Lowry Header - Monitoring					
Time (hh:mm)	1600			1530	
Technician (initials)	DB			DB	
Control Panel - Digital Recorder					
Flow Rate (SCFM)	192			196	
Gas Temperature (F)	51.6			52.1	
Flare 2 - Monitoring					
Time (hh:mm)	1605			1540	
Technician (initials)	DB			DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☒	☐
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (inWC)	-42.8			-41.2	
*Flare DP (inWC)	5.37			5.26	
*Flare Flame Temperature (F)	1251			1255	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	100			109	
*Gas Handling Skid Inlet Temperature (F)	35			32	
*Recirculation Valve Position (%Closed)	70%			70%	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	500			498	
*Total Flow (MMSCF)	1155.16			1157.31	
*Flow Pressure (inWC)	6.7			6.6	
*Flow Temperature (F)	110			110	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	811.4935			813.6456	
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—			—	
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	42769			42840	
*Blower 301 Vibration (in/Sec)	0.25			0.23	
*Blower 301 Speed (%Max)	90%			91%	
*Blower 301 Inlet Bearing Temp (F)	81			83	
*Blower 301 Outlet Bearing Temp (F)	100			107	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	14.0			13.7	
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-42.6			-41.2	
*Demister Outlet Pressure (inWC)	-45.0			-44.2	
*Demister DP (inWC)	+2.4			+3.0	
*Flame Arrester Inlet Pressure (inWC)	+7.8			+7.8	
*Flame Arrester Outlet Pressure (inWC)	+4.7			+4.7	
*Flame Arrester DP (inWC)	+3.1			+3.1	
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	
*Spiralator Position (%Open)	50			50	
*Manual Louver 1 Position (%Open)	50			50	
*Manual Louver 2 Position (%Open)	50			50	
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ | ☒	☐ | ☐	☐ | ☐	☒ | ☒	☐ | ☐
Flare 3 - Monitoring					
Time (hh:mm)	1615			1545	
Technician (initials)	DB			DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☒	☐
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☒	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-40.5			-39.9	
*Gas Handling Skid Inlet Temperature (F)	61			63	
*Panel Temperature (F)	78			84	
*Recirculation Valve Position (%Closed)	100%			100%	
*Flare Flame Temperature (F)	1103			1313	
*Flame Arrestor Temperature (F)	91			102	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))	301 | 3555			301 | 3627	
*Blower Speed (Blower | Speed (%Max))	65%			73%	
*Blower Vibration (Blower | Vibration (in/Sec))	0.02			0.05	
*Blower Current (Blower | Current (Amps))	30.6			37.8	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	1074			1381	
*Total Flow (MMSCF)	639.13			643.96	
*Flow Pressure (inWC)	4.5			8.2	
*Flow Temperature (F)	92			103	
*Flow DP (inWC)	2.79			4.86	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	639.1307			643.9635	
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—			—	
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☒	☐	☐	☒	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-39.9			-39.1	
*Demister Outlet Pressure (inWC)	-41.0			-41.1	
*Demister DP (inWC)	+1.1			+2.0	
*Flame Arrester Inlet Pressure (inWC)	+5.3			+9.6	
*Flame Arrester Outlet Pressure (inWC)	+4.8			+8.7	
*Flame Arrester DP (inWC)	+0.5			+0.9	
*Fail-Close Valve Air Pressure (psi)	107			107	
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	
*Spiralator Position (%Open)	50			50	
*Manual Louver 1 Position (%Open)	50			50	
*Manual Louver 2 Position (%Open)	50			50	
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ | ☒	☐ | ☐	☐ | ☐	☒ | ☒	☐ | ☐
Engine Plant 1 - Monitoring					
Time (hh mm)	1620			1555	
Technician (Initials)	DB			DB	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	682 | 672			669 | —	
*Power Setpoint (kWh) (Engine #2 | #1)	690 | 683			688 | 687	
Control Room - Laptop					
*Flow Total (MSCF)	691470.6			695869.3	
*Flow Rate (SCFM)	1084.5			791.3	
*Discharge Gas Temperature (F)	74.1			85.1	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-44.6			-42.1	
Other					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	

Note * Collect during device operation only

Remarks

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)	5/23/22			5/26	
Lowry Header - Monitoring					
Time (hh mm)	1600			1435	
Technician (Initials)	DB			DB	
Control Panel - Digital Recorder					
Flow Rate (SCFM)	201			200	
Gas Temperature (F)	53.1			53.3	
Flare 2 - Monitoring					
Time (hh:mm)	1605			1440	
Technician (Initials)	DB			DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☒	☐
Heating/Cooling OK (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Digital Recorder					
Local Recorder On (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Touchscreen - Process Overview					
*Gas Handling Skid Inlet Pressure (InWC)	-40.5			-40.3	
*Flare DP (InWC)	5.38			5.33	
*Flare Flame Temperature (F)	1225			1249	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	82			102	
*Gas Handling Skid Inlet Temperature (F)	46			37	
*Recirculation Valve Position (%Closed)	70%			70%	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	505			504	
*Total Flow (MMSCF)	1160.21			1162.32	
*Flow Pressure (InWC)	6.7			6.8	
*Flow Temperature (F)	107			112	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	816.5439			818.6609	
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—			—	
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	42937			43007	
*Blower 301 Vibration (in/Sec)	0.23			0.24	
*Blower 301 Speed (%Max)	88%			88%	
*Blower 301 Inlet Bearing Temp (F)	59			80	
*Blower 301 Outlet Bearing Temp (F)	102			119	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	13.9			13.8	
Gas Handling Skid					
*Demister Inlet Pressure (InWC)	-40.9			-40.5	
*Demister Outlet Pressure (InWC)	-43.4			-42.9	
*Demister DP (InWC)	+2.5			+2.4	
*Flame Arrester Inlet Pressure (InWC)	+7.3			+7.5	
*Flame Arrester Outlet Pressure (InWC)	+4.4			+4.6	
*Flame Arrester DP (InWC)	+2.9			+2.9	
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	
*Spiralator Position (%Open)	50			50	
*Manual Louver 1 Position (%Open)	50			50	
*Manual Louver 2 Position (%Open)	50			50	
Other					
Heat Trace OK (Check for Yes)	☒	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ ☒	☐ ☐	☐ ☐	☒ ☒	☐ ☐
Flare 3 - Monitoring					
Time (hh:mm)	1615			1446	
Technician (Initials)	DB			DB	
Control Panel					
*Indicator Lights OK (Check for Yes)	☒	☐	☐	☒	☐
*Heating/Cooling OK (Check for Yes)	☒	☐	☐	☒	☐
Control Panel - Digital Recorder					
*Remote Recorder On (Check for Yes)	☒	☐	☐	☒	☐

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Control Panel - Touchscreen - Analog Data Menu - Process Overview					
*Gas Handling Skid Inlet Vacuum (inWC)	-40.0		~~-40.7~~	-40.7	
*Gas Handling Skid Inlet Temperature (F)	63		~~66~~	66	
*Panel Temperature (F)	75		~~81~~	81	
*Recirculation Valve Position (%Closed)	100%		~~100~~	100%	
*Flare Flame Temperature (F)	1287			1304	
*Flame Arrestor Temperature (F)	86			99	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower # | Runtime (Hours))	301 | 3723			301 | 3794	
*Blower Speed (Blower # | Speed (%Max))	64%			65%	
*Blower Vibration (Blower # | Vibration (in/Sec))	0.01			0.02	
*Blower Current (Blower # | Current (Amps))	28.9			30.2	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	1647			1030	
*Total Flow (MMSCF)	651.05			655.31	
*Flow Pressure (inWC)	4.1			3.9	
*Flow Temperature (F)	88			100	
*Flow DP (inWC)	2.72			2.56	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	651.0513			655.3075	
*Reset Date/Time (mm/dd/yy hh:mm:ss)	—			—	
Control Panel - Touchscreen - Alarm History *(Press Main)*					
*Alarm History (Check box if no alarm)	☒	☐	☐	☒	☐
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-39.4			-39.7	
*Demister Outlet Pressure (inWC)	-41.0			-41.0	
*Demister DP (inWC)	+1.6			+1.3	
*Flame Arrester Inlet Pressure (inWC)	+4.5			+4.8	
*Flame Arrester Outlet Pressure (inWC)	+4.1			+4.4	
*Flame Arrester DP (inWC)	+0.4			+0.4	
*Fail-Close Valve Air Pressure (psi)	107			109	
Flare					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	
*Spiralator Position (%Open)	50			50	
*Manual Louver 1 Position (%Open)	50			50	
*Manual Louver 2 Position (%Open)	50			50	
Other					
*Heat Trace OK (Check for Yes)	☒	☐	☐	☒	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☒ | ☒	☐ | ☐	☐ | ☐	☒ | ☒	☐ | ☐
Engine Plant 1 - Monitoring					
Time (hh mm)	1620			1455	
Technician (initials)	DB			DB	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	698 | 685			690 | 647	
*Power Setpoint (kWh) (Engine #2 | #1)	697 | 715			699 | 697	
Control Room - Laptop					
*Flow Total (MSCF)	7013294			7061478	
*Flow Rate (SCFM)	1143.3			1662.9	
*Discharge Gas Temperature (F)	72.0			81.8	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)	-43.5			-43.9	
Other					
*Visible Emissions (Yes/No, If yes explain)	NO			NO	
Note * Collect during device operation only					

Remarks

DADS LANDFILL
LOWRY. FLARE 2. FLARE 3. PLANT.
DAILY LOG

Personnel DHuckbuck Date 6/24/22

Temperature 85 Baro 29.66

Reading Time _____ Weather Cloudy, Humid

Location	Pressure (in. w.c.)	Flow (scfm)	CH4 (% - Vol)	CO2 (% -Vol)	02 (% - Vol)	N2 (% - Vol)
LOWRY	-28.9	177	27.6	27.2	2.2	43.0
FLARE 2	-32.1	506	35.9	31.8	0.7	31.6
FLARE 3	-40.4	967	42.7	34.7	0.7	21.9
PLANT	-44.3	1110.2	46.7	36.4	0.6	16.3

Lowry Gas Inlet Temp: 58.4 F

FLARE 2: Temp: Inlet 47 Flow 106 F Indicator Lights ✓ Heating/Cooling ✓

Flame Temp 973 Panel Temp 103 F Pilot Temp — Recorder ON: ✓

Inlet Pres. -32.1 Flow Pres. 6.9 Recirc Valve Pos. 70 FA Temp —

Totalizer Reading: 839.3869

BLOWERS: 301

Runtime 43698 Vibration 0.21 Speed 86 % Bearing Temp IN 82 Out 102 Amps: 12.8

Demister: Pres. IN -31.7 OUT -34.9 DP +3.2 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN -8.0 OUT +4.8 DP +3.2 Emis. Visible? Y-(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N Propane Tank Level OK ? 1.(Y)---N 2. (Y)---N

FLARE 3: Temp: Inlet 69 Flow 98 F Indicator Lights ✓ Heating/Cooling ✓

Flame Temp 1393 Panel Temp 78 F Pilot Temp 881 Recorder ON: ✓

Inlet Pres. -46.4 Flow Pres. 4.2 Recirc Valve Pos. 100 FA Temp 97

Totalizer Reading: 701.1854

BLOWERS: 301---302

Runtime 4485 Speed 65 % Vibration 0.02 Amps: 30.6

Demister: Pres. IN -40.1 OUT -46.4 DP +0.3 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +4.8 OUT +4.7 DP +0.1 Emis. Visible? Y---(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N Propane Tank Level OK ? 1.(Y)---N 2. (Y)---N PRES 107 psi.

PLANT :

Power Setpoints : 4 672 3 711 2 698 1 682

LFG Temp. 81.4 Inlet Pres. -44.3 Flow Rate 1110.2 Totalizer 748280.0

Visible Emissions? Y--(N)

Remarks _____

DADS LANDFILL
LOWRY. FLARE 2. FLARE 3. PLANT.
DAILY LOG

Personnel ~~6/16/22~~ DAVE GUCK

Date 6/16/22

Temperature 93

Baro 29.75

Reading Time 1600

Weather WARM, LIGHTNING, NO CLOUDS

Location	Pressure (in. w.c.)	Flow (scfm)	CH4 (% - Vol)	CO2 (% -Vol)	02 (% - Vol)	N2 (% - Vol)
LOWRY	-29.0	184	31.8	25.2	1.7	41.2
FLARE 2	- 36.7	506	41.1	30.0	0.6	28.3
FLARE 3	- 40.4	1644	50.9	33.9	0.4	14.7
PLANT	- 46.3	1080.6	53.1	35.5	0.3	11.2

Lowry Gas Inlet Temp: 56.4 F

FLARE 2: Temp: Inlet 39 Flow 110 F Indicator Lights ✓ Heating/Cooling ✓

Flame Temp 1148 Panel Temp 114 F Pilot Temp — Recorder ON: ✓

Inlet Pres. -36.7 Flow Pres. 6.7 Recirc Valve Pos. 70% FA Temp —

Totalizer Reading: 833.6496

BLOWERS: 301

Runtime 43506 Vibration 0.23 Speed 86 % Bearing Temp IN 82 Out 110 Amps: 13.1

Demister: Pres. IN -34.4 OUT -37.8 DP +3.4 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +7.9 OUT +4.6 DP +3.3 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N Propane Tank Level OK ? 1.(Y)--N 2. (Y)--N

FLARE 3: Temp: Inlet 69 Flow ~~1644~~ 1600 F Indicator Lights ✓ Heating/Cooling ✓

Flame Temp 1189 Panel Temp 89 F Pilot Temp 727 Recorder ON: ✓

Inlet Pres. -40.4 Flow Pres. 4.6 Recirc Valve Pos. 100 FA Temp 103

Totalizer Reading: 688.7572

BLOWERS: 301---302

Runtime 4298 Speed 65 % Vibration 0.02 Amps: 30.7

Demister: Pres. IN -39.8 OUT -41.4 DP -1.6 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +4.8 OUT +4.3 DP +0.5 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N Propane Tank Level OK ? 1.(Y)--N 2.(Y)---N PLUS 1080 p.s.

PLANT :

Power Setpoints : 4 700 3 683 2 695 1 703

LFG Temp. 95.7 Inlet Pres. -46.3 Flow Rate 1080.6 Totalizer 731509.1

Visible Emissions? Y--(N)

Remarks _____

DADS LANDFILL
LOWRY. FLARE 2. FLARE 3. PLANT.
DAILY LOG

Personnel DAVE BUCK

Date 6/14/22

Temperature 83

Baro 29.53

Reading Time 1630

Weather L. CLOUDS, M. WIND

Location	Pressure (in. w.c.)	Flow (scfm)	CH4 (% - Vol)	CO2 (% -Vol)	02 (% - Vol)	N2 (% - Vol)
LOWRY	-29.6	191	28.1	25.5	2.8	43.6
FLARE 2	-36.5	503	38.8	31.9	0.6	28.8
FLARE 3	-40.8	1017	47.3	34.9	0.4	17.4
PLANT	-45.7	1070.7	51.2	37.5	0.3	11.0

Lowry Gas Inlet Temp: 559 F

FLARE 2: Temp: Inlet 41 Flow 112 F Indicator Lights ✓ Heating/Cooling ✓

Flame Temp 1231 Panel Temp 107 F Pilot Temp X Recorder ON: ✓

Inlet Pres. -36.5 Flow Pres. 6.4 Recirc Valve Pos. 70% ~~FA TEMP~~

Totalizer Reading: 832.2182

BLOWERS: 301

Runtime 43459 Vibration 6.27 Speed 86 % Bearing Temp IN 82 Out 119 Amps: 13.5

Demister: Pres. IN -35.6 OUT -39.4 DP +3.8 Louver 1 Pos. 50 ✓ 2 Pos. 50

Flame Arrester: Pres. IN +7.7 OUT +4.5 DP -3.2 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N Propane Tank Level OK ? 1.(Y)--N 2. (Y)--N

FLARE 3: Temp: Inlet 69 Flow 1082 F Indicator Lights ✓ Heating/Cooling ✓

Flame Temp 1322 Panel Temp 82 F Pilot Temp 399 Recorder ON: ✓

Inlet Pres. -40.8 Flow Pres. 4.3 Recirc Valve Pos. 100% FA TEMP 101

Totalizer Reading: 685.7443

BLOWERS: (301)--302

Runtime 4260 Speed 65% Vibration 0.02 Amps: 30.0

Demister: Pres. IN -40.4 OUT -39.6 DP +0.8 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +4.9 OUT +4.2 DP +0.7 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N Propane Tank Level OK ? 1.(Y)---N 2. (Y)---N

PLANT :

Power Setpoints : 4 685 3 674 2 677 1 690

LFG Temp. 87.0 Inlet Pres. -45.7 Flow Rate 1070.7 Totalizer 733592.4

Visible Emissions? Y---(N)

Remarks _____

DADS LANDFILL
LOWRY. FLARE 2. FLARE 3. PLANT.
DAILY LOG

Personnel DAVE BUCK Date 6/6/22

Temperature _____ Baro _____

Reading Time 1440 Weather M. CLOUDY

Location	Pressure (in. w.c.)	Flow (scfm)	CH4 (% - Vol)	CO2 (% -Vol)	02 (% - Vol)	N2 (% - Vol)
LOWRY	-31.5	194	31.1	28.0	1.5	39.4
FLARE 2	-38.6	497	38.8	30.8	0.5	29.9
FLARE 3	-40.5	1030	47.7	36.6	0.3	15.3
PLANT	-45.8	1050	51.1	38.3	0.2	10.3

Lowry Gas Inlet Temp: 54.4 F

FLARE 2: Temp: Inlet 37 Flow 108 F Indicator Lights X Heating/Cooling ✓

Flame Temp 1248 Panel Temp 106 F Pilot Temp X Recorder ON: ✓

Inlet Pres. -38.6 Flow Pres. 6.5 Recirc Valve Pos. ~~50~~ 0 % FA TEMP ~~=~~

Totalizer Reading: 826.5942

BLOWERS: 301

Runtime 43271 Vibration 0.26 Speed 87 % Bearing Temp IN 79 Out 106 Amps: 13.4

Demister: Pres. IN -37.0 OUT -39.6 DP +2.6 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +7.4 OUT +4.6 DP +2.8 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N , Propane Tank Level OK ? 1.(Y)--N 2. (Y)--N

FLARE 3: Temp: Inlet 66 Flow 99 F Indicator Lights ✓ Heating/Cooling ✓

Flame Temp 1267 Panel Temp 79 F Pilot Temp 234 Recorder ON: ✓

Inlet Pres. -40.5 Flow Pres. 4.2 Recirc Valve Pos. 100 % FA Temp 98

Totalizer Reading: 672.5071

BLOWERS: (301)---302

Runtime 4058 Speed 65 % Vibration 0.02 Amps: 30.3

Demister: Pres. IN -40.1 OUT -40.9 DP +0.8 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +4.7 OUT +4.3 DP +0.4 Emis. Visible? Y---(N) Spiral. Pos. 50

Heat Trace OK ? (Y)--N Propane Tank Level OK ? 1.(Y)---N 2. (Y)---N KO PLGS 107

PLANT :

Power Setpoints : 4 694 3 704 2 704 1 683

LFG Temp. 92.0 Inlet Pres. -45.8 Flow Rate 1050 Totalizer 7222336

Visible Emissions? Y---(N)

Remarks _____

DADS LANDFILL
LOWRY. FLARE 2. FLARE 3. PLANT.
DAILY LOG

Personnel Dave Buck Date 6/3/22

Temperature 75 Baro 29.68

Reading Time 1250 Weather P. cloudy, clear

Location	Pressure (in. w.c.)	Flow (scfm)	CH4 (% - Vol)	CO2 (% -Vol)	02 (% - Vol)	N2 (% - Vol)
LOWRY	-30.6	196	28.2	26.6	1.8	43.4
FLARE 2	-38.7	497	37.6	30.9	0.5	31.1
FLARE 3	-40.7	1067	43.1	32.9	0.5	23.0
PLANT	-43.9	1050	48.6	35.3	0.4	15.8

Lowry Gas Inlet Temp: 54.0 F

FLARE 2: Temp: Inlet 38 Flow 109 F Indicator Lights X Heating/Cooling X

Flame Temp 1266 Panel Temp 100 F Pilot Temp — Recorder ON: X

Inlet Pres. -30.6 Flow Pres. 6.5 Recirc Valve Pos. X FA TEMP —

Totalizer Reading: 024.3770

BLOWERS: 301

Runtime 43198 Vibration 0.25 Speed 87 % Bearing Temp IN 79 Out 105 Amps: 13.2

Demister: Pres. IN -38.0 OUT -40.3 DP +2.3 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN 7.8 OUT 4.8 DP +3.0 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)---N Propane Tank Level OK ? 1.(Y)--N 2. (Y)--N

FLARE 3: Temp: Inlet 65 Flow 99 F Indicator Lights X Heating/Cooling X

Flame Temp 1269 Panel Temp 79 F Pilot Temp 204 Recorder ON: X

Inlet Pres. -40.7 Flow Pres. 4.2 Recirc Valve Pos. 100 % FA TEMP 97

Totalizer Reading: 668.0372

BLOWERS: (301)--302

Runtime 3984 Speed 65 % Vibration 0.02 Amps: 30.3

Demister: Pres. IN -39.5 OUT -40.4 DP +0.9 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +6.4 OUT +4.7 DP +0.7 Emis. Visible? Y---(N) Spiral. Pos. 50

Heat Trace OK ? (Y)---N Propane Tank Level OK ? 1. (Y)--N 2. (Y)---N

PLANT :

Power Setpoints : 4 682 3 642 2 684 1 716

LFG Temp. 77.4 Inlet Pres. -43.9 Flow Rate 1050 Totalizer 7)7492.8

Visible Emissions? Y--(N)

Remarks _____

DADS LANDFILL
LOWRY. FLARE 2. FLARE 3. PLANT.
DAILY LOG

Personnel Dave Buck Date 5/31/22

Temperature _____ Baro _____

Reading Time 1545 Weather Cloudy, rain

Location	Pressure (in. w.c.)	Flow (scfm)	CH4 (% - Vol)	CO2 (% -Vol)	02 (% - Vol)	N2 (% - Vol)
LOWRY	-30.9	198	23.4	26.2	2.5	47.9
FLARE 2	-40.4	501	29.8	30.7	1.0	38.4
FLARE 3	-40.8	905	41.8	35.3	0.9	21.9
PLANT	-44.2	1152.1	47.8	38.4	0.7	13.1

Lowry Gas Inlet Temp: 53.7 F

FLARE 2: Temp: Inlet 49 Flow ~~Temp~~ 108 F Indicator Lights X Heating/Cooling X

Flame Temp 1078 Panel Temp 74 F Pilot Temp 1 Recorder ON: X

Inlet Pres. -30.9 Flow Pres. 6.4 Recirc Valve Pos. 70%

Totalizer Reading: 822.3000

BLOWERS: 301

Runtime 43128 Vibration 0.27 Speed 86 % Bearing Temp IN 52 Out 96 Amps: 13.3

Demister: Pres. IN -39.2 OUT -42.1 DP +2.9 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +7.5 OUT +4.6 DP +2.9 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)---N Propane Tank Level OK ? 1 (Y)---N 2. (Y)---N

FLARE 3: Temp: Inlet 61 Flow 83 F Indicator Lights X Heating/Cooling X

Flame Temp 1268 Panel Temp 67 F Pilot Temp 350 Recorder ON: X

Inlet Pres. -40.8 Flow Pres. 3.0 Recirc Valve Pos. 100% FA Temp 79

Totalizer Reading: 663,873.2

BLOWERS: (301)---302

Runtime 3915 Speed 61 % Vibration 0.01 Amps: 27.1

Demister: Pres. IN -40.6 OUT -41.0 DP +0.4 Louver 1 Pos. 50 2 Pos. 50

Flame Arrester: Pres. IN +3.3 OUT +3.1 DP +0.2 Emis. Visible? Y--(N) Spiral. Pos. 50

Heat Trace OK ? (Y)---N Propane Tank Level OK ? 1.(Y)---N 2. (Y)---N

PLANT :

Power Setpoints : 4 672 3 690 2 680 1 696

LFG Temp. 76.4 Inlet Pres. -44.2 Flow Rate 1152.1 Totalizer 712951.9

Visible Emissions? Y--(N)

Remarks _____

APPENDIX D-3

ENGINES INLET METHANE AND HEAT CONTENT TEST

FEBRUARY 16, 2022

Test Report

Waste Management of Colorado, Inc.
3500 South Gun Club Road
Aurora, CO 80018

Lowry / DADS Landfill
Gas to Energy Facility
Aurora, Colorado

Engines Inlet
Methane and Heat Content Test

Test Date: February 16, 2022

AST Project No. AAS-2022-0178

Prepared By
Alliance Source Testing, LLC
5530 Marshall Street
Arvada, CO 80002

Regulatory Information

Regulatory Citation 40 CFR 60.18 – General Control Device Requirements

Source Information

Source Name	*Target Parameters*
Fuel Gas Line	CH4, Heat Value

Contact Information

Test Location
Waste Management of
Colorado, Inc.
3500 S. Gun Club Road
Aurora, CO 80018

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(720) 624-6986

Alliance Source Testing, LLC (AST) has completed the source testing as described in this report. Results apply only to the source(s) tested and operating condition(s) for the specific test date(s) and time(s) identified within this report. All results are intended to be considered in their entirety, and AST is not responsible for use of less than the complete test report without written consent. This report shall not be reproduced in full or in part without written approval from the customer.

To the best of my knowledge and abilities, all information, facts and test data are correct. Data presented in this report has been checked for completeness and is accurate, error-free and legible. Onsite testing was conducted in accordance with approved internal Standard Operating Procedures. Any deviations or problems are detailed in the relevant sections on the test report.

This report is only considered valid once an authorized representative of AST has signed in the space provided below; any other version is considered draft. This document was prepared in portable document format (.pdf) and contains pages as identified in the bottom footer of this document.

Mike Pearson

Michael Pearson
Alliance Source Testing, LLC

2/24/22

Date

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

Introduction

1.0 Introduction

Alliance Source Testing, LLC (AST) was retained by Waste Management of Colorado, Inc. (WMC) to conduct a series of performance tests at the DADS/Lowry Landfill located in Aurora, Colorado. The facility is subject to provisions of the 40 CFR 60.18 – General Control Device Requirements. Testing was conducted to determine the methane (CH_4) and heat content of the fuel line feeding the engines at the gas to energy facility.

1.1 Project Team

Personnel involved in this project are identified in the following table.

Table 1-1
Project Team

WMC Personnel	Patrick Mekled
AST Personnel	Michael Wildgruber

Summary of Results

2.0 Summary of Results

AST conducted compliance testing at the WMC facility in Aurora, Colorado on February 16, 2022. At the fuel line to the generator engines, four gas samples were collected in Tedlar bags for off-site analyses of CH4 and heat content. The fuel gas samples were analyzed at the AST laboratory in Arvada, Colorado in accordance with ASTM D-1945. The heat content was calculated from values published in ASTM D3588.

Table 2-1 provides a summary of the emission testing results. Any difference between the summary results listed in the following table and the detailed results contained in appendices is due to rounding for presentation.

Table 2-1
Summary of Results

Run Number	**Run 1**	**Run 2**	**Run 3**	**Run 4**	**Average**	***40 CFR §60.18 Performance Specifications***
Date	**2/16/22**	**2/16/22**	**2/16/22**	**2/16/22**	**--**	
Heat Content						
Concentration, Btu/scf	573.01	562.67	563.19	572.29	567.79	≥ 200 Btu/scf *§60.18(c)(3)(ii)*
Methane Data						
Concentration, mol %	56.62	55.60	55.65	56.55	56.10	--

Testing Methodology

3.0 Testing Methodology

The emission testing program was conducted in accordance with the test methods listed in Table 3-1.

Table 3-1
Source Testing Methodology

Parameter	U.S. EPA Reference Test Methods	Notes/Remarks
Methane Content	ASTM D1945	Constant Rate Sampling / Gas Chromatography Analysis
Heat Content	ASTM D3588	Published Values

Appendix A

Waste Management of Colorado Inc
DADS / Lowry Landfill
Lowry, Colorado
Fuel Line Run 1
2/16/2022

F Factor Sample Calculations: Determination of Oxygen-Based F Factor (dry basis)

CH_4 - Fuel Gas Heat Content (Btu/scf)

= $\frac{\text{Gas Heat Content (Btu/scf)} * \text{Volume Percent (\%)}}{100}$

= $\frac{1{,}010 * 56.62}{100}$

CH_4 - Fuel Gas Heat Content (Btu/lb)

= $\frac{\text{Fuel Gas Heat Content (Btu/scf)} * 379.4}{\text{Molecular Weight (gm/gm-mol)}}$

= $\frac{571.9 * 379.4}{28.04}$

= **Results Below (All Included)**

	Btu/scf	Btu/lb
Nitrogen	0.00	0.00
Oxygen	0.00	0.00
Carbon Monoxide	0.00	0.00
Hydrogen	0.98	13.8
Carbon Dioxide	0.00	0.00
Hydrogen Sulfide	0.02	0.30
Methane	**571.9**	**8040.1**
Acetylene	0.00	0.00
Ethylene	0.00	0.00
Ethane	0.00	0.00
Propadiene	0.00	0.00
Propylene	0.00	0.00
Propane	0.14	2.03
1,3-Butadiene	0.00	0.00
Butylenes	0.00	0.00
i-Butane	0.00	0.00
n-Butane	0.00	0.00
i-Pentane	0.00	0.00
n-Pentane	0.00	0.00
C6+	0.00	0.00
total	573.01	8056.28

Fuel Gas Heat Content (Btu/scf)

= 573.01

Fuel Gas Heat Content (Btu/lb)

= 8056.28

F-Factor (dscf/MMBtu)

= **Fuel Gas Elemental Weight Percentages (FGEWP)**

Hydrogen [H]	8.4840
Carbon [C]	41.3426
Sulfur [S]	0.004
Nitrogen [N]	6.3322
Oxygen [O]	43.8373

K values (K)

H	3.64
C	1.53
S	0.57
N	0.14
O	-0.46

= $\frac{1000000 * H\,(FGEWP) * H\,(K) + C\,(FGEWP) * C\,(K) + S\,(FGEWP) * S\,(K) + N\,(FGEWP) * N\,(K) + O\,(FGEWP) * O\,(K)}{\text{Heat Content (Btu/lb)}}$

= $\frac{1000000 * (8.4840 * 3.64) + (41.3426 * 1.53) + (0.004 * 0.57) + (6.3322 * 0.14) + (43.8373 * -0.46)}{8056.28}$

= **9,292**

Waste Management of Colorado Inc
DADS / Lowry Landfill
Lowry, Colorado
Fuel Line Run 1
2/1/2022

F Factor Sample Calculations: Determination of Oxygen-Based F Factor (dry basis)

Variables and Abbreviations

Btu/scf - British thermal units per standard cubic foot

Btu/lb - British thermal units per pound

dscf/MMBtu - dry standard cubic foot per million British thermal units

FGEWP - Fuel Gas Elemental Weight Percentages

gm/gm-mol - gram per gram-mole

K - K value

H - hydrogen

C - carbon

S - sulfur

N - nitrogen

O - oxygen

Appendix B

Alliance SOURCE TESTING

5530 Marshall Street
Arvada, Colorado 80002
Phone: 303-420-5949
Fax: 303-420-5920

Certificate of Analysis
Analysis By Gas Chromatography

Company ..... Waste Management

Study Number..... AAS-2022-0178

Unit..... DADS Landfill
Date Sampled..... 2/16/2022
Date Analyzed ..... 2/17/22 8:57 AM
Sample Name..... **Bag #1**

Sample Location..... Main Inlet at Gas to Energy Plant
Sample Pressure..... N/A (pump used)
Sample Temp..... 37 F
Test Method..... ASTM D1945
Sample Method..... RGA
Method of Analysis.... GC-TCD/FID
Container..... Tedlar Bag
Instrument..... Agilent 7890 GC

Components	Normalized Mole%
C6+	0.0000
Propane	0.0057
Propylene	0.0000
Isobutane	0.0000
Propadiene	0.0000
n-Butane	0.0000
1 - Butene	0.0000
Isobutylene	0.0000
trans-2-Butene	0.0000
cis-2-Butene	0.0000
1,3-Butadiene	0.0000
Isopentane	0.0000
n-Pentane	0.0000
Helium	0.0000
Hydrogen	0.3029
Carbon Dioxide	36.2472
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0033
Oxygen	0.7214
Nitrogen	6.0997
Methane	56.6197
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	26.99
Heat Content (Btu/scf)	573.01
Heat Content (Btu/lb)	8,056
F Factor (dscf/MMBtu)	9,292

Alliance SOURCE TESTING

5530 Marshall Street
Arvada, Colorado 80002
Phone: 303-420-5949
Fax: 303-420-5920

Certificate of Analysis
Analysis By Gas Chromatography

Company ..... Waste Management

Study Number..... AAS-2022-0178

Unit..... DADS Landfill
Date Sampled..... 2/16/2022
Date Analyzed ..... 2/17/22 9:23 AM
Sample Name..... **Bag #2**

Sample Location..... Main Inlet at Gas to Energy Plant
Sample Pressure..... N/A (pump used)
Sample Temp..... 37 F
Test Method..... ASTM D1945
Sample Method..... RGA
Method of Analysis.... GC-TCD/FID
Container..... Tedlar Bag
Instrument..... Agilent 7890 GC

Components	Normalized Mole%
C6+	0.0000
Propane	0.0056
Propylene	0.0000
Isobutane	0.0000
Propadiene	0.0000
n-Butane	0.0000
1 - Butene	0.0000
Isobutylene	0.0000
trans-2-Butene	0.0000
cis-2-Butene	0.0000
1,3-Butadiene	0.0000
Isopentane	0.0000
n-Pentane	0.0000
Helium	0.0000
Hydrogen	0.2920
Carbon Dioxide	35.9845
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0031
Oxygen	0.7927
Nitrogen	7.3217
Methane	55.6004
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	27.07
Heat Content (Btu/scf)	562.67
Heat Content (Btu/lb)	7,886
F Factor (dscf/MMBtu)	9,318

Alliance SOURCE TESTING

5530 Marshall Street
Arvada, Colorado 80002
Phone: 303-420-5949
Fax: 303-420-5920

Certificate of Analysis
Analysis By Gas Chromatography

Company ..... Waste Management

Study Number..... AAS-2022-0178

Unit..... DADS Landfill
Date Sampled..... 2/16/2022
Date Analyzed ..... 2/17/22 9:47 AM
Sample Name..... **Bag #3**

Sample Location..... Main Inlet at Gas to Energy Plant
Sample Pressure..... N/A (pump used)
Sample Temp..... 37 F
Test Method..... ASTM D1945
Sample Method..... RGA
Method of Analysis.... GC-TCD/FID
Container..... Tedlar Bag
Instrument..... Agilent 7890 GC

Components	Normalized Mole%
C6+	0.0000
Propane	0.0057
Propylene	0.0000
Isobutane	0.0000
Propadiene	0.0000
n-Butane	0.0000
1 - Butene	0.0000
Isobutylene	0.0000
trans-2-Butene	0.0000
cis-2-Butene	0.0000
1,3-Butadiene	0.0000
Isopentane	0.0000
n-Pentane	0.0000
Helium	0.0000
Hydrogen	0.2921
Carbon Dioxide	36.0506
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0034
Oxygen	0.7700
Nitrogen	7.2270
Methane	55.6512
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	27.07
Heat Content (Btu/scf)	563.19
Heat Content (Btu/lb)	7,892
F Factor (dscf/MMBtu)	9,318

Alliance SOURCE TESTING

5530 Marshall Street
Arvada, Colorado 80002
Phone: 303-420-5949
Fax: 303-420-5920

Certificate of Analysis
Analysis By Gas Chromatography

Company ..... Waste Management

Study Number..... AAS-2022-0178

Unit..... DADS Landfill
Date Sampled..... 2/16/2022
Date Analyzed ..... 2/17/22 10:19 AM
Sample Name..... **Bag #4**

Sample Location..... Main Inlet at Gas to Energy Plant
Sample Pressure..... N/A (pump used)
Sample Temp..... 37 F
Test Method..... ASTM D1945
Sample Method..... RGA
Method of Analysis.... GC-TCD/FID
Container..... Tedlar Bag
Instrument..... Agilent 7890 GC

Components	Normalized Mole%
C6+	0.0000
Propane	0.0057
Propylene	0.0000
Isobutane	0.0000
Propadiene	0.0000
n-Butane	0.0000
1 - Butene	0.0000
Isobutylene	0.0000
trans-2-Butene	0.0000
cis-2-Butene	0.0000
1,3-Butadiene	0.0000
Isopentane	0.0000
n-Pentane	0.0000
Helium	0.0000
Hydrogen	0.3036
Carbon Dioxide	36.4244
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0031
Oxygen	0.5332
Nitrogen	6.1816
Methane	56.5484
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	27.01
Heat Content (Btu/scf)	572.29
Heat Content (Btu/lb)	8,037
F Factor (dscf/MMBtu)	9,310

APPENDIX D-4

LANDFILL GAS MONITORING PROBES

(METHANE)

APPENDIX D-4
LFG GAS PROBE RESULTS (METHANE)
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Date	MP-1 Pressure (in. of H_2O)[a/]	MP-1 Methane (%)[b/]	MP-2 Pressure (in. of H_2O)	MP-2 Methane (%)	MP-3 Pressure (in. of H_2O)	MP-3 Methane (%)	MP-4 Pressure (in. of H_2O)	MP-4 Methane (%)	MP-5 Pressure (in. of H_2O)	MP-5 Methane (%)	MP-6B Pressure (in. of H_2O)	MP-6B Methane (%)	MP-7 Pressure (in. of H_2O)	MP-7 Methane (%)	MP-8 Pressure (in. of H_2O)	MP-8 Methane (%)	MP-8BH[c/] Pressure (in. of H_2O)	MP-8BH Methane (%)
3/4/2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA[d/]	NA
5/27/2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
	MP-9 Pressure (in. of H_2O)	MP-9 Methane (%)	MP-10 Pressure (in. of H_2O)	MP-10 Methane (%)	MP-11 Pressure (in. of H_2O)	MP-11 Methane (%)	MP-12 Pressure (in. of H_2O)	MP-12 Methane (%)	MP-13 Pressure (in. of H_2O)	MP-13 Methane (%)	MP-14 Pressure (in. of H_2O)	MP-14 Methane (%)	MP-15 Pressure (in. of H_2O)	MP-15 Methane (%)	MP-16 Pressure (in. of H_2O)	MP-16 Methane (%)	MP-17 Pressure (in. of H_2O)	MP-17 Methane (%)
3/4/2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/27/2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MP-18 Pressure (in. of H_2O)	MP-18 Methane (%)	MP-19 Pressure (in. of H_2O)	MP-19 Methane (%)	MP-20 Pressure (in. of H_2O)	MP-20 Methane (%)	MP-21 Pressure (in. of H_2O)	MP-21 Methane (%)									Barometric Pressure (Start) (in. of Hg)[e/]	Barometric Pressure (Finish) (in. of Hg)
3/4/2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									29.83	29.74
5/27/2022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									30.05	30.02

a/ (in. of H_2O) = Pressure measured in inches of water measurement taken in well casing before cap is removed.

b/ (%) = Percent of Methane measured

c/ MP-8BH is sampled if the water level was above the top of screen at MP-8. Six foot deep borehole probe (MP-8 BH) installed and sampled next to MP-8.

d/ NA = Not applicable

e/ (in. of Hg) = Barometric Pressure measured in inches of Mercury

APPENDIX E

COVER MONITORING

FIELD INSPECTION AND MAINTENANCE REPORTS

APPENDIX E-1

SITE AND LANDFILL COVER INSPECTIONS

FIELD INSPECTION AND MAINTENANCE FORM

Inspector: Chris Carlson Organization: Parsons

Date: 06/1/22 Weather: 1.07 inches of slow and steady rain 5/31/22 2 PM to 6/1/22 10 AM

Instructions: Complete checklist of visual evaluation items and then complete specific data items. Field measurements should be made with a cloth tape and noted on the attached site plan. Estimated measurements shall be so noted. Attach photographs or hand sketches of areas indicating erosion, sedimentation, settlement, animal burrows, etc. to further define conditions or problems.

1. Visual Evaluation Items

		CONDITION: (Check One)		Action Required?		
	Map ID	**Acceptable**	**Not Acceptable**	**Yes**	**No**	**REMARKS**
1) Covers						
a) Landfill Prism and Traffic Cap						
Vegetation		X			X	
Erosion		X			X	
Waste Breakthrough		X			X	

FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
a) Landfill Prism and Traffic Cap (cont'd)						
Settlement	A	X			X	Area appears nearly flat – no ponding.
Settlement	B	X			X	Area appears nearly flat – no ponding.
Settlement	C	X			X	Area appears nearly flat – no ponding.
Settlement	D	X			X	Area appears nearly flat – no ponding.
Settlement	E	X			X	Area appears nearly flat – no ponding.
Settlement	F	X			X	Area appears nearly flat – no ponding.
Settlement	G	X			X	Area appears nearly flat – no ponding.
Animal Burrows		X			X	
Other (litter, disposal)		X			X	
Pooling or Ponding		X			X	Minor ponding on or near roads.

FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) SWRA Cover and NTES						
Vegetation		X			X	
Erosion		X			X	
Waste Breakthrough		X			X	
Settlement		X			X	
Animal Burrows		X			X	
Pooling or Ponding		X			X	

FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) SWRA Cover and NTES (cont'd)						
Other (litter, disposal)		X			X	
c) FTPA Treatment Cell Area						
Vegetation		X			X	
Erosion		X			X	
Waste Breakthrough		X			X	
Settlement		X			X	
Animal Burrows		X			X	
Other (litter, disposal)		X			X	
2) Integrity of Stormwater Conveyance Ditches						
a) Sediment Accumulation		X			X	

FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
2) Integrity of Stormwater Conveyance Ditches (cont'd)						
b) Pooling or Ponding	_____	X	_____	___	X	_____
c) Slope Integrity	_____	X	_____	___	X	_____
d) Erosion Protection	_____	X	_____	___	X	_____
e) Obstruction of Culverts	_____	X	_____	___	X	_____
3) Condition of Traffic Cap/Perimeter Roads	_____	X	_____	___	X	Minor ponding on or near roads.
4) Condition of Gates/Locks/Fences	_____	X	_____	___	X	_____

FIELD INSPECTION AND MAINTENANCE FORM (Continued)

2. Specific Items *(Write N.A. if not applicable)*

1) Settlement Areas
   a. Map ID: _A___
   b. Area: _~200 feet by _~300__feet
   c. Depth: _NA_ feet

2) Settlement Areas
   d. Map ID: _B___
   e. Area: _~100 feet by _~150__feet
   f. Depth: _NA_ feet

3) Settlement Areas
   g. Map ID: _C___
   h. Area: _~150 feet by _~200__feet
   i. Depth: _NA_ feet

4) Settlement Areas
   j. Map ID: _D___
   k. Area: _~150 feet by _~200__feet
   l. Depth: _NA_ feet

5) Settlement Areas
   m. Map ID: _E___
   n. Area: _~150 feet by _~200__feet
   o. Depth: _NA_ feet

6) Settlement Areas
   p. Map ID: _F___
   q. Area: _~200 feet by _~300__feet
   r. Depth: _NA_ feet

7) Settlement Areas
   s. Map ID: _G___

FIELD INSPECTION AND MAINTENANCE FORM (Continued)

t. Area: _~100 feet by _~100__feet
u. Depth: _NA_ feet

8) Ponding or Pooling
   a. Map ID: _NA_
   b. Area: _____feet by _____feet
   c. Depth: _____feet
   d. Map ID: _NA_
   e. Area: _____feet by _____feet
   f. Depth: _____feet
   g. Map ID: _NA_
   h. Area: _____feet by _____feet
   i. Depth: _____feet

9) Erosion
   a. Map ID: _NA_
   b. Area: _____feet by _____feet
   c. Depth: _____feet
   d. Map ID: _NA_
   e. Area: _____feet by _____feet
   f. Depth: _____feet
   g. Map ID: _NA_
   h. Area: _____feet by _____feet
   i. Depth: _____feet

10) Waste Breakthrough
   a. Map ID: _NA_
   b. Area: _____feet by _____feet
   c. Depth: _____feet
   d. Map ID: _NA_
   e. Area: _____feet by _____feet
   f. Depth: _____feet
   g. Map ID: _NA_
   h. Area: _____feet by _____feet
   i. Depth: _____feet

FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Signature of Inspector:

Attachments

___X__ Yes _____No

If yes, list attachments:

___Cover Inspection Figure 2.1(06-01-22).pdf_____

___Cover Inspection Photos (June2022).pdf____

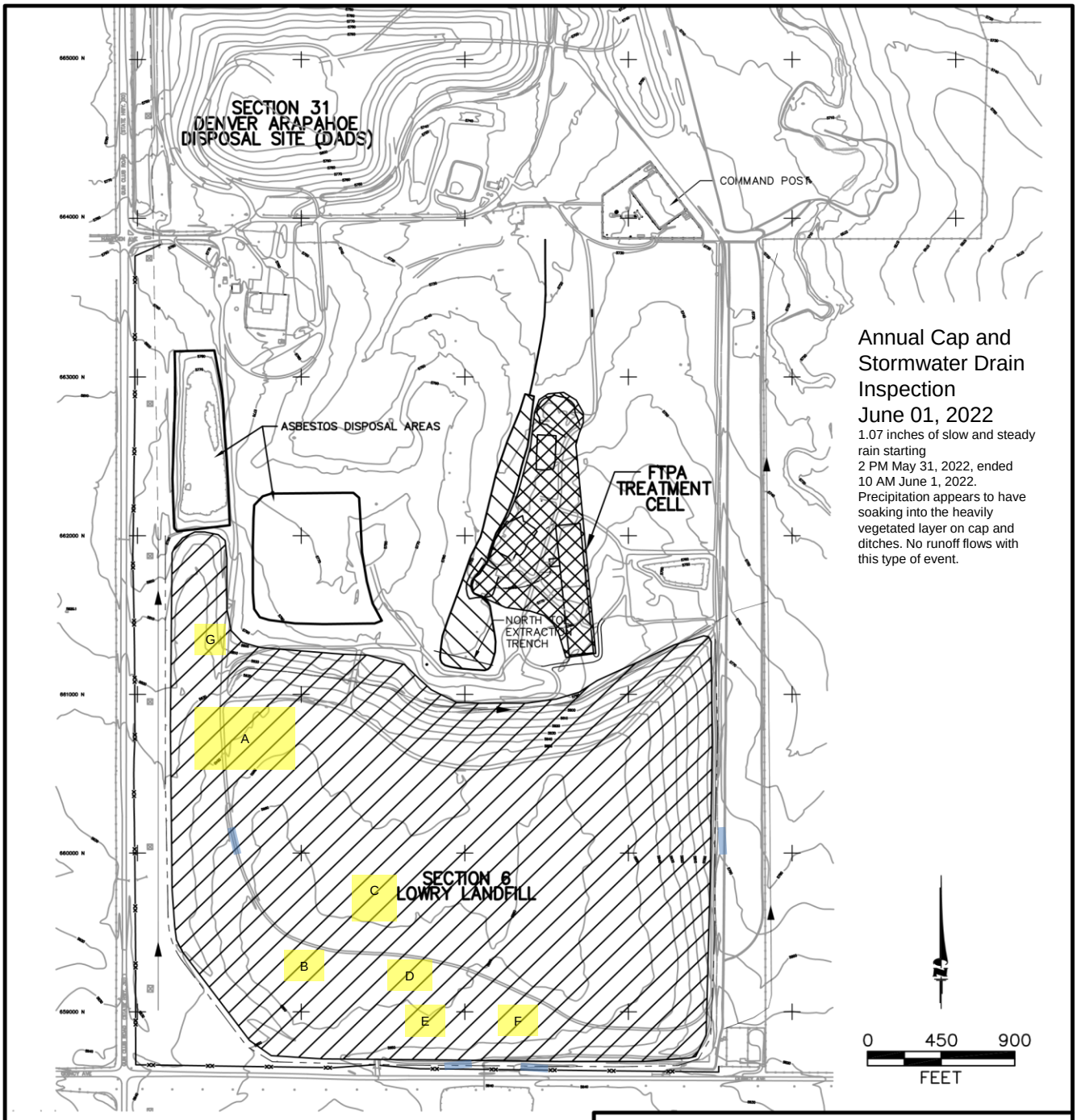
Date: __06/1/22_____

Inspection warranted due to the larger than normal rain event occurring between 2 PM May 31, 2022, and 10 AM June 1, 2022. Drainage ditches were all in very good condition. Rain soaked into the vegetation cover and did not run off.

Areas A, B, C, D, E, F and G appears near flat but have no signs of ponding. Some of these areas received shallow fill and revegetated in 2020, currently adding more topsoil to some of these areas. Will continue to closely monitor this area for future signs of settling.

Vegetation in all areas is good, no major number of weeds observed.

Instructions: Complete checklist of visual evaluation items and then complete specific data items. Field measurements should be made with a cloth tape and noted on the attached site plan. Estimated measurements shall be so noted. Attach photographs or hand sketches of areas indicating erosion, sedimentation, settlement, animal burrows, etc. to further define conditions or problems.



LEGEND

SLURRY WALL TRAFFIC CAP

STORMWATER CONVEYANCE DITCHES W/ FLOW DIRECTION (DASHED WHERE CULVERTS)

FTPA AREA

SWRA COVER

MSW PRISM

Weeds (thistle, kosha…)

Minor Ponding (acceptable)

Near Flat Area of Concern (no ponding)

Low Area of Concern (with ponding)

Erosion Area of Concern

FIGURE 2.1

REMEDIAL COMPONENT LOCATION MAP

Lowry Landfill Superfund Site

PARSONS ENGINEERING SCIENCE, INC.

Denver, Colorado

June 2022 Cap and Drains Inspection Photo Documentation

Map ID A Looking South 6/1/22 (Near Flat Area of Concern – No Ponding. Topsoil staged to fill in a potentially low area)

Map ID A Looking Northwest 6/1/22 (Near Flat Area of Concern – Post shallow filling project. No Ponding)

Minor Ponding in Road South of Area A 6/1/22

Map ID G Looking South 6/1/22 (Near Flat Area of Concern – No Ponding)

June 2022 Cap and Drains Inspection Photo Documentation

Area B 6/1/22 (no ponding)

Area C 6/1/22 (post shallow filling and revegetation – no ponding)

June 2022 Cap and Drains Inspection Photo Documentation

Areas D, E and F 6/1/22 (no ponding)

Slope Drainage Ditch Near PM-11 6/1/22 (no erosion)

June 2022 Cap and Drains Inspection Photo Documentation

Eastern Surface Water Diversion Ditch Near PM-11 6/1/22 (no erosion)

Eastern Surface Water Diversion Ditch Near MW-51 Looking South 6/1/22

(No erosion, minor ponding on road)

June 2022 Cap and Drains Inspection Photo Documentation

Eastern Surface Water Diversion Ditch Near PM-15 Looking South 6/1/22 (no erosion)

Eastern Surface Water Diversion Ditch Near PM-15 Looking North 6/1/22 (no erosion)

June 2022 Cap and Drains Inspection Photo Documentation

Southwest Corner Surface Swale Water Near PM-5 Looking Southeast 6/1/22 (no erosion – or ponding)

Southern Traffic Cap Looking East 6/1/22 (minor ponding in road)

June 2022 Cap and Drains Inspection Photo Documentation

North Slope Drain Near PM-15 Area 6/1/22 (good condition)

North Slope Drain Looking West 6/1/22 (good condition)

June 2022 Cap and Drains Inspection Photo Documentation

Northwest Slope Drain Looking West 6/1/22 (good condition)

SWRA Cover Near South Pit Looking North 6/1/22 (good vegetation – no erosion)

June 2022 Cap and Drains Inspection Photo Documentation

SWRA Cover Near South Pit Looking South 6/1/22 (good vegetation – no erosion)

SWRA Cover Near North Pit Looking North 6/1/22 (good vegetation – no erosion)

June 2022 Cap and Drains Inspection Photo Documentation

SWRA Cover Near North Pit Looking North 6/1/22 (good vegetation – no erosion)

APPENDIX E-2

BUFFER ZONE INSPECTIONS

APPENDIX E-2.1

JANUARY 2022 BUFFER ZONE INSPECTION

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

Inspector: **Chris Carlson** Organization: **Parsons**

Date: **1/24/22**

Instructions: Complete checklist of visual evaluation items and then complete specific data items. Field measurements should be made with a cloth tape and noted on the attached site plan. Estimated measurements shall be so noted. Attach photographs or hand sketches of areas indicating fence damage, erosion, sedimentation, settlement, animal burrows, weeds etc. to further define conditions or problems.

1. Visual Evaluation Items

		CONDITION: (Check One)				
	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
1) E. ¼ Section 6						
a) Fencing / Security						
Locking Gates		X			X	
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement	_____	X	_____	___	X	_____
Animal Burrows	_____	X	_____	___	X	_____
Erosion	_____	X	_____	___	X	_____
Sediment Accumulation	_____	X	_____	___	X	_____
Obstruction of Culverts	_____	X	_____	___	X	_____
c) Vegetation						
Weeds	_____	X	_____	___	X	_____
Ground Cover	_____	X	_____	___	X	_____

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security
- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

b) Terrain
- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

c) Vegetation
- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

		CONDITION: (Check One)				
	Map		Not	Action Required?		
	ID	Acceptable	Acceptable	Yes	No	REMARKS
2) N. ½ Section 7						
a) Fencing / Security						
Locking Gates		X			X	
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement		X			X	
Animal Burrows		X			X	Approximately 4 Active Burrows
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds		X			X	
Ground Cover		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security
- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

b) Terrain
- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

c) Vegetation
- Map ID: _NA_
- Area: _____feet by _____feet
-

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	CONDITION: (Check One)					
	Map ID	**Acceptable**	**Not Acceptable**	**Action Required? Yes**	**No**	**REMARKS**
3) E. ½ Section 1						
a) Fencing / Security						
Locking Gates	A		X	X		Gate found unlocked. Relocked today.
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement		X			X	
Animal Burrows		X			X	Approximately 13 Active Burrows
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds		X			X	
Ground Cover		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security

- Map ID: **A**
- Area: **NA** Gate found unlocked. Relocked during inspection.

- Map ID: _NA_
- Area: _____linier feet

b) Terrain

- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

c) Vegetation

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

		CONDITION: (Check One)				
	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
4) E. ½ Section 36						
a) Fencing / Security						
Locking Gates		X			X	
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement		X			X	
Animal Burrows		X			X	Approximately 20 Active Burrows
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds		X			X	
Ground Cover		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security
- Map ID: **NA**
- Area: **NA** linier feet

- Map ID: **NA**
- Area: **NA** linier feet

- Map ID: **NA**
- Area: **NA** linier feet

- Map ID: **NA**
- Area: **NA** linier feet

- Map ID: **NA**
- Area: **NA** linier feet

b) Terrain
- Map ID: **_NA_**
- Area: **_NA_** feet by **_NA_** feet
- Depth: **_NA_** feet

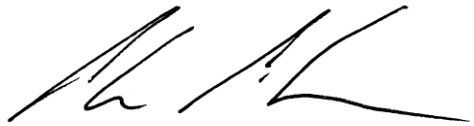
- Map ID: **_NA_**
- Area: **_NA_** feet by **_NA_** feet
- Depth: **_NA_** feet

c) Vegetation
- Map ID: **_NA_**
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Signature of Inspector:

Attachments



__**X**__ Yes ___ No

If yes, list attachments:

__**Jan 2022 Buffer Property Map.pdf**_____

__**Buffer Zone Pictures (1-24-22).pdf**_____

Date: __**1/24/22**_____

Actions taken: Gate found unlocked on Section 1. Prairie dogs to be addressed with mitigation scheduled for this Spring.

E ½ Section 1 (MAP ID A) Gate Found Unlocked. Locked 1/24/22

Quarterly Buffer Zone Inspection January 24, 2022

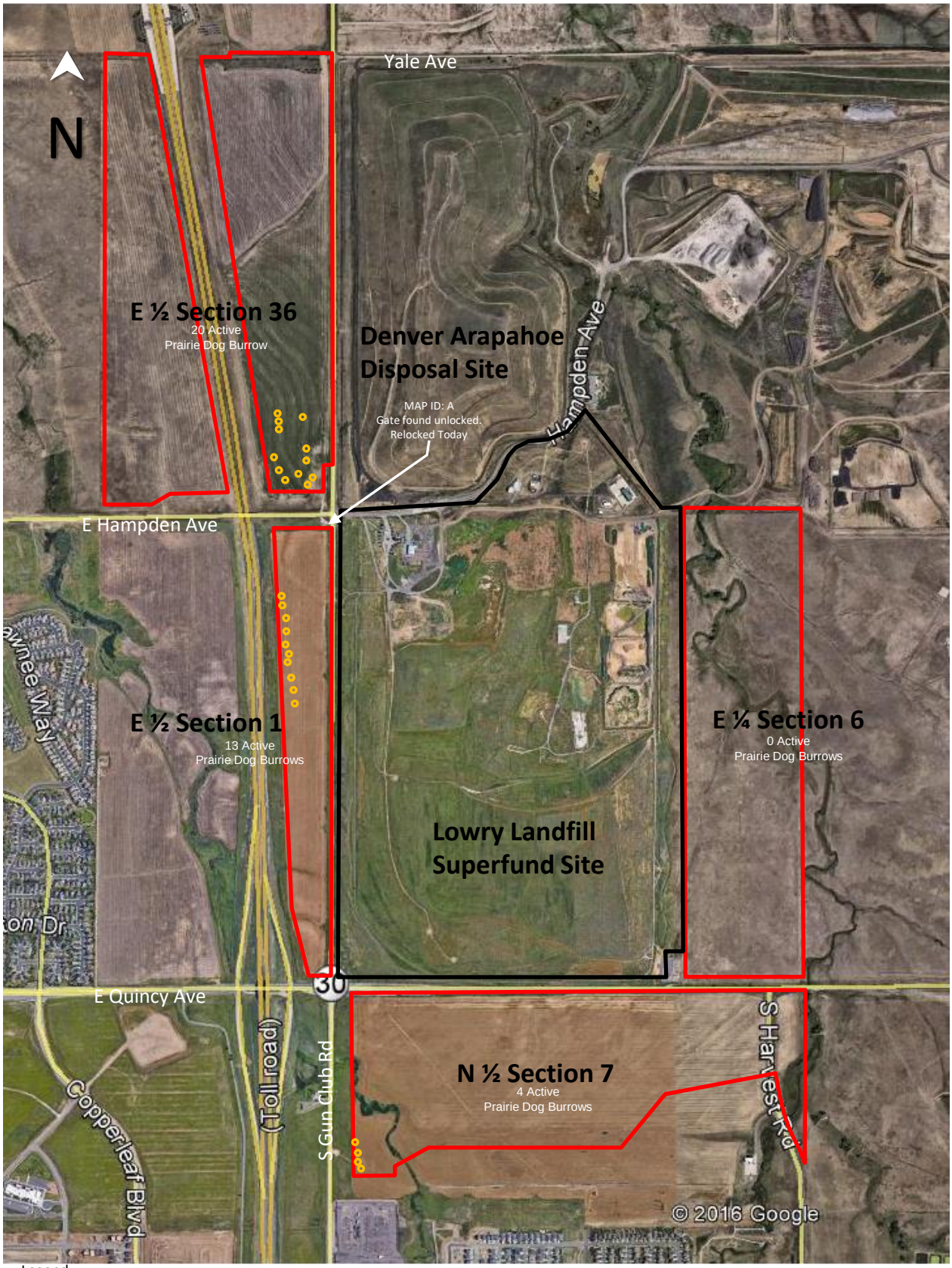
E ½ Section 1 Approximately 13 Active Prairie Dog Burrows Present

N ½ Section 7 Approximately 10 Active Prairie Dog Burrows Present

Quarterly Buffer Zone Inspection January 24, 2022

E ½ Section 36 Active Prairie Dog Burrows

E ½ Section 36 Active Prairie Dog Burrows



Legend

- Lowry Landfill Site Boundary
- Lowry Trust Buffer Property
- Active Prairie Dog Burrows
- Weeds

January 24, 2022
Buffer Zone Inspection

APPENDIX E-2.2

APRIL 2022 BUFFER ZONE INSPECTION

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

Inspector: **Chris Carlson** Organization: **Parsons**

Date: **4/14/22**

Instructions: Complete checklist of visual evaluation items and then complete specific data items. Field measurements should be made with a cloth tape and noted on the attached site plan. Estimated measurements shall be so noted. Attach photographs or hand sketches of areas indicating fence damage, erosion, sedimentation, settlement, animal burrows, weeds etc. to further define conditions or problems.

1. Visual Evaluation Items

		CONDITION: (Check One)		Action Required?		
	Map ID	Acceptable	Not Acceptable	Yes	No	REMARKS
1) E. ¼ Section 6						
a) Fencing / Security						
Locking Gates		X			X	
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement		X			X	
Animal Burrows		X			X	
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds		X			X	
Ground Cover		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security
- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

b) Terrain
- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

c) Vegetation
- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

		CONDITION: (Check One)				
	Map		Not	Action Required?		
	ID	Acceptable	Acceptable	Yes	No	REMARKS
2) N. ½ Section 7						
a) Fencing / Security						
Locking Gates		X			X	
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement		X			X	
Animal Burrows		X			X	Approximately 4 Active Burrows
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds		X			X	
Ground Cover		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security
- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

b) Terrain
- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

c) Vegetation
- Map ID: _NA_
- Area: _____feet by _____feet
-

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	CONDITION: (Check One)					
	Map ID	**Acceptable**	**Not Acceptable**	**Action Required? Yes**	**No**	**REMARKS**
3) E. ½ Section 1						
a) Fencing / Security						
Locking Gates		X			X	
Barbwire	A		X	X		Approx. 30 LF of barbwire damaged
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement		X			X	
Animal Burrows		X			X	Approximately 13 Active Burrows
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds		X			X	
Ground Cover		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security

- Map ID: **A**
- Area: **30** linier feet (Barbwire fencing along west side of S Gun Club Rd damaged. Repaired during inspection)

- Map ID: _NA_
- Area: _____linier feet

b) Terrain

- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

c) Vegetation

- Map ID: _NA_
- Area: _____feet by _____feet

- Map ID: _NA_
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

		CONDITION: (Check One)				
	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
4) E. ½ Section 36						
a) Fencing / Security						
Locking Gates	B		X	X		Gate found unlocked. Relocked today.
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

	Map ID	Acceptable	Not Acceptable	Action Required? Yes	No	REMARKS
b) Terrain						
Settlement		X			X	
Animal Burrows		X			X	Approximately 20 Active Burrows
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds		X			X	
Ground Cover		X			X	

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Specific Items *(Write N.A. if not applicable)*

a) Fence / Security
- Map ID: **B**
- Area: **NA** Gate found unlocked. Relocked during inspection.

- Map ID: **NA**
- Area: **NA** linier feet

- Map ID: **NA**
- Area: **NA** linier feet

- Map ID: **NA**
- Area: **NA** linier feet

- Map ID: **NA**
- Area: **NA** linier feet

b) Terrain
- Map ID: **_NA_**
- Area: **_NA_** feet by **_NA_** feet
- Depth: **_NA_** feet

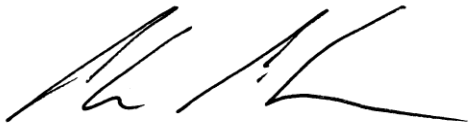
- Map ID: **_NA_**
- Area: **_NA_** feet by **_NA_** feet
- Depth: **_NA_** feet

c) Vegetation
- Map ID: **_NA_**
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Signature of Inspector:

Attachments



__**X**__ Yes ___ No

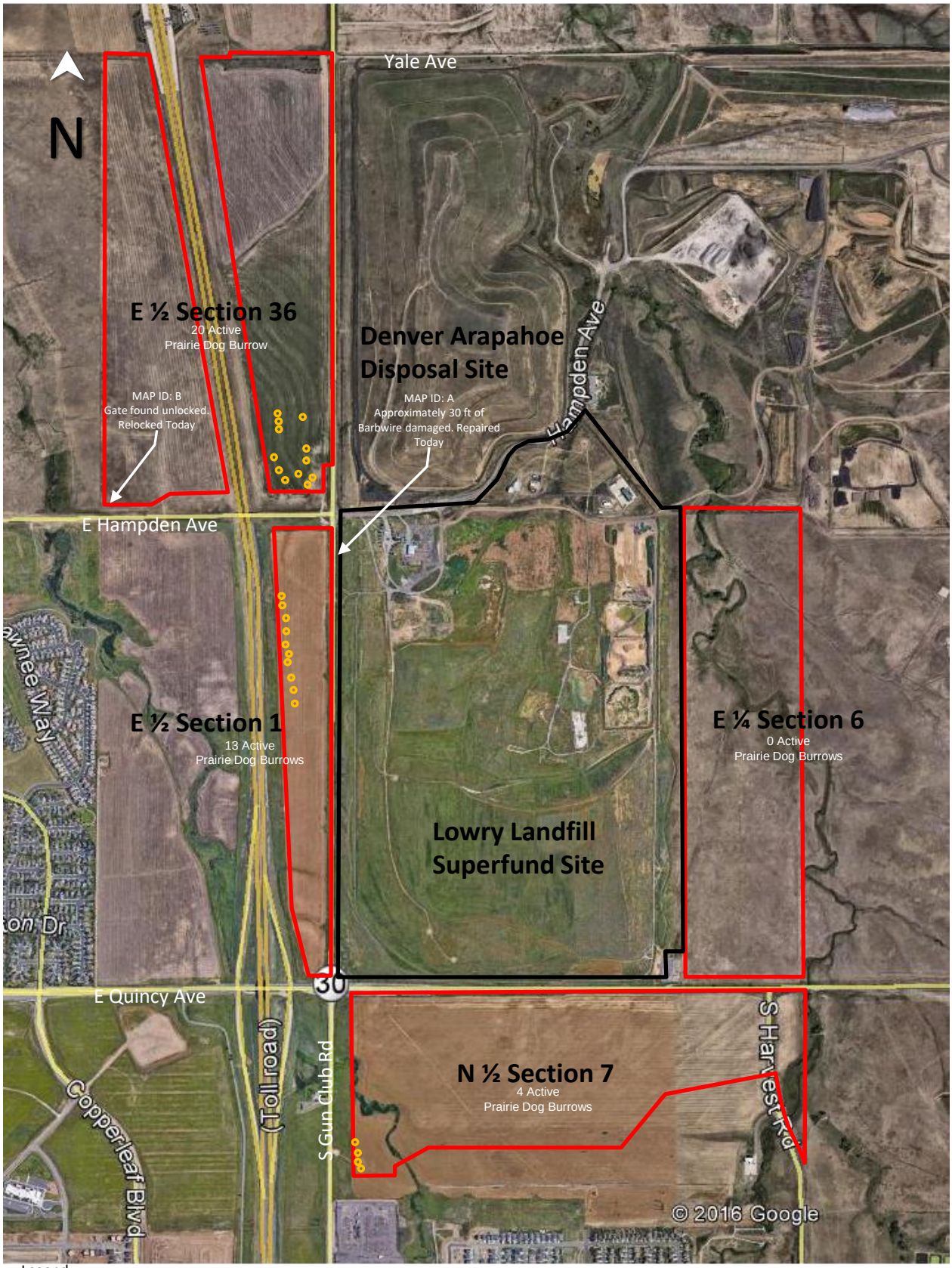
If yes, list attachments:

__**April 2022 Buffer Property Map.pdf**_____

__**Buffer Zone Pictures (4-14-22).pdf**_____

Date: __**4/14/22**_____

Actions taken: Fence damaged on Section 1 on west side of S Gun Club Road found and repaired during Inspection. Prairie dogs to be addressed with mitigation scheduled for later this month.



Legend

- Lowry Landfill Site Boundary
- Lowry Trust Buffer Property
- Active Prairie Dog Burrows
- Weeds

April 14, 2022
Buffer Zone Inspection

Quarterly Buffer Zone Inspection April 14, 2022

E ½ Section 1 (MAP ID A) Approximately 30 LF of Barbwire Fence Found Damaged

E ½ Section 1 (MAP ID A) Approximately 30 LF of Fencing Post 4/14/22 Repairs

Quarterly Buffer Zone Inspection April 14, 2022

N ½ Section 7 Approximately 10 Active Prairie Dog Burrows Present

N ½ Section 7 Approximately 10 Active Prairie Dog Burrows Present

Quarterly Buffer Zone Inspection April 14, 2022

E ¼ Section 6 Fencing Good and No Active Prairie Dog Burrows

E ¼ Section 6 Fencing Good and No Active Prairie Dog Burrows

Quarterly Buffer Zone Inspection April 14, 2022

E ½ Section 36 Active Prairie Dog Burrows

E ½ Section 36 Active Prairie Dog Burrows

Quarterly Buffer Zone Inspection April 14, 2022

E ½ Section 36 (MAP ID B) Gate Found Unlocked

E ½ Section 36 (MAP ID B) Gate Found Unlocked. Locked 4/14/22

APPENDIX F

ANALYTICAL DATA PACKAGES, DATA VALIDATION REPORTS, AND DATA QUALITY ASSESSMENT

APPENDIX F-1

SAMPLE LOCATION CROSS REFERENCE TABLE

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
GW[b/] - Compliance/Effectiveness	B-314	4/13/2022	280-160946-1	EUROFINS	NR
GW - Compliance/Effectiveness	B-314	4/13/2022	A221519	PACE	NR
GW - Molybdenum Investigation	B-326-UD	2/8/2022	280-158480-1	EUROFINS	NR
GW - North End Monitoring	B-326-UD	2/8/2022	A220605	PACE	NR
GW - Molybdenum Investigation	B-326-UD	4/14/2022	280-161015-1	EUROFINS	X
GW - North End Monitoring	B-326-UD	4/14/2022	A221521	PACE	NR
GW - Molybdenum Investigation	B-326-WD	2/8/2022	280-158480-1	EUROFINS	NR
GW - North End Monitoring	B-326-WD	2/8/2022	A220605	PACE	NR
GW - Molybdenum Investigation	B-326-WD	4/14/2022	280-161009-1	EUROFINS	NR
GW - North End Monitoring	B-326-WD	4/14/2022	A221521	PACE	NR
GW - Compliance/Effectiveness	BM-11X-100N	5/18/2022	280-162481-1	EUROFINS	NR
GW - Compliance/Effectiveness	BM-11X-100N	5/18/2022	A222009	PACE	NR
GW - Compliance/Effectiveness	BM-11X-100S	5/18/2022	280-162481-1	EUROFINS	NR
GW - Compliance/Effectiveness	BM-11X-100S	5/18/2022	A222009	PACE	NR
GW - Compliance	BM-15E2	4/26/2022	280-161502-1	EUROFINS	NR
GW - Compliance	BM-15E2	4/26/2022	A221715	PACE	NR
GW - Compliance/Effectiveness	BM-15N6	4/25/2022	280-161502-1	EUROFINS	NR
GW - Compliance/Effectiveness	BM-15N6	4/25/2022	A221715	PACE	NR
WTP[c/] - Early Warning	EARLY WARNING INFLUENT	4/4/2022	280-160553-1	EUROFINS	NR
WTP - Early Warning	EARLY WARNING INFLUENT	4/5/2022	22-04030	EBS[d/]	X
GW - Compliance	GW-106	4/18/2022	280-161157-1	EUROFINS	X
GW - Compliance	GW-106	4/18/2022	A221601	PACE	X
GW - Effectiveness	MNA-01	5/19/2022	280-162546-1	EUROFINS	NR
GW - Effectiveness	MNA-03	5/19/2022	280-162546-1	EUROFINS	NR
WTP - Compliance	MP-001	1/4/2022	22-01010	EBS	X
WTP - Compliance	MP-001	1/4/2022	280-157419-1	EUROFINS	X
WTP - Compliance	MP-001	2/2/2022	280-158347-1	EUROFINS	X
WTP - Compliance	MP-001	2/2/2022	280-158357-1	EUROFINS	X
WTP - Compliance	MP-001	3/2/2022	280-159255-1	EUROFINS	X
WTP - Compliance	MP-001	3/2/2022	280-159257-1	EUROFINS	X
WTP - Compliance	MP-001	4/5/2022	22-04030	EBS	X
WTP - Compliance	MP-001	4/5/2022	280-160539-1	EUROFINS	X
WTP - Compliance	MP-001	4/5/2022	280-160556-1	EUROFINS	X
WTP - Compliance	MP-001	5/3/2022	280-161798-1	EUROFINS	X
WTP - Compliance	MP-001	6/7/2022	280-163136-1	EUROFINS	X
WTP - Compliance	MP-001_010322_1200	1/3/2022	280-157420-1	EUROFINS	X
WTP - Compliance	MP-001_010322_1600	1/3/2022	280-157420-1	EUROFINS	X
WTP - Compliance	MP-001_010322_2000	1/3/2022	280-157420-1	EUROFINS	X
WTP - Compliance	MP-001_010422_0000	1/4/2022	280-157420-1	EUROFINS	X
WTP - Compliance	MP-001_010422_0400	1/4/2022	280-157420-1	EUROFINS	X
WTP - Compliance	MP-001_010422_0800	1/4/2022	280-157420-1	EUROFINS	X
WTP - Compliance	MP-001_020122_1200	2/1/2022	280-158345-1	EUROFINS	X
WTP - Compliance	MP-001_020122_1200	2/1/2022	280-158360-1	EUROFINS	X
WTP - Compliance	MP-001_020122_1600	2/1/2022	280-158345-1	EUROFINS	X
WTP - Compliance	MP-001_020122_1600	2/1/2022	280-158360-1	EUROFINS	X
WTP - Compliance	MP-001_020122_2000	2/1/2022	280-158345-1	EUROFINS	X
WTP - Compliance	MP-001_020122_2000	2/1/2022	280-158360-1	EUROFINS	X
WTP - Compliance	MP-001_020222_0000	2/2/2022	280-158345-1	EUROFINS	X
WTP - Compliance	MP-001_020222_0000	2/2/2022	280-158360-1	EUROFINS	X
WTP - Compliance	MP-001_020222_0400	2/2/2022	280-158345-1	EUROFINS	X
WTP - Compliance	MP-001_020222_0400	2/2/2022	280-158360-1	EUROFINS	X
WTP - Compliance	MP-001_020222_0800	2/2/2022	280-158345-1	EUROFINS	X
WTP - Compliance	MP-001_020222_0800	2/2/2022	280-158360-1	EUROFINS	X
WTP - Compliance	MP-001_030122_1200	3/1/2022	280-159263-1	EUROFINS	X
WTP - Compliance	MP-001_030122_1600	3/1/2022	280-159263-1	EUROFINS	X
WTP - Compliance	MP-001_030122_2000	3/1/2022	280-159263-1	EUROFINS	X

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Compliance	MP-001_030222_0000	3/2/2022	280-159263-1	EUROFINS	X
WTP - Compliance	MP-001_030222_0400	3/2/2022	280-159263-1	EUROFINS	X
WTP - Compliance	MP-001_030222_0800	3/2/2022	280-159263-1	EUROFINS	X
WTP - Compliance	MP-001_040422_1200	4/4/2022	280-160527-1	EUROFINS	X
WTP - Compliance	MP-001_040422_1200	4/4/2022	280-160533-1	EUROFINS	NR
WTP - Compliance	MP-001_040422_1600	4/4/2022	280-160527-1	EUROFINS	X
WTP - Compliance	MP-001_040422_1600	4/4/2022	280-160533-1	EUROFINS	NR
WTP - Compliance	MP-001_040422_2000	4/4/2022	280-160527-1	EUROFINS	X
WTP - Compliance	MP-001_040422_2000	4/4/2022	280-160533-1	EUROFINS	NR
WTP - Compliance	MP-001_040422-1200	4/4/2022	280-160529-1	EUROFINS	X
WTP - Compliance	MP-001_040422-1600	4/4/2022	280-160529-1	EUROFINS	X
WTP - Compliance	MP-001_040422-2000	4/4/2022	280-160529-1	EUROFINS	X
WTP - Compliance	MP-001_040522_0000	4/5/2022	280-160527-1	EUROFINS	X
WTP - Compliance	MP-001_040522_0000	4/5/2022	280-160533-1	EUROFINS	NR
WTP - Compliance	MP-001_040522_0400	4/5/2022	280-160527-1	EUROFINS	X
WTP - Compliance	MP-001_040522_0400	4/5/2022	280-160533-1	EUROFINS	NR
WTP - Compliance	MP-001_040522_0800	4/5/2022	280-160527-1	EUROFINS	X
WTP - Compliance	MP-001_040522_0800	4/5/2022	280-160533-1	EUROFINS	NR
WTP - Compliance	MP-001_040522-0000	4/5/2022	280-160529-1	EUROFINS	X
WTP - Compliance	MP-001_040522-0400	4/5/2022	280-160529-1	EUROFINS	X
WTP - Compliance	MP-001_040522-0800	4/5/2022	280-160529-1	EUROFINS	X
WTP - Compliance	MP-001_050222_1200	5/2/2022	280-161802-1	EUROFINS	X
WTP - Compliance	MP-001_050222_1600	5/2/2022	280-161802-1	EUROFINS	X
WTP - Compliance	MP-001_050222_2000	5/2/2022	280-161802-1	EUROFINS	X
WTP - Compliance	MP-001_050322_0000	5/3/2022	280-161802-1	EUROFINS	X
WTP - Compliance	MP-001_050322_0400	5/3/2022	280-161802-1	EUROFINS	X
WTP - Compliance	MP-001_050322_0800	5/3/2022	280-161802-1	EUROFINS	X
WTP - Compliance	MP-001_050922_1200	5/9/2022	280-162140-1	EUROFINS	X
WTP - Compliance	MP-001_050922_1600	5/9/2022	280-162140-1	EUROFINS	X
WTP - Compliance	MP-001_050922_2000	5/9/2022	280-162140-1	EUROFINS	X
WTP - Compliance	MP-001_051022_0000	5/10/2022	280-162140-1	EUROFINS	X
WTP - Compliance	MP-001_051022_0400	5/10/2022	280-162140-1	EUROFINS	X
WTP - Compliance	MP-001_051022_0800	5/10/2022	280-162140-1	EUROFINS	X
WTP - Compliance	MP-001_060622_1200	6/6/2022	280-163140-1	EUROFINS	X
WTP - Compliance	MP-001_060622_1600	6/6/2022	280-163140-1	EUROFINS	X
WTP - Compliance	MP-001_060622_2000	6/6/2022	280-163140-1	EUROFINS	X
WTP - Compliance	MP-001_060722_0000	6/7/2022	280-163140-1	EUROFINS	X
WTP - Compliance	MP-001_060722_0400	6/7/2022	280-163140-1	EUROFINS	X
WTP - Compliance	MP-001_060722_0800	6/7/2022	280-163140-1	EUROFINS	X
GW - North End Monitoring	MW05-WD	3/1/2022	A220918	PACE	NR
GW - North End Monitoring	MW102-WD	1/24/2022	A220403	PACE	NR
GW - North End Monitoring	MW102-WD	4/28/2022	A221718	PACE	NR
GW - North End Monitoring	MW103-WD	2/7/2022	A220605	PACE	NR
GW - North End Monitoring	MW103-WD	5/9/2022	A221901	PACE	NR
GW - Compliance	MW105-WD	4/20/2022	280-161274-1	EUROFINS	X
GW - Compliance	MW105-WD	4/20/2022	A221608	PACE	X
GW - Compliance	MW108-WD	4/21/2022	280-161328-1	EUROFINS	NR
GW - Compliance	MW108-WD	4/21/2022	A221612	PACE	NR
GW - North End Monitoring	MW113-EW-1	1/25/2022	280-158091-1	EUROFINS	NR
GW - North End Monitoring	MW113-EW-1	1/25/2022	A220404	PACE	X
GW - North End Monitoring	MW113-EW-1	4/19/2022	280-161199-1	EUROFINS	NR
GW - North End Monitoring	MW113-EW-1	4/19/2022	A221603	PACE	NR
GW - Molybdenum Investigation	MW113-UD	1/25/2022	280-158098-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-UD	1/25/2022	280-158098-1	EUROFINS	NR
GW - North End Monitoring	MW113-UD	1/25/2022	A220404	PACE	X
GW - Molybdenum Investigation	MW113-UD	2/8/2022	280-158481-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-UD	3/8/2022	280-159517-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-UD	4/5/2022	280-160555-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
GW - Molybdenum Investigation	MW113-UD	5/17/2022	280-162449-1	EUROFINS	NR
GW - North End Monitoring	MW113-UD	5/17/2022	A222004	PACE	NR
GW - Molybdenum Investigation	MW113-UD	6/15/2022	280-163656-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	1/11/2022	280-157594-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	1/25/2022	280-158098-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	2/8/2022	280-158481-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	2/22/2022	280-158989-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	3/8/2022	280-159517-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	3/22/2022	280-160028-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	4/5/2022	280-160555-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	4/19/2022	280-161200-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	5/3/2022	280-161809-1	EUROFINS	NR
GW - Investigation	MW113-WD	5/3/2022	A221815	PACE	NR
GW - Molybdenum Investigation	MW113-WD	5/17/2022	280-162449-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	6/7/2022	280-163135-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	6/15/2022	280-163449-1	EUROFINS	NR
GW - Molybdenum Investigation	MW113-WD	6/29/2022	280-163904-1	EUROFINS	NR
GW - North End Monitoring	MW114-WD	1/20/2022	A220309	PACE	NR
GW - North End Monitoring	MW114-WD	5/9/2022	A221901	PACE	NR
GW - North End Monitoring	MW117-WD	1/20/2022	A220309	PACE	NR
GW - North End Monitoring	MW117-WD	5/9/2022	A221901	PACE	NR
GW - North End Monitoring	MW118-WD	1/20/2022	A220309	PACE	NR
GW - North End Monitoring	MW118-WD	5/9/2022	A221901	PACE	NR
GW - North End Monitoring	MW121-WDR	1/26/2022	A220406	PACE	NR
GW - North End Monitoring	MW122-WDR	1/26/2022	A220406	PACE	NR
GW - North End Monitoring	MW123-WD	1/26/2022	A220406	PACE	NR
GW - North End Monitoring	MW124-WD	1/27/2022	A220408	PACE	NR
GW - North End Monitoring	MW125-WD	1/27/2022	A220408	PACE	NR
GW - North End Monitoring	MW129-WD	2/28/2022	A220911	PACE	NR
GW - North End Monitoring	MW132-WD	1/31/2022	A220501	PACE	NR
GW - North End Monitoring	MW132-WD	5/10/2022	A221907	PACE	NR
GW - North End Monitoring	MW135-WD	2/23/2022	A220901	PACE	X
GW - North End Monitoring	MW141-WD	2/15/2022	A220705	PACE	NR
GW - North End Monitoring	MW142-WD	2/23/2022	A220911	PACE	NR
GW - North End Monitoring	MW144-WD	2/15/2022	A220705	PACE	NR
GW - North End Monitoring	MW151-WD	1/31/2022	A220501	PACE	NR
GW - North End Monitoring	MW151-WD	5/16/2022	A222004	PACE	NR
GW - North End Monitoring	MW153-EW-1	1/27/2022	A220408	PACE	NR
GW - North End Monitoring	MW153-EW-1	4/27/2022	A221715	PACE	NR
GW - North End Monitoring	MW154-EW-1	1/27/2022	A220408	PACE	NR
GW - North End Monitoring	MW154-EW-1	4/28/2022	A221718	PACE	NR
GW - North End Monitoring	MW155-EW-1	1/31/2022	A220501	PACE	NR
GW - North End Monitoring	MW155-EW-1	5/2/2022	A221815	PACE	NR
GW - North End Monitoring	MW156-EW-1	2/9/2022	A220612	PACE	NR
GW - North End Monitoring	MW156-EW-1	5/2/2022	A221815	PACE	NR
GW - North End Monitoring	MW156-WD	2/10/2022	A220612	PACE	NR
GW - North End Monitoring	MW156-WD	5/16/2022	A222004	PACE	NR
GW - North End Monitoring	MW157-WD	2/10/2022	A220612	PACE	NR
GW - North End Monitoring	MW157-WD	5/16/2022	A222004	PACE	NR
GW - North End Monitoring	MW160-WD	1/31/2022	A220501	PACE	NR
GW - North End Monitoring	MW160-WD	4/26/2022	A221715	PACE	NR
GW - RAWP[c/]/MW77 Response Action/Molybdenum Investigation	MW170-EW-1	1/25/2022	280-158092-1	EUROFINS	X
GW - RAWP/MW77 Response Action	MW170-EW-1	1/25/2022	A220404	PACE	X
Action/Molybdenum Investigation	MW170-EW-1	5/10/2022	280-162131-1	EUROFINS	NR
GW - RAWP/MW77 Response Action	MW170-EW-1	5/10/2022	A221907	PACE	NR
GW - North End Monitoring	MW176-DEN	2/15/2022	A220705	PACE	NR
GW - Molybdenum Investigation	MW179-UDEN	3/1/2022	280-159261-1	EUROFINS	X

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
GW - North End Monitoring	MW179-UDEN	3/1/2022	A220918	PACE	NR
GW - Compliance	MW23-UPPER-C	4/20/2022	280-161275-1	EUROFINS	NR
GW - Compliance	MW23-UPPER-C	4/20/2022	A221608	PACE	X
GW - Compliance	MW36-WDR	5/10/2022	280-162129-1	EUROFINS	NR
GW - Compliance	MW36-WDR	5/10/2022	A221907	PACE	NR
GW - MW38 Source Control	MW38-1028N-256E	4/27/2022	280-161561-1	EUROFINS	NR
GW - MW38 Source Control	MW38-1028N-256E	4/27/2022	A221715	PACE	NR
GW - MW38 Source Control	MW38-170S-140W	4/27/2022	280-161561-1	EUROFINS	NR
GW - MW38 Source Control	MW38-170S-140W	4/27/2022	A221715	PACE	NR
GW - MW38 Source Control	MW38-825S-445E	4/27/2022	280-161561-1	EUROFINS	NR
GW - MW38 Source Control	MW38-825S-445E	4/27/2022	A221715	PACE	NR
GW - Compliance	MW38-830N-230E	4/13/2022	280-160946-1	EUROFINS	NR
GW - Compliance	MW38-830N-230E	4/13/2022	A221519	PACE	NR
GW - Compliance	MW43-WD	4/26/2022	280-161502-1	EUROFINS	NR
GW - Compliance	MW43-WD	4/26/2022	A221715	PACE	NR
GW - Compliance	MW54-WD	4/18/2022	280-161157-1	EUROFINS	X
GW - Compliance	MW54-WD	4/18/2022	A221601	PACE	X
GW - Compliance	MW60-WD	4/26/2022	280-161502-1	EUROFINS	NR
GW - Compliance	MW60-WD	4/26/2022	A221715	PACE	NR
GW - Compliance/Effectiveness	MW62-WDR	4/19/2022	280-161197-1	EUROFINS	NR
GW - Compliance/Effectiveness	MW62-WDR	4/19/2022	A221603	PACE	NR
GW - VES[f/] Performance	MW70-WD	5/3/2022	280-161804-1	EUROFINS	NR
GW - Compliance	MW71-WD	4/19/2022	280-161197-1	EUROFINS	NR
GW - Compliance	MW71-WD	4/19/2022	A221603	PACE	NR
GW - Compliance	MW74-WD	4/13/2022	280-160946-1	EUROFINS	NR
GW - Compliance	MW74-WD	4/13/2022	A221519	PACE	NR
GW - North End Monitoring	MW77-EW-1	1/24/2022	A220403	PACE	NR
GW - North End Monitoring	MW77-EW-1	4/28/2022	A221718	PACE	NR
GW - North End Monitoring	MW77-EW-2	1/24/2022	A220403	PACE	NR
GW - North End Monitoring	MW77-EW-2	4/28/2022	A221718	PACE	NR
GW - Compliance	MW77-WD	4/18/2022	280-161157-1	EUROFINS	X
GW - Compliance	MW77-WD	4/18/2022	A221601	PACE	X
GW - Compliance	MW78-WD	4/18/2022	280-161157-1	EUROFINS	X
GW - Compliance	MW78-WD	4/18/2022	A221601	PACE	X
GW - Compliance	MW90-WD	5/17/2022	280-162434-1	EUROFINS	NR
GW - Compliance	MW90-WD	5/17/2022	A222004	PACE	NR
GW - Compliance	MW91-WD	5/3/2022	280-161786-1	EUROFINS	NR
GW - Compliance	MW91-WD	5/3/2022	A221815	PACE	NR
GW - North End Monitoring	MW98-WD	1/24/2022	A220403	PACE	NR
GW - North End Monitoring	MW98-WD	4/28/2022	A221718	PACE	NR
GW - Effectiveness	PM-13X	5/5/2022	280-161958-1	EUROFINS	NR
GW - Effectiveness	PM-13X	5/5/2022	A221819	PACE	NR
GW - Compliance/Effectiveness	PM-14X	4/21/2022	280-161328-1	EUROFINS	NR
GW - Compliance/Effectiveness	PM-14X	4/21/2022	A221612	PACE	NR
GW - Effectiveness	PM-3X	5/5/2022	280-161958-1	EUROFINS	NR
GW - Effectiveness	PM-3X	5/5/2022	A221819	PACE	NR
GW - Effectiveness	PM-6X	5/5/2022	280-161958-1	EUROFINS	NR
GW - Effectiveness	PM-6X	5/5/2022	A221819	PACE	NR
Homeowner Well	Private Well 1	6/7/2022	A222333	PACE	NR
Homeowner Well	Private Well 2	6/7/2022	A222333	PACE	NR
GW - Molybdenum Investigation	PTP-11	2/7/2022	280-158481-1	EUROFINS	NR
GW - Molybdenum Investigation	PTP-11	5/11/2022	280-162308-1	EUROFINS	NR
GW - Molybdenum Investigation	PTP-12	2/7/2022	280-158481-1	EUROFINS	NR
GW - North End Monitoring	PTP-12	2/14/2022	A220705	PACE	NR
GW - Molybdenum Investigation	PTP-12	5/11/2022	280-162308-1	EUROFINS	NR
GW - North End Monitoring	PTP-12	5/11/2022	A221907	PACE	NR
GW - Molybdenum Investigation	PTP-13	3/1/2022	280-159260-1	EUROFINS	NR
GW - North End Monitoring	PTP-13	3/1/2022	A220918	PACE	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
GW - Molybdenum Investigation	PTP-13	5/12/2022	280-162308-1	EUROFINS	NR
GW - North End Monitoring	PTP-13	5/12/2022	A221911	PACE	NR
WTP - Early Warning	TP-110	1/3/2022	280-157422-1	EUROFINS	NR
WTP - Early Warning	TP-110	2/1/2022	280-158293-1	EUROFINS	NR
WTP - Early Warning	TP-110	3/1/2022	280-159199-1	EUROFINS	NR
WTP - Early Warning	TP-110	4/4/2022	280-160525-1	EUROFINS	NR
WTP - Early Warning	TP-110	4/4/2022	280-160534-1	EUROFINS	NR
WTP - Early Warning	TP-110	5/2/2022	280-161801-1	EUROFINS	NR
WTP - Early Warning	TP-110	6/6/2022	280-163137-1	EUROFINS	NR
WTP - Early Warning	TP-120	1/3/2022	280-157422-1	EUROFINS	NR
WTP - Early Warning	TP-120	2/1/2022	280-158293-1	EUROFINS	NR
WTP - Early Warning	TP-120	3/1/2022	280-159199-1	EUROFINS	NR
WTP - Early Warning	TP-120	4/4/2022	280-160525-1	EUROFINS	NR
WTP - Early Warning	TP-120	4/4/2022	280-160534-1	EUROFINS	NR
WTP - Early Warning	TP-120	5/2/2022	280-161801-1	EUROFINS	NR
WTP - Early Warning	TP-120	6/6/2022	280-163137-1	EUROFINS	NR
WTP - Early Warning	TP-140	1/3/2022	280-157422-1	EUROFINS	NR
WTP - Early Warning	TP-140	2/1/2022	280-158293-1	EUROFINS	NR
WTP - Early Warning	TP-140	3/1/2022	280-159199-1	EUROFINS	NR
WTP - Early Warning	TP-140	4/4/2022	280-160525-1	EUROFINS	NR
WTP - Early Warning	TP-140	4/4/2022	280-160534-1	EUROFINS	NR
WTP - Early Warning	TP-140	5/2/2022	280-161801-1	EUROFINS	NR
WTP - Early Warning	TP-140	6/6/2022	280-163137-1	EUROFINS	NR
WTP - Early Warning	TP-150	1/3/2022	280-157422-1	EUROFINS	NR
WTP - Early Warning	TP-150	2/1/2022	280-158293-1	EUROFINS	NR
WTP - Early Warning	TP-150	3/1/2022	280-159199-1	EUROFINS	NR
WTP - Early Warning	TP-150	4/4/2022	280-160525-1	EUROFINS	NR
WTP - Early Warning	TP-150	4/4/2022	280-160534-1	EUROFINS	NR
WTP - Early Warning	TP-150	5/2/2022	280-161801-1	EUROFINS	NR
WTP - Early Warning	TP-150	6/6/2022	280-163137-1	EUROFINS	NR
WTP - Early Warning	TP-160	1/3/2022	280-157422-1	EUROFINS	NR
WTP - Early Warning	TP-160	2/1/2022	280-158293-1	EUROFINS	NR
WTP - Early Warning	TP-160	3/1/2022	280-159199-1	EUROFINS	NR
WTP - Early Warning	TP-160	4/4/2022	280-160525-1	EUROFINS	NR
WTP - Early Warning	TP-160	4/4/2022	280-160534-1	EUROFINS	NR
WTP - Early Warning	TP-160	5/2/2022	280-161801-1	EUROFINS	NR
WTP - Early Warning	TP-160	6/6/2022	280-163137-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	1/3/2022	280-157421-1	EUROFINS	NR
WTP - Early Warning	TP-170	1/3/2022	280-157422-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	1/11/2022	280-157595-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	1/18/2022	280-157832-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	1/25/2022	280-158099-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	1/25/2022	280-158100-1	EUROFINS	NR
WTP - Early Warning	TP-170	2/1/2022	280-158293-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	2/1/2022	280-158296-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	2/8/2022	280-158483-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	2/8/2022	280-158485-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	2/15/2022	280-158767-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	2/22/2022	280-158975-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Early Warning	TP-170	3/1/2022	280-159199-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	3/1/2022	280-159201-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	3/8/2022	280-159507-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	3/8/2022	280-159508-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	3/15/2022	280-159745-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	3/15/2022	280-159744-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Molybdenum Performance	TP-170	3/22/2022	280-160001-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	3/22/2022	280-160006-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	3/29/2022	280-160307-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Early Warning	TP-170	4/4/2022	280-160525-1	EUROFINS	NR
WTP - Early Warning	TP-170	4/4/2022	280-160534-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	4/5/2022	280-160531-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	4/12/2022	280-160910-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	4/19/2022	280-161212-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	4/26/2022	280-161516-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Early Warning	TP-170	5/2/2022	280-161801-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	5/2/2022	280-161810-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	5/10/2022	280-162134-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	5/17/2022	280-162439-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	5/24/2022	280-162709-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	5/31/2022	280-162925-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	6/6/2022	280-163134-1	EUROFINS	NR
WTP - Early Warning	TP-170	6/6/2022	280-163137-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	6/14/2022	280-163423-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	6/21/2022	280-163655-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-170	6/28/2022	280-163849-1	EUROFINS	NR
WTP - Biotreatment System	TP-170	6/28/2022	280-163850-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-173A	1/3/2022	280-157421-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-173A	1/11/2022	280-157595-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-173A	6/21/2022	280-163655-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	1/3/2022	280-157421-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	1/11/2022	280-157595-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	1/18/2022	280-157832-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	1/25/2022	280-158099-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	2/1/2022	280-158296-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	2/8/2022	280-158485-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	2/15/2022	280-158767-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	2/22/2022	280-158975-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	3/1/2022	280-159201-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	3/8/2022	280-159507-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	3/15/2022	280-159745-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	3/22/2022	280-160001-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	3/29/2022	280-160307-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	4/5/2022	280-160531-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	4/12/2022	280-160910-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	4/19/2022	280-161212-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	4/26/2022	280-161516-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	5/2/2022	280-161810-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	5/10/2022	280-162134-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	5/17/2022	280-162439-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	5/24/2022	280-162709-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	5/31/2022	280-162925-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	6/6/2022	280-163134-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	6/14/2022	280-163423-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-174A	6/21/2022	280-163655-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Molybdenum Performance	TP-174A	6/28/2022	280-163849-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	1/18/2022	280-157832-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	1/25/2022	280-158099-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	2/1/2022	280-158296-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	2/8/2022	280-158485-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	2/15/2022	280-158767-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	2/22/2022	280-158975-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	3/1/2022	280-159201-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	3/8/2022	280-159507-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	3/15/2022	280-159745-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	3/22/2022	280-160001-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	3/29/2022	280-160307-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	4/5/2022	280-160531-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	4/12/2022	280-160910-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	4/19/2022	280-161212-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	4/26/2022	280-161516-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	5/2/2022	280-161810-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	5/10/2022	280-162134-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	5/17/2022	280-162439-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	5/24/2022	280-162709-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	5/31/2022	280-162925-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	6/6/2022	280-163134-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	6/14/2022	280-163423-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-175A	6/28/2022	280-163849-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	1/3/2022	280-157421-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	1/11/2022	280-157595-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	1/18/2022	280-157832-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	1/25/2022	280-158099-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	2/1/2022	280-158296-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	2/8/2022	280-158485-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	2/15/2022	280-158767-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	2/22/2022	280-158975-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	3/1/2022	280-159201-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	3/8/2022	280-159507-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	3/15/2022	280-159745-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	3/22/2022	280-160001-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	3/29/2022	280-160307-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	4/5/2022	280-160531-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	4/12/2022	280-160910-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	4/19/2022	280-161212-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	4/26/2022	280-161516-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	5/2/2022	280-161810-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	5/10/2022	280-162134-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	5/17/2022	280-162439-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	5/24/2022	280-162709-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	5/31/2022	280-162925-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	6/6/2022	280-163134-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	6/14/2022	280-163423-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	6/21/2022	280-163655-1	EUROFINS	NR
WTP - Molybdenum Performance	TP-183	6/28/2022	280-163849-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/4/2022	280-157415-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/11/2022	280-157593-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	1/25/2022	280-158100-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Biotreatment System	TP-3300	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	2/1/2022	280-158297-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	2/8/2022	280-158482-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	2/8/2022	280-158483-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	2/15/2022	280-158765-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/1/2022	280-159203-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/8/2022	280-159485-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/8/2022	280-159508-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/15/2022	280-159727-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/15/2022	280-159744-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/22/2022	280-160004-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/22/2022	280-160006-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/5/2022	280-160526-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/3/2022	280-161806-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/10/2022	280-162132-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/7/2022	280-163133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/7/2022	280-163174-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/21/2022	280-163644-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/21/2022	280-163653-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-3300	6/28/2022	280-163850-1	EUROFINS	NR
WTP - Early Warning	TP-3310	1/3/2022	280-157422-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/4/2022	280-157415-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/11/2022	280-157593-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	1/25/2022	280-158100-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Early Warning	TP-3310	2/1/2022	280-158293-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	2/1/2022	280-158297-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	2/8/2022	280-158482-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	2/8/2022	280-158483-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Biotreatment System	TP-3310	2/15/2022	280-158765-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Early Warning	TP-3310	3/1/2022	280-159199-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/1/2022	280-159203-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/8/2022	280-159485-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/8/2022	280-159508-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/15/2022	280-159727-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/15/2022	280-159744-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/22/2022	280-160004-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/22/2022	280-160006-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Early Warning	TP-3310	4/4/2022	280-160525-1	EUROFINS	NR
WTP - Early Warning	TP-3310	4/4/2022	280-160534-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/5/2022	280-160526-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Early Warning	TP-3310	5/2/2022	280-161801-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/3/2022	280-161806-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/10/2022	280-162132-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Early Warning	TP-3310	6/6/2022	280-163137-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/7/2022	280-163133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/7/2022	280-163174-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/21/2022	280-163644-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/21/2022	280-163653-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-3310	6/28/2022	280-163850-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/4/2022	280-157415-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/11/2022	280-157593-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	1/25/2022	280-158100-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	2/1/2022	280-158297-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	2/8/2022	280-158482-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	2/8/2022	280-158483-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	2/15/2022	280-158765-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Biotreatment System	TP-3320	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/1/2022	280-159203-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/8/2022	280-159485-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/8/2022	280-159508-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/15/2022	280-159727-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/15/2022	280-159744-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/22/2022	280-160004-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/22/2022	280-160006-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/5/2022	280-160526-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/3/2022	280-161806-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/10/2022	280-162132-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/7/2022	280-163133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/7/2022	280-163174-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/21/2022	280-163644-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/21/2022	280-163653-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-3320	6/28/2022	280-163850-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	2/8/2022	280-158482-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	2/15/2022	280-158765-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	3/8/2022	280-159485-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	3/15/2022	280-159727-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	3/22/2022	280-160004-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	5/10/2022	280-162132-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Biotreatment System	TP-3331	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	6/7/2022	280-163133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	6/21/2022	280-163644-1	EUROFINS	NR
WTP - Biotreatment System	TP-3331	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	2/8/2022	280-158482-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	2/15/2022	280-158765-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	3/8/2022	280-159485-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	3/15/2022	280-159727-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	3/22/2022	280-160004-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	5/10/2022	280-162132-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	6/7/2022	280-163133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	6/21/2022	280-163644-1	EUROFINS	NR
WTP - Biotreatment System	TP-3332	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	2/8/2022	280-158482-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	2/15/2022	280-158765-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	3/8/2022	280-159485-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	3/15/2022	280-159727-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	3/22/2022	280-160004-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	5/10/2022	280-162132-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	6/7/2022	280-163133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-3333	6/21/2022	280-163644-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Biotreatment System	TP-3333	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/4/2022	280-157415-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/11/2022	280-157593-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	1/25/2022	280-158100-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/1/2022	280-158297-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/8/2022	280-158482-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/8/2022	280-158483-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/15/2022	280-158765-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/1/2022	280-159203-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/8/2022	280-159485-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/8/2022	280-159508-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/15/2022	280-159727-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/15/2022	280-159744-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/22/2022	280-160004-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/22/2022	280-160006-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/5/2022	280-160526-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/3/2022	280-161806-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/10/2022	280-162132-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/7/2022	280-163133-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/7/2022	280-163174-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/21/2022	280-163644-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/21/2022	280-163653-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-3340	6/28/2022	280-163850-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	1/4/2022	280-157415-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	1/11/2022	280-157593-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	1/25/2022	280-158100-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	2/1/2022	280-158297-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Biotreatment System	TP-710	2/8/2022	280-158483-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	3/1/2022	280-159203-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	3/8/2022	280-159508-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	3/15/2022	280-159744-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	3/22/2022	280-160006-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	4/5/2022	280-160526-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	5/3/2022	280-161806-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	6/7/2022	280-163174-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	6/21/2022	280-163653-1	EUROFINS	NR
WTP - Biotreatment System	TP-710	6/28/2022	280-163850-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/4/2022	280-157412-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/4/2022	280-157415-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/11/2022	280-157592-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/11/2022	280-157593-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/18/2022	280-157834-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/25/2022	280-158093-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	1/25/2022	280-158100-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	2/1/2022	280-158289-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	2/1/2022	280-158297-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	2/15/2022	280-158765-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	2/22/2022	280-158977-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	3/1/2022	280-159200-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	3/1/2022	280-159203-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	3/29/2022	280-160298-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/5/2022	280-160524-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/5/2022	280-160526-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/12/2022	280-160893-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/19/2022	280-161195-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/26/2022	280-161504-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/3/2022	280-161789-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/3/2022	280-161806-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/10/2022	280-162132-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/17/2022	280-162430-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/24/2022	280-162705-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/31/2022	280-162922-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	6/7/2022	280-163133-1	EUROFINS	NR

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2022 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	LAB	Validated?[a/]
WTP - Biotreatment System	TP-730	6/7/2022	280-163174-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	6/14/2022	280-163420-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	6/21/2022	280-163653-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	6/21/2022	280-163644-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	6/28/2022	280-163846-1	EUROFINS	NR
WTP - Biotreatment System	TP-730	6/28/2022	280-163850-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	1/4/2022	280-157415-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	1/11/2022	280-157593-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	1/18/2022	280-157833-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	1/25/2022	280-158100-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	2/1/2022	280-158297-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	2/8/2022	280-158483-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	2/15/2022	280-158768-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	2/22/2022	280-158979-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	3/1/2022	280-159203-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	3/8/2022	280-159508-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	3/15/2022	280-159744-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	3/22/2022	280-160006-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	3/29/2022	280-160306-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	4/5/2022	280-160526-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	4/12/2022	280-160911-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	4/19/2022	280-161210-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	4/26/2022	280-161518-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	5/3/2022	280-161806-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	5/10/2022	280-162133-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	5/17/2022	280-162438-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	5/24/2022	280-162707-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	5/31/2022	280-162934-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	6/7/2022	280-163174-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	6/14/2022	280-163422-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	6/21/2022	280-163653-1	EUROFINS	NR
WTP - Biotreatment System	TP-740	6/28/2022	280-163850-1	EUROFINS	NR
GW - Compliance	U-518R-WD	4/21/2022	280-161328-1	EUROFINS	NR
GW - Compliance	U-518R-WD	4/21/2022	A221612	PACE	NR
WTP - Sludge Analysis	WTP SLUDGE	3/14/2022	22-03072	EBS	NR
WTP - Sludge Analysis	WTP SLUDGE	3/14/2022	280-159746-1	EUROFINS	NR
WTP - Sludge Analysis (TENORM[g/])	WTP SLUDGE-1	3/14/2022	22-03071	EBS	NR
WTP - Sludge Analysis (TENORM)	WTP SLUDGE-2	3/14/2022	22-03071	EBS	NR
WTP - Sludge Analysis (TENORM)	WTP SLUDGE-3	3/14/2022	22-03071	EBS	NR

a/ Validated:
X = Level III validation
NR = Not required
b/ GW = groundwater
c/ WTP = Water Treatment Plant
d/ EBS - Eberline Services
e/ RAWP = Response Action Work Plan
f/ VES = Vapor Extraction System
g/ TENORM = Technologically Enhanced Naturally Occurring Radioactive Material

APPENDIX F-2

ANALYTICAL DATA PACKAGES

AND

DATA VALIDATION REPORTS

See folder APPENDIX F-2

APPENDIX F-3

DATA QUALITY ASSESSMENT

APPENDIX F-3

DATA QUALITY ASSESSMENT

JANUARY THROUGH JUNE 2022
OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Based on the project or task requirements, a data evaluation process was performed on project analytical data. The data evaluation process provides an evaluation of the data quality in relation to specific project data quality criteria and with reference to the sampling and analysis requirements of the Quality Assurance Project Plan (QAPP).

The overall quality assurance objective for all measurement data is to maximize the probability that the data generated are of documented quality and are defensible for the intended data uses. To meet these objectives, data shall be: (1) representative of actual site physical and chemical conditions; (2) comparable to previous and subsequent data and other studies; (3) complete to the extent that necessary conclusions may be reached; and (4) of known quantitative statistical significance in terms of precision and accuracy, at levels appropriate for each stated data use for the project.

The data review process is performed in two phases. The initial phase, data verification, involves inspecting the laboratory data deliverables to determine if project requirements were met. The second phase, data validation, includes a review of data to assess data usability and application of data qualifiers to the analytical results based on adherence to method protocols and laboratory-specific quality assurance/quality control (QA/QC) limits.

F-3.1 DATA VERIFICATION

Data verification is the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual requirements. Data verification is the review of sample data deliverables for completeness and compliance with project requirements. A checklist was completed for each data package to ensure that all documentation was provided. If deficiencies were revealed, resubmissions of the missing or incorrect data were requested and the data deliverable was updated. In addition, transcription checks of 100% of the compliance, effectiveness, vertical migration, Response Action, and North End groundwater results, Water Treatment Plant (WTP) Early Warning, molybdenum testing, and WTP effluent (MP-001) samples were performed to ensure the data reported in the database and the hardcopy data packages were the same. The following problems were noted during sample verification:

The following problems were identified:

280-161009 was missing the inorganic (general chemistry) raw sample data - the data package was resubmitted.

280-162131 was missing total and dissolved molybdenum in the EDD and the data package for MW170-EW-1. The analysis had been performed but not reported. The data package and EDD were resubmitted.

No other problems were encountered from data verification of the analytical data.

F-3.2 DATA VALIDATION

Data validation was performed on the following selected locations during the reporting period.

- 10% of the 30 compliance and effectiveness groundwater (GW) wells. Samples for validation were chosen at random:
- A representative set of the investigation wells (Molybdenum testing and North End Monitoring) were also validated.
- All MP-00l (WTP effluent) samples.

A Level III validation (summary quality control review) was performed consisting of manually examining data deliverables to determine data quality. Data validation included application of data qualifiers to the analytical results based on adherence to method protocols and project-specific QA/QC limits. Method protocols reviewed included:

- Analytical holding times,
- Method blanks (MB),
- Trip blanks (TB),
- Equipment blanks (EBs),
- Ambient blanks (AB),
- Matrix spikes/matrix spike duplicates (MS/MSDs),
- Laboratory control samples (LCSs),
- Shipping cooler temperatures,
- Laboratory duplicates,
- Internal Standards (ISs),
- Surrogates,
- Chemical recovery (radionuclides), or
- An out-of-control QC parameter that is mentioned in the case narrative.

Data qualifiers were applied to analytical results during the data validation process. All data were validated using method applicable guidelines and in accordance with the requirements of the National Functional Guidelines for Organic and Inorganic Data Review (EPA, 1994a & b, as amended) and by SW-846 guidelines specific to the method or as directed by EPA. All radionuc1ide results that were less than the critical value (Lc) were qualified as not detected (U).

Radionuc1ides were validated according to the guidelines and criteria specified in the Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP) Manual (EPA, 2004, as amended).

The following definitions provide explanations of the USEPA qualifiers that may be assigned to analytical results during data validation.

U = The analyte was analyzed for and is not present above the level of the associated value. The associated numerical value indicates the approximate concentration necessary to detect the analyte in the sample.

UJ = The analyte analyzed for was not present above the level of the associated value. The associated numerical value may not accurately represent the concentration necessary to detect the analyte in the sample.

UJ- = Same as UJ qualification but with an indication of negative bias in the associated numerical value.

UJ+ = Same as UJ qualification but with an indication of positive bias in the associated numerical value.

NJ = The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the sample.

J = The analyte was analyzed for, and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

J- = Same as J qualification but with an indication of negative bias in the sample concentration.

J+ = Same as J qualification but with an indication of positive bias in the sample concentration.

Data quality is summarized below only where problems were noted during the validation. Frequency requirements for field sample collection of QC samples (MS/MSDs, field duplicates, and blanks) were reviewed and meet project requirements. The frequency requirements for laboratory specific method QC were met overall.

F -3.2.1 Groundwater

Six samples associated with the 30 compliance and effectiveness wells plus 5 samples associated with investigation and North End groundwater monitoring were validated. Locations of wells sampled during the reporting period are shown on Figures 4.9 and 4.10. Data validation reports (DVRs), included in Appendix F-2, are cross-referenced by location and SDG number in Table F-l. Raw data packages and DVRs are presented in Appendix F-2.

The following methods were validated as required:

- SW8260B (VOCs),
- SW8260_SIM (low-level 1,4-Dioxane),
- SW6010B (Metals),
- E300.0A (Nitrate and Nitrite).

The following groundwater samples were validated as indicated for each method:

MASTER LOC	Sample Date	300_0A	6010B	8260_SIM	8260B
B-326-UD	4/14/2022		X		
GW-106	4/18/2022	X	X	X	X
MW105-WD	4/20/2022	X	X	X	X
MW113-UD	4/5/2022		X		
MW113-WD	4/5/2022		X		
MW135-WD	2/23/2022			X	
MW179-UDEN	3/1/2022		X		
MW23-UPPER-C	4/20/2022			X	
MW54-WD	4/18/2022	X	X	X	X
MW77-WD	4/18/2022	X	X	X	X
MW78-WD	4/18/2022	X	X	X	X

The results listed in the table below were qualified for exceeding the linear range (LR) of the calibration curve or for contaminated calibration blanks (CCBs). No other qualifiers were necessary for groundwater samples after validation.

Data Qualifications – Groundwater

MASTER LOC	Parameter Name	Sample Date	Result	Units	Final Q	LR	CCB
MW105-WD	Cadmium	4/20/2022	0.53	ug/L	U		U
MW23-UPPER-C	Cadmium	4/20/2022	0.36	ug/L	U		U
MW62-WDR	Cadmium	4/19/2022	0.56	ug/L	U		U
MW71-WD	Cadmium	4/19/2022	0.38	ug/L	U		U
MW77-WD	Nitrogen, Nitrate	4/18/2022	13000	ug/L	J	J	

Continuing Calibration Blanks

The continuing calibration blank (CCB) is an aliquot that consists of the same matrix as that used for the calibration standards, but without the analytes, analyzed during an analysis sequence to verify the continued absence of instrumental interferences. Four cadmium samples were qualified for CCB contamination (U). Each qualified sample was from the same analytical run. This indicates contamination originating from lab processes.

Linear Range

One nitrate concentration exceeded the linear range of the calibration curve. The dilution reanalysis was performed after the holding time expired so could not be used. The results exceeding the linear range were reported and qualified as J, estimated.

F-3.2.2 WTP Effluent (MP-00l)

The WTP effluent samples (MP-001) were validated for the following methods, if applicable:

- E200.8 and E200.7 – Metals,
- E624 – VOCs,
- E625 –SVOCs,
- SW8260SIM – 1,4-Dioxane,
- E900.0 - Gross alpha/beta,
- EPA 60017-79-08 - Plutonium-238, -239, -240,
- ER110 LANL - Americium-241,
- SM 7500-RA-B – Radium-226 and Total Radium, and
- EPA-RA-05 – Radium-228.

Data validation reports included in Appendix F are cross-referenced by location and SDG number in Appendix F-l. DVRs and raw data packages are presented in Appendix F-2.

The results listed in the table below were qualified because out-of-control chemical recovery, uncertainty, LCS recovery, MS recovery, trip blanks, continuing calibration verifications (CCVs), surrogates, and method blanks.

Data Qualifications – WTP Effluent

Sample ID	Sample Date	Parameter Name	Result	CE	Units	Final Q	Unc	MS Rec	Chem Rec	MB	LCS Rec	CCV %D	SUR
MP-001_010322_2000	1/3/22	1,2,3-Trichloropropane	3		ug/L	R		R					
MP-001_010322_1600	1/3/22	1,2,3-Trichloropropane	3		ug/L	R		R					
MP-001_010322_1200	1/3/22	1,2,3-Trichloropropane	3		ug/L	R		R					
MP-001_010322_1200	1/3/22	Dichlorodifluoromethane	2		ug/L	R					R		
MP-001_010322_1600	1/3/22	Dichlorodifluoromethane	2		ug/L	R					R		
MP-001_010322_2000	1/3/22	Dichlorodifluoromethane	2		ug/L	R					R		
MP-001_010322_1200	1/3/22	o-Xylene	1		ug/L	R		R					
MP-001_010322_2000	1/3/22	o-Xylene	1		ug/L	R		R					
MP-001_010322_1600	1/3/22	o-Xylene	1		ug/L	R		R					
MP-001_010422_0400	1/4/22	1,2,3-Trichloropropane	3		ug/L	R		R					
MP-001_010422_0800	1/4/22	1,2,3-Trichloropropane	3		ug/L	R		R					
MP-001_010422_0000	1/4/22	1,2,3-Trichloropropane	3		ug/L	R		R					
MP-001	1/4/22	Alpha, Gross	15	5.9	pCi/l	UJ+		S+		B+	S+		
MP-001	1/4/22	Americium-241	0.013	0.029	pCi/l	J	Q						
MP-001	1/4/22	Benzidine	95		ug/L	R		R					
MP-001_010422_0000	1/4/22	Dichlorodifluoromethane	2		ug/L	R					R		
MP-001_010422_0400	1/4/22	Dichlorodifluoromethane	2		ug/L	R					R		
MP-001_010422_0800	1/4/22	Dichlorodifluoromethane	2		ug/L	R					R		
MP-001	1/4/22	Hexachlorocyclopentadiene	47		ug/L	R					R		
MP-001_010422_0800	1/4/22	o-Xylene	1		ug/L	R		R					
MP-001_010422_0400	1/4/22	o-Xylene	1		ug/L	R		R					
MP-001_010422_0000	1/4/22	o-Xylene	1		ug/L	R		R					
MP-001	1/4/22	Plutonium-238	0.083	0.072	pCi/l	UJ			J				
MP-001	1/4/22	Plutonium-239/240	0.049	0.059	pCi/l	J	Q		J				
MP-001	1/4/22	Radium-226	0.42	0.36	pCi/l	J	Q						

Sample ID	Sample Date	Parameter Name	Result	CE	Units	Final Q	Unc	MS Rec	Chem Rec	MB	LCS Rec	CCV %D	SUR
MP-001	1/4/22	Radium-228	1.2	0.71	pCi/l	J	Q						
MP-001	1/4/22	Total Radium	0.37	0.20	pCi/l	J	Q						
MP-001	1/4/22	Zinc	3.1		ug/L	U				U			
MP-001	2/2/22	Benzidine	93		ug/L	R		R					
MP-001	2/2/22	Hexachlorocyclopentadiene	47		ug/L	R		R			R		
MP-001	4/5/22	2-Chlorophenol	9.4		ug/L	UJ-							UJ-
MP-001	4/5/22	Acetophenone	9.4		ug/L	UJ-							UJ-
MP-001	4/5/22	Alpha, Gross	37.8	7.4	pCi/l	J+				B+			
MP-001	4/5/22	Americium-241	-0.00011	0.051	pCi/l	UJ			J				
MP-001	4/5/22	Benzidine	94		ug/L	R		R					UJ-
MP-001	4/5/22	Hexachloroethane	9.4		ug/L	UJ-							UJ-
MP-001	4/5/22	N-Nitroso-Di-N-Propylamine	9.4		ug/L	UJ-							UJ-
MP-001_040422_1200	4/5/22	Nonylphenol	4.9		ug/L	R		R					
MP-001_040422_1600	4/5/22	Nonylphenol	4.9		ug/L	R		R					
MP-001_040422_2000	4/5/22	Nonylphenol	4.9		ug/L	R		R					
MP-001_040522_0000	4/5/22	Nonylphenol	4.9		ug/L	R		R					
MP-001_040522_0400	4/5/22	Nonylphenol	4.9		ug/L	R		R					
MP-001_040522_0800	4/5/22	Nonylphenol	4.9		ug/L	R		R					UJ-
MP-001	4/5/22	Plutonium-238	-0.019	0.033	pCi/l	UJ			J				
MP-001	4/5/22	Plutonium-239/240	0.0046	0.030	pCi/l	UJ			J				
MP-001	4/5/22	Radium-228	0.46	0.23	pCi/l	J	Q						
MP-001	4/5/22	Zinc	3.1		ug/L	UJ+						J+	

CE = Counting Error
MS Rec = Matrix Spike Recovery
Chem Rec = Chemical Recovery (RADs)
Unc = Uncertainty
LCS Rec = Laboratory Control Sample Recovery
MB = Method Blank
SUR = Surrogate recovery
CCV = Continuing Calibration Verification percent difference

Uncertainty

Samples for americium-241, plutonium-239/240 and radium-228 were qualified because of a high counting error in relation to the sample result (uncertainty). This indicates that the uncertainty of a measured value is too large compared to the result value. This usually occurs when the result value is just above the critical value. The final result is qualified as estimated (J).

Matrix Spike Recovery

Benzidine in three samples was rejected due to low matrix spike recoveries. Benzidine was extracted and analyzed in duplicate for each sample collected because of this problem. Benzidine experiences oxidative losses during extraction inhibiting recovery of matrix spikes. Because benzidine has never been detected at Lowry, Metro has allowed a variance for the method. The lab must analyze it twice and if the spikes fail twice, we do not have to resample. LCS recoveries will still need to be in control plus all other QC.

Gross alpha in one sample was out of control for matrix spike recoveries. Gross alpha may be biased high in the associated samples as indicated by matrix spike recoveries that were above the upper control limits.

1,2,3-Trichloropropane, nonylphenol, and o-xylene in one set of MP-001 samples were rejected due to low matrix recoveries. Hexachlorobutadiene was rejected in one MP-001 sample. The samples were recollected and reanalyzed with passing QC.

Qualifications resulting from matrix spike recoveries are most likely matrix-related because the associated LCSs were in control.

Chemical Recovery

Americium-241, plutonium-238 and plutonium-239/240 in one sample were qualified as estimated for chemical recovery. Chemical recovery measures the yield of a radioactive isotope of the analyte added to the sample to measure any losses of the analyte during the chemical separations or other processes employed in the analysis. Sample concentrations are corrected for chemical recovery but the lower the yield the greater the variance in the result. Therefore, the sample results were qualified as estimated (J).

Method Blanks

The method blank measures possible contamination by the laboratory. One zinc sample was qualified for method blank contamination (U). Two gross alpha samples were qualified as B+ (estimated with a high bias, final Q = J+). This indicates contamination originating from lab processes.

Laboratory Control Samples

LCSs are designed to check the accuracy of the analytical procedure by measuring a known concentration of an analyte of interest. One set of six samples for dichlorodifluoromethane and two samples for hexachlorocyclopentadiene were rejected for low LCS recoveries. The samples

were recollected and reanalyzed with passing QC. One gross alpha sample was qualified S+ for high bias.

Continuing Calibration Verification

Initial calibration curves must be verified daily prior to sample analysis using a CCV to monitor the accuracy of the analysis and every 10 samples for metals analysis. One sample for zinc was qualified as biased high for a failing CCV.

Surrogates

Surrogate spike analyses are used to determine the efficiency of target analyte recovery during sample preparation and analysis. One sample for nonylphenol, 2-chlorophenol, acetophenone, hexachloroethane, N-nitroso-di-N-propylamine and benzidine were out of control with a low bias. Qualifications resulting from surrogate recoveries are most likely matrix-related.

F-3.3 DATA ASSESSMENT

Data quality assessment (DQA) criteria were used to evaluate the quality of the field sampling efforts, field screening results, and laboratory results for compliance with project data quality objectives (DQOs). The DQA criteria are expressed in terms of analytical precision, accuracy, representativeness, completeness, and comparability (PARCC). Procedures used to assess data accuracy and precision are in accordance with the respective analytical methods and QAPP requirements.

F-3.3.1 Precision

Precision is the measure of variability between individual sample measurements under prescribed conditions. The relative percent difference (RPD) for field duplicate, MS/MSD, and laboratory duplicate analyses demonstrates the precision of the analytical methods and, in the case of field duplicates, sampling methods. An RPD within the method-specific control limit indicates satisfactory precision in a measurement system. Methods (matrix specific) were considered out of control when greater than 50 percent of all precision data exceeded criteria. Out-of-control methods are evaluated for trends in bias. If a specific bias is evident, it is discussed below.

Precision results (i.e., MS/MSD, laboratory replicates, and field duplicates) for all methods and matrices were in control overall. The tables below present field duplicate precision for groundwater and WTP effluent where at least one of the duplicate results was detected. Field duplicates have an RPD control limit for sample concentrations exceeding the RL by 5 times of 35% and a range limit equal to the two times the RL is applied to sample values less than 5 times the RL. The field duplicate results were in control.

Field Duplicate Results

Sample ID	Analyte	Sample Date	RL	Sample Conc (ug/L)	Dupe Conc (ug/L)	Range	RPD
MW170-EW-1	1,1,1-Trichloroethane	1/25/2022	1	1.8	1.8	0	

Sample ID	Analyte	Sample Date	RL	Sample Conc (ug/L)	Dupe Conc (ug/L)	Range	RPD
MW170-EW-1	1,1-Dichloroethane	1/25/2022	1	3.7	3.8	0.1	
MW170-EW-1	1,1-Dichloroethene	1/25/2022	1	3	3	0	
MW170-EW-1	cis-1,2-Dichloroethene	1/25/2022	1	9	8.7		3%
MW170-EW-1	Tetrachloroethene	1/25/2022	1	1.2	1.1	0.1	
MW170-EW-1	Trichloroethene	1/25/2022	1	0.49	0.49	0	
MW170-EW-1	Nitrate as N	1/25/2022	2.5	11	11	0	
MW170-EW-1	Molybdenum, Total	1/25/2022	20	1.4	1	0.4	
MW170-EW-1	Molybdenum, Dissolved	1/25/2022	20	1.3	2	0.7	
MW105-WD	Cadmium	4/20/2022	5	0.53	1	0.47	
MW105-WD	Nitrate as N	4/20/2022	0.5	0.22	0.2	0.02	
MW113-WD	Molybdenum, Total	1/15/2022	200	32000	31000		3%
MW113-WD	Molybdenum, Dissolved	1/15/2022	200	31000	31000		0%
MP-001_010422_0800	1,1,1-Trichloroethane	1/4/2022	1	8.7	8.4		4%
MP-001_010422_0800	1,1-Dichloroethane	1/4/2022	1	22	21		5%
MP-001_040522-0800	1,1-Dichloroethane	4/5/2022	1	6.8	6.7		1%
MP-001_010422_0800	1,2-Dichloroethene, Total	1/4/2022	1	4.9	4.9	0	
MP-001_010422_0800	1,4-Dioxane	1/4/2022	1.4	14	13		7%
MP-001_040522-0800	1,4-Dioxane	4/5/2022	20	28	23	5	
MP-001_040522_0800	1,4-Dioxane	4/5/2022	1.4	12	11		9%
MP-001_010422_0800	cis-1,2-Dichloroethene	1/4/2022	1	4.9	4.9	0	
MP-001	Copper	4/5/2022	2.5	21	21		0%
MP-001	Diethyl phthalate	4/5/2022	3.8	0.42	0.63	0.21	
MP-001	Molybdenum	1/4/2022	5	13	13	0	
MP-001	Molybdenum	4/5/2022	5	14	14	0	
MP-001	Nickel	4/5/2022	2.5	3.5	3.1	0.4	
MP-001	Selenium	1/4/2022	2.5	19	18		5%
MP-001	Selenium	4/5/2022	2.5	17	17		0%
MP-001	Zinc	1/4/2022	10	3.1	3.3	0.2	
MP-001	Zinc	4/5/2022	10	3.1	3	0.1	

No qualifiers are applied based on field duplicate results unless resampling is indicated. Field duplicates are used as a measure of field sampling reproducibility and may be used to judge the representativeness of the samples collected.

F-3.3.2 Accuracy

F-3.3.2.1 Accuracy of Laboratory QC Samples

Accuracy is the degree of agreement of a measurement with an accepted reference or true value. The results of surrogate, MS/MSD, and LCS analyses, when expressed in terms of percent recovery, demonstrate the accuracy of the method. Surrogate and MS/MSD spike recoveries indicate accuracy relevant to a unique sample matrix. LCS spike recoveries indicate accuracy relevant to an analytical batch lot and are strictly a measure of laboratory analytical accuracy

conditions independent of samples and matrices. As with precision determinations, methods (matrix specific) were considered systematically out of control when greater than 50 percent of all accuracy data exceeded criteria. Out-of-control methods are evaluated for trends in bias. If a specific bias is evident, it is discussed below. If insufficient data are available (i.e., fewer than 20 occurrences) to represent a viable sample population, then statistical certainty in an out-of-control condition cannot be assumed. Control charts were developed to demonstrate if a change in the lab analysis process is occurring over time. The most current analyses were compared against the control limits and mean of the previous twenty analyses. By comparing current data to the control limits and mean of the previous set, you can determine whether the process variation is consistent (in control) or is unpredictable (out of control, affected by special causes of variation).

Control charts were developed for groundwater for the LCS/LCSD and MS/MSD spike recoveries for cadmium (representing SW6010B, Figures F-3.1, F-3.2, F-3.3, and F-3.4), trichloroethene (TCE) (representing SW8260B, Figures F-3.5, F-3.6, F-3.7, and F-3.8), and 1,4-dioxane by method SW8260 SIM (Figures F-3.9, F-3.10, and F-3.11). One LCS for cadmium was less than the lower control limit during the reporting period at 91% in a window of 93 to 107%. The accuracy of their LCSs over time has caused the control chart limits to be narrow. TCE exceeded the control limit for the LCS, MS and MSD in one analysis run indicating the laboratory analytical system was biased high. The associated sample (MW170-EW-1) had a trace detect of 0.49 J consistent with previous results.

Control charts or plots were developed for WTP effluent for the LCS/LCSD and MS/MSD spike recoveries for TCE (representing SW8260B, Figures F-3.12, F-3.13, F-3.14 and F-3.15), selenium (representing SW6010B, Figures, F-3.16, F-3.17, 3.18, and F-3.19), and pyridine by method SW8270 (Figures F-3.20, F-3.21, F-3.22 and F-3.23). LCS, LCSD, MS and MSD results were in control for the reporting period.

MP-001 was resampled for out-of-control matrix spike recoveries for benzidine, 1,2,3-trichloropropane, hexachlorocyclopentadiene, nonylphenol, and o-xylene. Benzidine experiences oxidative losses during the extraction inhibiting recovery of matrix spikes. A variance has been approved by Metro where the samples are extracted twice and analyzed twice for each sample. If the recoveries of the LCSs and MSs still do not pass, the results may be submitted to Metro. The other compounds were resampled with acceptable results.

LCSs associated with MP-001 were out of control for dichlorodifluoromethane and hexachlorocyclopentadiene. The associated samples were recollected and analyzed with acceptable results.

Surrogates were out of control with a low bias for nonylphenol, benzidine, hexachloroethane, N-nitroso-di-N-propylamine, acetophenone, and 2-chlorophenol in one sample.

Accuracy results (i.e., MS/MSD, LCS, surrogate spikes, and post digestion spikes) for all methods and matrices are predominantly in control except where noted. The accuracy results which were out-of-control are not significant for any one compound, method, or matrix (except benzidine) and do not represent a negative impact to data quality. Therefore, overall accuracy was acceptable.

F-3.4.3 Representativeness

Compliance sample data are believed to be representative of the site conditions prevailing at the time of sample collection because samples were properly collected, stored, and preserved. Although blank contamination did occur, sample data quality was not predominantly affected. Holding times were met for all compliance samples.

F-3.4.4 Comparability

All samples were reported in industry-standard units. Water reporting units were micrograms per liter (µg/L) or picoCuries per liter (pCi/L). Landfill gas units were in ug/m^3. Analytical protocols for the methods were adhered to and analytical results are considered comparable.

F-3.4.5 Completeness

Completeness is defined as the percentage of laboratory measurements judged to be valid on a method-by-method basis. Valid data are defined as all data and/or qualified data which meet the DQOs for this project. Data completeness is expressed as percent complete (PC), which is (1-(the number of rejected samples per compound ÷ total number of samples per compound) X 100. Completeness for the reporting period was 100%, understanding that all results qualified with U, UJ* or J* are usable to meet project objectives. Benzidine results were 0% complete but are not included in the calculation. The method required by the Metro permit is inadequate to analyze for this compound and does not provide a usable result. The goal for meeting analytical holding times was l00% and was met for all reported compliance samples. The rejected MP-001 samples that were rejected were replaced with resampled results.

F-3.4.6 Conclusion

The groundwater and WTP data for the reporting period are of acceptable quality and are considered usable to support project objectives. Samples are representative of the Site and comparable with previous and future investigations (when used in accordance with the validation qualifiers).

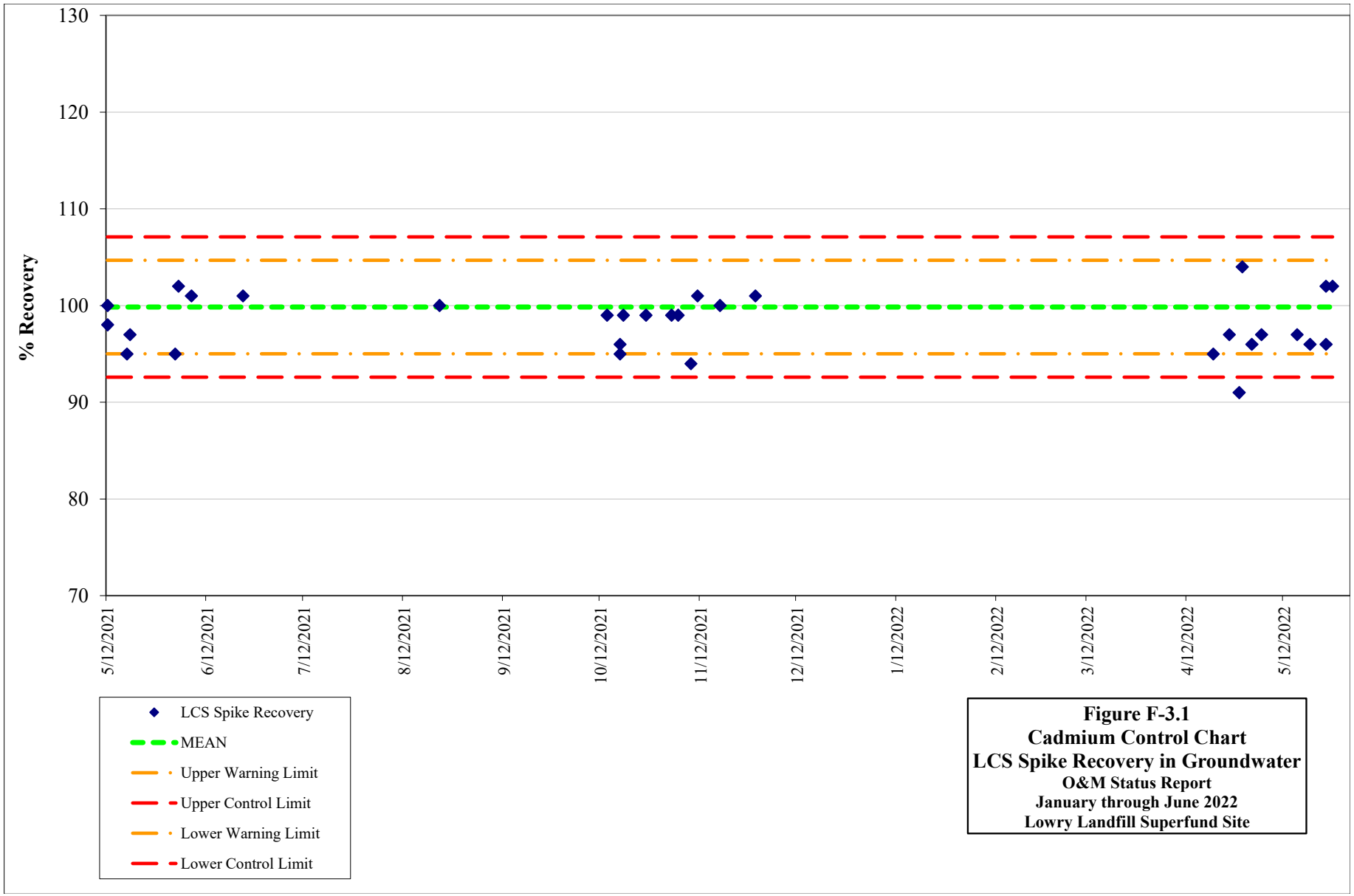


Figure F-3.1
Cadmium Control Chart
LCS Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

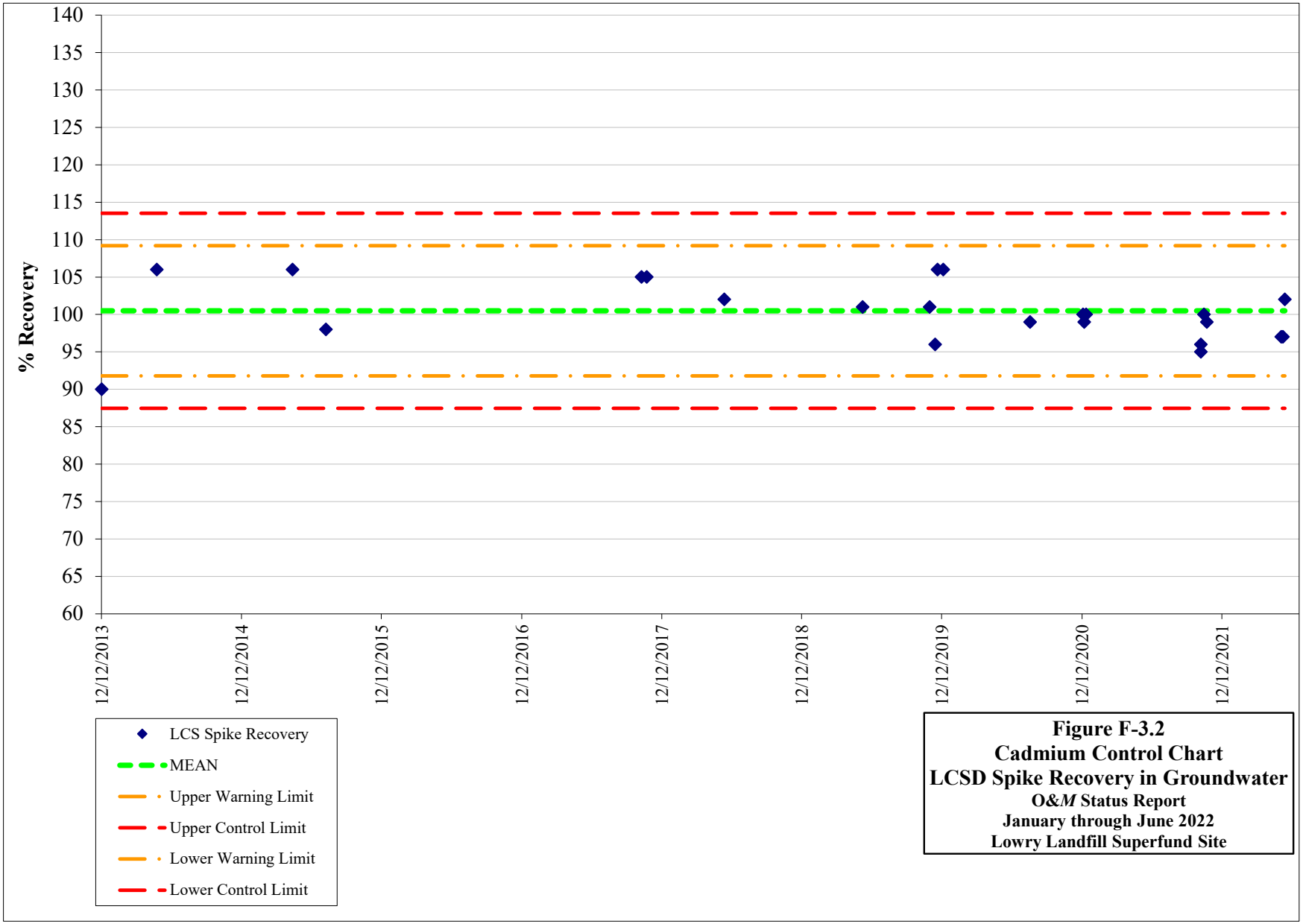


Figure F-3.2
Cadmium Control Chart
LCSD Spike Recovery in Groundwater
O&*M* Status Report
January through June 2022
Lowry Landfill Superfund Site

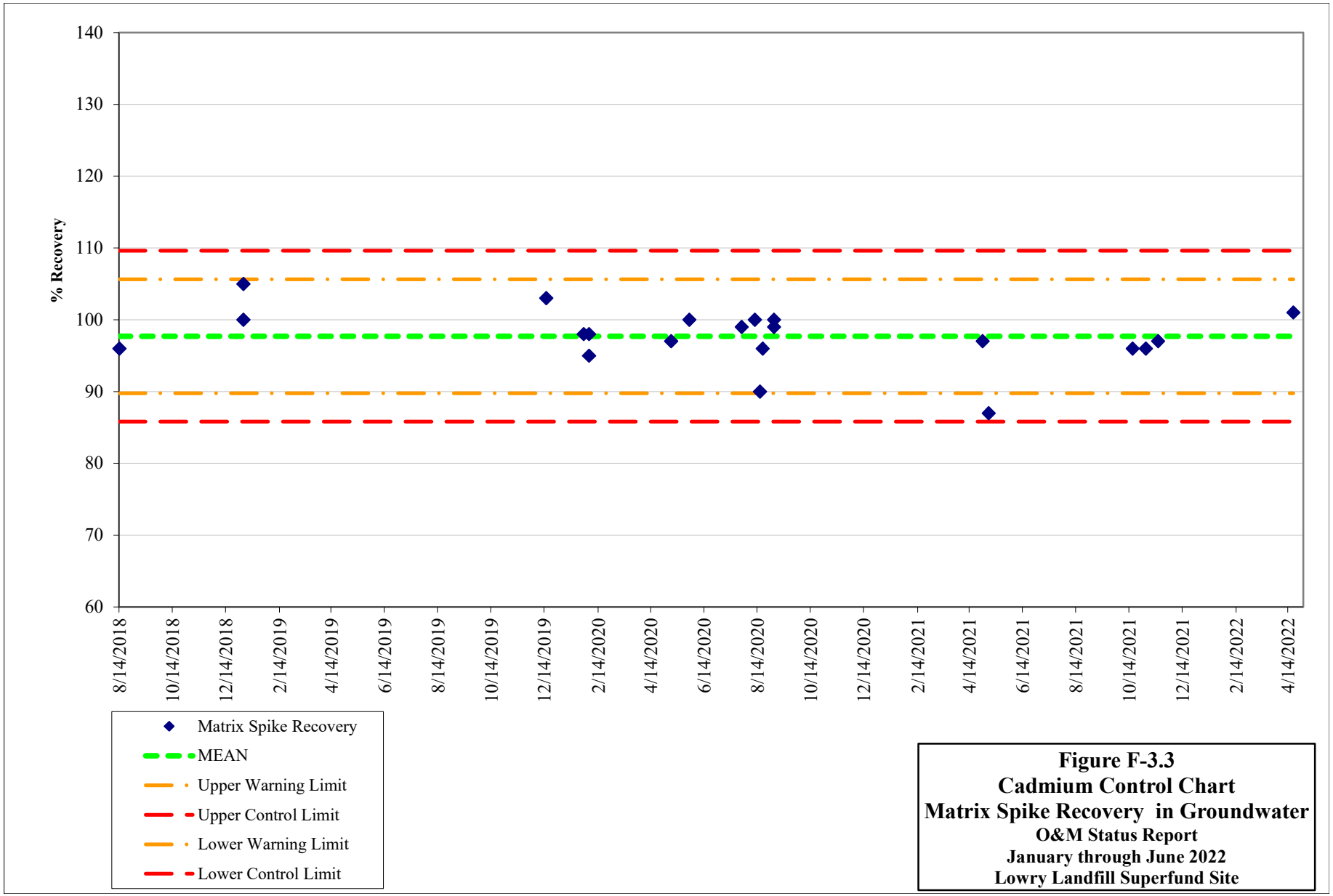


Figure F-3.3
Cadmium Control Chart
Matrix Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

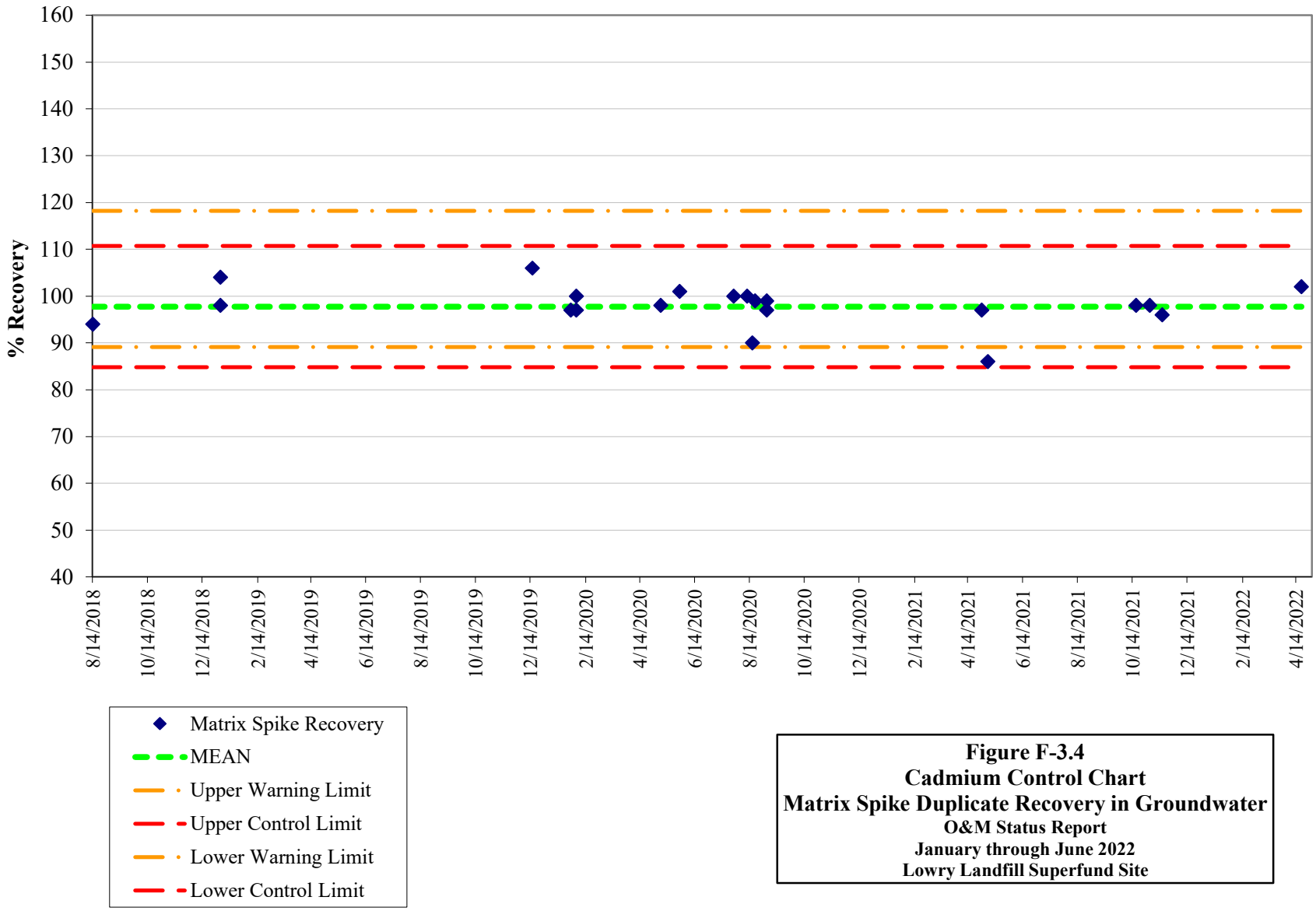


Figure F-3.4
Cadmium Control Chart
Matrix Spike Duplicate Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

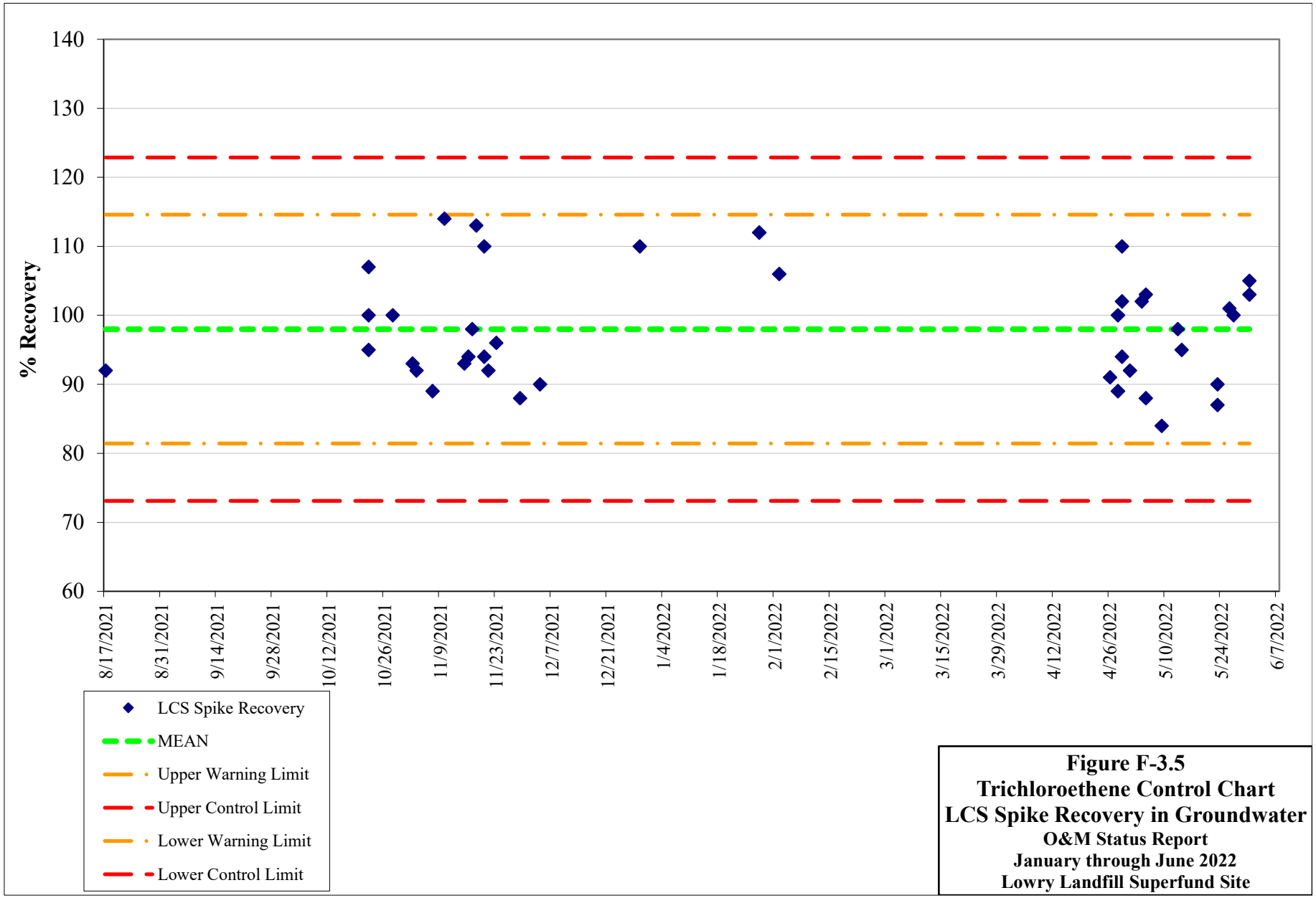


Figure F-3.5
Trichloroethene Control Chart
LCS Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

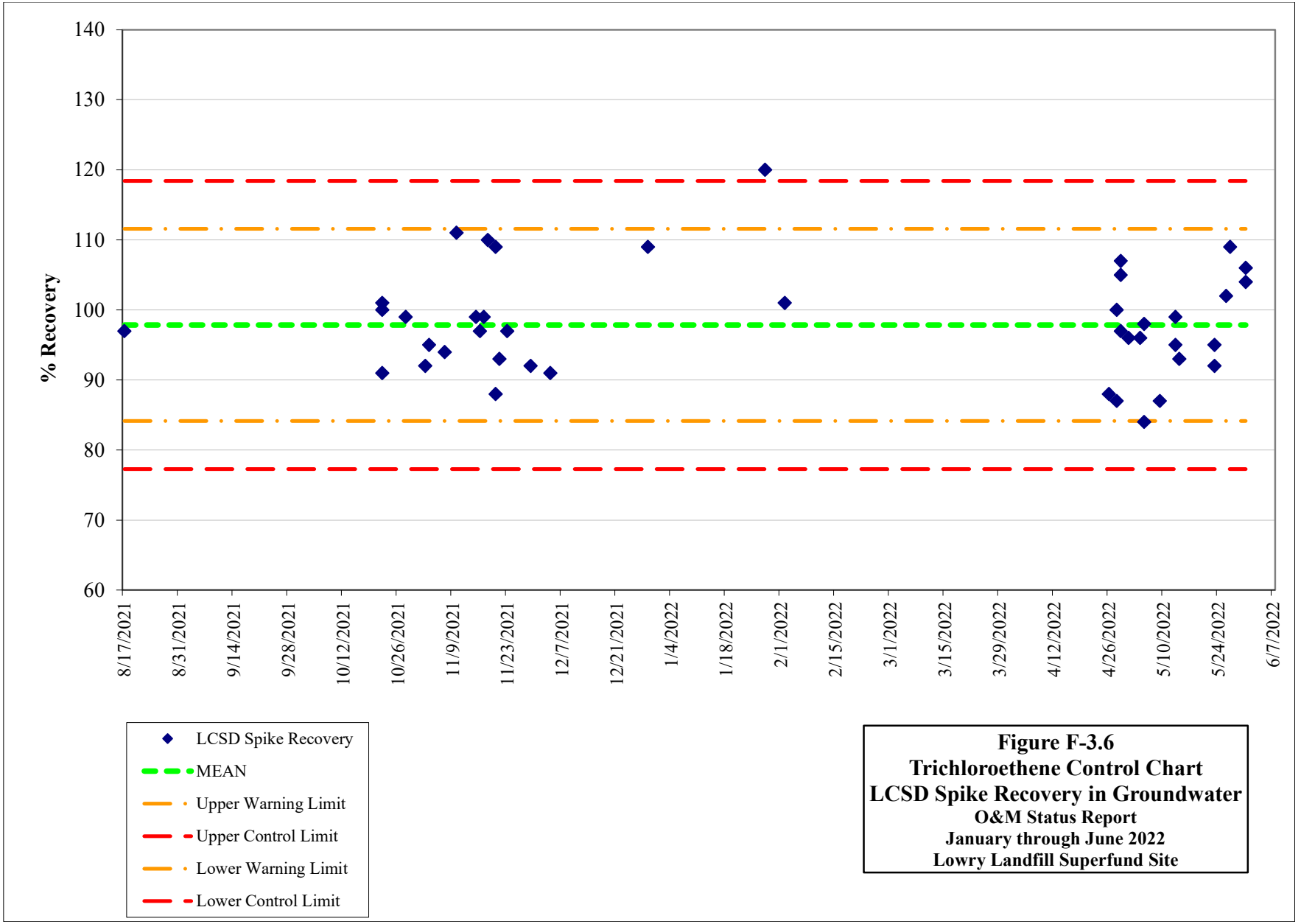


Figure F-3.6
Trichloroethene Control Chart
LCSD Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

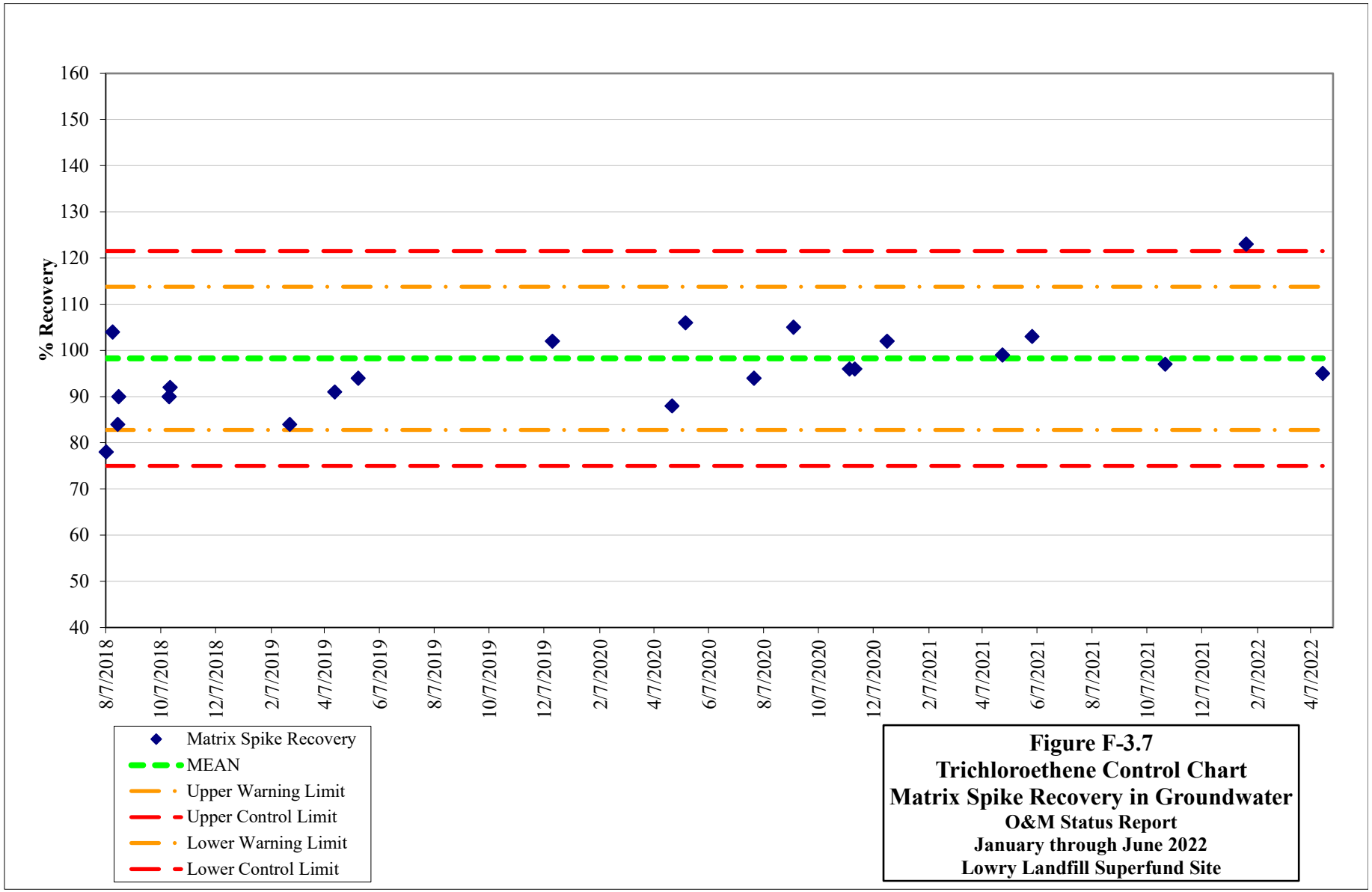


Figure F-3.7
Trichloroethene Control Chart
Matrix Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

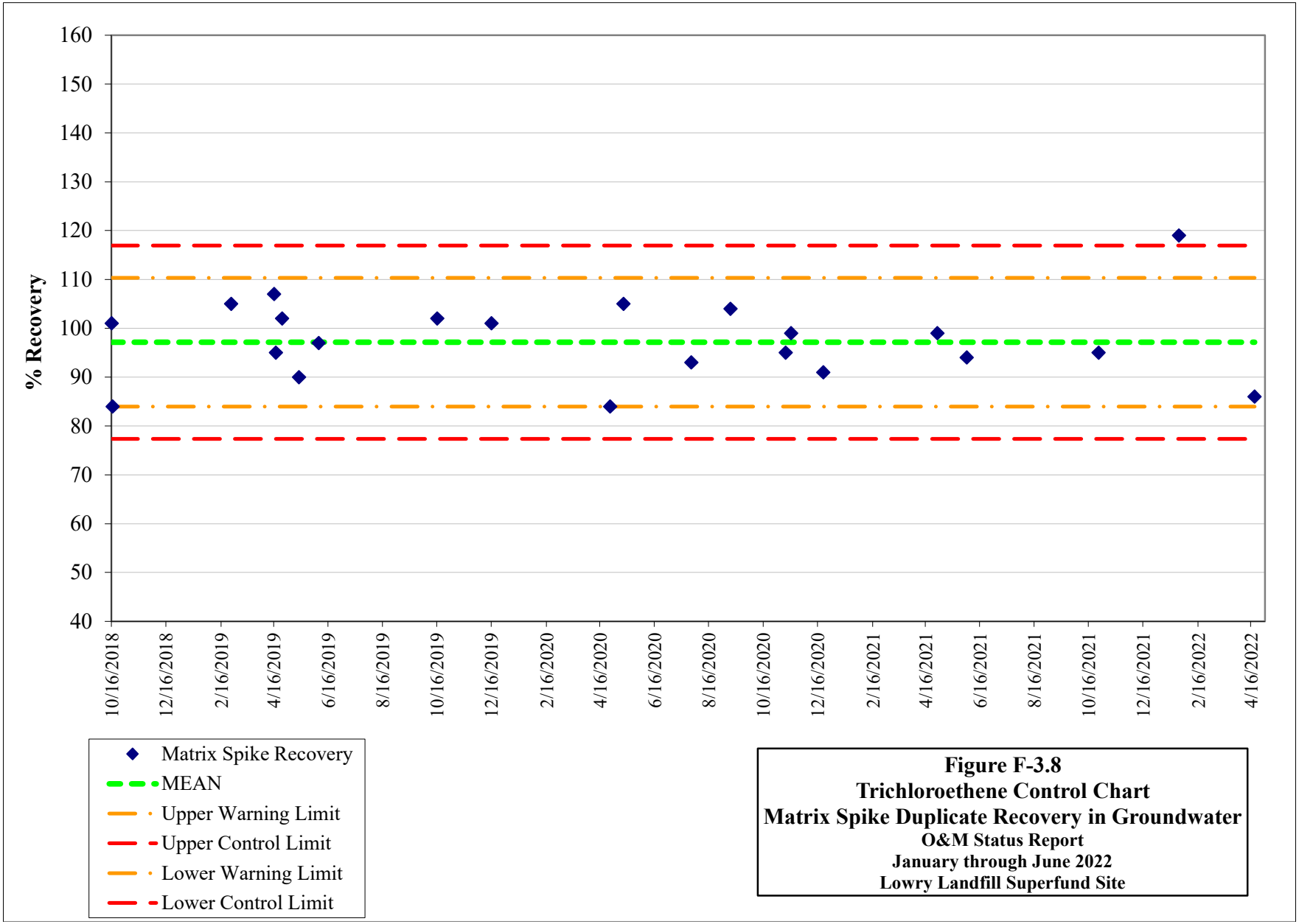


Figure F-3.8
Trichloroethene Control Chart
Matrix Spike Duplicate Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

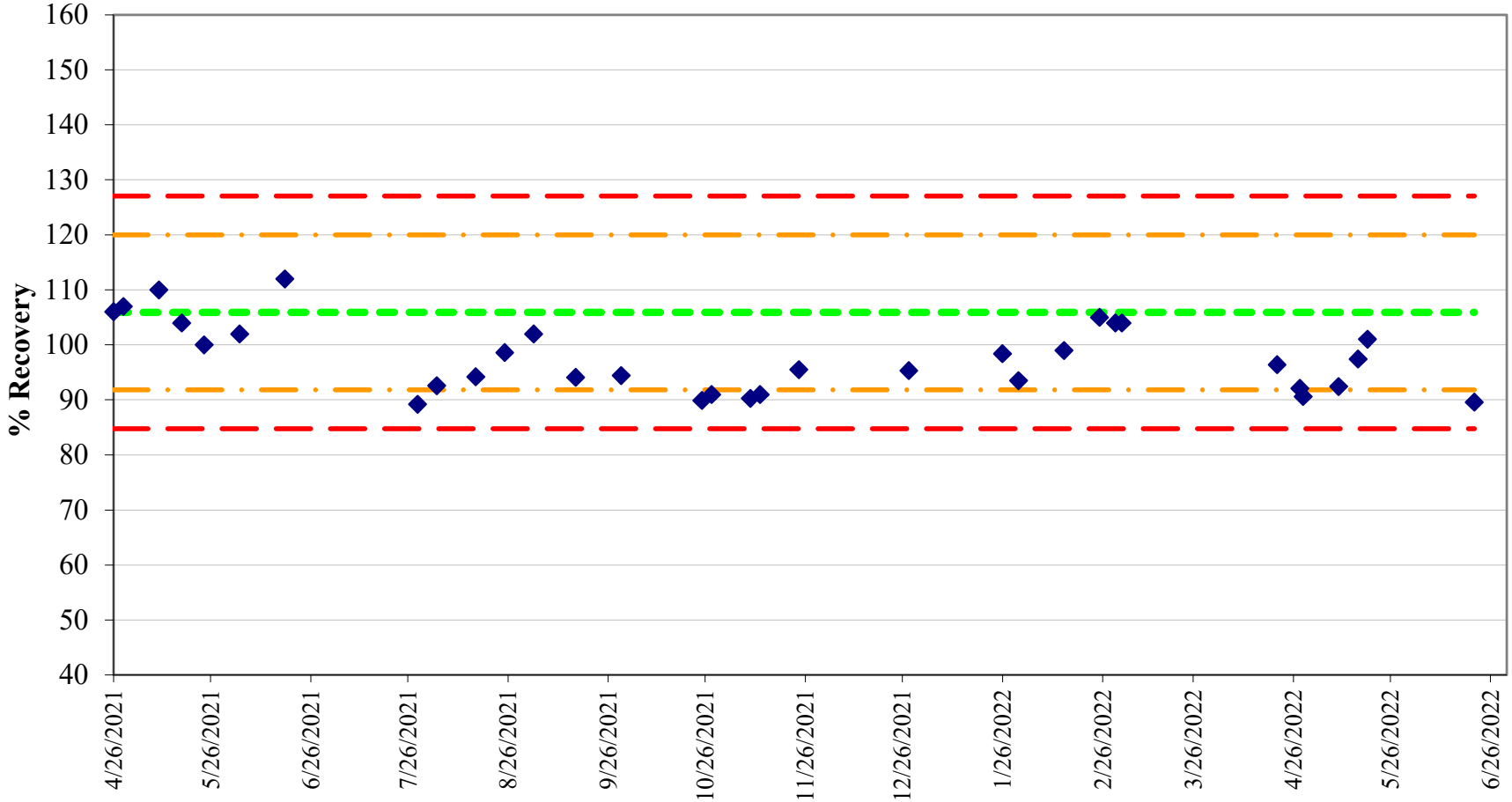


Figure F-3.9
1,4-Dioxane Control Chart
LCS Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

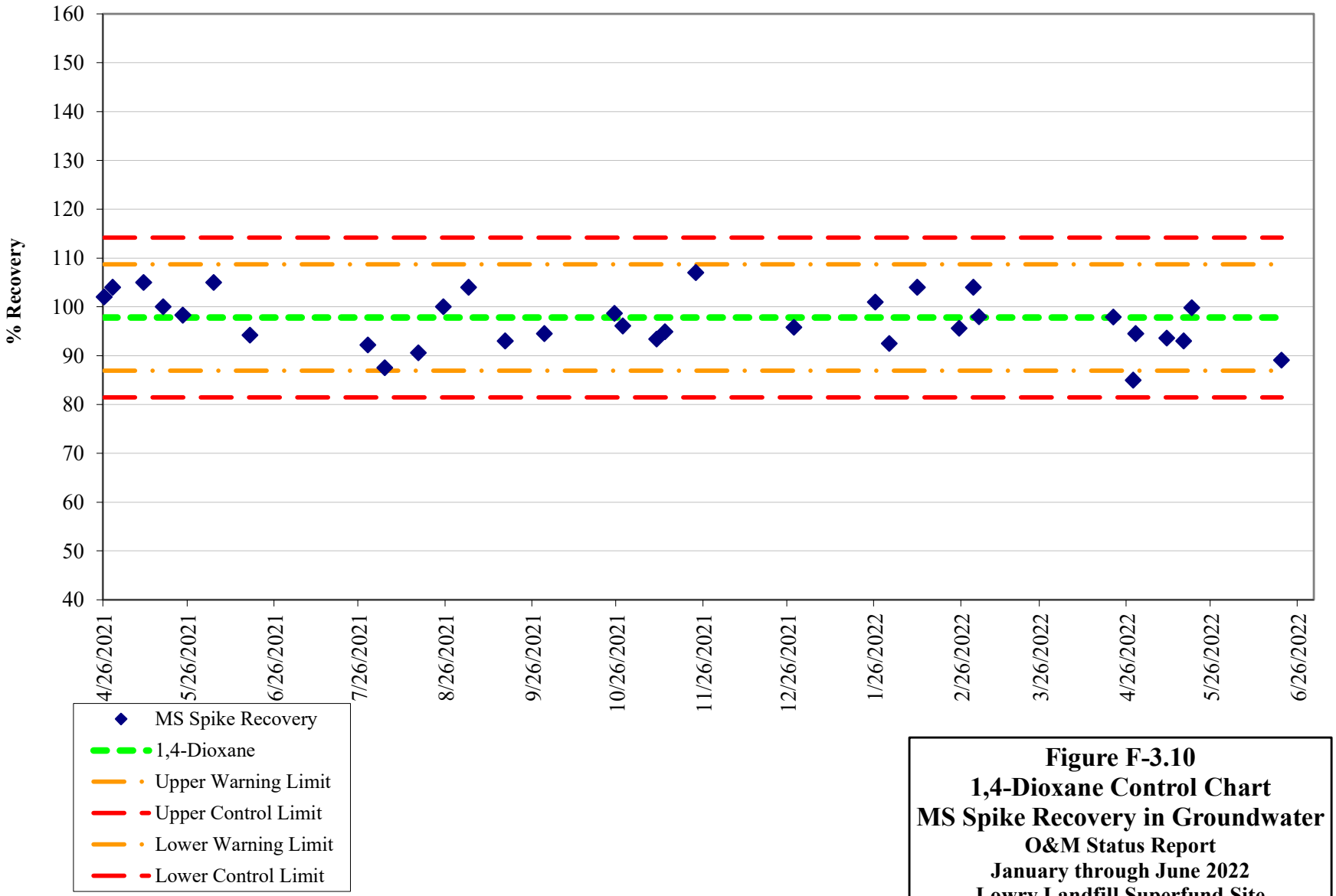


Figure F-3.10
1,4-Dioxane Control Chart
MS Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

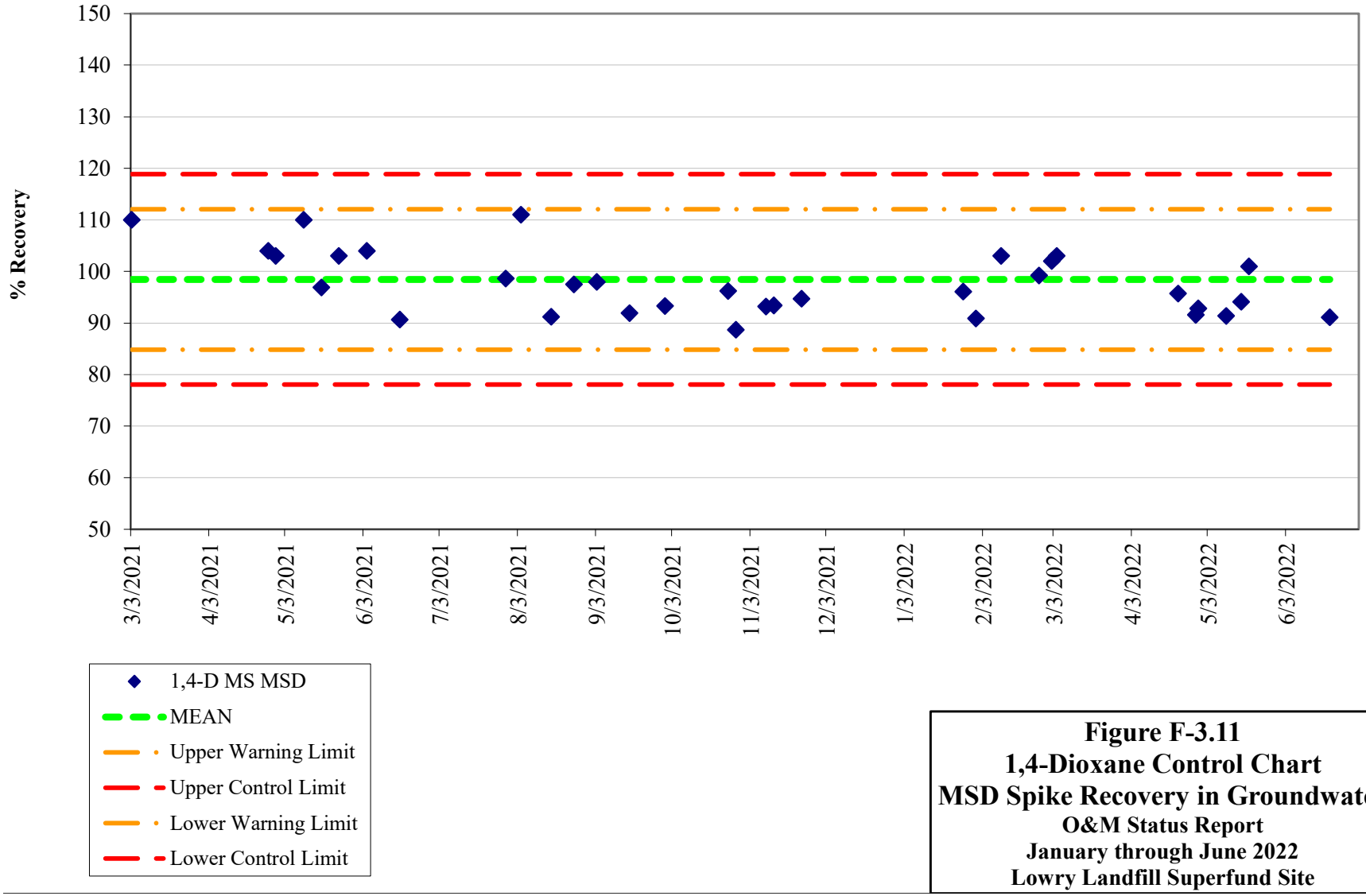


Figure F-3.11
1,4-Dioxane Control Chart
MSD Spike Recovery in Groundwater
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

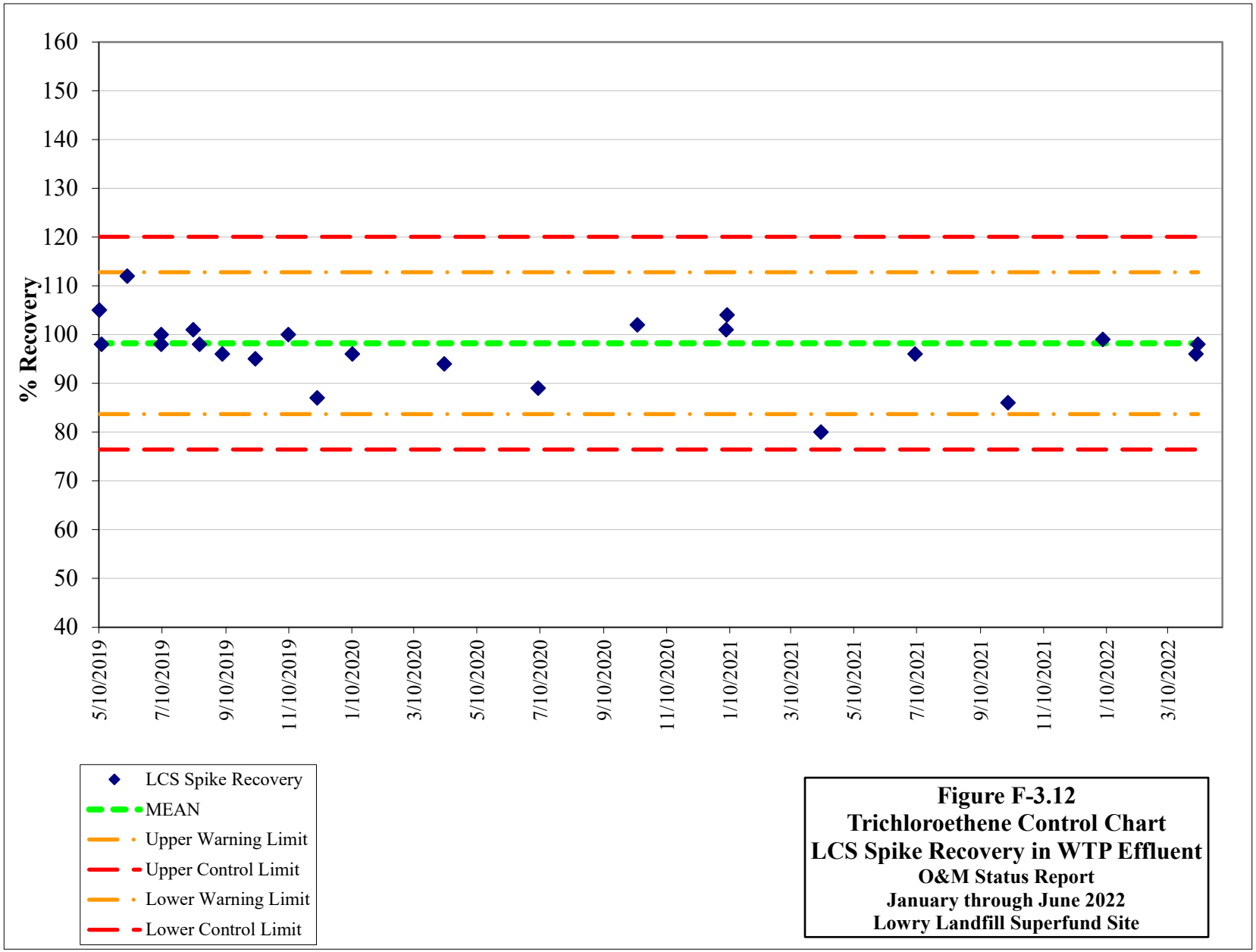


Figure F-3.12
Trichloroethene Control Chart
LCS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

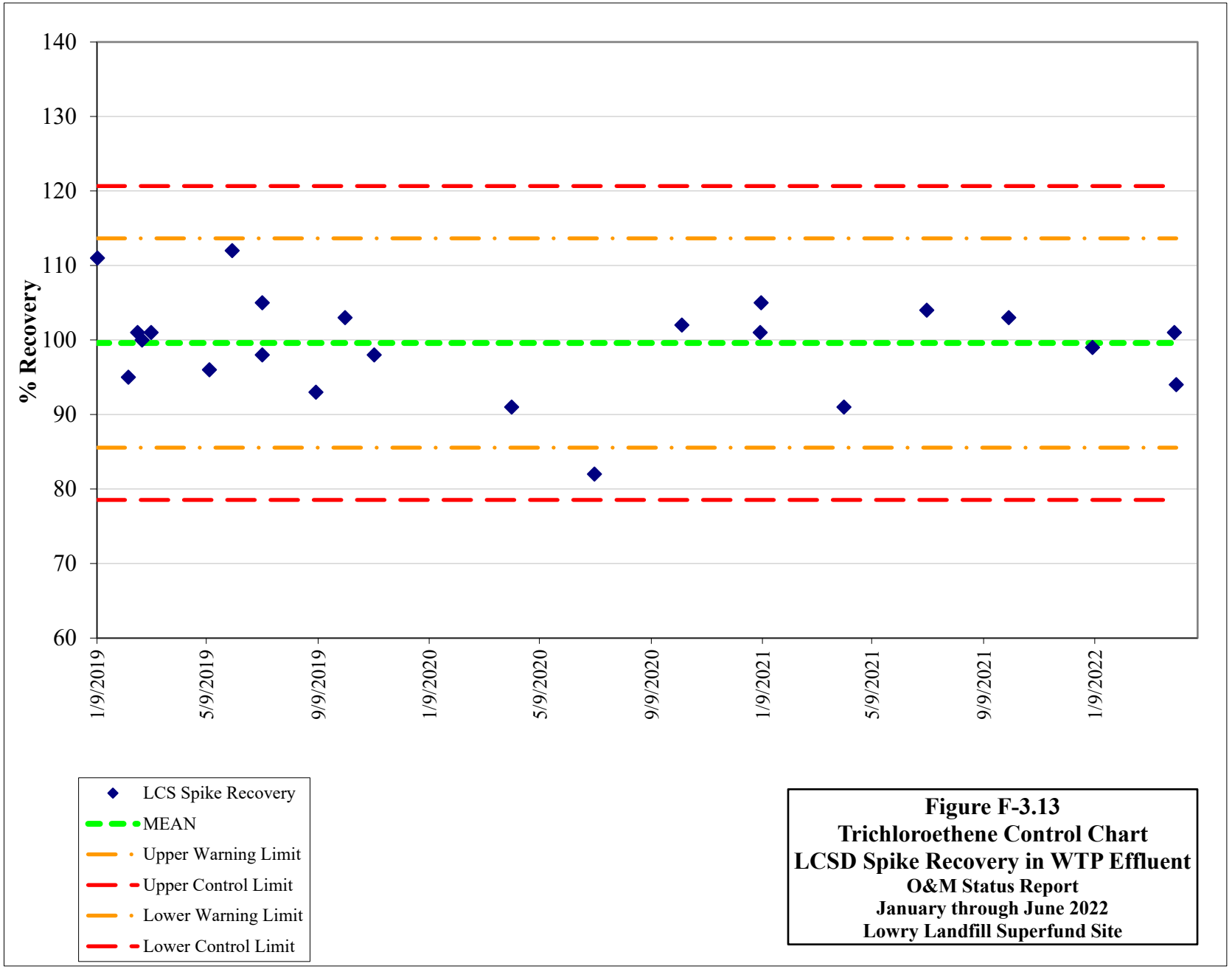


Figure F-3.13
Trichloroethene Control Chart
LCSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

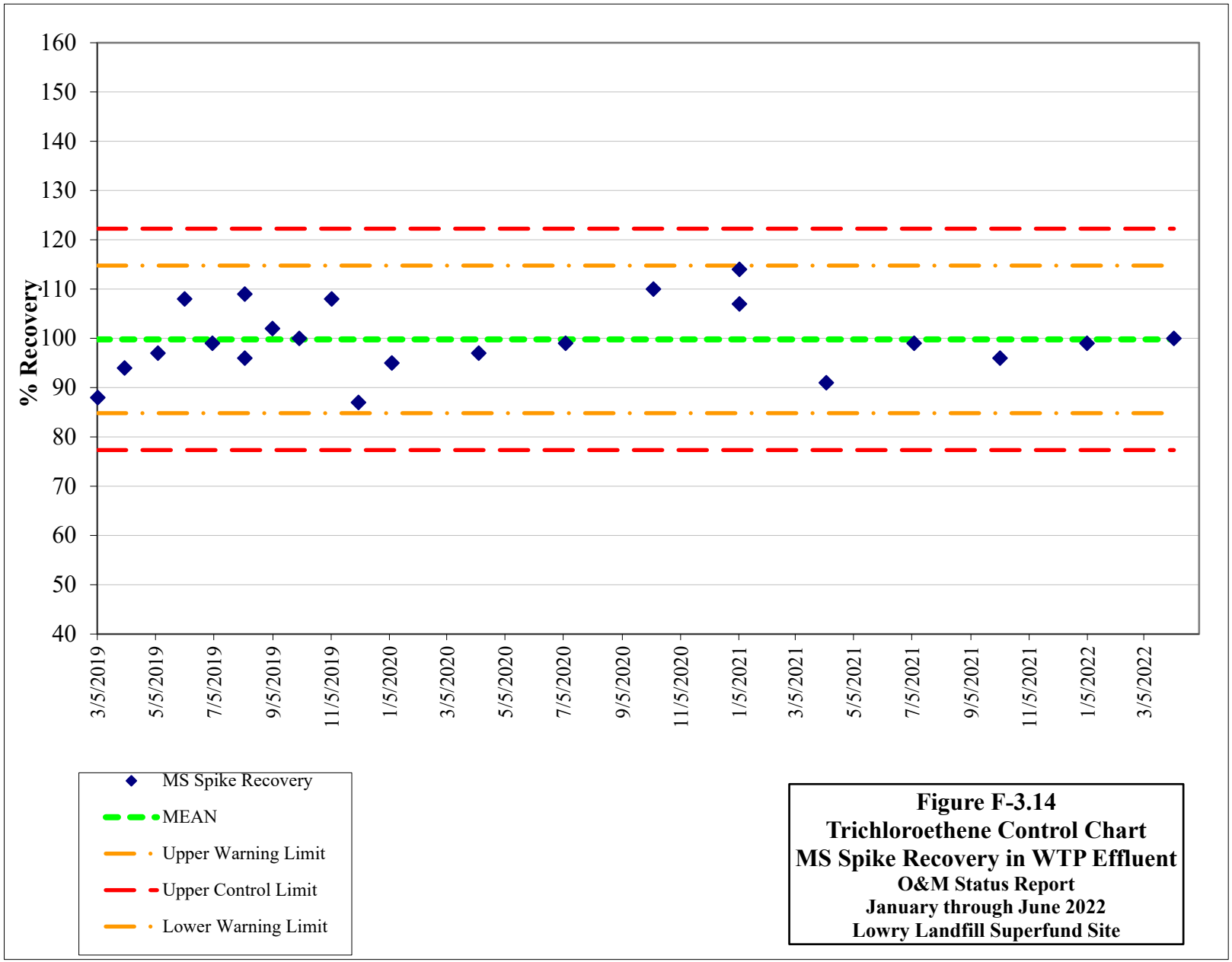


Figure F-3.14
Trichloroethene Control Chart
MS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

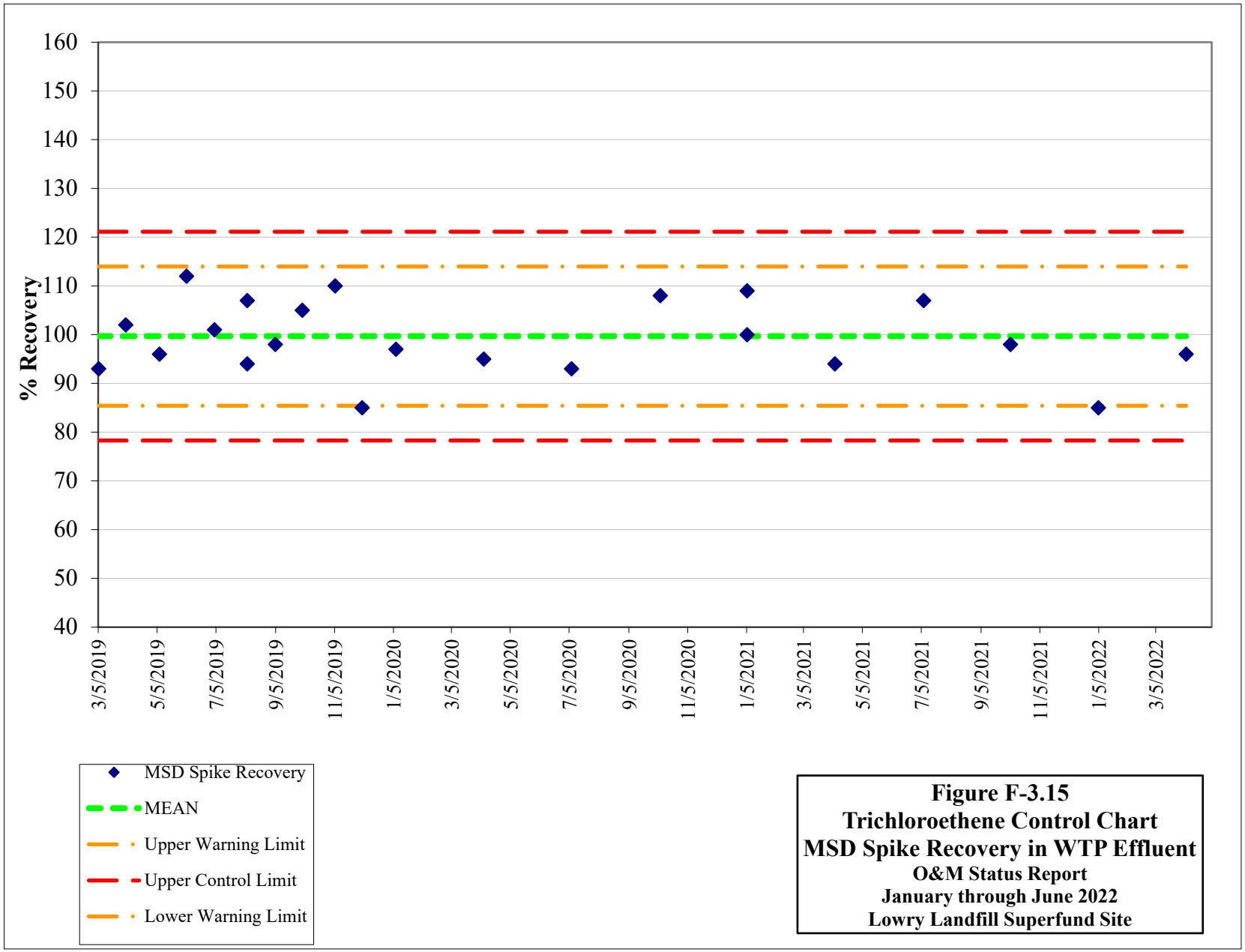


Figure F-3.15
Trichloroethene Control Chart
MSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

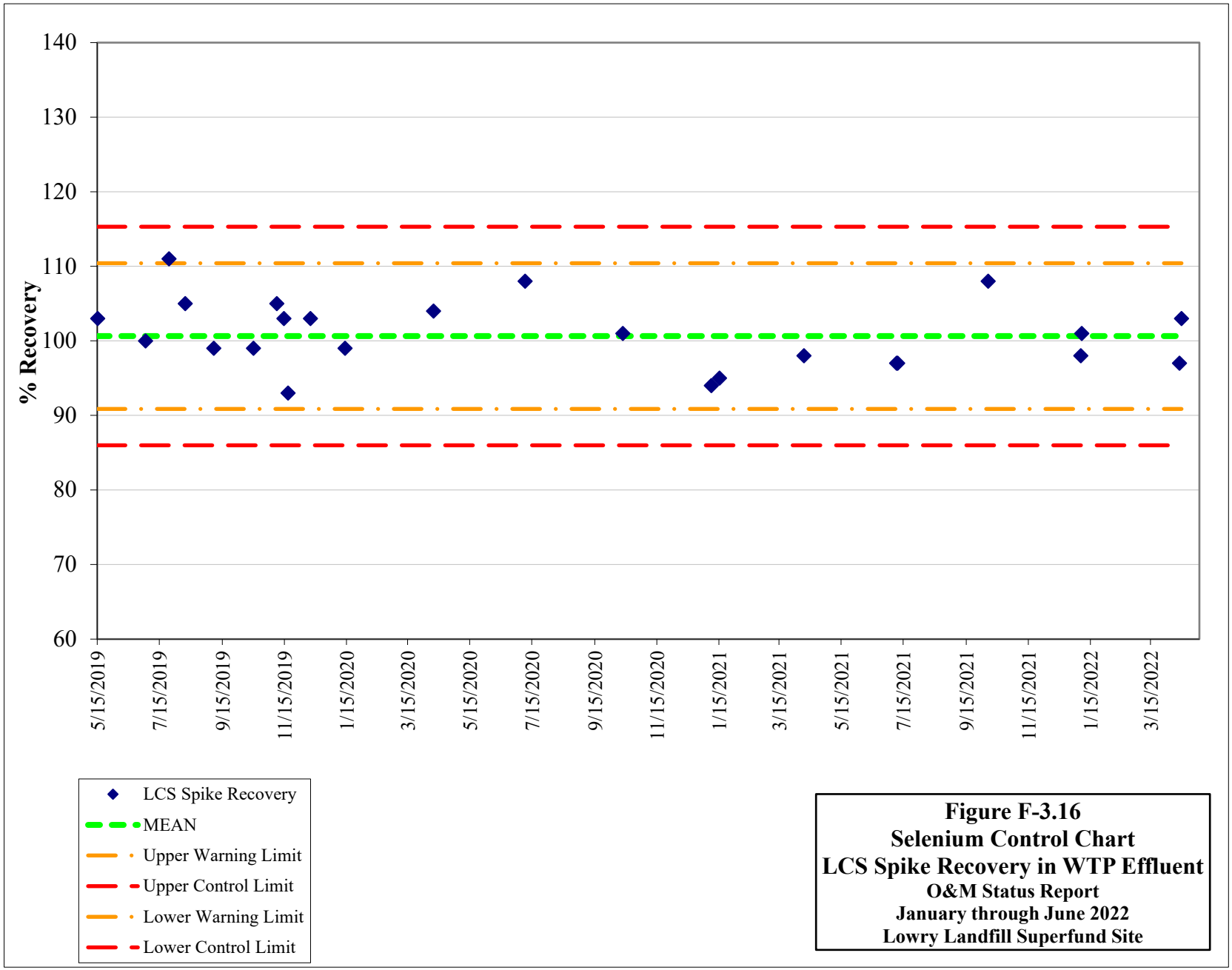


Figure F-3.16
Selenium Control Chart
LCS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

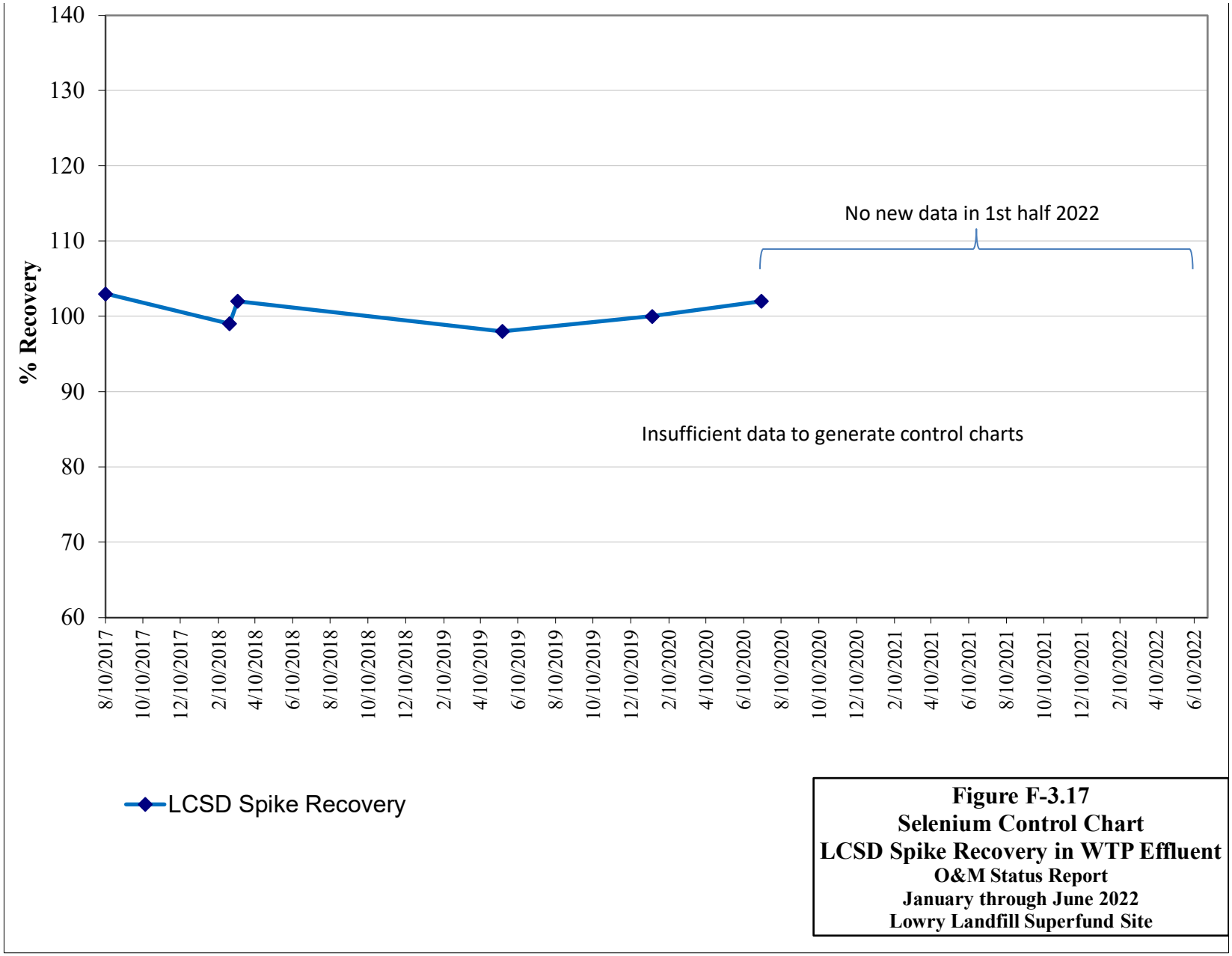


Figure F-3.17
Selenium Control Chart
LCSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

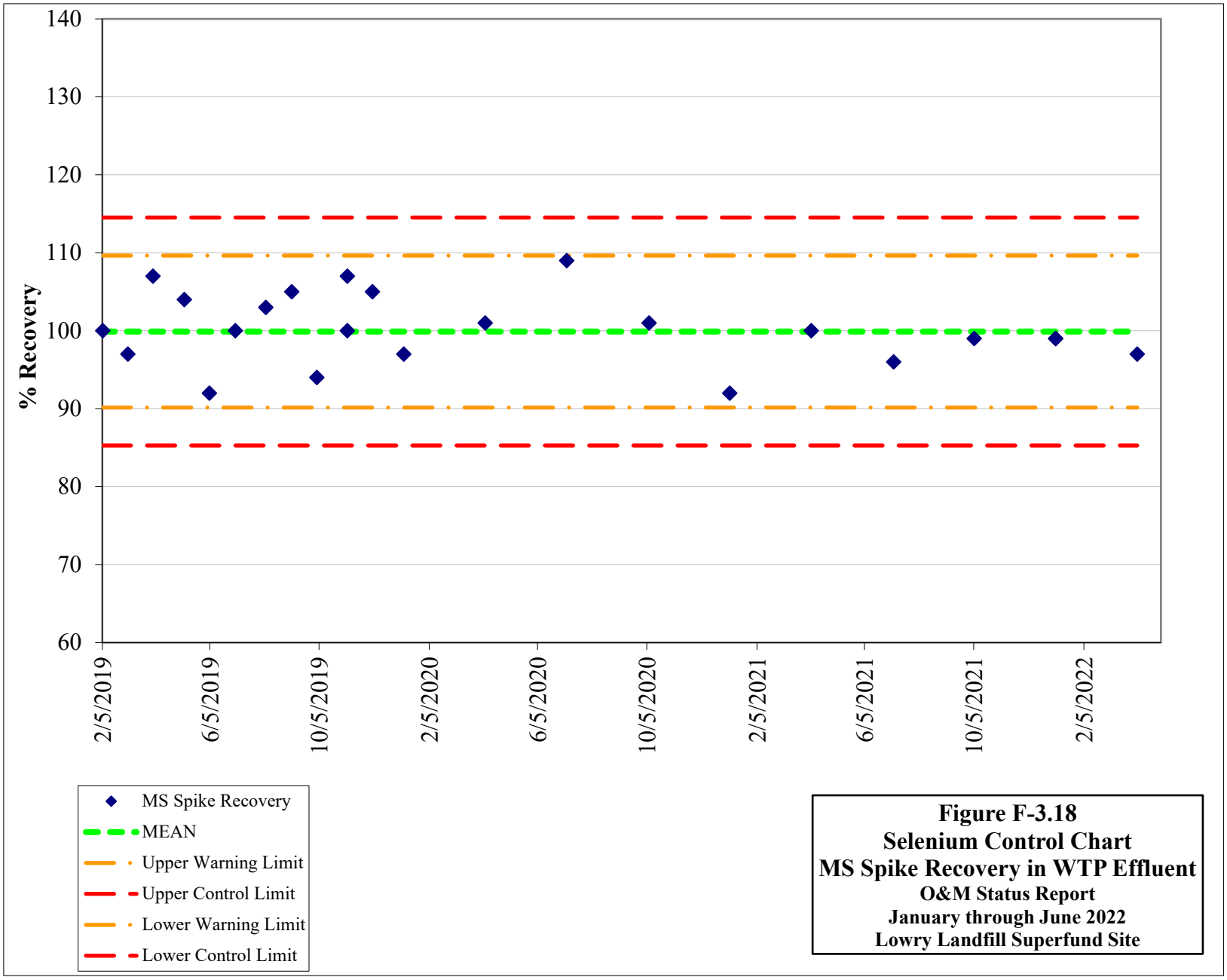


Figure F-3.18
Selenium Control Chart
MS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

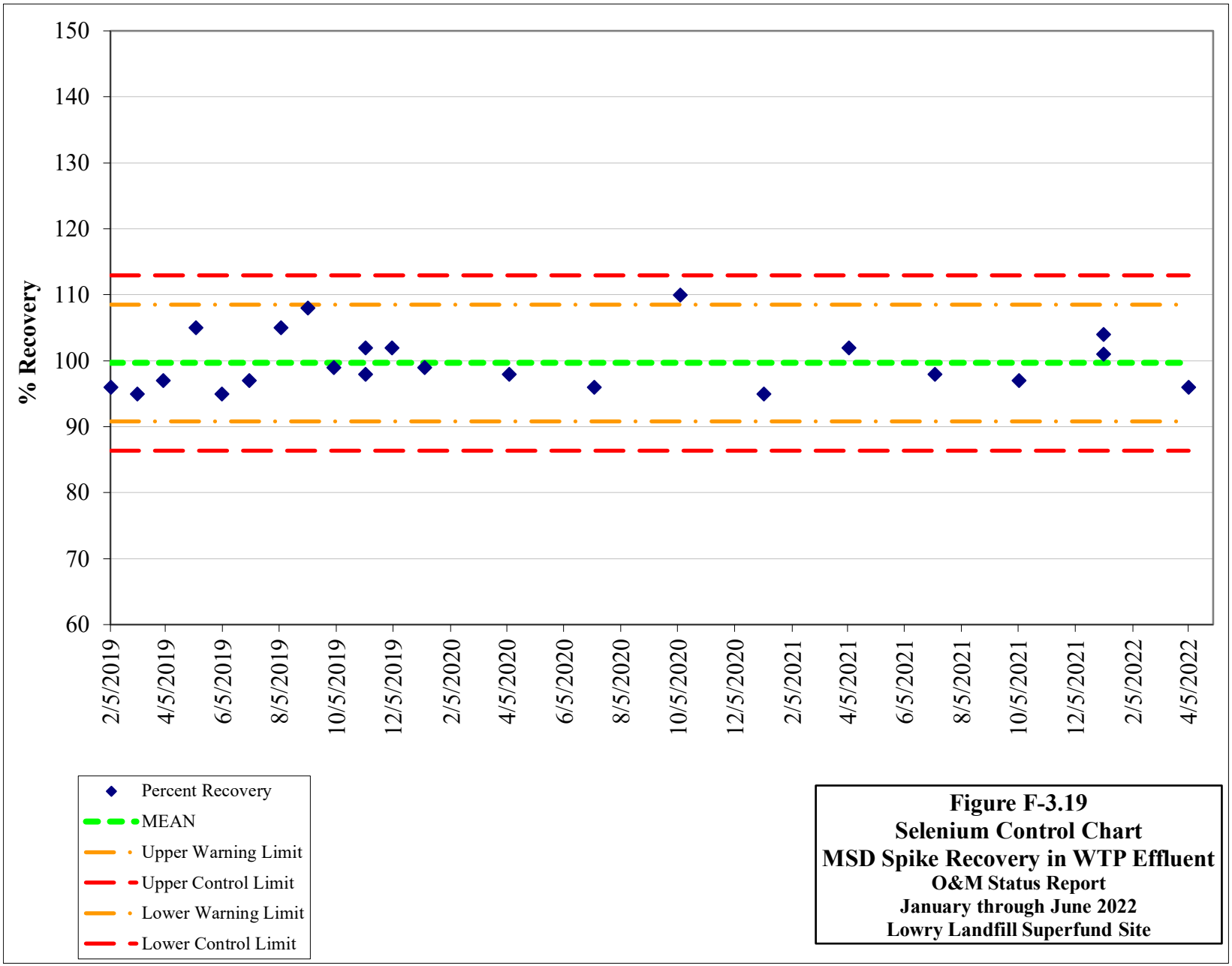


Figure F-3.19
Selenium Control Chart
MSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

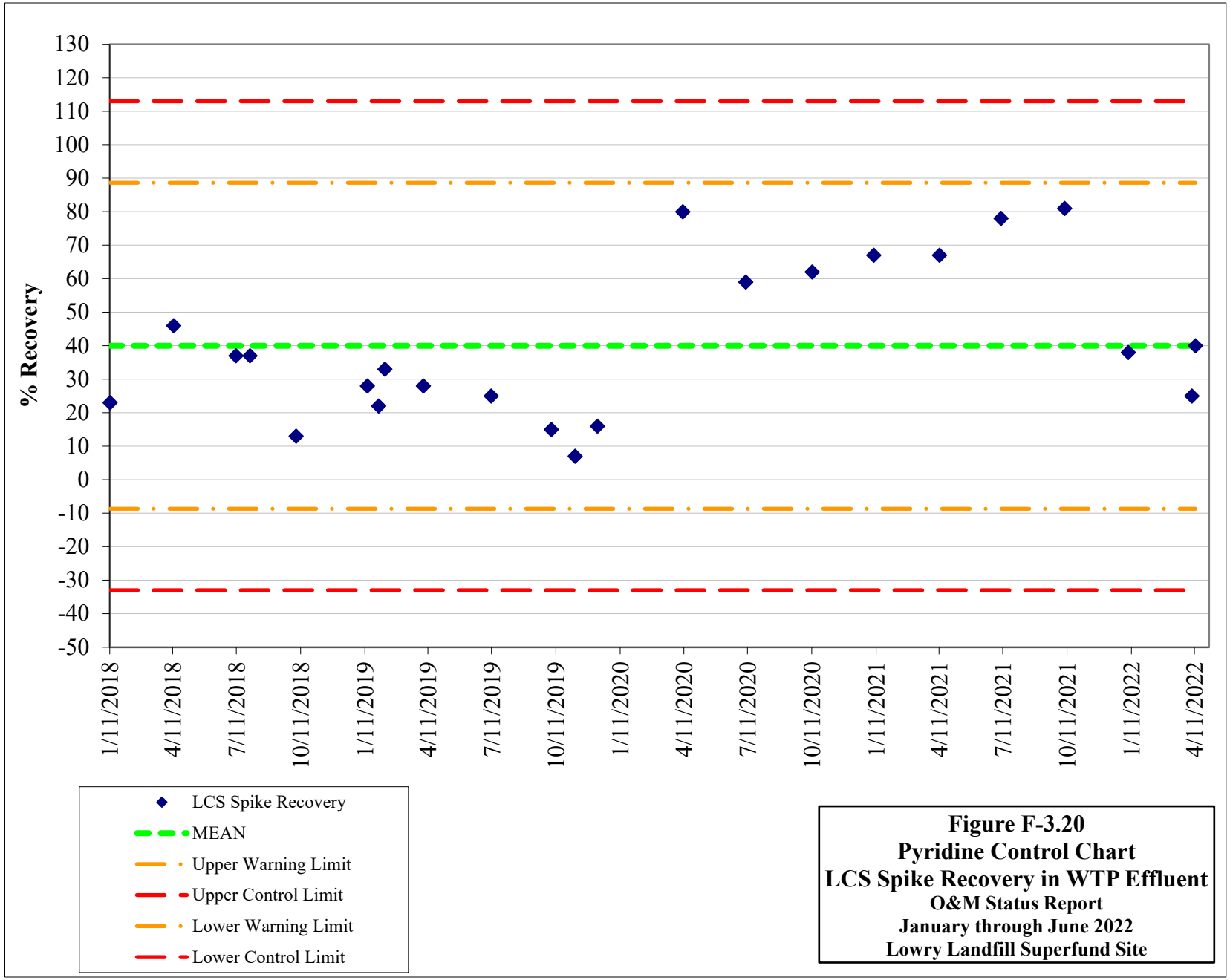


Figure F-3.20
Pyridine Control Chart
LCS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

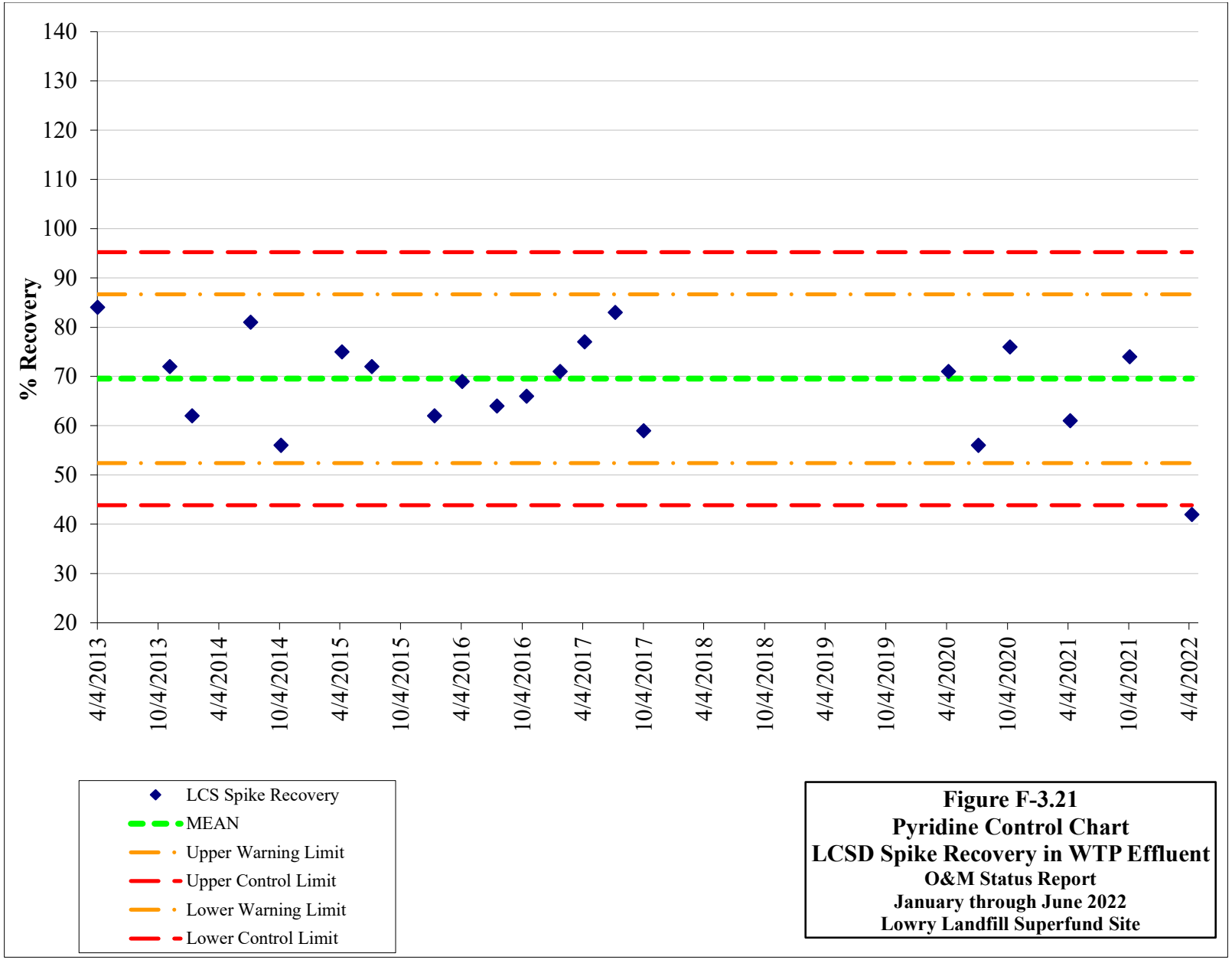


Figure F-3.21
Pyridine Control Chart
LCSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2022
Lowry Landfill Superfund Site

APPENDIX G

ELECTRONIC DATABASE

see the external database