REMEDIAL ACTION AND OPERATIONS & MAINTENANCE STATUS REPORT JANUARY THROUGH JUNE 2020 LOWRY LANDFILL SUPERFUND SITE

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SEPTEMBER 30, 2020

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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
BAT	Best Available Technology
bgs	Below ground surface
BTS	Biological Treatment System
°C	Degrees Centigrade
CAG	Citizens Advisory Group
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
gpm	Gallons per minute
GTEP	Gas-to-Energy Plant

LIST OF ACRONYMS AND ABBREVIATIONS

GWMP	Groundwater Monitoring Plan
H	Hour
in wc	Inches of water column
IRA	Initial Response Action
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
MARLAP	Multi-Agency Radiological Laboratory Analytical Protocols
MB	Method blank
MDL	Method detection limit
Metro	Metro Wastewater Reclamation District
M-K	Mann-Kendall
mS/cm	micro-Siemens per centimeter
M	minute
mg/L	Milligrams per liter
MS/MSD	Matrix spike/matrix spike duplicate
V	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
OS	Optimization Study
PARCC	Precision, accuracy, representativeness, comparability, completeness
PCR	Periodic Compliance Report
PCE	Tetrachloroethene
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
PWI	Potable water injection
QAPP	Quality Assurance Project Plan
RA	Remedial action

LIST OF ACRONYMS AND ABBREVIATIONS

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
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
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



Executive Summary: Status of Operations, Maintenance and Remedial Actions

September 30, 2020

INTRODUCTION

Since the last report six months ago, the City and County of Denver, Waste Management of Colorado, Inc., and Chemical Waste Management Inc., collectively referred to as the Work Settling Defendants (WSDs), conducted routine operations and maintenance (O&M) activities at and north of the Superfund Site, and continued to make progress on EPA's Five-Year Review issues. Details of the O&M activities are presented in this Status Report.

In summary, they consisted of extracting and treating approximately nine million gallons of groundwater from several onsite and offsite extraction systems in full compliance with their Industrial Discharge Permit from the Metro Wastewater Reclamation District; collection and analyses of 173 samples from 87 groundwater monitoring wells; continuous operations of the Landfill Gas Extraction and Treatment system in full compliance with decision documents; collection and analyses of soil gas samples from 64 subsurface gas monitoring probes surrounding the Lowry Landfill; maintenance of stormwater conveyance ditches; and inspection and maintenance of landfill covers and buffer properties contiguous to the Superfund Site.

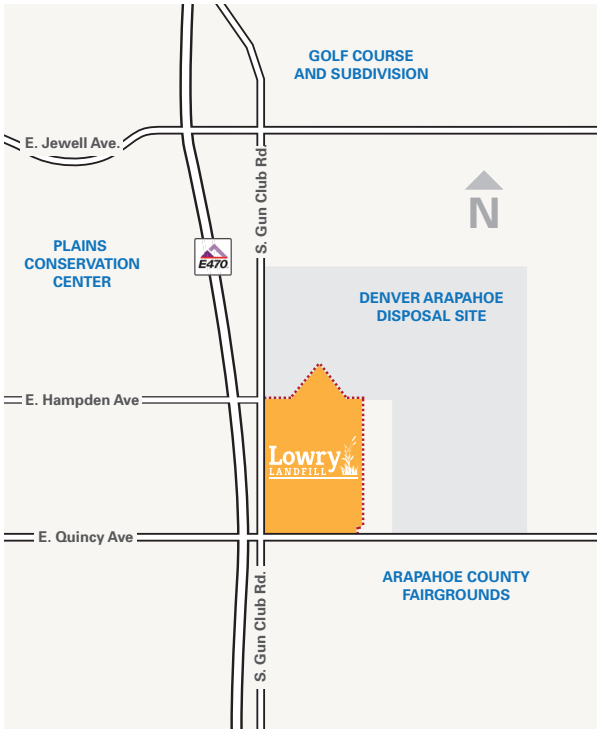
Progress made on EPA's Five-Year Review issues consisted of EPA's approval of a report on the sampling of private wells within/adjacent to the north end 1,4-dioxane plume that indicated no impact to these wells; EPA's acceptance of the final Progress Report on the pilot test to temporarily cease potable water injection north of the North Boundary Barrier Wall (NBBW); addressing EPA and CDPHE comments on delineation of the 1,4-dioxane plume north of the Superfund Site; receipt of Colorado Water Court approval for an amended Water Augmentation Plan to permanently relocate the point of release of augmentation water; addressing additional EPA comments on a Plan for the NBBW Containment System Evaluation (CSE); and assisting EPA and its contractors with updating the Conceptual Site Model for the Superfund Site.

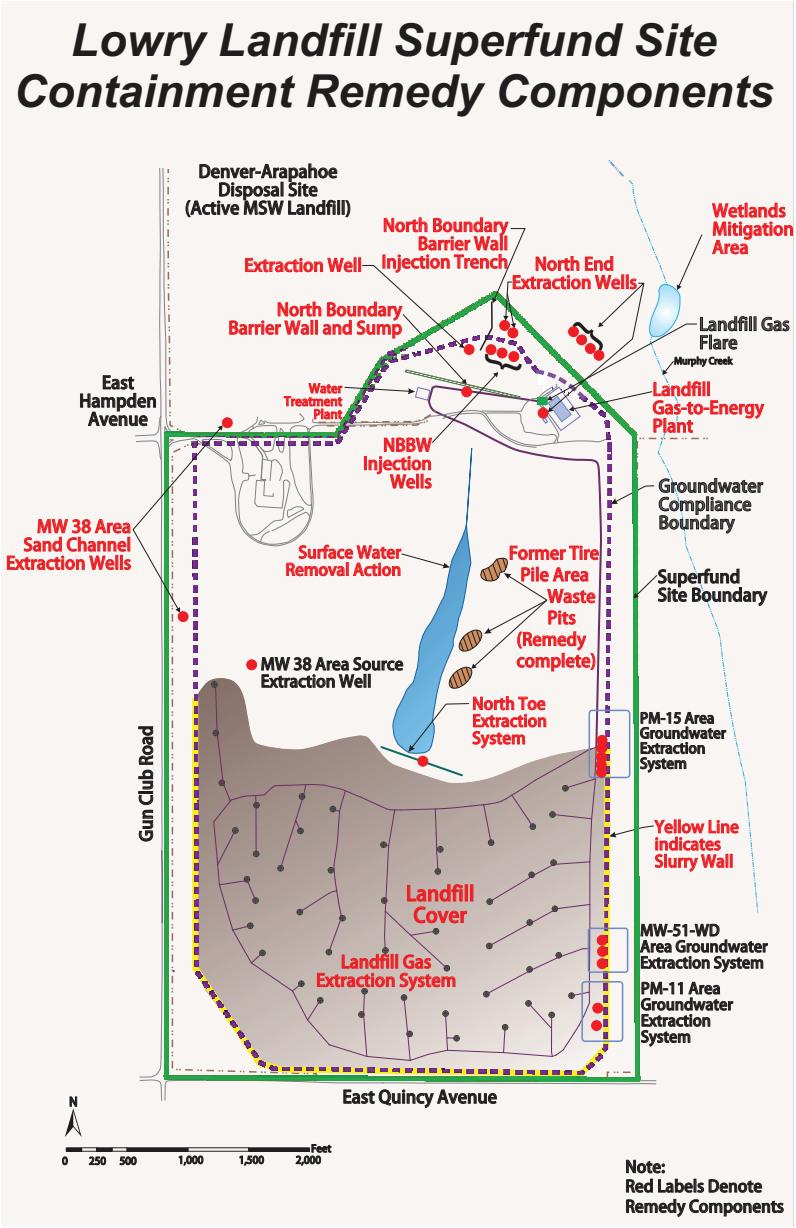
In addition, during the reporting period, the WSDs provided community outreach by participating in several meetings with the Lowry Landfill Community Advisory Group, and providing Site tours to regulatory and elected officials, concerned citizens, and college students.

Progress at Lowry

- ✔ Upgrading the WTP and POTW discharge line: **DONE**
- ✔ Obtain approval from the State Engineer's Office to allow higher flow rates through the plant and new locations for release of augmentation water on a permanent basis: **DONE**
- ✔ Sampling private wells within/adjacent to the 1,4-dioxane plume and confirming they are not impacted: **DONE**
- ✔ Finalizing the NBBW CSE Plan: **IN PROGRESS**
- ✔ Updating the Groundwater Monitoring Plan to add 1,4-dioxane, delete iron, and incorporate the most recent Colorado Basic Standards for Groundwater : **DONE**
- ✔ Identifying and sampling potentially at-risk off-site private wells in the vicinity of the 1,4-dioxane plume: **DONE**
- ✔ Confirming the lateral and vertical extent of the off-site 1,4-dioxane plume: **IN PROGRESS**
- ✔ Updating performance standards for landfill gas in subsurface soils: **DONE**

LOCATION & CONTAINMENT REMEDY MAPS





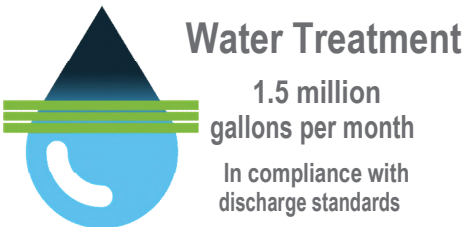
GROUNDWATER MONITORING

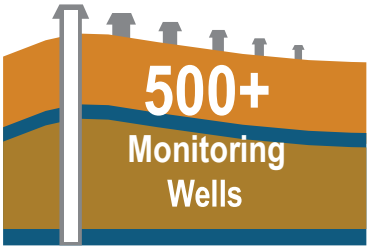
More than 500 monitoring wells extending into both shallow and deep aquifers have been installed within and outside the site to ensure the community is protected. Well inspections are a routine part of the monitoring program. Data shows that the monitoring system continues to be effective.

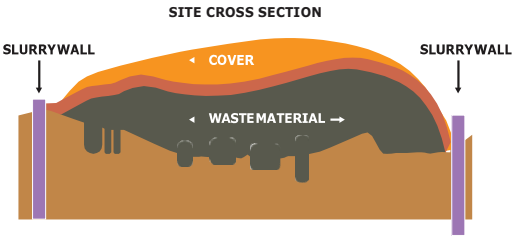
Specifically, the slurry wall – a vertical barrier wall made of clay that prevents groundwater flow – continues to effectively contain contamination inside the eastern, southern and western limits of the landfill as designed. The North Toe Extraction System, which collects and pumps water to the treatment 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 9 to 12 gallons per minute, which effectively prevents contamination from migrating offsite.

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 chloroform. The 9 compliance wells are being addressed by continuing to pump contaminated water to the treatment plant, as discussed above. This method has proved to be effective at 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 detect 1,4-dioxane at this concentration so a site-specific standard for Lowry Landfill is set at 0.9ppb.

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



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, ant freeze and paint
- Site groundwater standard = .9ppb

there is a comprehensive monitoring program in place. That the concentrations are declining in all areas shows the effectiveness of the ongoing response actions. 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. lowrylandfill.com.

MW38 Sand Channel

Remediation actions to contain groundwater and reduce contaminant concentrations in the sand channel have also been successful. Water is pumped out of the sand channel, which operates as a bathtub. The "tub" is continuously being drained and the water sent to the treatment plant ensuring the surrounding groundwater is always flowing into the tub. Levels of 1,4-dioxane have reduced 99% since May 2005. Both chloroform and trichloroethene have reduced 96%. See graph at right.

Nitrate in the NBBW Area

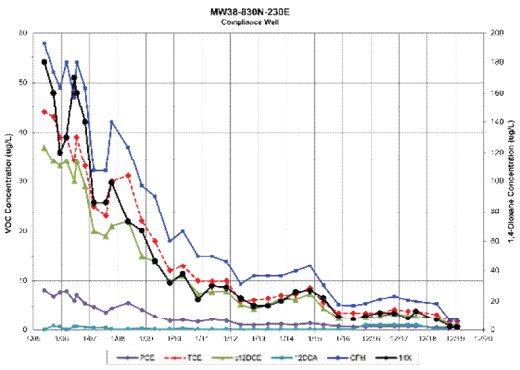
One well is exceeding the nitrate standard in areas where sewage sludge was historically land farmed to cultivate and enhance microbial degradation of the organic matter. This well is located in the eastern part of the NBBW. There is no potential for significant off-Site migration of nitrate at concentrations greater than the performance standard and continued monitoring is ongoing. Additionally, groundwater extraction from the North End wells further downgradient captures any potential migration of nitrate 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 98% of the chemicals. The waste is then discharged to a publicly-owned wastewater treatment plant. The on-site treatment plant removes all site chemicals to safe standards and leaves a minimal environmental foot-print. It treats approximately 8.5 million gallons of contaminated groundwater every month. The data show the plant continues to operate as designed in compliance with discharge standards.

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



At Lowry

- Extraction and treatment continues to decrease concentrations.
- North End Area: 36 Wells

81% *show declining concentrations*

17% *remain flat*

- MW38 Channel:

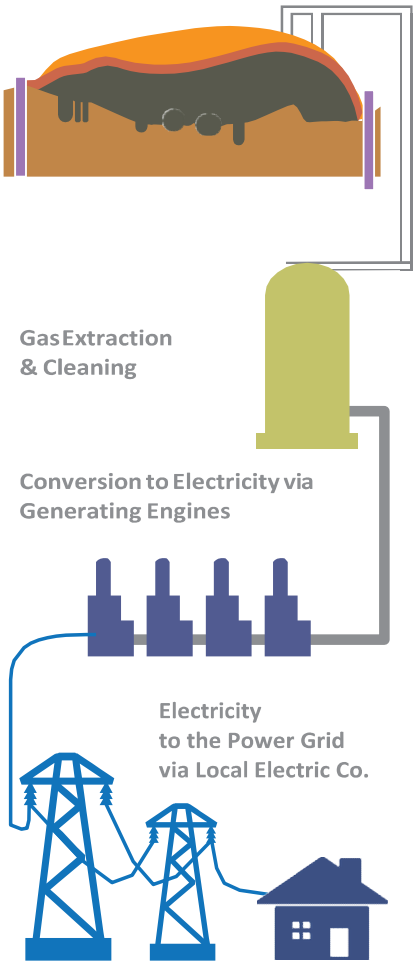
99% *reduction of 1,4 dioxane since May 2005*

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 – the equivalent in greenhouse gas terms of removing 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 issues were identified from these inspections 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 6, Operation and Maintenance Manual, Water Treatment Plant* (Engineering Management Support, Inc [EMSI]/Parsons, 2019); *Revision 2, Operations and Maintenance Manual, Groundwater Extraction* (EMSI/Parsons, 2015); *Revision 2 Groundwater Monitoring Plan* (GWMP) (EMSI/Parsons, 2018); the *Stormwater Monitoring Plan* (EMSI, 2008a); *Revision 2, Operations and Maintenance Manual, LFG Remedy* (EMSI, 2016a); *Revision 3, Updated Compliance Monitoring Plan LFG Remedy* (EMSI, 2018a); 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 *Proposed Voluntary Action to More Efficiently Manage and Maintain the North Boundary Barrier Wall Containment Zone in Conjunction with Mass Removal of 1,4-Dioxane Immediately North of the Containment Zone* (EMSI, 2010a); the *North End Groundwater Monitoring Plan* (EMSI, 2007b); the *North End Groundwater Monitoring Plan Update No.1* (EMSI, 2008c); 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); the *Final Pilot Test Work Plan for Temporary Cessation of Potable Water Injection* (EMSI, 2018b); and *the Revised Work Plan to Further Assess the North End 1,4-Dioxane Plume and Update Conceptual Model for North End Area* (EMSI, 2018c). The status of North End activities is described in Subsections 4.8, 4.9 and 4.10.

1.1 Purpose and Scope

This report summarizes results of O&M activities performed from 01 January 2020 through 30 June 2020 (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. 2360-5-2A, effective through January 4, 2020 then 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.

- Power interruptions: Plant discharge stopped on two occasions for power grid interruptions. Plant discharge was interrupted on January 1 and March 19 – 20, 2020 for a total of 27 hours 57 minutes.
- Main PLC (programable logic controller) fault: Plant operations were stopped on one occasion when the Main PLC alarmed for a fault condition while performing a routine daily task that occurs at midnight. Plant operations were stopped for 1 hour and 22 minutes on April 8, 2020 while the PLC and computers communicating with the PLC were rebooted. Fault condition cleared and has not reoccurred.
- Routine O&M: Discharge pH probe calibration, quarterly POTW discharge line valve exercising and granular activated carbon (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 to daylight savings time adjustment: Plant operations were stopped while the PLC and plant computers were adjusted to daylight savings time (March 9, 2020 – 47 minutes).
- Maximum 24-hour discharge volume setpoint reached: Plant discharge stopped automatically on two occasion when the volume of water discharged in 24-hours met the volume used to calculate alarm setpoints of the onsite process monitoring gas chromatographs (GCs). Plant discharge stopped February 26 and March 18, 2020 for a total of 23 minutes.
- Discharge line sudden pressure loss: Plant discharge was interrupted on one occasion when a sudden drop of pressure in the discharge line created an alarm condition caused by an abrupt slowing of the discharge pump speed following a

period of higher flows. Plant discharge was stopped for 1 minute on June 18, 2020.

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 7.2 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 4.28). North End on-Site and off-Site extracted groundwater were 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. In response to reduced extraction at on-Site North End well MW113-EW-1 during first half of 2020, extraction in the MW113-EW-1 area has been augmented by additional extraction from well NBBW-IW-3 located approximately 150 feet southwest of MW113-EW-1. 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)]	7.2	1,892,192
MW38 area (includes automatic pumping from the sand channel wells and the source-control well)	2.5 (calendar)	646,375
NTES Water	0.54 (calendar)	141,006
LFG Condensate from Tank 530 (treated in WTP from January 1 through June 30, 2020)	0.02 (calendar)	3,890
PM-11 Area	NA[a/]	64,918
MW51 Area	NA	61,022
PM-15 Area	NA	3,909
Decontamination Water and Precipitation	NA	1,142
North End On-Site Water[b/]	14.4 (calendar)	3,762,248

Water Source	Average Flow Rates (gpm)	Total Volume (gallons)
North End Off-Site Water[b/]	8.6 (calendar)	2,251,548
Potable Water (for plant wash-down, pipeline flushing and GCs)	NA	23,582
Total Influent[c/]	33.8 (calendar)	8,851,832
Discharge to POTW[c/]	33.6 (calendar)	8,811,092

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 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 (9 totalizers are used to generate the volumes above). For example, the effluent totalizer range of error is +/- 44,055 gallons over the reporting period.

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 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	7.0	6.9	7.7
February	7.0	7.0	6.9	7.6
March	7.0	7.0	6.6	7.5
April	7.0	7.0	6.9	7.6
May	7.0	7.0	6.9	7.5
June	7.0	6.9	6.7	7.2

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* (EMSI, 2008d) and in plant effluent per the discharge permit (Metro Wastewater Reclamation District [Metro] , 2019 and 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 2020
1,1-DCE	100%
1,2-DCA	100%
1,4-dioxane	98%
Benzene	100%
Vinyl Chloride	100%

Analytical results from MP-001 (plant effluent, Appendix A-4.1.1) and influent composite sampling (Appendix A-4.2.1) indicate that some breakthrough of target compounds through GAC contactors occurred during the reporting period (as shown in the

table above). 1,4-Dioxane showed breakthrough over the entire reporting period. Note: GAC is not intended to remove 1,4-dioxane. However, 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).

2.1.6 Sludge Production

During the reporting period, approximately 30 cubic yards (cy) of dry sludge were produced and placed into a lined roll-off box located adjacent to the WTP. Fifteen cy of the sludge were disposed at the Denver-Arapahoe Disposal Site (DADS) in January and May in accordance with the *Updated Waste Management Plan* (WMP) (EMSI, 2009 as amended). The remaining sludge will be disposed in the second half of 2020. The non-hazardous waste manifests for the sludge are presented in Appendix B-2. Analytical results for radiological and toxicity characteristic leaching procedure (TCLP) analyses of the sludge are presented in Appendix A-3. Analytical and screening results confirmed the sludge was a non-hazardous, solid waste.

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).

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, 2019 and 2020).

All 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.

Reduced extraction and weekly monitoring of on-Site North End extraction well MW113-EW-1 continued throughout the period to manage the molybdenum concentration in the WTP effluent. As a result of the lower extraction rate at MW113-EW-1 (reduced from 3.4 gpm to 1 gpm on November 18, 2019, then to 0.5 gpm on June 16, 2020), the volume of 1,4-dioxane mass removal was also reduced in the area of monitoring well B-326-WD. To supplement 1,4-dioxane mass removal in this area, former NBBW injection well NBBW-IW-3 located approximately 150 feet southwest of MW113-EW-1 was converted to a groundwater extraction well. On May 25, 2020 WSDs began pumping this well at 2 gpm into temporary tanks with weekly monitoring of molybdenum and 1,4-dioxane to check the concentration of these compounds before they are introduced to the WTP. Only trace detects of molybdenum have been detected in well NBBW-IW-3. The 1,4-dioxane results of well NBBW-IW-3 and the temporary tanks (approximately 130 µg/L), along with lower groundwater levels in the area indicate improved 1,4-dioxane removal of the B-326-WD area can be achieved with dual-well extraction from this area.

Early Warning monitoring for this reporting period involved yearly and monthly sampling of WTP influent according to the *Updated Early Warning Monitoring Plan* (EWMP) (EMSI, 2008d) and *Metro Letter of Understanding* (EMSI, 2015). Influent samples from TP-110 (RWSTs), TP-120 (NBBW), TP-150 (North End and MW77), TP-160 (North End off-Site) and TP-3310 (BTS influent) were collected for analysis of VOCs, 1,4-dioxane, and molybdenum and from a composite of these six sources for all other parameters (Appendix A-4.2).

2.2.1.1 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 is also provided in the table.

2.2.1.2 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.

2.2.1.3 Data Validation

All effluent (MP-001) sample results were validated according to EPA *National Functional Guidelines for Organic and Inorganic Data Review* (EPA, 1994a and b) as amended, by SW-846 guidelines specific to the method or as directed by EPA. 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* (EPA, 2004).

Validation is complete for all January through June 2020 compliance sampling events. All compliance data packages were received with no major quality issues. Validation results are discussed in the DQA report (Appendix F-3).

2.2.2 Monitoring Results

2.2.2.1 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.

2.2.2.2 Early Warning Monitoring

The EWMP (EMSI, 2008d) 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),
- Semi-Volatile Organic Compounds (SVOCs) (E625),
- Metals (E200.7 and E200.8),
- Mercury (E245.1),
- Nonylphenol (D7065),
- Gross Alpha/Beta,
- Radium-226, -228, and total,
- Plutonium-238, -239, -240, and
- Americium-241.

The annual influent sampling event was performed on April 6, 2020 and indicated 1,4-dioxane was the only **influent** compound exceeding **discharge** limits at that time. Consequently, 1,4-dioxane was selected as a compound of concern for monthly influent monitoring. Molybdenum was also monitored monthly from grab samples to monitor the concentration in each influent source. Influent sampling involved collecting grab samples from each of six sources (RWSTs, NBBW, MW38, North End on-Site water, North End off-Site water and BTS influent) and compositing the results based on flow-weighted

percentages. 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), molybdenum (A-4.2.3), and metals, SVOCs and radionuclides (A-4.2.4).

As mentioned above, one compound exceeded the discharge limit in the influent (1,4-dioxane). Statistical trending analyses (Sen's test) for 1,4-dioxane is presented in Appendix A-4.2.2.2. Trend analysis was also performed for molybdenum, which has exceeded its permit limit in the past (A-4.2.3.2). There were no statistically significant increasing trends for 1,4-dioxane nor molybdenum. The WTP can readily treat 1,4-dioxane to below discharge limits. Molybdenum treatability is discussed in Section 2.3.

2.3 Treatability

After the rise in molybdenum concentrations in the influent and effluent in November 2019, all influent wells were sampled monthly to monitor for increasing trends. The source of the molybdenum was determined to be MW113-EW-1 which was sampled weekly to monitor the molybdenum concentration in this well. At 0.5 gpm extraction rate molybdenum concentrations in MW113-EW-1 were in the 6.6 to 15.0 mg/L range.

During the reporting period WSDs performed two treatability assessments. Potential treatment options for reducing molybdenum coming from extraction well MW113-EW-1 into the WTP influent were investigated. Evaluation of engineering options including anion exchange and complexation with iron at reduced pH were assessed. Results of this evaluation will be presented in a technical memo in 2nd half 2020.

An analysis of the Best Available Technologies (BAT) (Parsons, 2020) to further remove 1,4-dioxane from the groundwater at the Site was submitted to Metro Wastewater Reclamation District on June 30, 2020. Based on the analysis, the current treatment protocol of chemical oxidation via UV/hydrogen peroxide treatment in parallel with aerobic fixed film biological treatment and polishing with GAC meet the requirements of BAT for 1,4-dioxane treatment in Lowry groundwater.

3.0 WASTE MANAGEMENT

Waste management activities during the reporting period were performed in accordance with the *Updated Waste Management Plan* (EMSI, 2020 in progress) 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 40 cy of dry chemical precipitation sludge were produced and placed into a lined roll-off box next to the WTP. Approximately 15 cy of the sludge were disposed at DADS in January and May 2020 (Appendix B-1). The non-hazardous waste manifests for these shipments are 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 1,142 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. 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 2020.

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
PTP-26	Bailer stuck in well	Not repairable
MW-120-WD	Cracked Pad	To be repaired
MW136-WD	Loose pad, locking bolts stripped, needs new outer flush mount casing	To be repaired
MW137-WD	Locking bolts rusting, needs new outer flush mount casing	To be repaired
MW138-WD	Locking bolts rusting, needs new outer flush mount casing	To be repaired
MW139-WD	Locking bolts rusting, needs new outer flush mount casing	To be repaired
MW141-WD	Locking bolts rusting, needs new outer flush mount casing	To be repaired
MW177-DEN	Needs new pad - Driven over and now cracked	To be repaired
NTES-EW-2	Well needs repair as the well lid does not close anymore due to settling	To be repaired
PZ-101A	Pad broken	To be repaired

In addition, 14 wells need new labels due to wearing. 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 2020. 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 2020. 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. 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 2020 are shown on Figures 4.1 and 4.2, respectively. Groundwater at the Site occurs under watertable 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 0.5 ft below ground surface (bgs) in the detention basin along the T1 transect and MW132-WD in Section 31, to 19 ft bgs along the unnamed creek drainage in the NBBW area (PTP-15), to approximately 62 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 11 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 PTP-20 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, 4.9, and 4.10, respectively.

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 0.022 foot per foot (ft/ft) directed generally to the north-northeast (between PM-8I and A-115 [change in head, Δh = 120.18 ft; distance, d = 5580 ft] in April 2020). 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 first and second quarters of 2020 are shown on Figures 4.3 and 4.4, respectively. The depth to the unweathered Dawson potentiometric surface ranges from approximately 15 ft bgs in the NBBW area (B-306) and along the unnamed creek drainage, to approximately 76 ft bgs in the MW38 area (MW38-410N-180W), to approximately 88 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 [Δh = 96.82 ft; d = 5,720 ft]) (using April 2020 water levels). The depths to groundwater, groundwater flow direction, and lateral hydraulic gradient observed during the first half of 2020 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) still shows a steadily increasing trend, indicating the water level has not stabilized since the last sampling event in January 2005. This 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. 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 trend. 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 2020 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 2020 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, the potentiometric level 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 (0.0046 ft/ft between MW112-DEN and MW71-DENR [Δh = 27.36 ft; d = 5,975 ft]) (using April 2020 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 2020, respectively. The levels indicate that the potentiometric surface is nearly flat with a very low hydraulic gradient of 0.0015 ft/ft between B-506 and MW71-LIG (Δh = 7.77 ft; d = 5,160 ft) (using April 2020 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 15 years ago indicate that the potentiometric surface of the lignite layer had gradually and steadily dropped 12 to 20 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 26.1% of the well pairs (not including well pairs where the WD was dry or the water level in one of the wells was not stable) during the first and second quarter 2020.

Areas of upward potential occur mostly around the NBBW groundwater extraction trench 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 2020 are generally consistent with those previously observed.

4.3 Groundwater Sampling

Table 4.4 and Figures 4.9 and 4.10 present the 87 compliance, effectiveness, and investigation monitoring wells and 173 samples collected during the reporting period. Three samples were from Upper Denver wells, 151 samples were from weathered Dawson wells, two were from alluvial wells, one was from a Denver well, and 16 samples were from unweathered Dawson wells. Table 4.4 presents the wells sampled during the reporting period and their classifications, i.e. compliance (22 wells), compliance/effectiveness (9 wells), effectiveness only (5 wells), and investigation (51 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. 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	(25) VOCs
	8260SIM	1,4-Dioxane
	6010B	(2) Dissolved metals
	300.0A	Nitrate and Nitrite
Perimeter Effectiveness	8260B	(4) VOCs
	8260SIM	1,4-Dioxane
North End Monitoring/Investigation	8260SIM	1,4-Dioxane
Cessation Investigation	6010B	(4) Metals
	300.0A	Nitrate, Chloride and Sulfate
	SM2540D	Total Dissolved Solids
	SM2320B	Total, Carbonate, and Bicarbonate Alkalinity
	8260B	VOCs
	8260SIM	1,4-Dioxane
MW77 Response Action	8260B	1,1-DCE (VOCs)
	8260SIM	1,4-Dioxane
	300.0A	Nitrate
B-313/B-326-UD Response Action	8260SIM	1,4-Dioxane
	300.0A	Nitrate

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, 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 EPA's ProUCL software package (version 5.1) 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 8 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-313	1,4-Dioxane
B-326-UD	1,4-Dioxane
B-326-WD	1,4-Dioxane
BM-11X-100N	Tetrachloroethene
BM-15N6	Nitrate
MW38-830N-230E	1,4-Dioxane Chloroform
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, and are discussed below:

Well	Compound
B-313	Nitrate
B-326-UD	Nitrate
BM-11X-100N	Trichloroethene
GW-109	1,4-Dioxane
MW62-WDR	Nitrite 1,4-Dioxane
MW106-UD	1,4-Dioxane

B-313 Nitrate: A statistically-based compliance determination could not be made for nitrate in B-313 because the groundwater performance standard for this chemical (28,000 micrograms per liter [µg/L]) falls between the 90% UCL and the 90% LCL values. (Table 4.6). No temporal trend exists in the concentrations of nitrate in this well. As per Step 8, Section 7.3.1 of the GWMP, no conclusion can be reached regarding compliance with the groundwater performance standard due to the high degree of variability of the sample results, the last ten of which range from 21,000 to 47,000 µg/L. The high degree of variability in the nitrate results for well B-313 may be caused by variations in groundwater levels and/or flow directions in the vicinity of this well resulting from cessation of potable water injection and/or changes in pumping rates from groundwater extraction wells located near this well. WSDs will continue monitoring at B-313 and attempt to determine compliance for this constituent.

B-326-UD Nitrate: Like B-313, a statistically-based compliance determination could not be made for nitrate in B-326-UD because the groundwater performance standard for this chemical falls between the 90% UCL and the 90% LCL values. (Table 4.6). No temporal trend exists in the concentrations of nitrate in this well. As per Step 8, Section 7.3.1 of the GWMP, no conclusion can be reached regarding compliance with the groundwater performance standard. The high degree of variability in the nitrate results for well B-326-UD, which range from 700 µg/L up to 66,000 µg/L, may be caused by variations in groundwater levels and/or flow directions in the vicinity of this well resulting from cessation of potable water injection and changes in pumping rates in nearby extraction wells. The three most recent nitrate results in B-326-UD (990 µg/L, 700 µg/L and 730 µg/L) were less than the performance standard. 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 6.9 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.

GW-109 1,4-Dioxane: A statistically based compliance determination could not be made for 1,4-dioxane in GW-109 because the groundwater performance standard for this chemical (0.9 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 The high degree of variability in the 1,4-dioxane results for well GW-109, which range from 0.42 µg/L to 41 µg/L, may be caused by variations in groundwater levels and/or flow directions in the vicinity of this well resulting from cessation of potable water injection and changes in pumping rates in nearby extraction wells. The two most recent nitrate results in GW-109 (20 µg/L and 41 µg/L) were greater than the performance standard. WSDs will continue monitoring at GW-109 and attempt to determine compliance for this constituent.

MW62-WDR 1,4-Dioxane: A statistically-based compliance determination could not be made for 1,4-dioxane in MW62-WDR 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). MW62-WDR is considered to be indeterminant for 1,4-dioxane because all 10 results were greater than the performance standard (0.9 µg/L) with a decreasing trend (i.e., this well does not meet the rules in step 9 of Section 7.3.1 of the GWMP to determine potential compliance). WSDs will continue monitoring at MW62-WDR and attempt to determine its statistical compliance, but for practical purposes, this well is considered to be potentially out of compliance.

MW62-WDR Nitrite: A statistically-based compliance determination could not be made for nitrite in MW62-WDR because the groundwater performance standard for this chemical (1000 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. The high degree of variability in the nitrite results for well MW62-WDR, which range from not detected at 980 µg/L to 5,400 µg/L, may be caused by variations in groundwater levels and/or flow directions in the vicinity of this well resulting from cessation of potable water injection and changes in pumping rates in nearby extraction wells. WSDs will continue monitoring at MW62-WDR and attempt to determine compliance for this constituent.

MW106-UD 1,4-Dioxane: MW106-UD was not sampled in this reporting period because it is only sampled biennially, and the last sampling event was in August of 2018. As in the second half 2019 report, a 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, 6/19/06) to have ten results, all ten results were 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-313	1,4-Dioxane	Out of compliance	No trend
B-326-UD	1,4-Dioxane	Out of compliance	Increasing
B-326-WD	1,4-Dioxane	Out of compliance	Increasing
BM-11X-100N	PCE	Out of compliance	No trend

Well	Compound	Compliance Decision	Trend
BM-15N6	Nitrate	Out of compliance	No trend
MW38-830N-230E	1,4-Dioxane and Chloroform	Out of compliance	No trend No trend
MW62-WDR	1,4-Dioxane	Potentially out of compliance	Decreasing
MW62-WDR	Nitrate	Out of compliance	No trend
MW77-WD	1,4-Dioxane	Out of compliance	No trend

The above compliance determination summary list is the same as that of the second half of 2019, with exception of two wells: well B-326-WD was previously potentially out of compliance for 1,4-dioxane is now out of compliance; and well MW62-WDR, which was out of compliance and is now indeterminant and potentially out of compliance for 1,4-dioxane. 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.

Also, MW77-WD nitrate, which was indeterminant with no trend in second half 2019 and is now in compliance. Nine of ten MW77-WD nitrate concentrations are below the performance standard (28,000 µg/L). The one concentration above the performance standard (39,000 µg/L) was determined to be an outlier but data validation could not find a reason to exclude the value from the statistics.

Based on the current findings, the necessity and scope of potential corrective actions for the eight 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 five NBBW-area compliance monitoring wells (B-313, 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. The concentration of 1,4-dioxane at compliance well B-313 was 39 µg/L on May 7, 2013, before the response action began. The most recent (April 2020) 1,4-dioxane concentration in this well was 21 µg/L

Groundwater extraction has been ongoing from 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 this well 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 10 feet between October 2018 through June 2020) 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 4.19). The water level in B-326-UD has rebounded 2 ft in this reporting period due to reduced pumping at MW113-EW-1. During this same timeframe (October 2018 through June 2020), concentrations of 1,4-dioxane increased then stabilized at around 7 µg/L. Relationships

between the groundwater level declines and 1,4-dioxane concentration changes were addressed in the 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 EPA-approved work plans.

The 1,4-dioxane concentrations in B-326-WD had an increasing trend in first half 2020 due to the occurrence of higher levels (10 µg/L and 11 µg/L) of 1,4-dioxane in February and May of 2020, respectively. The increasing concentrations of 1,4-dioxane in B-326-WD since October 2018 are coincident with a significant decline in the water level in this well over the same period (10 feet from October 2018 to June 2020). The water level in B-326-WD has rebounded 2.8 ft in this reporting period with little change in the concentration of 1,4-dioxane. Like B-326-UD, relationships between the groundwater level declines and changes in 1,4-dioxane concentrations were addressed in the Final Cessation Report (EMSI/CDM-Smith, 2020a).

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 2010b) 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 5 µg/L in May 2020. Similar trends are apparent for nitrate (160,000 µg/L to 18,000 µg/L) and 1,1-DCE (22 µg/L to 0.43 J µg/L) for the same sampling dates.

In MW62-WDR, 1,4-dioxane exceeds the performance standard in all of the ten most recent samples (3.4 µg/L to 5.8 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 area. 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 (5YRR) (EPA, 2017), the WSDs are conducting 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. Recommendations from that evaluation will be applied to conditions at MW62-WDR. 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.

4.4.2.2 Nitrate in the NBBW Area

Nitrate also occurs in excess of its performance standard 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 significant trend (increasing or decreasing) in the nitrate 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 4.10, response actions are being implemented in this area. Other wells located in Section 31 north of the NBBW area were previously sampled and analyzed for nitrate, nitrite, and VOCs. None of these compounds were 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). As for the 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) that were resampled as part of the *Work Plan to Sample North End Wells, Piezometers and Surface Water* (EMSI, 2016b) or *Work Plan for 3DVA Synoptic Sampling Event* (EMSI, 2018d, as amended), again no nitrate, nitrite, or VOCs were detected above performance standards. Based on these results, the extent of nitrate 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 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 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 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 from the NBBW area if northern migration were to occur.

4.4.2.3 MW38-830N-230E

Chloroform and 1,4-dioxane concentrations in monitoring well MW38-830N-230E exceed their groundwater performance standards. No temporal trends in the concentrations of these chemicals were identified 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 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 these chemicals 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. 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 no trend in nitrate concentrations in well BM-15N6.

Well is also located in an area where sewage sludge had historically been land-farmed. EPA 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 (9300 µg/L), and BM-15X-50S (38000 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. 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

The calculated mean of the tetrachloroethene concentrations in monitoring well BM-11X-100N (6.1 µg/L) slightly exceeds the groundwater performance standard of 5 µg/L. No temporal trend was identified in this well. 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 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 detected PCE. 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 no trend and 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 preliminary 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 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 Synoptic sampling event (EMSI, 2018d) and was dewatered during purging before a sample could be collected. Attempts to measure the water level in January and April 2020 revealed no recharge at this well since the October 2018 sampling event. PM-3X was also dry in January 2020.

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 (data for each well is presented in Appendix C-4.2). For wells with 4 to 8 sample results, 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 33 times for VOCs and six times for 1,4-dioxane (Appendix C-4.1). 1,4-Dioxane has never been detected in this well. 1,1,1-TCA and 1,1-DCA have never been detected above their RLs in this well. PCE and TCE have been detected in this well at concentrations substantially below their respective groundwater performance standards. The background data set for 1,1,1-TCA and TCE included 32 samples. The background data set for 1,1-DCA and PCE included 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, TCE, and PCE are below the Shewhart-CUSUM control limit (Appendix C-4.4). These VOC results, plus the 1,4-dioxane non-detect results, indicate the slurry wall is effective at this location.

PM-6X has been sampled 34 times for VOCs and six times for 1,4-dioxane (Appendix C-4.1). None of the five indicator compounds has ever been detected in this well. These results indicate the slurry wall is effective in this area.

PM-13X has been sampled 34 times for VOCs and six times for 1,4-dioxane (Appendix C-4.1). 1,4-Dioxane has only been detected once in PM-13X (0.35J). 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. The other two detected VOC compounds had no trend in the background set of 32 results. No increasing trends were identified in the background data sets and the 18 most recent results for 1,1,1-TCA, the 14 most recent results for 1,1-DCA, and the two most recent samples for PCE and TCE are below the Shewhart-CUSUM control limit (Appendix C-4.4). These VOC results, plus the 1,4-dioxane results less than the RL, indicate the perimeter slurry wall is effective at this location.

PM-14X has been sampled 36 times for 1,1,1-TCA, 1,1-DCA, TCE, and PCE and 33 times for 1,4-dioxane (Appendix C-4.1). PCE and 1,4-dioxane have never been detected at this location. 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 20 samples for 1,1-DCA. The most recent 12 samples for 1,1-DCA are below the Shewhart-CUSUM control limit. No increasing or decreasing trends in the background data set of 32 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 most recent sample is 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.

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 2020, 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

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 2020, 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 and B-326-WD, plus monitoring wells GW-109, PTP-17, PTP-16, PTP-21, TR-1, PTP-15, and PTP-14. Directions of groundwater flow into cones of depression within the enhanced Containment Zone are shown on both figures.

Since potable water injection stopped north of the NBBW, capture of contaminated groundwater migrating from the Site does not appear to have been compromised and the NBBW continues to function as intended. Flattening of the water table north (downgradient) of the wall is expected to continue. VOC and 1,4-dioxane concentrations provide an additional line of evidence that the NBBW is effectively performing as intended and containing contamination within the alluvium/weathered Dawson Formation that might otherwise migrate across the POC along the northern boundary of the Site.

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

Well	1/1 – 3/12//2020	3/12 – 4/9/ 2020	4/10 – 5/15/ 2020	5/15 – 6/18/20	6/18 – 6/30/ 2020
MW113-EW-1	1.0	1.0	1.0	1.0	0.5
B-321	0.003	0.001	0.001	0.001	0.001
MW113-UD	0.04	0.04	0.05	0.05	0.04
NBBW-IW-3	0	0	0	2	2.5
Total Extraction	**1.043**	**1.041**	**1.051**	**3.051**	**3.041**

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.

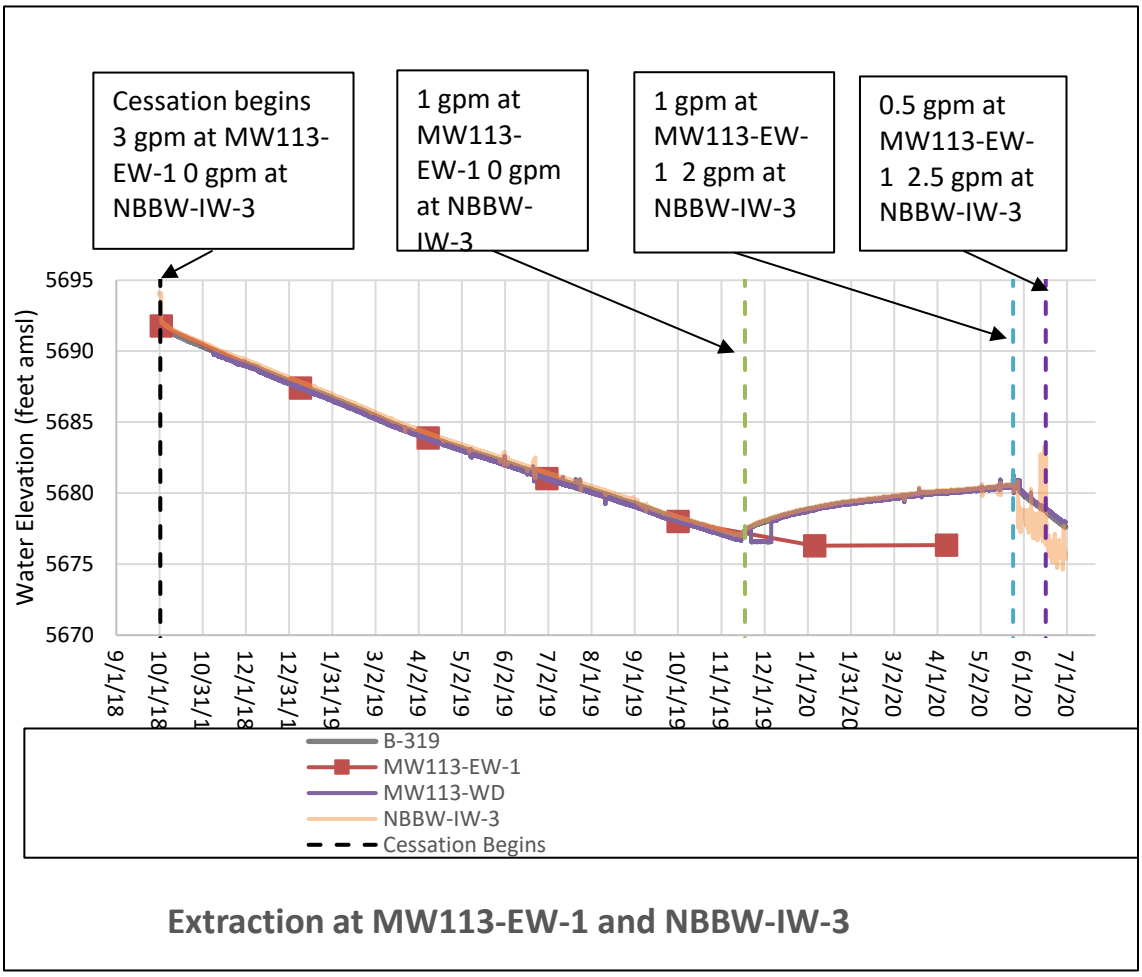
The saturated thickness (defined as the water present in a well between the top of the water column and bottom of the well screen) in MW113-EW-1 has decreased since cessation of potable water injection. Historically, this well was able to sustain extraction in the 3 to 4 gpm range. With decreasing saturated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

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 18th 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 where it remained for the rest of the reporting period.

An investigation of the extent and possible sources of elevated molybdenum in groundwater will be presented in a Technical Memorandum, *Molybdenum in NBBW-Area Groundwater* in second half 2020.

To continue, and possibly increase, removal of 1,4-dioxane mass from the MW113 and B326 area, former injection well NBBW-IW-3 was converted to an extraction well and began extraction of groundwater 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 through the end of the reporting period. This resulted in a total extraction rate from the B326/MW113 area of approximately 3 gpm.

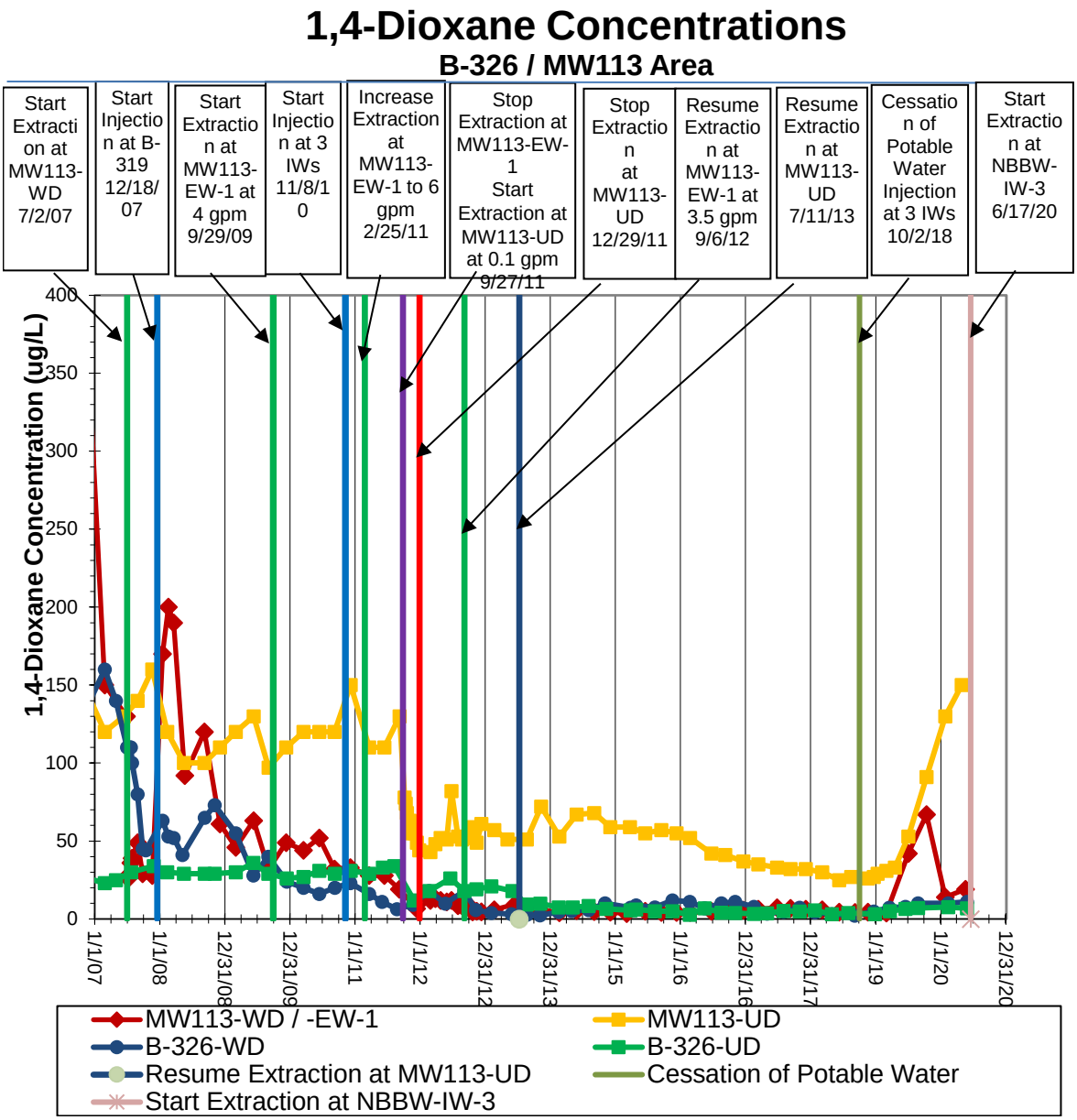
The time-series graph below shows water elevations following cessation for extraction well and companion monitoring well MW113-EW-1/MW113-WD and NBBW-IW-3/B-319. Since cessation began, water levels decreased while extracting at 3 gpm in MW113-EW-1. When extraction was reduced to 1 gpm, water levels rebounded (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 decreased. Review of the graph shows a steady and continuing water level decrease following reduced extraction at 0.5 gpm in MW113-EW-1 and increased extraction to 2.5 gpm in NBBW-IW-3.



Future extraction rates will be dictated by the ability of the wells to maintain a constant yield, balanced against the ability of the WTP to meet its discharge limit for molybdenum.

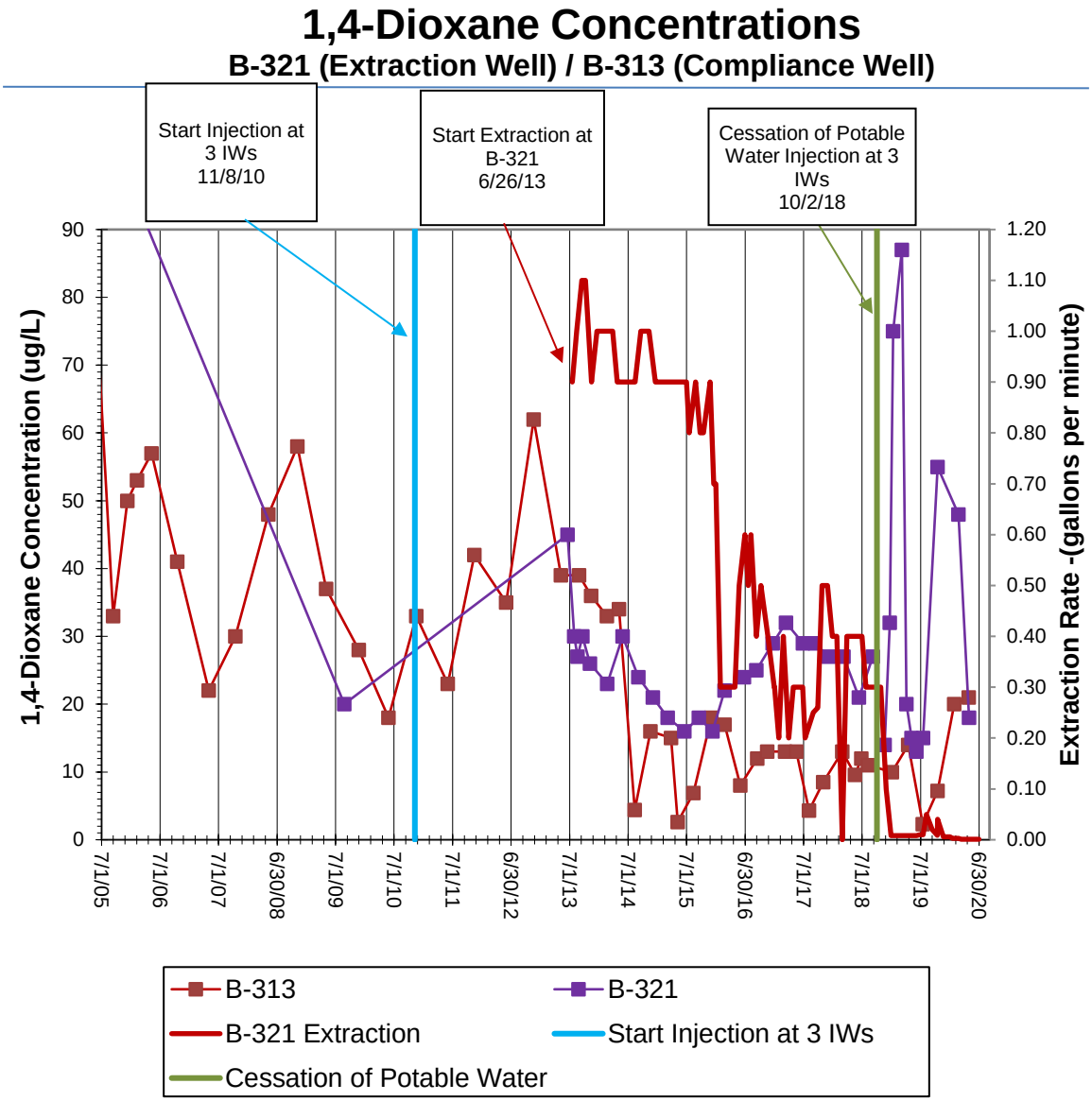
As a result of cessation of injection, availability of water in B-321 is formation limited and the extraction rate is dictated by groundwater availability to the well. During the reporting period, extraction rates ranged between 0.003 and 0.001 gpm and reflects continued dry conditions and lack of substantial precipitation events at the Site during the reporting period.

A time-series graph below shows the effect of the remedial action implemented in this area on 1,4-dioxane concentrations. The time-series graph below 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. Groundwater levels north of the NBBW have declined since cessation began. 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).



The time-series graph below 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, dioxane concentrations in the extraction well varied between 16 and 45 µg/L, with no apparent trend. Since the start of cessation, dioxane variability of concentrations increased to between 13 and 87 µg/L, also 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. Since extraction well B-321 is formation limited and the extraction rate is dictated by groundwater availability to

the well, 1,4-dioxane variability is anticipated to continue. Further discussion provided in the cessation pilot test report (EMSI/CDM-Smith, 2020a).



Figures 4.18 and 4.19 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 will be further evaluated as part of the NBBW CSE (EMSI/Parsons/CDM-Smith, 2019).

4.5.4 MW38 Channel

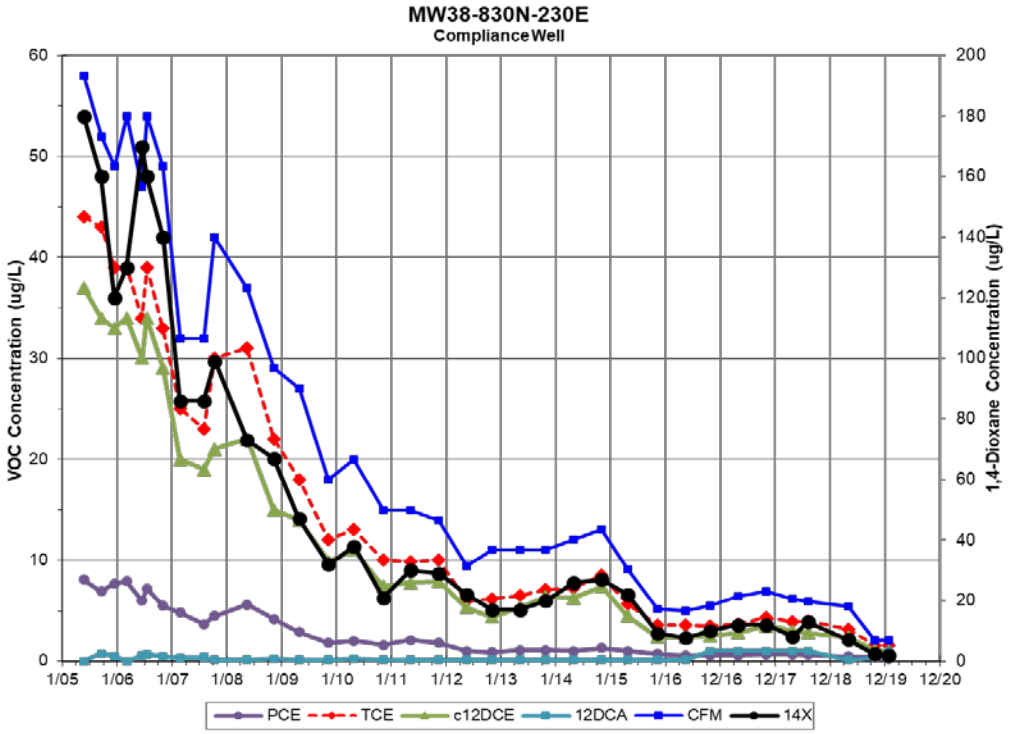
Groundwater extraction continued from wells MW38-170S-140E and MW38-1028N-256E located in the MW38 channel sand (Figures 4.20 and 4.21). Pumping from these two

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 4.20 and 4.21). 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 of 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, is representative of groundwater that 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 (when pumping) have been successful at reducing contaminant concentrations in MW38-830N-230E where the 1,4-dioxane concentration has been reduced by 98.9% 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, aligning 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 the January 2020 had decreased to within a couple feet of historical water elevations.

It should also be noted that two domestic septic system leach fields exist in the same general vicinity as the potable water line leak. Specifically, a leach field that services the DADS office trailers is located immediately north-northwest of the office trailers. A second leach field that services rest rooms in DADS' maintenance shop is located immediately north of the maintenance shop. Both leach fields have been operating for many years and are likely contributing to the groundwater mound illustrated by contours 5745 and 5750 on Figures 4.1, 4.2, 4.20 and 4.21. To avoid future potentiometric interference and/or possible groundwater quality impacts to Site groundwater, the WSDs are having DADS reroute domestic wastewater entering these leach fields to Aurora's sanitary sewer, beginning in the 4th quarter of 2020.

4.5.5 Vertical Migration Assessment

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. The four wells were not sampled in during the reporting period. The most recent results and statistical analyses performed were presented in the second half 2018 O&M Status Report and 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 seven subsequent samples obtained from this well were all reported as not detected for 1,4-dioxane, down to a method detection limit (MDL) of 0.15 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, 3/15/06) 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.

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 2019 following completion of upgrades to the WTP and installation of the new POTW pipeline. In the first half 2020, total extracted groundwater from the source well was 74,102 gallons and reflects six months of continuous pumping.

The primary constituents detected in the May 6, 2020 sample were 1,2-DCA at 32,000 µg/L; 1,1-DCA at 1,900 J µg/L; and 1,4-dioxane at 2,500 µg/L. Continued extraction resulted in contaminant mass removal of 19.75 pounds of 1,2-DCA; 1.17 pounds of 1,1-DCA; and 1.54 pounds of 1,4-dioxane. Cumulative mass removed from this well since pumping began in October 2004 is 2,928.1 pounds of 1,2-DCA; 150.9 pounds of 1,1-DCA; and 148.7 pounds of 1,4-dioxane.

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 356 gallons per day (gpd). Approximately 64,918 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 2020 production from these three wells was 61,022 gallons or 335 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. 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 4.22 and 4.23) 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 3,909 gallons was transferred from PM-15 area storage tank to the RWST at the WTP during the first half of 2020. 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 0.26 ft/ft at the extraction pairs to 0.001 ft/ft at the non-extraction well pairs, as can be checked by comparison of paired wells on Figure 4.12, Figure 4.22, 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 LNAPLs or dense non-aqueous phase liquids (DNAPLs) were present in the extracted groundwater, as there were no 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 the *North End Groundwater Monitoring Plan Update No.1* (EMSI, 2008c) (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. Figures 4.24 and 4.25 show the potentiometric surface in Section 31 for January and April 2020, respectively. Although well control is sparse in Sections 19 and 30, Figure 4.26 shows the interpreted potentiometric surface in the vicinity of Murphy Creek Golf Course during January 2020.

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. Table C-6.2 (Appendix C-6) presents all organic and nitrate data collected in Area 3. Section 31 1,4-dioxane concentrations are shown on Figures 4.27 and 4.28 for the first and second quarters of 2020, respectively. Section 31 wells are sampled quarterly. Figure 4.29 shows the spatial distribution of 1,4-dioxane in shallow groundwater in the Sections 19 and 30 in first quarter 2020 where the wells are sampled semi-annually. No data are available in Section 19 and 30 for the second quarter 2020.

Two private domestic wells (Pingle/Ng and Reed), which are 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 25, 2020. 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 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 the MDL of 0.5 µg/L (from March 28, 2006 through July 16, 2015) or above 0.15 µg/L (July 16, 2015 to June 25, 2020).

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

Groundwater was extracted from the four areas illustrated on Figures 4.27 and 4.28, and described below:

- In Area 1, extraction occurred from three wells (MW153-EW-1, MW154-EW-1, and MW155-EW-1) at a combined rate of between 6.1 and 7.8 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). The most recent (May 2020) 1,4-dioxane concentration in this well is estimated at 0.5 J µg/L, which is less than the current performance standard of 0.9 µg/L.
- In Area 2, pumping from one well (MW160-WD) continued at 0.5 gpm until June 18 when it was decreased to 0.4 gpm. The most recent (May 2020) 1,4-dioxane concentrations in this well and adjacent well MW132-WD are 2.7 µg/L and 18 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 2020) 1,4-dioxane concentration in this well is estimated at 0.62 J.
- In Area 3 (MW77 area), three wells (MW102-WD, MW77-EW-1 and MW98-WD) were pumped at a combined rate of 0.89 to 1.1 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 (May 2020) concentration is this well is 0.17 J µg/L. Pumping was also suspended at MW114-WD on October 7, 2009 for the same reason. The most recent (May 2020) concentration in this well is 0.98 µg/L – slightly above the current performance standard. We will resume pumping from this well in 2nd half 2020.
- 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 4.10.

4.8.3 Progress from Response Actions and Investigations

Approximately 6.0 million gallons of groundwater were pumped from eleven 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 342.2 grams (0.75 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 135.6 million gallons, with a cumulative mass removal of 8,088 grams (17.8 pounds) of 1,4-dioxane. Table 4.9 lists the groundwater volume removed and the mass removed from each north end extraction well.

Trend analyses for the 36 wells being monitored in the North End Area are illustrated in Figures 4.30 through 4.35; the four compliance well trend analyses are included in Appendix C-3.2. All trend results are summarized in the table below. Of the 36 wells

being monitored, 29 (81%) are showing declining trends, 5 (14%) are showing no trends, and 2 (5%) are showing an increasing trend for 1,4-dioxane. The decreasing trends in all four Areas are evidence that the ongoing response actions are effective at removing mass from within Section 31. B-326-WD is showing an increasing trend when evaluating only the last 10 samples, where concentrations have increased from 4.2 to 11 µg/L. If all of the B-326-WD 1,4-dioxane data were evaluated (beginning in 2006), this well would show a visually declining trend. Monitoring well B-326-UD previously had a no trend for 1,4-dioxane. Using the last 10 samples, where concentrations have increased from 5.5 to 6.9 µg/L, an increased trend was identified.

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

Well	Trend**	Extraction Well?	Well	Trend	Extraction Well?
1,4-Dioxane					
B-321	No trend	Yes	MW141-WD	Decreasing	No
B-326-UD	Increasing*	No	MW142-WD	Decreasing	No
B-326-WD	Increasing*	No	MW144-WD	Decreasing	No
MW05-WD	Decreasing	No	MW151-WD	Decreasing	No
MW102-WD	Decreasing	Yes	MW153-EW-1	Decreasing	Yes
MW103-WD	No Trend	No	MW154-EW-1	Decreasing	Yes
MW113-UD	Decreasing	Yes	MW155-EW-1	Decreasing	Yes
MW113-EW-1	Decreasing	Yes	MW156-EW-1	Decreasing	Yes
MW118-WD	Decreasing	Yes	MW156-WD	Decreasing	No
MW121-WDR	Decreasing	No	MW157-WD	Decreasing	No
MW122-WDR	Decreasing	No	MW160-WD	Decreasing	Yes
MW123-WD	Decreasing	No	MW176-DEN	No trend	No
MW124-WD	Decreasing	No	MW77-EW-1	Decreasing	Yes
MW125-WD	Decreasing	No	MW77-EW-2	Decreasing	Yes
MW129-WD	Decreasing	No	MW77-WD	No trend*	No
MW132-WD	Decreasing	No	MW98-WD	Decreasing	Yes
MW114-WD	Decreasing	Yes	PTP-13	Decreasing	No
MW135-WD	Decreasing	No	B-313	No trend*	No
Nitrate					
B-321	No trend	Yes	MW113-EW-1	No trend	Yes

**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.

Figure 4.36 depicts the concentration trends spatially with the use of different colored dots to signify increasing, decreasing, and no trend. Inset graphs for well MW103-WD which exhibit no trend, is shown on the figure. B-326-UD is a compliance well with an increasing trend over the last 10 samples. An inset on Figure 4.36 displays all data for B-326-UD to demonstrate how 1,4-dioxane has decreased over time. MW77-WD and B-313 have no trend also but display similar results as B-326-UD. Figure 4.36 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 2010a)	**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 is pumping at a rate of 2 gpm to improve mass removal.

Work Plans to Extract Additional Groundwater from Area 3 and 5 of the North End Response Action (EMSI, 2010b 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 4.10, below.

North End Groundwater Monitoring Plan and Update No. 1 (EMSI, 2007b and 2008c)	**Status**
Assess results and modify plan as appropriate.	Ongoing. quarterly and semiannual monitoring of North End wells will continue in accordance with *Update No. 1.*

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

Response Action Work Plan for B-326-UD and B-313 Area (EMSI, 2013)	**Status**
	MW113-UD and B-321 commenced in June and July 2013, respectively, in accordance with the RAWP.

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, as discussed in Section 4.8.4 below. A sentry well location was recommended.

Work Plan to Sample North End Wells, Piezometers, and Surface Water (EMSI, 2016b)	**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 sampled in 1st half 2018. See Section 4.8.4 below.

Work Plan to Cease Potable Water Injection at North Boundary Barrier Wall (EMSI, 2018b)	Status
Cease potable water injection to evaluate the effectiveness of the NBBW without Potable Water Injection (PWI), as directed by EPA in the fourth five-year review.	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. See Section 4.9.

Revised Work Plan to Further Assess the North End 1,4-Dioxane Plume (EMSI, 2018c)	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.	Six wells were installed and samples were collected from five of those wells in second half 2018. Slug tests and the remaining sample collection occurred in first half 2019. See Section 4.8.4.

4.8.4 North End 1,4-Dioxane Plume Assessment

In response to the EPA's Fourth Five Year Review, WSDs implemented the *Revised Work Plan to Further Assess the North End 1,4-Dioxane Plume* (EMSI, 2018c). The Work Plan was approved by USEPA on November 14, 2018 and implemented during the 4th quarter 2018 and first half 2019. Findings, conclusions, and recommendations were presented to EPA in a Technical Memorandum submitted on October 16, 2019 (EMSI/CDM-Smith, 2019a).

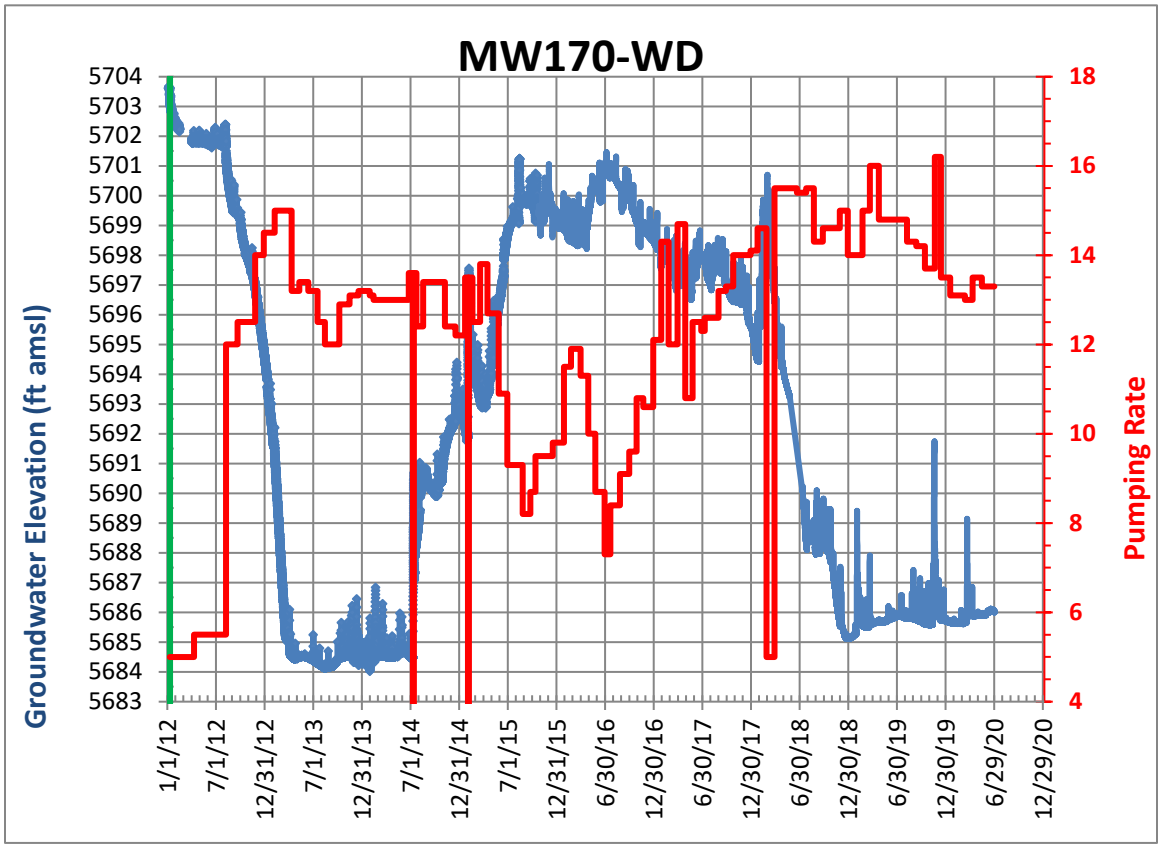
4.9 NBBW Injection Cessation

On October 2, 2018, injection of potable water at the three NBBW injection wells ceased in accordance with the *Final Pilot Test Work Plan for Temporary Cessation of Potable Water Injection* (EMSI, 2018b). Pilot testing was completed on July 1, 2019. A full set of pilot-test data, conclusions, and recommendations were presented to EPA in the *Revised Final Report on Pilot Test for Cessation of Potable Water Injection* submitted on December 17, 2019 and revised May 15,2020 (EMSI/CDM-Smith, 2020a). EPA approved the Revised Final Report on June 26, 2020.

4.10 GTEP Area Response Actions

Pumping from the GTEP extraction well (MW170-EW-1, Figure 4.28, Area 5) was initiated on January 9, 2012 and continued throughout the reporting period. During this reporting period, the pumping rate ranged between 13.0 gpm and 13.5 gpm, with approximately 3.5 million gallons pumped during the period. Approximately 54.4 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 2020, respectively. In the center of the GTEP area, groundwater levels at MW170-WD (adjacent to extraction well MW170-EW-1) were initially lowered by approximately 19 ft, compared to the January 2012 pre-pumping groundwater elevation of 5703.12 ft amsl. A hydrograph of MW170-WD (below) shows that hydraulic equilibrium was established at a pumping rate of about 13 gpm.



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 and have expanded the radius of influence.

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 5.0 µg/L on May 4, 2020.

With regards to MW62-WDR, the well lies within the zone of containment shown on Figurers 4.16 and 4.17. As mentioned previously, and as required by EPA's Fourth Five Year Review, the WSDs will be conducting a Containment System Evaluation and Optimization Study of the NBBW area. This will encompass the MW62-WDR and GTEP

areas. Recommendations from that evaluation will address need for additional containment measures in the MW62-WD area, if appropriate.

Statistical trend analyses of VOCs, 1,4-dioxane, and nitrate in well MW170-EW-1 are presented in Figure 4.37 and in the table below. 1,1-DCA, 1,1-DCE, 1,4-dioxane, PCE, nitrate, and TCE showed statistically significant decreasing trends; all other analytes were not trending.

VOC Trends in MW170-EW-1

Compound	Trend	Compound	Trend
1,4-Dioxane	Decreasing	TCE	Decreasing
1,1-DCA	Decreasing	PCE	Decreasing
1,1-DCE	Decreasing	Nitrate	Decreasing

5.0 LANDFILL GAS REMEDY

The current LFG extraction, collection and treatment system consists of the following components: 64 vertical gas extraction wells, 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.

Under normal circumstances, the GTEP, FS3 or DBF will operate individually, and/or collectively to stabilize vacuum in the Lowry and DADS collection systems.

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 extraction wells (EWs) at Lowry, sixty-one were online and three were shut in 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 99 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, FS3 and DBF 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	1.5	4.1	6.6
GTEP	0.0	0.4	0.9
DBF	0.3	1.0	2.1
FS3	0.3	0.6	1.2

Generally, oxygen readings up to 3% indicate integrity of the gas collection network. Readings exceeding 3% may indicate potential problems. As shown, the oxygen level in the Lowry Header Pipe exceeded the 3% threshold, triggering the need for repairs. Such repairs are discussed below in Section 5.1.1.5.

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	566
February	337
March	498
April	546
May	710
June	1,233
Total	**3,890**

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

In April 2020, ET Technologies and Waste Management Landfill Gas Technicians completed repairs on the Lowry Header Pipe that involved repair of a drainpipe leading to condensate trap CTW-5. Troubleshooting found the 2" PVC isolation valve at CTW-5 was broken. The valve was replaced with a 2" HDPE valve. Excavations required to troubleshoot and repair the valve were limited to small areas around extraction well 18, CTW-4 and CTW-5. All disturbed areas were backfilled and compacted per Lowry Landfill engineering requirements.

5.1.2 GTEP and Blower/Flare Stations

During the reporting period, the GTEP, FS3 and DBF stations provided treatment of extracted LFG. The GTEP, FS3 and DBF operated for approximately 4,306 hours, 4,112 hours, and 1,341 hours respectively.

During the reporting period, routine preventive maintenance such as fluid changes were performed.

While the FS3 and DBF 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 EPA and CDPHE. Additional GTEP reporting requirements are discussed in Subsection 5.1.2.5.

5.1.2.1 Flare Temperature

While combustion temperature was recorded, FS3 and DBF 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 3,048 standard cubic feet per minute (scfm). The combined average LFG flow was calculated by first summing the volume of LFG consumed by the GTEP, FS3 and DBF 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 6.0% of this flow and 94.0% 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 183 and 2,865 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	21.4	28.0	34.5
GTEP	42.1	49.7	53.4
DBF	31.6	38.9	45.3
FS3	39.6	47.1	51.2

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 greasing were performed throughout the reporting period.

On February 26, 2020, Method 22 opacity inspections were performed at the DBF and FS3 (Appendix D-3). No visible emissions exceedances were found during the inspections.

On February 21, 2020, Instrument Valve Service Company calibrated eight pressure transmitters at DBF, FS3, and the Lowry Header. The calibrations included the transmitters that measure flow rate. All transmitters were found to be in good working order and required only minor adjustments to keep the devices working within their respective specification limits.

On June 19, 2020, BA Lawrence LLC performed routine blower service and inspections on all four blowers/motors at DBF and FS3. The service included re-greasing the inboard and outboard bearings for both the motors and blowers. The shaft connection between the motors and blower were laser aligned. Also, the electrical loads on the motors were checked. The blowers/motors were found to be in good working order.

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 a gas concentration 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 no occurrences when all treatment devices were simultaneously offline (total system shutdown) for one hour or more during the reporting period.

(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, FS3 and DBF 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 twice weekly during regular business hours while the treatment devices were operating. 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 was performed at the GTEP at least twice weekly during regular business hours while the treatment device was operating. A summary of GTEP monitoring results is provided in Appendix D-2.3. Monitored parameters were within normal historical ranges.

Heat and methane content testing of the inlet gas stream was performed at the GTEP during the monitoring period on February 26, 2020 (Appendix D-4). All measured parameters were found to be within applicable compliance limits.

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 POC probes were sampled quarterly for methane (Appendix D-5). All concentrations were below the methane performance standard of 5% by volume. VOCs are collected biennially and were not sampled in the reporting period.

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 an issue.

6.2 Stormwater Monitoring

Annual stormwater sampling in accordance with the *Stormwater Monitoring Plan* (EMSI, 2008a) was not performed during the reporting period because insufficient flow was available to activate the stormwater samplers. To the extent that sufficient flow becomes available during the next reporting period, stormwater will be sampled.

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 March 2020 following an above normal snow event (Appendix E-1). Some minimal areas of shallow ponding on the cap, primarily in and near roads was noted. No new issues or concerns were observed requiring immediate attention. Some small localized areas were noted as near flat or possibly low but no ponding occurred from this event. These areas were added to a "watch list" and will be closely monitored for future ponding. All surface water conveyance ditches remained in good condition and no erosion from this event was observed.

7.1.2 Landfill Cover Maintenance Activities

Cover maintenance during the first half 2020 was not required. Some maintenance spraying for noxious or invasive weed mitigation was performed late in the first half 2020 according to 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 in the last two years in surrounding areas within Section 6, mitigation was not performed 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 March and June 2020 (Appendices E-2.1 and E-2.2, respectively). Inspections focused on the integrity of security fencing, trash and debris, potential soil erosion, wildlife management, and noxious weed management. Items of concern included areas of damaged barbed wire fencing, illegally dumped trash, and minor areas of weeds.

Inspection reports provide photographs of items of concern and their locations on a property map (Appendix E-2).

7.2.2 Buffer Zone Maintenance Activities

Fence repairs and trash cleanup 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 EPA-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 and action items associated with EPA's 2017 5YRR. The master schedule is presented as Figure 9.1.

9.1 Problems Encountered

In response to Issue No. 1 of EPA's Fourth Five Year Review, WSDs submitted the *Revised Final Report on Pilot Test for Cessation of Potable Water Injection* (EMSI/CDM-Smith, 2020a). This document was prepared in collaboration with EPA and its contractors. EPA and CDPHE provided review and comment. With CDPHE concurrence, EPA approved the document on June 26, 2020.

In response to Issue No. 3 of EPA's Fourth Five Year Review, WSDs continued work on the *North Boundary Barrier Wall, Containment System Evaluation Plan* (EMSI/Parsons/CDM-Smith, 2020), working collaboratively with EPA and CDPHE. We anticipate this document will be finalized, then approved by EPA during the next reporting period.

In response to Issue No. 4 of EPA's Fourth Five Year Review, 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, 2020). This document was prepared in collaboration with Tri-County Health Department. EPA and CDPHE provided review and comment. With CDPHE concurrence, EPA approved the document on June 26, 2020.

In response to Issues No. 7 and 9 of EPA's Fourth Five Year Review, WSDs continued work on the *Technical Memorandum, Updated 1,4-Dioxane Plume Map and North End Conceptual Model, 2017 Five-Year Review Issues #7 and #9* (EMSI/CDM-Smith, 2020b), working collaboratively with EPA and CDPHE. We anticipate this document will be finalized, then approved by EPA during the next reporting period.

Five-Year Review Issue 2 (increase capacity of WTP); Issue 5 (add 1,4-dioxane to COC list for effectiveness monitoring); Issue 6 (remove iron from COC list for compliance monitoring; and Issue 8 (reevaluated LFG performance standards) have been addressed and approved by EPA.

A Gantt Chart illustrating timelines for and logic ties between these issues is presented in the Master Schedule (Figure 9.1).

During the previous reporting period, molybdenum was detected in WTP effluent above its permitted limit, which led to a temporary shut-down of the WTP. The source of the molybdenum was determined to be from extraction well MW113-EW-1. Upon discovery of the source, the extraction rate from this well was reduced, which in turn, reduced molybdenum concentrations in WTP effluent to below its permitted limit. During the current reporting period, WSDs assessed vertical and lateral limits of elevated molybdenum in the B326/MW113 area, determined the source to be naturally-occurring, added a second extraction well to the B326/MW113 groundwater area so that 1,4-dioxane mass from this area could continue to be removed, and conducted treatability studies to remove molybdenum from MW113-EW-1 water before it enters the main treatment train of the WTP. A Technical Memorandum documenting the extent and possible sources of molybdenum will be submitted to EPA and CDPHE during the next reporting period.

Likewise, design, implementation, and startup of a molybdenum pretreatment system will be performed during the next reporting period.

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.

For the NBBW area, continue to collect, evaluate, and report potentiometric and water quality data, per the *Final Technical Memorandum: Post-Cessation Pilot Test Monitoring* Plan (EMSI/CDM-Smith, 2020c)

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

Well	Compound	Compliance Decision
B-313	1,4-Dioxane	Out of compliance
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	Out of compliance
MW38-830N-230E	1,4-Dioxane Chloroform	Out of compliance
MW62-WDR	1,4-Dioxane	Potentially Out of compliance
MW62-WDR	Nitrate	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

1,4-Dioxane occurs in excess or potentially in excess of its performance standard in five NBBW-area compliance monitoring wells (B-313, B-326-UD, B-326-WD, MW62-WDR, and MW77-WD).

As discussed in Subsection 4.4.2.1 of this report, continued pumping from extraction wells MW113-EW-1, MW113-UD, B-321, MW170-EW-1, and MW-77 area wells is recommended.

With regards 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 require only long-term monitoring. As required by the Fourth Five-Year Review (5YRR) (EPA, 2017), the WSDs are conducting additional evaluations of the effectiveness of the NBBW containment system and the Response Actions in the NBBW area as part of the CSE. Recommendations from that evaluation will applied to conditions at MW62-WDR. 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 in the NBBW Area

Nitrate occurs in excess of its performance standard in monitoring well MW62-WDR. 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 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 occurrences do not result from a source in the immediate vicinity of this well (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 in this area. To the extent that the cause of the nitrate occurrence 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 the levels of nitrate in the groundwater. Nonetheless, groundwater extraction from North End wells further downgradient should capture any potential migration from the NBBW area if northern migration were to occur.

9.2.4.3 MW38-830N-230E

Chloroform and 1,4-dioxane concentrations in monitoring well MW38-830N-230E exceed their respective groundwater performance standards. No temporal trends in the concentrations of these chemicals were identified 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 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 these chemicals 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 no 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. EPA 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

The calculated mean of the tetrachloroethene concentrations in monitoring well BM-11X-100N (6.1 µg/L) slightly exceeds the groundwater performance standard of 5 µg/L. No temporal trend was identified in this well. 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 becomes outward to the northeast toward the Site boundary. Well MW50-WD, a weathered Dawson well positioned approximately 150 ft north of well BM-11X-150N and outside the slurry wall, has never detected PCE. Similarly, wells located further to the north and northeast have always been in compliance with the PCE groundwater performance standard. The overall low concentration of PCE in well BM-11X-100N, in addition to no trend and 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 preliminary 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. 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 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.
2. Continue to skim LNAPL from the surface of groundwater in the NTES trench, if present.
3. Continue to optimize removal of 1,4-dioxane within the WTP.

9.3 Schedule of Planned Activities

See Figure 9.1 - Master Schedule for an update of planned activities. Please note that the timelines and milestone list in Gant chart for the FYRR are subject to change based on agency review timeframes and level of effort needed to respond to agency comments. The schedule reflects EPA-approved revised 5YRR milestone dates.

10.0 REFERENCES

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TABLES

TABLE 2.1
WATER TREATMENT PLANT SAMPLING SCHEDULE
JANUARY THROUGH JUNE 2020 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, TP3310	Early Warning Influent (grab) TP-110, TP-120, TP-140, TP-150, TP3310	Early Warning Influent (grab) TP-110, TP-120, TP-140, TP-150, TP3310	Early Warning Influent (composite) TP-110, TP-120, TP-140, TP-150, TP3310
Sampling Date	**Monthly 24-Hour Grabs[a/]**	**Quarterly 24-Hour Grabs[a/]**	**Quarterly Composite[a/]**	**Yearly Composite[a/]**	**Monthly**	**Quarterly[b/]**	**Yearly**	**Yearly[c/]**
January 6-7	X	X	X		X	X		
February 3-4	X		X (Resample for Benzidine and Hexachloroethane)		X			
March 2-3	X				X			
April 4-6	X	X	X	X	X	X	X	X
April 21-22			X (Resample for Molybdenum)					
May 4-5	X				X			
June 1-2	X				X			
July	X	X	X		X	X		
August	X				X			
September	X				X			
October	X	X	X		X	X		
November	X				X			
December	X				X			
Analytical Methods								
	1,4-Dioxane (8260 SIM) pH (pH-740 one time at start of 24 hours)	VOCs (EPA 624.1) Nonylphenols Total (ASTM D7065_11)	SVOCs (EPA 625.1) Metals[d/] (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[e/f/] (200.7, 200.8) Mercury (7470) Gross alpha/beta Plutonium-238,239,240 Americium-241 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/ equivalent to MP-001 VOC quarterly list

c/ equivalent to MP-001 yearly list

e/ Quarterly Metals - Molybdenum, Zinc and Selenium

f/ Annual Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Nickle and Silver

TABLE 4.1
SUMMARY OF DRILLING ACTIVITIES COMPLETED
JANUARY THROUGH JUNE 2020 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 2020 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	1/6/2020	5,703.63	19.98	17.39	5,723.61	2.59	10.4-30.3	35	32	ALLUVIUM/WD
A-102	4/9/2020	5,703.47	20.14	17.55	5,723.61	2.59	10.4-30.3	35	32	ALLUVIUM/WD
A-115	1/6/2020	5,696.49	14.26	12.04	5,710.75	2.22	6.9-13.5	21	NE[f/], >21	ALLUVIUM/WD
A-115	4/8/2020	5,696.73	14.02	11.8	5,710.75	2.22	6.9-13.5	21	NE, >21	ALLUVIUM/WD
B-215-WD	1/6/2020	5,702.34	33.58	31.16	5,735.92	2.42	34-36	39	36.5	WD
B-215-WD	4/8/2020	5,702.50	33.42	31	5,735.92	2.42	34-36	39	36.5	WD
B-304	1/6/2020	5,695.28	31.51	30.92	5,726.79	0.59	24-34	39	37	WD
B-304	4/9/2020	5,697.84	28.95	28.36	5,726.79	0.59	24-34	39	37	WD
B-304-UD	1/6/2020	5,690.05	38.59	36.45	5,728.64	2.14	58-78	80	36.5	UNWD
B-304-UD	4/9/2020	5,690.54	38.1	35.96	5,728.64	2.14	58-78	80	36.5	UNWD
B-305R	1/6/2020	5,693.30	31.43	29	5,724.73	2.43	28-38	41	27	UNWD
B-305R	4/8/2020	5,692.98	31.75	29.32	5,724.73	2.43	28-38	41	27	UNWD
B-305WD	1/6/2020	5,699.57	24.2	22.33	5,723.77	1.87	13-23	28	23	WD
B-305WD	4/8/2020	5,699.35	24.42	22.55	5,723.77	1.87	13-23	28	23	WD
B-306	1/6/2020	5,691.47	18.1	15.23	5,709.57	2.87	28.5-38.5	43.5	22	UNWD
B-306	4/8/2020	5,691.88	17.69	14.82	5,709.57	2.87	28.5-38.5	43.5	22	UNWD
B-307	1/6/2020	Dry	Dry	Dry	5,708.83	1.34	15-20	22	NE, >22	WD
B-307	3/11/2020	Dry	Dry	Dry	5,708.83	1.34	15-20	22	NE, >22	WD
B-307	4/8/2020	Dry	Dry	Dry	5,708.83	1.34	15-20	22	NE, >22	WD
B-307	5/4/2020	Dry	Dry	Dry	5,708.83	1.34	15-20	22	NE, >22	WD
B-308	1/6/2020	5,692.41	30.15	28.09	5,722.56	2.06	23-33	37	33	WD
B-308	3/11/2020	5,691.97	30.59	28.53	5,722.56	2.06	23-33	37	33	WD
B-308	4/8/2020	5,692.11	30.45	28.39	5,722.56	2.06	23-33	37	33	WD
B-308	5/4/2020	5,692.99	29.57	27.51	5,722.56	2.06	23-33	37	33	WD
B-309	1/6/2020	5,687.36	29.05	26.14	5,716.41	2.91	17-27	31	26.5	WD
B-309	3/11/2020	5,687.24	29.17	26.26	5,716.41	2.91	17-27	31	26.5	WD
B-309	4/8/2020	5,687.23	29.18	26.27	5,716.41	2.91	17-27	31	26.5	WD
B-309	5/4/2020	5,687.26	29.15	26.24	5,716.41	2.91	17-27	31	26.5	WD
B-310	1/6/2020	5,688.50	28.65	26.3	5,717.15	2.35	21.5-31.5	34	31.3	WD
B-310	3/11/2020	5,688.35	28.8	26.45	5,717.15	2.35	21.5-31.5	34	31.3	WD
B-310	4/8/2020	5,688.20	28.95	26.6	5,717.15	2.35	21.5-31.5	34	31.3	WD
B-310	5/4/2020	5,688.15	29	26.65	5,717.15	2.35	21.5-31.5	34	31.3	WD
B-311	1/6/2020	Dry	Dry	Dry	5,718.56	2.66	18-23	25.7	23	WD
B-311	4/8/2020	Dry	Dry	Dry	5,718.56	2.66	18-23	25.7	23	WD
B-312	1/6/2020	5,679.12	32.12	29.48	5,711.24	2.64	21-31	35	31	WD
B-312	3/11/2020	5,679.92	31.32	28.68	5,711.24	2.64	21-31	35	31	WD
B-312	4/8/2020	5,680.12	31.12	28.48	5,711.24	2.64	21-31	35	31	WD
B-312	5/4/2020	5,680.50	30.74	28.1	5,711.24	2.64	21-31	35	31	WD
B-313	1/6/2020	5,689.59	26.33	23.81	5,715.92	2.52	20-27	30.1	26.5	WD
B-313	3/11/2020	5,688.34	27.58	25.06	5,715.92	2.52	20-27	30.1	26.5	WD
B-313	4/8/2020	5,688.77	27.15	24.63	5,715.92	2.52	20-27	30.1	26.5	WD
B-313	5/4/2020	5,688.34	27.58	25.06	5,715.92	2.52	20-27	30.1	26.5	WD
B-313-UD	1/6/2020	5,685.51	29.94	27.29	5,715.45	2.65	48-63	65	27	UNWD
B-313-UD	3/11/2020	5,685.94	29.51	26.86	5,715.45	2.65	48-63	65	27	UNWD
B-313-UD	4/8/2020	5,686.07	29.38	26.73	5,715.45	2.65	48-63	65	27	UNWD
B-313-UD	5/4/2020	5,686.38	29.07	26.42	5,715.45	2.65	48-63	65	27	UNWD
B-314	1/6/2020	5,696.34	45.79	43.26	5,742.13	2.53	32.5-47.5	51	47.5	WD
B-314	4/9/2020	5,696.29	45.84	43.31	5,742.13	2.53	32.5-47.5	51	47.5	WD
B-314-UD	1/6/2020	5,691.14	50.86	48.46	5,742.00	2.40	67-87	89	48.5	UNWD
B-314-UD	4/9/2020	5,691.43	50.57	48.17	5,742.00	2.40	67-87	89	48.5	UNWD
B-315	1/6/2020	5,696.96	41	38.44	5,737.96	2.56	28-43	46	43	WD
B-315	4/9/2020	5,696.98	40.98	38.42	5,737.96	2.56	28-43	46	43	WD
B-316	1/6/2020	5,695.46	23.2	20.64	5,718.66	2.56	20.5-30.5	34	30.5	WD
B-316	4/8/2020	5,695.46	23.2	20.64	5,718.66	2.56	20.5-30.5	34	30.5	WD
B-316-UD	1/6/2020	5,676.97	41.87	39.63	5,718.84	2.24	41-56	59	33	UNWD
B-316-UD	4/8/2020	5,682.86	35.98	33.74	5,718.84	2.24	41-56	59	33	UNWD
B-317	1/6/2020	5,690.13	20.69	18.17	5,710.82	2.52	18-24	28.1	24	WD
B-317	3/11/2020	5,690.31	20.51	17.99	5,710.82	2.52	18-24	28.1	24	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/]
B-317	4/8/2020	5,690.17	20.65	18.13	5,710.82	2.52	18-24	28.1	24	WD
B-317	5/4/2020	5,690.27	20.55	18.03	5,710.82	2.52	18-24	28.1	24	WD
B-317-UD	1/6/2020	5,692.22	17.71	15.88	5,709.93	1.83	37-52	54.5	23.5	UNWD
B-317-UD	3/11/2020	5,692.32	17.61	15.78	5,709.93	1.83	37-52	54.5	23.5	UNWD
B-317-UD	4/8/2020	5,692.43	17.5	15.67	5,709.93	1.83	37-52	54.5	23.5	UNWD
B-317-UD	5/4/2020	5,692.52	17.41	15.58	5,709.93	1.83	37-52	54.5	23.5	UNWD
B-318	1/6/2020	5,702.04	26.45	23.86	5,728.49	2.59	18-25	28	25	WD
B-318	4/8/2020	5,701.44	27.05	24.46	5,728.49	2.59	18-25	28	25	WD
B-319	1/6/2020	5,678.88	34.52	31.6	5,713.40	2.80	21.5-41.5	44.1	42	WD
B-319	3/11/2020	5,679.77	33.63	30.71	5,713.40	2.80	21.5-41.5	44.1	42	WD
B-319	4/8/2020	5,680.00	33.4	30.48	5,713.40	2.80	21.5-41.5	44.1	42	WD
B-319	5/4/2020	5,680.25	33.15	30.23	5,713.40	2.80	21.5-41.5	44.1	42	WD
B-319-25S	1/6/2020	Dry	Dry	Dry	5,712.73	2.23	14-24	24	NE, >24	WD
B-319-25S	4/9/2020	Dry	Dry	Dry	5,712.73	2.23	14-24	24	NE, >24	WD
B-319-26W	1/6/2020	Dry	Dry	Dry	5,712.60	2.60	12.4-22.4	22.4	NE, >22.4	WD
B-319-26W	4/8/2020	Dry	Dry	Dry	5,712.60	2.60	12.4-22.4	22.4	NE, >22.4	WD
B-319-50S	1/6/2020	Dry	Dry	Dry	5,713.85	2.55	14-24	24	NE, >24	WD
B-319-50S	4/9/2020	Dry	Dry	Dry	5,713.85	2.55	14-24	24	NE, >24	WD
B-319-50W	1/6/2020	Dry	Dry	Dry	5,711.78	2.28	14-24	24	NE, >24	WD
B-319-50W	4/9/2020	Dry	Dry	Dry	5,711.78	2.28	14-24	24	NE, >24	WD
B-319-75S	1/6/2020	Dry	Dry	Dry	5,714.00	2.00	14-24	24	NE, >24	WD
B-319-75S	3/11/2020	Dry	Dry	Dry	5,714.00	2.00	14-24	24	NE, >24	WD
B-319-75S	4/8/2020	Dry	Dry	Dry	5,714.00	2.00	14-24	24	NE, >24	WD
B-319-75S	5/4/2020	Dry	Dry	Dry	5,714.00	2.00	14-24	24	NE, >24	WD
B-320	1/6/2020	5,692.76	30.26	27.84	5,723.02	2.42	19-34	38.5	34	WD
B-320	3/11/2020	5,692.50	30.52	28.1	5,723.02	2.42	19-34	38.5	34	WD
B-320	4/8/2020	5,693.47	29.55	27.13	5,723.02	2.42	19-34	38.5	34	WD
B-320	5/4/2020	5,694.46	28.56	26.14	5,723.02	2.42	19-34	38.5	34	WD
B-321	1/6/2020	5,685.66	27.23	25.44	5,712.89	1.79	12-27	30.5	27	WD
B-321	3/11/2020	5,686.15	26.74	24.95	5,712.89	1.79	12-27	30.5	27	WD
B-321	4/8/2020	5,685.93	26.96	25.17	5,712.89	1.79	12-27	30.5	27	WD
B-321	5/4/2020	5,685.81	27.08	25.29	5,712.89	1.79	12-27	30.5	27	WD
B-322	1/6/2020	5,690.15	29.79	27.01	5,719.94	2.78	15-30	33.5	30	WD
B-322	4/8/2020	5,690.05	29.89	27.11	5,719.94	2.78	15-30	33.5	30	WD
B-323-WD	1/6/2020	Dry	Dry	Dry	5,732.01	2.01	23-33	35	33	WD
B-323-WD	3/11/2020	Dry	Dry	Dry	5,732.01	2.01	23-33	35	33	WD
B-323-WD	4/8/2020	Dry	Dry	Dry	5,732.01	2.01	23-33	35	33	WD
B-323-WD	5/4/2020	Dry	Dry	Dry	5,732.01	2.01	23-33	35	33	WD
B-324-WD	1/6/2020	5,700.55	34.46	30.95	5,735.01	3.51	28.5-43.5	46	43.5	WD
B-324-WD	4/9/2020	5,701.87	33.14	29.63	5,735.01	3.51	28.5-43.5	46	43.5	WD
B-325-WD	1/6/2020	5,696.06	37.9	35.24	5,733.96	2.66	29.5-39.5	43	39.5	WD
B-325-WD	4/9/2020	5,696.03	37.93	35.27	5,733.96	2.66	29.5-39.5	43	39.5	WD
B-326-UD	1/6/2020	5,679.74	34.72	32.06	5,714.46	2.66	60-80	83	48.5	UNWD
B-326-UD	3/11/2020	5,680.56	33.9	31.24	5,714.46	2.66	60-80	83	48.5	UNWD
B-326-UD	4/8/2020	5,680.68	33.78	31.12	5,714.46	2.66	60-80	83	48.5	UNWD
B-326-UD	5/4/2020	5,680.90	33.56	30.9	5,714.46	2.66	60-80	83	48.5	UNWD
B-326-WD	1/6/2020	5,678.90	34.68	32.5	5,713.58	2.18	24-49	51	49	WD
B-326-WD	3/11/2020	5,679.82	33.76	31.58	5,713.58	2.18	24-49	51	49	WD
B-326-WD	4/8/2020	5,679.98	33.6	31.42	5,713.58	2.18	24-49	51	49	WD
B-326-WD	5/4/2020	5,680.24	33.34	31.16	5,713.58	2.18	24-49	51	49	WD
B-327-UD	1/6/2020	5,693.30	30.23	28.2	5,723.53	2.03	50-65	67	19	UNWD
B-327-UD	4/8/2020	5,693.57	29.96	27.93	5,723.53	2.03	50-65	67	19	UNWD
B-327-WD	1/6/2020	5,694.60	28.79	26.3	5,723.39	2.49	18-28	30	28	WD
B-327-WD	3/11/2020	5,694.45	28.94	26.45	5,723.39	2.49	18-28	30	28	WD
B-327-WD	4/8/2020	5,694.21	29.18	26.69	5,723.39	2.49	18-28	30	28	WD
B-327-WD	5/4/2020	5,694.18	29.21	26.72	5,723.39	2.49	18-28	30	28	WD
B-502	1/16/2020	5,749.04	30.68	26.86	5,779.72	3.82	95-105	120	23	UNWD
B-502	4/23/2020	5,749.32	30.4	26.58	5,779.72	3.82	95-105	120	23	UNWD

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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/]
B-504A	1/16/2020	5,717.63	34.55	34.17	5,752.18	0.38	105-125	126.5	36	UPPER DENVER
B-504A	4/23/2020	5,717.71	34.47	34.09	5,752.18	0.38	105-125	126.5	36	UPPER DENVER
B-506	1/9/2020	5,687.01	146.38	143.99	5,833.39	2.39	310-350	355	55	LIGNITE
B-506	4/15/2020	5,687.30	146.09	143.7	5,833.39	2.39	310-350	355	55	LIGNITE
B-518	1/13/2020	5,759.28	38.46	36.12	5,797.74	2.34	75-95	100	50	UNWD
B-518	4/16/2020	5,759.40	38.34	36	5,797.74	2.34	75-95	100	50	UNWD
B-519	1/9/2020	5,809.51	17.63	17.49	5,827.14	0.14	60-80	85	50	UNWD
B-519	4/15/2020	5,809.07	18.07	17.93	5,827.14	0.14	60-80	85	50	UNWD
B-520	1/9/2020	5,762.03	64.06	62.17	5,826.09	1.89	125-145	155	50	UPPER DENVER
B-520	4/15/2020	5,761.83	64.26	62.37	5,826.09	1.89	125-145	155	50	UPPER DENVER
B-706	1/9/2020	5,785.55	78.69	75.95	5,864.24	2.74	105-115	115	87.6	UNWD
B-706	4/15/2020	5,785.30	78.94	76.2	5,864.24	2.74	105-115	115	87.6	UNWD
B-708	1/9/2020	5,774.49	91.52	88.51	5,866.01	3.01	122-132	132	101	UNWD
B-708	4/15/2020	5,774.50	91.51	88.5	5,866.01	3.01	122-132	132	101	UNWD
B-712-25S-UD	1/16/2020	5,748.61	25.17	22.29	5,773.78	2.88	65-80	82	35.5	UNWD
B-712-25S-UD	4/23/2020	5,748.75	25.03	22.15	5,773.78	2.88	65-80	82	35.5	UNWD
B-712-LD	1/16/2020	5,741.53	31.33	28.87	5,772.86	2.46	100-115	119	36.5	UNWD
B-712-LD	4/23/2020	5,741.65	31.21	28.75	5,772.86	2.46	100-115	119	36.5	UNWD
B-712-UD	1/16/2020	5,748.29	24.25	22.01	5,772.54	2.24	56.5-71.5	74	36	UNWD
B-712-UD	4/23/2020	5,748.41	24.13	21.89	5,772.54	2.24	56.5-71.5	74	36	UNWD
BKGD-1WD	1/8/2020	5,824.62	50.56	48.33	5,875.18	2.23	44.5-54.5	55	54	WD
BKGD-1WD	4/15/2020	5,828.30	46.88	44.65	5,875.18	2.23	44.5-54.5	55	54	WD
BKGD-2UD	1/8/2020	5,813.33	38.17	36.22	5,851.50	1.95	58-68	68.5	47.6	UNWD
BKGD-2UD	4/15/2020	5,807.78	43.72	41.77	5,851.50	1.95	58-68	68.5	47.6	UNWD
BKGD-2WD	1/8/2020	5,841.66	9.76	7.86	5,851.42	1.90	33.6-48.6	48.6	47.6	WD
BKGD-2WD	4/15/2020	5,840.45	10.97	9.07	5,851.42	1.90	33.6-48.6	48.6	47.6	WD
BKGD-3UD	1/8/2020	5,785.49	56.68	54.62	5,842.17	2.06	94-104	105	70	UNWD
BKGD-3UD	4/15/2020	5,785.62	56.55	54.49	5,842.17	2.06	94-104	105	70	UNWD
BKGD-3WD	1/8/2020	5,785.33	57.25	54.32	5,842.58	2.93	55.5-70.5	71	70	WD
BKGD-3WD	4/15/2020	5,785.22	57.36	54.43	5,842.58	2.93	55.5-70.5	71	70	WD
BKGD-4UD	1/8/2020	5,821.35	30.35	28.29	5,851.70	2.06	60-75	75	30	UNWD
BKGD-4UD	4/15/2020	5,821.64	30.06	28	5,851.70	2.06	60-75	75	30	UNWD
BKGD-4WD	1/8/2020	5,833.11	18.78	16.53	5,851.89	2.25	21-30	31	30	WD
BKGD-4WD	4/15/2020	5,832.54	19.35	17.1	5,851.89	2.25	21-30	31	30	WD
BM-11I-100N	1/13/2020	5,773.98	43.2	40.2	5,817.18	3.00	18.5-50.5	56	50.5	WD
BM-11I-100N	4/16/2020	5,773.80	43.38	40.38	5,817.18	3.00	18.5-50.5	56	50.5	WD
BM-11I-100S	1/13/2020	5,799.20	23.03	20.53	5,822.23	2.50	19.2-51.2	57	51.2	WD
BM-11I-100S	4/16/2020	5,798.51	23.72	21.22	5,822.23	2.50	19.2-51.2	57	51.2	WD
BM-11I-150N	1/13/2020	5,792.47	23.44	21.33	5,815.91	2.11	17.5-47.5	54	46.5	WD
BM-11I-150N	4/16/2020	5,791.66	24.25	22.14	5,815.91	2.11	17.5-47.5	54	46.5	WD
BM-11I-200N	1/13/2020	5,792.95	22	19.41	5,814.95	2.59	19-44	49	44	WD
BM-11I-200N	4/16/2020	5,792.24	22.71	20.12	5,814.95	2.59	19-44	49	44	WD
BM-11I-50N	1/13/2020	5,794.04	24.95	21.95	5,818.99	3.00	17.5-47.5	53	47.5	WD
BM-11I-50N	4/16/2020	5,793.32	25.67	22.67	5,818.99	3.00	17.5-47.5	53	47.5	WD
BM-11I-50S	1/13/2020	5,796.37	25.19	22.19	5,821.56	3.00	18-48	53	47.7	WD
BM-11I-50S	4/16/2020	5,795.75	25.81	22.81	5,821.56	3.00	18-48	53	47.7	WD
BM-11X-100N	1/13/2020	5,794.30	21.21	18.71	5,815.51	2.50	19-46	50	46	WD
BM-11X-100N	4/16/2020	5,793.77	21.74	19.24	5,815.51	2.50	19-46	50	46	WD
BM-11X-100S	1/13/2020	5,805.30	14.45	11.95	5,819.75	2.50	18.5-48.5	53	47.5	WD
BM-11X-100S	4/16/2020	5,805.18	14.57	12.07	5,819.75	2.50	18.5-48.5	53	47.5	WD
BM-11X-150N	1/13/2020	5,793.94	20.52	18.11	5,814.46	2.41	19.5-44.5	49.5	44.5	WD
BM-11X-150N	4/16/2020	5,793.30	21.16	18.75	5,814.46	2.41	19.5-44.5	49.5	44.5	WD
BM-11X-200N	1/13/2020	5,793.59	19.4	16.96	5,812.99	2.44	19.5-44.5	50.5	44.5	WD
BM-11X-200N	4/16/2020	5,793.03	19.96	17.52	5,812.99	2.44	19.5-44.5	50.5	44.5	WD
BM-11X-50N	1/13/2020	5,795.89	21.39	18.89	5,817.28	2.50	17-47	50	47.5	WD
BM-11X-50N	4/16/2020	5,795.51	21.77	19.27	5,817.28	2.50	17-47	50	47.5	WD
BM-11X-50S	1/13/2020	5,804.08	15.16	12.66	5,819.24	2.50	19-46	50	44.5	WD
BM-11X-50S	4/16/2020	5,804.06	15.18	12.68	5,819.24	2.50	19-46	50	44.5	WD

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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-15E1	1/13/2020	5,732.31	32.64	31.06	5,764.95	1.58	20-40	45	40	WD
BM-15E1	4/17/2020	5,732.14	32.81	31.23	5,764.95	1.58	20-40	45	40	WD
BM-15E2	1/13/2020	5,731.75	35.98	33.65	5,767.73	2.33	31-43	46.8	43	WD
BM-15E2	4/17/2020	5,731.67	36.06	33.73	5,767.73	2.33	31-43	46.8	43	WD
BM-15E3	1/13/2020	5,731.85	37.3	34.75	5,769.15	2.55	31.5-46.5	49.6	46.7	WD
BM-15E3	4/17/2020	5,731.76	37.39	34.84	5,769.15	2.55	31.5-46.5	49.6	46.7	WD
BM-15E4	1/13/2020	5,735.79	36.4	33.71	5,772.19	2.69	34-49	54	49	WD
BM-15E4	4/17/2020	5,735.09	37.1	34.41	5,772.19	2.69	34-49	54	49	WD
BM-15E5	1/13/2020	5,736.45	34.12	31.35	5,770.57	2.77	31.5-46.5	53	46.5	WD
BM-15E5	4/17/2020	5,735.79	34.78	32.01	5,770.57	2.77	31.5-46.5	53	46.5	WD
BM-15E6	1/13/2020	5,738.15	34.97	32.15	5,773.12	2.82	29.5-49.5	52.7	49.5	WD
BM-15E6	4/17/2020	5,737.79	35.33	32.51	5,773.12	2.82	29.5-49.5	52.7	49.5	WD
BM-15I-100S	1/13/2020	5,725.97	52.58	49.22	5,778.55	3.36	19-51	56.8	50.8	WD
BM-15I-100S	4/17/2020	5,725.94	52.61	49.25	5,778.55	3.36	19-51	56.8	50.8	WD
BM-15I-125S	1/13/2020	5,739.70	38.95	36.84	5,778.65	2.11	19.5-50.5	53	49.8	WD
BM-15I-125S	4/17/2020	5,739.50	39.15	37.04	5,778.65	2.11	19.5-50.5	53	49.8	WD
BM-15I-150S	1/13/2020	Dry	Dry	Dry	5,780.35	3.23	20.5-50.5	55.5	50.5	WD
BM-15I-150S	4/17/2020	Dry	Dry	Dry	5,780.35	3.23	20.5-50.5	55.5	50.5	WD
BM-15I-15N	1/13/2020	Dry	Dry	Dry	5,775.49	2.79	17-47	52	47	WD
BM-15I-15N	4/17/2020	Dry	Dry	Dry	5,775.49	2.79	17-47	52	47	WD
BM-15I-175S	1/13/2020	5,741.43	39.24	37.38	5,780.67	1.86	19-51	55	50.8	WD
BM-15I-175S	4/17/2020	5,741.42	39.25	37.39	5,780.67	1.86	19-51	55	50.8	WD
BM-15I-200S	1/13/2020	5,746.07	35.59	33.32	5,781.66	2.27	20-50	55.5	48.2	WD
BM-15I-200S	4/17/2020	5,745.93	35.73	33.46	5,781.66	2.27	20-50	55.5	48.2	WD
BM-15I-25S	1/13/2020	Dry	Dry	Dry	5,777.56	3.86	21-51	56	52	WD
BM-15I-25S	4/17/2020	Dry	Dry	Dry	5,777.56	3.86	21-51	56	52	WD
BM-15I-37.5S	1/13/2020	5,723.07	52.61	50.23	5,775.68	2.38	24-54	59	54	WD
BM-15I-37.5S	4/17/2020	5,723.06	52.62	50.24	5,775.68	2.38	24-54	59	54	WD
BM-15I-50S	1/13/2020	5,723.89	53.6	50.24	5,777.49	3.36	17.7-52.7	59	53	WD
BM-15I-50S	4/17/2020	5,723.84	53.65	50.29	5,777.49	3.36	17.7-52.7	59	53	WD
BM-15I-75S	1/13/2020	5,738.42	38.53	37.09	5,776.95	1.44	19-51	55	51	WD
BM-15I-75S	4/17/2020	5,738.31	38.64	37.2	5,776.95	1.44	19-51	55	51	WD
BM-15N1	1/13/2020	5,736.18	34.9	33.02	5,771.08	1.88	22.3-52.3	60	52.3	WD
BM-15N1	4/17/2020	5,735.48	35.6	33.72	5,771.08	1.88	22.3-52.3	60	52.3	WD
BM-15N2	1/13/2020	5,737.87	31.79	29.32	5,769.66	2.47	19-39	45	39.2	WD
BM-15N2	4/17/2020	5,737.30	32.36	29.89	5,769.66	2.47	19-39	45	39.2	WD
BM-15N3	1/13/2020	5,738.16	28.42	26.02	5,766.58	2.40	19.5-39.5	45	39.5	WD
BM-15N3	4/17/2020	5,737.68	28.9	26.5	5,766.58	2.40	19.5-39.5	45	39.5	WD
BM-15N4	1/13/2020	5,735.84	29.72	27.01	5,765.56	2.71	17-37	44	37	WD
BM-15N4	4/17/2020	5,735.21	30.35	27.64	5,765.56	2.71	17-37	44	37	WD
BM-15N5	1/13/2020	5,735.51	37.19	34.89	5,772.70	2.30	31-56	62	56	WD
BM-15N5	4/17/2020	5,734.68	38.02	35.72	5,772.70	2.30	31-56	62	56	WD
BM-15N6	1/13/2020	5,737.49	35.1	30.51	5,772.59	4.59	16-46	51	47	WD
BM-15N6	4/17/2020	5,736.21	36.38	31.79	5,772.59	4.59	16-46	51	47	WD
BM-15NE1	1/13/2020	5,730.67	33.53	31.03	5,764.20	2.50	17.5-42.5	45	42.5	WD
BM-15NE1	4/17/2020	5,730.58	33.62	31.12	5,764.20	2.50	17.5-42.5	45	42.5	WD
BM-15NE2	1/13/2020	5,730.03	31.58	29.96	5,761.61	1.62	19-39	42.8	39	WD
BM-15NE2	4/17/2020	5,730.04	31.57	29.95	5,761.61	1.62	19-39	42.8	39	WD
BM-15NW1	1/13/2020	5,753.22	19.34	18.02	5,772.56	1.32	12-22	47	43.8	WD
BM-15NW1	4/17/2020	5,753.07	19.49	18.17	5,772.56	1.32	12-22	47	43.8	WD
BM-15NW2	1/13/2020	5,752.82	20.35	17.05	5,773.17	3.30	22-32	34.5	NE, >34.5	WD
BM-15NW2	4/17/2020	5,752.43	20.74	17.44	5,773.17	3.30	22-32	34.5	NE, >34.5	WD
BM-15X-100S	1/13/2020	5,739.24	36.61	34.11	5,775.85	2.50	18.5-52.5	55	52.6	WD
BM-15X-100S	4/17/2020	5,738.81	37.04	34.54	5,775.85	2.50	18.5-52.5	55	52.6	WD
BM-15X-125S	1/13/2020	5,739.86	36.89	34.8	5,776.75	2.09	19-50	55	49.9	WD
BM-15X-125S	4/17/2020	5,739.57	37.18	35.09	5,776.75	2.09	19-50	55	49.9	WD
BM-15X-150S	1/13/2020	5,740.58	37.06	34.56	5,777.64	2.50	20-50	54	50	WD
BM-15X-150S	4/17/2020	5,740.37	37.27	34.77	5,777.64	2.50	20-50	54	50	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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	1/13/2020	5,742.75	36.2	34.11	5,778.95	2.09	19-50	53	49.9	WD
BM-15X-175S	4/17/2020	5,742.58	36.37	34.28	5,778.95	2.09	19-50	53	49.9	WD
BM-15X-200S	1/13/2020	5,743.99	36.33	33.85	5,780.32	2.48	19.5-51.5	54.5	51.5	WD
BM-15X-200S	4/17/2020	5,744.09	36.23	33.75	5,780.32	2.48	19.5-51.5	54.5	51.5	WD
BM-15X-37.5S	1/13/2020	5,735.99	38.53	35.91	5,774.52	2.62	25-55	60	55	WD
BM-15X-37.5S	4/17/2020	5,735.27	39.25	36.63	5,774.52	2.62	25-55	60	55	WD
BM-15X-50S	1/13/2020	5,737.78	36.83	34.33	5,774.61	2.50	19-51	54	51.4	WD
BM-15X-50S	4/17/2020	5,737.13	37.48	34.98	5,774.61	2.50	19-51	54	51.4	WD
BM-15X-75S	1/13/2020	5,738.76	35.58	33.88	5,774.34	1.70	19-51	55	51	WD
BM-15X-75S	4/17/2020	5,738.33	36.01	34.31	5,774.34	1.70	19-51	55	51	WD
BM-4I-100N	1/9/2020	5,793.77	42.62	39.87	5,836.39	2.75	34-54	60	53.7	WD
BM-4I-100N	4/15/2020	5,793.57	42.82	40.07	5,836.39	2.75	34-54	60	53.7	WD
BM-4I-100S	1/9/2020	5,793.99	42.57	40.21	5,836.56	2.36	34-49	55	48.6	WD
BM-4I-100S	4/15/2020	5,793.90	42.66	40.3	5,836.56	2.36	34-49	55	48.6	WD
BM-4I-10S	1/9/2020	5,794.01	42.35	40.09	5,836.36	2.26	34-54	59.5	53.5	WD
BM-4I-10S	4/15/2020	5,793.92	42.44	40.18	5,836.36	2.26	34-54	59.5	53.5	WD
BM-4I-50N	1/9/2020	5,794.02	41.95	39.25	5,835.97	2.70	32-47	52.5	46.8	WD
BM-4I-50N	4/15/2020	5,793.87	42.1	39.4	5,835.97	2.70	32-47	52.5	46.8	WD
BM-4I-50S	1/9/2020	5,793.93	43.4	40.37	5,837.33	3.03	30.5-50.5	56	50.2	WD
BM-4I-50S	4/15/2020	5,793.83	43.5	40.47	5,837.33	3.03	30.5-50.5	56	50.2	WD
BM-4X-100N	1/9/2020	5,794.19	41.9	39.18	5,836.09	2.72	31-51	54	50.6	WD
BM-4X-100N	4/15/2020	5,794.12	41.97	39.25	5,836.09	2.72	31-51	54	50.6	WD
BM-4X-100S	1/9/2020	5,793.66	43.02	41.01	5,836.68	2.01	34-49	53	48.7	WD
BM-4X-100S	4/15/2020	5,793.55	43.13	41.12	5,836.68	2.01	34-49	53	48.7	WD
BM-4X-10S	1/9/2020	5,793.98	42.79	40.32	5,836.77	2.47	33.5-56.5	59	56.3	WD
BM-4X-10S	4/15/2020	5,793.82	42.95	40.48	5,836.77	2.47	33.5-56.5	59	56.3	WD
BM-4X-40S	1/9/2020	5,786.21	50.46	48.09	5,836.67	2.37	68-83	87	52	UNWD
BM-4X-40S	4/15/2020	5,785.87	50.8	48.43	5,836.67	2.37	68-83	87	52	UNWD
BM-4X-50N	1/9/2020	5,793.99	42.46	39.64	5,836.45	2.82	34-49	54	49	WD
BM-4X-50N	4/15/2020	5,793.80	42.65	39.83	5,836.45	2.82	34-49	54	49	WD
BM-4X-50S	1/9/2020	5,794.22	42.9	40.28	5,837.12	2.62	32.5-52.5	55	52.5	WD
BM-4X-50S	4/15/2020	5,794.09	43.03	40.41	5,837.12	2.62	32.5-52.5	55	52.5	WD
BW-PZ-1	1/6/2020	5,692.78	31.69	29.53	5,724.47	2.16	23-33	33	33	WD
BW-PZ-1	4/9/2020	5,692.80	31.67	29.51	5,724.47	2.16	23-33	33	33	WD
BW-PZ-1LC	1/6/2020	5,690.36	34.82	32.39	5,725.18	2.43	43-53	53	33	UNWD
BW-PZ-1LC	4/9/2020	5,690.57	34.61	32.18	5,725.18	2.43	43-53	53	33	UNWD
C-702P1	1/16/2020	5,687.98	42.4	40.02	5,730.38	2.38	196-201	237	31.5	UPPER DENVER
C-702P1	4/23/2020	5,688.20	42.18	39.8	5,730.38	2.38	196-201	237	31.5	UPPER DENVER
C-702P3	1/16/2020	5,711.96	17.41	15.14	5,729.37	2.27	90-100	102	60	UPPER DENVER
C-702P3	4/23/2020	5,711.95	17.42	15.15	5,729.37	2.27	90-100	102	60	UPPER DENVER
C-702P4	1/16/2020	5,714.30	15.57	13.5	5,729.87	2.07	47-52	53	NE, >37	UNWD
C-702P4	4/23/2020	5,714.18	15.69	13.62	5,729.87	2.07	47-52	53	NE, >37	UNWD
C-702Q1	1/16/2020	5,677.56	54.2	51.54	5,731.76	2.66	219-229	230	35	LIGNITE
C-702Q1	4/23/2020	5,677.85	53.91	51.25	5,731.76	2.66	219-229	230	35	LIGNITE
C-702Q3	1/16/2020	5,713.48	17.66	15.42	5,731.14	2.24	30-35	36	32.5	WD
C-702Q3	4/23/2020	5,713.61	17.53	15.29	5,731.14	2.24	30-35	36	32.5	WD
EAST CLEANOUT	1/17/2020	5,733.80	33.31	NA[g/]	5,767.11	--	--	--	--	NO GEOLOGIC LOG
EAST CLEANOUT	4/23/2020	5,733.83	33.28	NA	5,767.11	--	--	--	--	NO GEOLOGIC LOG
GW-101	1/13/2020	5,728.89	50.11	48.81	5,779.00	1.30	78.6-98.6	98.9	42	UNWD
GW-101	4/16/2020	5,729.03	49.97	48.67	5,779.00	1.30	78.6-98.6	98.9	42	UNWD
GW-101-DEN	1/13/2020	5,720.82	59.72	57.22	5,780.54	2.50	134 - 148.6	154	50	UPPER DENVER
GW-101-DEN	4/16/2020	5,721.02	59.52	57.02	5,780.54	2.50	134 - 148.6	154	50	UPPER DENVER
GW-103	1/9/2020	5,739.83	58.45	49.47	5,798.28	8.98	136-155.9	157	40	UPPER DENVER
GW-103	4/15/2020	5,739.92	58.36	49.38	5,798.28	8.98	136-155.9	157	40	UPPER DENVER
GW-104	1/9/2020	5,751.99	48.57	38.91	5,800.56	9.66	44.4-69.3	69.5	36.3	UNWD
GW-104	4/15/2020	5,751.95	48.61	38.95	5,800.56	9.66	44.4-69.3	69.5	36.3	UNWD

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WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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-106	1/6/2020	5,716.89	21.95	20.51	5,738.84	1.44	24.5-49.5	50.8	43	WD
GW-106	4/9/2020	5,717.01	21.83	20.39	5,738.84	1.44	24.5-49.5	50.8	43	WD
GW-106-DEN	1/6/2020	5,711.74	27.82	25.26	5,739.56	2.56	100.6 - 125	135	43	UPPER DENVER
GW-106-DEN	4/9/2020	5,711.74	27.82	25.26	5,739.56	2.56	100.6 - 125	135	43	UPPER DENVER
GW-106-LIG	1/6/2020	5,690.61	50.17	47.19	5,740.78	2.98	235-250	258	43.4	LIGNITE
GW-106-LIG	4/9/2020	5,690.74	50.04	47.06	5,740.78	2.98	235-250	258	43.4	LIGNITE
GW-107A	1/6/2020	5,698.50	27.89	26.4	5,726.39	1.49	15-35	59	32	WD
GW-107A	4/8/2020	5,698.83	27.56	26.07	5,726.39	1.49	15-35	59	32	WD
GW-107UD	1/6/2020	5,699.36	28.09	26.27	5,727.45	1.82	48.5-58.5	58.5	31.6	UNWD
GW-107UD	4/8/2020	5,699.43	28.02	26.2	5,727.45	1.82	48.5-58.5	58.5	31.6	UNWD
GW-107UDR	1/6/2020	5,669.74	57.55	55.26	5,727.29	2.29	47-62	64.5	34	UNWD
GW-107UDR	4/8/2020	5,671.27	56.02	53.73	5,727.29	2.29	47-62	64.5	34	UNWD
GW-108A	1/6/2020	5,690.16	42.33	39.64	5,732.49	2.69	52.6-87.6	99	42	UNWD
GW-108A	4/9/2020	5,690.49	42	39.31	5,732.49	2.69	52.6-87.6	99	42	UNWD
GW-109	1/6/2020	Dry	Dry	Dry	5,707.99	1.49	8.6-28.6	29	NE, >29	ALLUVIUM
GW-109	3/11/2020	5,680.00	27.99	26.5	5,707.99	1.49	8.6-28.6	29	NE, >29	ALLUVIUM
GW-109	4/8/2020	5,680.20	27.79	26.3	5,707.99	1.49	8.6-28.6	29	NE, >29	ALLUVIUM
GW-109	5/4/2020	5,680.46	27.53	26.04	5,707.99	1.49	8.6-28.6	29	NE, >29	ALLUVIUM
GW-112	1/16/2020	5,735.98	33.97	24.02	5,769.95	9.95	9.2-29.2	34.2	30.5	WD
GW-112	4/23/2020	5,735.38	34.57	24.62	5,769.95	9.95	9.2-29.2	34.2	30.5	WD
GW-113	1/16/2020	5,719.64	54.22	51.76	5,773.86	2.46	149.8-	175.5	38	UPPER DENVER
GW-113	4/23/2020	5,719.85	54.01	51.55	5,773.86	2.46	149.8-	175.5	38	UPPER DENVER
GW-114A	1/6/2020	5,695.85	36.45	34.45	5,732.30	2.00	29.5-39.5	40	NE, >40	WD
GW-114A	4/9/2020	5,695.82	36.48	34.48	5,732.30	2.00	29.5-39.5	40	NE, >40	WD
GW-120	1/16/2020	5,680.43	110.56	102.37	5,790.99	8.19	287.8-	310	65	LIGNITE
GW-120	4/23/2020	5,681.92	109.07	100.88	5,790.99	8.19	287.8-	310	65	LIGNITE
GW-121	1/16/2020	5,681.24	93.45	91.46	5,774.69	1.99	266.7-	298	32	LIGNITE
GW-121	4/23/2020	5,682.00	92.69	90.7	5,774.69	1.99	266.7-	298	32	LIGNITE
GW-122	1/13/2020	5,681.41	143.85	140.19	5,825.26	3.66	312.8-	343	84	LIGNITE
GW-122	4/17/2020	5,682.10	143.16	139.5	5,825.26	3.66	312.8-	343	84	LIGNITE
GW-POA1	1/16/2020	5,751.20	33.39	31	5,784.59	2.39	21.1-41.1	43.75	41.1	WD
GW-POA1	4/20/2020	5,751.13	33.46	31.07	5,784.59	2.39	21.1-41.1	43.75	41.1	WD
GW-POA-1N	1/16/2020	5,751.74	25.83	23.65	5,777.57	2.18	19.5-32	35	32.5	WD
GW-POA-1N	4/20/2020	5,751.74	25.83	23.65	5,777.57	2.18	19.5-32	35	32.5	WD
GW-POA-1NE	1/16/2020	5,749.56	23.52	20.88	5,773.08	2.08	17-32	34.5	32.6	WD
GW-POA-1NE	4/20/2020	5,749.28	23.8	21.16	5,773.08	2.08	17-32	34.5	32.6	WD
GW-POA2	1/16/2020	5,747.80	33.9	31.9	5,781.70	2.00	17.3-37.3	40.7	37.3	WD
GW-POA2	4/23/2020	5,747.79	33.91	31.91	5,781.70	2.00	17.3-37.3	40.7	37.3	WD
GW-POA3	1/16/2020	Dry	Dry	Dry	5,752.77	2.77	14.7-29.7	33	29.7	WD
GW-POA3	4/23/2020	Dry	Dry	Dry	5,752.77	2.77	14.7-29.7	33	29.7	WD
GW-POA4	1/16/2020	5,716.35	26.19	23.45	5,742.54	2.74	13.2-38.2	41.2	38.2	WD
GW-POA4	4/23/2020	5,716.09	26.45	23.71	5,742.54	2.74	13.2-38.2	41.2	38.2	WD
MNA-01	1/16/2020	5,737.79	23.86	21.11	5,761.65	2.75	15-35	37	33	WD
MNA-01	4/23/2020	5,737.52	24.13	21.38	5,761.65	2.75	15-35	37	33	WD
MNA-02	1/16/2020	5,739.39	19.94	17.41	5,759.33	2.53	12-32	34	32	WD
MNA-02	4/23/2020	5,739.06	20.27	17.74	5,759.33	2.53	12-32	34	32	WD
MNA-03	1/16/2020	5,739.77	18.26	15.53	5,758.03	2.73	10-35	37	35	WD
MNA-03	4/23/2020	5,739.49	18.54	15.81	5,758.03	2.73	10-35	37	35	WD
MNA-04	1/16/2020	5,739.49	17.14	14.41	5,756.63	2.73	14-34	39	34	WD
MNA-04	4/23/2020	5,739.24	17.39	14.66	5,756.63	2.73	14-34	39	34	WD
MNA-05	1/16/2020	5,738.68	16	13.72	5,754.68	2.28	9-34	37	34	WD
MNA-05	4/23/2020	5,738.39	16.29	14.01	5,754.68	2.28	9-34	37	34	WD
MNA-06	1/16/2020	5,743.24	22.15	19.46	5,765.39	2.69	13-28	30	28	WD
MNA-06	4/23/2020	5,742.66	22.73	20.04	5,765.39	2.69	13-28	30	28	WD
MNA-07	1/16/2020	5,743.16	21.9	19.44	5,765.06	2.46	17-37	39	37	WD
MNA-07	4/23/2020	5,743.08	21.98	19.52	5,765.06	2.46	17-37	39	37	WD
MNA-08	1/16/2020	5,723.18	16.47	14.12	5,739.65	2.35	12-32	34	32	WD
MNA-08	4/23/2020	5,722.97	16.68	14.33	5,739.65	2.35	12-32	34	32	WD

TABLE 4.2
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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/]
MNA-09	1/17/2020	5,717.61	15.83	12.99	5,733.44	2.84	8.5-38.5	41.5	38.5	WD
MNA-09	4/23/2020	5,717.52	15.92	13.08	5,733.44	2.84	8.5-38.5	41.5	38.5	WD
MNA-10	1/16/2020	5,713.88	14.07	11.32	5,727.95	2.75	9-34	39	34	WD
MNA-10	4/23/2020	5,713.73	14.22	11.47	5,727.95	2.75	9-34	39	34	WD
MNA-11	1/16/2020	5,707.30	17.42	14.4	5,724.72	3.02	9.5-29.5	33	29.5	WD
MNA-11	4/23/2020	5,707.14	17.58	14.56	5,724.72	3.02	9.5-29.5	33	29.5	WD
MNA-12	1/16/2020	5,704.86	15.03	12.44	5,719.89	2.59	8.5-28.5	31	28.5	WD
MNA-12	4/23/2020	5,704.69	15.2	12.61	5,719.89	2.59	8.5-28.5	31	28.5	WD
MNA-13	1/16/2020	5,699.12	17.89	15.78	5,717.01	2.11	10-25	29	25	WD
MNA-13	4/23/2020	5,699.17	17.84	15.73	5,717.01	2.11	10-25	29	25	WD
MPZ-1	1/16/2020	Dry	Dry	Dry	5,722.55	2.08	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-1	4/23/2020	Dry	Dry	Dry	5,722.55	2.08	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-10R	1/17/2020	5,728.29	34.36	33.31	5,762.65	1.05	15-35	37	NE, >	FILL
MPZ-10R	4/23/2020	5,727.45	35.2	34.15	5,762.65	1.05	15-35	37	NE, >	FILL
MPZ-11	1/17/2020	5,733.65	32.78	29	5,766.43	3.78	11-36	36	NE	FILL
MPZ-11	4/23/2020	5,733.68	32.75	28.97	5,766.43	3.78	11-36	36	NE	FILL
MPZ-12	1/16/2020	5,739.09	24	21.21	5,763.09	2.79	7-32	35	NE, >35	ALLUVIUM
MPZ-12	4/23/2020	5,738.90	24.19	21.4	5,763.09	2.79	7-32	35	NE, >35	ALLUVIUM
MPZ-13	1/16/2020	5,739.08	24.27	22.02	5,763.35	2.25	7.3-32.3	35	NE, >35	WD
MPZ-13	4/23/2020	5,738.72	24.63	22.38	5,763.35	2.25	7.3-32.3	35	NE, >35	WD
MPZ-2	1/16/2020	5,712.37	13.25	11.14	5,725.62	2.11	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-2	4/23/2020	5,712.19	13.43	11.32	5,725.62	2.11	3.2-13.2	13.5	NE, >13.5	ALLUVIUM
MPZ-3	1/16/2020	5,717.01	14.41	12.65	5,731.42	1.76	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-3	4/23/2020	5,716.95	14.47	12.71	5,731.42	1.76	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-4	1/16/2020	5,723.92	14.78	13.01	5,738.70	1.77	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-4	4/23/2020	Dry	Dry	Dry	5,738.70	1.77	3.5-13.5	13.5	NE, >13.5	ALLUVIUM
MPZ-5	1/16/2020	Dry	Dry	Dry	5,744.26	1.63	3.7-13.65	13.65	NE, >13.5	ALLUVIUM
MPZ-5	4/23/2020	Dry	Dry	Dry	5,744.26	1.63	3.7-13.65	13.65	NE, >13.5	ALLUVIUM
MPZ-6	1/16/2020	Dry	Dry	Dry	5,749.51	1.95	3.3-13.3	13.5	NE, >13.5	ALLUVIUM
MPZ-6	4/23/2020	Dry	Dry	Dry	5,749.51	1.95	3.3-13.3	13.5	NE, >13.5	ALLUVIUM
MPZ-7	1/16/2020	Dry	Dry	Dry	5,756.19	1.45	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-7	4/23/2020	Dry	Dry	Dry	5,756.19	1.45	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-8	1/16/2020	Dry	Dry	Dry	5,771.19	8.87	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-8	4/23/2020	Dry	Dry	Dry	5,771.19	8.87	3.4-13.4	13.5	NE, >13.5	ALLUVIUM
MPZ-9	1/16/2020	Dry	Dry	Dry	5,769.92	6.30	3.5-13.5	13.54	NE, >13.5	ALLUVIUM
MPZ-9	4/23/2020	Dry	Dry	Dry	5,769.92	6.30	3.5-13.5	13.54	NE, >13.5	ALLUVIUM
MW-1	1/8/2020	5,744.76	72.41	70.34	5,817.17	2.07	106-156	156	45	UNWD
MW-1	4/15/2020	5,744.98	72.19	70.12	5,817.17	2.07	106-156	156	45	UNWD
MW-1000	1/6/2020	Dry	Dry	Dry	5,717.68	2.34	18-28	28	26.5	WD
MW-1000	4/9/2020	5,687.63	30.05	27.71	5,717.68	2.34	18-28	28	26.5	WD
MW-1000LC	1/6/2020	5,688.11	29.26	26.83	5,717.37	2.43	37.5-47.5	47.5	26.5	UNWD
MW-1000LC	4/9/2020	5,688.35	29.02	26.59	5,717.37	2.43	37.5-47.5	47.5	26.5	UNWD
MW100-WD	1/8/2020	5,700.76	26.81	24.24	5,727.57	2.57	30-35	38.5	35	WD
MW100-WD	4/9/2020	5,700.95	26.62	24.05	5,727.57	2.57	30-35	38.5	35	WD
MW101-WD	1/8/2020	5,697.75	23.94	21.55	5,721.69	2.39	22.5-32.5	34	32	WD
MW101-WD	4/9/2020	5,697.91	23.78	21.39	5,721.69	2.39	22.5-32.5	34	32	WD
MW102-WD	1/8/2020	5,696.12	27.03	24.68	5,723.15	2.35	24-36	38.5	36	WD
MW102-WD	4/9/2020	5,696.05	27.1	24.75	5,723.15	2.35	24-36	38.5	36	WD
MW103-WD	1/8/2020	5,692.98	26.5	24.07	5,719.48	2.43	21.7 - 36.7	39	37	WD
MW103-WD	4/9/2020	5,693.11	26.37	23.94	5,719.48	2.43	21.7 - 36.7	39	37	WD
MW104-WD	1/8/2020	5,686.44	22.66	19.43	5,709.10	3.23	13.7 - 33.7	36	33.7	WD
MW104-WD	4/9/2020	5,686.62	22.48	19.25	5,709.10	3.23	13.7 - 33.7	36	33.7	WD
MW105-WD	1/13/2020	5,722.58	22.29	19.83	5,744.87	2.46	22 - 32	34.3	32	WD
MW105-WD	4/17/2020	5,722.83	22.04	19.58	5,744.87	2.46	22 - 32	34.3	32	WD
MW106-UD	1/13/2020	5,751.46	34.82	32.09	5,786.28	2.73	41 - 51	54	36	UNWD
MW106-UD	4/16/2020	5,751.32	34.96	32.23	5,786.28	2.73	41 - 51	54	36	UNWD
MW107-UD	1/13/2020	5,751.62	54.13	51.93	5,805.75	2.20	61.9 - 76.9	79.3	47	UNWD
MW107-UD	4/16/2020	5,751.65	54.1	51.9	5,805.75	2.20	61.9 - 76.9	79.3	47	UNWD

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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/]
MW107-WD	1/13/2020	5,766.26	39.69	37.28	5,805.95	2.41	36 - 46	48.5	45	WD
MW107-WD	4/16/2020	5,766.12	39.83	37.42	5,805.95	2.41	36 - 46	48.5	45	WD
MW108-WD	1/9/2020	5,808.92	17.3	14.78	5,826.22	2.52	30 - 45	50	47.5	WD
MW108-WD	4/15/2020	5,808.47	17.75	15.23	5,826.22	2.52	30 - 45	50	47.5	WD
MW109-WD	1/9/2020	5,794.08	40.19	38.47	5,834.27	1.72	36 - 51	54	50.8	WD
MW109-WD	4/14/2020	5,793.87	40.4	38.68	5,834.27	1.72	36 - 51	54	50.8	WD
MW110-WD	1/9/2020	5,783.11	47.22	44.7	5,830.33	2.52	41.5 - 56.5	58.8	56.5	WD
MW110-WD	4/14/2020	5,782.69	47.64	45.12	5,830.33	2.52	41.5 - 56.5	58.8	56.5	WD
MW111-UD	1/9/2020	5,766.71	50.1	47.89	5,816.81	2.21	69 - 74	79.5	61	UNWD
MW111-UD	4/14/2020	5,766.81	50	47.79	5,816.81	2.21	69 - 74	79.5	61	UNWD
MW112-DEN	1/9/2020	5,737.46	105.55	103.06	5,843.01	2.49	174.6 - 204	209	50	UPPER DENVER
MW112-DEN	4/15/2020	5,737.58	105.43	102.94	5,843.01	2.49	174.6 - 204	209	50	UPPER DENVER
MW112-UD	1/9/2020	5,792.17	50.18	47.63	5,842.35	2.55	60 - 75	79	49	UNWD
MW112-UD	4/15/2020	5,791.90	50.45	47.9	5,842.35	2.55	60 - 75	79	49	UNWD
MW112-WD	1/9/2020	5,807.15	35.44	32.92	5,842.59	2.52	28.5 - 48.5	51	48.5	WD
MW112-WD	4/15/2020	5,807.47	35.12	32.6	5,842.59	2.52	28.5 - 48.5	51	48.5	WD
MW113-EW-1	1/6/2020	5,678.75	34.52	31.55	5,713.27	2.97	20-50	55.3	46	WD
MW113-EW-1	4/9/2020	5,680.06	33.21	30.24	5,713.27	2.97	20-50	55.3	46	WD
MW113-LD	1/6/2020	5,682.47	29.88	27.53	5,712.35	2.35	77.2-97.2	100	35.1	UNWD
MW113-LD	3/11/2020	5,683.11	29.24	26.89	5,712.35	2.35	77.2-97.2	100	35.1	UNWD
MW113-LD	4/8/2020	5,683.40	28.95	26.6	5,712.35	2.35	77.2-97.2	100	35.1	UNWD
MW113-LD	5/4/2020	5,683.76	28.59	26.24	5,712.35	2.35	77.2-97.2	100	35.1	UNWD
MW113-UD	1/6/2020	5,631.73	80.55	78.27	5,712.28	2.28	59-79	84	51.7	UNWD
MW113-UD	4/9/2020	5,631.73	80.55	78.27	5,712.28	2.28	59-79	84	51.7	UNWD
MW113-WD	1/6/2020	5,678.77	34.67	31.13	5,713.44	3.54	20-50	55	51.7	WD
MW113-WD	3/11/2020	5,679.77	33.67	30.13	5,713.44	3.54	20-50	55	51.7	WD
MW113-WD	4/8/2020	5,679.96	33.48	29.94	5,713.44	3.54	20-50	55	51.7	WD
MW113-WD	5/4/2020	5,680.22	33.22	29.68	5,713.44	3.54	20-50	55	51.7	WD
MW114-WD	1/8/2020	5,688.61	24.73	21.89	5,713.34	3.00	22-32	38	32	WD
MW114-WD	4/9/2020	5,688.82	24.52	21.68	5,713.34	3.00	22-32	38	32	WD
MW115-UD	1/8/2020	5,687.24	15.11	12.58	5,702.35	2.53	46.6-56.6	--	24	UNWD
MW115-UD	4/9/2020	5,687.47	14.88	12.35	5,702.35	2.53	46.6-56.6	--	24	UNWD
MW115-WD	1/8/2020	5,687.02	21.35	14.01	5,708.37	2.25	11.3-26.3	30	26.3	WD
MW115-WD	4/9/2020	5,687.32	21.05	13.71	5,708.37	2.25	11.3-26.3	30	26.3	WD
MW116-WD	1/8/2020	5,687.18	27.29	24.64	5,714.47	2.65	24.9-39.9	45	39.9	WD
MW116-WD	4/9/2020	5,687.44	27.03	24.38	5,714.47	2.65	24.9-39.9	45	39.9	WD
MW117-WD	1/8/2020	5,685.67	14.65	12.23	5,700.32	2.42	10.5-30.5	33	30.5	WD
MW117-WD	4/9/2020	5,685.93	14.39	11.97	5,700.32	2.42	10.5-30.5	33	30.5	WD
MW118-UD	1/8/2020	5,687.11	18.05	15.49	5,705.16	2.56	62-77	80	34.9	UNWD
MW118-UD	4/9/2020	5,687.28	17.88	15.32	5,705.16	2.56	62-77	80	34.9	UNWD
MW118-WD	1/8/2020	5,684.84	20.5	17.9	5,705.34	2.60	20.1-35.1	37.5	35.1	WD
MW118-WD	4/9/2020	5,685.11	20.23	17.63	5,705.34	2.60	20.1-35.1	37.5	35.1	WD
MW119-WD	1/8/2020	5,687.57	16.66	14.83	5,704.23	1.83	18-28	31.5	29	WD
MW119-WD	4/9/2020	5,687.78	16.45	14.62	5,704.23	1.83	18-28	31.5	29	WD
MW120-WD	1/8/2020	5,686.42	15.75	13.48	5,702.17	2.27	18-28	32	30	WD
MW120-WD	4/9/2020	5,686.63	15.54	13.27	5,702.17	2.27	18-28	32	30	WD
MW121-WDR	1/10/2020	5,652.11	23.31	20.79	5,675.42	2.52	23.5-33.5	36	36.5	WD
MW121-WDR	4/22/2020	5,652.61	22.81	20.29	5,675.42	2.52	23.5-33.5	36	36.5	WD
MW122-WDR	1/10/2020	5,652.28	20.35	17.72	5,672.63	2.63	20.5-30.5	36	33	WD
MW122-WDR	4/22/2020	5,652.85	19.78	17.15	5,672.63	2.63	20.5-30.5	36	33	WD
MW123-WD	1/10/2020	5,652.64	19.4	16.66	5,672.04	2.74	22-32	36	33	WD
MW123-WD	4/22/2020	5,653.40	18.64	15.9	5,672.04	2.74	22-32	36	33	WD
MW124-WD	1/10/2020	5,653.04	18.99	16.76	5,672.03	2.23	23-33	39	34.5	WD
MW124-WD	4/22/2020	5,653.99	18.04	15.81	5,672.03	2.23	23-33	39	34.5	WD
MW125-WD	1/10/2020	5,653.89	19.01	15.81	5,672.90	3.20	22-32	37	36	WD
MW125-WD	4/22/2020	5,655.10	17.8	14.6	5,672.90	3.20	22-32	37	36	WD
MW126-WD	1/10/2020	5,654.63	18.52	15.57	5,673.15	2.95	20-30	34	33	WD
MW126-WD	4/22/2020	5,655.71	17.44	14.49	5,673.15	2.95	20-30	34	33	WD

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MW127-WD	1/10/2020	5,655.21	17.15	14.79	5,672.36	2.36	20-30	34	32.5	WD
MW127-WD	4/22/2020	5,656.08	16.28	13.92	5,672.36	2.36	20-30	34	32.5	WD
MW129-WD	1/10/2020	5,649.73	21.38	19.07	5,671.11	2.31	20.8-30.5	34	31	WD
MW129-WD	4/22/2020	5,649.99	21.12	18.81	5,671.11	2.31	20.8-30.5	34	31	WD
MW130-WD	1/10/2020	5,649.50	23.53	21.3	5,673.03	2.23	21.3-31	37.5	32.4	WD
MW130-WD	4/22/2020	5,649.73	23.3	21.07	5,673.03	2.23	21.3-31	37.5	32.4	WD
MW131-WD	1/10/2020	5,649.33	26.92	24.97	5,676.25	1.95	23.3-33	36	34.3	WD
MW131-WD	4/22/2020	5,649.56	26.69	24.74	5,676.25	1.95	23.3-33	36	34.3	WD
MW132-WD	1/10/2020	5,674.69	3.95	1.61	5,678.64	2.34	4-14	24	21.5	WD
MW132-WD	4/22/2020	5,674.80	3.84	1.5	5,678.64	2.34	4-14	24	21.5	WD
MW133-WD	1/10/2020	5,636.40	12.2	12.1	5,648.60	0.10	14-24	27	24.5	WD
MW133-WD	4/22/2020	5,636.65	11.95	11.85	5,648.60	0.10	14-24	27	24.5	WD
MW134-WD	1/10/2020	5,637.96	18.61	16.14	5,656.57	2.47	15-30	33	30.5	WD
MW134-WD	4/22/2020	5,638.24	18.33	15.86	5,656.57	2.47	15-30	33	30.5	WD
MW135-WD	1/10/2020	5,639.31	18.72	19.14	5,658.03	-0.42	18-38	41.5	39	WD
MW135-WD	4/22/2020	5,639.60	18.43	18.85	5,658.03	-0.42	18-38	41.5	39	WD
MW136-WD	1/10/2020	5,638.97	20.33	20.73	5,659.30	-0.40	21-46	49	46.5	WD
MW136-WD	4/22/2020	5,639.29	20.01	20.41	5,659.30	-0.40	21-46	49	46.5	WD
MW137-WD	1/10/2020	5,638.72	16.16	16.54	5,654.88	-0.38	21-41	44	39.5	WD
MW137-WD	4/22/2020	5,639.00	15.88	16.26	5,654.88	-0.38	21-41	44	39.5	WD
MW138-WD	1/10/2020	5,638.49	15.31	15.61	5,653.80	-0.30	19-39	43	39.5	WD
MW138-WD	4/22/2020	5,638.82	14.98	15.28	5,653.80	-0.30	19-39	43	39.5	WD
MW139-WD	1/10/2020	5,638.92	10.78	10.98	5,649.70	-0.20	17-37	44	39.8	WD
MW139-WD	4/22/2020	5,639.28	10.42	10.62	5,649.70	-0.20	17-37	44	39.8	WD
MW140-WD	1/10/2020	5,607.16	18.41	18.74	5,625.57	-0.33	21-36	44	42.5	WD
MW140-WD	4/22/2020	5,607.48	18.09	18.42	5,625.57	-0.33	21-36	44	42.5	WD
MW141-UDEN	1/10/2020	5,604.79	18.73	19.19	5,623.52	-0.46	57-77	79	37.5	UNWEATHERED DENVER
MW141-UDEN	4/22/2020	5,605.16	18.36	18.82	5,623.52	-0.46	57-77	79	37.5	UNWEATHERED DENVER
MW141-WD	1/10/2020	5,606.96	17.77	18.04	5,624.73	-0.27	21-31	44	42	WD
MW141-WD	4/22/2020	5,607.28	17.45	17.72	5,624.73	-0.27	21-31	44	42	WD
MW142-WD	1/10/2020	5,589.99	8.61	9.01	5,598.60	-0.40	10-20	34	33.5	WD
MW142-WD	4/22/2020	5,589.79	8.81	9.21	5,598.60	-0.40	10-20	34	33.5	WD
MW144-WD	1/10/2020	5,567.92	14.45	14.62	5,582.37	-0.17	16.5-31.5	36	35.5	WD
MW144-WD	4/22/2020	5,568.10	14.27	14.44	5,582.37	-0.17	16.5-31.5	36	35.5	WD
MW145-WD	1/10/2020	5,567.94	11.9	12.17	5,579.84	-0.27	13-38	40.9	38	WD
MW145-WD	4/22/2020	5,568.13	11.71	11.98	5,579.84	-0.27	13-38	40.9	38	WD
MW151-WD	1/10/2020	5,661.32	18.18	15.68	5,679.50	2.50	17-27	39	36.6	WD
MW151-WD	4/22/2020	5,662.29	17.21	14.71	5,679.50	2.50	17-27	39	36.6	WD
MW153-EW-1	1/8/2020	5,661.77	12.62	10.43	5,674.39	2.19	13-23	29.5	28.7	WD
MW153-EW-1	4/22/2020	5,662.47	11.92	9.73	5,674.39	2.19	13-23	29.5	28.7	WD
MW153-WD	1/10/2020	5,661.83	11.4	8.97	5,673.23	2.43	10-20	32	29.7	WD
MW153-WD	4/22/2020	5,662.66	10.57	8.14	5,673.23	2.43	10-20	32	29.7	WD
MW154-EW-1	1/8/2020	5,662.05	12.42	10.25	5,674.47	2.17	11.5-21.5	28	--	WD
MW154-EW-1	4/22/2020	5,663.00	11.47	9.3	5,674.47	2.17	11.5-21.5	28	--	WD
MW154-WD	1/10/2020	5,662.05	11.66	9.45	5,673.71	2.21	7-22	32	28.5	WD
MW154-WD	4/22/2020	5,663.01	10.7	8.49	5,673.71	2.21	7-22	32	28.5	WD
MW155-EW-1	1/8/2020	5,662.07	12.25	9.83	5,674.32	2.42	9.5-19.5	25	--	WD
MW155-EW-1	4/22/2020	5,663.16	11.16	8.74	5,674.32	2.42	9.5-19.5	25	--	WD
MW155-WD	1/10/2020	5,661.99	12.45	8.91	5,674.44	3.54	9-19	34	32.3	WD
MW155-WD	4/22/2020	5,663.05	11.39	7.85	5,674.44	3.54	9-19	34	32.3	WD
MW156-EW-1	1/10/2020	5,662.05	11.3	8.85	5,673.35	2.45	11-21	29	--	WD
MW156-EW-1	4/22/2020	5,663.36	9.99	7.54	5,673.35	2.45	11-21	29	--	WD
MW156-WD	1/10/2020	5,661.66	11.14	8.74	5,672.80	2.40	14-24	34	33	WD
MW156-WD	4/22/2020	5,663.11	9.69	7.29	5,672.80	2.40	14-24	34	33	WD
MW157-WD	1/10/2020	5,661.36	11.22	8.94	5,672.58	2.28	14-24	33.3	31.5	WD
MW157-WD	4/22/2020	5,663.03	9.55	7.27	5,672.58	2.28	14-24	33.3	31.5	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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/]
MW158-WD	1/10/2020	5,660.17	13.09	10.83	5,673.26	2.26	15-25	39	34	WD
MW158-WD	4/22/2020	5,662.12	11.14	8.88	5,673.26	2.26	15-25	39	34	WD
MW160-WD	1/8/2020	Dry	Dry	Dry	5,690.47	4.17	15-30	36	31	WD
MW160-WD	4/22/2020	Dry	Dry	Dry	5,690.47	4.17	15-30	36	31	WD
MW170-EW-1	1/6/2020	5,676.31	55.49	53.87	5,731.80	1.62	25-60	65	60	WD
MW170-EW-1	4/8/2020	5,676.35	55.45	53.83	5,731.80	1.62	25-60	65	60	WD
MW170-WD	1/6/2020	5,685.68	44.23	44.33	5,729.91	-0.10	20-55	58	55.5	WD
MW170-WD	3/11/2020	5,685.69	44.22	44.32	5,729.91	-0.10	20-55	58	55.5	WD
MW170-WD	4/8/2020	5,685.95	43.96	44.06	5,729.91	-0.10	20-55	58	55.5	WD
MW170-WD	5/4/2020	5,685.99	43.92	44.02	5,729.91	-0.10	20-55	58	55.5	WD
MW171-WD	1/6/2020	5,700.19	30.49	28.09	5,730.68	2.40	17.5-32.5	35	32.5	WD
MW171-WD	3/11/2020	5,700.15	30.53	28.13	5,730.68	2.40	17.5-32.5	35	32.5	WD
MW171-WD	4/8/2020	5,703.05	27.63	25.23	5,730.68	2.40	17.5-32.5	35	32.5	WD
MW171-WD	5/4/2020	5,701.88	28.8	26.4	5,730.68	2.40	17.5-32.5	35	32.5	WD
MW172-WD	1/6/2020	5,699.68	30.81	28.69	5,730.49	2.12	18-38	43	38	WD
MW172-WD	3/11/2020	5,699.78	30.71	28.59	5,730.49	2.12	18-38	43	38	WD
MW172-WD	4/8/2020	5,699.97	30.52	28.4	5,730.49	2.12	18-38	43	38	WD
MW172-WD	5/4/2020	5,699.96	30.53	28.41	5,730.49	2.12	18-38	43	38	WD
MW173-WD	1/6/2020	5,701.13	29.66	27.41	5,730.79	2.25	18-33	38	35.5	WD
MW173-WD	3/11/2020	5,701.20	29.59	27.34	5,730.79	2.25	18-33	38	35.5	WD
MW173-WD	4/8/2020	5,701.38	29.41	27.16	5,730.79	2.25	18-33	38	35.5	WD
MW173-WD	5/4/2020	5,701.37	29.42	27.17	5,730.79	2.25	18-33	38	35.5	WD
MW174-WD	1/6/2020	5,701.69	31.86	29.19	5,733.55	2.67	20.7-35.7	38	36	WD
MW174-WD	3/11/2020	5,701.76	31.79	29.12	5,733.55	2.67	20.7-35.7	38	36	WD
MW174-WD	4/8/2020	5,701.87	31.68	29.01	5,733.55	2.67	20.7-35.7	38	36	WD
MW174-WD	5/4/2020	5,701.93	31.62	28.95	5,733.55	2.67	20.7-35.7	38	36	WD
MW175-WD	1/6/2020	5,687.60	45.81	43.26	5,733.41	2.55	25.5-45.5	49	46	WD
MW175-WD	3/11/2020	5,687.54	45.87	43.32	5,733.41	2.55	25.5-45.5	49	46	WD
MW175-WD	4/8/2020	5,687.95	45.46	42.91	5,733.41	2.55	25.5-45.5	49	46	WD
MW175-WD	5/4/2020	5,687.94	45.47	42.92	5,733.41	2.55	25.5-45.5	49	46	WD
MW176-DEN	1/10/2020	5,558.01	16.12	16.45	5,574.13	-0.23	12-52	55	55	Upper Denver
MW176-DEN	4/22/2020	5,558.31	15.82	16.15	5,574.13	-0.23	12-52	55	55	Upper Denver
MW176-UDEN	1/10/2020	5,557.97	17.25	17.78	5,575.22	-0.53	74-94	109	51	UNWEATHERED
MW176-UDEN	4/22/2020	5,558.24	16.98	17.51	5,575.22	-0.53	74-94	109	51	UNWEATHERED
MW177-DEN	1/10/2020	5,568.69	13.51	13.95	5,582.20	-0.44	17.5-27.5	33	27.5	UPPER DENVER
MW177-DEN	4/22/2020	5,569.00	13.2	13.64	5,582.20	-0.44	17.5-27.5	33	27.5	UPPER DENVER
MW177-UDEN	1/10/2020	5,563.20	18.72	19.09	5,581.92	-0.37	47-62	69	27.5	UNWEATHERED
MW177-UDEN	4/22/2020	5,563.75	18.17	18.54	5,581.92	-0.37	47-62	69	27.5	UNWEATHERED
MW178-DEN	1/10/2020	5,559.54	17.95	18.31	5,577.49	-0.36	16-36	43	36	UPPER DENVER
MW178-DEN	4/22/2020	5,559.99	17.5	17.86	5,577.49	-0.36	16-36	43	36	UPPER DENVER
MW178-UDEN	1/10/2020	5,536.44	40.2	41.05	5,576.64	-0.85	67-97	99	36.5	UNWEATHERED
MW178-UDEN	4/22/2020	5,536.62	40.02	40.87	5,576.64	-0.85	67-97	99	36.5	UNWEATHERED
MW179-UDEN	1/10/2020	5,649.24	22.62	20.86	5,671.86	1.85	56-81	84	29	UNWEATHERED
MW179-UDEN	4/22/2020	5,649.48	22.38	20.62	5,671.86	1.85	56-81	84	29	UNWEATHERED
MW180-WD	1/10/2020	5,678.00	16.84	14.7	5,694.84	2.14	17-27	30	27	WD
MW180-WD	4/22/2020	5,678.27	16.57	14.43	5,694.84	2.14	17-27	30	27	WD
MW-2	1/8/2020	5,758.13	78.44	76.47	5,836.57	1.97	64-119	142	60	UNWD
MW-2	4/15/2020	5,758.12	78.45	76.48	5,836.57	1.97	64-119	142	60	UNWD
MW23-C-SD	1/8/2020	5,699.19	29.48	27.11	5,728.67	2.37	56-71	73	38	UNWD
MW23-C-SD	4/9/2020	5,699.27	29.4	27.03	5,728.67	2.37	56-71	73	38	UNWD
MW23-UPPER-C	1/8/2020	5,702.04	26.89	24.56	5,728.93	2.33	25-35	38	37	WD
MW23-UPPER-C	4/9/2020	5,702.23	26.7	24.37	5,728.93	2.33	25-35	38	37	WD
MW23-WD	1/8/2020	5,701.47	28.51	25.5	5,729.98	3.01	35-55	56.5	NE, >56.5	UNWD
MW23-WD	4/9/2020	5,701.61	28.37	25.36	5,729.98	3.01	35-55	56.5	NE, >56.5	UNWD
MW-3	1/8/2020	5,786.88	44.38	42.02	5,831.26	2.36	47-97	102	55	UNWD
MW-3	4/15/2020	5,786.61	44.65	42.29	5,831.26	2.36	47-97	102	55	UNWD
MW30-BU	1/13/2020	5,718.25	78.7	75.99	5,796.95	2.71	150-180	183	48	UPPER DENVER

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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/]
MW30-BU	4/17/2020	5,718.33	78.62	75.91	5,796.95	2.71	150-180	183	48	UPPER DENVER
MW32-UD	1/9/2020	5,786.89	47.27	45.51	5,834.16	1.76	59.5-69.5	69.8	49	UNWD
MW32-UD	4/15/2020	5,786.65	47.51	45.75	5,834.16	1.76	59.5-69.5	69.8	49	UNWD
MW32-WD	1/9/2020	5,802.09	32.33	29.89	5,834.42	2.44	32.7 - 47.7	50	47.5	WD
MW32-WD	4/15/2020	5,800.98	33.44	31	5,834.42	2.44	32.7 - 47.7	50	47.5	WD
MW33-UD	1/9/2020	5,788.19	56.69	54.71	5,844.88	1.98	62.5-72.5	75	51.5	UNWD
MW33-UD	4/15/2020	5,788.27	56.61	54.63	5,844.88	1.98	62.5-72.5	75	51.5	UNWD
MW33-WDR	1/9/2020	Dry	Dry	Dry	5,844.27	1.97	31.5-43.2	--	50.6	WD
MW33-WDR	4/15/2020	Dry	Dry	Dry	5,844.27	1.97	31.5-43.2	--	50.6	WD
MW34-UD	1/9/2020	5,787.75	48.46	46.05	5,836.21	2.41	64-74	74	54.5	UNWD
MW34-UD	4/14/2020	5,787.42	48.79	46.38	5,836.21	2.41	64-74	74	54.5	UNWD
MW34-WDR	1/9/2020	5,789.26	46.96	44.24	5,836.22	2.72	43 - 53	56	53.5	WD
MW34-WDR	4/14/2020	5,789.11	47.11	44.39	5,836.22	2.72	43 - 53	56	53.5	WD
MW35-UD	1/9/2020	5,759.45	58.8	56.65	5,818.25	2.15	69.79	79	59	UNWD
MW35-UD	4/14/2020	5,759.47	58.78	56.63	5,818.25	2.15	69.79	79	59	UNWD
MW35-WDR	1/9/2020	5,778.93	39.06	36.37	5,817.99	2.69	36.7 - 56.7	59	58	WD
MW35-WDR	4/14/2020	5,778.91	39.08	36.39	5,817.99	2.69	36.7 - 56.7	59	58	WD
MW36-UD	1/9/2020	5,767.59	33.47	31.51	5,801.06	1.96	56.5-66.5	66.5	46.1	UNWD
MW36-UD	4/14/2020	5,767.61	33.45	31.49	5,801.06	1.96	56.5-66.5	66.5	46.1	UNWD
MW36-WDR	1/9/2020	5,772.36	28.85	26.44	5,801.21	2.41	30.5-42.5	48.6	42.5	WD
MW36-WDR	4/14/2020	5,771.83	29.38	26.97	5,801.21	2.41	30.5-42.5	48.6	42.5	WD
MW37-UD	1/6/2020	5,698.70	28.64	26.7	5,727.34	1.94	38-53	59	32.5	UNWD
MW37-UD	4/8/2020	5,698.92	28.42	26.48	5,727.34	1.94	38-53	59	32.5	UNWD
MW37-WD	1/6/2020	5,695.78	32.63	29.63	5,728.41	3.00	22-32	35	32	WD
MW37-WD	4/8/2020	5,695.84	32.57	29.57	5,728.41	3.00	22-32	35	32	WD
MW38-0N-140W	1/16/2020	5,745.31	62.57	60.29	5,807.88	2.28	48-63	79	63	WD
MW38-0N-140W	4/20/2020	5,745.37	62.51	60.23	5,807.88	2.28	48-63	79	63	WD
MW38-1005N-150E	1/15/2020	5,736.33	39.95	37.47	5,776.28	2.48	36.5-56.5	61.4	56.5	WD
MW38-1005N-150E	4/20/2020	5,737.17	39.11	36.63	5,776.28	2.48	36.5-56.5	61.4	56.5	WD
MW38-100N-200E	1/16/2020	5,747.39	43.63	41.11	5,791.02	2.52	33-48	50.5	48	WD
MW38-100N-200E	4/20/2020	5,747.37	43.65	41.13	5,791.02	2.52	33-48	50.5	48	WD
MW38-100N-53W	1/16/2020	Dry	Dry	Dry	5,804.53	2.03	48-58	69	58	WD
MW38-100N-53W	4/20/2020	Dry	Dry	Dry	5,804.53	2.03	48-58	69	58	WD
MW38-100N-60E	1/16/2020	5,736.19	61.34	58.81	5,797.53	2.53	40-60	64.5	61.5	WD
MW38-100N-60E	4/20/2020	5,736.55	60.98	58.45	5,797.53	2.53	40-60	64.5	61.5	WD
MW38-100S-140W	1/16/2020	Dry	Dry	Dry	5,807.35	1.55	48.5-68.5	74	68.5	WD
MW38-100S-140W	4/20/2020	Dry	Dry	Dry	5,807.35	1.55	48.5-68.5	74	68.5	WD
MW38-100S-195W	1/16/2020	Dry	Dry	Dry	5,807.22	-0.35	51-71	73.5	71	WD
MW38-100S-195W	4/20/2020	Dry	Dry	Dry	5,807.22	-0.35	51-71	73.5	71	WD
MW38-100S-200E	1/16/2020	5,748.59	43.47	41.01	5,792.06	2.46	34-49	51.5	49	WD
MW38-100S-200E	4/20/2020	5,748.65	43.41	40.95	5,792.06	2.46	34-49	51.5	49	WD
MW38-100S-53W	1/16/2020	Dry	Dry	Dry	5,806.51	3.71	46-66	79	66	WD
MW38-100S-53W	4/20/2020	Dry	Dry	Dry	5,806.51	3.71	46-66	79	66	WD
MW38-1028N-256E	1/15/2020	5,720.29	51.51	49.41	5,771.80	2.10	28-53	56	NE, > 56	WD
MW38-1028N-256E	4/20/2020	5,720.79	51.01	48.91	5,771.80	2.10	28-53	56	NE, > 56	WD
MW38-1064N-650E	1/15/2020	5,734.48	26.4	23.92	5,760.88	2.48	20-35	39	35	WD
MW38-1064N-650E	4/20/2020	5,736.60	24.28	21.8	5,760.88	2.48	20-35	39	35	WD
MW38-1064N-655E	1/15/2020	5,726.19	34.41	32.21	5,760.60	2.20	40-55	57.5	35.5	UNWD
MW38-1064N-655E	4/20/2020	5,726.20	34.4	32.2	5,760.60	2.20	40-55	57.5	35.5	UNWD
MW38-1064N-660E	1/15/2020	5,717.90	42.64	40.4	5,760.54	2.24	60-75	77.5	35	UNWD
MW38-1064N-660E	4/20/2020	5,717.84	42.7	40.46	5,760.54	2.24	60-75	77.5	35	UNWD
MW38-1095N-226E	1/15/2020	5,721.28	50.03	48.22	5,771.31	1.81	23-53	69	52.5	WD
MW38-1095N-226E	4/20/2020	5,721.71	49.6	47.79	5,771.31	1.81	23-53	69	52.5	WD
MW38-1100N-0E	1/15/2020	5,745.31	34.45	31.99	5,779.76	2.46	32-47	54	47	WD
MW38-1100N-0E	4/20/2020	5,745.74	34.02	31.56	5,779.76	2.46	32-47	54	47	WD
MW38-1100N-326E	1/15/2020	5,727.89	38.5	38.51	5,766.39	-0.01	34.5-49.5	52.5	49.5	WD
MW38-1100N-326E	4/20/2020	5,727.91	38.48	38.49	5,766.39	-0.01	34.5-49.5	52.5	49.5	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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/]
MW38-1120N-1000E	1/15/2020	5,717.30	32.91	32.2	5,750.21	0.71	50-70	72.5	44	UNWD
MW38-1120N-1000E	4/20/2020	5,717.23	32.98	32.27	5,750.21	0.71	50-70	72.5	44	UNWD
MW38-1175N-300E	1/15/2020	5,723.23	44.63	45.05	5,767.86	-0.42	25.5-45.5	48.5	45.5	WD
MW38-1175N-300E	4/20/2020	5,723.04	44.82	45.24	5,767.86	-0.42	25.5-45.5	48.5	45.5	WD
MW38-1175N-518E	1/15/2020	5,734.86	31.55	31.74	5,766.41	-0.19	25.5-45.5	48	45.5	WD
MW38-1175N-518E	4/20/2020	5,734.67	31.74	31.93	5,766.41	-0.19	25.5-45.5	48	45.5	WD
MW38-1200N-226E	1/15/2020	5,709.79	62.3	60.71	5,772.09	1.59	45-70	74	69.5	UNWD
MW38-1200N-226E	4/20/2020	5,709.85	62.24	60.65	5,772.09	1.59	45-70	74	69.5	UNWD
MW38-1363N-180W	1/15/2020	5,723.94	46.9	47.16	5,770.84	-0.26	70-90	94.5	58	UNWD
MW38-1363N-180W	4/20/2020	5,724.01	46.83	47.09	5,770.84	-0.26	70-90	94.5	58	UNWD
MW38-1373N-180W	1/15/2020	5,722.65	49.44	46.65	5,772.09	2.79	36-51	54	51	WD
MW38-1373N-180W	4/20/2020	5,722.41	49.68	46.89	5,772.09	2.79	36-51	54	51	WD
MW38-150S-320W	1/16/2020	5,759.70	53.9	51.4	5,813.60	2.50	47-57	59.5	57	WD
MW38-150S-320W	4/20/2020	5,759.84	53.76	51.26	5,813.60	2.50	47-57	59.5	57	WD
MW38-170S-140W	1/15/2020	5,734.18	72.58	70.32	5,806.76	2.26	58-73	78.5	74	WD
MW38-170S-140W	4/20/2020	5,734.83	71.93	69.67	5,806.76	2.26	58-73	78.5	74	WD
MW38-200N-425E	1/16/2020	5,731.50	49.35	47.2	5,780.85	2.15	33-58	69	40	UNWD
MW38-200N-425E	4/20/2020	5,731.33	49.52	47.37	5,780.85	2.15	33-58	69	40	UNWD
MW38-200N-60E	1/16/2020	5,736.50	58.92	56.4	5,795.42	2.52	38.5-58.5	61.6	58.5	WD
MW38-200N-60E	4/20/2020	5,736.94	58.48	55.96	5,795.42	2.52	38.5-58.5	61.6	58.5	WD
MW38-200S-140W	1/16/2020	5,735.82	70.74	68.48	5,806.56	2.26	53-73	77	72	WD
MW38-200S-140W	4/20/2020	5,735.91	70.65	68.39	5,806.56	2.26	53-73	77	72	WD
MW38-200S-180W	1/16/2020	5,735.98	72.18	70.32	5,808.16	1.86	55-75	78.8	75	WD
MW38-200S-180W	4/20/2020	5,736.18	71.98	70.12	5,808.16	1.86	55-75	78.8	75	WD
MW38-200S-195W	1/16/2020	5,736.08	70.51	70.99	5,806.59	-0.48	53-73	76.5	73	WD
MW38-200S-195W	4/20/2020	5,736.42	70.17	70.65	5,806.59	-0.48	53-73	76.5	73	WD
MW38-250S-160W	1/16/2020	5,743.35	62.96	60.35	5,806.31	2.61	51-63	68	63	WD
MW38-250S-160W	4/20/2020	5,743.46	62.85	60.24	5,806.31	2.61	51-63	68	63	WD
MW38-250S-320W	1/16/2020	5,760.04	54.35	51.86	5,814.39	2.49	45-60	64	60	WD
MW38-250S-320W	4/20/2020	5,760.08	54.31	51.82	5,814.39	2.49	45-60	64	60	WD
MW38-250S-50W	1/16/2020	Dry	Dry	Dry	5,803.99	3.09	34-49	54	49	WD
MW38-250S-50W	4/20/2020	Dry	Dry	Dry	5,803.99	3.09	34-49	54	49	WD
MW38-275S-195W	1/16/2020	5,738.03	67.9	68.07	5,805.93	-0.17	50-70	72.5	69	WD
MW38-275S-195W	4/20/2020	5,738.16	67.77	67.94	5,805.93	-0.17	50-70	72.5	69	WD
MW38-300S-180W	1/16/2020	5,745.42	62.22	59.38	5,807.64	2.84	56-61	64	61	WD
MW38-300S-180W	4/20/2020	5,745.43	62.21	59.37	5,807.64	2.84	56-61	64	61	WD
MW38-300S-315W	1/16/2020	5,745.11	68.78	66.59	5,813.89	2.19	53.7-68.7	87	68	WD
MW38-300S-315W	4/20/2020	5,745.21	68.68	66.49	5,813.89	2.19	53.7-68.7	87	68	WD
MW38-300S-60E	1/16/2020	5,748.49	47.63	45.91	5,796.12	1.72	40-50	58	50	WD
MW38-300S-60E	4/20/2020	5,748.52	47.6	45.88	5,796.12	1.72	40-50	58	50	WD
MW38-302S-50W	1/16/2020	5,743.62	59.06	56.58	5,802.68	2.48	50-70	79	55	UNWD
MW38-302S-50W	4/20/2020	5,743.85	58.83	56.35	5,802.68	2.48	50-70	79	55	UNWD
MW38-320N-305E	1/15/2020	5,728.83	55.36	52.27	5,784.19	3.09	40-55	64	NE, >64	WD
MW38-320N-305E	4/20/2020	5,728.91	55.28	52.19	5,784.19	3.09	40-55	64	NE, >64	WD
MW38-325S-195W	1/16/2020	5,746.56	58.87	59.03	5,805.43	-0.16	48.5-63.5	66	62.5	WD
MW38-325S-195W	4/20/2020	5,746.65	58.78	58.94	5,805.43	-0.16	48.5-63.5	66	62.5	WD
MW38-350N-175E	1/16/2020	Dry	Dry	Dry	5,788.58	2.98	27-47	49.5	47	WD
MW38-350N-175E	4/20/2020	Dry	Dry	Dry	5,788.58	2.98	27-47	49.5	47	WD
MW38-350S-200E	1/16/2020	5,748.79	40.45	38.01	5,789.24	2.44	37.5-44.5	53.8	44.5	WD
MW38-350S-200E	4/20/2020	5,748.81	40.43	37.99	5,789.24	2.44	37.5-44.5	53.8	44.5	WD
MW38-350S-320W	1/16/2020	5,747.49	66.67	64.21	5,814.16	2.46	54-74	77	74	WD
MW38-350S-320W	4/20/2020	5,747.56	66.6	64.14	5,814.16	2.46	54-74	77	74	WD
MW38-350S-50W	1/16/2020	5,747.95	54.1	51.55	5,802.05	2.55	36-56	58.5	57	WD
MW38-350S-50W	4/20/2020	5,747.90	54.15	51.6	5,802.05	2.55	36-56	58.5	57	WD
MW38-350S-60E	1/16/2020	5,748.46	47.78	45.24	5,796.24	2.54	33.5-53.5	57.2	53.5	WD
MW38-350S-60E	4/20/2020	5,748.45	47.79	45.25	5,796.24	2.54	33.5-53.5	57.2	53.5	WD
MW38-360N-405E	1/15/2020	Dry	Dry	Dry	5,779.52	2.44	40-55	59	49	WD/UNWD

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LOWRY LANDFILL SUPERFUND SITE

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MW38-360N-405E	4/20/2020	Dry	Dry	Dry	5,779.52	2.44	40-55	59	49	WD/UNWD
MW38-390S-60E	1/16/2020	5,748.53	46.4	43.87	5,794.93	2.53	30.5-50.5	73	50.5	WD
MW38-390S-60E	4/20/2020	5,748.49	46.44	43.91	5,794.93	2.53	30.5-50.5	73	50.5	WD
MW38-400N-100E	1/15/2020	5,739.09	49.85	47.51	5,788.94	2.34	40-55	62	55	WD
MW38-400N-100E	4/20/2020	5,739.63	49.31	46.97	5,788.94	2.34	40-55	62	55	WD
MW38-400N-180W	1/15/2020	5,757.54	41.22	38.06	5,798.76	3.16	41.5-56.5	59	57	WD
MW38-400N-180W	4/20/2020	5,757.34	41.42	38.26	5,798.76	3.16	41.5-56.5	59	57	WD
MW38-400N-240E	1/15/2020	5,738.98	45.73	43.02	5,784.71	2.71	31-46	49.2	46	WD
MW38-400N-240E	4/20/2020	5,739.52	45.19	42.48	5,784.71	2.71	31-46	49.2	46	WD
MW38-400N-300E	1/15/2020	5,719.22	63.89	61.38	5,783.11	2.51	65.6-85.6	89	45	UNWD
MW38-400N-300E	4/20/2020	5,718.88	64.23	61.72	5,783.11	2.51	65.6-85.6	89	45	UNWD
MW38-400S-0W	1/16/2020	5,748.13	50.67	47.57	5,798.80	3.10	37.5-51.5	54	51.7	WD
MW38-400S-0W	4/20/2020	5,748.17	50.63	47.53	5,798.80	3.10	37.5-51.5	54	51.7	WD
MW38-400S-140W	1/16/2020	5,747.48	56.93	54.52	5,804.41	2.41	38.5-58.5	61.5	58.5	WD
MW38-400S-140W	4/20/2020	5,747.47	56.94	54.53	5,804.41	2.41	38.5-58.5	61.5	58.5	WD
MW38-400S-195W	1/16/2020	5,747.01	57.37	57.29	5,804.38	0.08	43.5-58.5	64	58.5	WD
MW38-400S-195W	4/20/2020	5,747.09	57.29	57.21	5,804.38	0.08	43.5-58.5	64	58.5	WD
MW38-400S-320W	1/16/2020	5,747.81	65.79	63.49	5,813.60	2.30	59.5-74.5	87	74.2	WD
MW38-400S-320W	4/20/2020	5,747.87	65.73	63.43	5,813.60	2.30	59.5-74.5	87	74.2	WD
MW38-400S-50W	1/16/2020	5,747.84	53.38	51.26	5,801.22	2.12	42-57	59.5	57	WD
MW38-400S-50W	4/20/2020	5,747.86	53.36	51.24	5,801.22	2.12	42-57	59.5	57	WD
MW38-410N-180W	1/15/2020	5,718.95	78.46	75.75	5,797.41	2.71	71.5-91.5	94	56	UNWD
MW38-410N-180W	4/20/2020	5,718.76	78.65	75.94	5,797.41	2.71	71.5-91.5	94	56	UNWD
MW38-450S-200E	1/16/2020	5,748.76	40.63	37.84	5,789.39	2.79	45.5-48.5	48.8	45.5	WD/UNWD
MW38-450S-200E	4/20/2020	5,748.78	40.61	37.82	5,789.39	2.79	45.5-48.5	48.8	45.5	WD/UNWD
MW38-450S-320W	1/16/2020	5,750.55	62.2	59.55	5,812.75	2.65	50-70	73.2	70	WD
MW38-450S-320W	4/20/2020	5,750.68	62.07	59.42	5,812.75	2.65	50-70	73.2	70	WD
MW38-450S-60E	1/16/2020	5,749.05	45.19	42.75	5,794.24	2.44	31.5-51.5	54	52.5	WD
MW38-450S-60E	4/20/2020	5,749.03	45.21	42.77	5,794.24	2.44	31.5-51.5	54	52.5	WD
MW38-500N-396E	1/15/2020	5,744.16	30.93	28.34	5,775.09	2.59	24-39	44	40	WD
MW38-500N-396E	4/20/2020	5,742.14	32.95	30.36	5,775.09	2.59	24-39	44	40	WD
MW38-500S-320W	1/16/2020	5,750.68	60.93	58.82	5,811.61	2.11	55-70	87	69.3	WD
MW38-500S-320W	4/20/2020	5,750.84	60.77	58.66	5,811.61	2.11	55-70	87	69.3	WD
MW38-500S-50W	1/16/2020	5,749.98	50.8	48.19	5,800.78	2.61	36.5-51.5	54	51.5	WD
MW38-500S-50W	4/20/2020	5,750.00	50.78	48.17	5,800.78	2.61	36.5-51.5	54	51.5	WD
MW38-550S-200E	1/16/2020	5,750.97	35.1	32.63	5,786.07	2.47	34-49	54	44.5	WD
MW38-550S-200E	4/20/2020	5,750.91	35.16	32.69	5,786.07	2.47	34-49	54	44.5	WD
MW38-550S-320W	1/16/2020	5,751.40	59.29	57.3	5,810.69	1.99	58-68	72	68	WD
MW38-550S-320W	4/20/2020	5,751.54	59.15	57.16	5,810.69	1.99	58-68	72	68	WD
MW38-600N-250E	1/15/2020	5,739.83	37.15	34.67	5,776.98	2.48	27.5-42.5	45.1	42.5	WD
MW38-600N-250E	4/20/2020	5,740.23	36.75	34.27	5,776.98	2.48	27.5-42.5	45.1	42.5	WD
MW38-600S-320W	1/16/2020	5,752.22	58.64	56.18	5,810.86	2.46	52-62	69	61.5	WD
MW38-600S-320W	4/20/2020	5,752.39	58.47	56.01	5,810.86	2.46	52-62	69	61.5	WD
MW38-650S-200E	1/16/2020	5,751.12	35.42	31.68	5,786.54	3.74	42-47	53	47	WD
MW38-650S-200E	4/20/2020	5,751.19	35.35	31.61	5,786.54	3.74	42-47	53	47	WD
MW38-650S-400E	1/16/2020	5,751.03	25.9	23.57	5,776.93	2.33	16-36	38.5	36	WD
MW38-650S-400E	4/20/2020	5,750.99	25.94	23.61	5,776.93	2.33	16-36	38.5	36	WD
MW38-650S-50W	1/16/2020	5,752.44	47.97	45.46	5,800.41	2.51	35-55	58.5	55	WD
MW38-650S-50W	4/20/2020	5,752.39	48.02	45.51	5,800.41	2.51	35-55	58.5	55	WD
MW38-680N-419E	1/15/2020	5,755.84	16.42	14.28	5,772.26	2.14	25-40	43	40	WD
MW38-680N-419E	4/20/2020	5,751.17	21.09	18.95	5,772.26	2.14	25-40	43	40	WD
MW38-700S-320W	1/16/2020	5,766.25	44.23	41.35	5,810.48	2.88	54-59	64	58.9	WD
MW38-700S-320W	4/20/2020	5,766.40	44.08	41.2	5,810.48	2.88	54-59	64	58.9	WD
MW38-700S-400E	1/16/2020	5,751.05	26.21	23.85	5,777.26	2.36	20-35	38.3	35	WD
MW38-700S-400E	4/20/2020	5,750.98	26.28	23.92	5,777.26	2.36	20-35	38.3	35	WD
MW38-750S-400E	1/16/2020	5,751.07	26.65	24.63	5,777.72	2.02	18-33	37.4	33	WD
MW38-750S-400E	4/20/2020	5,751.00	26.72	24.7	5,777.72	2.02	18-33	37.4	33	WD

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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/]
MW38-758N-277E	1/15/2020	5,739.63	31.75	29.27	5,771.38	2.48	24-36	49	36	WD
MW38-758N-277E	4/20/2020	5,740.16	31.22	28.74	5,771.38	2.48	24-36	49	36	WD
MW38-770S-60E	1/16/2020	5,762.26	31.16	28.64	5,793.42	2.52	25-45	48	45	WD
MW38-770S-60E	4/20/2020	5,762.04	31.38	28.86	5,793.42	2.52	25-45	48	45	WD
MW38-794N-383E	1/15/2020	5,751.59	20.81	18.37	5,772.40	2.44	25-40	42.5	40	WD
MW38-794N-383E	4/20/2020	5,750.29	22.11	19.67	5,772.40	2.44	25-40	42.5	40	WD
MW38-815S-445E	1/16/2020	5,751.20	29.11	26.32	5,780.31	2.79	21.7 - 36.7	38	36	WD
MW38-815S-445E	4/20/2020	5,751.11	29.2	26.41	5,780.31	2.79	21.7 - 36.7	38	36	WD
MW38-825S-445E	1/16/2020	5,751.14	30	26.46	5,781.14	3.54	26-36	41	36	WD
MW38-825S-445E	4/20/2020	5,751.06	30.08	26.54	5,781.14	3.54	26-36	41	36	WD
MW38-830N-230E	1/15/2020	5,739.47	34.1	32.51	5,773.57	1.59	28 - 38	43.4	40	WD
MW38-830N-230E	4/20/2020	5,740.07	33.5	31.91	5,773.57	1.59	28 - 38	43.4	40	WD
MW38-830S-380E	1/16/2020	5,751.24	28.83	26.66	5,780.07	2.17	17.5 - 32.5	34.8	33	WD
MW38-830S-380E	4/20/2020	5,751.17	28.9	26.73	5,780.07	2.17	17.5 - 32.5	34.8	33	WD
MW38-840S-325E	1/16/2020	5,753.00	27.43	24.93	5,780.43	2.50	19 - 34	39	36	WD
MW38-840S-325E	4/20/2020	5,752.99	27.44	24.94	5,780.43	2.50	19 - 34	39	36	WD
MW38-890S-385E	1/16/2020	5,751.76	31.89	29.29	5,783.65	2.60	21.3 - 36.3	39	37	WD
MW38-890S-385E	4/20/2020	5,751.72	31.93	29.33	5,783.65	2.60	21.3 - 36.3	39	37	WD
MW38-995N-228E	1/15/2020	5,721.53	52.89	50.17	5,774.42	2.72	24-64	74	64	WD
MW38-995N-228E	4/20/2020	5,722.08	52.34	49.62	5,774.42	2.72	24-64	74	64	WD
MW38-995N-300E	1/15/2020	5,721.48	49.93	47.42	5,771.41	2.51	27.5-57.5	60	57.5	WD
MW38-995N-300E	4/20/2020	5,722.00	49.41	46.9	5,771.41	2.51	27.5-57.5	60	57.5	WD
MW38-995N-375E	1/15/2020	5,733.15	35.74	32.55	5,768.89	3.19	29-49	51.5	49	WD
MW38-995N-375E	4/20/2020	5,734.11	34.78	31.59	5,768.89	3.19	29-49	51.5	49	WD
MW38-995N-475E	1/15/2020	5,734.78	25.7	26.22	5,760.48	-0.52	31-51	53.9	51	WD
MW38-995N-475E	4/20/2020	5,736.33	24.15	24.67	5,760.48	-0.52	31-51	53.9	51	WD
MW38-WD	1/16/2020	5,735.46	68.96	65.64	5,804.42	3.32	39.5-69.5	75	69.5	WD
MW38-WD	4/20/2020	5,735.91	68.51	65.19	5,804.42	3.32	39.5-69.5	75	69.5	WD
MW39I-WD	1/9/2020	5,773.04	32.64	29.86	5,805.68	2.78	31.1-41	48.8	41	WD
MW39I-WD	4/14/2020	5,772.80	32.88	30.1	5,805.68	2.78	31.1-41	48.8	41	WD
MW39-UD	1/9/2020	5,751.95	52.6	49.55	5,804.55	3.05	56-76	79	42.8	UNWD
MW39-UD	4/14/2020	5,751.75	52.8	49.75	5,804.55	3.05	56-76	79	42.8	UNWD
MW39-WD	1/9/2020	5,774.63	30.62	27.87	5,805.25	2.75	24.1-44.1	48.7	44.1	WD
MW39-WD	4/14/2020	5,774.23	31.02	28.27	5,805.25	2.75	24.1-44.1	48.7	44.1	WD
MW40-WD	1/9/2020	5,777.87	42.79	40.13	5,820.66	2.66	31.7-61.7	65	61.8	WD
MW40-WD	4/14/2020	5,777.62	43.04	40.38	5,820.66	2.66	31.7-61.7	65	61.8	WD
MW41-WD	1/9/2020	5,788.43	44.49	42.07	5,832.92	2.42	25.3-55.3	61	55.3	WD
MW41-WD	4/14/2020	5,788.12	44.8	42.38	5,832.92	2.42	25.3-55.3	61	55.3	WD
MW42-UD	1/9/2020	5,787.12	48.68	46.28	5,835.80	2.40	70-90	92.5	60	UNWD
MW42-UD	4/15/2020	5,786.84	48.96	46.56	5,835.80	2.40	70-90	92.5	60	UNWD
MW42-WD	1/9/2020	5,790.01	46.2	43.59	5,836.21	2.61	23.3-48.3	52	48.3	WD
MW42-WD	4/15/2020	5,789.63	46.58	43.97	5,836.21	2.61	23.3-48.3	52	48.3	WD
MW43-WD	1/9/2020	5,791.86	50.91	48.44	5,842.77	2.47	19.5-54.5	60.5	55.1	WD
MW43-WD	4/15/2020	5,791.26	51.51	49.04	5,842.77	2.47	19.5-54.5	60.5	55.1	WD
MW44-WD	1/9/2020	5,788.50	60.75	58.2	5,849.25	2.55	26.4-66.4	69.7	66.4	WD
MW44-WD	4/15/2020	5,788.60	60.65	58.1	5,849.25	2.55	26.4-66.4	69.7	66.4	WD
MW45-WD	1/9/2020	5,806.40	49.14	47	5,855.54	2.14	35-65	70	65	WD
MW45-WD	4/15/2020	5,805.23	50.31	48.17	5,855.54	2.14	35-65	70	65	WD
MW46-WD	1/9/2020	5,825.51	22.94	20.29	5,848.45	2.65	15-65	70	65	WD
MW46-WD	4/15/2020	5,825.64	22.81	20.16	5,848.45	2.65	15-65	70	65	WD
MW47-WD	1/9/2020	5,825.87	16.14	13.63	5,842.01	2.51	10-45	45.3	NE, >45.3	WD
MW47-WD	4/15/2020	5,826.68	15.33	12.82	5,842.01	2.51	10-45	45.3	NE, >45.3	WD
MW48-WD	1/9/2020	5,824.29	13.57	11.31	5,837.86	2.26	9.7-49.7	55	49.7	WD
MW48-WD	4/15/2020	5,825.91	11.95	9.69	5,837.86	2.26	9.7-49.7	55	49.7	WD
MW49-WD	1/9/2020	5,808.78	16.16	13.92	5,824.94	2.24	19-54	58.5	54	WD
MW49-WD	4/15/2020	5,808.32	16.62	14.38	5,824.94	2.24	19-54	58.5	54	WD
MW50-WD	1/13/2020	5,792.65	18.3	15.75	5,810.95	2.55	15.2-45.2	50	45.2	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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/]
MW50-WD	4/16/2020	5,792.21	18.74	16.19	5,810.95	2.55	15.2-45.2	50	45.2	WD
MW51-10S	1/13/2020	5,753.20	43.12	40.7	5,796.32	2.42	51-61	64	44	UNWD
MW51-10S	4/16/2020	5,753.10	43.22	40.8	5,796.32	2.42	51-61	64	44	UNWD
MW51I-WD	1/13/2020	Dry	Dry	Dry	5,798.03	3.03	34-44	49	44	WD
MW51I-WD	4/16/2020	Dry	Dry	Dry	5,798.03	3.03	34-44	49	44	WD
MW51I-WD-10S	1/13/2020	5,756.51	41.4	38.69	5,797.91	2.71	40.5-41.5	44	NE, >44	WD
MW51I-WD-10S	4/16/2020	5,756.49	41.42	38.71	5,797.91	2.71	40.5-41.5	44	NE, >44	WD
MW51I-WD-15N	1/13/2020	Dry	Dry	Dry	5,796.61	2.04	29-44	49	44	WD
MW51I-WD-15N	4/16/2020	Dry	Dry	Dry	5,796.61	2.04	29-44	49	44	WD
MW51I-WD-35S	1/13/2020	Dry	Dry	Dry	5,797.94	2.36	26-46	51	46	WD
MW51I-WD-35S	4/16/2020	Dry	Dry	Dry	5,797.94	2.36	26-46	51	46	WD
MW51I-WD-65N	1/13/2020	5,752.04	43.18	41.46	5,795.22	1.72	28.5-43.5	50.5	44	WD
MW51I-WD-65N	4/16/2020	5,752.03	43.19	41.47	5,795.22	1.72	28.5-43.5	50.5	44	WD
MW51I-WD-80S	1/13/2020	5,756.77	41.67	39.73	5,798.44	1.94	39-54	59	52	WD
MW51I-WD-80S	4/16/2020	5,756.71	41.73	39.79	5,798.44	1.94	39-54	59	52	WD
MW51-WD	1/13/2020	5,753.86	42.54	40.24	5,796.40	2.30	16.2-41.2	45.1	41.2	WD
MW51-WD	4/16/2020	5,753.81	42.59	40.29	5,796.40	2.30	16.2-41.2	45.1	41.2	WD
MW51X-WD-100S	1/13/2020	5,751.88	46.75	44.02	5,798.63	2.73	46.5-48.5	51	52	WD
MW51X-WD-100S	4/16/2020	5,751.84	46.79	44.06	5,798.63	2.73	46.5-48.5	51	52	WD
MW51X-WD-35S	1/13/2020	5,752.10	43.95	41.94	5,796.05	2.01	28-43	45.5	43.5	WD
MW51X-WD-35S	4/16/2020	5,752.03	44.02	42.01	5,796.05	2.01	28-43	45.5	43.5	WD
MW51X-WD-65N	1/13/2020	5,752.15	43.1	39.76	5,795.25	3.34	21-41	44.5	41	WD
MW51X-WD-65N	4/16/2020	5,752.10	43.15	39.81	5,795.25	3.34	21-41	44.5	41	WD
MW51X-WD-90S	1/13/2020	5,751.97	45.86	43.93	5,797.83	1.93	38-53	56.5	52	WD
MW51X-WD-90S	4/16/2020	5,751.93	45.9	43.97	5,797.83	1.93	38-53	56.5	52	WD
MW52-DEN	1/13/2020	5,728.41	55.12	53.01	5,783.53	2.11	155-175	180	45	UPPER DENVER
MW52-DEN	4/16/2020	5,728.74	54.79	52.68	5,783.53	2.11	155-175	180	45	UPPER DENVER
MW52-LIG	1/13/2020	5,680.75	102.79	99.95	5,783.54	2.84	285-300	307	45	LIGNITE
MW52-LIG	4/16/2020	5,681.25	102.29	99.45	5,783.54	2.84	285-300	307	45	LIGNITE
MW52-UD	1/13/2020	5,748.35	35.79	32.95	5,784.14	2.84	65-85	88	45	UNWD
MW52-UD	4/16/2020	5,748.47	35.67	32.83	5,784.14	2.84	65-85	88	45	UNWD
MW52-WD	1/13/2020	5,751.72	33.15	30.28	5,784.87	2.87	25-45	50	45	WD
MW52-WD	4/16/2020	5,751.35	33.52	30.65	5,784.87	2.87	25-45	50	45	WD
MW53-WD	1/13/2020	5,748.68	36.03	34.52	5,784.71	1.51	17.5-52.5	55.5	52.5	WD
MW53-WD	4/16/2020	5,748.74	35.97	34.46	5,784.71	1.51	17.5-52.5	55.5	52.5	WD
MW54-UDR	1/13/2020	5,720.52	25.35	22.88	5,745.87	2.47	54-64	67	37	UNWD
MW54-UDR	4/17/2020	5,720.48	25.39	22.92	5,745.87	2.47	54-64	67	37	UNWD
MW54-WD	1/13/2020	5,719.72	25.55	22.93	5,745.27	2.62	16.8-36.8	40	36.8	WD
MW54-WD	4/17/2020	5,719.95	25.32	22.7	5,745.27	2.62	16.8-36.8	40	36.8	WD
MW55-WD	1/15/2020	5,755.11	36.16	33.29	5,791.27	2.87	28.4-48.4	54	48.4	WD
MW55-WD	4/20/2020	5,755.86	35.41	32.54	5,791.27	2.87	28.4-48.4	54	48.4	WD
MW56-WD	1/16/2020	5,750.48	47.76	44.72	5,798.24	3.04	25-50	54	50	WD
MW56-WD	4/20/2020	5,750.48	47.76	44.72	5,798.24	3.04	25-50	54	50	WD
MW57-WD	1/16/2020	5,741.02	36.13	33.98	5,777.15	2.15	24-39	44	39	WD
MW57-WD	4/20/2020	5,740.96	36.19	34.04	5,777.15	2.15	24-39	44	39	WD
MW58-WD	1/16/2020	5,756.34	53.67	50.56	5,810.01	3.11	26-56	59	56	WD
MW58-WD	4/20/2020	5,756.30	53.71	50.6	5,810.01	3.11	26-56	59	56	WD
MW59-WD	1/16/2020	5,755.04	48.06	46.47	5,803.10	1.59	39.5-57	60	57	WD
MW59-WD	4/20/2020	5,755.45	47.65	46.06	5,803.10	1.59	39.5-57	60	57	WD
MW60-WD	1/13/2020	5,751.87	35.02	32.37	5,786.89	2.65	19-44	49	44	WD
MW60-WD	4/16/2020	5,751.81	35.08	32.43	5,786.89	2.65	19-44	49	44	WD
MW61-WD	1/13/2020	5,751.86	34.18	32.04	5,786.04	2.14	27-39	44	39	WD
MW61-WD	4/16/2020	5,751.80	34.24	32.1	5,786.04	2.14	27-39	44	39	WD
MW62-DENR	1/6/2020	5,699.19	29.16	27.16	5,728.35	2.00	124-144	149	35	UPPER DENVER
MW62-DENR	4/8/2020	5,699.39	28.96	26.96	5,728.35	2.00	124-144	149	35	UPPER DENVER
MW62-LIG	1/6/2020	5,674.35	52.95	51.25	5,727.30	1.70	208-223	227	30.5	LIGNITE
MW62-LIG	4/8/2020	5,674.52	52.78	51.08	5,727.30	1.70	208-223	227	30.5	LIGNITE

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/]
MW62-UD	1/6/2020	5,690.21	37.45	35.39	5,727.66	2.06	53.5-68.5	71	32	UNWD
MW62-UD	4/8/2020	5,690.45	37.21	35.15	5,727.66	2.06	53.5-68.5	71	32	UNWD
MW62-WDR	1/6/2020	5,697.14	31.11	28.79	5,728.25	2.32	20.4-30.4	33.5	30	WD
MW62-WDR	4/8/2020	5,696.93	31.32	29	5,728.25	2.32	20.4-30.4	33.5	30	WD
MW63-WD	1/9/2020	5,774.34	34.15	32.26	5,808.49	1.89	33-53	57.9	53	WD
MW63-WD	4/14/2020	5,774.02	34.47	32.58	5,808.49	1.89	33-53	57.9	53	WD
MW64-WD	1/9/2020	5,776.47	29.56	26.83	5,806.03	2.73	31-46	49	45.4	WD
MW64-WD	4/14/2020	5,776.01	30.02	27.29	5,806.03	2.73	31-46	49	45.4	WD
MW65-WD	1/9/2020	5,773.13	26.46	24.07	5,799.59	2.39	26-38	42	37.7	WD
MW65-WD	4/14/2020	5,772.61	26.98	24.59	5,799.59	2.39	26-38	42	37.7	WD
MW66-WD	1/13/2020	5,751.86	39.58	36.94	5,791.44	2.64	31.8-41.8	49	41	WD
MW66-WD	4/16/2020	5,751.80	39.64	37	5,791.44	2.64	31.8-41.8	49	41	WD
MW67-WD	1/9/2020	5,773.85	27.76	25.25	5,801.61	2.51	31-43	49	43	WD
MW67-WD	4/14/2020	5,773.50	28.11	25.6	5,801.61	2.51	31-43	49	43	WD
MW68-WD	1/9/2020	5,775.22	31.19	28.58	5,806.41	2.61	29-44	52.8	44	WD
MW68-WD	4/14/2020	5,774.86	31.55	28.94	5,806.41	2.61	29-44	52.8	44	WD
MW70-WD	1/13/2020	5,751.83	39.32	37.17	5,791.15	2.15	34.5-49.5	52.3	49	WD
MW70-WD	4/16/2020	5,751.82	39.33	37.18	5,791.15	2.15	34.5-49.5	52.3	49	WD
MW71-DENR	1/13/2020	5,709.98	22.93	20.47	5,732.91	2.46	102.1 -	130	41.5	UPPER DENVER
MW71-DENR	4/17/2020	5,710.22	22.69	20.23	5,732.91	2.46	102.1 -	130	41.5	UPPER DENVER
MW71-LIG	1/13/2020	5,679.48	53.21	50.52	5,732.69	2.69	208-223	228	33	LIGNITE
MW71-LIG	4/17/2020	5,679.53	53.16	50.47	5,732.69	2.69	208-223	228	33	LIGNITE
MW71-UD	1/13/2020	5,710.03	23.11	20.67	5,733.14	2.44	67.5-82.5	84	37	UNWD
MW71-UD	4/17/2020	5,710.20	22.94	20.5	5,733.14	2.44	67.5-82.5	84	37	UNWD
MW71-WD	1/13/2020	5,709.26	23.8	21.04	5,733.06	2.76	20.5-35.5	39.2	35.5	WD
MW71-WD	4/17/2020	5,709.54	23.52	20.76	5,733.06	2.76	20.5-35.5	39.2	35.5	WD
MW72-DEN	1/13/2020	5,716.60	40.13	37.55	5,756.73	2.58	109.4 - 124	128	42	UPPER DENVER
MW72-DEN	4/17/2020	5,716.73	40	37.42	5,756.73	2.58	109.4 - 124	128	42	UPPER DENVER
MW72-LIGR	1/13/2020	5,681.54	77.53	75.13	5,759.07	2.40	253-263	268	42	LIGNITE
MW72-LIGR	4/17/2020	5,682.11	76.96	74.56	5,759.07	2.40	253-263	268	42	LIGNITE
MW72-UD	1/13/2020	5,721.65	35.01	32.55	5,756.66	2.46	66-81	84	43	UNWD
MW72-UD	4/17/2020	5,721.73	34.93	32.47	5,756.66	2.46	66-81	84	43	UNWD
MW72-WD	1/13/2020	5,724.98	32.3	29.32	5,757.28	2.98	32.5-42.5	45	42.5	WD
MW72-WD	4/17/2020	5,724.78	32.5	29.52	5,757.28	2.98	32.5-42.5	45	42.5	WD
MW73-UD	1/6/2020	5,711.20	25	22.5	5,736.20	2.50	57.7-77.7	80	35	UNWD
MW73-UD	4/9/2020	5,711.25	24.95	22.45	5,736.20	2.50	57.7-77.7	80	35	UNWD
MW73-WD	1/6/2020	5,715.64	21.18	18.62	5,736.82	2.56	15.7-35.7	38	34.5	WD
MW73-WD	4/9/2020	5,715.77	21.05	18.49	5,736.82	2.56	15.7-35.7	38	34.5	WD
MW74-UD	1/15/2020	5,713.31	36.05	33.69	5,749.36	2.36	72.7-92.7	95	54	UNWD
MW74-UD	4/20/2020	5,713.36	36	33.64	5,749.36	2.36	72.7-92.7	95	54	UNWD
MW74-WD	1/15/2020	5,717.49	31.89	29.51	5,749.38	2.38	38-58	62	54	WD
MW74-WD	4/20/2020	5,717.47	31.91	29.53	5,749.38	2.38	38-58	62	54	WD
MW75-UD	1/15/2020	5,717.69	39.14	36.52	5,756.83	2.62	71.5-91.5	94	51	UNWD
MW75-UD	4/20/2020	5,717.64	39.19	36.57	5,756.83	2.62	71.5-91.5	94	51	UNWD
MW75-WD	1/15/2020	5,730.96	26.21	23.34	5,757.17	2.87	25-50	52.5	50	WD
MW75-WD	4/20/2020	5,732.15	25.02	22.15	5,757.17	2.87	25-50	52.5	50	WD
MW76-UD	1/15/2020	5,718.09	44.45	42.11	5,762.54	2.34	60-80	83	34.5	UNWD
MW76-UD	4/20/2020	5,718.01	44.53	42.19	5,762.54	2.34	60-80	83	34.5	UNWD
MW76-WD	1/15/2020	5,740.88	21.36	18.82	5,762.24	2.54	20-35	38	34.5	WD
MW76-WD	4/20/2020	5,743.11	19.13	16.59	5,762.24	2.54	20-35	38	34.5	WD
MW77-EW-1	1/8/2020	5,688.37	36.86	34.23	5,725.23	2.63	25-35	39	37.6	WD
MW77-EW-1	4/9/2020	5,688.40	36.83	34.2	5,725.23	2.63	25-35	39	37.6	WD
MW77-EW-2	1/8/2020	5,695.80	25.18	22.7	5,720.98	2.48	22-32	39	34.9	WD
MW77-EW-2	4/9/2020	5,695.98	25	22.52	5,720.98	2.48	22-32	39	34.9	WD
MW77-UD	1/8/2020	5,696.17	31.39	29.16	5,727.56	2.22	57-72	75	35	UNWD
MW77-UD	4/9/2020	5,696.33	31.23	29	5,727.56	2.22	57-72	75	35	UNWD
MW77-WD	1/8/2020	5,699.96	28.29	25.44	5,728.25	2.85	19.7-34.7	37	34.5	WD

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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/]
MW77-WD	4/9/2020	5,700.41	27.84	24.99	5,728.25	2.85	19.7-34.7	37	34.5	WD
MW78-UD	1/13/2020	5,705.56	25.98	23.64	5,731.54	2.34	57-77	79.5	42.5	UNWD
MW78-UD	4/17/2020	5,705.33	26.21	23.87	5,731.54	2.34	57-77	79.5	42.5	UNWD
MW78-WD	1/13/2020	5,704.68	26.9	24.42	5,731.58	2.48	24-44	47.5	42.5	WD
MW78-WD	4/17/2020	5,705.01	26.57	24.09	5,731.58	2.48	24-44	47.5	42.5	WD
MW79-UD	1/13/2020	5,712.50	14.8	12.5	5,727.30	2.30	52-72	75	35	UNWD
MW79-UD	4/17/2020	5,712.57	14.73	12.43	5,727.30	2.30	52-72	75	35	UNWD
MW79-WD	1/13/2020	5,712.86	15.17	12.34	5,728.03	2.83	20-35	38	35	WD
MW79-WD	4/17/2020	5,713.05	14.98	12.15	5,728.03	2.83	20-35	38	35	WD
MW90-UD	1/13/2020	5,731.66	28.29	25.04	5,759.95	3.25	44-64	66.5	41	UNWD
MW90-UD	4/17/2020	5,732.05	27.9	24.65	5,759.95	3.25	44-64	66.5	41	UNWD
MW90-WD	1/13/2020	5,731.65	28.4	25.45	5,760.05	2.95	26-41	43.5	41	WD
MW90-WD	4/17/2020	5,732.03	28.02	25.07	5,760.05	2.95	26-41	43.5	41	WD
MW91-UD	1/13/2020	5,715.93	19.91	17.67	5,735.84	2.24	60-80	82.5	31.5	UNWD
MW91-UD	4/17/2020	5,716.16	19.68	17.44	5,735.84	2.24	60-80	82.5	31.5	UNWD
MW91-WD	1/13/2020	5,717.21	18.38	16.39	5,735.59	1.99	21.5-31.5	34	31.5	WD
MW91-WD	4/17/2020	5,717.41	18.18	16.19	5,735.59	1.99	21.5-31.5	34	31.5	WD
MW92-WD	1/13/2020	5,723.88	24.13	21.52	5,748.01	2.61	19.5-39.5	42	39.5	WD
MW92-WD	4/17/2020	5,724.15	23.86	21.25	5,748.01	2.61	19.5-39.5	42	39.5	WD
MW93-UD	1/13/2020	5,731.76	25.61	23.04	5,757.37	2.57	42-62	75	35	UNWD
MW93-UD	4/17/2020	5,732.14	25.23	22.66	5,757.37	2.57	42-62	75	35	UNWD
MW93-WD	1/13/2020	5,729.84	27.64	25.16	5,757.48	2.48	15-35	37.5	35	WD
MW93-WD	4/17/2020	5,729.92	27.56	25.08	5,757.48	2.48	15-35	37.5	35	WD
MW97-WD	1/8/2020	5,698.48	29.18	26.32	5,727.66	2.86	29-31	34	30.5	WD
MW97-WD	4/9/2020	5,698.33	29.33	26.47	5,727.66	2.86	29-31	34	30.5	WD
MW98-WD	1/8/2020	5,691.01	34.72	32.39	5,725.73	2.33	25.5-33	36	33	WD
MW98-WD	4/9/2020	5,691.05	34.68	32.35	5,725.73	2.33	25.5-33	36	33	WD
MW99-WD	1/8/2020	5,699.68	25.82	23.32	5,725.50	2.50	25.5-33	35.5	31.5	WD
MW99-WD	4/9/2020	5,699.86	25.64	23.14	5,725.50	2.50	25.5-33	35.5	31.5	WD
MW-EW-1	1/6/2020	5,697.09	16.43	13.51	5,713.52	2.92	7.8-17.8	17.8	NE, >17.8	ALLUVIUM
MW-EW-1	4/8/2020	5,697.28	16.24	13.32	5,713.52	2.92	7.8-17.8	17.8	NE, >17.8	ALLUVIUM
MW-EW-1LC	1/6/2020	5,694.82	18.15	16.21	5,712.97	1.94	28-38	38.1	23	UNWD
MW-EW-1LC	4/8/2020	5,694.99	17.98	16.04	5,712.97	1.94	28-38	38.1	23	UNWD
MW-EW-1LCRA	1/6/2020	5,693.22	19.64	17.28	5,712.86	2.36	46.5-61.5	64	23	UNWD
MW-EW-1LCRA	4/8/2020	5,693.38	19.48	17.12	5,712.86	2.36	46.5-61.5	64	23	UNWD
MW-EW-2	1/6/2020	5,696.81	16.83	13.81	5,713.64	3.02	8-18	18	NE, >18	ALLUVIUM
MW-EW-2	4/8/2020	5,697.06	16.58	13.56	5,713.64	3.02	8-18	18	NE, >18	ALLUVIUM
MW-EW-2LC	1/6/2020	5,695.22	19.19	16.13	5,714.41	3.06	28-38	38	25	UNWD
MW-EW-2LC	4/8/2020	5,695.42	18.99	15.93	5,714.41	3.06	28-38	38	25	UNWD
MW-EW-2LCR	1/6/2020	5,695.17	20.77	17.83	5,715.94	2.94	46.5-56.5	59	24.5	UNWD
MW-EW-2LCR	4/8/2020	5,695.44	20.5	17.56	5,715.94	2.94	46.5-56.5	59	24.5	UNWD
NBBW-IW-1	1/6/2020	Dry	Dry	Dry	5,709.43	2.61	10-20	27.5	22	WD
NBBW-IW-1	3/11/2020	Dry	Dry	Dry	5,709.43	2.61	10-20	27.5	22	WD
NBBW-IW-1	4/8/2020	Dry	Dry	Dry	5,709.43	2.61	10-20	27.5	22	WD
NBBW-IW-1	5/4/2020	Dry	Dry	Dry	5,709.43	2.61	10-20	27.5	22	WD
NBBW-IW-2	1/6/2020	5,686.43	22.67	19.51	5,709.10	3.16	12-22	28	23	WD
NBBW-IW-2	3/11/2020	5,686.37	22.73	19.57	5,709.10	3.16	12-22	28	23	WD
NBBW-IW-2	4/8/2020	5,686.39	22.71	19.55	5,709.10	3.16	12-22	28	23	WD
NBBW-IW-2	5/4/2020	5,686.44	22.66	19.5	5,709.10	3.16	12-22	28	23	WD
NBBW-IW-3	1/6/2020	5,679.02	33.01	30.45	5,712.03	2.56	11-41	47	42	WD
NBBW-IW-3	3/11/2020	5,679.87	32.16	29.6	5,712.03	2.56	11-41	47	42	WD
NBBW-IW-3	4/8/2020	5,680.02	32.01	29.45	5,712.03	2.56	11-41	47	42	WD
NBBW-IW-3	5/4/2020	5,680.42	31.61	29.05	5,712.03	2.56	11-41	47	42	WD
NEPZ-097	1/10/2020	5,553.25	25.24	25.44	5,578.49	-0.20	23-43	47.3	43.5	UPPER DENVER
NEPZ-097	4/22/2020	5,553.52	24.97	25.17	5,578.49	-0.20	23-43	47.3	43.5	UPPER DENVER
NEPZ-098	1/10/2020	5,554.33	22.3	22.29	5,576.63	0.01	16-46	49.5	45.5	UPPER DENVER
NEPZ-098	4/22/2020	5,554.60	22.03	22.02	5,576.63	0.01	16-46	49.5	45.5	UPPER DENVER

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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/]
NEPZ-099	1/10/2020	5,556.11	19.35	19.31	5,575.46	0.04	12.5-42.5	48.5	43.5	UPPER DENVER
NEPZ-099	4/22/2020	5,556.41	19.05	19.01	5,575.46	0.04	12.5-42.5	48.5	43.5	UPPER DENVER
NEPZ-101	1/10/2020	5,560.03	12.37	13.05	5,572.40	-0.68	19-44	49	43	UPPER DENVER
NEPZ-101	4/22/2020	5,560.32	12.08	12.76	5,572.40	-0.68	19-44	49	43	UPPER DENVER
NEPZ-102	1/10/2020	5,562.60	11	11.44	5,573.60	-0.44	27-42	49	43	UPPER DENVER
NEPZ-102	4/22/2020	5,562.90	10.7	11.14	5,573.60	-0.44	27-42	49	43	UPPER DENVER
NEPZ-103	1/10/2020	5,563.95	10.33	10.87	5,574.28	-0.54	24-44	46	43	UPPER DENVER
NEPZ-103	4/22/2020	5,564.32	9.96	10.5	5,574.28	-0.54	24-44	46	43	UPPER DENVER
NEPZ-104	1/10/2020	5,564.29	10.34	10.56	5,574.63	-0.22	14.8-29.8	33	29.5	UPPER DENVER
NEPZ-104	4/22/2020	5,564.62	10.01	10.23	5,574.63	-0.22	14.8-29.8	33	29.5	UPPER DENVER
NEPZ-105	1/10/2020	5,565.79	10.39	10.62	5,576.18	-0.23	11.8-26.8	29.8	27.2	UPPER DENVER
NEPZ-105	4/22/2020	5,566.08	10.1	10.33	5,576.18	-0.23	11.8-26.8	29.8	27.2	UPPER DENVER
NTES SUMP	1/17/2020	5,728.51	29.42	33.29	5,757.93	-3.87	--	--	--	--
NTES SUMP	4/23/2020	5,728.51	29.42	33.29	5,757.93	-3.87	--	--	--	--
NTES-180W	1/16/2020	5,729.74	35.89	33.77	5,765.63	2.12	15-35	40.5	36	Fill (tire shreds)
NTES-180W	4/23/2020	5,729.65	35.98	33.86	5,765.63	2.12	15-35	40.5	36	Fill (tire shreds)
NTES-EW1	1/17/2020	5,749.81	28.47	26.89	5,778.28	1.58	41-51	53.5	50.5	WD
NTES-EW1	4/23/2020	5,749.54	28.74	27.16	5,778.28	1.58	41-51	53.5	50.5	WD
NTES-EW2	1/16/2020	5,745.72	32.34	29.76	5,778.06	2.58	30-50	55	52	WD
NTES-EW2	4/23/2020	5,745.70	32.36	29.78	5,778.06	2.58	30-50	55	52	WD
NTES-EW3	1/16/2020	5,748.25	31.75	28.45	5,780.00	3.30	27.5-37.5	40	37.5	WD
NTES-EW3	4/23/2020	5,748.33	31.67	28.37	5,780.00	3.30	27.5-37.5	40	37.5	WD
PM-10I	1/9/2020	5,814.89	19.59	17.01	5,834.48	2.58	11.7-49.2	55.25	49.2	WD
PM-10I	4/15/2020	5,814.81	19.67	17.09	5,834.48	2.58	11.7-49.2	55.25	49.2	WD
PM-10X	1/9/2020	5,819.52	14.87	12.08	5,834.39	2.79	11.7-41.7	45.6	41.7	WD
PM-10X	4/15/2020	5,820.47	13.92	11.13	5,834.39	2.79	11.7-41.7	45.6	41.7	WD
PM-11I	1/13/2020	5,773.71	46.31	43.89	5,820.02	2.42	12.5-52.5	58.5	52.5	WD
PM-11I	4/16/2020	5,773.78	46.24	43.82	5,820.02	2.42	12.5-52.5	58.5	52.5	WD
PM-11X	1/13/2020	5,795.74	21.73	19.96	5,817.47	2.44	16-51	55	50.8	WD
PM-11X	4/16/2020	5,795.61	21.86	20.09	5,817.47	2.44	16-51	55	50.8	WD
PM-12I	1/13/2020	5,762.93	41.7	38.97	5,804.63	2.73	23.2-43.2	49.2	43.2	WD
PM-12I	4/16/2020	5,763.09	41.54	38.81	5,804.63	2.73	23.2-43.2	49.2	43.2	WD
PM-12X	1/13/2020	5,769.18	34.33	31.82	5,803.51	2.51	17-47	50	44	WD
PM-12X	4/16/2020	5,768.54	34.97	32.46	5,803.51	2.51	17-47	50	44	WD
PM-13I	1/13/2020	Dry	Dry	Dry	5,791.09	2.89	14.5-34.5	41	34.5	WD
PM-13I	4/16/2020	Dry	Dry	Dry	5,791.09	2.89	14.5-34.5	41	34.5	WD
PM-13X	1/13/2020	Dry	Dry	Dry	5,789.76	2.86	15-35	35	35	WD
PM-13X	4/16/2020	5,752.30	37.46	34.6	5,789.76	2.86	15-35	35	35	WD
PM-14I	1/13/2020	5,749.47	32.97	30.44	5,782.44	2.53	11.6-56.6	62	56.6	WD
PM-14I	4/16/2020	5,749.21	33.23	30.7	5,782.44	2.53	11.6-56.6	62	56.6	WD
PM-14ID	1/13/2020	5,751.05	32.69	30.6	5,783.74	2.09	44.5-54.5	64	54.5	WD
PM-14ID	4/16/2020	5,750.81	32.93	30.84	5,783.74	2.09	44.5-54.5	64	54.5	WD
PM-14X	1/13/2020	5,748.43	32.75	30.09	5,781.18	2.66	26.3-51.3	55	51.3	WD
PM-14X	4/16/2020	5,748.19	32.99	30.33	5,781.18	2.66	26.3-51.3	55	51.3	WD
PM-15I	1/13/2020	5,723.57	53.35	49.83	5,776.92	3.52	18.6-48.6	54	48.6	WD
PM-15I	4/17/2020	5,723.69	53.23	49.71	5,776.92	3.52	18.6-48.6	54	48.6	WD
PM-15I-UD	1/13/2020	5,735.89	39.5	36.81	5,775.39	2.69	57.5-77.5	80	53.10	UNWD
PM-15I-UD	4/17/2020	5,735.78	39.61	36.92	5,775.39	2.69	57.5-77.5	80	53.10	UNWD
PM-15W	1/13/2020	5,746.27	34.08	31.16	5,780.35	2.92	22-32	54	53	WD
PM-15W	4/17/2020	5,746.23	34.12	31.2	5,780.35	2.92	22-32	54	53	WD
PM-15WR	1/13/2020	5,739.69	40.16	37.92	5,779.85	2.24	25-55	58	55.7	WD
PM-15WR	4/17/2020	5,739.62	40.23	37.99	5,779.85	2.24	25-55	58	55.7	WD
PM-15X	1/13/2020	5,736.52	38.12	35.28	5,774.64	2.84	29.3-49.3	52.5	49.4	WD
PM-15X	4/17/2020	5,735.80	38.84	36	5,774.64	2.84	29.3-49.3	52.5	49.4	WD
PM-1I	1/16/2020	5,772.16	21.9	18.94	5,794.06	2.96	15.5-35.5	41	35.5	WD
PM-1I	4/20/2020	5,771.42	22.64	19.68	5,794.06	2.96	15.5-35.5	41	35.5	WD
PM-1X	1/16/2020	5,772.79	19.14	16.51	5,791.93	2.63	14.5-34.5	38	34.5	WD

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PM-1X	4/20/2020	5,772.66	19.27	16.64	5,791.93	2.63	14.5-34.5	38	34.5	WD
PM-2I	1/9/2020	5,770.45	46.45	43.65	5,816.90	2.80	30.2-65.2	71	65.2	WD
PM-2I	4/14/2020	5,770.14	46.76	43.96	5,816.90	2.80	30.2-65.2	71	65.2	WD
PM-2X	1/9/2020	5,777.48	37.74	35.62	5,815.22	2.12	28-63	68	63	WD
PM-2X	4/14/2020	5,777.84	37.38	35.26	5,815.22	2.12	28-63	68	63	WD
PM-3I	1/9/2020	5,779.59	47.95	45.31	5,827.54	2.64	29-64	70	64	WD
PM-3I	4/14/2020	5,779.20	48.34	45.7	5,827.54	2.64	29-64	70	64	WD
PM-3X	1/9/2020	5,778.81	48.21	45.69	5,827.02	2.52	28-68	71	68	WD
PM-3X	4/14/2020	5,778.46	48.56	46.04	5,827.02	2.52	28-68	71	68	WD
PM-4EW1	1/9/2020	5,795.21	42.73	40.09	5,837.94	2.64	32-45	48	45	WD
PM-4EW1	4/15/2020	5,795.12	42.82	40.18	5,837.94	2.64	32-45	48	45	WD
PM-4EW2	1/9/2020	5,795.21	42.71	40.09	5,837.92	2.62	45-52	54.5	52	WD
PM-4EW2	4/15/2020	5,795.07	42.85	40.23	5,837.92	2.62	45-52	54.5	52	WD
PM-4I	1/9/2020	5,793.97	42.75	40.13	5,836.72	2.62	22-57	62.9	57	WD
PM-4I	4/15/2020	5,793.79	42.93	40.31	5,836.72	2.62	22-57	62.9	57	WD
PM-4X	1/9/2020	5,794.18	43.01	40.42	5,837.19	2.59	28.8-48.8	51.9	48.8	WD
PM-4X	4/15/2020	5,794.06	43.13	40.54	5,837.19	2.59	28.8-48.8	51.9	48.8	WD
PM-5I	1/9/2020	5,798.63	38.78	36.67	5,837.41	2.11	22.4-52.4	59	51.4	WD
PM-5I	4/15/2020	5,798.26	39.15	37.04	5,837.41	2.11	22.4-52.4	59	51.4	WD
PM-5X	1/9/2020	5,799.85	38.2	35.65	5,838.05	2.55	22.9-47.9	51.9	47.9	WD
PM-5X	4/15/2020	5,799.27	38.78	36.23	5,838.05	2.55	22.9-47.9	51.9	47.9	WD
PM-6I	1/9/2020	5,797.68	54.5	51.92	5,852.18	2.58	43.9-63.9	69.9	63.9	WD
PM-6I	4/15/2020	5,797.63	54.55	51.97	5,852.18	2.58	43.9-63.9	69.9	63.9	WD
PM-6X	1/9/2020	5,793.99	57.68	55.11	5,851.67	2.57	36.5-61.5	65	61.5	WD
PM-6X	4/15/2020	5,793.79	57.88	55.31	5,851.67	2.57	36.5-61.5	65	61.5	WD
PM-6X-UD	1/9/2020	5,792.47	59.56	57.05	5,852.03	2.51	85 - 109.5	112.5	75	UNWD
PM-6X-UD	4/15/2020	5,792.24	59.79	57.28	5,852.03	2.51	85 - 109.5	112.5	75	UNWD
PM-7I	1/9/2020	5,811.43	41.52	39.47	5,852.95	2.05	27.5-62.5	68.75	62.5	WD
PM-7I	4/15/2020	5,811.05	41.9	39.85	5,852.95	2.05	27.5-62.5	68.75	62.5	WD
PM-7X	1/9/2020	5,818.64	34.97	32.16	5,853.61	2.81	16.5-66.5	70	66.5	WD
PM-7X	4/15/2020	5,817.87	35.74	32.93	5,853.61	2.81	16.5-66.5	70	66.5	WD
PM-8I	1/9/2020	5,817.22	26.2	23.98	5,843.42	2.22	12.3-64.8	71.3	64.8	WD
PM-8I	4/15/2020	5,816.91	26.51	24.29	5,843.42	2.22	12.3-64.8	71.3	64.8	WD
PM-8X	1/9/2020	5,825.73	18.09	15.27	5,843.82	2.82	10.2-65.2	70	65.2	WD
PM-8X	4/15/2020	5,826.35	17.47	14.65	5,843.82	2.82	10.2-65.2	70	65.2	WD
PM-9I	1/9/2020	5,816.57	24.86	22.43	5,841.43	2.43	12-44.5	50.25	44.5	WD
PM-9I	4/15/2020	5,816.45	24.98	22.55	5,841.43	2.43	12-44.5	50.25	44.5	WD
PM-9X	1/9/2020	5,824.91	15.98	12.79	5,840.89	3.19	11.75-	50	46.8	WD
PM-9X	4/15/2020	5,826.55	14.34	11.15	5,840.89	3.19	11.75-	50	46.8	WD
PTP-1	1/6/2020	5,695.57	37.1	33.33	5,732.67	3.77	25-40	40	NE, >40	WD
PTP-1	4/9/2020	5,695.66	37.01	33.24	5,732.67	3.77	25-40	40	NE, >40	WD
PTP-10C	1/6/2020	5,693.95	32.55	28.25	5,726.50	4.30	19-34	34	32	WD
PTP-10C	4/8/2020	5,693.91	32.59	28.29	5,726.50	4.30	19-34	34	32	WD
PTP-11	1/6/2020	5,687.07	23.11	19.53	5,710.18	3.58	12-22	23.9	22	WD
PTP-11	3/11/2020	5,687.28	22.9	19.32	5,710.18	3.58	12-22	23.9	22	WD
PTP-11	4/8/2020	5,687.44	22.74	19.16	5,710.18	3.58	12-22	23.9	22	WD
PTP-11	5/4/2020	5,687.54	22.64	19.06	5,710.18	3.58	12-22	23.9	22	WD
PTP-12	1/6/2020	5,688.13	25	22.17	5,713.13	2.83	12-27	27	26	WD
PTP-12	3/11/2020	5,688.32	24.81	21.98	5,713.13	2.83	12-27	27	26	WD
PTP-12	4/8/2020	5,688.45	24.68	21.85	5,713.13	2.83	12-27	27	26	WD
PTP-12	5/4/2020	5,688.57	24.56	21.73	5,713.13	2.83	12-27	27	26	WD
PTP-13	1/6/2020	5,687.61	25.95	23.79	5,713.56	2.16	12.5-27.5	27.5	27	WD
PTP-13	3/11/2020	5,687.84	25.72	23.56	5,713.56	2.16	12.5-27.5	27.5	27	WD
PTP-13	4/8/2020	5,687.88	25.68	23.52	5,713.56	2.16	12.5-27.5	27.5	27	WD
PTP-13	5/4/2020	5,688.08	25.48	23.32	5,713.56	2.16	12.5-27.5	27.5	27	WD
PTP-14	1/6/2020	5,683.94	25.11	22.86	5,709.05	2.25	12-27	27	26.5	WD
PTP-14	3/11/2020	5,684.43	24.62	22.37	5,709.05	2.25	12-27	27	26.5	WD

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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-14	4/8/2020	5,684.62	24.43	22.18	5,709.05	2.25	12-27	27	26.5	WD
PTP-14	5/4/2020	5,684.78	24.27	22.02	5,709.05	2.25	12-27	27	26.5	WD
PTP-15	1/6/2020	5,682.68	22.26	19.42	5,704.94	2.84	7.5-22.5	23.7	22.5	WD
PTP-15	3/11/2020	5,683.38	21.56	18.72	5,704.94	2.84	7.5-22.5	23.7	22.5	WD
PTP-15	4/8/2020	5,683.63	21.31	18.47	5,704.94	2.84	7.5-22.5	23.7	22.5	WD
PTP-15	5/4/2020	5,683.88	21.06	18.22	5,704.94	2.84	7.5-22.5	23.7	22.5	WD
PTP-15S	1/6/2020	Dry	Dry	Dry	5,704.55	2.35	7-12	12	NE, >12	WD
PTP-15S	4/8/2020	Dry	Dry	Dry	5,704.55	2.35	7-12	12	NE, >12	WD
PTP-16	1/6/2020	Dry	Dry	Dry	5,703.46	0.36	4.5-14.5	17	NE, >17	WD
PTP-16	4/9/2020	Dry	Dry	Dry	5,703.46	0.36	4.5-14.5	17	NE, >17	WD
PTP-17S	1/6/2020	Dry	Dry	Dry	5,711.50	4.50	10-15	15	NE, >15	WD
PTP-17S	4/9/2020	Dry	Dry	Dry	5,711.50	4.50	10-15	15	NE, >15	WD
PTP-18	1/6/2020	Dry	Dry	Dry	5,712.55	3.85	15.5-30.5	30.5	30.5	WD
PTP-18	4/9/2020	5,680.09	32.46	28.61	5,712.55	3.85	15.5-30.5	30.5	30.5	WD
PTP-19	1/6/2020	Dry	Dry	Dry	5,715.56	3.86	9.5-24.5	39	38.8	WD
PTP-19	4/9/2020	Dry	Dry	Dry	5,715.56	3.86	9.5-24.5	39	38.8	WD
PTP-20	1/6/2020	Dry	Dry	Dry	5,707.16	3.66	6-21	23.5	21	WD
PTP-20	4/8/2020	Dry	Dry	Dry	5,707.16	3.66	6-21	23.5	21	WD
PTP-20S	1/6/2020	Dry	Dry	Dry	5,706.15	2.65	NA	--	NA	WD
PTP-20S	4/8/2020	Dry	Dry	Dry	5,706.15	2.65	NA	--	NA	WD
PTP-21	1/6/2020	5,688.35	22.26	19.85	5,710.61	2.41	7.5-22.5	22.5	21	WD
PTP-21	3/11/2020	5,688.10	22.51	20.1	5,710.61	2.41	7.5-22.5	22.5	21	WD
PTP-21	4/8/2020	5,688.12	22.49	20.08	5,710.61	2.41	7.5-22.5	22.5	21	WD
PTP-21	5/4/2020	5,688.21	22.4	19.99	5,710.61	2.41	7.5-22.5	22.5	21	WD
PTP-22	1/6/2020	5,688.75	23.42	20.55	5,712.17	2.87	6-21	21	21	WD
PTP-22	3/11/2020	Dry	Dry	Dry	5,712.17	2.87	6-21	21	21	WD
PTP-22	4/8/2020	5,688.57	23.6	20.73	5,712.17	2.87	6-21	21	21	WD
PTP-22	5/4/2020	5,688.69	23.48	20.61	5,712.17	2.87	6-21	21	21	WD
PTP-22S	1/6/2020	Dry	Dry	Dry	5,711.50	2.20	7-12	12	NE, >12	WD
PTP-22S	4/8/2020	Dry	Dry	Dry	5,711.50	2.20	7-12	12	NE, >12	WD
PTP-23	1/6/2020	5,692.96	32.37	28.56	5,725.33	3.81	23-33	33	32	WD
PTP-23	4/8/2020	5,693.09	32.24	28.43	5,725.33	3.81	23-33	33	32	WD
PTP-24	1/6/2020	5,692.49	28.74	25.54	5,721.23	3.20	22-32	32	29.5	WD
PTP-24	4/8/2020	5,692.51	28.72	25.52	5,721.23	3.20	22-32	32	29.5	WD
PTP-25	1/6/2020	5,688.54	24.85	22.88	5,713.39	1.97	18.3-28.3	28.29	27	WD
PTP-25	4/9/2020	5,688.57	24.82	22.85	5,713.39	1.97	18.3-28.3	28.29	27	WD
PTP-26	1/6/2020	5,689.19	35.4	32.5	5,724.59	2.90	24-34	34	34	WD
PTP-26	4/9/2020	5,689.21	35.38	32.48	5,724.59	2.90	24-34	34	34	WD
PTP-27	1/6/2020	5,694.24	33.3	30.6	5,727.54	2.70	24-34	34	34	WD
PTP-27	4/9/2020	5,694.16	33.38	30.68	5,727.54	2.70	24-34	34	34	WD
PTP-2F	1/6/2020	5,692.86	36.26	32.24	5,729.12	4.02	22.5-37.5	37.5	36	WD
PTP-2F	4/9/2020	5,692.84	36.28	32.26	5,729.12	4.02	22.5-37.5	37.5	36	WD
PTP-3F	1/6/2020	5,690.94	34.1	30.46	5,725.04	3.64	16.5-31.5	31.5	NE, >31.5	WD
PTP-3F	4/9/2020	5,690.94	34.1	30.46	5,725.04	3.64	16.5-31.5	31.5	NE, >31.5	WD
PTP-4C	1/6/2020	5,690.67	29.8	25.93	5,720.47	3.87	17-27	27.2	NE, >27.2	WD
PTP-4C	4/9/2020	5,690.88	29.59	25.72	5,720.47	3.87	17-27	27.2	NE, >27.2	WD
PTP-5A	1/6/2020	Dry	Dry	Dry	5,717.37	3.37	15-25	25	NE, >25	WD
PTP-5A	4/9/2020	Dry	Dry	Dry	5,717.37	3.37	15-25	25	NE, >25	WD
PTP-6B	1/6/2020	5,688.64	24.42	20.46	5,713.06	3.96	9-24	24	NE, >24	WD
PTP-6B	4/8/2020	5,688.64	24.42	20.46	5,713.06	3.96	9-24	24	NE, >24	WD
PTP-7H	1/6/2020	5,688.96	23.57	20.14	5,712.53	3.43	12.5-22.5	22.5	NE, >22.5	WD
PTP-7H	4/8/2020	5,688.91	23.62	20.19	5,712.53	3.43	12.5-22.5	22.5	NE, >22.5	WD
PTP-8A	1/6/2020	5,689.78	28.08	25.12	5,717.86	2.96	16-26	26	NE, >26	WD
PTP-8A	4/8/2020	5,689.79	28.07	25.11	5,717.86	2.96	16-26	26	NE, >26	WD
PTP-9	1/6/2020	Dry	Dry	Dry	5,722.06	3.46	17-27	27	NE, >27	WD
PTP-9	4/8/2020	Dry	Dry	Dry	5,722.06	3.46	17-27	27	NE, >27	WD
PZ-101A	1/9/2020	5,681.89	144.31	142.01	5,826.20	2.30	314.6-	328	48	LIGNITE

TABLE 4.2
WATER LEVEL ELEVATIONS
JANUARY THROUGH JUNE 2020 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/]
PZ-101A	4/15/2020	5,683.37	142.83	140.53	5,826.20	2.30	314.6-	328	48	LIGNITE
PZ-103	1/9/2020	5,679.69	116.09	109.61	5,795.78	6.48	291.5-302	302.3	30	LIGNITE
PZ-103	4/15/2020	5,679.86	115.92	109.44	5,795.78	6.48	291.5-302	302.3	30	LIGNITE
RDPZ-102	1/9/2020	5,783.30	64.78	62.33	5,848.08	2.45	47.5-67	69.5	69.5	WD
RDPZ-102	4/15/2020	5,783.35	64.73	62.28	5,848.08	2.45	47.5-67	69.5	69.5	WD
SUMP	1/6/2020	5,685.66	27.08	27.98	5,712.74	-0.90	10-32.9	32.9	--	NO GEOLOGIC
SUMP	4/9/2020	5,685.69	27.05	27.95	5,712.74	-0.90	10-32.9	32.9	--	NO GEOLOGIC
T1-1	1/10/2020	5,674.78	3.49	1.42	5,678.27	2.07	7.5-17.5	17.5	--	ALLUVIUM
T1-1	4/22/2020	5,674.89	3.38	1.31	5,678.27	2.07	7.5-17.5	17.5	--	ALLUVIUM
T1-2	1/10/2020	5,675.41	9.61	6.29	5,685.02	3.32	10-20	20	--	WD
T1-2	4/22/2020	5,675.71	9.31	5.99	5,685.02	3.32	10-20	20	--	WD
T1-3	1/10/2020	5,675.57	3.89	0.43	5,679.46	3.46	6.4-16.4	16.4	--	WD
T1-3	4/22/2020	5,675.67	3.79	0.33	5,679.46	3.46	6.4-16.4	16.4	--	WD
T1-4	1/10/2020	5,676.09	4	0.61	5,680.09	3.39	4-14	14	--	WD
T1-4	4/22/2020	5,676.16	3.93	0.54	5,680.09	3.39	4-14	14	--	WD
T1-5	1/10/2020	5,677.30	15.4	12	5,692.70	3.40	14-24	24	--	WD
T1-5	4/22/2020	5,677.55	15.15	11.75	5,692.70	3.40	14-24	24	--	WD
TR-1	1/6/2020	Dry	Dry	Dry	5,706.65	1.72	8-18	18	NE, >18	WD
TR-1	3/11/2020	Dry	Dry	Dry	5,706.65	1.72	8-18	18	NE, >18	WD
TR-1	4/8/2020	Dry	Dry	Dry	5,706.65	1.72	8-18	18	NE, >18	WD
TR-1	5/4/2020	Dry	Dry	Dry	5,706.65	1.72	8-18	18	NE, >18	WD
U-518R-WD	1/13/2020	5,752.00	46.71	44.5	5,798.71	2.21	39.5 - 49.5	52.7	50.5	WD
U-518R-WD	4/16/2020	5,752.09	46.62	44.41	5,798.71	2.21	39.5 - 49.5	52.7	50.5	WD
U-701	1/6/2020	5,689.09	27.25	24.63	5,716.34	2.62	34-44	44	33.6	UNWD
U-701	4/8/2020	5,688.86	27.48	24.86	5,716.34	2.62	34-44	44	33.6	UNWD
U-701-WD	1/6/2020	Dry	Dry	Dry	5,716.24	2.23	12.7-22.7	22.7	34.9	WD
U-701-WD	4/8/2020	Dry	Dry	Dry	5,716.24	2.23	12.7-22.7	22.7	34.9	WD
WEST CLEANOUT	1/17/2020	Dry	Dry	Dry	5,772.41	--	--	--	--	NO GEOLOGIC
WEST CLEANOUT	4/23/2020	Dry	Dry	Dry	5,772.41	--	--	--	--	NO GEOLOGIC

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 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		1st Quarter 2020				2nd Quarter 2020			
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	1/6/2020	-5.23	35.24	-0.148	4/9/2020	-7.30	36.52	-0.200
B-305WD	B-305-R	1/6/2020	-6.27	10.44	-0.60	4/8/2020	-6.37	10.49	-0.608
B-307	B-306	1/6/2020	B-307 Dry			4/8/2020	B-307 Dry		
B-313	B-313-UD	1/6/2020	-2.08	28.69	-0.072	4/8/2020	-0.70	28.28	-0.025
B-314	B-314-UD	1/6/2020	-5.20	31.62	-0.164	4/9/2020	-4.86	31.59	-0.154
B-316	B-316-UD	1/6/2020	-18.49	22.73	-0.813	4/8/2020	-12.60	22.73	-0.554
B-317	B-317-UD	1/6/2020	2.09	23.61	0.089	4/8/2020	2.26	23.64	0.096
B-327-WD	B-327-UD	1/6/2020	-1.30	29.75	-0.044	4/8/2020	-0.64	29.56	-0.022
B-712-UD	B-712-LD	1/16/2020	-6.76	43.40	-0.156	4/23/2020	-6.76	43.40	-0.156
BKGD-2WD	BKGD-2UD	1/8/2020	-28.33	21.87	-1.295	4/15/2020	-32.67	21.87	-1.494
BM-4X-50S	BM-4X-40S	1/9/2020	-8.01	29.31	-0.273	4/15/2020	-8.22	29.24	-0.281
BW-PZ-1	BW-PZ-1LC	1/6/2020	-2.42	16.30	-0.149	4/9/2020	-2.23	16.31	-0.137
C-702Q3	C-702P4	1/16/2020	0.82	18.10	0.045	4/23/2020	0.57	18.10	0.031
GW-107A	GW-107UD	1/6/2020	0.86	22.07	0.039	4/8/2020	0.60	22.23	0.027
GW-114A	GW-108A	1/6/2020	-5.69	33.63	-0.169	4/9/2020	-5.33	33.61	-0.159
MW-1000	MW-1000LC	1/6/2020	MW-1000 Dry			4/9/2020	0.72	42.65	0.017
MW33-WDR	MW33-UD	1/9/2020	MW33-WDR Dry			4/15/2020	MW33-WDR Dry		
MW36-WDR	MW36-UD	1/9/2020	-4.77	24.70	-0.193	4/14/2020	-4.22	24.70	-0.171
MW37-WD	MW37-UD	1/6/2020	2.93	14.68	0.200	4/8/2020	3.09	14.72	0.210
MW38-1064N-650E	MW38-1064N-655E	1/15/2020	-8.29	18.04	-0.460	4/20/2020	-10.40	19.10	-0.545
MW38-1373N-180W	MW38-1363N-180W	1/15/2020	1.29	29.38	0.044	4/20/2020	1.60	29.25	0.055
MW38-350S-50W	MW38-302S-50W	1/16/2020	-4.33	8.82	-0.491	4/20/2020	-4.05	8.68	-0.467
MW38-400N-180W	MW38-410N-180W	1/15/2020	-38.59	35.53	-1.086	4/20/2020	-38.58	35.62	-1.083
MW38-400N-240E	MW38-400N-300E	1/15/2020	-19.76	32.49	-0.608	4/20/2020	-20.64	32.76	-0.630
MW39-WD	MW39-UD	1/9/2020	-22.68	31.01	-0.731	4/14/2020	-22.48	30.81	-0.730
MW42-WD	MW42-UD	1/9/2020	-2.89	34.26	-0.084	4/15/2020	-2.79	34.07	-0.082
MW49-WD	B-519	1/9/2020	0.73	29.20	0.025	4/15/2020	0.75	29.20	0.026
MW51-WD	MW51-10S	1/13/2020	-0.66	15.48	-0.043	4/16/2020	-0.71	15.45	-0.046
MW51X-WD-100S	B-518	1/13/2020	7.40	38.00	0.195	4/16/2020	7.56	38.00	0.199
MW52-WD	MW52-UD	1/13/2020	-3.37	38.06	-0.089	4/16/2020	-2.88	37.87	-0.076
MW54-WD	MW54-UDR	1/13/2020	0.80	28.39	0.028	4/17/2020	0.53	28.50	0.019
MW62-WDR	MW62-UD	1/6/2020	-6.93	31.74	-0.218	4/8/2020	-6.48	31.63	-0.205
MW71-WD	MW71-UD	1/13/2020	0.77	46.33	0.017	4/17/2020	0.66	46.47	0.014
MW72-WD	MW72-UD	1/13/2020	-3.33	36.10	-0.092	4/17/2020	-3.05	36.10	-0.084
MW73-WD	MW73-UD	1/6/2020	-4.44	41.10	-0.108	4/9/2020	-4.52	41.17	-0.110
MW74-WD	MW74-UD	1/15/2020	-4.18	34.70	-0.120	4/20/2020	-4.11	34.70	-0.118
MW75-WD	MW75-UD	1/15/2020	-13.27	44.09	-0.301	4/20/2020	-14.51	44.09	-0.329

TABLE 4.3
SUMMARY OF VERTICAL HYDRAULIC GRADIENT CALCULATIONS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

		1st Quarter 2020				2nd Quarter 2020			
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)
MW76-WD	MW76-UD	1/15/2020	-22.79	42.00	-0.543	4/20/2020	-25.10	42.00	-0.598
MW77-WD	MW77-UD	1/8/2020	-3.79	34.50	-0.110	4/9/2020	-4.08	34.73	-0.117
MW78-WD	MW78-UD	1/13/2020	0.88	32.69	0.027	4/17/2020	0.32	32.86	0.010
MW79-WD	MW79-UD	1/13/2020	-0.36	34.70	-0.010	4/17/2020	-0.48	34.70	-0.014
MW91-WD	MW91-UD	1/13/2020	-1.28	43.50	-0.029	4/17/2020	-1.25	43.50	-0.029
MW93-WD	MW93-UD	1/13/2020	1.92	22.12	0.087	4/17/2020	2.22	22.16	0.100
MW-EW-1	MW-EW-1LC	1/6/2020	-2.27	17.34	-0.131	4/8/2020	-2.29	17.44	-0.131
MW-EW-1	MW-EW-1LCRA	1/6/2020	-6.23	38.44	-0.162	4/8/2020	-6.26	38.54	-0.162
MW-EW-2	MW-EW-2LC	1/6/2020	-1.59	16.35	-0.097	4/8/2020	-1.64	16.48	-0.100
NTES-EW1	B-712-UD	1/17/2020	-1.52	24.40	-0.062	4/23/2020	-1.13	24.40	-0.046
BM-15I-15N	PM-15I-UD	1/13/2020	BM-15I-15N Dry			4/17/2020	BM-15I-15N Dry		
U-701-WD	U-701	1/6/2020	U-701-WD Dry			4/8/2020	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

Well pair affected by cessation of potable water injection

Water level still recovering after sample

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2020 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 2020	2nd Quarter 2020	3rd Quarter 2020[e/]	4th Quarter 2020[e/]
B-313	Compliance/Effectiveness/B-326-UD & B-313 RAWP[f/]/Cessation	NB	WD	Semi-annual (Compliance)/Quarterly (Cessation and RAWP)	4/28/2020	1/28/2020 2/11/2020	4/28/2020	X	X
B-313-UD	Compliance/Cessation	NB	UNWD	Biennial (Compliance)/Quarterly for Cessation	4/29/2020	1/27/2020 2/6/2020	4/29/2020	X	X
B-314	Compliance/Effectiveness	NB	WD	Semi-annual	5/18/2020	2/6/2020	5/18/2020		X
B-314-UD	Compliance	NB	UNWD	Biennial	2/6/2020	2/6/2020		X	
B-321	B-326-UD & B-313 RAWP	NB	WD	Quarterly for RAWP	4/29/2020	2/24/2020	4/29/2020	X	X
B-326-UD	Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Cessation	NB	UNWD	Biennial (Compliance)/Quarterly (NE, RAWP & Cessation)	5/27/2020	2/12/2020	5/27/2020	X	X
B-326-WD	Compliance/Effectiveness/North End Monitoring/Cessation	NB	WD	Semi-annual (Compliance)/Quarterly (NE & Cessation)	5/28/2020	2/12/2020	5/28/2020	X	X
B-327-UD	Compliance	NB	UNWD	Biennial	8/10/2018			X	
B-712-LD	Vertical Migration	INT	UNWD	Biennial	8/21/2018			X	
BKGD-3WD	Performance Evaluation Sample	EXT-S	WD	Annual	9/24/2019			X	
BM-11X-100N	Compliance/Effectiveness	EB	WD	Semi-annual	4/30/2020		4/30/2020		X
BM-11X-100S	Compliance/Effectiveness	EB	WD	Semi-annual	4/30/2020		4/30/2020		X
BM-15E2	Compliance	EB	WD	Semi-annual	5/7/2020		5/7/2020		X
BM-15N6	Compliance/Effectiveness	EB	WD	Semi-annual	5/13/2020		5/13/2020		X
GW-106	Compliance	NB	WD	Semi-annual	5/12/2020		5/12/2020		X
GW-108A	Compliance	NB	UNWD	Biennial	8/21/2018			X	
GW-109	Compliance/Effectiveness/Cessation	NB	ALLUVIUM	Semi-annual (Compliance & Effectiveness)/Quarterly (Cessation)	6/1/2020	3/2/2020	6/1/2020	X	X
MNA-01	Effectiveness	INT	WD	Semi-annual	6/9/2020		6/9/2020		X
MNA-03	Effectiveness	INT	WD	Semi-annual	6/9/2020		6/9/2020		X
MW05-WD	North End Monitoring	NE	WD	Semi-annual	2/26/2020	2/26/2020		X	
MW102-WD	North End Monitoring	NB	WD	Quarterly	5/21/2020	2/13/2020	5/21/2020	X	X
MW103-WD	North End Monitoring	NE	WD	Quarterly	5/6/2020	1/30/2020	5/6/2020	X	X
MW105-WD	Compliance	EB	WD	Semi-annual	6/24/2020	2/3/2020	6/24/2020		X
MW106-UD	Compliance	EB	UNWD	Biennial	8/9/2018			X	
MW107-UD	Compliance	EB	UNWD	Biennial	8/20/2018			X	
MW108-WD	Compliance	EB	WD	Semi-annual	4/27/2020		4/27/2020		X
MW113-EW-1	North End Monitoring/Molybdenum Investigation	NE	WD	Quarterly (NE Monitoring)/Weekly (Moly Invest)	6/30/2020	sampled 13 times	sampled 13 times	X	X
MW113-LD	Cessation/Molybdenum Investigation	NE	UNWD	NA[g/]	4/21/2020		4/21/2020		

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2020 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 2020	2nd Quarter 2020	3rd Quarter 2020[e/]	4th Quarter 2020[e/]
MW113-UD	North End Monitoring/Cessation/Molybdenum Investigation	NE	UNWD	Quarterly(NE Monitoring)/Monthly (Moly Invest)	6/23/2020	1/27/2020 2/11/2020 3/24/2020	4/28/2020 5/19/2020 6/23/2020	X	X
MW113-WD	Cessation/Molybdenum Investigation	NE	WD	Quarterly (Cessation)/Bi-weekly (Moly Invest)	6/4/2020	1/27/2020 2/5/2020	4/21/2020 5/19/2020 6/4/2020	X	X
MW114-WD	North End Monitoring	NE	WD	Quarterly	5/18/2020	2/18/2020	5/18/2020	X	X
MW118-WD	North End Monitoring	NE	WD	Quarterly	5/18/2020	2/18/2020	5/18/2020	X	X
MW121-WDR	North End Monitoring	NE	WD	Semi-annual	1/22/2020	1/22/2020		X	
MW122-WDR	North End Monitoring	NE	WD	Semi-annual	1/22/2020	1/22/2020		X	
MW123-WD	North End Monitoring	NE	WD	Semi-annual	1/22/2020	1/22/2020		X	
MW124-WD	North End Monitoring	NE	WD	Semi-annual	1/23/2020	1/23/2020		X	
MW125-WD	North End Monitoring	NE	WD	Semi-annual	1/23/2020	1/23/2020		X	
MW129-WD	North End Monitoring	NE	WD	Semi-annual	1/23/2020	1/23/2020		X	
MW132-WD	North End Monitoring	NE	WD	Quarterly	5/6/2020	1/21/2020 3/3/2020	5/6/2020	X	X
MW135-WD	North End Monitoring	NE	WD	Semi-annual	1/29/2020	1/29/2020		X	
MW139-WD	Molybdenum Investigation	NE	WD	NA	3/10/2020	3/10/2020			
MW141-WD	North End Monitoring	NE	WD	Semi-annual	1/29/2020	1/29/2020		X	
MW142-WD	North End Monitoring	NE	WD	Semi-annual	1/30/2020	1/30/2020		X	
MW144-WD	North End Monitoring	NE	WD	Semi-annual	1/30/2020	1/30/2020		X	
MW151-WD	North End Monitoring	NE	WD	Quarterly	5/6/2020	1/22/2020	5/6/2020	X	X
MW153-EW-1	North End Monitoring	NE	WD	Quarterly	5/19/2020	2/20/2020	5/19/2020	X	X
MW154-EW-1	North End Monitoring	NE	WD	Quarterly	5/21/2020	2/20/2020	5/21/2020	X	X
MW155-EW-1	North End Monitoring	NE	WD	Quarterly	5/21/2020	2/20/2020	5/21/2020	X	X
MW156-EW-1	North End Monitoring	NE	WD	Quarterly	5/27/2020	2/24/2020	5/27/2020	X	X
MW156-WD	North End Monitoring	NE	WD	Quarterly	5/26/2020	2/11/2020	5/26/2020	X	X
MW157-WD	North End Monitoring	NE	WD	Quarterly	5/26/2020	2/11/2020	5/26/2020	X	X
MW160-WD	North End Monitoring	NE	WD	Quarterly	5/19/2020	2/20/2020	5/19/2020	X	X
MW170-EW-1	MW77 Response Action/Cessation	EB	WD	Quarterly	5/12/2020	sampled 11 times	5/12/2020	X	X
MW176-DEN	North End Monitoring	NE	Upper Denver	Quarterly	5/27/2020	2/19/2020	5/27/2020	X	X
MW179-UDEN	North End Monitoring	NE	UDEN	Quarterly	5/23/2019				X
MW23-C-SD	Compliance	EB	UNWD	Biennial	7/31/2018			X	
MW23-UPPER-C	Compliance	EB	WD	Semi-annual	5/18/2020		5/18/2020		X
MW36-WDR	Compliance	WB	WD	Semi-annual	5/13/2020		5/13/2020		X
MW38-1028N-256E	MW38 Source Control	WB	WD	Semi-annual	5/5/2020		5/5/2020		X
MW38-170S-140W	MW38 Source Control	WB	WD	Semi-annual	5/5/2020		5/5/2020		X
MW38-825S-445E	MW38 Source Control	WB	WD	Semi-annual	5/6/2020		5/6/2020		X

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2020 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 2020	2nd Quarter 2020	3rd Quarter 2020[e/]	4th Quarter 2020[e/]
MW38-830N-230E	Compliance	WB	WD	Semi-annual	6/22/2020	1/28/2020	6/22/2020		X
MW42-UD	Compliance	WB	UNWD	Biennial	8/15/2018			X	
MW43-WD	Compliance	WB	WD	Semi-annual	6/25/2020	2/4/2020	6/25/2020		X
MW54-WD	Compliance	EB	WD	Semi-annual	5/12/2020		5/12/2020		X
MW60-WD	Compliance	EB	WD	Semi-annual	6/23/2020	1/29/2020	6/23/2020		X
MW62-UD	Molybdenum Investigation	NB	UNWD	NA	2/11/2020	2/11/2020			
MW62-WDR	Compliance/Effectiveness	NB	WD	Semi-annual	5/14/2020	2/10/2020	5/14/2020		X
MW70-WD	VES Performance	EB	WD	Semi-annual	5/14/2020		5/14/2020		X
MW71-WD	Compliance	EB	WD	Semi-annual	4/29/2020		4/29/2020		X
MW72-UD	Compliance	EB	UNWD	Biennial	8/20/2018			X	
MW74-UD	Compliance	NB	UNWD	Biennial	8/1/2018			X	
MW74-WD	Compliance	NB	WD	Semi-annual	5/7/2020		5/7/2020		X
MW76-UD	Compliance	NB	UNWD	Biennial	8/16/2018			X	
MW77-EW-1	North End Monitoring	EB	WD	Quarterly	5/21/2020	2/13/2020	5/21/2020	X	X
MW77-EW-2	North End Monitoring	EB	WD	Quarterly	5/21/2020	2/13/2020	5/21/2020	X	X
MW77-WD	Compliance	EB	WD	Semi-annual	5/4/2020		5/4/2020		X
MW78-UD	Compliance	EB	UNWD	Biennial	7/16/2019			X	
MW78-WD	Compliance	EB	WD	Semi-annual	4/29/2020		4/29/2020		X
MW90-UD	Compliance/Molybdenum Investigation	EB	UNWD	Biennial	5/18/2020		5/18/2020		
MW90-WD	Compliance	EB	WD	Semi-annual	5/4/2020		5/4/2020		X
MW91-UD	Compliance	EB	UNWD	Biennial	2/3/2020	2/3/2020		X	
MW91-WD	Compliance	EB	WD	Semi-annual	2/3/2020	2/3/2020			X
MW98-WD	North End Monitoring	NB	WD	Quarterly	5/21/2020	2/13/2020	5/21/2020	X	X
NBBW-IW-2	Molybdenum Investigation	NB	WD	NA	3/31/2020	3/31/2020			
NBBW-IW-3	Molybdenum Investigation	NB	WD	Weekly	6/30/2020	3/11/2020	6/2/2020 6/9/2020 6/16/2020 6/23/2020 6/30/2020	X	X
Pingle	Homeowner Well	NE	UPPER DENVER	Annual	6/25/2020		6/25/2020		
PM-13X	Effectiveness	EB	WD	Semi-annual	6/8/2020		6/8/2020		X
PM-14X	Compliance/Effectiveness	EB	WD	Semi-annual	5/13/2020		5/13/2020		X
PM-3X	Effectiveness	WB	WD	Semi-annual	6/8/2020		6/8/2020		X
PM-6X	Effectiveness	SB	WD	Semi-annual	6/8/2020		6/8/2020		X
PM-6X-UD	Compliance	SB	UNWD	Biennial	9/4/2018			X	
PTP-11	Molybdenum Investigation	NB	WD	Quarterly	6/4/2020	3/30/2020	6/4/2020	X	X
PTP-12	Molybdenum Investigation	NB	WD	Quarterly	6/4/2020	3/30/2020	6/4/2020	X	X
PTP-13**	North End Monitoring/Cessation	NB	WD	Quarterly	6/2/2020	2/27/2020	6/2/2020	X	X
PTP-14	Cessation/Molybdenum Investigation	NB	WD	Quarterly	6/2/2020	3/4/2020	6/2/2020	X	X

TABLE 4.4
GROUNDWATER SAMPLING ACTIVITIES
JANUARY THROUGH JUNE 2020 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 2020	2nd Quarter 2020	3rd Quarter 2020[e/]	4th Quarter 2020[e/]
PTP-15	Molybdenum Investigation	NB	WD	NA	3/30/2020	3/30/2020			
PTP-18	Molybdenum Investigation	NB	WD	NA	3/5/2020	3/5/2020			
PTP-21	Molybdenum Investigation	NB	WD	NA	3/31/2020	3/31/2020			
Reed	Homeowner Well	NE	DENVER	Annual	6/25/2020		6/25/2020		
U-518R-WD	Compliance	EB	WD	Semi-annual	4/27/2020		4/27/2020		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

** Bailer lost in well - may be unable to collect sample

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 2020

f/ RAWP = Response Action Work Plan

g/ NA for frequency means there is no set frequency - sampled as needed for investigations

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
B-313	1,4-Dioxane	1/28/2020	20		µg/L	0.9
B-313	1,4-Dioxane	4/28/2020	21		µg/L	0.9
B-313	Alkalinity, Bicarbonate	1/28/2020	220000		µg/L	5000
B-313	Alkalinity, Bicarbonate	4/28/2020	220000		µg/L	5000
B-313	Alkalinity, Total	1/28/2020	220000		µg/L	5000
B-313	Alkalinity, Total	4/28/2020	220000		µg/L	5000
B-313	Calcium	1/28/2020	470000		µg/L	200
B-313	Calcium	4/28/2020	410000		µg/L	200
B-313	Chloride	1/28/2020	410000		µg/L	15000
B-313	Chloride	4/28/2020	360000		µg/L	60000
B-313	Magnesium	1/28/2020	59000		µg/L	200
B-313	Magnesium	4/28/2020	56000		µg/L	200
B-313	Molybdenum, Dissolved	2/11/2020	3.3	J	µg/L	30
B-313	Molybdenum, Dissolved	4/28/2020	2.7	J	µg/L	20
B-313	Molybdenum, Total	2/11/2020	4.6	J	µg/L	30
B-313	Nitrogen, Nitrate	1/28/2020	30000		µg/L	2500
B-313	Nitrogen, Nitrate	4/28/2020	28000		µg/L	10000
B-313	Potassium	1/28/2020	9600		µg/L	3000
B-313	Potassium	4/28/2020	9300		µg/L	3000
B-313	Sodium	1/28/2020	420000		µg/L	5000
B-313	Sodium	4/28/2020	380000		µg/L	5000
B-313	Sulfate	1/28/2020	1300000		µg/L	100000
B-313	Sulfate	4/28/2020	1100000		µg/L	100000
B-313	Total Dissolved Solids	1/28/2020	3000000		µg/L	40000
B-313	Total Dissolved Solids	4/28/2020	2700000		µg/L	40000
B-313-UD	Alkalinity, Bicarbonate	1/27/2020	110000		µg/L	5000
B-313-UD	Alkalinity, Bicarbonate	4/29/2020	120000		µg/L	5000
B-313-UD	Alkalinity, Total	1/27/2020	110000		µg/L	5000
B-313-UD	Alkalinity, Total	4/29/2020	120000		µg/L	5000
B-313-UD	Calcium	1/27/2020	76000		µg/L	200
B-313-UD	Calcium	4/29/2020	83000		µg/L	200
B-313-UD	Chloride	1/27/2020	34000		µg/L	15000
B-313-UD	Chloride	4/29/2020	33000		µg/L	3000
B-313-UD	Magnesium	1/27/2020	5000		µg/L	200
B-313-UD	Magnesium	4/29/2020	5100		µg/L	200
B-313-UD	Molybdenum, Dissolved	2/6/2020	2.8		µg/L	2
B-313-UD	Molybdenum, Total	2/6/2020	0.82	J	µg/L	2
B-313-UD	Potassium	1/27/2020	4500		µg/L	3000
B-313-UD	Potassium	4/29/2020	4200		µg/L	3000
B-313-UD	Sodium	1/27/2020	100000		µg/L	5000
B-313-UD	Sodium	4/29/2020	110000		µg/L	5000
B-313-UD	Sulfate	1/27/2020	300000		µg/L	25000
B-313-UD	Sulfate	4/29/2020	290000		µg/L	25000
B-313-UD	Total Dissolved Solids	1/27/2020	600000		µg/L	10000
B-313-UD	Total Dissolved Solids	4/29/2020	570000		µg/L	10000
B-314	1,1-Dichloroethane	5/18/2020	1.3		µg/L	1
B-314	Molybdenum, Dissolved	2/6/2020	5.7		µg/L	2

TABLE 4.5
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LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
B-314	Molybdenum, Total	2/6/2020	1.2	J	µg/L	2
B-314	Nitrogen, Nitrate	5/18/2020	200	J	µg/L	500
B-314-UD	Molybdenum, Dissolved	2/6/2020	0.95	J	µg/L	2
B-314-UD	Molybdenum, Total	2/6/2020	1.3	J	µg/L	2
B-321	1,4-Dioxane	2/24/2020	48		µg/L	0.9
B-321	1,4-Dioxane	4/29/2020	18		µg/L	0.9
B-321	Nitrogen, Nitrate	2/24/2020	29000		µg/L	2500
B-321	Nitrogen, Nitrate	4/29/2020	35000		µg/L	2500
B-323-WD AREA SOIL	Molybdenum	2/26/2020	2.2		mg/kg	2.1
B-323-WD AREA SOIL	Nitrogen, Nitrate	2/26/2020	5.2	J	mg/kg	6.1
B-326-UD	1,4-Dioxane	2/12/2020	7.7		µg/L	0.9
B-326-UD	1,4-Dioxane	5/27/2020	6.9		µg/L	0.9
B-326-UD	Alkalinity, Bicarbonate	2/12/2020	100000		µg/L	5000
B-326-UD	Alkalinity, Bicarbonate	5/27/2020	110000		µg/L	5000
B-326-UD	Alkalinity, Total	2/12/2020	100000		µg/L	5000
B-326-UD	Alkalinity, Total	5/27/2020	110000		µg/L	5000
B-326-UD	Calcium	2/12/2020	180000		µg/L	200
B-326-UD	Calcium	5/27/2020	160000		µg/L	200
B-326-UD	Chloride	2/12/2020	100000		µg/L	3000
B-326-UD	Chloride	5/27/2020	91000		µg/L	3000
B-326-UD	Magnesium	2/12/2020	13000		µg/L	200
B-326-UD	Magnesium	5/27/2020	11000		µg/L	200
B-326-UD	Molybdenum, Dissolved	2/12/2020	3.3	J	µg/L	30
B-326-UD	Molybdenum, Dissolved	5/27/2020	2.5	J	µg/L	20
B-326-UD	Molybdenum, Total	2/12/2020	3.4	J	µg/L	30
B-326-UD	Nitrogen, Nitrate	2/12/2020	730		µg/L	500
B-326-UD	Potassium	2/12/2020	5900		µg/L	3000
B-326-UD	Potassium	5/27/2020	5400		µg/L	3000
B-326-UD	Sodium	2/12/2020	150000		µg/L	5000
B-326-UD	Sodium	5/27/2020	150000		µg/L	5000
B-326-UD	Sulfate	2/12/2020	550000		µg/L	25000
B-326-UD	Sulfate	5/27/2020	520000		µg/L	50000
B-326-UD	Total Dissolved Solids	2/12/2020	1100000		µg/L	20000
B-326-UD	Total Dissolved Solids	5/27/2020	1000000		µg/L	20000
B-326-WD	1,4-Dioxane	2/12/2020	10		µg/L	0.9
B-326-WD	1,4-Dioxane	5/28/2020	11		µg/L	0.9
B-326-WD	Alkalinity, Bicarbonate	2/12/2020	130000		µg/L	5000
B-326-WD	Alkalinity, Bicarbonate	5/28/2020	130000		µg/L	5000
B-326-WD	Alkalinity, Total	2/12/2020	130000		µg/L	5000
B-326-WD	Alkalinity, Total	5/28/2020	130000		µg/L	5000
B-326-WD	Calcium	2/12/2020	180000		µg/L	200
B-326-WD	Calcium	5/28/2020	170000		µg/L	200
B-326-WD	Chloride	2/12/2020	120000		µg/L	3000
B-326-WD	Chloride	5/28/2020	120000		µg/L	3000
B-326-WD	Chloroform	2/12/2020	0.3	J	µg/L	1
B-326-WD	Chloroform	5/28/2020	0.31	J	µg/L	1
B-326-WD	Magnesium	2/12/2020	22000		µg/L	200

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
B-326-WD	Magnesium	5/28/2020	22000		µg/L	200
B-326-WD	Molybdenum, Dissolved	2/12/2020	4.1	J	µg/L	30
B-326-WD	Molybdenum, Dissolved	5/28/2020	5.9	J	µg/L	20
B-326-WD	Molybdenum, Total	2/12/2020	5.5	J	µg/L	30
B-326-WD	Nitrogen, Nitrate	2/12/2020	21000		µg/L	2500
B-326-WD	Nitrogen, Nitrate	5/28/2020	16000		µg/L	2500
B-326-WD	Potassium	2/12/2020	4500		µg/L	3000
B-326-WD	Potassium	5/28/2020	4300		µg/L	3000
B-326-WD	Sodium	2/12/2020	150000		µg/L	5000
B-326-WD	Sodium	5/28/2020	140000		µg/L	5000
B-326-WD	Sulfate	2/12/2020	400000		µg/L	25000
B-326-WD	Sulfate	5/28/2020	440000		µg/L	25000
B-326-WD	Total Dissolved Solids	2/12/2020	1100000		µg/L	10000
B-326-WD	Total Dissolved Solids	5/28/2020	1000000		µg/L	10000
BM-11X-100N	1,1,1-Trichloroethane	4/30/2020	0.78	J	µg/L	1
BM-11X-100N	1,1-Dichloroethane	4/30/2020	31		µg/L	1
BM-11X-100N	1,1-Dichloroethene	4/30/2020	1.1		µg/L	1
BM-11X-100N	Chloroform	4/30/2020	1.2		µg/L	1
BM-11X-100N	Nitrogen, Nitrate	4/30/2020	11000		µg/L	1000
BM-11X-100N	Tetrachloroethene	4/30/2020	6.9		µg/L	1
BM-11X-100N	Trichloroethene	4/30/2020	5		µg/L	1
BM-11X-100S	1,1-Dichloroethane	4/30/2020	5.4		µg/L	1
BM-11X-100S	1,1-Dichloroethene	4/30/2020	0.85	J	µg/L	1
BM-11X-100S	Chloroform	4/30/2020	1.3		µg/L	1
BM-11X-100S	Nitrogen, Nitrate	4/30/2020	11000		µg/L	1000
BM-11X-100S	Tetrachloroethene	4/30/2020	1.4		µg/L	1
BM-11X-100S	Trichloroethene	4/30/2020	1.8		µg/L	1
BM-15E2	1,1-Dichloroethane	5/7/2020	1.6		µg/L	1
BM-15E2	1,1-Dichloroethene	5/7/2020	0.36	J	µg/L	1
BM-15E2	Nitrogen, Nitrate	5/7/2020	19000		µg/L	2500
BM-15E2	Trichloroethene	5/7/2020	0.28	J	µg/L	1
BM-15N6	1,1-Dichloroethane	5/13/2020	2.8		µg/L	1
BM-15N6	Chloroform	5/13/2020	0.41	J	µg/L	1
BM-15N6	Nitrogen, Nitrate	5/13/2020	35000		µg/L	2500
BM-15N6	Tetrachloroethene	5/13/2020	2.6		µg/L	1
BM-15N6	Trichloroethene	5/13/2020	0.58	J	µg/L	1
GW-106	Molybdenum, Dissolved	5/12/2020	2.4	J	µg/L[b/]	30
GW-106	Nitrogen, Nitrate	5/12/2020	4600		µg/L	500
GW-109	1,4-Dioxane	3/2/2020	41		µg/L	0.9
GW-109	1,4-Dioxane	6/1/2020	19	J	µg/L	200
GW-109	1,4-Dioxane	6/1/2020	20		µg/L	0.9
GW-109	Acetone	6/1/2020	3	J	µg/L	10
GW-109	Alkalinity, Bicarbonate	6/1/2020	130000		µg/L	5000
GW-109	Alkalinity, Total	6/1/2020	130000		µg/L	5000
GW-109	Calcium	6/1/2020	250000		µg/L	200
GW-109	Calcium, Dissolved	3/2/2020	170000		µg/L	200
GW-109	Chloride	6/1/2020	48000	J	µg/L	60000

TABLE 4.5
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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
GW-109	Magnesium	6/1/2020	22000		µg/L	200
GW-109	Magnesium, Dissolved	3/2/2020	15000		µg/L	200
GW-109	Molybdenum	6/1/2020	1500		µg/L	20
GW-109	Molybdenum, Dissolved	3/2/2020	1600		µg/L	20
GW-109	Molybdenum, Total	3/2/2020	1600		µg/L	30
GW-109	Potassium	6/1/2020	5500		µg/L	3000
GW-109	Potassium, Dissolved	3/2/2020	4400		µg/L	3000
GW-109	Sodium	6/1/2020	150000		µg/L	5000
GW-109	Sodium, Dissolved	3/2/2020	130000		µg/L	5000
GW-109	Sulfate	6/1/2020	790000		µg/L	100000
GW-109	Total Dissolved Solids	6/1/2020	1400000		µg/L	20000
MNA-01	1,1-Dichloroethane	6/9/2020	66		µg/L	10
MNA-01	1,2-Dichloroethane	6/9/2020	54		µg/L	10
MNA-01	1,4-Dioxane	6/9/2020	12000		µg/L	2000
MNA-01	Benzene	6/9/2020	21		µg/L	10
MNA-01	Chloroform	6/9/2020	1.8	J	µg/L	10
MNA-01	cis-1,2-Dichloroethene	6/9/2020	2.1	J	µg/L	10
MNA-01	Nitrogen, Nitrate	6/9/2020	100000		µg/L	10000
MNA-03	1,1-Dichloroethane	6/9/2020	110		µg/L	4
MNA-03	1,4-Dioxane	6/9/2020	7700		µg/L	800
MNA-03	Arsenic	6/9/2020	5.5	J	µg/L	15
MNA-03	Benzene	6/9/2020	160		µg/L	4
MNA-03	Chlorobenzene	6/9/2020	2.9	J	µg/L	4
MNA-03	Chloroform	6/9/2020	0.65	J	µg/L	4
MNA-03	Ethylbenzene	6/9/2020	3.5	J	µg/L	4
MNA-03	Nitrogen, Nitrate	6/9/2020	60000		µg/L	5000
MNA-03	Toluene	6/9/2020	3.3	J	µg/L	4
MNA-03	Trans-1,2-Dichloroethene	6/9/2020	1.4	J	µg/L	2
MW05-WD	1,4-Dioxane	2/26/2020	4.7		µg/L	0.9
MW102-WD	1,4-Dioxane	2/13/2020	1.1		µg/L	0.9
MW102-WD	1,4-Dioxane	5/21/2020	1.3		µg/L	0.9
MW102-WD	Molybdenum, Dissolved	5/21/2020	1.5	J	µg/L	30
MW103-WD	1,4-Dioxane	1/30/2020	0.42	J	µg/L	0.9
MW103-WD	1,4-Dioxane	5/6/2020	0.76	J	µg/L	0.9
MW105-WD	Molybdenum, Dissolved	6/24/2020	1.3	J	µg/L	20
MW105-WD	Nitrogen, Nitrate	2/3/2020	370	J	µg/L	500
MW108-WD	Chloroform	4/27/2020	0.43	J	µg/L	1
MW108-WD	Nitrogen, Nitrate	4/27/2020	10000		µg/L	1000
MW113-EW-1	1,4-Dioxane	1/21/2020	93		µg/L	0.9
MW113-EW-1	1,4-Dioxane	4/28/2020	92		µg/L	0.9
MW113-EW-1	Arsenic, Total	1/7/2020	6.6	J	µg/L	25
MW113-EW-1	Chromium, Total	1/21/2020	15	J	µg/L	20
MW113-EW-1	Copper, Dissolved	1/15/2020	1.8	J	µg/L	20
MW113-EW-1	Copper, Total	1/15/2020	1.8	J	µg/L	20
MW113-EW-1	Lead, Dissolved	2/4/2020	3.4	J	µg/L	50
MW113-EW-1	Lead, Total	1/7/2020	4.6	J	µg/L	50
MW113-EW-1	Lead, Total	2/4/2020	3.8	J	µg/L	50

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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW113-EW-1	Molybdenum, Dissolved	1/7/2020	6700		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	1/15/2020	6100		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	1/21/2020	6800		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	1/28/2020	7000		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	2/4/2020	7000		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	2/11/2020	7100		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	2/18/2020	7200		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	2/25/2020	7900		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	3/3/2020	7600		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	3/10/2020	7900		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	3/17/2020	7800		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	3/24/2020	7500		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	3/31/2020	8100		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	4/7/2020	8000		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	4/14/2020	8300		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	4/21/2020	7600		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	4/28/2020	8100		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	5/5/2020	7700		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	5/12/2020	8300		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	5/19/2020	8700		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	5/26/2020	7700		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	6/2/2020	9800		µg/L	30
MW113-EW-1	Molybdenum, Dissolved	6/9/2020	10000		µg/L	20
MW113-EW-1	Molybdenum, Dissolved	6/16/2020	12000		µg/L	20
MW113-EW-1	Molybdenum, Dissolved	6/23/2020	14000		µg/L	20
MW113-EW-1	Molybdenum, Dissolved	6/30/2020	15000		µg/L	20
MW113-EW-1	Molybdenum, Total	1/7/2020	6400		µg/L	30
MW113-EW-1	Molybdenum, Total	1/15/2020	5800		µg/L	30
MW113-EW-1	Molybdenum, Total	1/21/2020	7000		µg/L	30
MW113-EW-1	Molybdenum, Total	1/28/2020	6900		µg/L	30
MW113-EW-1	Molybdenum, Total	2/4/2020	7100		µg/L	30
MW113-EW-1	Molybdenum, Total	2/11/2020	7000		µg/L	30
MW113-EW-1	Molybdenum, Total	2/18/2020	6900		µg/L	30
MW113-EW-1	Molybdenum, Total	2/25/2020	7500		µg/L	30
MW113-EW-1	Molybdenum, Total	3/3/2020	7400		µg/L	30
MW113-EW-1	Molybdenum, Total	3/10/2020	7900		µg/L	30
MW113-EW-1	Molybdenum, Total	3/17/2020	7700		µg/L	30
MW113-EW-1	Molybdenum, Total	3/24/2020	7300		µg/L	30
MW113-EW-1	Molybdenum, Total	3/31/2020	8000		µg/L	30
MW113-EW-1	Molybdenum, Total	4/7/2020	7900		µg/L	30
MW113-EW-1	Molybdenum, Total	4/14/2020	8200		µg/L	30
MW113-EW-1	Molybdenum, Total	4/21/2020	8700		µg/L	30
MW113-EW-1	Molybdenum, Total	4/28/2020	8500		µg/L	30
MW113-EW-1	Molybdenum, Total	5/5/2020	8000		µg/L	30
MW113-EW-1	Molybdenum, Total	5/12/2020	8000		µg/L	30
MW113-EW-1	Molybdenum, Total	5/19/2020	8200		µg/L	30
MW113-EW-1	Molybdenum, Total	5/26/2020	8100		µg/L	30

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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW113-EW-1	Molybdenum, Total	6/2/2020	9900		µg/L	30
MW113-EW-1	Molybdenum, Total	6/9/2020	10000		µg/L	20
MW113-EW-1	Molybdenum, Total	6/16/2020	12000		µg/L	20
MW113-EW-1	Molybdenum, Total	6/23/2020	15000		µg/L	20
MW113-EW-1	Molybdenum, Total	6/30/2020	15000		µg/L	20
MW113-EW-1	Nickel, Dissolved	1/7/2020	4.3	J	µg/L	20
MW113-EW-1	Nickel, Dissolved	1/15/2020	5.6	J	µg/L	20
MW113-EW-1	Nickel, Dissolved	1/21/2020	5.8	J	µg/L	20
MW113-EW-1	Nickel, Dissolved	1/28/2020	4.2	J	µg/L	20
MW113-EW-1	Nickel, Dissolved	2/4/2020	4.5	J	µg/L	20
MW113-EW-1	Nickel, Total	1/7/2020	4.9	J	µg/L	20
MW113-EW-1	Nickel, Total	1/15/2020	5.3	J	µg/L	20
MW113-EW-1	Nickel, Total	1/21/2020	6.3	J	µg/L	20
MW113-EW-1	Nickel, Total	1/28/2020	4.9	J	µg/L	20
MW113-EW-1	Nickel, Total	2/4/2020	4.5	J	µg/L	20
MW113-EW-1	Nitrogen, Nitrate	1/21/2020	3800		µg/L	500
MW113-EW-1	Nitrogen, Nitrate	4/28/2020	4100		µg/L	500
MW113-EW-1	Selenium, Dissolved	1/7/2020	9.6		µg/L	2.5
MW113-EW-1	Selenium, Dissolved	1/15/2020	9.8		µg/L	2.5
MW113-EW-1	Selenium, Dissolved	1/21/2020	9.6		µg/L	2.5
MW113-EW-1	Selenium, Dissolved	1/28/2020	9		µg/L	2.5
MW113-EW-1	Selenium, Dissolved	2/4/2020	9.6		µg/L	5
MW113-EW-1	Selenium, Total	1/7/2020	8.5		µg/L	2.5
MW113-EW-1	Selenium, Total	1/15/2020	10		µg/L	2.5
MW113-EW-1	Selenium, Total	1/21/2020	9.8		µg/L	2.5
MW113-EW-1	Selenium, Total	1/28/2020	10		µg/L	2.5
MW113-EW-1	Selenium, Total	2/4/2020	9.1		µg/L	5
MW113-EW-1	Zinc, Dissolved	1/7/2020	17	J	µg/L	20
MW113-EW-1	Zinc, Dissolved	1/15/2020	13	J	µg/L	20
MW113-EW-1	Zinc, Dissolved	1/21/2020	12	J	µg/L	20
MW113-EW-1	Zinc, Dissolved	1/28/2020	13	J	µg/L	20
MW113-EW-1	Zinc, Dissolved	2/4/2020	9.8	J	µg/L	20
MW113-EW-1	Zinc, Total	1/7/2020	13	J	µg/L	20
MW113-EW-1	Zinc, Total	1/15/2020	13	J	µg/L	20
MW113-EW-1	Zinc, Total	1/21/2020	13	J	µg/L	20
MW113-EW-1	Zinc, Total	1/28/2020	15	J	µg/L	20
MW113-EW-1	Zinc, Total	2/4/2020	11	J	µg/L	20
MW113-LD	Alkalinity, Bicarbonate	4/21/2020	93000		µg/L	10000
MW113-LD	Alkalinity, Total	4/21/2020	93000		µg/L	10000
MW113-LD	Antimony	4/21/2020	0.71	J	µg/L	2
MW113-LD	Arsenic	4/21/2020	0.36	J	µg/L	5
MW113-LD	Barium	4/21/2020	30		µg/L	1
MW113-LD	Calcium	4/21/2020	26000		µg/L	200
MW113-LD	Chloride	4/21/2020	36000		µg/L	3000
MW113-LD	Dissolved Organic Carbon	4/21/2020	1200		µg/L	1000
MW113-LD	Fluoride	4/21/2020	6500		µg/L	500
MW113-LD	Magnesium	4/21/2020	1500		µg/L	200

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MW113-LD	Manganese	4/21/2020	9.7		µg/L	1
MW113-LD	Molybdenum, Dissolved	4/21/2020	10		µg/L	2
MW113-LD	Molybdenum, Total	4/21/2020	6.7	J	µg/L	30
MW113-LD	Nitrogen, Ammonia	4/21/2020	41	J	µg/L	100
MW113-LD	Potassium	4/21/2020	2700	J	µg/L	3000
MW113-LD	SiO2, Silica	4/21/2020	5800		µg/L	1100
MW113-LD	Sodium	4/21/2020	69000		µg/L	1000
MW113-LD	Strontium	4/21/2020	590		µg/L	10
MW113-LD	Sulfate	4/21/2020	69000		µg/L	5000
MW113-LD	Total Dissolved Solids	4/21/2020	270000		µg/L	10000
MW113-UD	1,1-Dichloroethane	1/27/2020	0.75	J	µg/L	1
MW113-UD	1,1-Dichloroethane	4/28/2020	1		µg/L	1
MW113-UD	1,4-Dioxane	1/27/2020	99	J	µg/L	200
MW113-UD	1,4-Dioxane	1/27/2020	130		µg/L	0.9
MW113-UD	1,4-Dioxane	4/28/2020	120	J	µg/L	200
MW113-UD	1,4-Dioxane	4/28/2020	150		µg/L	0.9
MW113-UD	Alkalinity, Bicarbonate	1/27/2020	170000		µg/L	5000
MW113-UD	Alkalinity, Bicarbonate	4/28/2020	180000		µg/L	5000
MW113-UD	Alkalinity, Total	1/27/2020	170000		µg/L	5000
MW113-UD	Alkalinity, Total	4/28/2020	180000		µg/L	5000
MW113-UD	Calcium	1/27/2020	230000		µg/L	200
MW113-UD	Calcium	4/28/2020	280000		µg/L	200
MW113-UD	Chloride	1/27/2020	200000		µg/L	3000
MW113-UD	Chloride	4/28/2020	210000		µg/L	15000
MW113-UD	cis-1,2-Dichloroethene	1/27/2020	0.16	J	µg/L	1
MW113-UD	Magnesium	1/27/2020	23000		µg/L	200
MW113-UD	Magnesium	4/28/2020	25000		µg/L	200
MW113-UD	Molybdenum, Dissolved	2/11/2020	1300		µg/L	30
MW113-UD	Molybdenum, Dissolved	3/24/2020	1500		µg/L	30
MW113-UD	Molybdenum, Dissolved	4/28/2020	1500		µg/L	20
MW113-UD	Molybdenum, Dissolved	5/19/2020	1800		µg/L	30
MW113-UD	Molybdenum, Dissolved	6/23/2020	1800		µg/L	20
MW113-UD	Molybdenum, Total	2/11/2020	1200		µg/L	30
MW113-UD	Molybdenum, Total	3/24/2020	1400		µg/L	30
MW113-UD	Molybdenum, Total	4/28/2020	1700		µg/L	30
MW113-UD	Molybdenum, Total	5/19/2020	1700		µg/L	30
MW113-UD	Molybdenum, Total	6/23/2020	1800		µg/L	20
MW113-UD	Potassium	1/27/2020	6300		µg/L	3000
MW113-UD	Potassium	4/28/2020	6400		µg/L	3000
MW113-UD	Sodium	1/27/2020	150000		µg/L	5000
MW113-UD	Sodium	4/28/2020	160000		µg/L	5000
MW113-UD	Sulfate	1/27/2020	610000		µg/L	25000
MW113-UD	Sulfate	4/28/2020	660000		µg/L	25000
MW113-UD	Total Dissolved Solids	1/27/2020	1400000		µg/L	10000
MW113-UD	Total Dissolved Solids	4/28/2020	1500000		µg/L	20000
MW113-UD	Trichloroethene	1/27/2020	0.16	J	µg/L	1
MW113-WD	1,1-Dichloroethane	1/27/2020	0.22	J	µg/L	1

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MW113-WD	1,4-Dioxane	1/27/2020	14		µg/L	0.9
MW113-WD	1,4-Dioxane	5/19/2020	19		µg/L	0.9
MW113-WD	Alkalinity, Bicarbonate	1/27/2020	150000		µg/L	5000
MW113-WD	Alkalinity, Bicarbonate	4/21/2020	150000		µg/L	10000
MW113-WD	Alkalinity, Total	1/27/2020	150000		µg/L	5000
MW113-WD	Alkalinity, Total	4/21/2020	150000		µg/L	10000
MW113-WD	Arsenic	4/21/2020	0.64	J	µg/L	5
MW113-WD	Arsenic, Total	2/5/2020	4.8	J	µg/L	25
MW113-WD	Barium	4/21/2020	53		µg/L	1
MW113-WD	Cadmium	4/21/2020	5.8		µg/L	1
MW113-WD	Calcium	1/27/2020	200000		µg/L	200
MW113-WD	Calcium	4/21/2020	220000		µg/L	200
MW113-WD	Chloride	1/27/2020	150000		µg/L	3000
MW113-WD	Chloride	4/21/2020	170000		µg/L	3000
MW113-WD	Chromium, Total	2/5/2020	1.5	J	µg/L	20
MW113-WD	Dissolved Organic Carbon	4/21/2020	2200		µg/L	1000
MW113-WD	Fluoride	4/21/2020	300	J	µg/L	500
MW113-WD	Lead, Dissolved	2/5/2020	3.7	J	µg/L	50
MW113-WD	Lead, Total	2/5/2020	4.2	J	µg/L	50
MW113-WD	Magnesium	1/27/2020	27000		µg/L	200
MW113-WD	Magnesium	4/21/2020	27000		µg/L	200
MW113-WD	Manganese	4/21/2020	27		µg/L	1
MW113-WD	Molybdenum	4/21/2020	30000		µg/L	100
MW113-WD	Molybdenum, Dissolved	2/5/2020	31000		µg/L	300
MW113-WD	Molybdenum, Dissolved	5/19/2020	28000		µg/L	150
MW113-WD	Molybdenum, Dissolved	6/4/2020	42000		µg/L	200
MW113-WD	Molybdenum, Total	2/5/2020	26000		µg/L	300
MW113-WD	Molybdenum, Total	5/19/2020	30000		µg/L	150
MW113-WD	Molybdenum, Total	6/4/2020	38000		µg/L	200
MW113-WD	Nitrogen, Ammonia	4/21/2020	22	J	µg/L	100
MW113-WD	Nitrogen, Nitrate	4/21/2020	2200		µg/L	500
MW113-WD	Potassium	1/27/2020	5900		µg/L	3000
MW113-WD	Potassium	4/21/2020	5500		µg/L	3000
MW113-WD	Selenium	4/21/2020	7.6		µg/L	5
MW113-WD	Selenium, Dissolved	2/5/2020	8.1		µg/L	5
MW113-WD	Selenium, Total	2/5/2020	6.9		µg/L	5
MW113-WD	SiO2, Silica	4/21/2020	16000		µg/L	1100
MW113-WD	Sodium	1/27/2020	170000		µg/L	5000
MW113-WD	Sodium	4/21/2020	190000		µg/L	1000
MW113-WD	Strontium	4/21/2020	4500		µg/L	10
MW113-WD	Sulfate	1/27/2020	640000		µg/L	25000
MW113-WD	Sulfate	4/21/2020	700000		µg/L	50000
MW113-WD	Tetrachloroethene	1/27/2020	0.31	J	µg/L	1
MW113-WD	Total Dissolved Solids	1/27/2020	1400000		µg/L	10000
MW113-WD	Total Dissolved Solids	4/21/2020	1500000		µg/L	20000
MW113-WD	Total phosphorus	4/21/2020	70		µg/L	50
MW113-WD	Trichloroethene	1/27/2020	0.18	J	µg/L	1

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW113-WD	Zinc	4/21/2020	3.7	J	µg/L	10
MW113-WD	Zinc, Total	2/5/2020	4.5	J	µg/L	20
MW114-WD	1,4-Dioxane	2/18/2020	2.4		µg/L	0.9
MW114-WD	1,4-Dioxane	5/18/2020	0.98		µg/L	0.9
MW114-WD	Molybdenum, Dissolved	2/18/2020	30		µg/L	30
MW114-WD	Molybdenum, Dissolved	5/18/2020	28	J	µg/L	30
MW114-WD	Molybdenum, Total	2/18/2020	27	J	µg/L	30
MW118-WD	1,4-Dioxane	2/18/2020	0.96		µg/L	0.9
MW118-WD	1,4-Dioxane	5/18/2020	0.62	J	µg/L	0.9
MW118-WD	Molybdenum, Dissolved	2/18/2020	2	J	µg/L	30
MW118-WD	Molybdenum, Dissolved	5/18/2020	1.4	J	µg/L	30
MW121-WDR	1,4-Dioxane	1/22/2020	1		µg/L	0.9
MW122-WDR	1,4-Dioxane	1/22/2020	2.3		µg/L	0.9
MW123-WD	1,4-Dioxane	1/22/2020	0.95		µg/L	0.9
MW124-WD	1,4-Dioxane	1/23/2020	0.43	J	µg/L	0.9
MW125-WD	1,4-Dioxane	1/23/2020	0.28	J	µg/L	0.9
MW129-WD	1,4-Dioxane	1/23/2020	7.7		µg/L	0.9
MW132-WD	1,4-Dioxane	1/21/2020	22		µg/L	0.9
MW132-WD	1,4-Dioxane	5/6/2020	18		µg/L	0.9
MW132-WD	Molybdenum, Dissolved	3/3/2020	2	J	µg/L	30
MW132-WD	Molybdenum, Dissolved	5/6/2020	1.9	J	µg/L	30
MW132-WD	Molybdenum, Total	3/3/2020	3.6	J	µg/L	30
MW135-WD	1,4-Dioxane	1/29/2020	6.3		µg/L	0.9
MW141-WD	1,4-Dioxane	1/29/2020	3.5		µg/L	0.9
MW142-WD	1,4-Dioxane	1/30/2020	2		µg/L	0.9
MW151-WD	1,4-Dioxane	1/22/2020	2.4		µg/L	0.9
MW151-WD	1,4-Dioxane	5/6/2020	1.2		µg/L	0.9
MW151-WD	Molybdenum, Dissolved	5/6/2020	1.4	J	µg/L	30
MW153-EW-1	1,4-Dioxane	2/20/2020	2.4		µg/L	0.9
MW153-EW-1	1,4-Dioxane	5/19/2020	2		µg/L	0.9
MW153-EW-1	Molybdenum, Dissolved	5/19/2020	2.1	J	µg/L	30
MW154-EW-1	1,4-Dioxane	2/20/2020	2.6		µg/L	0.9
MW154-EW-1	1,4-Dioxane	5/21/2020	1.7		µg/L	0.9
MW154-EW-1	Molybdenum, Dissolved	5/21/2020	1.1	J	µg/L	30
MW155-EW-1	1,4-Dioxane	2/20/2020	1.6		µg/L	0.9
MW155-EW-1	1,4-Dioxane	5/21/2020	0.86	J	µg/L	0.9
MW156-EW-1	1,4-Dioxane	2/24/2020	1.1		µg/L	0.9
MW156-EW-1	1,4-Dioxane	5/27/2020	0.5	J	µg/L	0.9
MW156-WD	1,4-Dioxane	2/11/2020	0.69	J	µg/L	0.9
MW156-WD	1,4-Dioxane	5/26/2020	0.56	J	µg/L	0.9
MW156-WD	Molybdenum, Dissolved	5/26/2020	12	J	µg/L	30
MW157-WD	1,4-Dioxane	2/11/2020	0.29	J	µg/L	0.9
MW157-WD	1,4-Dioxane	5/26/2020	0.57	J	µg/L	0.9
MW157-WD	Molybdenum, Dissolved	5/26/2020	1.1	J	µg/L	30
MW160-WD	1,4-Dioxane	2/20/2020	3.7		µg/L	0.9
MW160-WD	1,4-Dioxane	5/19/2020	2.7		µg/L	0.9
MW160-WD	Molybdenum, Dissolved	5/19/2020	10	J	µg/L	30

TABLE 4.5
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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW170-EW-1	1,1,1-Trichloroethane	2/11/2020	2.8		µg/L	1
MW170-EW-1	1,1,1-Trichloroethane	5/12/2020	3.2		µg/L	1
MW170-EW-1	1,1-Dichloroethane	2/11/2020	5.1		µg/L	1
MW170-EW-1	1,1-Dichloroethane	5/12/2020	5.6		µg/L	1
MW170-EW-1	1,1-Dichloroethene	2/11/2020	4.3		µg/L	1
MW170-EW-1	1,1-Dichloroethene	5/12/2020	4.1		µg/L	1
MW170-EW-1	1,2-Dichloroethane	2/11/2020	0.14	J	µg/L	1
MW170-EW-1	1,4-Dioxane	2/11/2020	18		µg/L	0.9
MW170-EW-1	1,4-Dioxane	5/12/2020	16		µg/L	0.9
MW170-EW-1	Alkalinity, Bicarbonate	2/11/2020	220000		µg/L	5000
MW170-EW-1	Alkalinity, Bicarbonate	5/12/2020	230000		µg/L	5000
MW170-EW-1	Alkalinity, Total	2/11/2020	220000		µg/L	5000
MW170-EW-1	Alkalinity, Total	5/12/2020	230000		µg/L	5000
MW170-EW-1	Calcium	2/11/2020	330000		µg/L	200
MW170-EW-1	Calcium	5/12/2020	320000		µg/L	200
MW170-EW-1	Chloride	2/11/2020	290000		µg/L	15000
MW170-EW-1	Chloride	5/12/2020	280000		µg/L	60000
MW170-EW-1	cis-1,2-Dichloroethene	2/11/2020	13		µg/L	1
MW170-EW-1	cis-1,2-Dichloroethene	5/12/2020	13		µg/L	1
MW170-EW-1	Copper, Dissolved	1/15/2020	2.8	J	µg/L	20
MW170-EW-1	Copper, Total	1/15/2020	3.6	J	µg/L	20
MW170-EW-1	Lead, Dissolved	2/4/2020	3.5	J	µg/L	50
MW170-EW-1	Lead, Total	2/4/2020	3.3	J	µg/L	50
MW170-EW-1	Magnesium	2/11/2020	42000		µg/L	200
MW170-EW-1	Magnesium	5/12/2020	41000		µg/L	200
MW170-EW-1	Molybdenum, Dissolved	1/7/2020	2.4	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	1/15/2020	6	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	1/21/2020	1.8	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	1/28/2020	1.4	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	2/4/2020	10	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	2/11/2020	2	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	2/18/2020	1.9	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	2/25/2020	12	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	3/3/2020	7.2	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	3/17/2020	1.2	J	µg/L	30
MW170-EW-1	Molybdenum, Dissolved	5/12/2020	1.2	J	µg/L	20
MW170-EW-1	Molybdenum, Total	1/7/2020	5.8	J	µg/L	30
MW170-EW-1	Molybdenum, Total	1/15/2020	1.5	J	µg/L	30
MW170-EW-1	Molybdenum, Total	1/21/2020	6.7	J	µg/L	30
MW170-EW-1	Molybdenum, Total	1/28/2020	18	J	µg/L	30
MW170-EW-1	Molybdenum, Total	2/4/2020	7.7	J	µg/L	30
MW170-EW-1	Molybdenum, Total	2/11/2020	1.8	J	µg/L	30
MW170-EW-1	Molybdenum, Total	2/18/2020	2.3	J	µg/L	30
MW170-EW-1	Molybdenum, Total	2/25/2020	8.9	J	µg/L	30
MW170-EW-1	Molybdenum, Total	3/3/2020	13	J	µg/L	30
MW170-EW-1	Molybdenum, Total	3/10/2020	9.7	J	µg/L	30
MW170-EW-1	Molybdenum, Total	3/17/2020	9	J	µg/L	30

TABLE 4.5
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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW170-EW-1	Molybdenum, Total	5/12/2020	3.3	J	µg/L	30
MW170-EW-1	Nitrogen, Nitrate	2/11/2020	8100		µg/L	500
MW170-EW-1	Nitrogen, Nitrate	5/12/2020	8700		µg/L	500
MW170-EW-1	Potassium	2/11/2020	6100		µg/L	3000
MW170-EW-1	Potassium	5/12/2020	6000		µg/L	3000
MW170-EW-1	Selenium, Dissolved	1/7/2020	18		µg/L	2.5
MW170-EW-1	Selenium, Dissolved	1/15/2020	18		µg/L	2.5
MW170-EW-1	Selenium, Dissolved	1/21/2020	17		µg/L	2.5
MW170-EW-1	Selenium, Dissolved	1/28/2020	18		µg/L	2.5
MW170-EW-1	Selenium, Dissolved	2/4/2020	18		µg/L	5
MW170-EW-1	Selenium, Total	1/7/2020	17		µg/L	2.5
MW170-EW-1	Selenium, Total	1/15/2020	21		µg/L	2.5
MW170-EW-1	Selenium, Total	1/21/2020	18		µg/L	2.5
MW170-EW-1	Selenium, Total	1/28/2020	19		µg/L	2.5
MW170-EW-1	Selenium, Total	2/4/2020	18		µg/L	5
MW170-EW-1	Sodium	2/11/2020	210000		µg/L	5000
MW170-EW-1	Sodium	5/12/2020	210000		µg/L	5000
MW170-EW-1	Sulfate	2/11/2020	800000		µg/L	25000
MW170-EW-1	Sulfate	5/12/2020	790000		µg/L	100000
MW170-EW-1	Tetrachloroethene	2/11/2020	1.3		µg/L	1
MW170-EW-1	Tetrachloroethene	5/12/2020	1.4		µg/L	1
MW170-EW-1	Total Dissolved Solids	2/11/2020	1900000		µg/L	20000
MW170-EW-1	Total Dissolved Solids	5/12/2020	1900000		µg/L	20000
MW170-EW-1	Trichloroethene	2/11/2020	0.5	J	µg/L	1
MW170-EW-1	Trichloroethene	5/12/2020	0.48	J	µg/L	1
MW170-EW-1	Zinc, Total	1/7/2020	7.9	J	µg/L	20
MW170-EW-1	Zinc, Total	1/21/2020	7.1	J	µg/L	20
MW170-EW-1	Zinc, Total	1/28/2020	7.2	J	µg/L	20
MW176-DEN	1,4-Dioxane	2/19/2020	0.69	J	µg/L	0.9
MW176-DEN	1,4-Dioxane	5/27/2020	0.56	J	µg/L	0.9
MW176-DEN	Molybdenum, Dissolved	5/27/2020	4.1	J	µg/L	30
MW23-UPPER-C	Nitrogen, Nitrate	5/18/2020	110	J	µg/L	500
MW36-WDR	Nitrogen, Nitrate	5/13/2020	18000		µg/L	1000
MW38-1028N-256E	1,1-Dichloroethane	5/5/2020	1.8	J	µg/L	5
MW38-1028N-256E	1,4-Dioxane	5/5/2020	2.8		µg/L	0.9
MW38-1028N-256E	Chloroform	5/5/2020	1.5	J	µg/L	5
MW38-1028N-256E	Molybdenum, Dissolved	5/5/2020	8	J	µg/L	30
MW38-1028N-256E	Tetrachloroethene	5/5/2020	0.44	J	µg/L	5
MW38-1028N-256E	Trichloroethene	5/5/2020	0.91	J	µg/L	5
MW38-170S-140W	1,1-Dichloroethane	5/5/2020	20		µg/L	5
MW38-170S-140W	1,4-Dioxane	5/5/2020	31	J	µg/L	200
MW38-170S-140W	1,4-Dioxane	5/5/2020	37		µg/L	0.9
MW38-170S-140W	Chloroform	5/5/2020	6.7		µg/L	5
MW38-170S-140W	cis-1,2-Dichloroethene	5/5/2020	7		µg/L	5
MW38-170S-140W	Tetrachloroethene	5/5/2020	1.4	J	µg/L	5
MW38-170S-140W	Trichloroethene	5/5/2020	5.2		µg/L	5
MW38-825S-445E	1,1-Dichloroethane	5/6/2020	1900	J	µg/L	2000

TABLE 4.5
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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW38-825S-445E	1,1-Dichloroethene	5/6/2020	400	J	µg/L	2000
MW38-825S-445E	1,2-Dichloroethane	5/6/2020	32000		µg/L	2000
MW38-825S-445E	1,3-Dichlorobenzene	5/6/2020	120	J	µg/L	2000
MW38-825S-445E	1,4-Dioxane	5/6/2020	2500		µg/L	90
MW38-825S-445E	Benzene	5/6/2020	150	J	µg/L	2000
MW38-825S-445E	Chloroform	5/6/2020	220	J	µg/L	2000
MW38-825S-445E	cis-1,2-Dichloroethene	5/6/2020	530	J	µg/L	2000
MW38-825S-445E	Molybdenum, Dissolved	5/6/2020	1.6	J	µg/L	30
MW38-825S-445E	Tetrachloroethene	5/6/2020	95	J	µg/L	2000
MW38-825S-445E	Trichloroethene	5/6/2020	160	J	µg/L	2000
MW38-825S-445E	Vinyl Chloride	5/6/2020	930	J	µg/L	2000
MW38-825S-445E	Xylenes, Total	5/6/2020	430	J	µg/L	2000
MW38-830N-230E	1,1-Dichloroethane	1/28/2020	2.8		µg/L	1
MW38-830N-230E	1,4-Dioxane	1/28/2020	2		µg/L	0.9
MW38-830N-230E	Arsenic	1/28/2020	8.7	J	µg/L	15
MW38-830N-230E	Chloroform	1/28/2020	2.1		µg/L	1
MW38-830N-230E	cis-1,2-Dichloroethene	1/28/2020	0.97	J	µg/L	1
MW38-830N-230E	Nitrogen, Nitrate	1/28/2020	9300		µg/L	500
MW38-830N-230E	Tetrachloroethene	1/28/2020	0.26	J	µg/L	1
MW38-830N-230E	Trichloroethene	1/28/2020	1.6		µg/L	1
MW43-WD	Arsenic	2/4/2020	5.4	J	µg/L	15
MW43-WD	Nitrogen, Nitrate	2/4/2020	8300		µg/L	1000
MW54-WD	Nitrogen, Nitrate	5/12/2020	3000		µg/L	500
MW60-WD	1,2-Dichloroethane	1/29/2020	0.13	J	µg/L	1
MW62-UD	Molybdenum, Dissolved	2/11/2020	4.7	J	µg/L	30
MW62-UD	Molybdenum, Total	2/11/2020	4.9	J	µg/L	30
MW62-WDR	1,4-Dioxane	5/14/2020	3.4		µg/L	0.9
MW62-WDR	Molybdenum, Dissolved	2/10/2020	3.7	J	µg/L	30
MW62-WDR	Molybdenum, Dissolved	5/14/2020	1.4	J	µg/L	20
MW62-WDR	Molybdenum, Total	2/10/2020	3.1	J	µg/L	30
MW62-WDR	Nitrogen, Nitrate	5/14/2020	130000		µg/L	10000
MW62-WDR	Nitrogen, Nitrite	5/14/2020	1500	J	µg/L	10000
MW70-WD	1,1-Dichloroethane	5/14/2020	7.9		µg/L	1
MW70-WD	Tetrachloroethene	5/14/2020	0.5	J	µg/L	1
MW70-WD	Trichloroethene	5/14/2020	0.26	J	µg/L	1
MW71-WD	Nitrogen, Nitrate	4/29/2020	3200		µg/L	500
MW74-WD	Nitrogen, Nitrate	5/7/2020	2400		µg/L	500
MW77-EW-1	1,4-Dioxane	2/13/2020	3		µg/L	0.9
MW77-EW-1	1,4-Dioxane	5/21/2020	2.8		µg/L	0.9
MW77-EW-2	1,4-Dioxane	2/13/2020	0.12	J	µg/L	0.9
MW77-EW-2	1,4-Dioxane	5/21/2020	0.17	J	µg/L	0.9
MW77-EW-2	Molybdenum, Dissolved	5/21/2020	1.1	J	µg/L	30
MW77-WD	1,1-Dichloroethene	5/4/2020	0.43	J	µg/L	1
MW77-WD	1,4-Dioxane	5/4/2020	5		µg/L	0.9
MW77-WD	Nitrogen, Nitrate	5/4/2020	18000		µg/L	5000
MW77-WD	Tetrachloroethene	5/4/2020	0.61	J	µg/L	1
MW77-WD	Trichloroethene	5/4/2020	0.18	J	µg/L	1

TABLE 4.5
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Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
MW78-WD	Nitrogen, Nitrate	4/29/2020	180	J	µg/L	500
MW91-UD	Nitrogen, Nitrate	2/3/2020	190	J	µg/L	500
MW91-WD	Nitrogen, Nitrate	2/3/2020	290	J	µg/L	500
MW98-WD	1,4-Dioxane	2/13/2020	11		µg/L	0.9
MW98-WD	1,4-Dioxane	5/21/2020	8.6		µg/L	0.9
MW98-WD	Molybdenum, Dissolved	5/21/2020	2.2	J	µg/L	30
NBBW-IW-2	Molybdenum, Dissolved	3/31/2020	1.1	J	µg/L	30
NBBW-IW-3	1,4-Dioxane	6/2/2020	110		µg/L	0.9
NBBW-IW-3	1,4-Dioxane	6/9/2020	120		µg/L	0.9
NBBW-IW-3	1,4-Dioxane	6/16/2020	110		µg/L	0.9
NBBW-IW-3	1,4-Dioxane	6/23/2020	120		µg/L	0.9
NBBW-IW-3	1,4-Dioxane	6/30/2020	120		µg/L	14
NBBW-IW-3	Molybdenum, Dissolved	3/11/2020	4.6	J	µg/L	30
NBBW-IW-3	Molybdenum, Dissolved	6/2/2020	2.8	J	µg/L	30
NBBW-IW-3	Molybdenum, Dissolved	6/9/2020	5.2	J	µg/L	20
NBBW-IW-3	Molybdenum, Dissolved	6/16/2020	6.2	J	µg/L	20
NBBW-IW-3	Molybdenum, Dissolved	6/23/2020	4	J	µg/L	20
NBBW-IW-3	Molybdenum, Dissolved	6/30/2020	8.2	J	µg/L	20
NBBW-IW-3	Molybdenum, Total	3/11/2020	3.5	J	µg/L	30
NBBW-IW-3	Molybdenum, Total	6/9/2020	5.9	J	µg/L	20
NBBW-IW-3	Molybdenum, Total	6/16/2020	8.9	J	µg/L	20
NBBW-IW-3	Molybdenum, Total	6/23/2020	3.8	J	µg/L	20
NBBW-IW-3	Molybdenum, Total	6/30/2020	7.9	J	µg/L	20
PM-13X	1,1,1-Trichloroethane	6/8/2020	0.92	J	µg/L	1
PM-13X	1,1-Dichloroethane	6/8/2020	29		µg/L	1
PM-13X	1,4-Dioxane	6/8/2020	0.35	J	µg/L	0.9
PM-13X	Chloroform	6/8/2020	0.67	J	µg/L	1
PM-13X	Tetrachloroethene	6/8/2020	1.2		µg/L	1
PM-13X	Trichloroethene	6/8/2020	1.5		µg/L	1
PM-14X	1,1-Dichloroethane	5/13/2020	3		µg/L	1
PM-14X	Chloroform	5/13/2020	0.31	J	µg/L	1
PM-14X	Nitrogen, Nitrate	5/13/2020	8700		µg/L	2500
PM-3X	1,1-Dichloroethane	6/8/2020	0.6	J	µg/L	1
PM-3X	Tetrachloroethene	6/8/2020	0.73	J	µg/L	1
PTP-11	Molybdenum, Dissolved	3/30/2020	7	J	µg/L	30
PTP-11	Molybdenum, Dissolved	6/4/2020	7.5	J	µg/L	20
PTP-11	Molybdenum, Total	3/30/2020	7.4	J	µg/L	30
PTP-11	Molybdenum, Total	6/4/2020	6.6	J	µg/L	20
PTP-12	Molybdenum, Dissolved	3/30/2020	7.6	J	µg/L	30
PTP-12	Molybdenum, Dissolved	6/4/2020	9.8	J	µg/L	20
PTP-12	Molybdenum, Total	3/30/2020	8.2	J	µg/L	30
PTP-12	Molybdenum, Total	6/4/2020	10	J	µg/L	20
PTP-13	1,4-Dioxane	2/27/2020	16		µg/L	0.9
PTP-13	1,4-Dioxane	6/2/2020	10		µg/L	0.9
PTP-13	Alkalinity, Bicarbonate	2/27/2020	180000		µg/L	5000
PTP-13	Alkalinity, Bicarbonate	6/2/2020	180000		µg/L	5000
PTP-13	Alkalinity, Total	2/27/2020	180000		µg/L	5000

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
PTP-13	Alkalinity, Total	6/2/2020	180000		µg/L	5000
PTP-13	Calcium	2/27/2020	360000		µg/L	200
PTP-13	Calcium	6/2/2020	370000		µg/L	200
PTP-13	Chloride	2/27/2020	250000		µg/L	15000
PTP-13	Chloride	6/2/2020	240000		µg/L	15000
PTP-13	Magnesium	2/27/2020	44000		µg/L	200
PTP-13	Magnesium	6/2/2020	49000		µg/L	200
PTP-13	Molybdenum	6/2/2020	860		µg/L	20
PTP-13	Molybdenum, Dissolved	2/27/2020	1100		µg/L	30
PTP-13	Molybdenum, Total	2/27/2020	1000		µg/L	30
PTP-13	Molybdenum, Total	6/2/2020	980		µg/L	30
PTP-13	Potassium	2/27/2020	6400		µg/L	3000
PTP-13	Potassium	6/2/2020	7200		µg/L	3000
PTP-13	Sodium	2/27/2020	210000		µg/L	5000
PTP-13	Sodium	6/2/2020	230000		µg/L	5000
PTP-13	Sulfate	2/27/2020	870000		µg/L	25000
PTP-13	Sulfate	6/2/2020	820000		µg/L	25000
PTP-13	Tetrachloroethene	2/27/2020	0.23	J	µg/L	1
PTP-13	Total Dissolved Solids	2/27/2020	2300000		µg/L	20000
PTP-13	Total Dissolved Solids	6/2/2020	2200000		µg/L	40000
PTP-14	1,1-Dichloroethane	6/2/2020	0.46	J	µg/L	1
PTP-14	1,4-Dioxane	3/4/2020	10		µg/L	0.9
PTP-14	1,4-Dioxane	3/4/2020	26	J	µg/L	200
PTP-14	1,4-Dioxane	6/2/2020	82		µg/L	0.9
PTP-14	1,4-Dioxane	6/2/2020	120	J	µg/L	200
PTP-14	Alkalinity, Bicarbonate	3/4/2020	200000		µg/L	5000
PTP-14	Alkalinity, Bicarbonate	6/2/2020	200000		µg/L	5000
PTP-14	Alkalinity, Total	3/4/2020	200000		µg/L	5000
PTP-14	Alkalinity, Total	6/2/2020	200000		µg/L	5000
PTP-14	Calcium	3/4/2020	230000		µg/L	200
PTP-14	Calcium	6/2/2020	270000		µg/L	200
PTP-14	Chloride	3/4/2020	170000		µg/L	3000
PTP-14	Chloride	6/2/2020	160000		µg/L	3000
PTP-14	Magnesium	3/4/2020	27000		µg/L	200
PTP-14	Magnesium	6/2/2020	32000		µg/L	200
PTP-14	Molybdenum	6/2/2020	5600		µg/L	20
PTP-14	Molybdenum, Dissolved	3/4/2020	3900		µg/L	30
PTP-14	Molybdenum, Total	3/4/2020	3900		µg/L	30
PTP-14	Molybdenum, Total	6/2/2020	5600		µg/L	30
PTP-14	Potassium	3/4/2020	5800		µg/L	3000
PTP-14	Potassium	6/2/2020	6300		µg/L	3000
PTP-14	Sodium	3/4/2020	200000		µg/L	1000
PTP-14	Sodium	6/2/2020	230000		µg/L	5000
PTP-14	Sulfate	3/4/2020	720000		µg/L	25000
PTP-14	Sulfate	6/2/2020	750000		µg/L	25000
PTP-14	Total Dissolved Solids	3/4/2020	1600000		µg/L	10000
PTP-14	Total Dissolved Solids	6/2/2020	1700000		µg/L	20000

TABLE 4.5
SUMMARY OF DETECTED CONSTITUENTS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
PTP-15	Molybdenum, Dissolved	3/30/2020	4	J	µg/L	30
PTP-15	Molybdenum, Total	3/30/2020	3.8	J	µg/L	30
PTP-18	Molybdenum, Dissolved	3/5/2020	5.5	J	µg/L	30
PTP-18	Molybdenum, Total	3/5/2020	3	J	µg/L	30
PTP-21	Molybdenum, Dissolved	3/31/2020	3.5	J	µg/L	30
PTP-21	Molybdenum, Total	3/31/2020	3.6	J	µg/L	30
U-518R-WD	1,1-Dichloroethane	4/27/2020	3.4		µg/L	1
U-518R-WD	Nitrogen, Nitrate	4/27/2020	240	J	µg/L	500
U-518R-WD	Tetrachloroethene	4/27/2020	0.37	J	µg/L	1
U-518R-WD	Trichloroethene	4/27/2020	0.67	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
mg/kg = milligrams per kilogram

TABLE 4.6
SUMMARY OF COMPLIANCE MONITORING EVALUATIONS
JANUARY THROUGH JUNE 2020 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	10/31/2017	4/28/2020	No Trend	Normal	14.36	11.9	9.44	0.9	Out of Compliance
B-313	Nitrate	10/31/2017	4/28/2020	No Trend	Normal	33960	30400	26840	28000	Indeterminant[d/]
B-326-UD	1,4-Dioxane	1/25/2018	5/27/2020	Increasing	NC[f/]	8.745	7.488	6.23	0.9	Out of Compliance
B-326-UD	Nitrate	8/10/2011	2/12/2020	No Trend	Normal	31161	20952	10743	28000	Indeterminant[d/]
B-326-WD	1,4-Dioxane	1/25/2018	5/28/2020	Increasing	NC[f/]	12.5	11.08	9.66	0.9	Out of Compliance
BM-11X-100N	Tetrachloroethene	11/2/2015	4/30/2020	No Trend	Normal	6.458	6.1	5.744	5	Out of Compliance
BM-11X-100N	Trichloroethene	11/2/2015	4/30/2020	No Trend	Normal	5.385	4.98	4.575	5	Indeterminant[d/]
BM-15E2	Nitrate	12/8/2015	5/7/2020	No Trend	Nonparametric	22850	19800	16750	28000	In compliance
BM-15N6	Nitrate	11/3/2015	5/13/2020	No Trend	Normal	43684	41600	39516	28000	Out of Compliance
GW-109	1,4-Dioxane	5/31/2016	6/1/2020	No Trend	Gamma	19.48	7.942	0.308	0.9	Indeterminant[d/] - Seed-based d Mapping on-line calculator used to determine LCL
MW38-830N-230E	1,4-Dioxane	11/10/2015	1/28/2020	No Trend	Normal	10.13	8.47	6.81	0.9	Out of Compliance
MW38-830N-230E	Chloroform	11/10/2015	1/28/2020	No Trend	Nonparametric	5.8	5.07	4.34	3.5	Out of Compliance
MW62-WDR	1,4-Dioxane	2/7/2017	5/14/2020	Decreasing	NC[f/]	NC[f/]	NC[f/]	NC[f/]	0.9	Not determined - Did not meet linear regression requirements, Potentially out of compliance
MW62-WDR	Nitrate	2/7/2017	5/14/2020	No Trend	Nonparametric	124123	120000	115877	28000	Out of Compliance
MW62-WDR	Nitrite	2/7/2017	5/14/2020	Decreasing	`	1802	854.3	-93.4	1000	Indeterminant[d/]
MW74-WD	Nitrate	11/10/2015	5/7/2020	No Trend	Normal	15138	10520	5902	28000	In Compliance
MW77-WD	1,4-Dioxane	11/12/2015	5/4/2020	No Trend	Normal	11.58	8.94	6.3	0.9	Out of Compliance
MW77-WD	Nitrate	11/12/2015	5/4/2020	No Trend	Normal	24407	21270	8133	28000	In Compliance
MW106-UD	1,4-Dioxane	7/21/2006	8/9/2018	No Trend	NC[f/]	NC[f/]	NC[f/]	NC[f/]	0.9	Potentially in compliance[g/], 90% Nondetects - data not processed

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/ UCL above performance standard and LCL below performance standard - cannot determine potential for compliance
e/ Indeterminant potential - cannot determine potential for compliance according to the rules from Step 9, Section 7.3.1 of the 2018 GWMP.
f/ NC - Not calculated
g/ 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.

Note: * Statistics performed per the 2018 GWMP

* For all other parameters for the above listed 12 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 2020 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	-3.60	-0.48	-1.648	-2.05	-0.81	Inward Gradient exists	Wall is effective
PM-2	-7.70	-6.99	-7.166	-7.24	-7.02	Inward Gradient exists	Wall is effective
PM-3	0.52	0.78	0.664	0.55	0.91	Outward Gradient exists	Review water quality data
PM-4	-0.34	-0.21	-0.266	-0.44	0.10	Inward Gradient exists	Wall is effective
PM-5	-1.22	0.08	-0.787	-1.05	-0.24	Inward Gradient exists	Wall is effective
PM-6	3.62	3.84	3.719	3.62	3.93	Outward Gradient exists	Review water quality data
PM-7	-8.27	-6.16	-6.928	-7.26	-6.22	Inward Gradient exists	Wall is effective
PM-8	-9.92	-8.18	-9.063	-9.40	-8.35	Inward Gradient exists	Wall is effective
PM-9	-10.54	-8.34	-9.148	-9.60	-8.19	Inward Gradient exists	Wall is effective
PM-10	-5.81	-4.63	-5.200	-5.59	-4.37	Inward Gradient exists	Wall is effective
PM-11	-25.60	-21.83	-23.444	-23.90	-22.49	Inward Gradient exists	Wall is effective
PM-12	-6.25	-4.59	-5.286	-5.51	-4.81	Inward Gradient exists	Wall is effective
PM-13	Not calculated	Not calculated	Not calculated	Not calculated	Not calculated	PM-13I was dry, PM-13X was dry in 1st quarter	Continue to review water quality data
PM-14	1.02	1.15	1.076	0.95	1.35	Outward Gradient exists	Review water quality data
PM-15	-13.03	-11.52	-12.374	-12.53	-12.05	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 2020 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/]	Metals	Anions	Alkalinity	TDS[c/]
31	B-313	1/28/2020	20	30000	X	X	X	X	X
31	B-313	4/28/2020	21	28000	X	X	X	X	X
31	B-313-UD	1/27/2020	0.9 U		X	X	X	X	X
31	B-313-UD	4/29/2020	0.9 U		X	X	X	X	X
31	B-314	5/18/2020	0.9 U	200 J	X	X	X		
31	B-321	2/24/2020	48	29000			X		
31	B-321	4/29/2020	18	35000		X	X		
31	B-326-UD	2/12/2020	7.7	730	X	X	X	X	X
31	B-326-UD	5/27/2020	6.9		X	X	X	X	X
31	B-326-WD	2/12/2020	10	21000	X	X	X	X	X
31	B-326-WD	5/28/2020	11	16000	X	X	X	X	X
31	GW-109	3/2/2020	41	500 U	X	X	X		
31	GW-109	6/1/2020	20		X	X	X	X	X
31	MW05-WD	2/26/2020	4.7						
31	MW113-EW-1	1/21/2020	93	3800		X	X		
31	MW113-EW-1	4/28/2020	92	4100		X	X		
31	MW113-LD	4/21/2020		500 U		X	X	X	X
31	MW113-UD	1/27/2020	130		X	X	X	X	X
31	MW113-UD	4/28/2020	150		X	X	X	X	X
31	MW113-WD	1/27/2020	14		X	X	X	X	X
31	MW113-WD	4/21/2020		2200		X	X	X	X
31	MW113-WD	5/19/2020	19		X	X			
31	MW114-WD	2/18/2020	2.4			X			
31	MW114-WD	5/18/2020	0.98			X			
31	MW118-WD	2/18/2020	0.96			X			
31	MW118-WD	5/18/2020	0.62 J			X			
31	MW121-WDR	1/22/2020	1						
31	MW122-WDR	1/22/2020	2.3						
31	MW123-WD	1/22/2020	0.95						
31	MW124-WD	1/23/2020	0.43 J						
31	MW125-WD	1/23/2020	0.28 J						
31	MW129-WD	1/23/2020	7.7						
31	MW132-WD	1/21/2020	22						
31	MW132-WD	5/6/2020	18			X			
30	MW135-WD	1/29/2020	6.3						
30	MW141-WD	1/29/2020	3.5						
19	MW142-WD	1/30/2020	2						
24	MW144-WD	1/30/2020	0.9 U						
31	MW151-WD	1/22/2020	2.4						
31	MW151-WD	5/6/2020	1.2			X			
31	MW153-EW-1	2/20/2020	2.4			X			
31	MW153-EW-1	5/19/2020	2						
31	MW154-EW-1	2/20/2020	2.6						
31	MW154-EW-1	5/21/2020	1.7			X			
31	MW155-EW-1	2/20/2020	1.6						
31	MW155-EW-1	5/21/2020	0.86 J			X			
31	MW156-EW-1	2/24/2020	1.1						
31	MW156-EW-1	5/27/2020	0.5 J			X			
31	MW156-WD	2/11/2020	0.69 J						
31	MW156-WD	5/26/2020	0.56 J			X			
31	MW157-WD	2/11/2020	0.29 J						
31	MW157-WD	5/26/2020	0.57 J			X			

TABLE 4.8
NORTH END MONITORING - NITRATE AND 1,4-DIOXANE (NEW DATA ONLY)
JANUARY THROUGH JUNE 2020 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/]	Metals	Anions	Alkalinity	TDS[c/]
31	MW160-WD	2/20/2020	3.7						
31	MW160-WD	5/19/2020	2.7			X			
13	MW176-DEN	2/19/2020	0.69 J						
13	MW176-DEN	5/27/2020	0.56 J			X			
31	NBBW-IW-3	6/2/2020	110			X			
31	NBBW-IW-3	6/9/2020	120			X			
31	NBBW-IW-3	6/16/2020	110			X			
31	NBBW-IW-3	6/23/2020	120			X			
31	NBBW-IW-3	6/30/2020	120		X	X			
19	PINGLE	6/25/2020	0.9 U						
31	PTP-13	2/27/2020	16		X	X	X	X	X
31	PTP-13	6/2/2020	10		X	X	X	X	X
31	PTP-14	3/4/2020	26 J		X	X	X	X	X
31	PTP-14	6/2/2020	120 J		X	X	X	X	X
30	REED	6/25/2020	0.9 U						

a/ µg/L = micrograms per liter
b/ VOCs = volatile organic compounds
c/ TDS = Total dissolved solids
d/ 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 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Mass Removal of 1,4-Dioxane from North End Groundwater Extraction January through June 2020 (1H20)			
Extraction Well	**Volume Removed (gallons)**	**Mass (grams)**	**Mass (pounds)**
MW153-EW-1	1,084,032	9.73	0.021
MW154-EW-1	386,496	3.15	0.007
MW155-EW-1	471,456	1.69	0.004
MW156-EW-1	0	0.00	0.000
MW160-WD	129,312	1.70	0.004
MW118-WD	0	0.00	0.000
MW114-WD	0	0.00	0.000
MW77-EW-2	0	0.00	0.000
MW102-WD	242,640	1.14	0.003
MW77-EW-1	17,554	0.22	0.000
MW98-WD	8,107	0.33	0.001
MW170-EW-1 *	3,472,272	232.49	0.513
MW113-EW-1 *	253,440	85.93	0.189
MW113-UD *	11,477	5.75	0.013
B-321 *	543	0.09	0.000
TOTAL	6,077,328	342.23	0.754

Total Mass Removal of 1,4-Dioxane from North End Groundwater Extraction Cumulative through 06/30/20			
Extraction Well	**Volume Removed (gallons)**	**Mass (grams)**	**Mass (pounds)**
MW153-EW-1	18,277,320	387.3	0.854
MW154-EW-1	13,784,981	337.9	0.745
MW155-EW-1	12,403,648	207.9	0.458
MW156-EW-1	6,103,619	174.0	0.384
MW160-WD	5,702,482	252.4	0.557
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	6,516,380	253.0	0.558
MW77-EW-1	243,364	14.1	0.031
MW98-WD	728,567	118.2	0.261
MW170-EW-1 *	54,437,616	4825.9	10.639
MW113-EW-1 *	13,103,071	1141.1	2.516
MW113-UD *	135,723	27.8	0.061
B-321 *	1,762,713	157.9	0.348
TOTAL	135,644,186	8,088.4	17.8

* North End On-Site Well. Volume removed is based on recorded extraction rate multiplied by number of days within the extraction period (i.e., 30 days). As a result, the volume reported may slightly overestimate the volume removed because the number does not account for down-time or repair, extraction rate precision, and periodic O&M dialing in of the extraction rate. Totalizer reading for this reporting period was 3,763,104 gallons. Total North End On-Site Well's volume was 3,737,732 gallons. The totalizer volume has a higher degree of accuracy, difference between the two volumes differ by -0.7%.

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2020 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	07/25/16	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	11/09/16	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	02/07/17	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	05/17/17	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	08/01/17	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	10/13/17	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	03/07/18	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	05/10/18	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	07/31/18	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	05/14/19	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	
B-323-WD	03/04/11	1.5		0.85	J	0.98	J	2.5		2.2		0.13	U	3.7		53			
MW170-WD	03/07/11	5.4		2.1		3.8		11		6.9		0.13	U	8.3		72			
MW170-EW-1	01/05/12	11		3.6		8		26		11		0.55	J	15		150		110	
MW170-EW-1	08/22/12	5		2		3.4		11		2.7		0.33	J	10		77		33	
MW170-EW-1	09/19/12	4.5		2.2		3		11		3.1		0.35	J	9.3		72		27	
MW170-EW-1	10/22/12	4.3		1.5		2.2		9.2		2		0.19	J	6.2		56		24	
MW170-EW-1	11/13/12	3.8		1.5		2.2		8.7		1.9		0.13	U	5.9		46		19	
MW170-EW-1	12/10/12	4.2		1.6		2		8		2.1		0.13	U	6.2		40		17	
MW170-EW-1	01/30/13	5.2		1.8		1.9		11		2.7		0.17	J	6.9		45		13	
MW170-EW-1	02/20/13	5.4		2.4		3.2		14		3.1		0.13	U	10		71		12	
MW170-EW-1	03/14/13	8.3		3.5		4.6		21		4		0.34	J	15		79		8.8	
MW170-EW-1	04/22/13	5.8		2.2		2.5		11		1.6		0.13	J	7.9		64		5.5	
MW170-EW-1	05/15/13	5.2		2.1		2.7		9		1.6		0.13	U	8.1		50		5.5	
MW170-EW-1	06/17/13	4.9		1.9		2.7		8		1.6		0.13	U	6.5		39		5.3	
MW170-EW-1	07/29/13	4		1.4		2.1		6.2		1.2		0.13	U	5.1		32		5.3	
MW170-EW-1	08/21/13	4.8		1.5		2		6.8		1.7		0.13	U	5.4		29		5	
MW170-EW-1	09/18/13	3.3		1.1		1.6		4.4		0.93		0.13	U	3.7		32		5.3	
MW170-EW-1	11/11/13	2.7		1.1		1.4		4.6		1		0.13	U	3.7		27		5.8	
MW170-EW-1	02/20/14	1.7		0.64	J	0.8	J	2.5		0.72	J	0.13	U	2.6		15		5.1	
MW170-EW-1	05/28/14	2.1		0.87	J	1		3.2		0.88	J	0.13	U	3.1		18		6.2	
MW170-EW-1	09/04/14	2.3		0.86	J	1.9		4.3		1.1		0.13	U	3.1		22		14	
MW170-EW-1	12/03/14	1.5		0.56	J	2		3.1		1.1		0.13	U	2.6		17		13	
MW170-EW-1	03/05/15	1.7		0.59	J	2.3		2.9		1.3		0.13	U	2.2		12		14	
MW170-EW-1	06/18/15	1.2		0.4	J	1.9		2.3		1.2		0.13	U	1.9		9.9		19	
MW170-EW-1	09/16/15	1.1		0.43	J	1.4		1.8		0.98	J	0.13	U	1.6		8.8		22	
MW170-EW-1	12/10/15	0.87	J	0.3	J	0.82	J	1.1		0.49	J	0.13	U	0.99	J	6.7		22	

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2020 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	02/24/16	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	06/23/16	0.7	J	0.26	J	1.4		1.3		0.73	J	0.13	U	1.2		6		24	
MW170-EW-1	12/19/16	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	03/13/17	0.74	J	0.29	J	1.3		1.3		0.77	J	0.13	U	1.2		3.7		18	
MW170-EW-1	06/26/17	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	09/11/17	0.76	J	0.21	J	1.2		1.3		0.73	J	0.13	U	1.1		4.7		13	
MW170-EW-1	12/04/17	0.67	J	0.26	J	2.7		1.6		0.98	J	0.13	U	1.4		5.5		11	
MW170-EW-1	03/07/18	0.78	J	0.3	J	5.6		2.1		1.9		0.13	U	2.8		8.6		19	
MW170-EW-1	06/11/18	1.3		0.53	J	17		5.4		5.1		0.16	J	6.8		15		12	
MW170-EW-1	09/05/18	1.4		0.5	J	14		4.3		4.3		0.13	U	5.6		17		8.7	
MW170-EW-1	11/19/18	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	
MW171-WD	03/03/11	1		0.65	J	0.36	J	2.1		1.1		0.13	U	2.8		21			
MW171-WD	01/04/12	0.2	U	0.16	U	0.15	U	0.64	J	0.16	U	0.13	U	0.77	J	6.6		18	
MW171-WD	08/28/12	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	01/31/13	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	08/21/18	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	03/01/11	1.7		0.83	J	0.86	J	6		1.3		0.13	U	6		51			
MW172-WD	01/04/12	2.3		1.2		0.95	J	4.9		0.94	J	0.13	U	5.8		68		28	
MW172-WD	08/28/12	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	01/30/13	0.62	J	0.26	J	0.15	U	1.1		0.26	J	0.13	U	1		16		8.1	
MW172-WD	09/19/18	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	03/01/11	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	08/24/18	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	01/05/12	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	

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2020 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**	
MW174-WD	09/06/12	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	02/05/13	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	09/25/18	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	01/05/12	3.5		2.1		3.5		13		0.42	J	0.27	J	12		76		62	
MW175-WD	09/06/12	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	02/05/13	0.2		0.47	J	0.61	J	2.3		0.24	J	0.13	U	2		15		19	
MW175-WD	09/19/18	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	12/19/03	6.2		2.6		1.5		11		11		0.32	J	11		85	J	68	
MW77-WD	01/21/04	6.7		2.9		1.6		12		11		0.13	U	11		76	J		
MW77-WD	05/26/10	3.3		1.2		0.82	J	7		2.8		0.13	U	4.7		45		160	
MW77-WD	11/18/10	2.3		0.9	J	0.66	J	4.2		1.7		0.13	U	3.5		37		120	
MW77-WD	03/02/11	3		1.1		0.82	J	5.8		2		0.13	U	4.7		41			
MW77-WD	05/25/11	4.6		2		1.3		10		3.5		0.13	U	7.2		61		170	
MW77-WD	11/15/11	2.8		1.1		0.89	J	5.1		1.6		0.13	U	4.3		41		130	
MW77-WD	05/24/12	1.6		0.46	J	0.15	U	2.1		0.76	J	0.13	U	1.6		23		42	
MW77-WD	11/08/12	2.2		0.68	J	0.37	J	1.9		0.92	J	0.13	U	1.9		29		46	
MW77-WD	05/08/13	2.1		0.55	J	0.22	J	1.9		0.67	J	0.13	U	1.3		27		65	
MW77-WD	11/12/13	0.8		0.21	J	0.15	U	0.56	J	0.32	J	0.13	U	0.67	J	11		74	
MW77-WD	04/29/14	1.6		1.49	J	0.17	J	1.4		0.58	J	0.13	U	1.1		23		63	
MW77-WD	11/18/14	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	04/23/15	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	11/12/15	1.4		0.42	J	0.16	J	1.7		0.5	J	0.13	U	1.2		15		23	
MW77-WD	05/16/16	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	10/31/16	1.4		0.38	J	0.16	J	1.5		0.32	J	0.13	U	1		14		16	
MW77-WD	04/24/17	1.3		0.51	J	0.19	J	1.9		0.44	J	0.13	U	1.7		20		24	
MW77-WD	10/26/17	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	05/03/18	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	08/02/18	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	
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	
MW98-WD	03/08/10															44			
MW98-WD	06/10/10															42			
MW98-WD	09/07/10															38			
MW98-WD	12/01/10															34			
MW98-WD	03/09/11															36			
MW98-WD	06/14/11															35			
MW98-WD	08/30/11															40			

TABLE 4.10
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JANUARY THROUGH JUNE 2020 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	12/13/11															29			
MW98-WD	03/20/12															26			
MW98-WD	06/13/12															24			
MW98-WD	09/05/12															23			
MW98-WD	12/06/12															22			
MW98-WD	03/06/13															19			
MW98-WD	06/04/13															20			
MW98-WD	09/10/13															21			
MW98-WD	11/04/13															17	J		
MW98-WD	02/13/14															17			
MW98-WD	05/14/14															18			
MW98-WD	08/13/14															22			
MW98-WD	12/02/14															19			
MW98-WD	02/09/15															16			
MW98-WD	06/11/15															21			
MW98-WD	09/03/15															16			
MW98-WD	12/28/15															16			
MW98-WD	03/01/16															15			
MW98-WD	06/20/16															16			
MW98-WD	12/28/16															14			
MW98-WD	03/02/17															13			
MW98-WD	06/27/17															14			
MW98-WD	07/27/17															14			
MW98-WD	11/30/17															12			
MW98-WD	03/21/18															12			
MW98-WD	05/24/18															11			
MW98-WD	09/04/18	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	11/20/18															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			
MW102-WD	03/08/10															29			
MW102-WD	06/10/10															29			
MW102-WD	09/07/10															25			
MW102-WD	12/01/10															19			

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2020 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	03/09/11															20			
MW102-WD	06/14/11															21			
MW102-WD	08/30/11															21			
MW102-WD	12/13/11															12			
MW102-WD	03/20/12															9.7			
MW102-WD	06/13/12															6.4			
MW102-WD	09/05/12															5.8			
MW102-WD	12/06/12															4	J		
MW102-WD	03/06/13															3.3	J		
MW102-WD	06/04/13															3.2	J		
MW102-WD	09/10/13															2.8	J		
MW102-WD	11/04/13															2.8	J		
MW102-WD	02/13/14															2.4	J		
MW102-WD	05/14/14															2.7	J		
MW102-WD	08/13/14															5.2			
MW102-WD	12/02/14															3.6	J		
MW102-WD	02/09/15															2.8	J		
MW102-WD	06/11/15															4.4	J		
MW102-WD	09/03/15															3.3			
MW102-WD	12/28/15															2.9			
MW102-WD	03/01/16															2.2			
MW102-WD	06/20/16															3.3			
MW102-WD	12/28/16															2.5			
MW102-WD	03/02/17															2.9			
MW102-WD	06/27/17															2.5			
MW102-WD	07/27/17															2.5			
MW102-WD	11/30/17															1.3			
MW102-WD	03/21/18															1.4			
MW102-WD	05/24/18															0.81	J		
MW102-WD	09/04/18	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	11/20/18															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			
MW77-EW-1	03/08/10															32			
MW77-EW-1	06/10/10															33			

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2020 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	09/07/10															27			
MW77-EW-1	12/01/10															24			
MW77-EW-1	03/09/11															22			
MW77-EW-1	06/14/11															23			
MW77-EW-1	08/30/11															30			
MW77-EW-1	12/13/11															18			
MW77-EW-1	03/20/12															16			
MW77-EW-1	06/13/12															12			
MW77-EW-1	09/05/12															12			
MW77-EW-1	12/06/12															10			
MW77-EW-1	03/06/13															9.7			
MW77-EW-1	06/04/13															8.6			
MW77-EW-1	09/10/13															9.1			
MW77-EW-1	12/17/13															7.6			
MW77-EW-1	02/13/14															7.6			
MW77-EW-1	05/14/14															7.1			
MW77-EW-1	08/13/14															10			
MW77-EW-1	12/02/14															7.5			
MW77-EW-1	02/09/15															6.6			
MW77-EW-1	06/11/15															9.5			
MW77-EW-1	09/03/15															6.5			
MW77-EW-1	12/28/15															8.4			
MW77-EW-1	03/01/16															4.8			
MW77-EW-1	06/20/16															5.8			
MW77-EW-1	12/28/16															4.5			
MW77-EW-1	03/02/17															11			
MW77-EW-1	06/27/17															11			
MW77-EW-1	07/27/17															5.4			
MW77-EW-1	11/30/17															3.7			
MW77-EW-1	03/21/18															3.5			
MW77-EW-1	05/24/18															2.5			
MW77-EW-1	09/04/18	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	11/20/18															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			

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2020 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	5/21/2020															2.8			
MW77-EW-2	03/08/10															9.4			
MW77-EW-2	06/10/10															8.9			
MW77-EW-2	09/07/10															8.6			
MW77-EW-2	12/01/10															11			
MW77-EW-2	03/09/11															6.3			
MW77-EW-2	06/14/11															1.7	J		
MW77-EW-2	08/30/11															1.5	J		
MW77-EW-2	12/13/11															0.82	J		
MW77-EW-2	03/20/12															0.7	J		
MW77-EW-2	06/13/12															0.58	J		
MW77-EW-2	09/05/12															0.85	J		
MW77-EW-2	12/06/12															0.52	J		
MW77-EW-2	03/06/13															0.5	U		
MW77-EW-2	06/04/13															0.5	U		
MW77-EW-2	09/10/13															0.5	U		
MW77-EW-2	12/17/13															0.5	U		
MW77-EW-2	02/13/14															0.5	U		
MW77-EW-2	05/14/14															0.5	U		
MW77-EW-2	08/13/14															0.5	U		
MW77-EW-2	12/02/14															0.5	U		
MW77-EW-2	02/09/15															0.68	J		
MW77-EW-2	06/11/15															0.94	J		
MW77-EW-2	09/03/15															0.65	J		
MW77-EW-2	12/28/15															0.53	J		
MW77-EW-2	03/01/16															0.5	J		
MW77-EW-2	06/20/16															0.3	J		
MW77-EW-2	12/28/16															0.6	J		
MW77-EW-2	03/02/17															0.81	J		
MW77-EW-2	06/27/17															0.44	J		
MW77-EW-2	07/27/17															0.18	J		
MW77-EW-2	11/30/17															0.15	U		
MW77-EW-2	03/21/18															0.37	J		
MW77-EW-2	05/24/18															0.15	U		
MW77-EW-2	09/04/18	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	11/20/18															0.15	U		
MW77-EW-2	2/22/2019															0.17	J		
MW77-EW-2	5/16/2019															0.15	J		

TABLE 4.10
SUMMARY OF GTEP AREA ANALYTICAL RESULTS SINCE 2010 VOCs AND NITRATE
JANUARY THROUGH JUNE 2020 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	7/24/2019															0.4	U		
MW77-EW-2	10/23/2019															0.4	U		
MW77-EW-2	2/13/2020															0.12	J		
MW77-EW-2	5/21/2020															0.17	J		
MW77-UD	01/04/12	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	02/07/12	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	09/06/12	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	08/20/18	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 µg/L, except nitrate (NO_3), which is listed in 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 = estimated concentration below the reporting limit
U = undetected concentration below the method detection limit

FIGURES

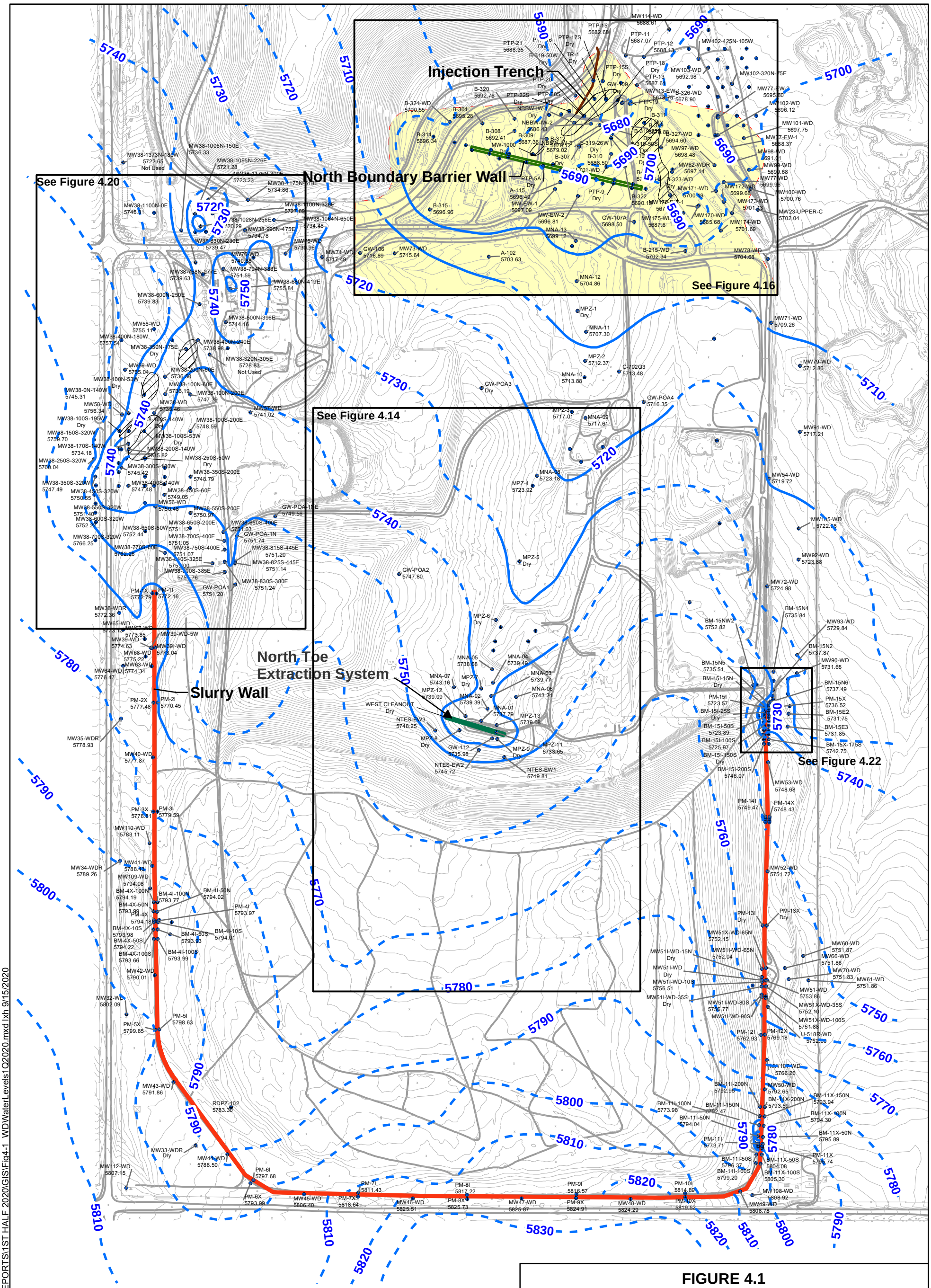

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FIGURE 4.1

SITEWIDE POTENTIOMETRIC SURFACE
ALLUVIUM/WEATHERED DAWSON
January 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

Injection Trench

North Boundary Barrier Wall

See Figure 4.21

See Figure 4.17

See Figure 4.15

See Figure 4.23

Slurry Wall

North Toe Extraction System

Slurry Wall

Legend

- Weathered Dawson Well Location
- Dry area
- Water Elevation Contour (10-foot interval) (Dashed where inferred, queried where uncertain)
- Dry Area or Well labeled dry – Water Level Below Base of Well Screen
- (5790.09) Water levels recorded week of April 08, 2020

N

Feet

0 250 500

1 inch = 500 feet

FIGURE 4.2

SITEWIDE POTENTIOMETRIC SURFACE ALLUVIUM/WEATHERED DAWSON April 2020

O&M Status Report - 1st Half 2020 Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

S:\ES\Maj\Proj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2020\GIS\Fig4-2_WDWaterLevels2Q2020.mxd lxh 9/15/2020

Figure 4.18

Injection Trench

North Boundary Barrier Wall

North Toe Extraction System

Slurry Wall

MW38-1363N-180W 5723.94
MW38-1200N-226E 5709.79
MW38-1120N-1000E 5717.3
MW38-1064N-660E 5717.90 Not Used
MW38-1064N-655E 5726.19
MW38-410N-180W 5718.95
MW38-400N-300E 5719.22
MW38-360N-405E Dry
MW38-200N-425E 5731.5
MW38-302S-50W 5743.62
MW38-450S-200E 5748.76
MW36-UD 5767.59
MW39-UD 5751.95
MW-1 5744.76 Not Used
MW35-UD 5759.45
MW111-UD 5766.71
MW-2 5758.13 Not Used
MW34-UD 5787.75
BM-4X-40S 5786.21
MW42-UD 5787.12
MW-3 5786.88
MW32-UD 5786.89
MW33-UD 5788.19
MW112-UD 5792.17
PM-6X-UD 5792.47
MW76-UD 5718.09
MW75-UD 5717.69
MW74-UD 5713.31
MW73-UD 5711.20
GW-104 5751.99
B-502 5749.04
B-712-LD 5741.53 Not Used
B-712-UD 5748.29
B-712-25S-UD 5748.61
B-706 5785.55
B-708 5774.49
MW113-LD 5682.47 Not Used
MW113-UD 5631.73
B-313-UD 5685.51
B-326-UD 5679.74
B-304-UD 5690.05
B-314-UD 5691.14
GW-108A 5690.16
BW-PZ-1LC 5690.36
MW-1000LC 5688.11
B-306 5691.47
B-317-UD 5692.22
U-701 5689.09
MW-EW-1LC 5694.82
MW-EW-1LCRA 5693.22 Not Used
MW-EW-2LC 5695.22
B-316-UD 5676.97
B-327-UD 5693.30
B-305R 5693.30
MW62-UD 5690.21
MW77-UD 5696.17
MW37-UD 5698.70
GW-107UD 5699.36
GW-107UDR 5669.74 Not Used
MW23-C-SD 5699.19
MW23-WD 5701.47
MW78-UD 5705.56
MW71-UD 5710.03
MW79-UD 5712.5
C-702P4 5714.3
MW91-UD 5715.93
MW54-UDR 5720.52
MW72-UD 5721.65
MW93-UD 5731.76
MW90-UD 5731.66
PM-15-UD 5735.89
GW-101 5728.89
MW52-UD 5748.35
MW106-UD 5751.46
MW51-10S 5753.2
B-518 5759.28
MW107-UD 5751.62
B-519 5809.51
BKGD-2UD 5813.33

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, queried where uncertain)
- (5790.09) Water levels recorded week of January 06, 2020
- 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 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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Figure 4.19

Injection Trench

North Boundary Barrier Wall

North Toe Extraction System

Slurry Wall

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

MW38-1363N-180W 5724.01
MW38-1200N-226E 5709.85
MW38-1120N-1000E 5717.23
MW38-1064N-660E 5717.84 Not Used
MW38-1064N-655E 5726.20
MW38-410N-180W 5718.76
MW38-400N-300E 5718.88
MW38-360N-405E Dry
MW38-200N-425E 5731.33
MW38-302S-50W 5743.85
MW38-450S-200E 5748.78
MW36-UD 5767.61
MW39-UD 5751.75
MW-1 5744.98 Not Used
MW35-UD 5759.47
MW111-UD 5766.81
MW-2 5758.12 Not Used
MW34-UD 5787.42
BM-4X-40S 5785.87
MW42-UD 5786.84
MW-3 5786.61
MW32-UD 5786.65
MW112-UD 5791.90
MW33-UD 5788.27
PM-6X-UD 5792.24
MW76-UD 5718.01
MW75-UD 5717.64
MW74-UD 5713.36
MW73-UD 5711.25
GW-104 5751.95
B-502 5749.32
B-712-LD 5741.65 Not Used
B-712-UD 5748.41
B-712-25S-UD 5748.75
B-706 5785.3
B-314-UD 5691.43
B-304-UD 5690.54
GW-108A 5690.49
BW-PZ-1LC 5690.57
B-313-UD 5686.07
MW-1000LC 5688.35
MW-EW-1LC 5694.99
MW-EW-2LC 5695.42
MW-EW-1S 5693.38 Not Used
B-306 5691.88
B-317-UD 5692.43
B-701 5688.86
B-316-UD 5682.86
MW113-LD 5683.40 Not Used
MW113-UD 5631.73
B-326-UD 5680.68
B-327-UD 5693.57
B-305R 5692.98
MW62-UD 5690.45
MW37-UD 5688.92
GW-107UD 5699.43
GW-107UDR 5671.27 Not Used
MW77-UD 5696.33
MW23-C-SD 5699.27
MW23-WD 5701.61
MW78-UD 5705.33
MW71-UD 5710.20
MW79-UD 5712.57
C-702P4 5714.18
MW91-UD 5716.16
MW54-UDR 5720.48
MW72-UD 5721.73
MW93-UD 5732.14
MW90-UD 5732.05
PM-15-UD 5735.78
GW-101 5729.03
MW52-UD 5748.47
MW106-UD 5751.32
MW51-10S 5753.10
B-518 5759.40
B-519 5809.07
B-708 5774.5
MW107-UD 5751.65

Legend

- Unweathered Dawson Well Location
- Water Elevation Contour (10-foot interval) (Dashed where inferred, queried where uncertain)
- (5790.09) Water levels recorded week of April 08, 2020
- Dry — Water Level Below Base of Screen

N

BKGD-2UD 5807.78 Not Used

0 250 500 Feet

1 inch = 500 feet

FIGURE 4.4

SITEWIDE POTENTIOMETRIC SURFACE UNWEATHERED DAWSON
April 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

PARSONS

Denver, Colorado

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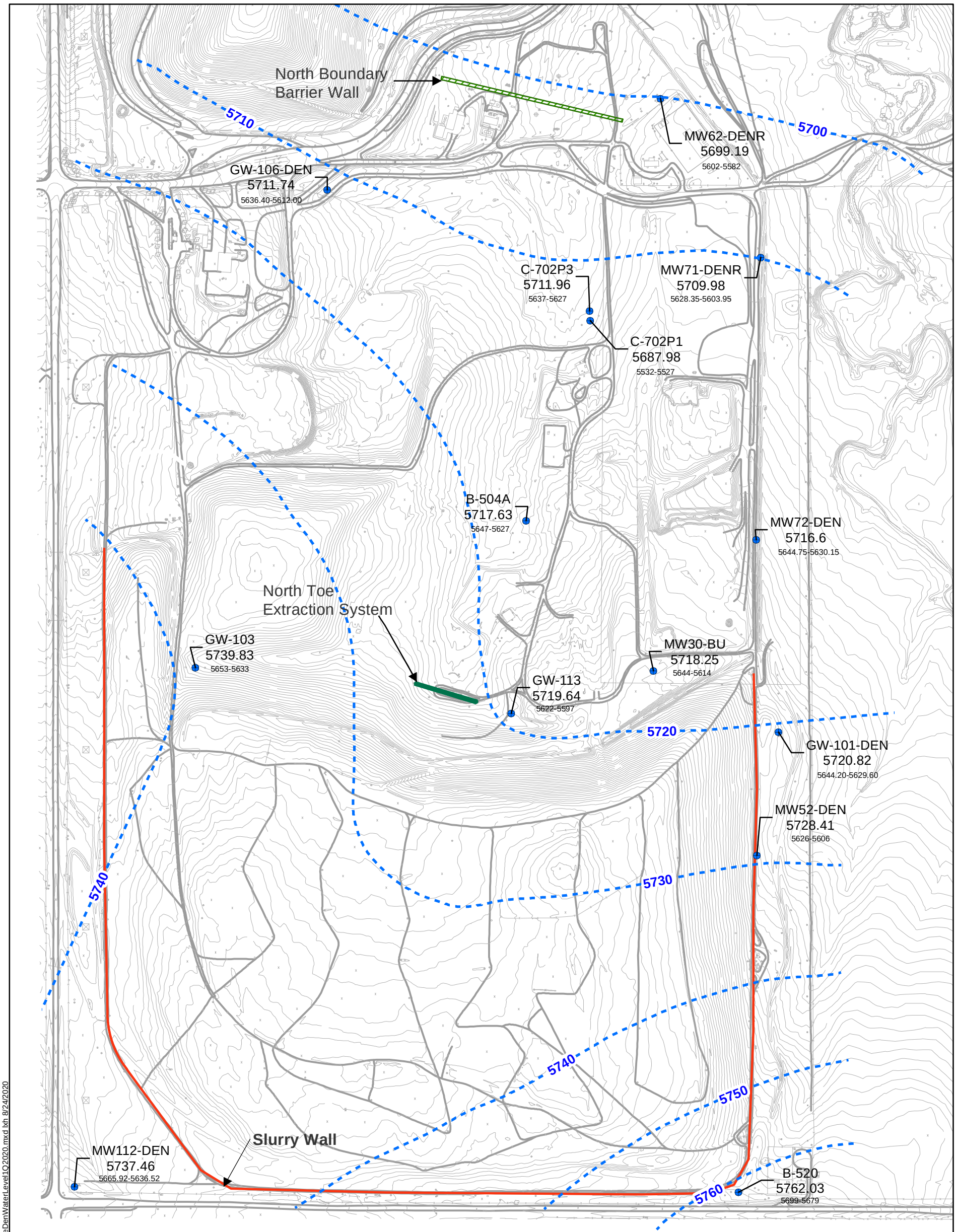

Legend

- MW112-DEN Well location,
  5737.34 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 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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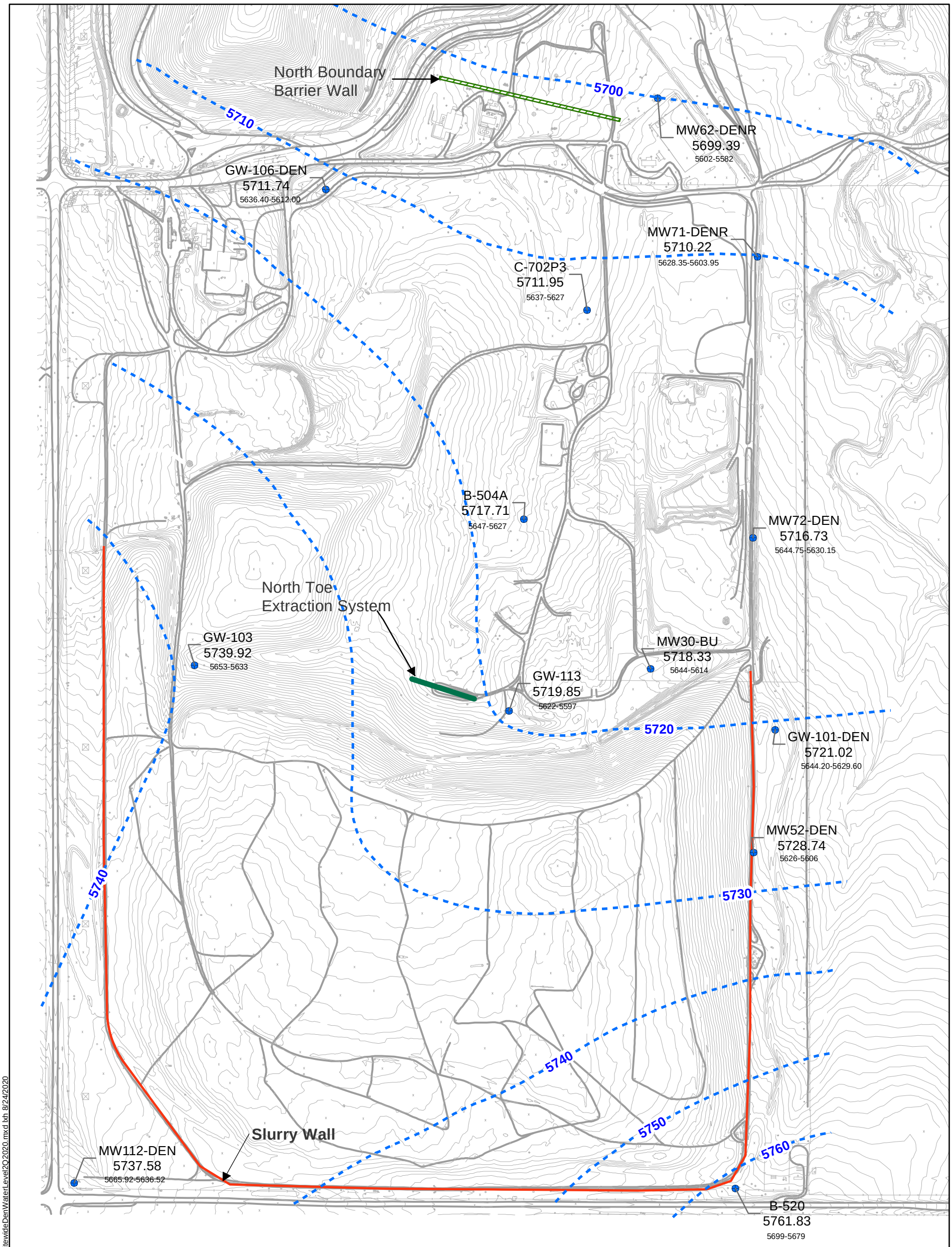

Legend

- MW112-DEN Well location,
  5737.14 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 4.6
Sitewide Potentiometric Levels
Upper Denver Formation
April 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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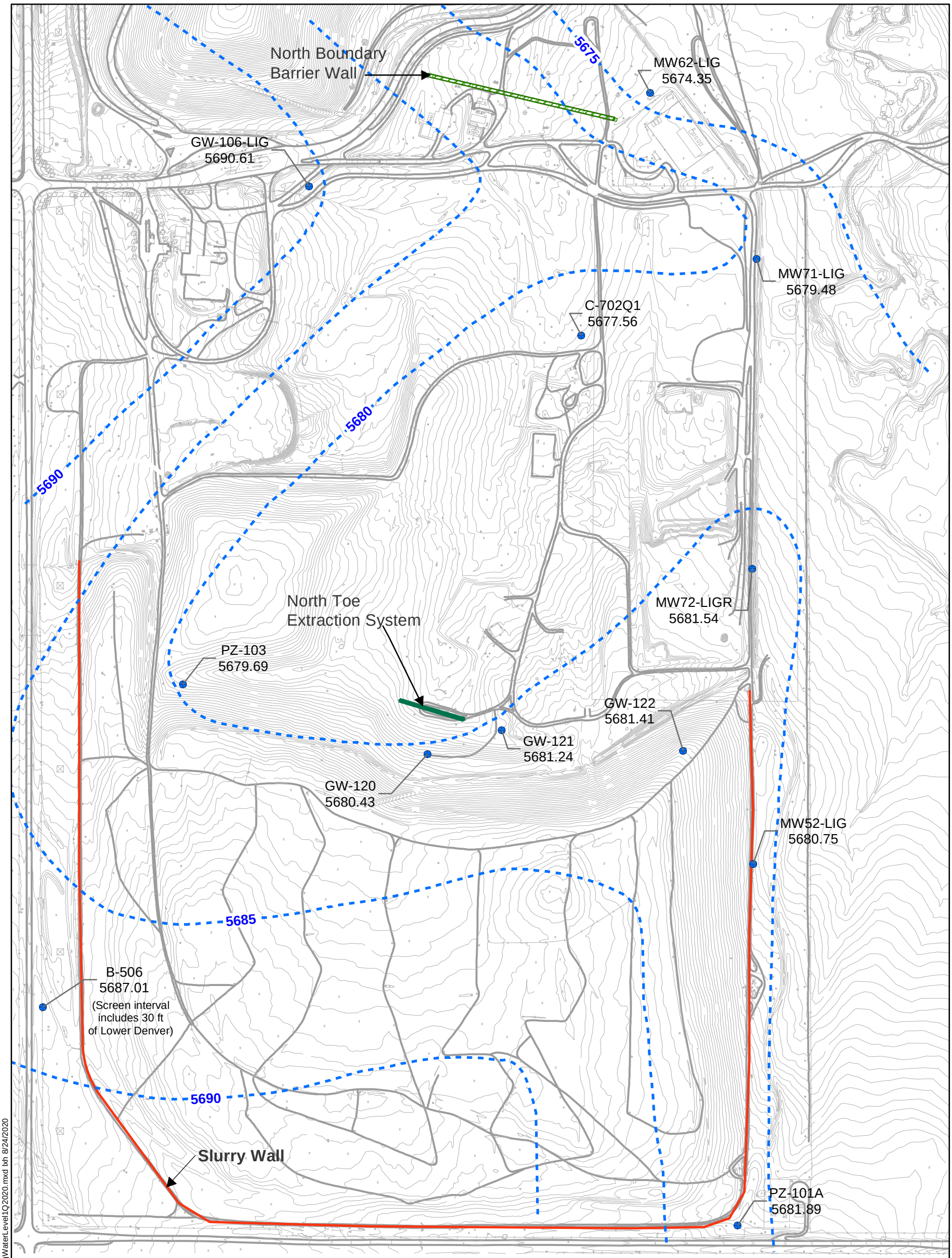

Legend

- MW52-LIG 5680.55 — 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 2020

O&M Status Report- 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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North Boundary
Barrier Wall

MW62-LIG
5674.52

GW-106-LIG
5690.74

MW71-LIG
5679.53

C-702Q1
5677.85

5675

5685

5680

5690

North Toe
Extraction System

MW72-LIGR
5682.11

PZ-103
5679.86

GW-121
5682.00

GW-120
5681.92

GW-122
5682.10

MW52-LIG
5681.25

B-506
5687.30
(Screen interval
includes 30 ft
of Lower Denver)

5690

Slurry Wall

PZ-101A
5683.37

Legend

MW52-LIG
5680.39
Well location and
water elevation

Water elevation contour
(dashed where inferred)

N

0 250 500
Feet

1 inch = 500 feet

Figure 4.8
Sitewide Potentiometric Levels
Lignite Layer
April 2020

O&M Status Report- 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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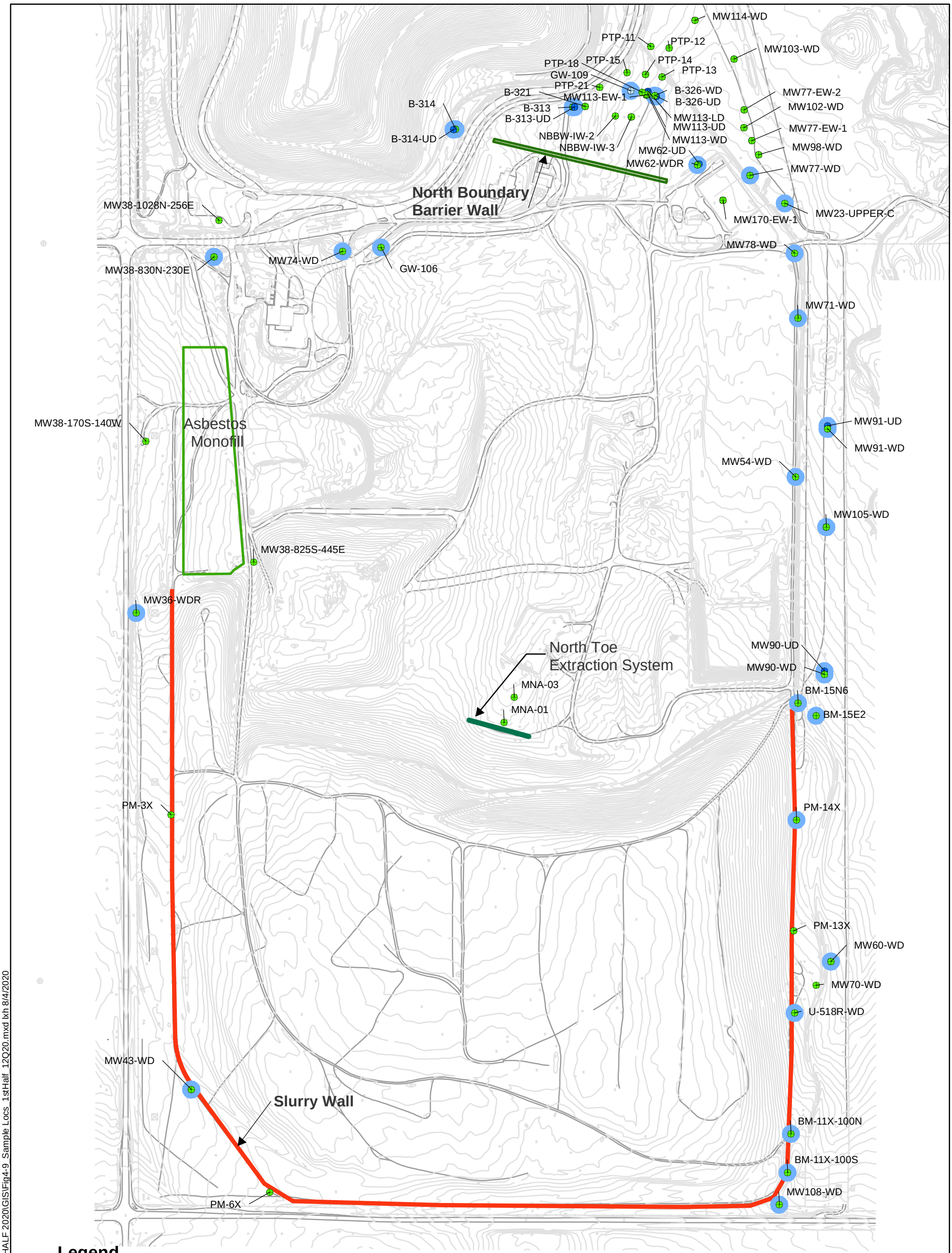

Legend

FORMATION

- ALLUVIUM
- ALLUVIUM/WD
- LIGNITE
- Unweathered Dawson
- UPPER 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 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

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13
18
24
19
25
30
MW176-DEN
MW144-WD
MW142-WD
PINGLE
MW141-WD
REED
MW139-WD
MW135-WD
MW122-WDR
MW123-WD
MW124-WD
MW125-WD
MW05-WD
MW129-WD
MW121-WDR
MW156-EW-1
MW153-EW-1
MW157-WD
MW156-WD
MW151-WD
MW155-EW-1
MW154-EW-1
MW132-WD
MW160-WD
PTP-11
PTP-14
MW113-EW-1
PTP-18
PTP-15
GW-109
NBBW-IW-3
PTP-21
B-321
B-313-UD
B-313
NBBW-IW-2
B-314-UD
B-314
MW38-1028N-256E
MW38-830N-230E
MW74-WD
GW-106
MW71-WD
MW113-LD
MW118-WD
MW113-WD
MW113-UD
PTP-12
MW114-WD
PTP-13
MW103-WD
B-326-WD
B-326-UD
MW77-EW-2
MW102-WD
MW77-EW-1
MW98-WD
MW62-UD
MW62-WDR
MW77-WD
MW23-UPPER-C
MW170-EW-1
MW78-WD
Gun Club Road
Mississippi Ave.
Coal Creek
Un-Named Murphy Creek Tributary
Murphy Creek
Un-Named Murphy Creek Tributary
Gun Club Road
E. Jewell Ave
Un-Named Murphy Creek Tributary
Murphy Creek
Tributary
Yale Ave.
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 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2020\GIS\Fig4-10 Sample Locs NE 1stHalf 1Q20.mxd lxh 9/23/2020

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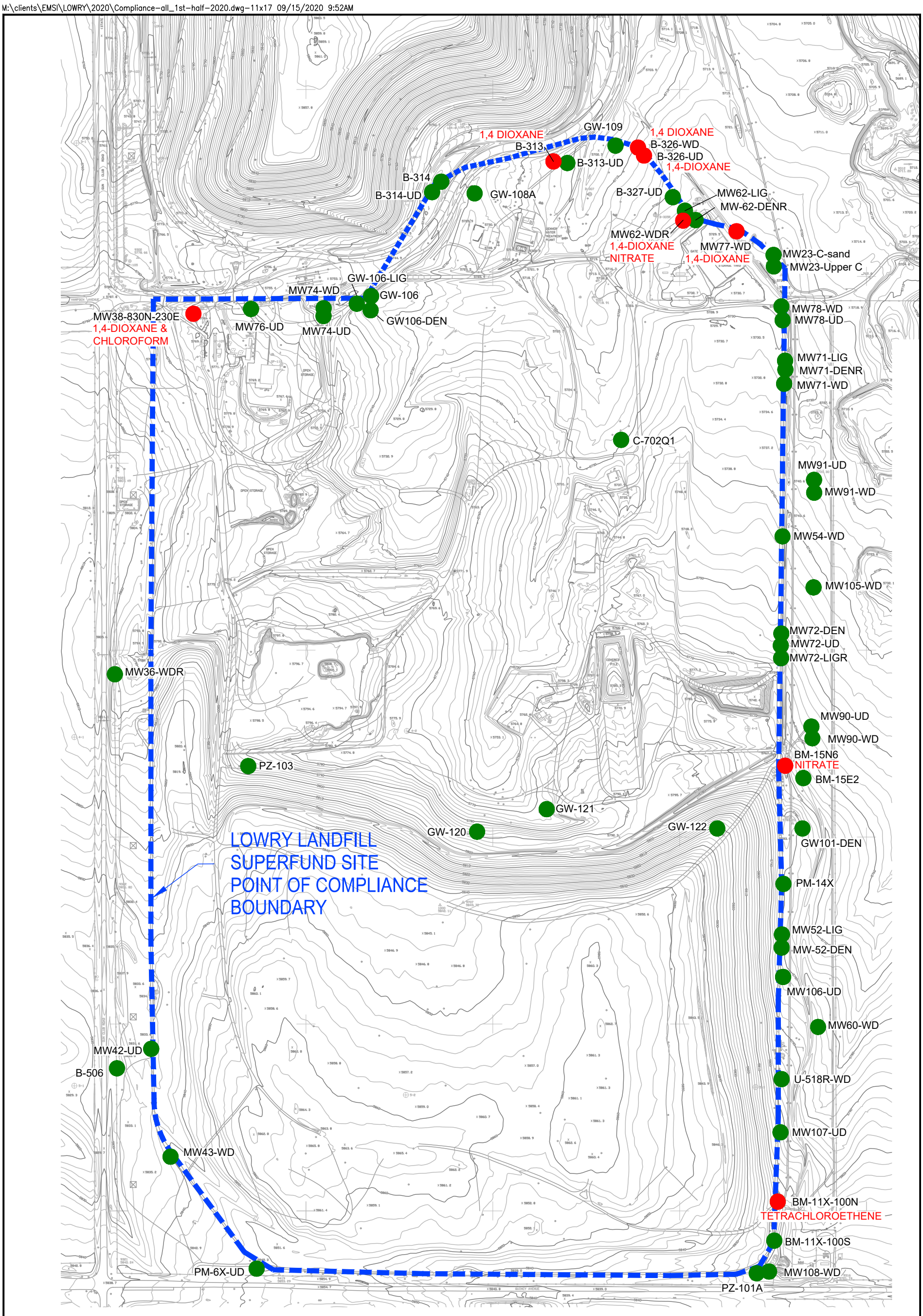

Legend

- 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 2020

Lowry Landfill Superfund Site

EMSI Engineering Management Support, Inc.

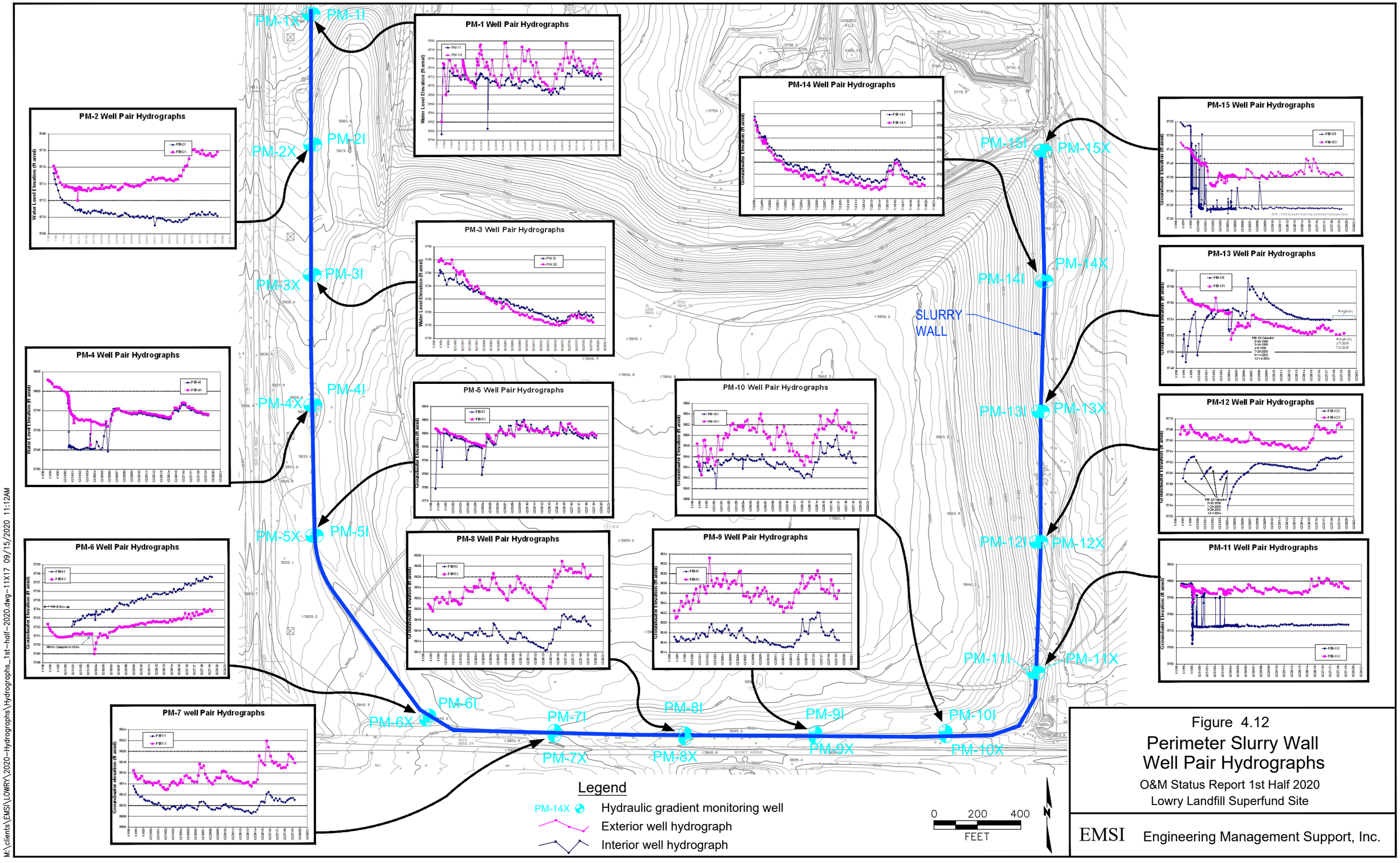

Figure 4.12

Perimeter Slurry Wall Well Pair Hydrographs

O&M Status Report 1st Half 2020
Lowry Landfill Superfund Site

EMSI Engineering Management Support, Inc.

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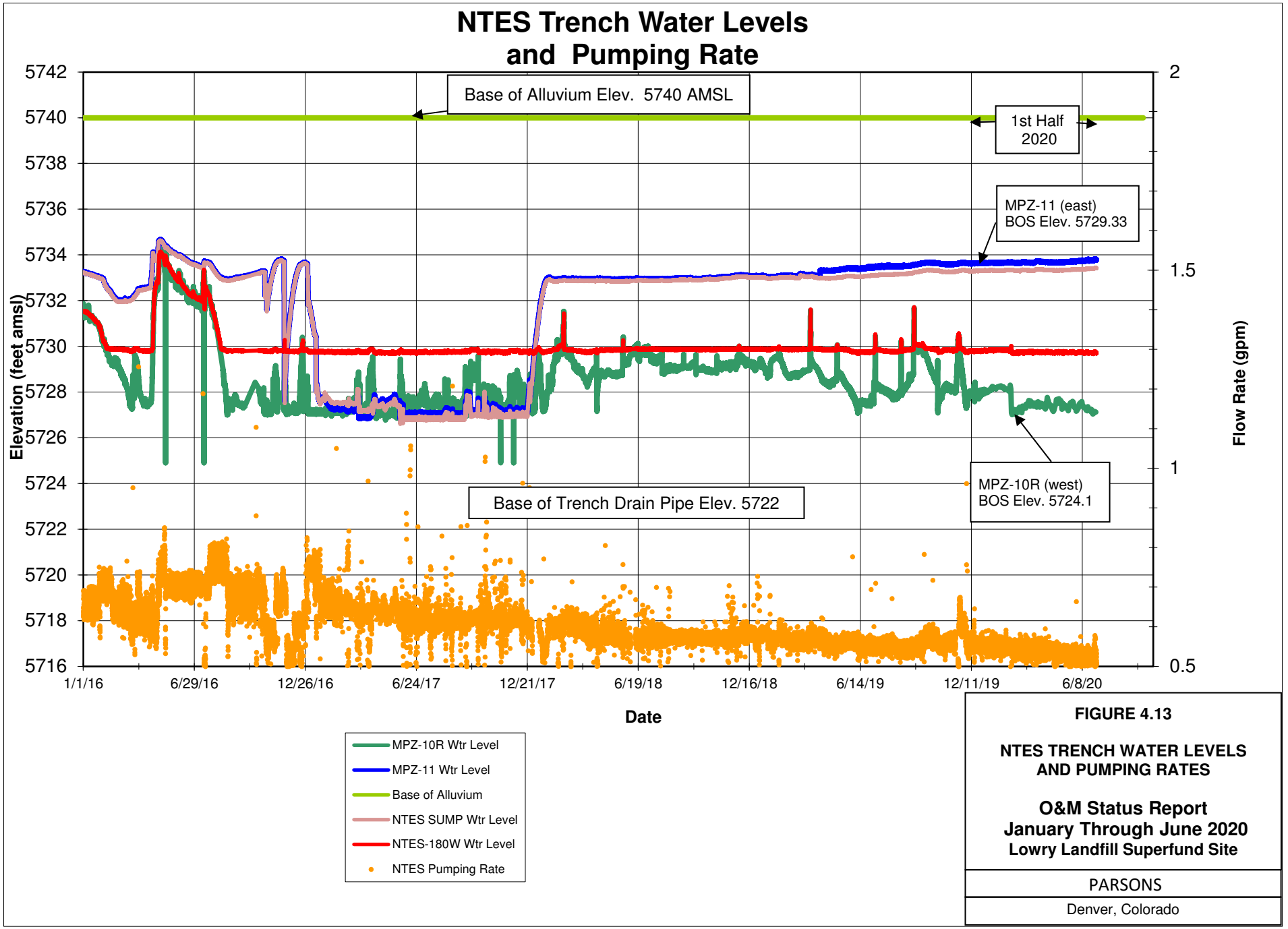

FIGURE 4.13

NTES TRENCH WATER LEVELS AND PUMPING RATES

O&M Status Report
January Through June 2020
Lowry Landfill Superfund Site

PARSONS

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S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2020\FIGURES\Figure 4.13 NTES Trench_1stHalf_2020.xlsx

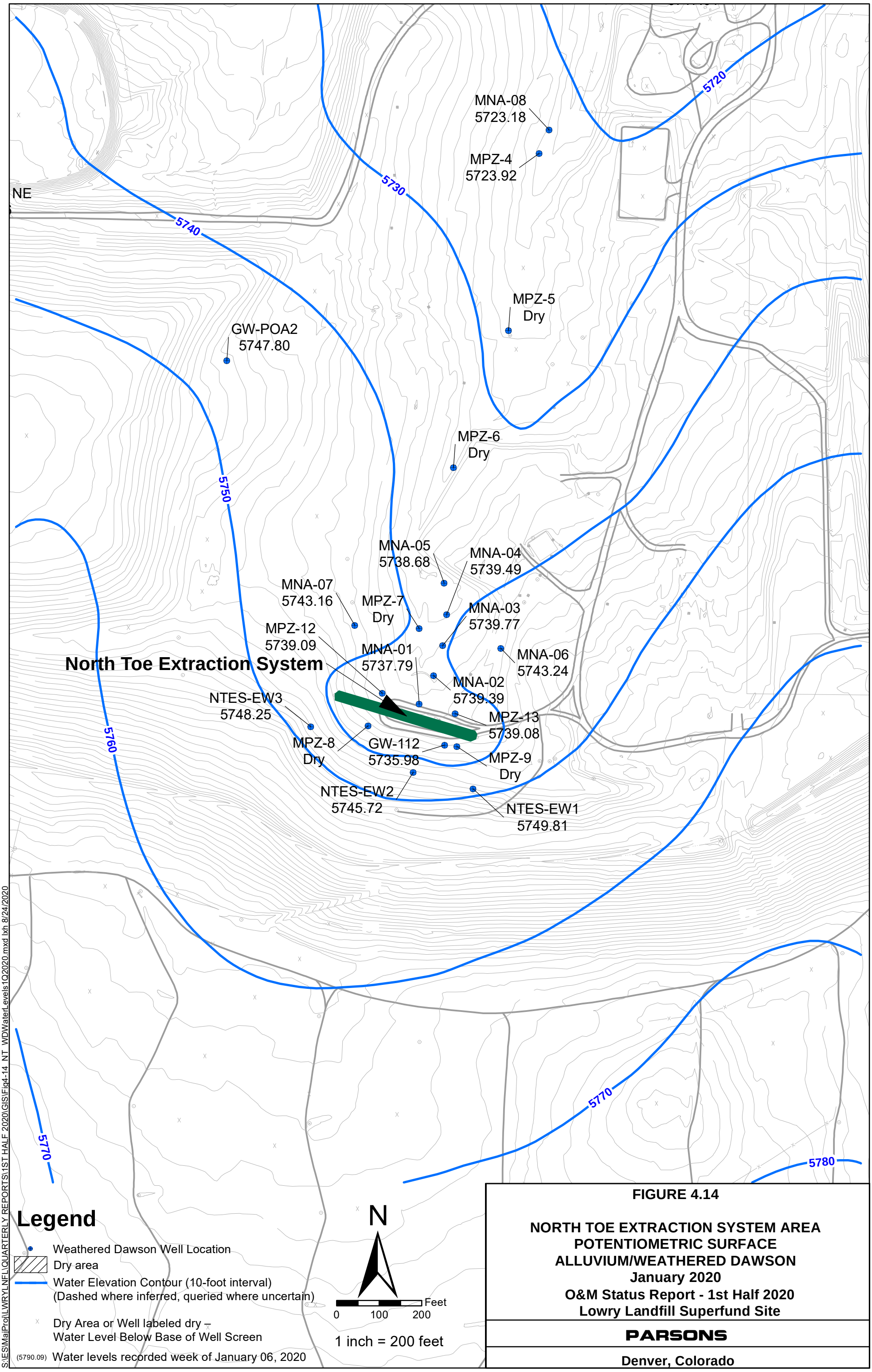

FIGURE 4.14

NORTH TOE EXTRACTION SYSTEM AREA
POTENTIOMETRIC SURFACE
ALLUVIUM/WEATHERED DAWSON
January 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

PARSONS

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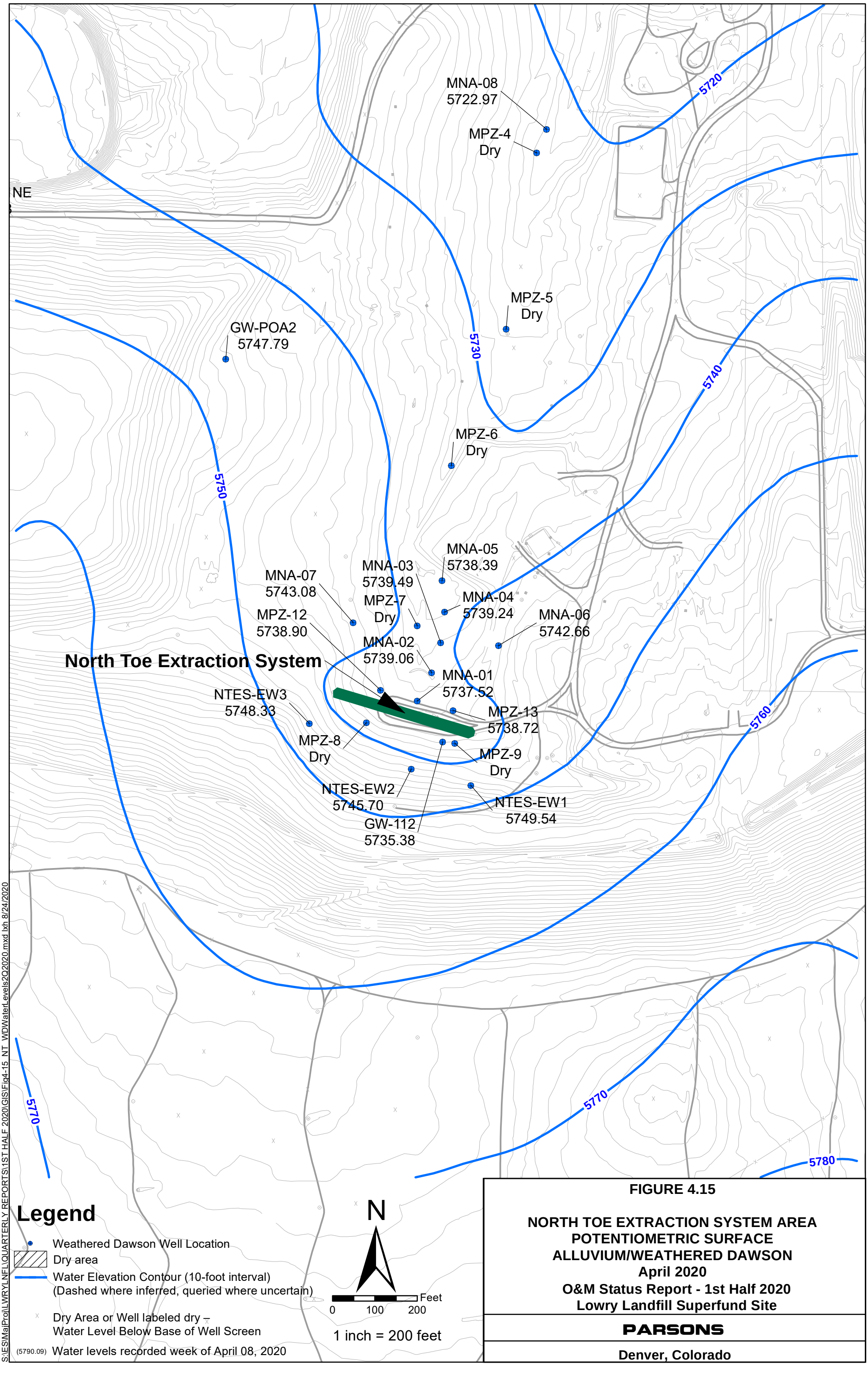

FIGURE 4.15

NORTH TOE EXTRACTION SYSTEM AREA
POTENTIOMETRIC SURFACE
ALLUVIUM/WEATHERED DAWSON
April 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

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Injection Wells
Operation terminated 10/2/18

Injection Trench
Operation terminated 1/20/11

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

N

0 37.5 75 150
Feet

1 inch = 150 feet

Legend

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

FIGURE 4.16
NBBW AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE

January 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

PARSONS
Denver, Colorado

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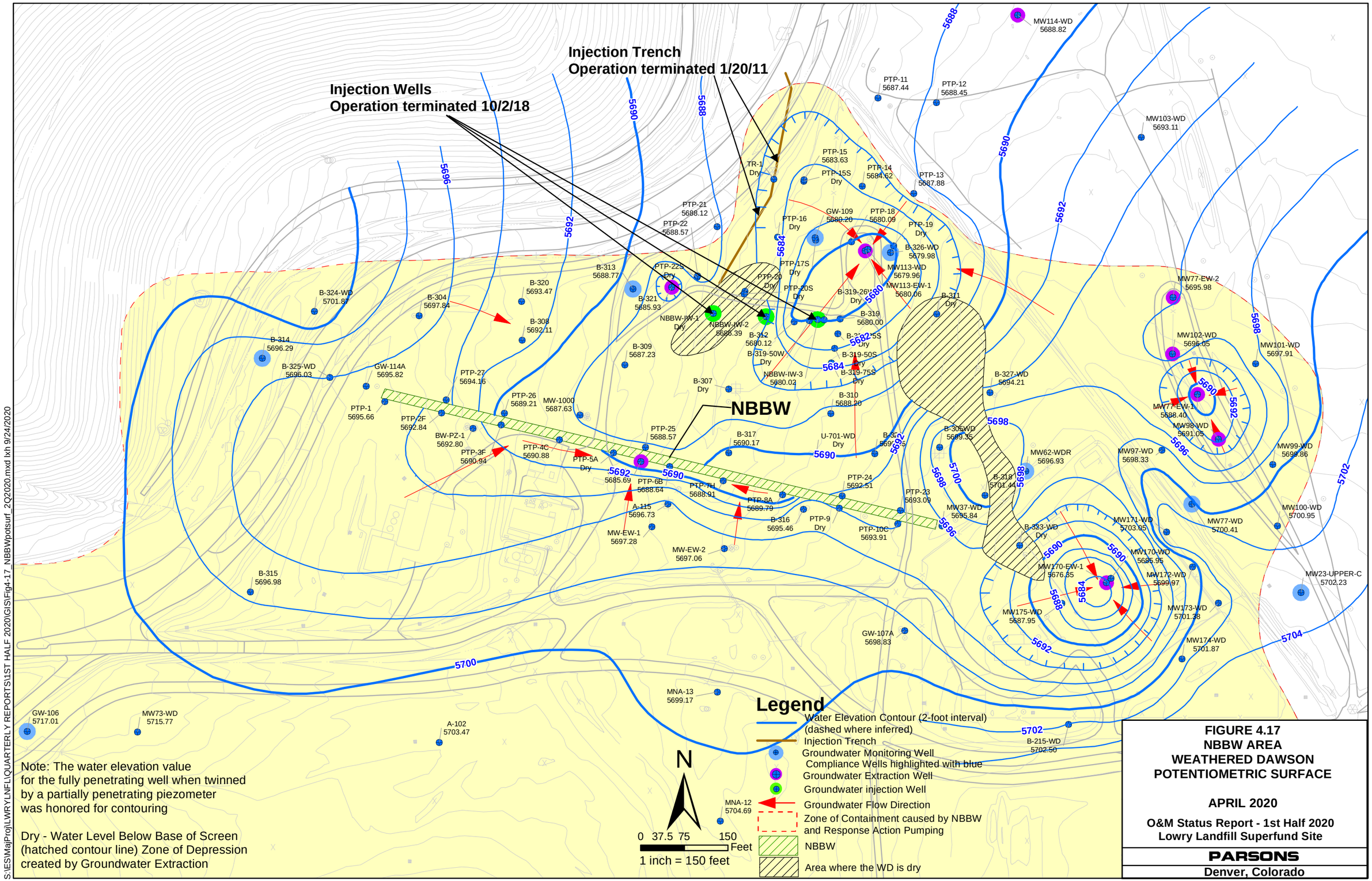

Note: The water elevation value for the fully penetrating well when twinned by a partially penetrating piezometer was honored for contouring

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

FIGURE 4.17
NBBW AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE

APRIL 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

PARSONS
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North Boundary Barrier Wall

MW113-LD
5682.47
Not Used

B-326-UD
5679.74

MW113-UD
5631.73

B-313-UD
5685.51

B-304-UD
5690.05

B-314-UD
5691.14

GW-108A
5690.16

MW-1000LC
5688.11

B-306
5691.47

B-317-UD
5692.22

U-701
5689.09

BW-PZ-1LC
5690.36

B-305R
5693.3

B-327-UD
5693.3

MW62-UD
5690.21

MW77-UD
5696.17

MW-EW-1LCRA
5693.22
Not Used

MW-EW-1LC
5694.82

B-316-UD
5676.97

MW37-UD
5698.7

MW-EW-2LC
5695.22

MW-EW-2LCR
5695.17

MW23-C-SD
5699.19

MW23-WD
5701.47

GW-107UD
5699.36

GW-107UDR
5669.74

MW73-UD
5711.2

5683 5684 5685 5686 5687 5688 5689 5690 5691 5692 5693 5694 5695 5696 5697 5698 5699 5700

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 4.18

NBBW AREA
POTENTIOMETRIC SURFACE
UNWEATHERED DAWSON
January 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site

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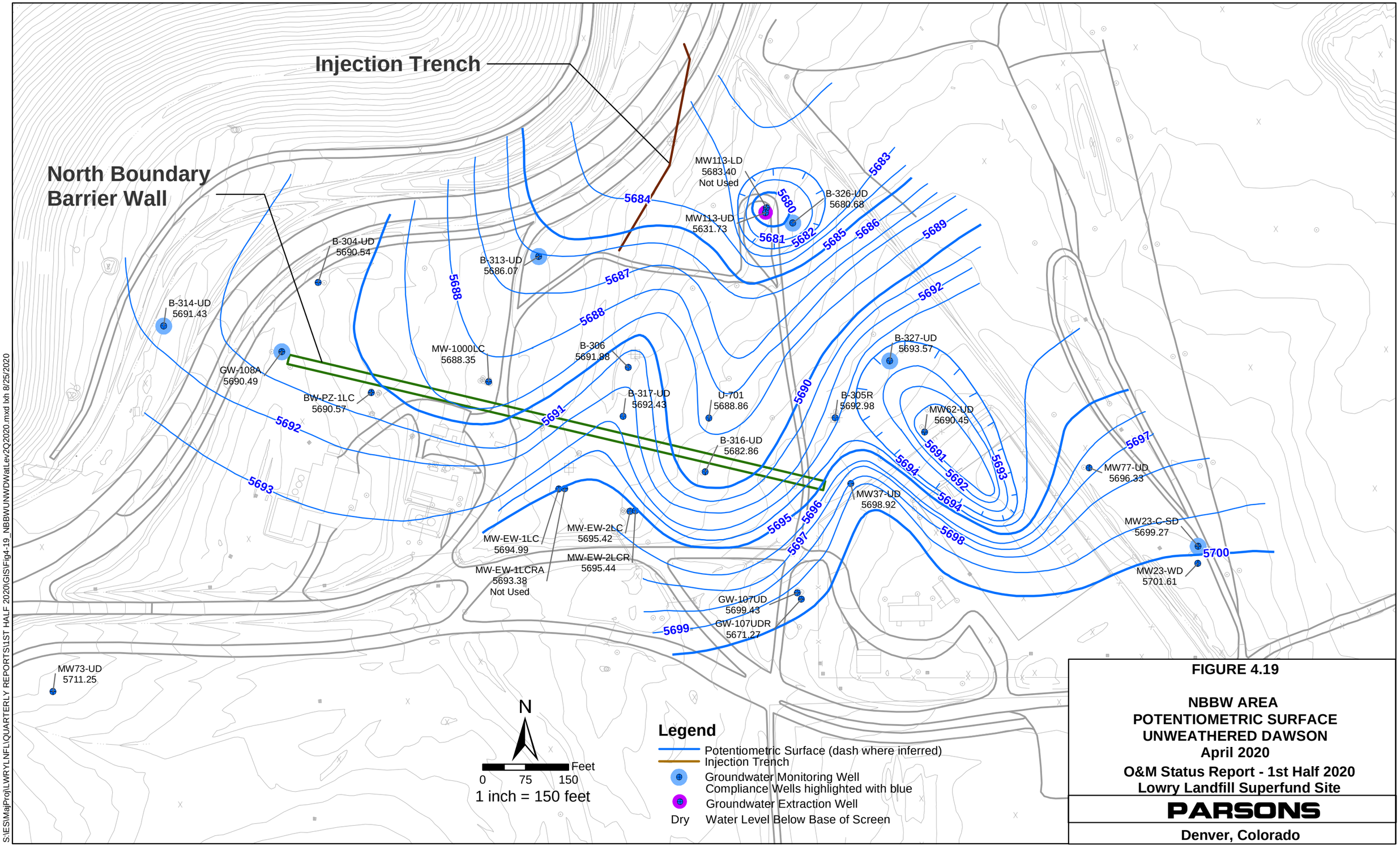
Injection Trench
North Boundary
Barrier Wall
MW113-LD
5683.40
Not Used
B-326-UD
5680.68
MW113-UD
5631.73
B-304-UD
5690.54
B-313-UD
5686.07
B-314-UD
5691.43
GW-108A
5690.49
MW-1000LC
5688.35
B-306
5691.88
BW-PZ-1LC
5690.57
B-317-UD
5692.43
U-701
5688.86
B-316-UD
5682.86
B-327-UD
5693.57
B-305R
5692.98
MW62-UD
5690.45
MW77-UD
5696.33
MW37-UD
5698.92
MW23-C-SD
5699.27
MW23-WD
5701.61
MW-EW-1LC
5694.99
MW-EW-2LC
5695.42
MW-EW-2LCR
5695.44
MW-EW-1LCRA
5693.38
Not Used
GW-107UD
5699.43
GW-107UDR
5671.27
MW73-UD
5711.25
5680
5681
5682
5683
5684
5685
5686
5687
5688
5689
5690
5691
5692
5693
5694
5695
5696
5697
5698
5699
5700
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 4.19
NBBW AREA
POTENTIOMETRIC SURFACE
UNWEATHERED DAWSON
April 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site
PARSONS
Denver, Colorado
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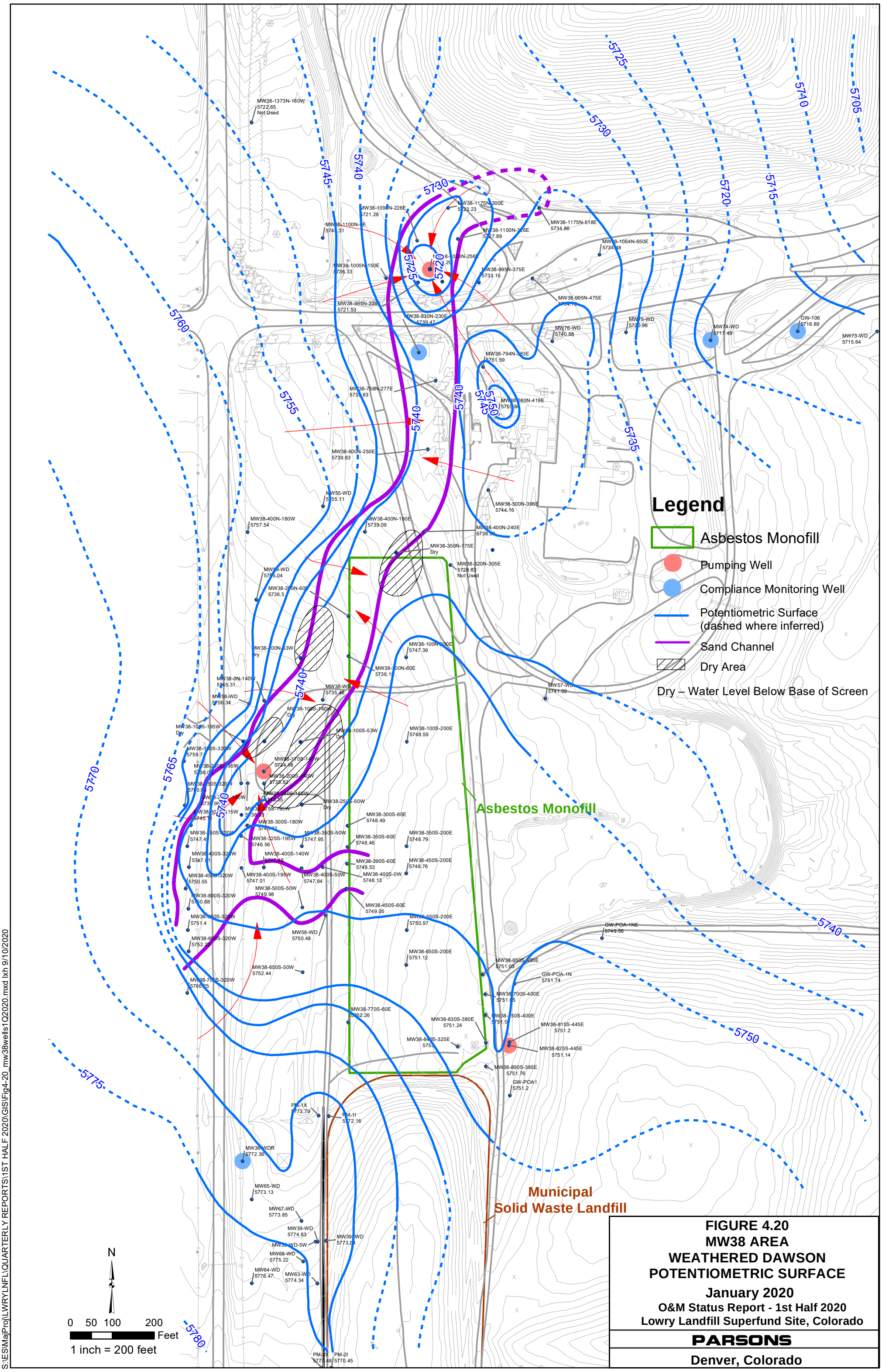

FIGURE 4.20
MW38 AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE

January 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

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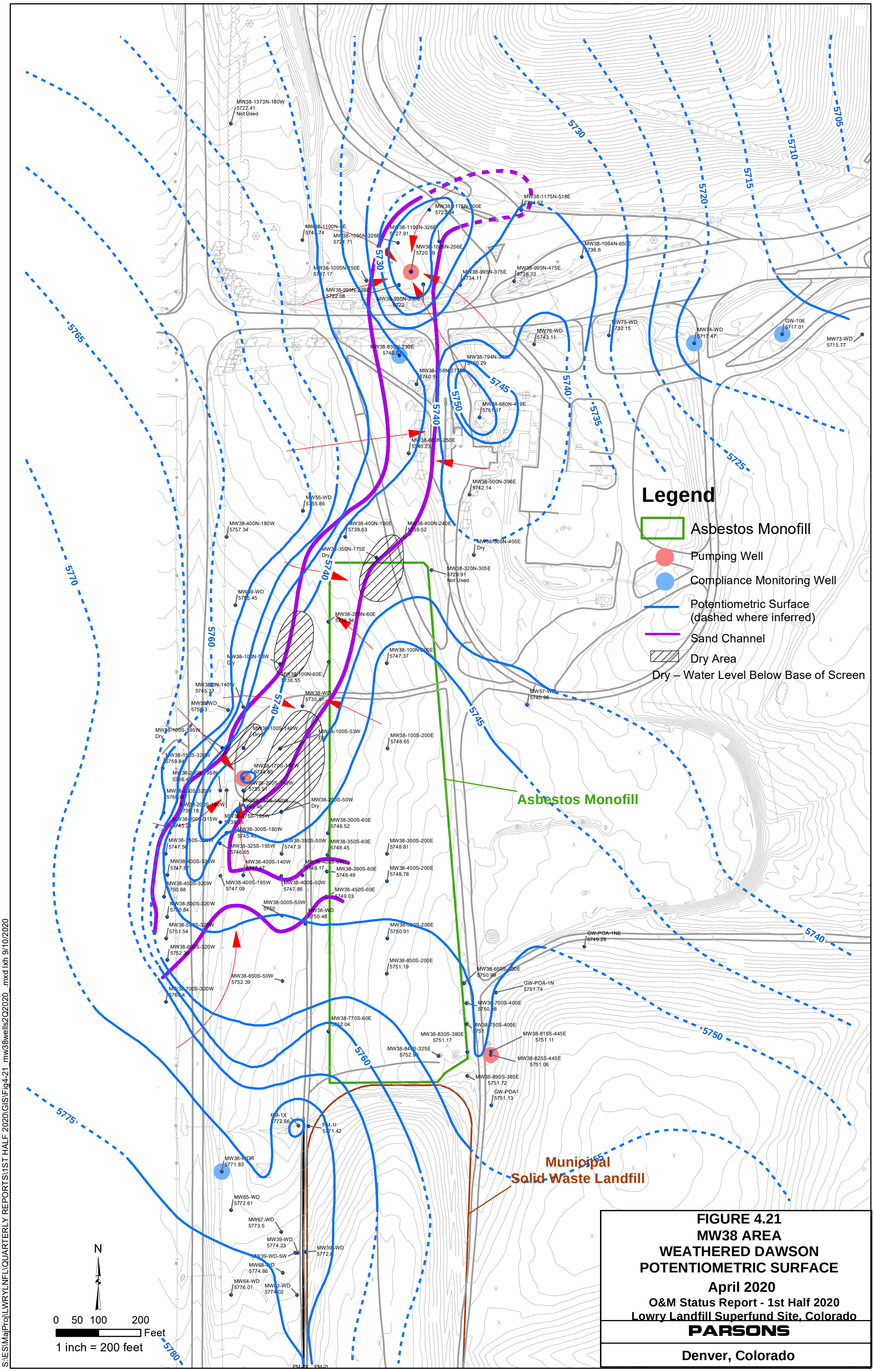

FIGURE 4.21
MW38 AREA
WEATHERED DAWSON
POTENTIOMETRIC SURFACE
April 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

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BM-15N4
5735.84

MW90-UD
5731.66
Not Used

MW90-WD
5731.65

BM-15NE2
5730.03

BM-15N3
5738.16

BM-15NW1
5753.22
Not Used

BM-15NW2
5752.82

BM-15N2
5737.865

BM-15NE1
5730.67

BM-15E5
5736.45

BM-15N1
5736.18

BM-15N6
5737.49

PM-15I-UD
5735.89
Not Used

BM-15N5
5735.51

BM-15E1
5732.31

BM-15I-15N
Dry

PM-15I
5723.57

PM-15X
5736.52

BM-15E4
5735.79

BM-15I-25S
Dry

BM-15E2
5731.75

PM-15W
5746.27
Not Used

BM-15I-37.5S
5723.07

BM-15X-37.5S
5735.99

BM-15X-50S
5737.78

PM-15WR
5739.6862

BM-15I-50S
5723.89

BM-15X-75S
5738.76

BM-15E6
5738.15

BM-15I-75S
5738.42

BM-15X-100S
5739.24

BM-15E3
5731.85

BM-15I-100S
5725.97

BM-15I-125S
5739.7

BM-15X-125S
5739.86

BM-15I-150S
Dry

BM-15X-150S
5740.58

BM-15I-175S
5741.43

BM-15X-175S
5742.75

BM-15X-200S
5743.99

BM-15I-200S
5746.07

5750
5750
5745
5740
5735
5730
5725
5730
5740
5745
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 4.22

PM-15 AREA
POTENTIOMETRIC SURFACE
WEATHERED DAWSON
January 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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MW90-UD
5732.05
Not Used

MW90-WD
5732.03

BM-15N4
5735.21

BM-15N3
5737.68

BM-15NE2
5730.04

BM-15NW1
5753.07
Not Used

BM-15NW2
5752.43

BM-15N2
5737.30

BM-15NE1
5730.58

BM-15E5
5735.79

BM-15N1
5735.48

PM-15I-UD
5735.78
Not Used

BM-15N6
5736.21

BM-15N5
5734.68

BM-15E1
5732.14

BM-15I-15N
Dry

PM-15X
5735.80

PM-15I
5723.69

BM-15E4
5735.09

BM-15I-25S
Dry

BM-15E2
5731.67

BM-15X-37.5S
5735.27

PM-15W
5746.23
Not Used

BM-15I-37.5S
5723.06

BM-15X-50S
5737.13

PM-15WR
5739.62

BM-15I-50S
5723.84

BM-15X-75S
5738.33

BM-15E6
5737.79

BM-15I-75S
5738.31

BM-15X-100S
5738.81

BM-15E3
5731.76

BM-15I-100S
5725.94

BM-15I-125S
5739.50

BM-15X-125S
5739.57

BM-15I-150S
Dry

BM-15X-150S
5740.37

BM-15I-175S
5741.42

BM-15X-175S
5742.58

BM-15I-200S
5745.93

BM-15X-200S
5744.09

5750
5745
5740
5735
5730
5725

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 4.23

PM-15 AREA
POTENTIOMETRIC SURFACE
WEATHERED DAWSON
April 2020
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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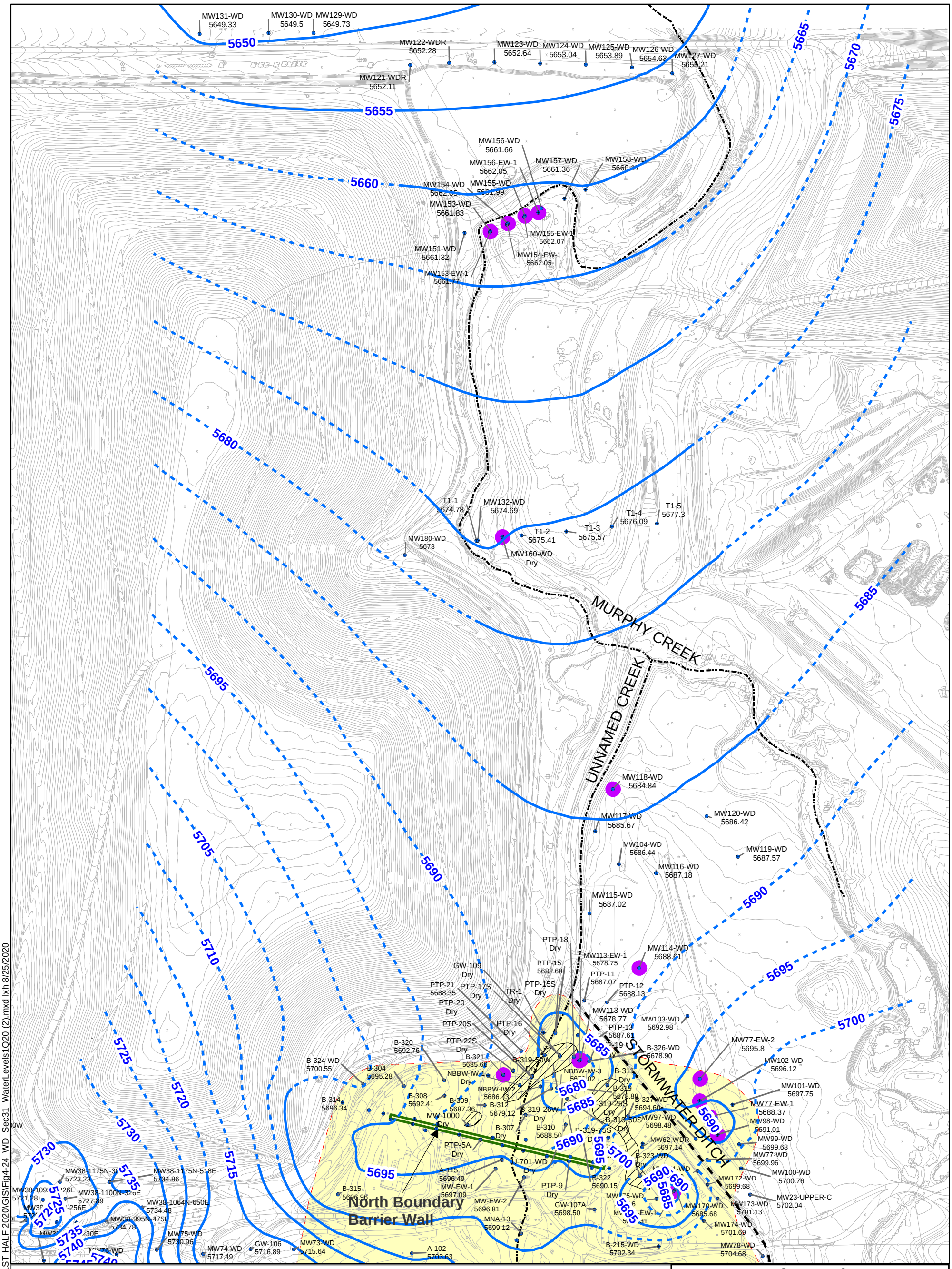

Legend

- Extraction Well
- Groundwater Monitoring Well
- Potentiometric Contours (dashed where inferred)
- Area where the Weather Dawson is dry
- Dry — Water Level Below Base of Screen
- Zone of Containment
- Secondary Containment caused by Response Action Pumping

N

0 400 Feet

1 inch = 400 feet

FIGURE 4.24

SECTION 31 WEATHERED DAWSON POTENTIOMETRIC SURFACE
January 2020
O&M Status Report - 1st Half 2020
North End
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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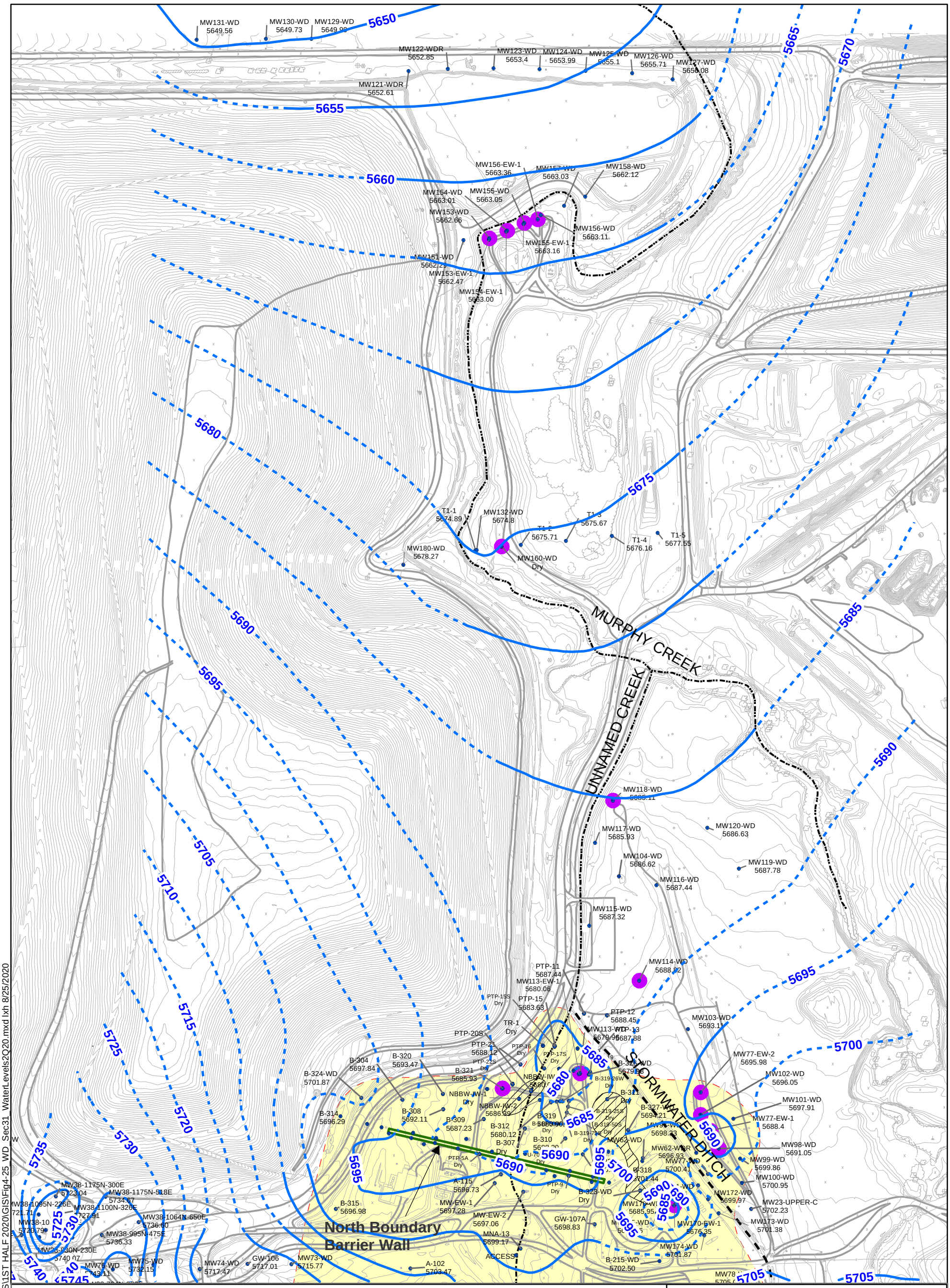

Legend

- Extraction Well
- Groundwater Monitoring Well
- Potentiometric Contours (dashed where inferred)
- Area where the Weather Dawson is dry
- Dry — Water Level Below Base of Screen
- Zone of Containment caused by NBBW and Response Action Pumping

N

0 400 Feet

1 inch = 400 feet

FIGURE 4.25

SECTION 31 WEATHERED DAWSON POTENTIOMETRIC SURFACE
April 2020

O&M Status Report - 1st Half 2020
North End
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

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13
18
24
19
25
30
31
SW-3
SW-5
MW178-DEN
5559.54
MW176-DEN
5558.01
NEPZ-101
5560.03
NEPZ-103
5563.95
NEPZ-098
5554.33
NEPZ-097
5553.25
NEPZ-104
5564.29
Mississippi Ave.
MW177-DEN
5568.69
NEPZ-105
5565.79
NEPZ-099
5556.11
NEPZ-102
5562.6
Gun Club Road
MW145-WD
5567.94
MW144-WD
5567.92
SWMC-07
SWMC-06
SWMC-05
SWMC-04
SWMC-03
MW142-WD
5589.99
SWMC-02
SWMC-09
SWMC-08
SWMC-01
MW140-WD
5607.16
MW141-WD
5606.96
E. Jewell Ave.
Un-Named Murphy Creek Tributary
Murphy Creek
Yale Ave.
MW138-WD
5638.49
MW139-WD
5638.92
MW137-WD
5638.72
MW133-WD
5636.4
MW136-WD
5638.97
MW134-WD
5637.96
MW135-WD
5639.31
MW130-WD
5649.5
MW131-WD
5649.33
MW129-WD
5649.73
MW122-WDR
5652.28
MW124-WD
5653.04
MW126-WD
5654.62
MW127-WD
5655.21
MW121-WDR
5652.11
MW123-WD
5652.64
MW125-WD
5653.89
MW157-WD
5661.36
MW154-WD
5662.05
MW151-WD
5661.32
MW153-WD
5661.83
MW158-WD
5660.17
MW156-WD
5661.66
MW156-FW-1
5662.05
MW155-WD
5661.99
MW160-WD
Dry
MW132-WD
5674.69
T1-1
5674.78
T1-2
5675.41
T1-3
5675.57
T1-4
5676.09
T1-5
5677.3
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

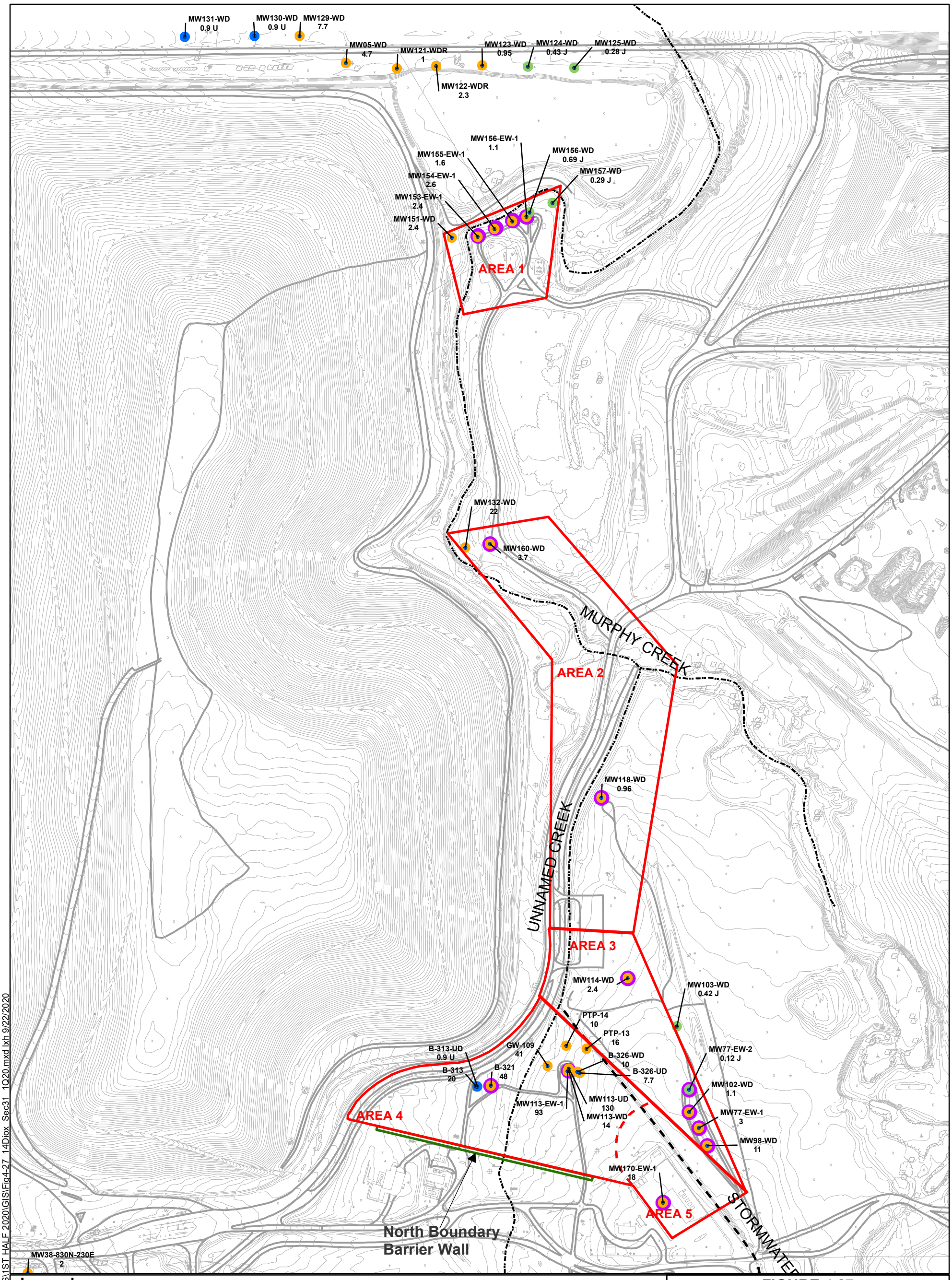
FIGURE 4.26

SECTIONS 19 AND 30
WEATHERED DAWSON
WEATHERED UPPER DENVER
POTENTIOMETRIC SURFACE
January 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS
Denver, Colorado

S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2020\GIS\Fig4-26 WD Sec1930 WaterLevels1Q20.mxd lxh 8/25/2020



S:\ES\Mal\Proj\LWRY\LNFL\QUARTERLY REPORTS\1ST HALF 2020\GIS\Fig4-27_14Diox_Sec31_1Q20.mxd lxh 9/22/2020

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

MW130-WD and MW131-WD results are from previous sampling events

J = ESTIMATED VALUE
U = UNDETECTED

Note: Extraction at MW114-WD did not start until 11/17/08

N

0 200 400 800 Feet

1 inch = 400 feet

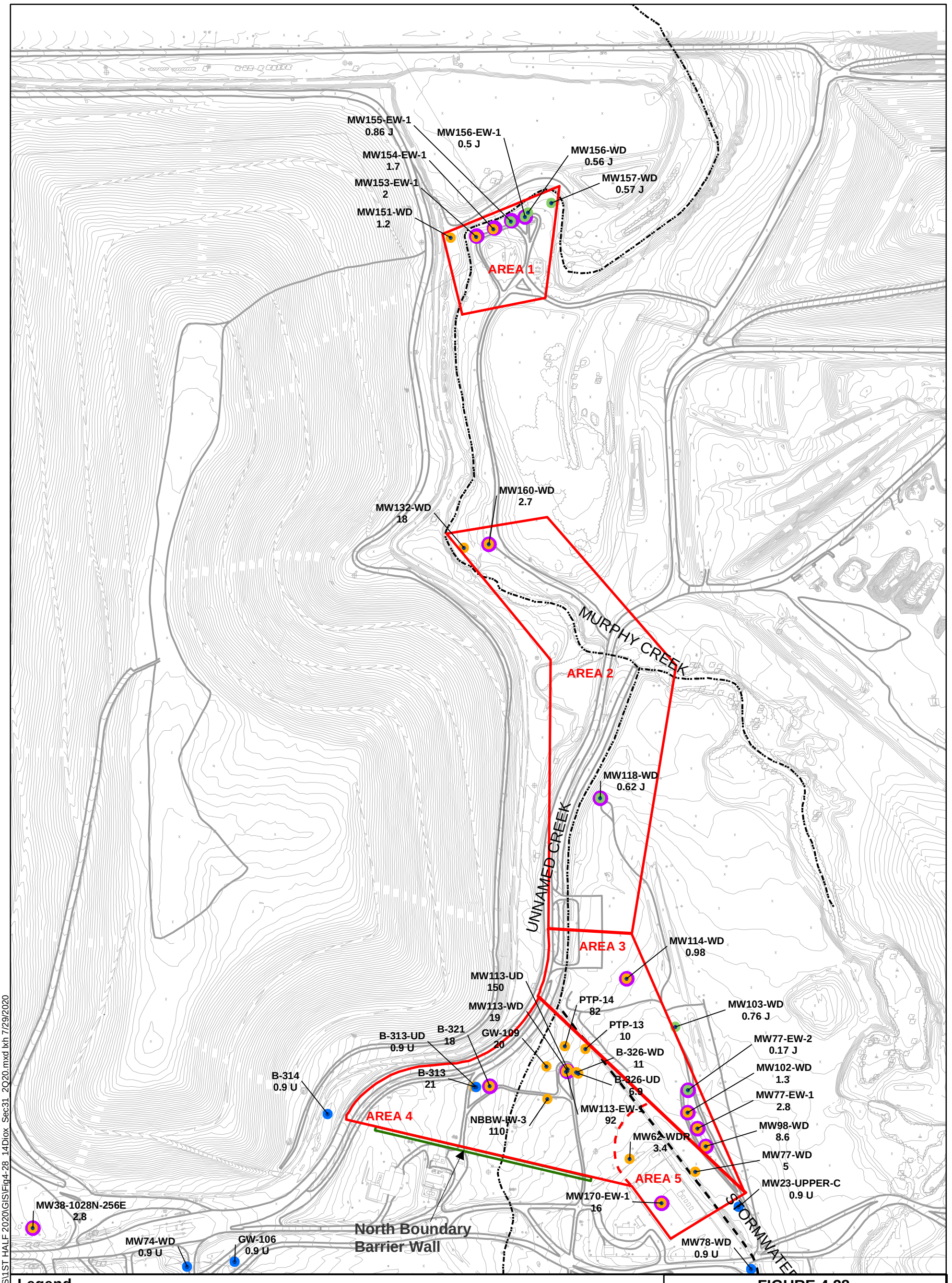
FIGURE 4.27

SECTION 31
1,4-DIOXANE RESULTS
FIRST QUARTER 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado



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

Note: Extraction at MW114-WD did not start until 11/17/08

N

Feet
0 200 400 800

1 inch = 400 feet

FIGURE 4.28

SECTION 31
1,4-DIOXANE RESULTS
SECOND QUARTER 2020

O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

Denver, Colorado

S:\ES\Maj\Proj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2020\GIS\Fig4-28_14Diox_Sec31_2Q20.mxd lxh 7/29/2020

MW176-DEN
0.56 J

MW144-WD
0.9 U

MW142-WD
2

MW141-WD
3.5

MW135-WD
6.3

MW123-WD
0.95

MW122-WDR
2.3

MW121-WDR
1

MW124-WD
0.43 J

MW125-WD
0.28 J

MW129-WD
7.7

MW05-WD
4.7

MW156-WD
0.56 J

MW157-WD
0.57 J

MW151-WD
1.2

MW156-EW-1
0.5 J

MW153-EW-1
2

MW155-EW-1
0.86 J

MW154-EW-1
1.7

MW132-WD
18

MW160-WD
2.7

Mississippi Ave.

E. Jewell Ave.

Yale Ave.

Gun Club Road

Un-Named Murphy Creek Tributary

Un-Named Murphy Creek Tributary

Un-Named Murphy Creek Tributary

Murphy Creek

Murphy Creek

24

25

19

30

31

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 1,000 Feet

1 inch = 1,000 feet

FIGURE 4.29

SECTIONS 19 AND 30
1,4-DIOXANE RESULTS

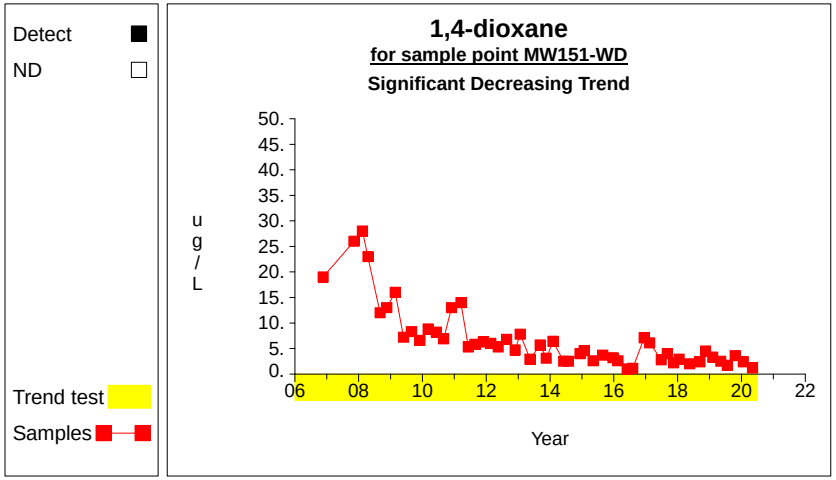
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado

PARSONS

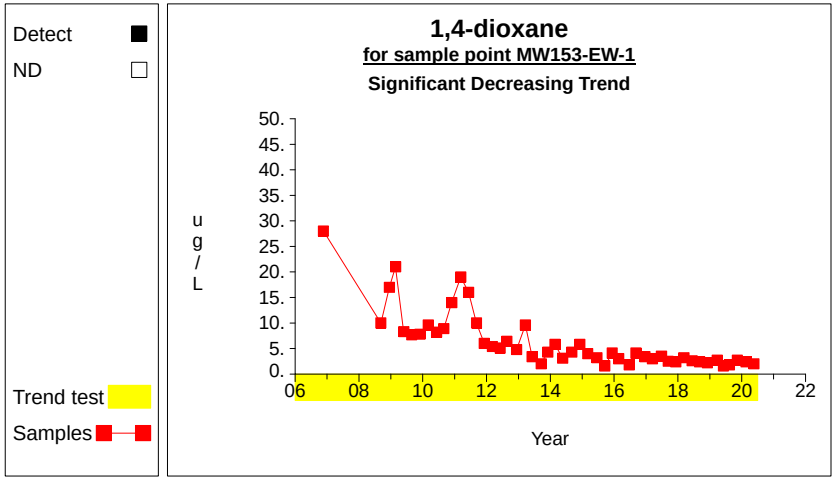
Denver, Colorado

S:\ES\MajProj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2020\GIS\Fig4-29_14Diox_Sec1930_12Q20.mxd lxh 8/17/2020

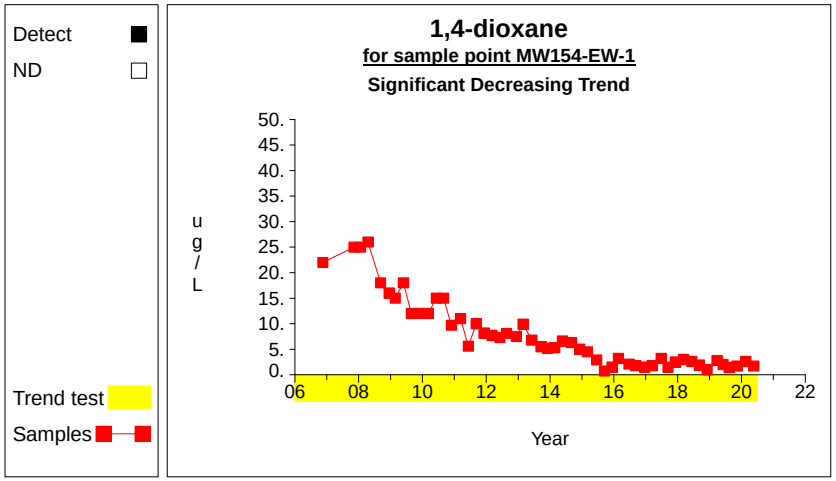
Figure 4.30
North End Trend Analysis Plots - Area 1
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



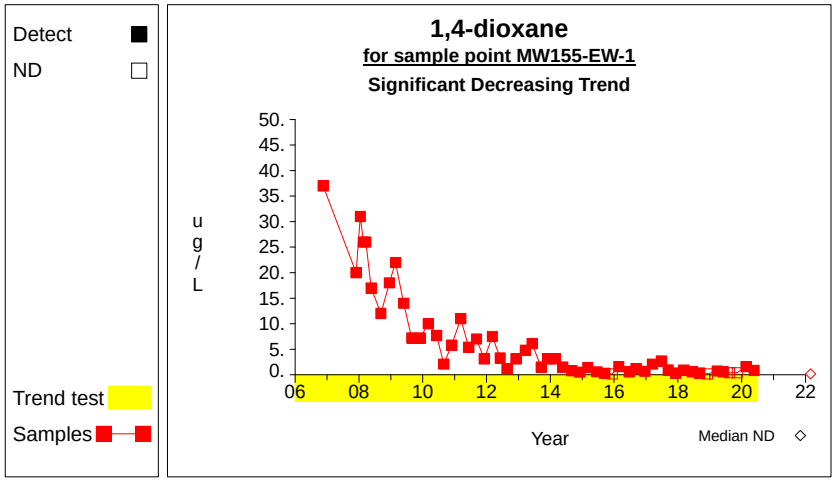
Graph 1



Graph 2



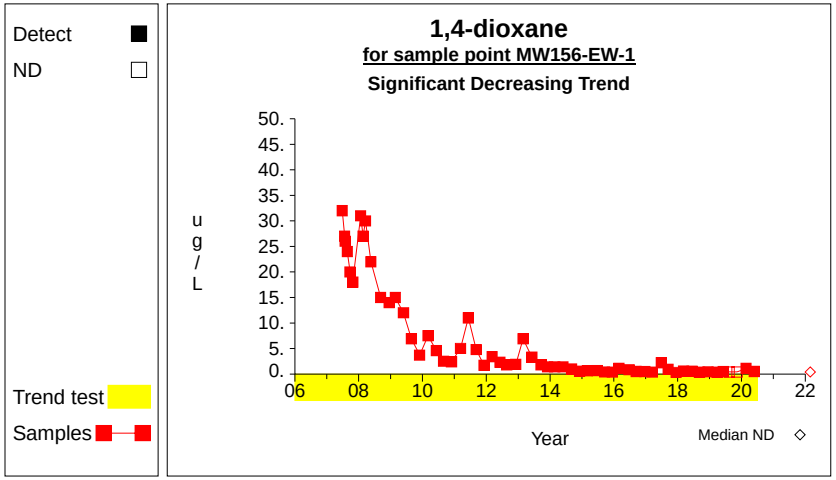
Graph 3



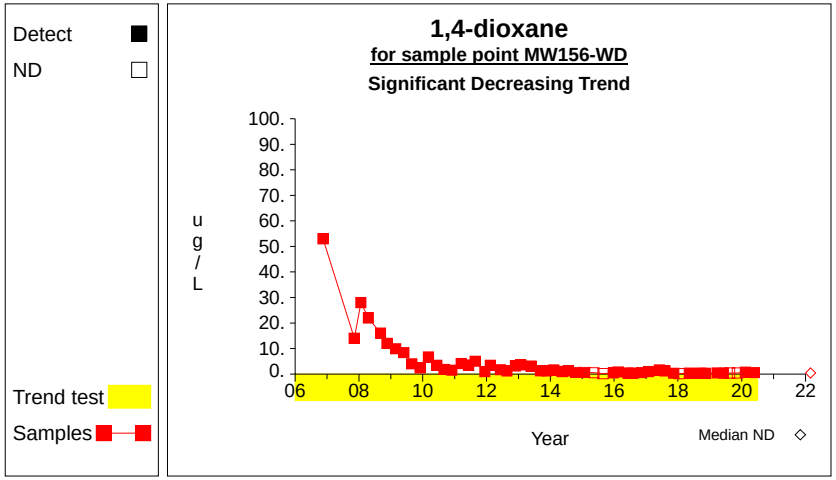
Graph 4

Prepared by: Parsons

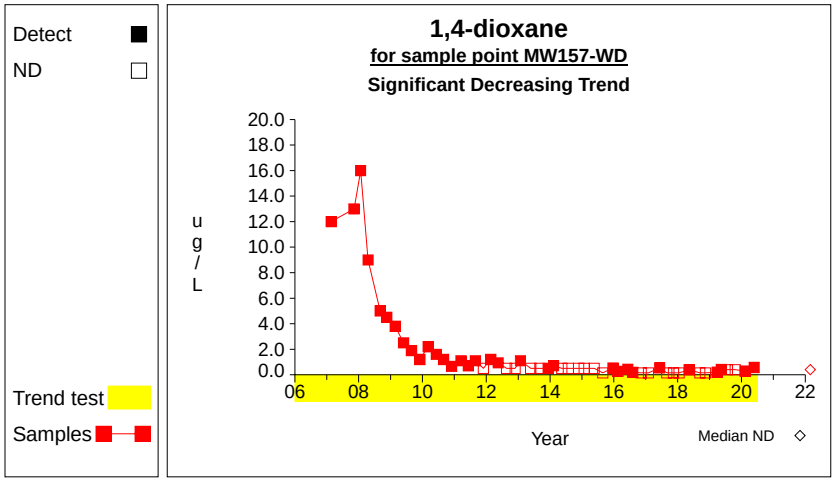
Figure 4.30
North End Trend Analysis Plots - Area 1
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 5



Graph 6

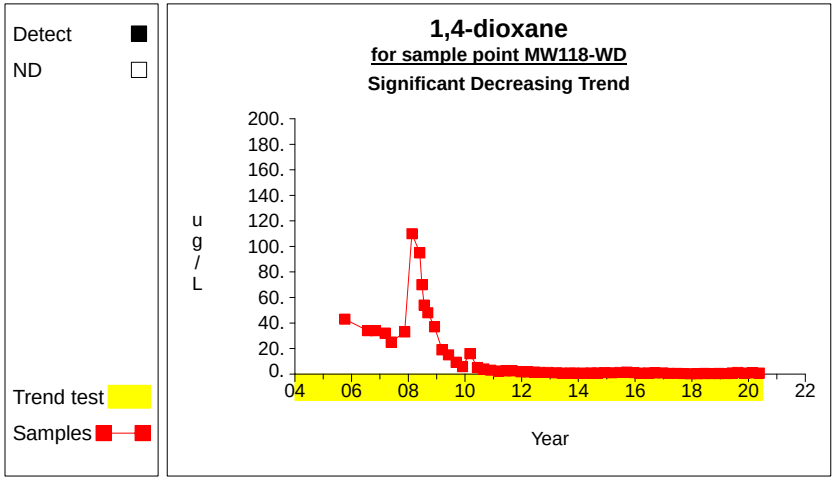


Graph 7

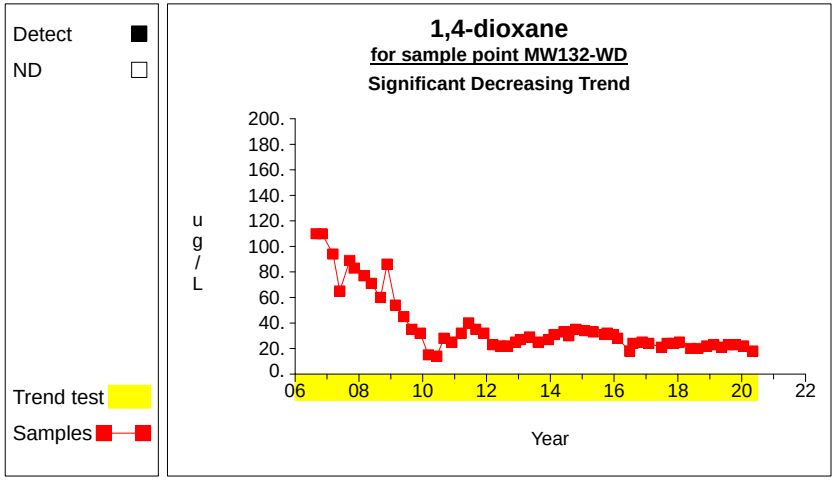
Prepared by: Parsons

Analysis prepared using Sen's Test for trend and DUMPSTAT®

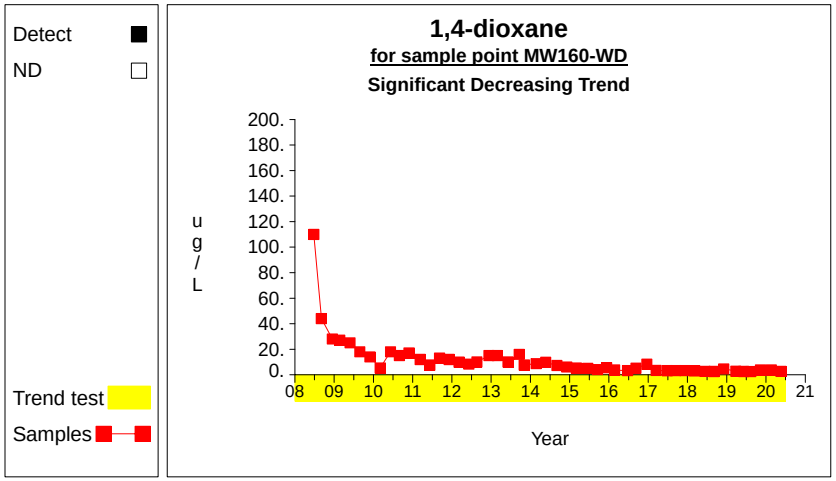
Figure 4.31
North End Trend Analysis Plots - Area 2
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 1



Graph 2

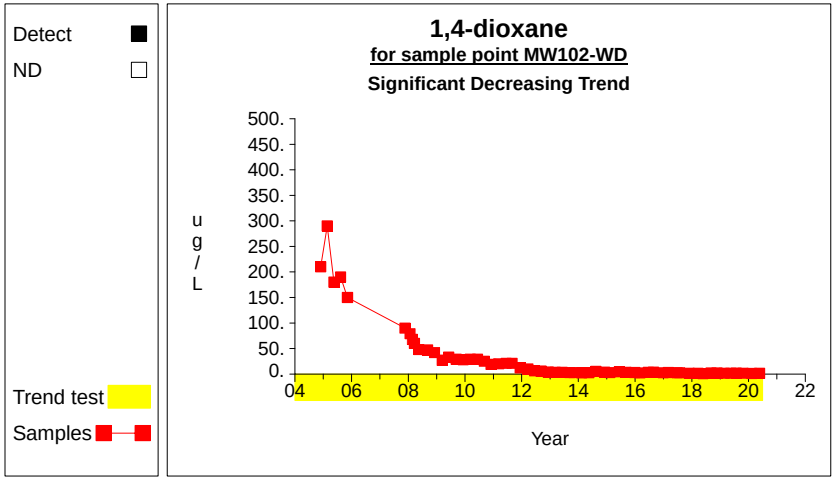


Graph 3

Prepared by: Parsons

Analysis prepared using Sen's Test for trend and DUMPSTAT®

Figure 4.32
North End Trend Analysis Plots - Area 3
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



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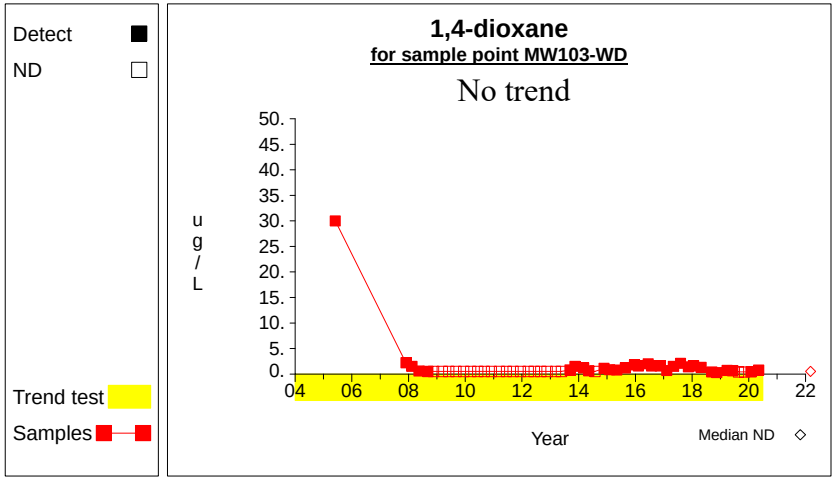

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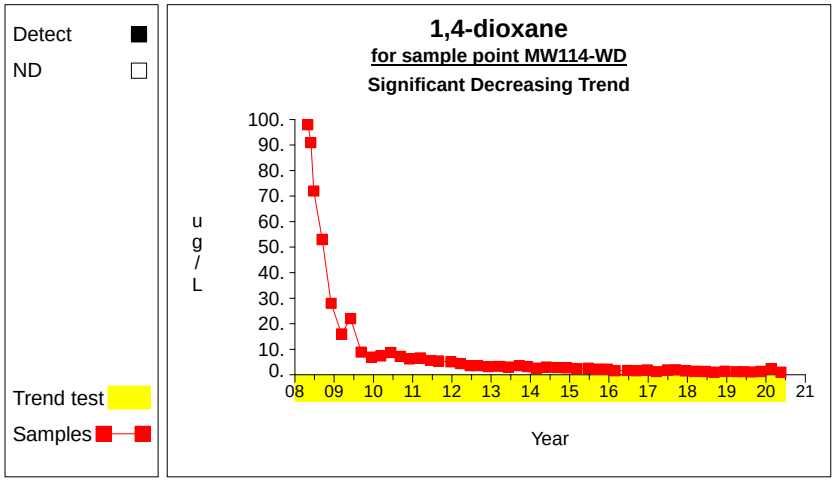

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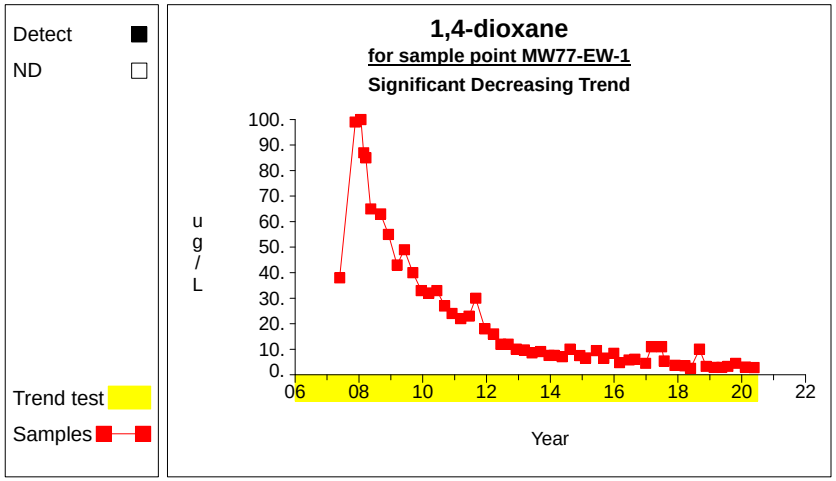
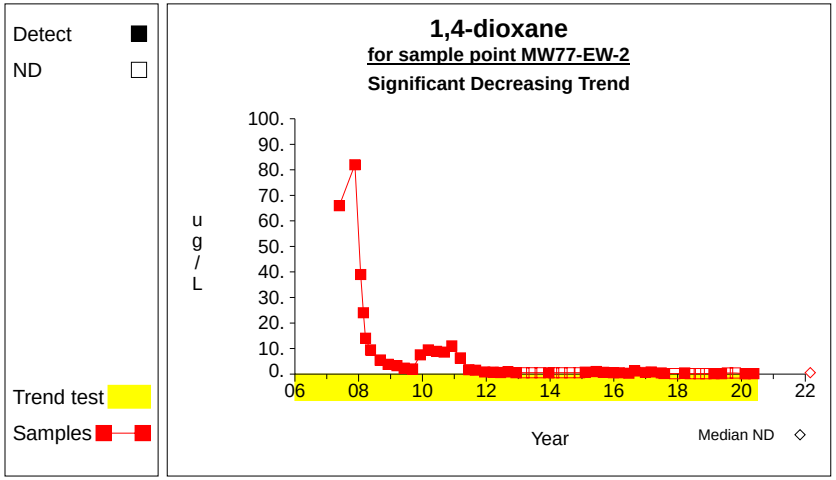


Graph 4

Prepared by: Parsons

Figure 4.32
North End Trend Analysis Plots - Area 3
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



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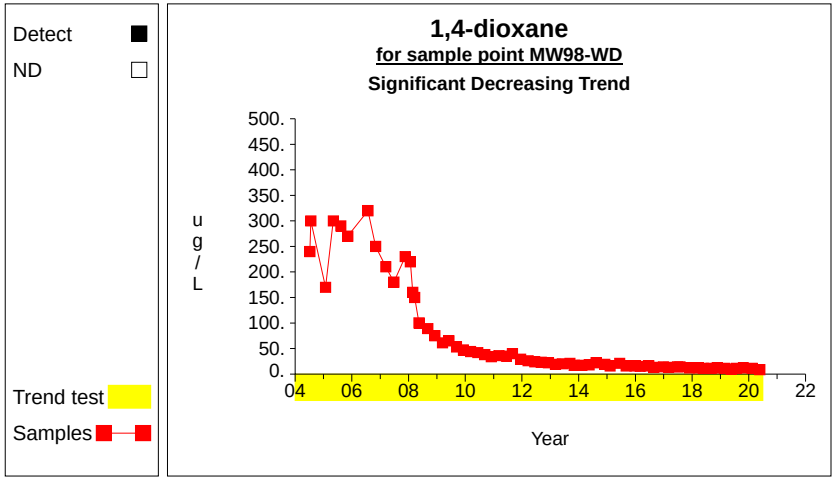
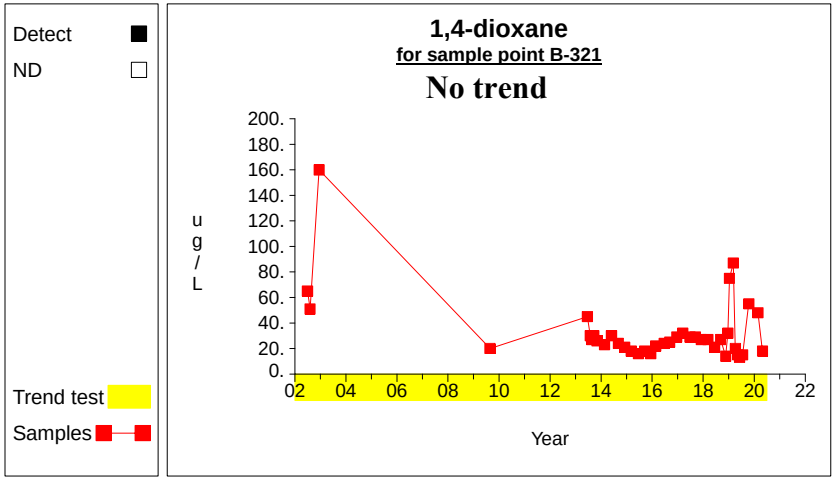


Graph 6

Analysis prepared using Sen's Test for trend and DUMPSTAT®

Prepared by: Parsons

Figure 4.33
North End Trend Analysis Plots - Area 4
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



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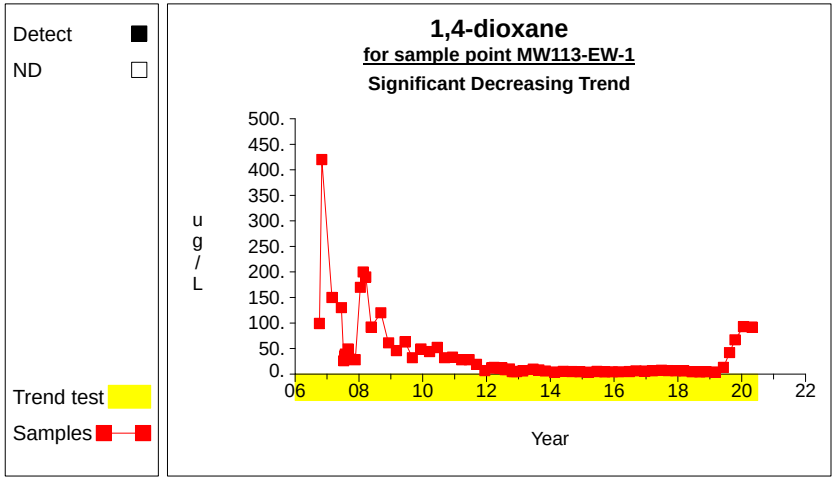
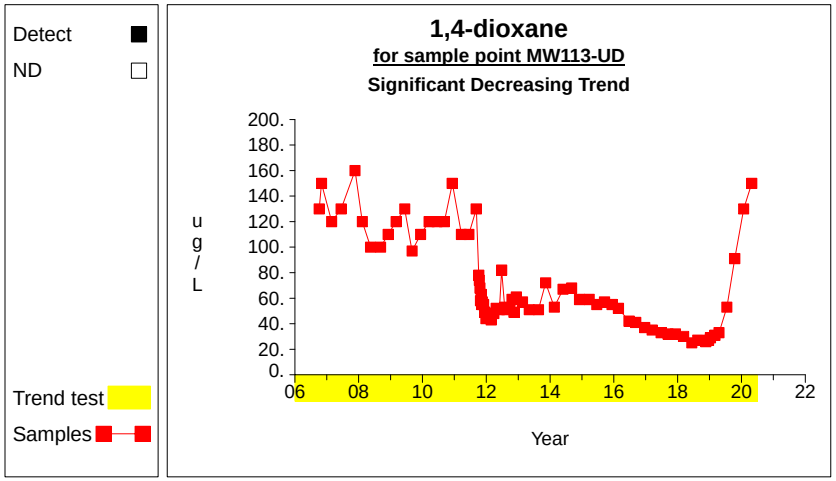
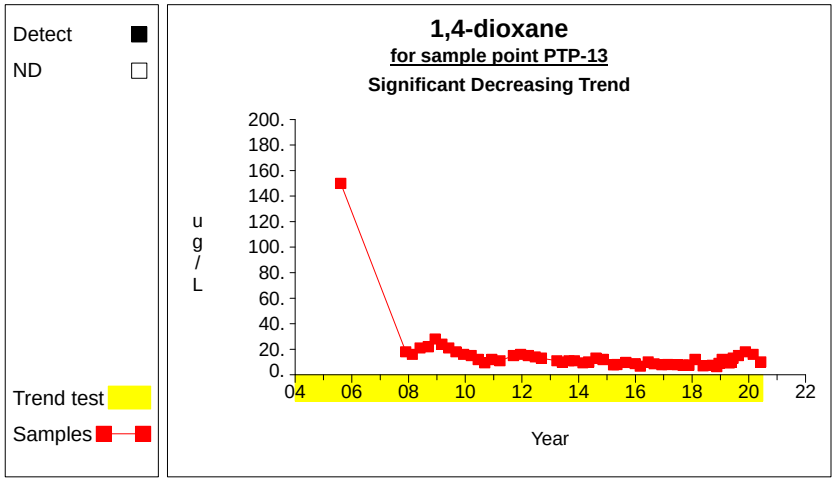


Graph 2



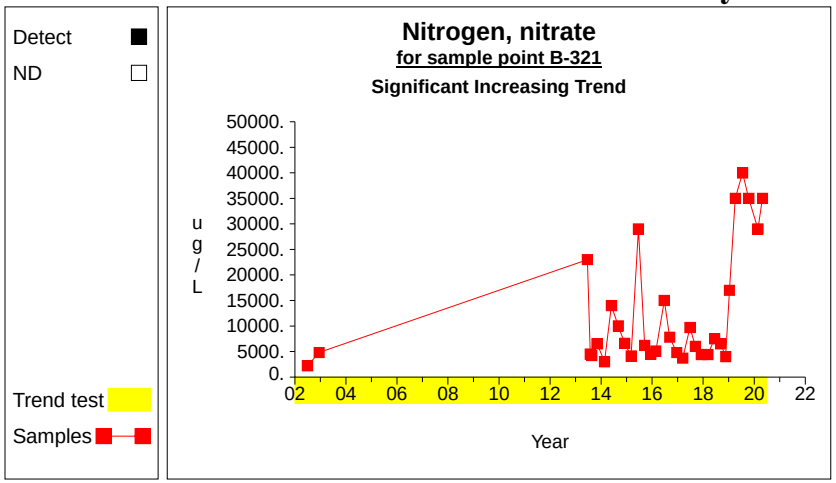
Graph 3



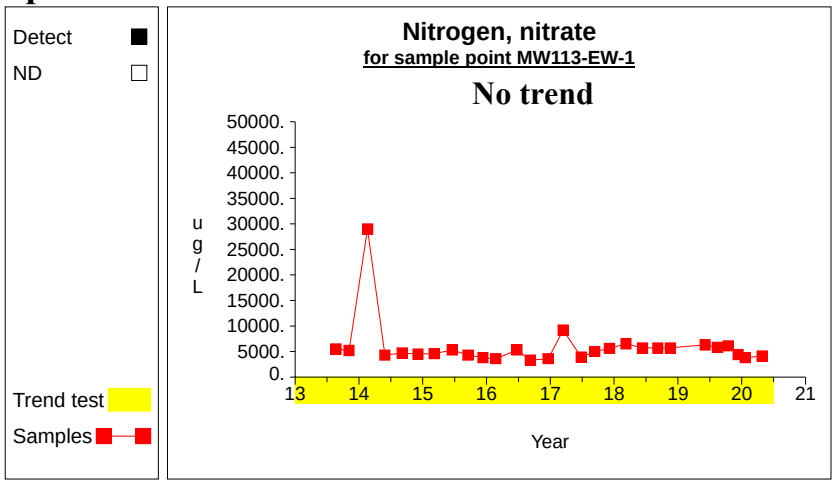
Graph 4

Prepared by: Parsons

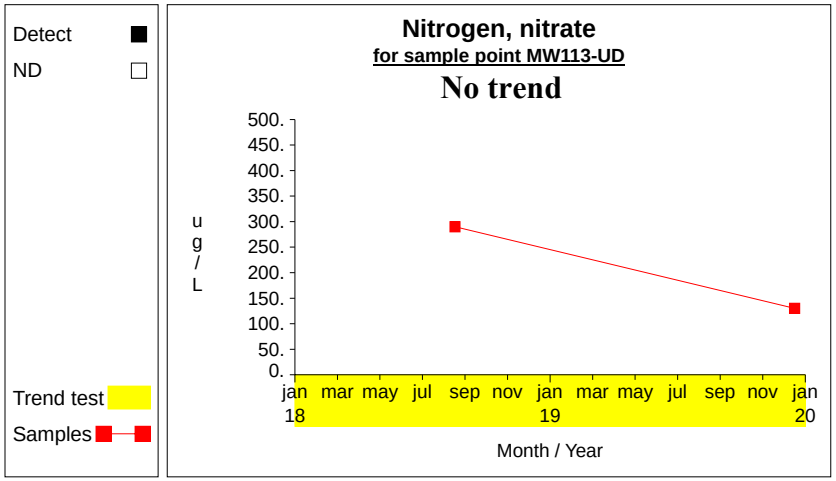
Figure 4.33
North End Trend Analysis Plots - Area 4
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 5



Graph 6

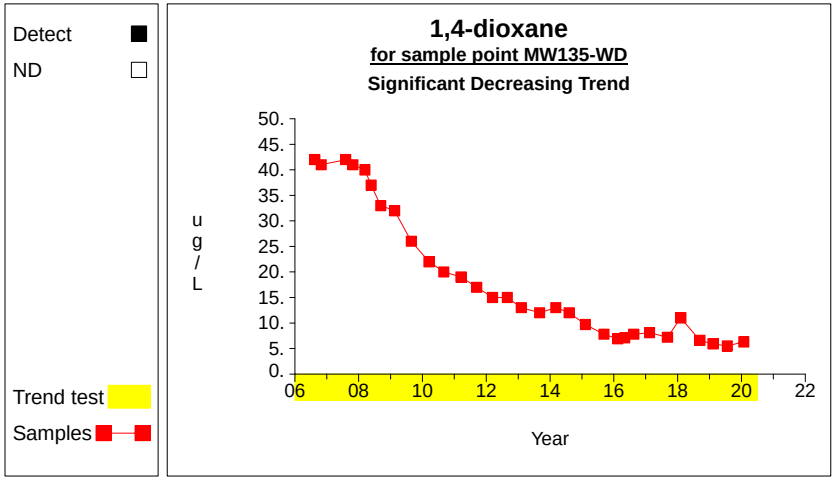


Graph 7

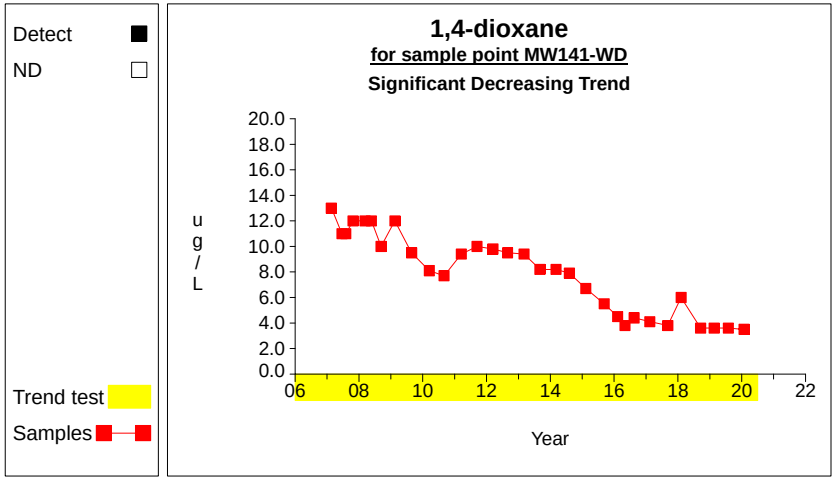
Prepared by: Parsons

Analysis prepared using Sen's Test for trend and DUMPSTAT®

Figure 4.34
North End Trend Analysis Plots - Sections 30 and 19
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 1



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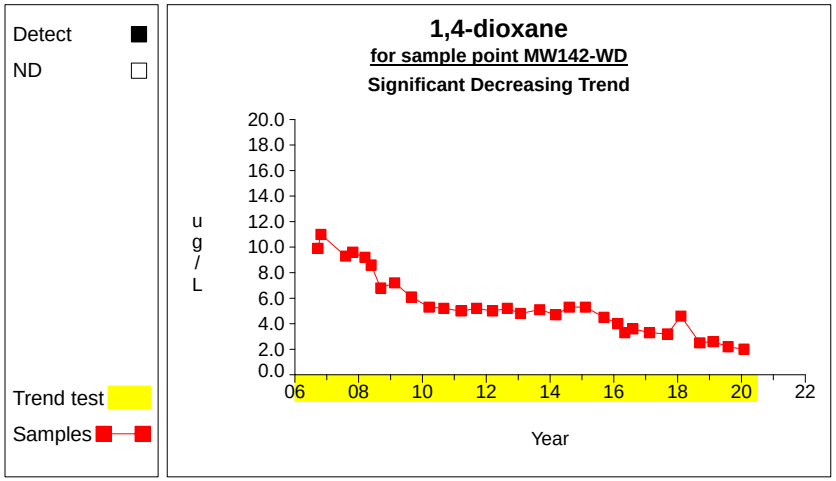

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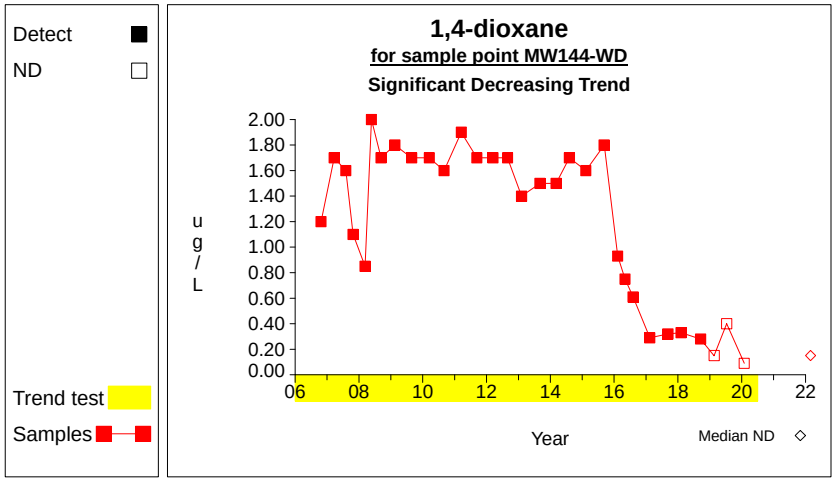
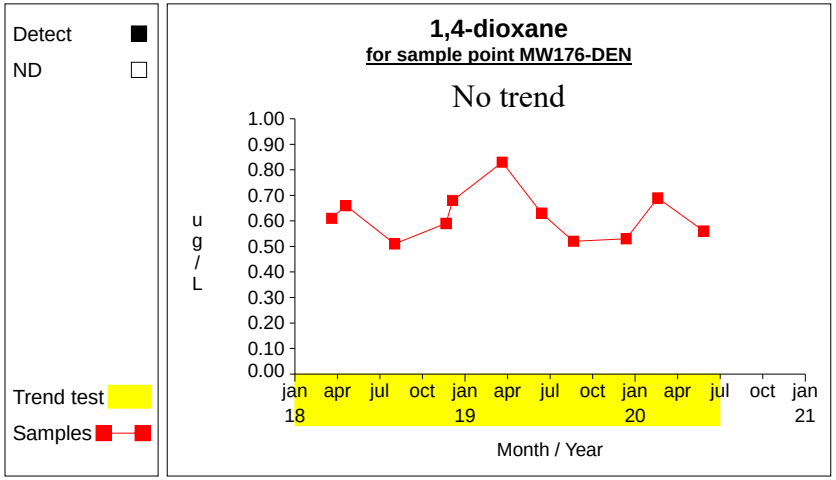


Graph 4

Prepared by: Parsons

Figure 4.34
North End Trend Analysis Plots - Sections 30 and 19
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site

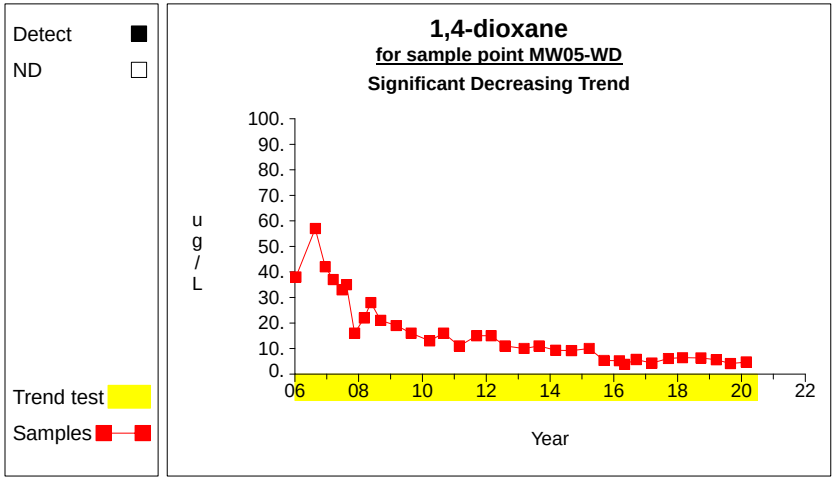


Graph 5

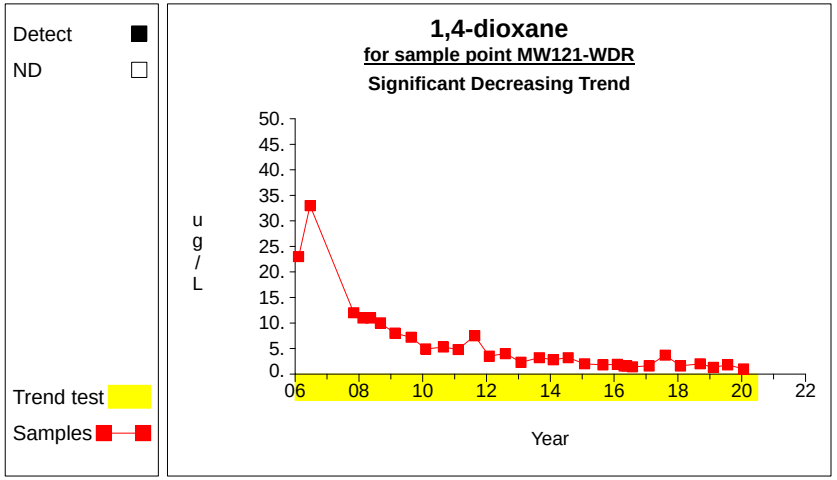
Analysis prepared using Sen's Test for trend and DUMPSTAT®

Prepared by: Parsons

Figure 4.35
North End Trend Analysis Plots - Yale Area
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 1



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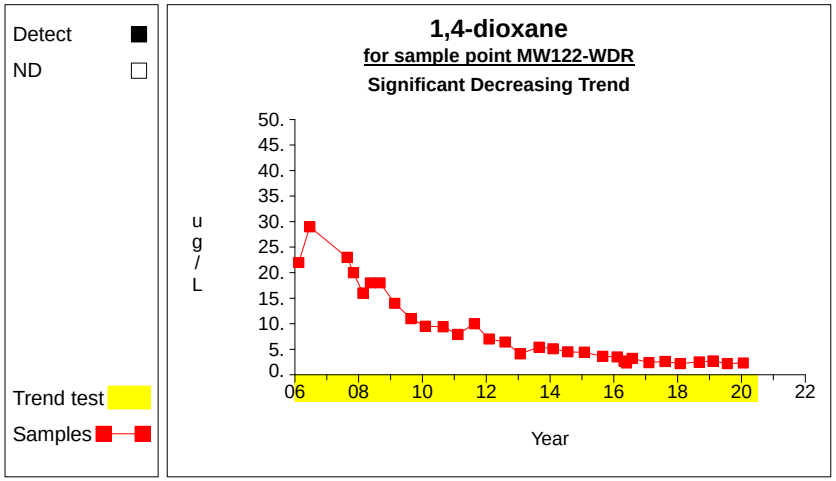
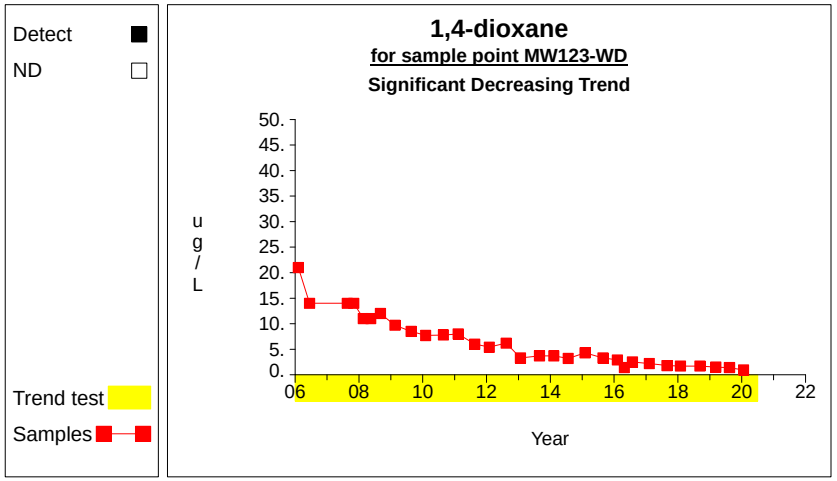


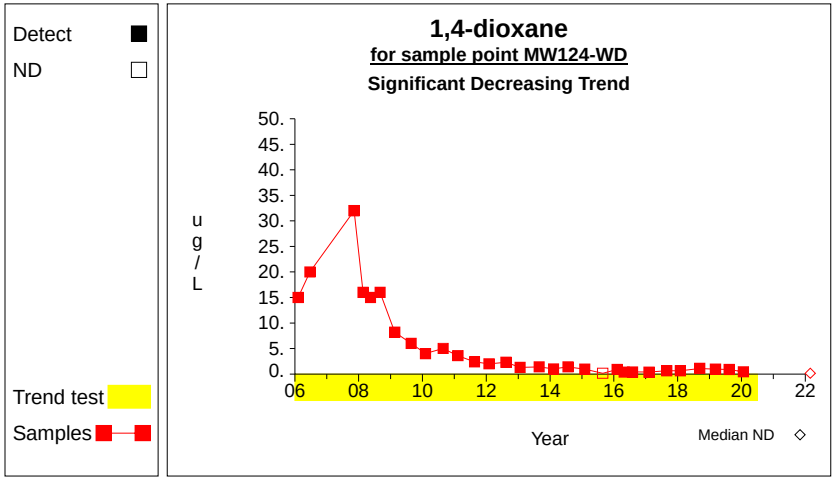
Graph 3



Graph 4

Prepared by: Parsons

Figure 4.35
North End Trend Analysis Plots - Yale Area
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



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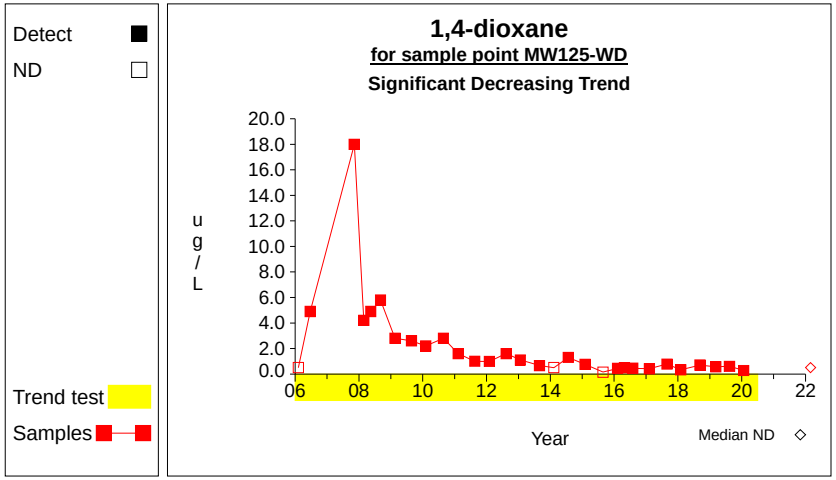

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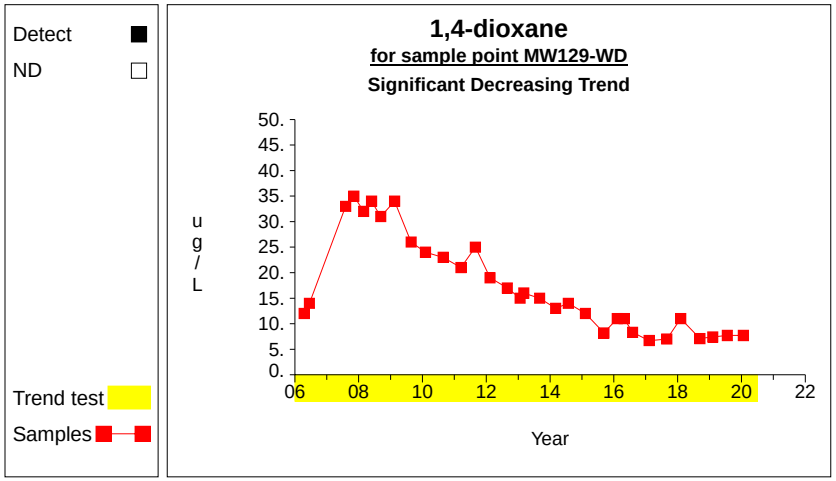


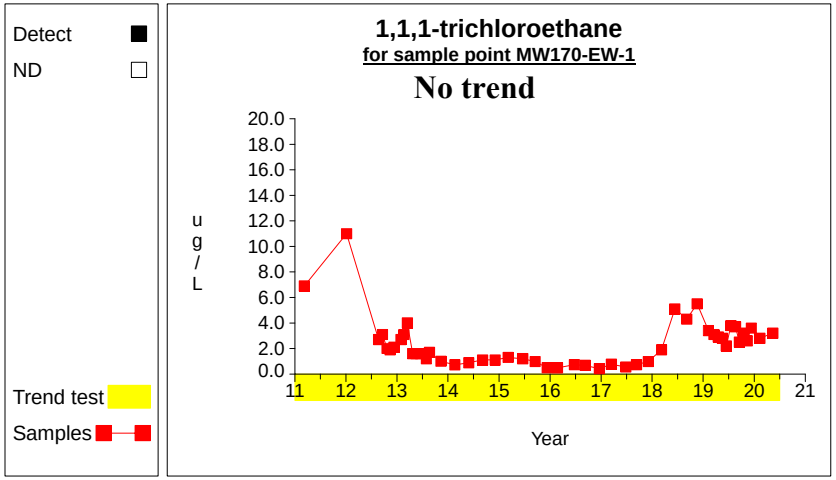
Graph 7

Prepared by: Parsons

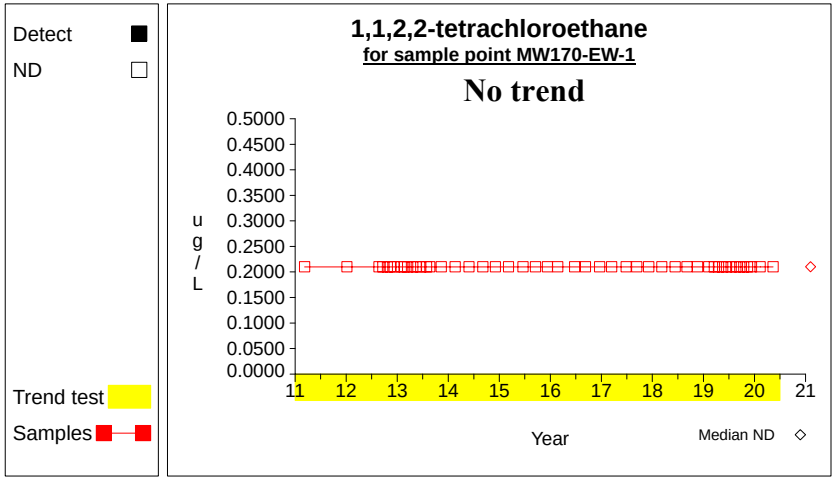
Analysis prepared using Sen's Test for trend and DUMPSTAT®

13
18
24
19
30
31
MW176-DEN
0.56 J
MW144-WD
0.9 U
MW142-WD
2
MW141-WD
3.5
MW135-WD
6.3
MW122-WDR
2.3
MW121-WDR
1
MW123-WD
0.95
MW130-WD
0.9 U
MW124-WD
0.43 J
MW131-WD
0.9 U
MW129-WD
7.7
MW125-WD
0.28 J
MW05-WD
4.7
MW154-EW-1
1.7
MW157-WD
0.57 J
MW153-EW-1
2
MW151-WD
1.2
MW156-WD
0.56 J
MW155-EW-1
0.86 J
MW156-EW-1
0.5 J
MW132-WD
18
MW113-UD
150
MW160-WD
2.7
B-326-WD
11
PTP-13
10
MW113-WD
19
PTP-14
82
NBBW-IW-3
110
GW-109
20
MW114-WD
0.98
MW118-WD
0.62 J
B-326-UD
6.9
B-321
18
MW113-EW-1
92
MW103-WD
0.76 J
MW102-WD
1.3
B-313
21
MW77-EW-2
0.17 J
B-313-UD
0.9 U
MW77-EW-1
2.8
B-314
0.9 U
MW62-WDR
3.4
MW98-WD
8.6
MW38-1028N-256E
2.8
MW170-EW-1
16
MW77-WD
5
MW74-WD
0.9 U
GW-106
0.9 U
MW23-UPPER-C
0.9 U
MW38-830N-230E
2
MW78-WD
0.9 U
MW71-WD
0.9 U
MW91-WD
0.9 U
MW38-170S-140W
37
MW91-UD
0.9 U
MW54-WD
0.9 U
MW38-825S-445E
2500
MW105-WD
0.9 U
MW36-WDR
0.9 U
North Boundary
Barrier Wall
North Toe
Mississippi Ave.
E. Jewell Ave.
Yale Ave.
Gun Club Road
Coal Creek
Murphy Creek
Murphy Creek Tributary
Un-Named Murphy Creek Tributary
UNNAMED CREEK
Murphy Creek Tributary
Un-Named Murphy Cr
B-326-UD
Start Extraction at MW113-WD 7/2/07
Start Injection at B-319 12/18/07
Start Injection at 3 IWs 11/8/10
Start Extraction at MW113-EW-1 9/29/09
1,4-Dioxane Concentration (ug/L)
1,4-D (ug/L)
MW103-WD
1,4-Dioxane Concentration (ug/L)
B-313 (Compliance Well)
1,4-DIOXANE
Concentration (ug/L)
14X
MW77-WD (Compliance Well)
1,4-DIOXANE
Concentration (ug/L)
14X
N
0 600 1,200 Feet
1 inch = 1,200 feet
Legend
Increasing Trend
No Trend; 1,4-Dioxane <= 0.9 µg/L
Decreasing 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
Never Above Performance Standard
Note: 1,4-Dioxane values from last sampling date for 1st half 2020
MW130-WD and MW131-WD results are from previous sampling events
1,4 Dioxane > 0.9 µg/L in 1st half 2020 (dashed where inferred)
FIGURE 4.36
PROGRESS FROM RESPONSE ACTIONS
LAST SAMPLING DATE
O&M Status Report - 1st Half 2020
Lowry Landfill Superfund Site, Colorado
P A R S O N S
Denver, Colorado
S:\ES\Maj Proj\LWRYLNFL\QUARTERLY REPORTS\1ST HALF 2020\GIS\Fig4-36_14Diox_Sec1930_31_12Q20_MostRecent.mxd lxh 9/22/2020

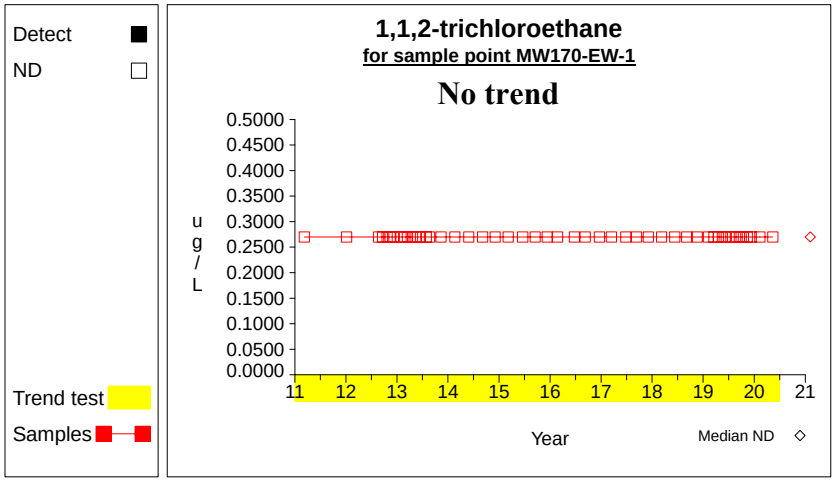
Figure 4.37
North End Trend Analysis Plots - Area 5
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



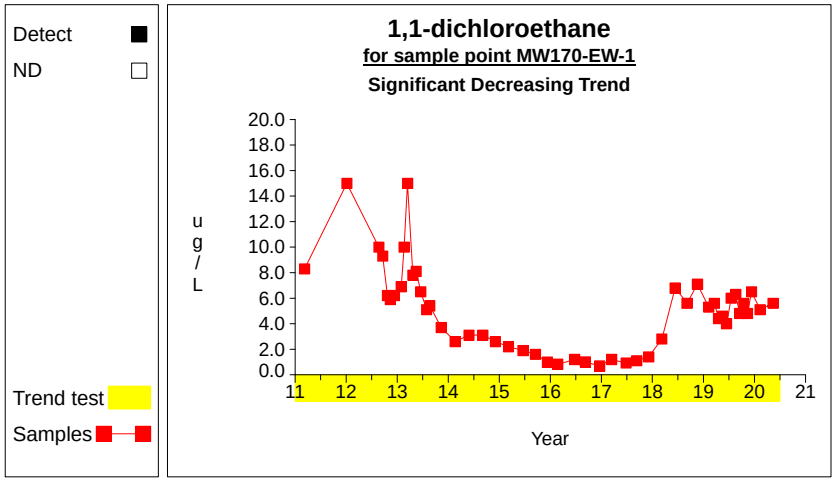
Graph 1



Graph 2



Graph 3

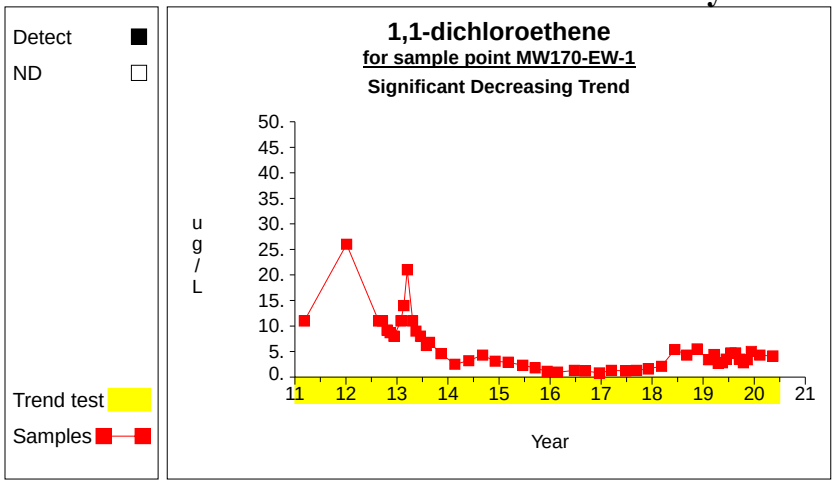


Graph 4

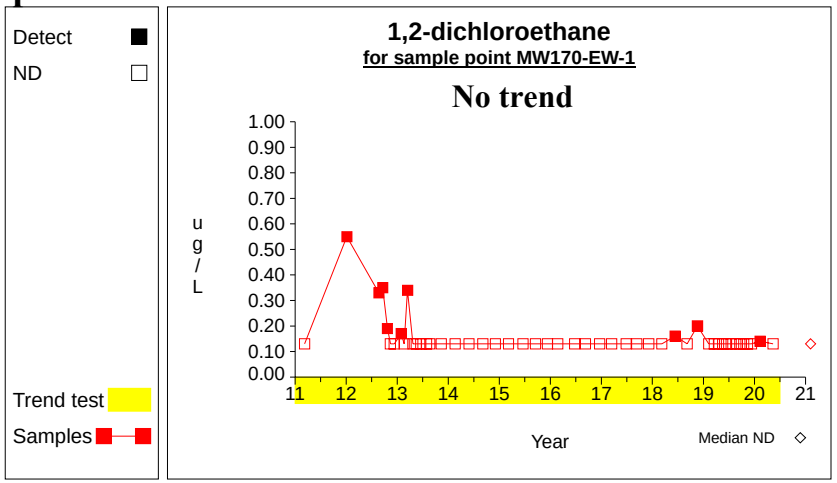
Prepared by: Parsons

1

Figure 4.37
North End Trend Analysis Plots - Area 5
January Through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 5



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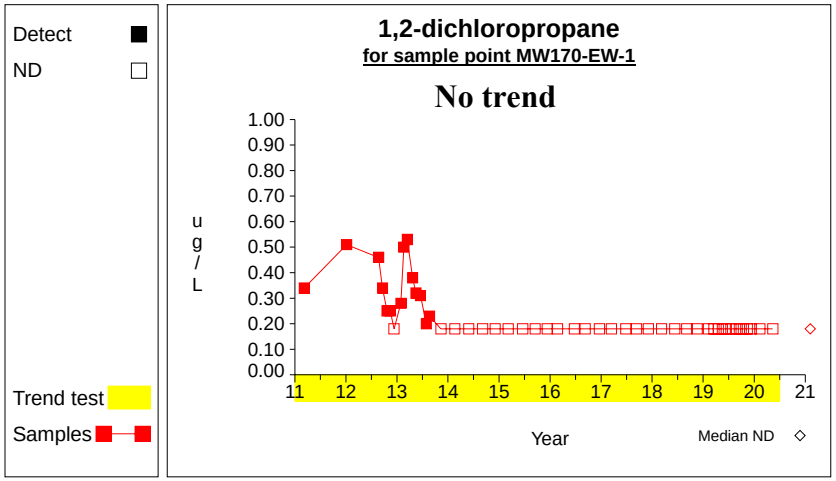

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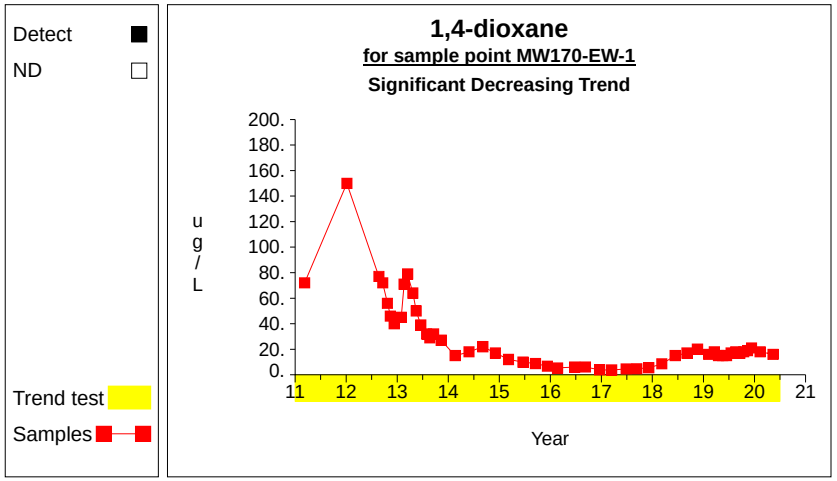
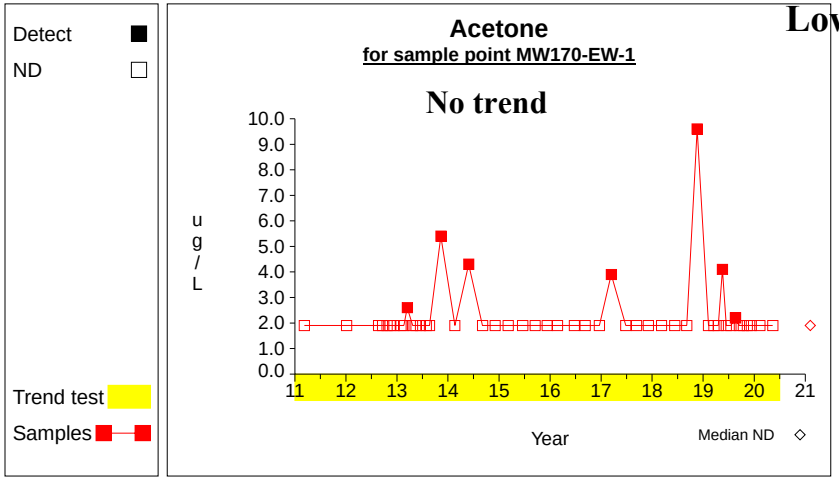


Graph 8

Prepared by: Parsons

Figure 4.37
North End Trend Analysis Plots - Area 5
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



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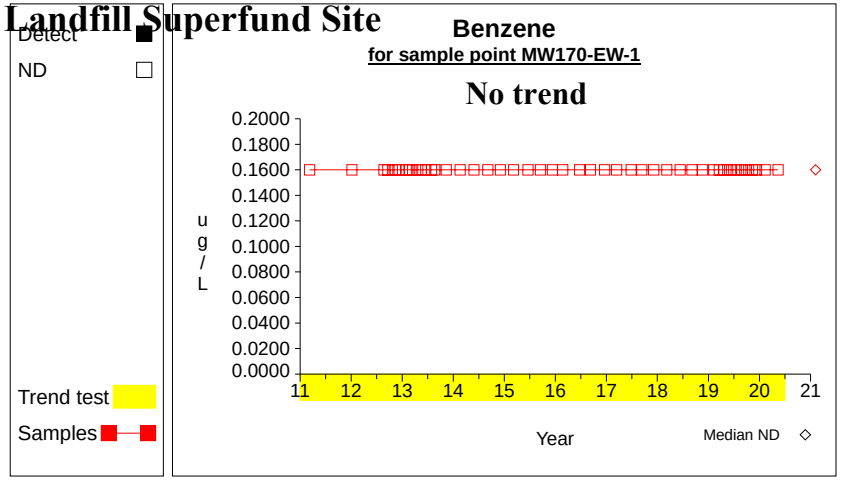
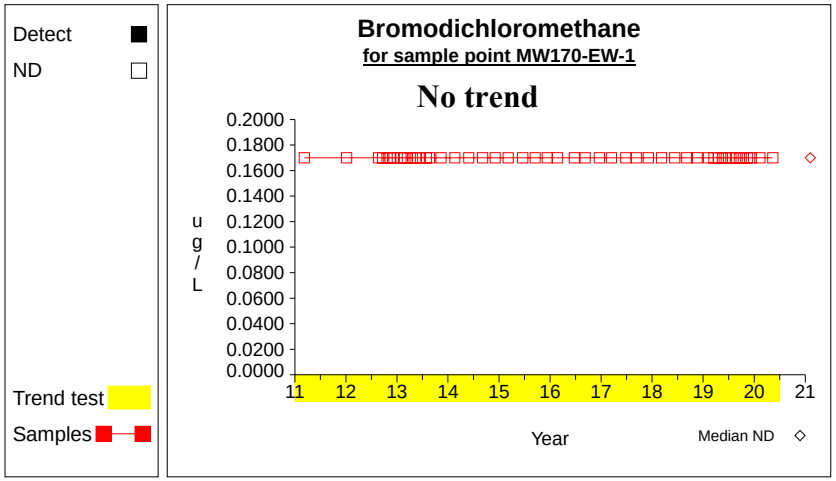


Graph 10



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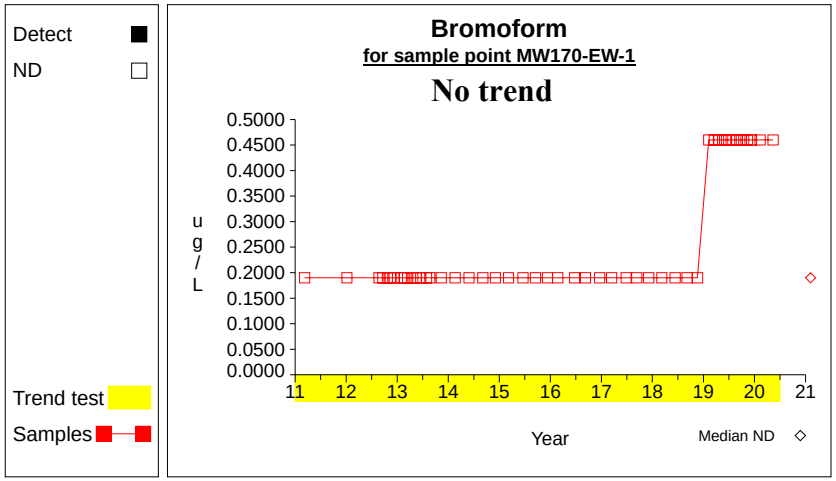
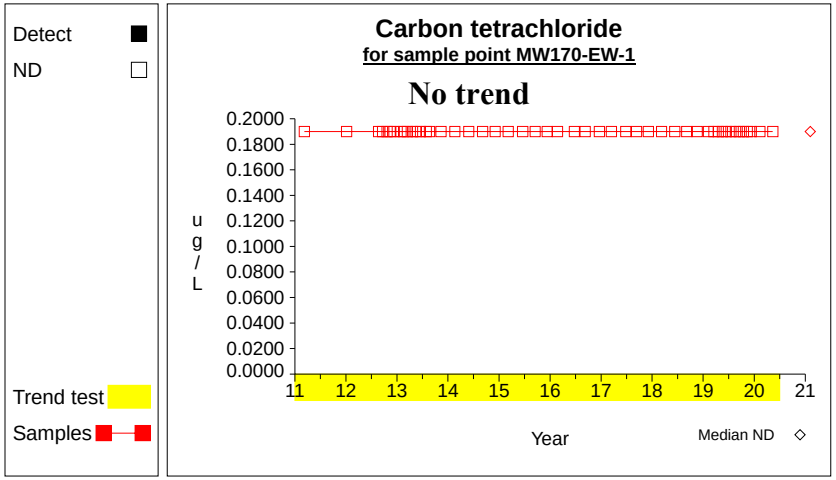


Graph 12

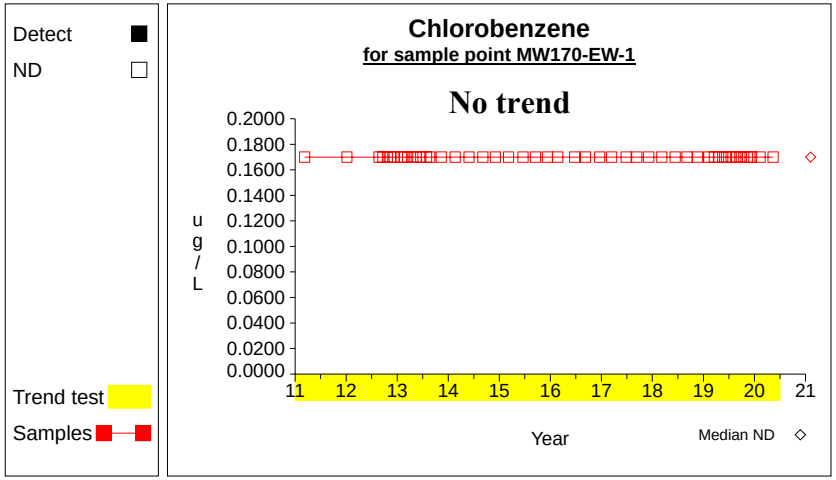
Prepared by: Parsons

3

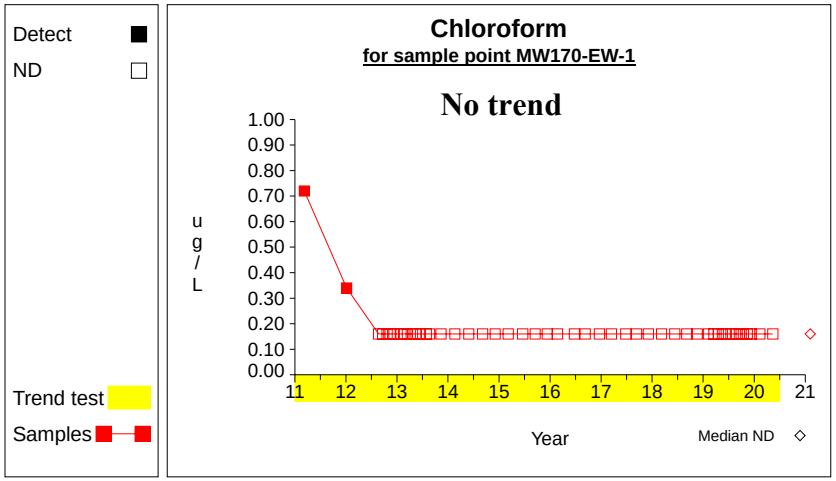
Figure 4.37
North End Trend Analysis Plots - Area 5
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 13



Graph 14



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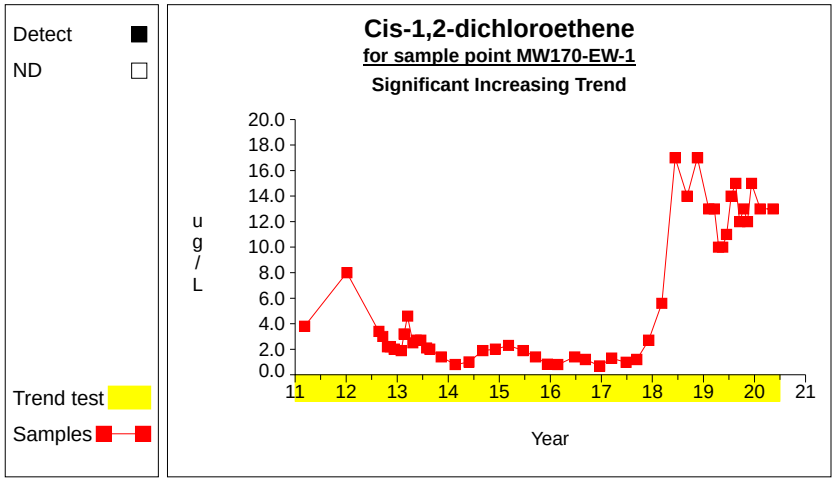
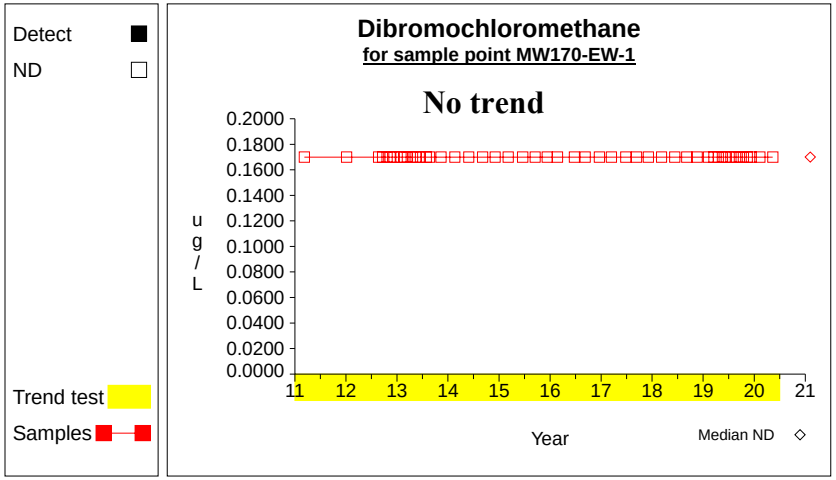


Graph 16

Prepared by: Parsons

Figure 4.37
North End Trend Analysis Plots - Area 5
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



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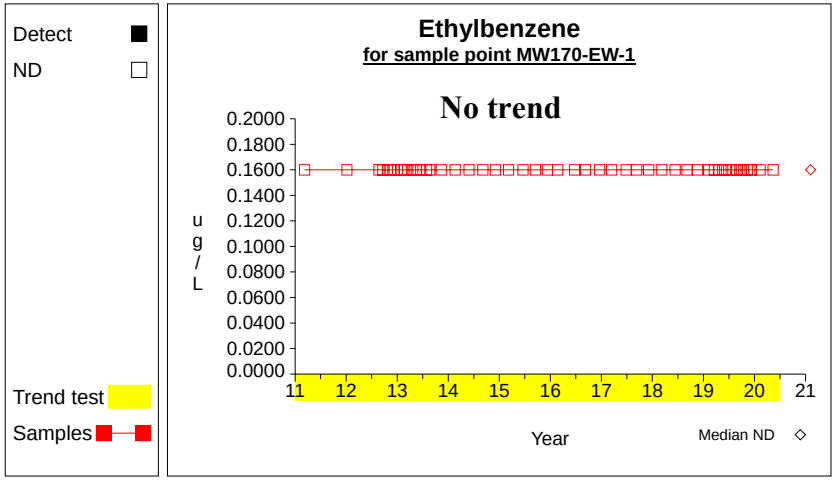

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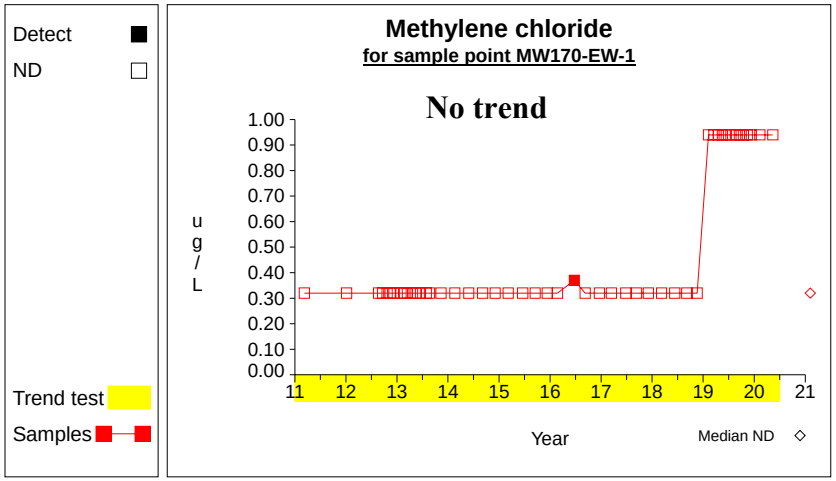

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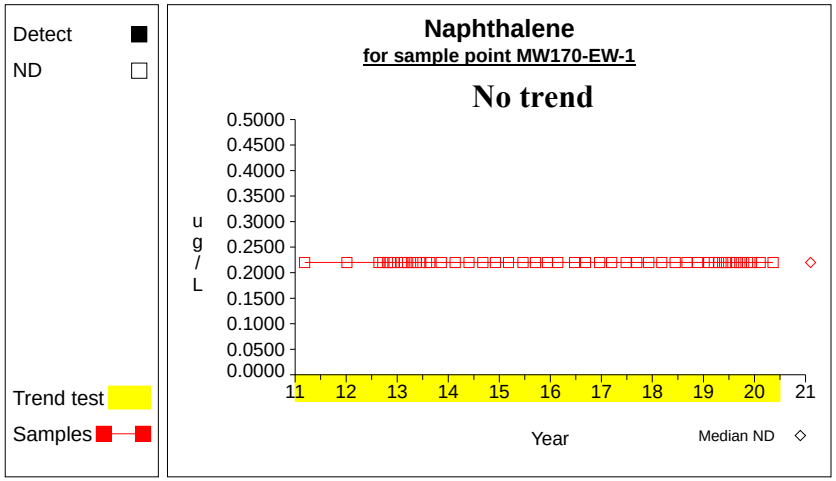
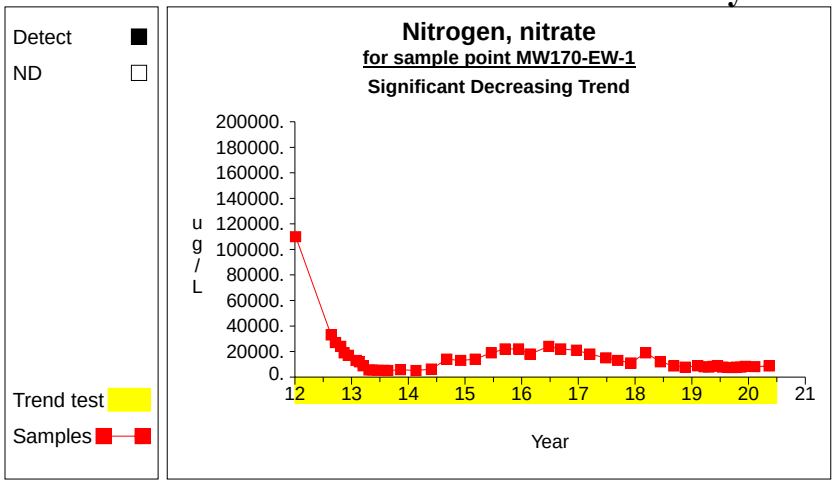


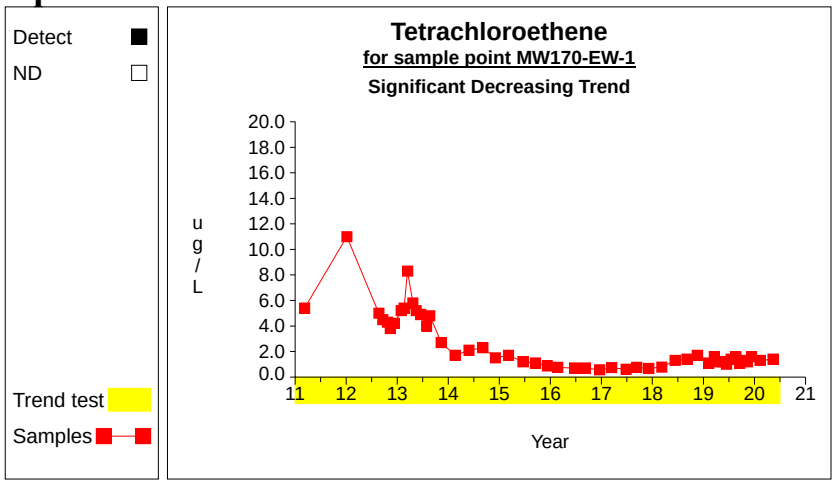
Graph 20

Prepared by: Parsons

Figure 4.37
North End Trend Analysis Plots - Area 5
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



Graph 21



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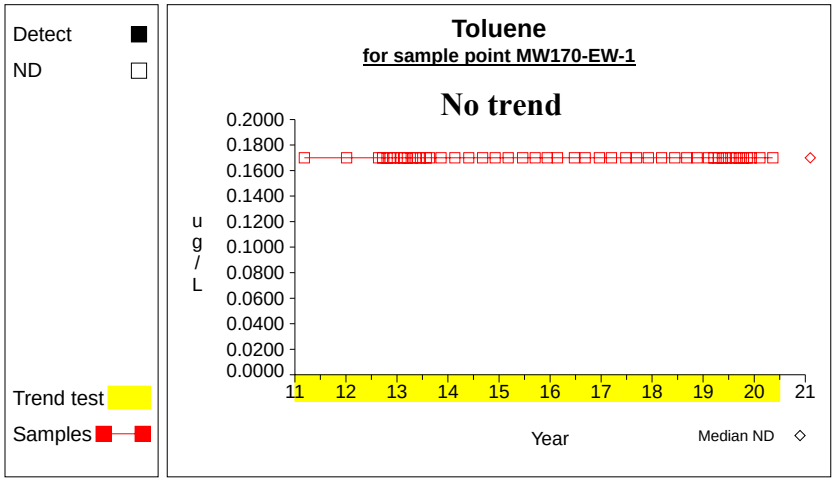

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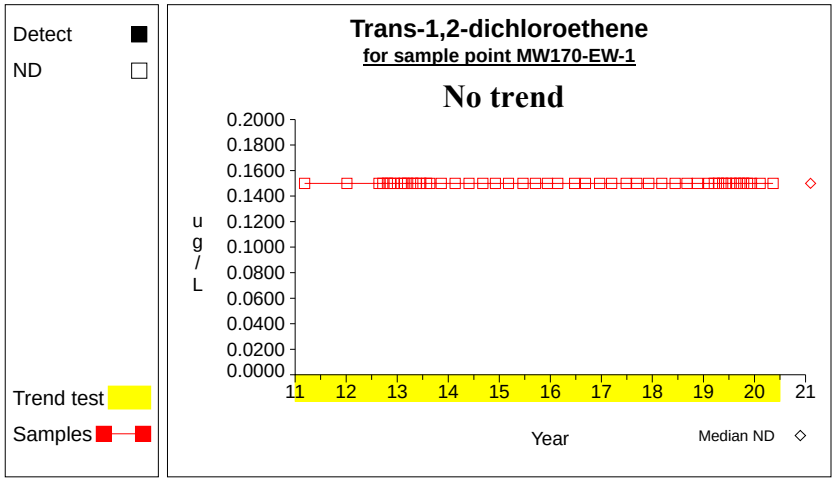
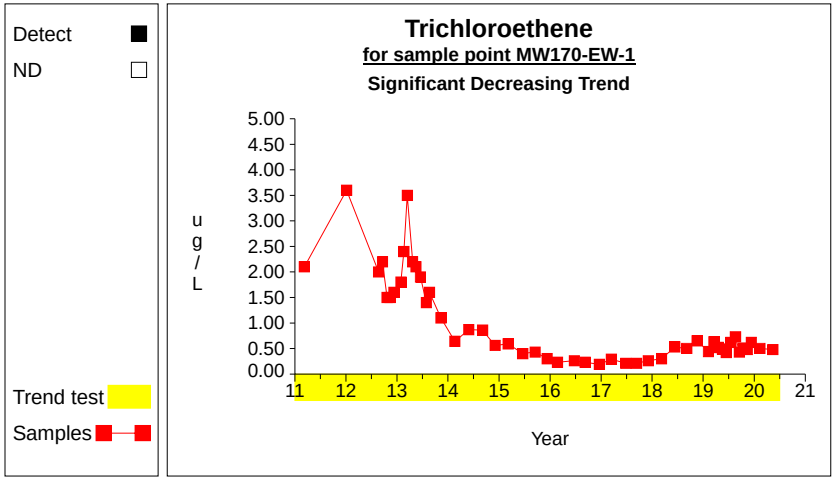


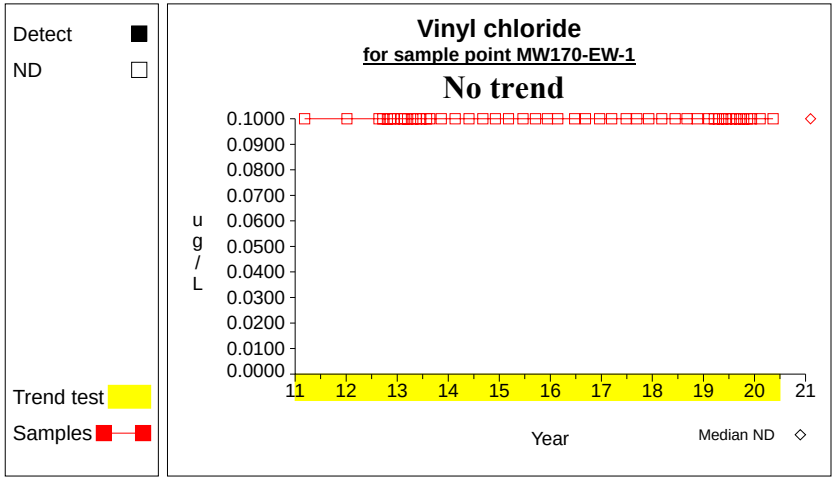
Graph 24

Prepared by: Parsons

Figure 4.37
North End Trend Analysis Plots - Area 5
January through June 2020 Operations and Maintenance Status Report
Lowry Landfill Superfund Site



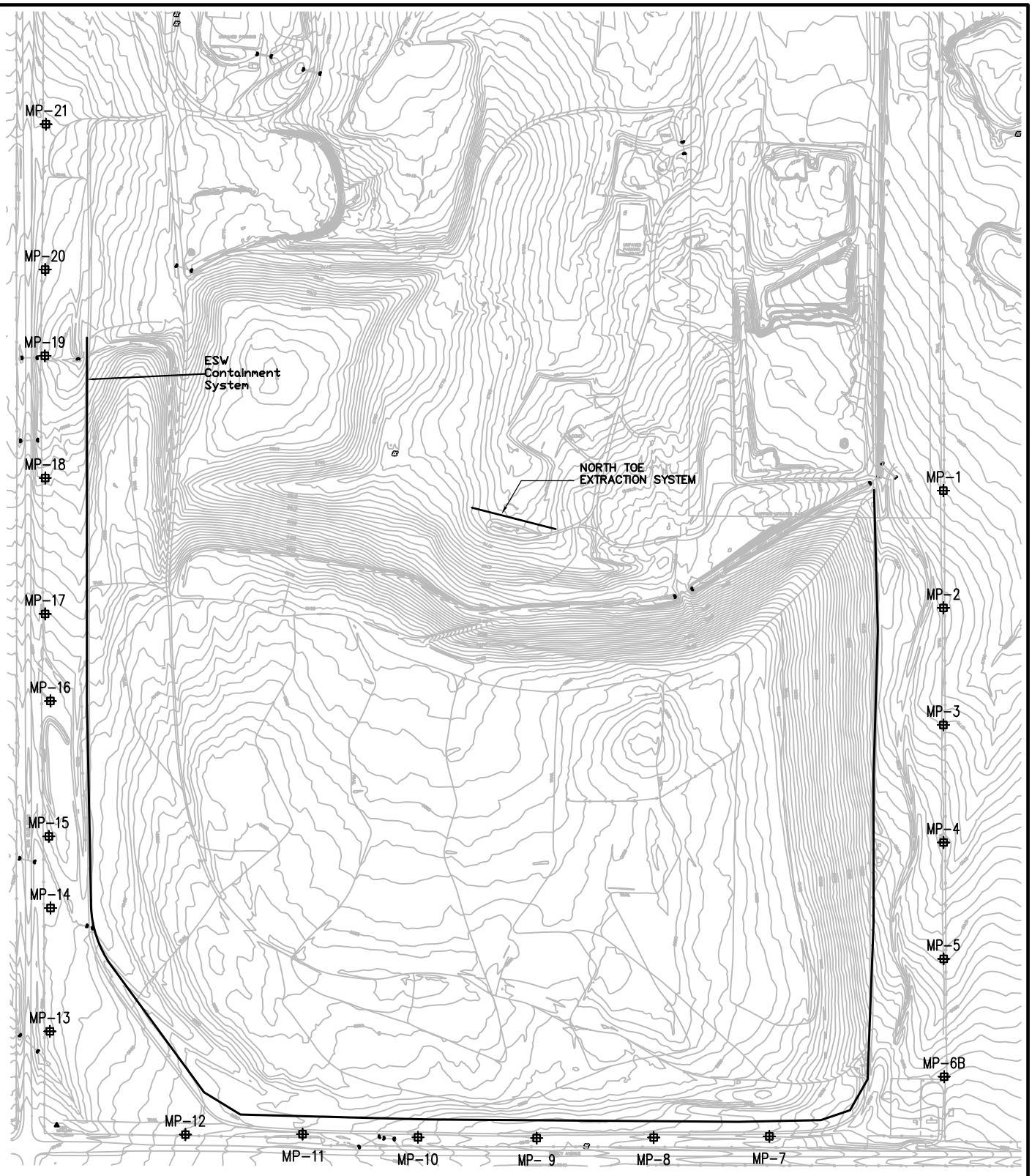
Graph 25



Graph 26

Analysis prepared using Sen's Test for trend and DUMPSTAT®

Prepared by: Parsons



LEGEND

MP-1 — LFG Monitoring Probe

5730 — Topographic Contour

N

0 300 600'

1"=600'

FIGURE 5.1

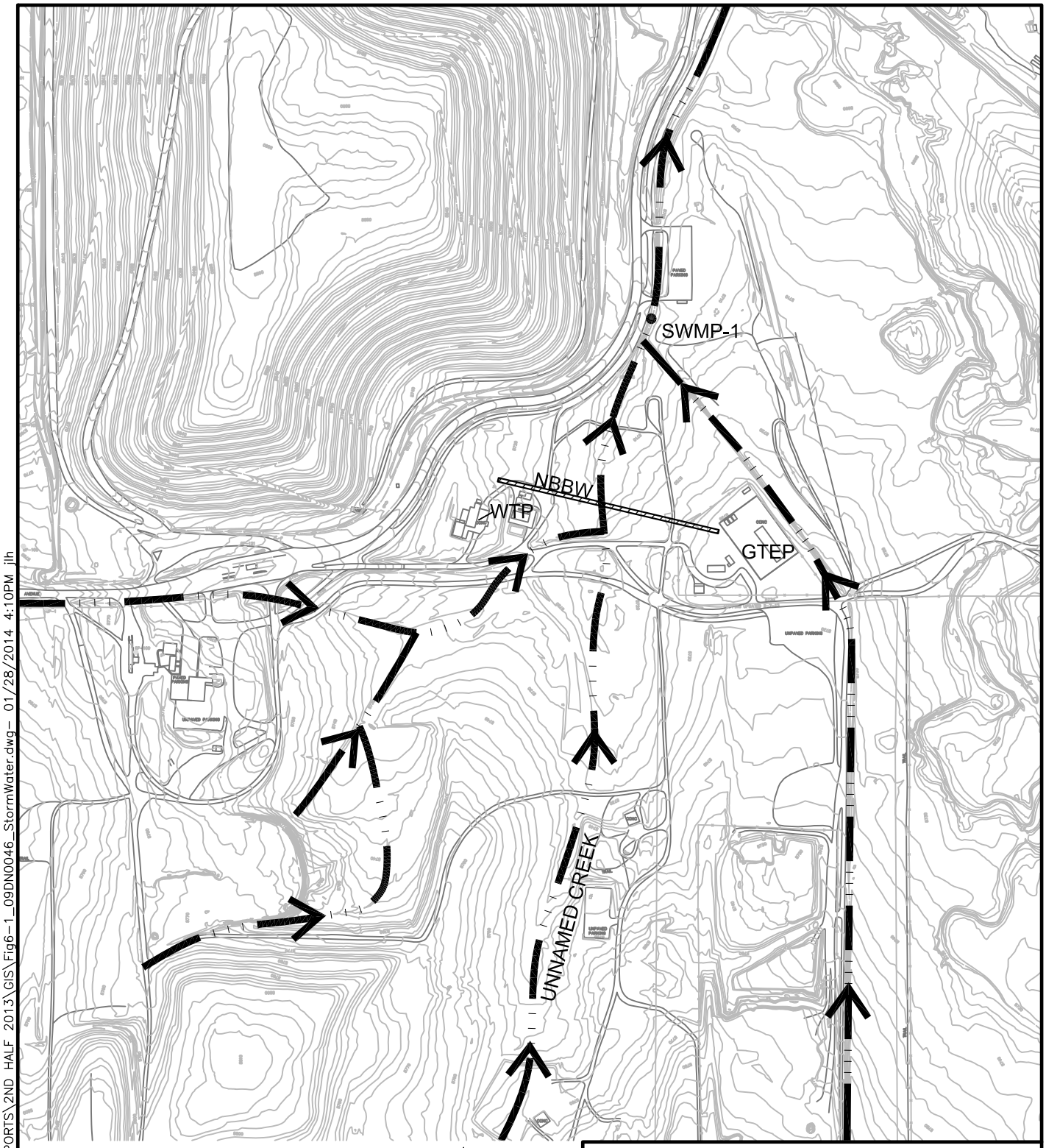
GAS MONITORING PROBE LOCATION MAP

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

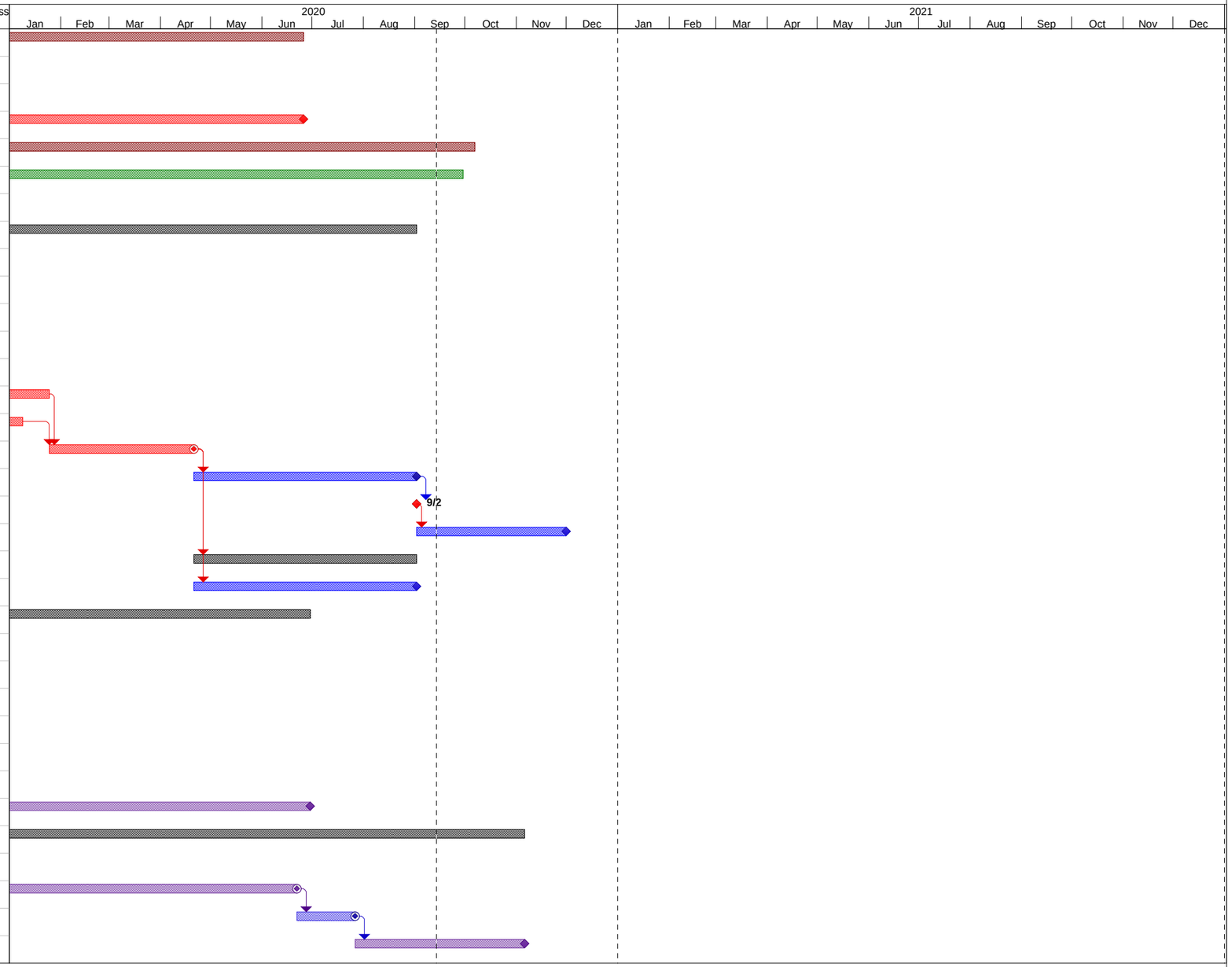
PARSONS

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	Predecess
1	**5YrR Issue #4: OU 1, Sample 4 Private Wells Within/Adjacent to Plume**	907 edays	Mon 1/1/18	Fri 6/26/20	
2	EPA New Deadline (Sample 4 Private Wells)	637 edays	Mon 1/1/18	Mon 9/30/19	
3	WSDs Prepare Draft and Final TM	86 edays	Mon 7/2/18	Wed 9/26/18	
4	EPA Review and Approval of Final TM	639 edays	Wed 9/26/18	Fri 6/26/20	3
5	**5YrR Issue #7: Update North End 1,4-Diox Plume Extent and CSM, GCE Wells, and ICs, and #9: Evaluate Need for Deep Wells Within North End Plume**	1010 edays	Mon 1/1/18	Wed 10/7/20	
6	EPA Deadline for Issue #7	1003 edays	Mon 1/1/18	Wed 9/30/20	
7	EPA Original and Current Deadline for Issue #9	276 edays	Fri 12/28/18	Mon 9/30/19	
8	North End Investigation	700 edays	Wed 10/3/18	Wed 9/2/20	
9	Subcommittee Review and EPA Approval of Final Work Plan	42 edays	Wed 10/3/18	Wed 11/14/18	
10	Implement Work Plan (includes install and sample new deep+shallow wells)	191 edays	Wed 11/14/18	Fri 5/24/19	9
11	Draft North End Report	105 edays	Fri 5/24/19	Fri 9/6/19	10
12	EPA Review and Comment on Draft North End Report	31 edays	Fri 9/6/19	Mon 10/7/19	11
13	Resolution of EPA Comments and Prepare Draft Final North End Report	9 edays	Mon 10/7/19	Wed 10/16/19	12
14	CDPHE Review and Comment on Draft Final North End Report	101 edays	Wed 10/16/19	Sat 1/25/20	13
15	CAG Review and Comment on Draft Final North End Report	71 edays	Wed 10/30/19	Thu 1/9/20	13
16	EPA Consolidation of CDPHE and CAG Comments to WSDs	87 edays	Sat 1/25/20	Tue 4/21/20	14,15
17	Resolution of Consolidated Comments and Prepare Final North End Report	134 edays	Tue 4/21/20	Wed 9/2/20	16
18	EPA Review and Approval of Final North End Report	0 edays	Wed 9/2/20	Wed 9/2/20	17
19	Update North End GW Monitoring Plan (Follow-on to Issue #9)	90 edays	Wed 9/2/20	Tue 12/1/20	18
20	Off-Site Institutional Controls	134 edays	Tue 4/21/20	Wed 9/2/20	16
21	Assess Need for Off-Site Institutional Controls (None needed)	134 edays	Tue 4/21/20	Wed 9/2/20	16
22	Synoptic Groundwater Sampling and 3DVA Update	972 edays	Wed 11/1/17	Tue 6/30/20	
23	Subcommittee Review and EPA Approval of Final Work Plan	7 edays	Fri 7/13/18	Fri 7/20/18	
24	Sample Collection, Analyses, and Data Validation	129 edays	Fri 7/20/18	Mon 11/26/18	23
25	Addendum 1 to Synoptic Sampling Plan (Install 2 Replacement Wells)	7 edays	Mon 8/13/18	Mon 8/20/18	
26	Subcommittee Review and Approval of Addendum 1	24 edays	Mon 8/20/18	Thu 9/13/18	25
27	Install and sample new wells	29 edays	Thu 9/13/18	Fri 10/12/18	26
28	Update Database and 3DVA Model	158 edays	Mon 11/26/18	Fri 5/3/19	24,27
29	3DVA Summary Report	424 edays	Fri 5/3/19	Tue 6/30/20	28
30	Overall Conceptual Site Model (CSM)	609 edays	Fri 3/8/19	Fri 11/6/20	
31	Outline for CSM	56 edays	Fri 3/8/19	Fri 5/3/19	
32	EPA/WSDs/CDPHE Collaborate on and Develop Draft CSM Report	416 edays	Fri 5/3/19	Mon 6/22/20	31,28
33	WSDs Comments on Draft CSM Report	35 edays	Mon 6/22/20	Mon 7/27/20	32
34	Final CSM Report	102 edays	Mon 7/27/20	Fri 11/6/20	33

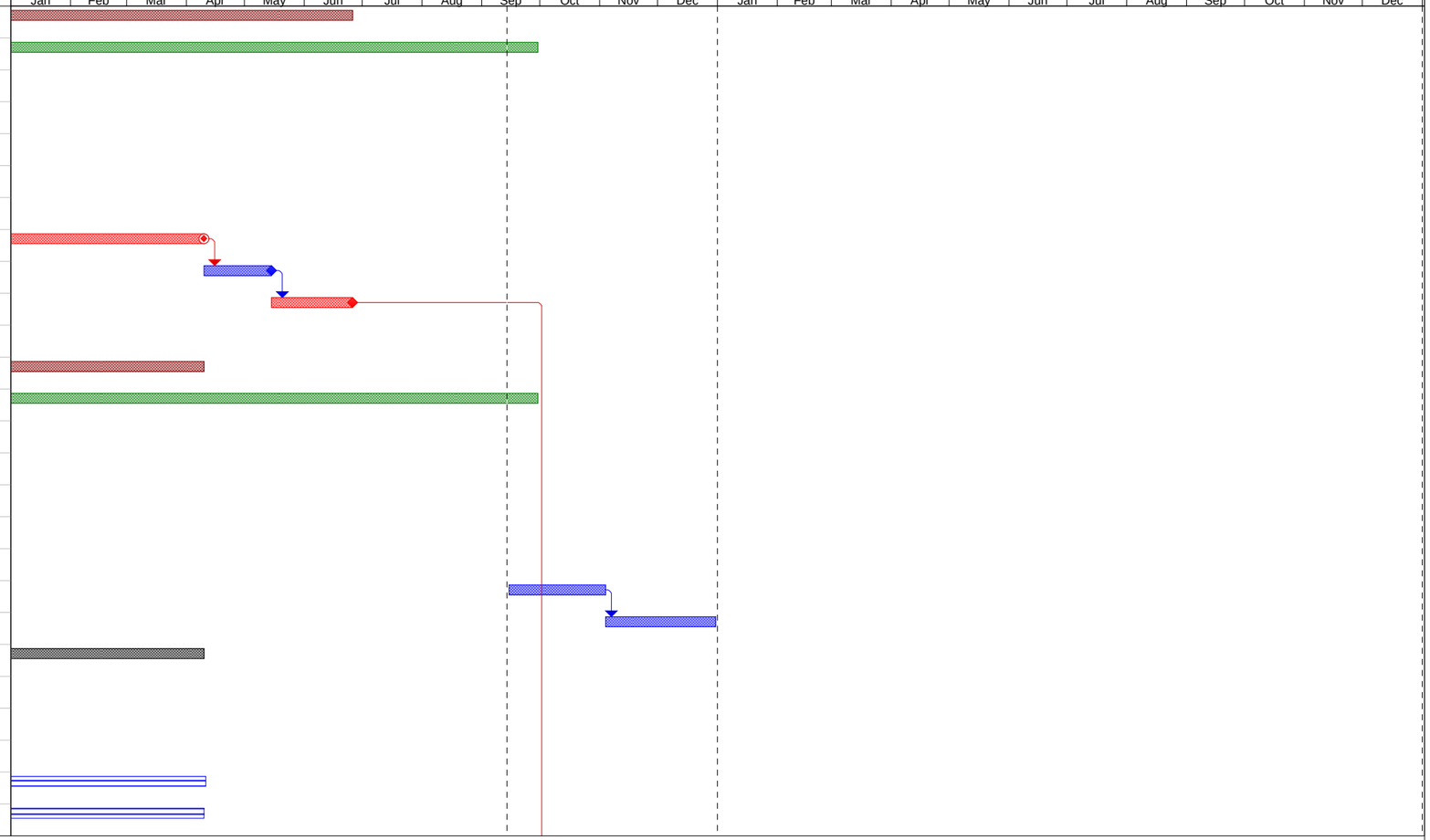


Project: 1H2020 O&M Status Report
Date: 14Sept 2020

Task	Rolled Up Task	External Tasks	Inactive Task	Manual Task	Start-only	Progress
Split	Rolled Up Split	Project Summary	Inactive Milestone	Duration-only	Finish-only	External Milestone
Milestone	Rolled Up Milestone	External Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	
Summary	Rolled Up Progress	Deadline	Inactive Summary	Manual Summary	External Milestone	

Figure 9.1
Master Schedule

ID	Task Name	Duration	Start	Finish	Predecess
35	**5YrR Issue #1: Cease Potable Water Injection and Assess Changes**	848 edays	Thu 3/1/18	Fri 6/26/20	
36	EPA New Deadline (Cease Potable Water Injection and Assess Changes)	944 edays	Thu 3/1/18	Wed 9/30/20	
37	Subcommittee Review and EPA Approval of Final "Pilot-Test" Work Plan	5 edays	Wed 9/26/18	Mon 10/1/18	
38	Temporarily Cease Potable Injection and Monitor	269 edays	Tue 10/2/18	Fri 6/28/19	37
39	Cessation Progress Reports and Summary Report	361 edays	Mon 10/1/18	Fri 9/27/19	37
40	EPA Comments on Draft Final Summary Report	19 edays	Fri 9/27/19	Wed 10/16/19	39
41	Resolution of EPA Comments and Prepare 2nd Draft Final Summary Report.	62 edays	Wed 10/16/19	Tue 12/17/19	40
42	CDPHE/CAG Review and Comment on 2nd Draft Summary Report	115 edays	Tue 12/17/19	Fri 4/10/20	41
43	Resolution of CDPHE/CAG Comments and Final Cessation Report.	35 edays	Fri 4/10/20	Fri 5/15/20	42
44	EPA Approval of Final Cessation Report	42 edays	Fri 5/15/20	Fri 6/26/20	43
45	**WTP and POTW Upgrades**	783 days	Mon 1/1/18	Thu 12/31/20	
46	**5YrR Issue #2: Evalaute and Upgrade WTP Capacity (with Amended WAP)**	830 edays	Mon 1/1/18	Fri 4/10/20	
47	EPA Orignial and Current Deadline (Evaluate and Ugrade WTP Capacity)	1003 edays	Mon 1/1/18	Wed 9/30/20	
48	Design, Permitting, Installation, and Startup of WTP and POTW Pipeline Upgrades	396 edays	Mon 1/1/18	Fri 2/1/19	
49	Draft O&M Manual	60 edays	Fri 2/1/19	Tue 4/2/19	48
50	Metro/EPA Review and Comment	58 edays	Tue 4/2/19	Thu 5/30/19	49
51	Final O&M Manual	22 edays	Thu 5/30/19	Fri 6/21/19	50
52	Metro/EPA Approval	151 edays	Fri 6/21/19	Tue 11/19/19	51
53	Design/Permit/Procure Molybdenum Treatment System (not 5YrR Issue)	50 edays	Tue 9/15/20	Wed 11/4/20	
54	Construct/ Startup Molybdenum Treatment System (not 5YrR Issue)	57 edays	Wed 11/4/20	Thu 12/31/20	53
55	WSDs SWSP and Amended WAP	725 edays	Mon 4/16/18	Fri 4/10/20	
56	Prepare Amendments to WAP, Address Public Objections, Prepare Draft SWSP	277 edays	Mon 4/16/18	Fri 1/18/19	
57	Identify and Arrange for Raw Water Source	59 days	Fri 1/18/19	Wed 4/10/19	56
58	SEO Review/Comments/Revisions/Approval of SWSP	35 edays	Wed 4/10/19	Wed 5/15/19	57
59	Implement SWPS	331 edays	Wed 5/15/19	Fri 4/10/20	58
60	Water Court Approval of Amended WAP	448 edays	Fri 1/18/19	Fri 4/10/20	56

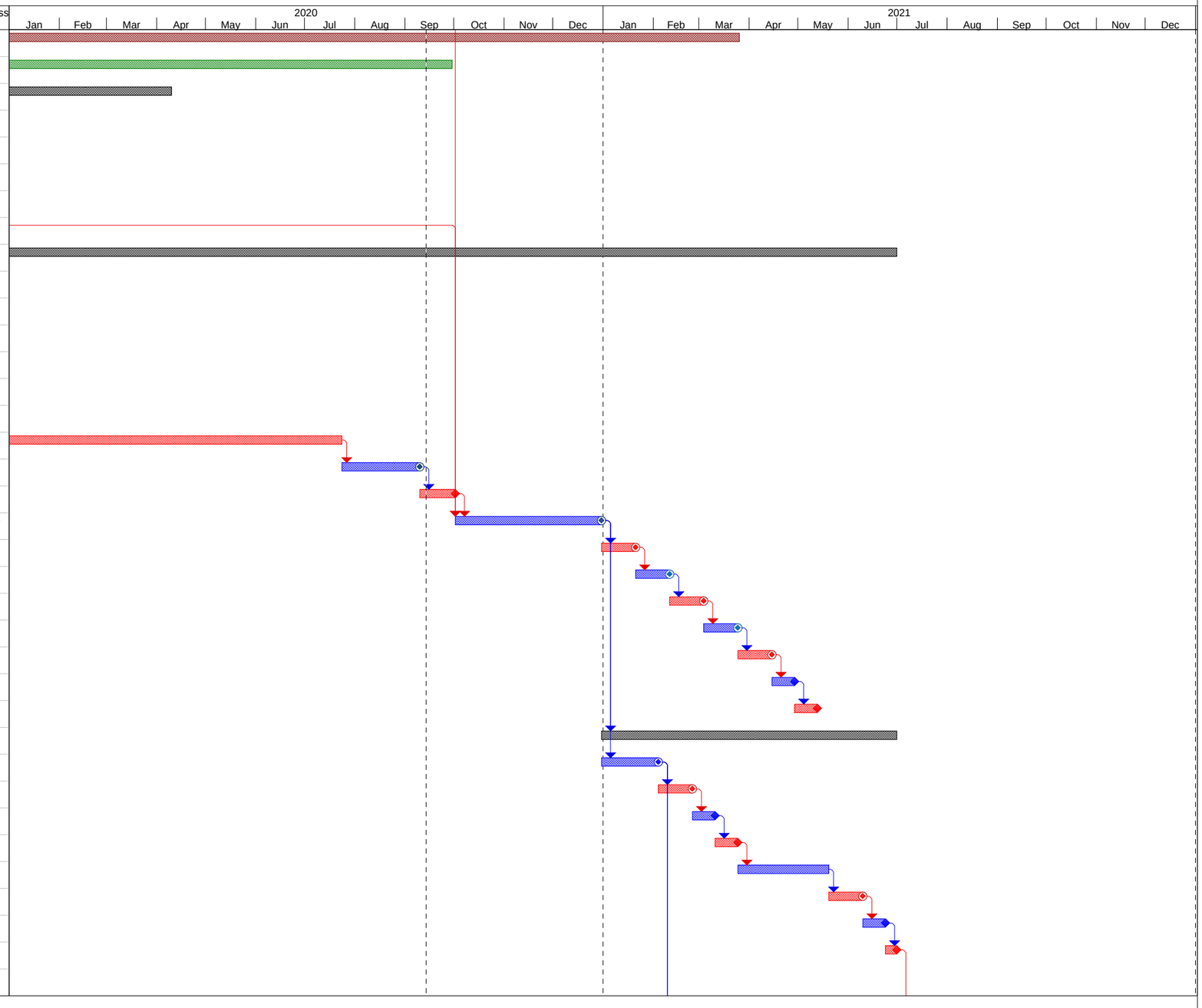


Project: 1H2020 O&M Status Report
Date: 14Sept 2020

Task	Rolled Up Task	External Tasks	Inactive Task	Manual Task	Start-only	Progress
Split	Rolled Up Split	Project Summary	Inactive Milestone	Duration-only	Finish-only	External Milestone
Milestone	Rolled Up Milestone	External Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	
Summary	Rolled Up Progress	Deadline	Inactive Summary	Manual Summary	External Milestone	

Figure 9.1
Master Schedule

ID	Task Name	Duration	Start	Finish	Predecess
61	**5YrR Issue #3: Effectiveness Evalutions of On-site and Off-Site Components**	1276 edays	Wed 9/27/17	Fri 3/26/21	
62	EPA New Deadline (CZAs per 2008 Guidance)	1099 edays	Wed 9/27/17	Wed 9/30/20	
63	Numerical Model Development and NBBW Containment System Evaluation	926 edays	Wed 9/27/17	Fri 4/10/20	
64	1st and 2nd Draft Setup Reports	625 edays	Wed 9/27/17	Fri 6/14/19	
65	Subcommittee Review and Comment on 2nd Draft Final Setup Report	103 edays	Fri 6/14/19	Wed 9/25/19	64
66	Response to EPA Comments on 2nd Draft Final Setup Report	30 edays	Wed 9/25/19	Fri 10/25/19	65
67	Final Numerical Model Setup Report	45 edays	Fri 10/25/19	Mon 12/9/19	66
68	EPA Acceptance of Numerical Model Setup Report	18 edays	Mon 12/9/19	Fri 12/27/19	67
69	NBBW Containment System Evaluation (CSE) and Opt Study (OS)	847 edays	Thu 3/7/19	Thu 7/1/21	
70	Revised Plan for NBBW CSE/OS	109 edays	Thu 3/7/19	Mon 6/24/19	
71	EPA Review and Comment of Revised CSE/OS Plan	14 edays	Mon 6/24/19	Mon 7/8/19	70
72	Draft Final Plan for NBBW CSE and OS	0 edays	Mon 7/8/19	Mon 7/8/19	71
73	EPA Review/Comment on Draft Final Plan	79 edays	Mon 7/8/19	Wed 9/25/19	72
74	Resolution of EPA Comments and Prepare 2nd Draft Final Plan	30 edays	Wed 9/25/19	Fri 10/25/19	73
75	EPA Review of 2nd Draft Final Plan	7 edays	Fri 10/25/19	Fri 11/1/19	74
76	CDPHE Review and Comment on 2nd Draft Final Plan	266 edays	Fri 11/1/19	Fri 7/24/20	75
77	Resolution of Consolidated Comments and Prepare Final Plan	48 edays	Fri 7/24/20	Thu 9/10/20	76
78	EPA Review and Approval of Final Plan	22 edays	Thu 9/10/20	Fri 10/2/20	77
79	First Draft NBBW CSE/OS Report	90 edays	Fri 10/2/20	Thu 12/31/20	78,68,44
80	EPA Review and Comment on First Draft NBBW CSE/OS Report	21 edays	Thu 12/31/20	Thu 1/21/21	79
81	2nd Draft NBBW CSE/OS Report	21 edays	Thu 1/21/21	Thu 2/11/21	80
82	Subcommittee Review and Comment of 2nd Draft NBBW CSE/OS Report	21 edays	Thu 2/11/21	Thu 3/4/21	81
83	Draft Final NBBW CSE/OS Report	21 edays	Thu 3/4/21	Thu 3/25/21	82
84	Subcommittee Review and Comment of Draft Final NBBW CSE/OS Report	21 edays	Thu 3/25/21	Thu 4/15/21	83
85	Final NBBW CSE/OS Report	14 edays	Thu 4/15/21	Thu 4/29/21	84
86	Subcommittee Review and EPA Approval of Final NBBW CSE/OS Report	14 edays	Thu 4/29/21	Thu 5/13/21	85
87	Effectiveness Evaluation of North End Extraction Systems	182 edays	Thu 12/31/20	Thu 7/1/21	79
88	Draft Work Plan	35 edays	Thu 12/31/20	Thu 2/4/21	79
89	EPA Review and Comment	21 edays	Thu 2/4/21	Thu 2/25/21	88
90	Final Work Plan	14 edays	Thu 2/25/21	Thu 3/11/21	89
91	EPA Approval	14 edays	Thu 3/11/21	Thu 3/25/21	90
92	Effectiveness Evalaution and Draft Report	56 edays	Thu 3/25/21	Thu 5/20/21	91
93	EPA Review and Comment	21 edays	Thu 5/20/21	Thu 6/10/21	92
94	Final Effectiveness Report	14 edays	Thu 6/10/21	Thu 6/24/21	93
95	EPA Review and Approval	7 edays	Thu 6/24/21	Thu 7/1/21	94
96					

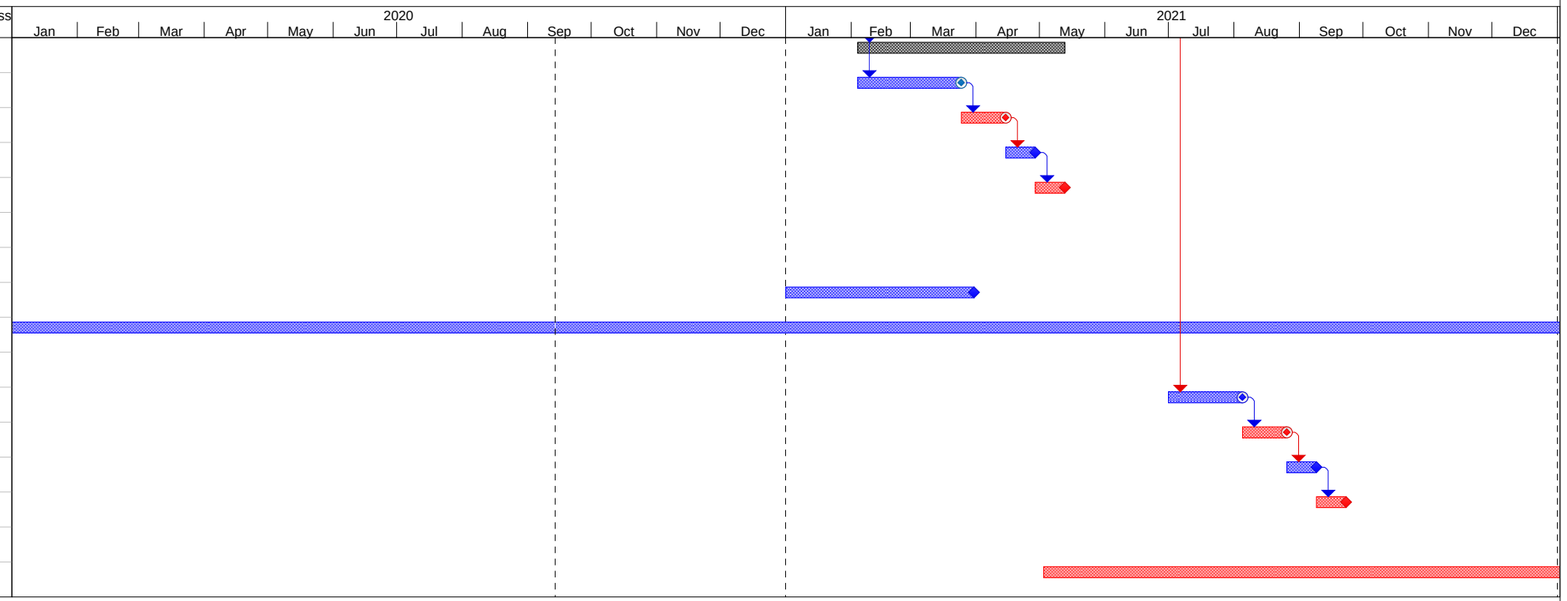


Project: 1H2020 O&M Status Report
Date: 14Sept 2020

Task	Rolled Up Task	External Tasks	Inactive Task	Manual Task	Start-only	Progress			
Split	Rolled Up Split	Project Summary	Inactive Milestone	Duration-only	Finish-only	External Milestone			
Milestone	Rolled Up Milestone	External Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks				
Summary	Rolled Up Progress	Deadline	Inactive Summary	Manual Summary	External Milestone				

Figure 9.1
Master Schedule

ID	Task Name	Duration	Start	Finish	Predecess
97	Effectiveness Evaluations for MW38, NTES, and Perimeter Extraction	98 edays	Thu 2/4/21	Thu 5/13/21	88
98	Effectiveness Evalautions and Draft Report	49 edays	Thu 2/4/21	Thu 3/25/21	88
99	EPA Review and Comment	21 edays	Thu 3/25/21	Thu 4/15/21	98
100	Final Effectiveness Report	14 edays	Thu 4/15/21	Thu 4/29/21	99
101	EPA Review and Approval	14 edays	Thu 4/29/21	Thu 5/13/21	100
102					
103	**Other Items**	1519 edays	Mon 1/1/18	Mon 2/28/22	
104	2H 2020 O&M Status Report	89 edays	Fri 1/1/21	Wed 3/31/21	
105	WTP Periodic Compliance Reports	2000 edays	Mon 1/1/18	Sat 6/24/23	
106					
107	Update Groundwater Extraction O&M Manual	35 edays	Thu 7/1/21	Thu 8/5/21	95
108	Agency Review and Comment	21 edays	Thu 8/5/21	Thu 8/26/21	107
109	Finalize Updated GWE O&M Manual	14 edays	Thu 8/26/21	Thu 9/9/21	108
110	Agency Review and Approval of Updated GWE O&M Manual	14 edays	Thu 9/9/21	Thu 9/23/21	109
111					
112	Fifth Five Year Review (18 months to prepare)	513 edays	Mon 5/3/21	Wed 9/28/22	



Project: 1H2020 O&M Status Report
Date: 14Sept 2020

Task	Rolled Up Task	External Tasks	Inactive Task	Manual Task	Start-only	Progress
Split	Rolled Up Split	Project Summary	Inactive Milestone	Duration-only	Finish-only	External Milestone
Milestone	Rolled Up Milestone	External Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	
Summary	Rolled Up Progress	Deadline	Inactive Summary	Manual Summary	External Milestone	

APPENDIX A

WATER TREATMENT PLANT

APPENDIX A-1

WTP WEEKLY SUMMARIES AND STANDARD OPERATIONS CHECKLISTS

See the folder on this DVD

APPENDIX A-2

NBBW SUMP GRAPH

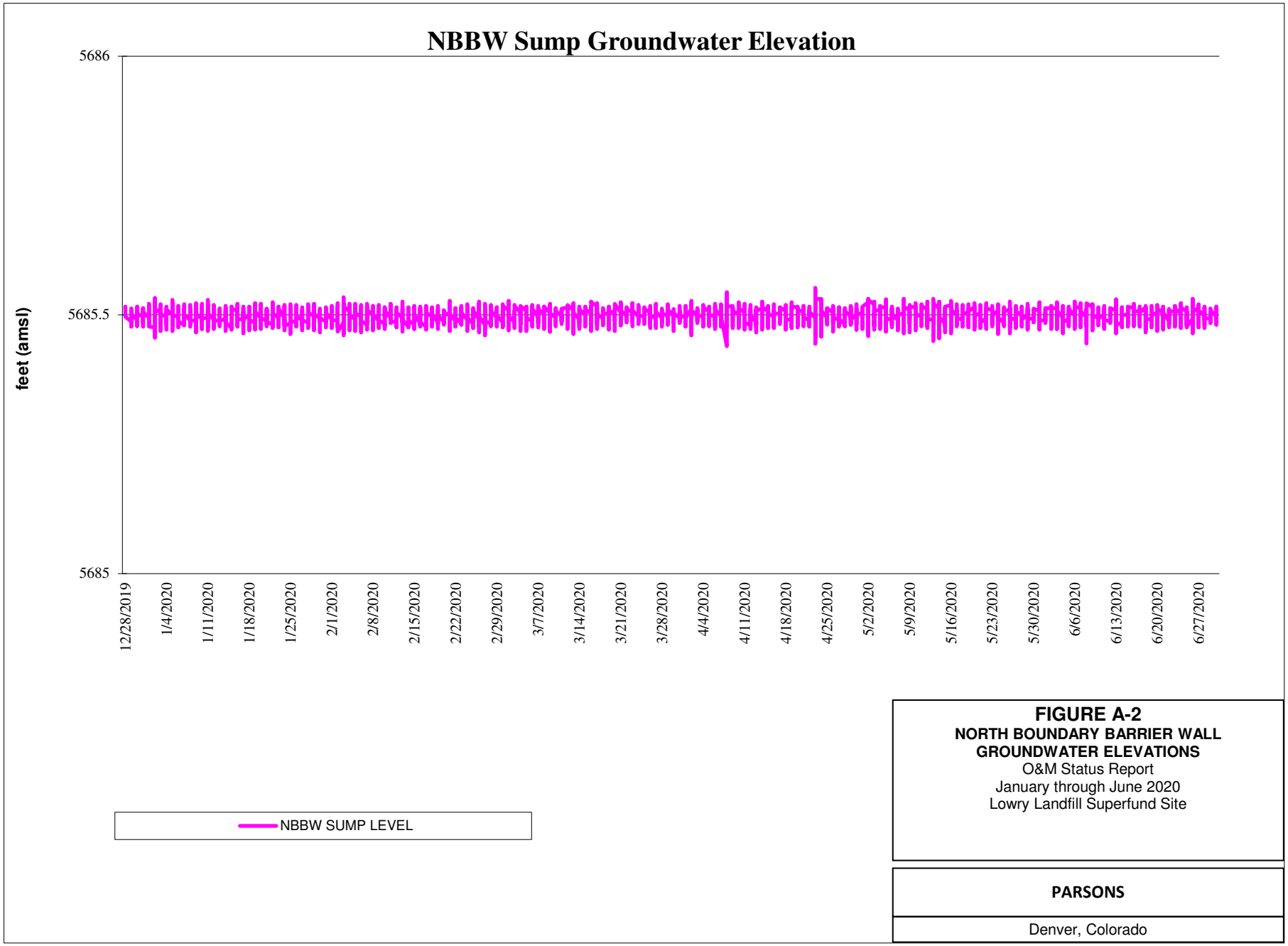


FIGURE A-2
NORTH BOUNDARY BARRIER WALL
GROUNDWATER ELEVATIONS
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

PARSONS
Denver, Colorado

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Figure A-2.xlsx

APPENDIX A-3

SLUDGE ANALYSIS DATA

APPENDIX A-3
WTP SLUDGE RESULTS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Parameter Name	Method	Units [a/]	Regulatory Limit[b/]	WTP SLUDGE 6/9/2020	RL/Lc[c/]
Uranium-234	ASTM D2907	pCi/g	1590	16.763 +/- 2.36	0.0097
Uranium-235	ASTM D2907	pCi/g	1800	0.92 +/- 0.3	0.0098
Uranium-238	ASTM D2907	pCi/g	1940	12.63 +/- 1.84	0.01
Plutonium-238	EPA 600/7-79-081	pCi/g	540	-0.012 +/- 0.14	0.5
Plutonium-239/240	EPA 600/7-79-081	pCi/g	1090	0.18 +/- 0.24	0.03
Americium-241	ER110 LANL	pCi/g	646	0.027 +/- 0.048	0.015
Arsenic	TCLP[d/]/6010B	mg/L	5	0.032 J	0.5
Barium	TCLP/6010B	mg/L	100	0.28 J	10
Cadmium	TCLP/6010B	mg/L	1	0.1 U	0.1
Chromium	TCLP/6010B	mg/L	6	0.5 U	0.5
Lead	TCLP/6010B	mg/L	5	0.5 U	0.5
Selenium	TCLP/6010B	mg/L	1	0.25 U	0.25
Silver	TCLP/6010B	mg/L	5	0.5 U	0.5
Mercury	TCLP/7470A	mg/L	0.2	0.002 U	0.002
2,4-D	TCLP/8151A	mg/L	10	0.04 U	0.04
1,1-Dichloroethene	TCLP/8260B	mg/L	0.7	0.01 U	0.01
1,2-Dichloroethane	TCLP/8260B	mg/L	0.5	0.01 U	0.01
2-Butanone (MEK)	TCLP/8260B	mg/L	200	0.05 U	0.05
Benzene	TCLP/8260B	mg/L	0.5	0.01 U	0.01
Carbon tetrachloride	TCLP/8260B	mg/L	0.5	0.01 U	0.01
Chlorobenzene	TCLP/8260B	mg/L	100	0.01 U	0.01
Chloroform	TCLP/8260B	mg/L	6	0.01 U	0.01
Tetrachloroethene	TCLP/8260B	mg/L	0.7	0.01 U	0.01
Trichloroethene	TCLP/8260B	mg/L	0.5	0.01 U	0.01
Vinyl chloride	TCLP/8260B	mg/L	0.2	0.02 U	0.02
1,4-Dichlorobenzene	TCLP/8270C	mg/L	7.5	0.02 U	0.02
2,4,5-Trichlorophenol	TCLP/8270C	mg/L	400	0.05 U	0.05
2,4,6-Trichlorophenol	TCLP/8270C	mg/L	2	0.025 U	0.025
2,4-Dinitrotoluene	TCLP/8270C	mg/L	0.13	0.05 U	0.05
2-Methylphenol	TCLP/8270C	mg/L	200	0.05 U	0.05
3 & 4 Methylphenol	TCLP/8270C	mg/L	200	0.05 U	0.05
Hexachlorobenzene	TCLP/8270C	mg/L	0.13	0.05 U	0.05
Hexachlorobutadiene	TCLP/8270C	mg/L	0.5	0.05 U	0.05
Hexachloroethane	TCLP/8270C	mg/L	3	0.05 U	0.05
Nitrobenzene	TCLP/8270C	mg/L	2	0.05 U	0.05
Pentachlorophenol	TCLP/8270C	mg/L	100	0.25 U	0.25
Pyridine	TCLP/8270C	mg/L	5	0.1 U	0.1
Total Cresols	TCLP/8270C	mg/L	200	0.05 U	0.05

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 2009)

c/ RL/Lc = Reporting Limit/Critical Value

d/ 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

COMPLIANCE SUMMARY OF TREATMENT PLANT EFFLUENT (MP-001) WATER QUALITY

APPENDIX A-4.1.1

COMPLIANCE SUMMARY OF 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→	1/6/2020	1/6/2020	1/6/2020	1/7/2020	1/7/2020	1/7/2020				
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/]	16	19	16	16	19	15	16.833333	47876	0.0067	0.032

Date→	2/3/2020	2/3/2020	2/3/2020	2/4/2020	2/4/2020	2/4/2020				
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	17	17	18	19	17	19	17.833333	45828	0.0068	0.032

Date→	3/2/2020	3/2/2020	3/2/2020	3/3/2020	3/3/2020	3/3/2020				
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	15	15	16	15	14	14	14.833333	47555	0.0059	0.032

Date→	4/6/2020	4/6/2020	4/6/2020	4/7/2020	4/7/2020	4/7/2020				
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	16	16	16	17	15	15	15.833333	50973	0.0067	0.032

Date→	5/4/2020	5/4/2020	5/4/2020	5/5/2020	5/5/2020	5/5/2020				
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	18	14	14	14	15	16	15.166667	50038	0.0063	0.032

Date→	6/1/2020	6/1/2020	6/1/2020	6/2/2020	6/2/2020	6/2/2020				
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	17	16	14	15	17	14	15.5	49734	0.0064	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 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→	1/6/2020 12:00	1/6/2020 16:00	1/6/2020 20:00	1/7/2020 00:00	1/7/2020 04:00	1/7/2020 08:00			
Compound	Conc (ug/L[a/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	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	NA[c/]	0
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
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	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,2,3-Trichloropropane	3 U	3 U	3 U	3 U	3 U	3 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	NA	0
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
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
2-Butanone (MEK)	20 U	20 U	20 U	20 U	20 U	20 U	0	NA	0
2-Chloroethylvinylether [b/]	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	0.57 J	2 U	2 U	2 U	2 U	0.1 J	NA	0.57 J
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
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
Chloromethane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	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
Dichlorodifluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 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
o-Xylene	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	NA	0
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	1500	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	5.1 U	5.1 U	5.1 U	5.2 U	5.1 U	5.2 U	0	NA	0

Date/Time→	4/6/20 12:00	4/6/20 16:00	4/6/20 20:00	4/7/2020 00:00	4/7/20 04:00	4/7/20 08:00			
Compound	Conc (ug/L[a/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Average conc (ug/L)	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	NA[c/]	0
1,1,1-Trichloroethane	2.1	2.3	2.5	2.3	2.3	2.3	2.3	NA	2.5
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	32	32	32	33	32	31	32.2	NA	33
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	NA	0
1,2,3-Trichloropropane	3 U	3 U	3 U	3 U	3 U	3 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	0.6 J	0.59 J	0.36 J	0.56 J	0.64 J	0.5 J	0.54 J	NA	0.64 J
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
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 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
Chloroform	0.37 J	1 U	0.39 J	1 U	0.4 J	0.36 J	0.27 J	NA	0.4 J
Chloromethane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	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
Dichlorodifluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	0	NA	0
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 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
o-Xylene	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	NA	0
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	0	1500	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	5.6 U	5.2 U	5.4 U	5.5 U	5.2 U	5.4 U	0	NA	0

a/ ug/L = micrograms per liter

b/ resampled for lab QC failure (1/20/20 and 1/21/20)

c/ NA = Not applicable - No permit limit

Frequency: Quarterly

Methods: Volatile Organic Compounds 8260B

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 TREATMENT PLANT EFFLUENT (MP-001)WATER QUALITY

METALS
AND
SEMIVOLATILE VOLATILE 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**	**1/6 and 1/7/2020**	**2/3 and 2/4/2020**	**3/2 and 3/3/2020**	**4/6 and 4/7/2020**	**4/21 and 4/22/2020**	**5/4 and 5/5/2020**	**6/1 and 6/2/2020**
1,2,4-Trichlorobenzene	ug/L[a/]	NA[b/]	Quarterly	9.5 U	NAn[c/]	NAn	9.5 U	NAn	NAn	NAn
2,4,6-Trichlorophenol	ug/L	NA	Quarterly	19 U	NAn	NAn	19 U	NAn	NAn	NAn
2,4-Dichlorophenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
2,4-Dimethylphenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
2,4-Dinitrophenol	ug/L	NA	Quarterly	57 U	NAn	NAn	57 U	NAn	NAn	NAn
2,4-Dinitrotoluene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
2,6-Dinitrotoluene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
2-Chloronaphthalene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
2-Chlorophenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
2-Methylnaphthalene	ug/L	NA	Quarterly	3.8 U	NAn	NAn	3.8 U	NAn	NAn	NAn
2-Nitrophenol	ug/L	NA	Quarterly	19 U	NAn	NAn	19 U	NAn	NAn	NAn
3,3'-Dichlorobenzidine	ug/L	NA	Quarterly	47 U	NAn	NAn	47 U	NAn	NAn	NAn
4,6-Dinitro-2-Methylphenol	ug/L	NA	Quarterly	57 U	NAn	NAn	57 U	NAn	NAn	NAn
4-Bromophenyl phenyl ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
4-Chloro-3-Methylphenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
4-Chlorophenyl phenyl ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
4-Nitrophenol	ug/L	NA	Quarterly	47 U	NAn	NAn	47 U	NAn	NAn	NAn
Acenaphthene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Acenaphthylene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Acetophenone	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
aniline	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Anthracene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Benzidine[d/]	ug/L	NA	Quarterly		150 U	NAn	140 U	NAn	NAn	NAn
Benzo(a)anthracene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Benzo(a)pyrene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Benzo(b)fluoranthene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Benzo(g,h,i)Perylene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Benzo(k)fluoranthene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Benzoic Acid	ug/L	NA	Quarterly	57 U	NAn	NAn	57 U	NAn	NAn	NAn
Bis(2-Chloroethoxy)methane	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Bis(2-Chloroethyl)Ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Bis(2-Chloroisopropyl) Ether	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
bis(2-Ethylhexyl)phthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Butyl benzyl phthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
C10	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
C18	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Carbazole	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Chrysene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Dibenz(a,h)anthracene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Diethylphthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Dimethylphthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Di-N-Butylphthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Di-n-octylphthalate	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Fluoranthene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Fluorene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Hexachlorobenzene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Hexachlorobutadiene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Hexachlorocyclopentadiene	ug/L	NA	Quarterly	47 U	NAn	NAn	47 U	NAn	NAn	NAn
Hexachloroethane[d/]	ug/L	NA	Quarterly		10 U	NAn	9.5 U	NAn	NAn	NAn

Compound	Units	Permit Limit	Frequency	1/6 and 1/7/2020	2/3 and 2/4/2020	3/2 and 3/3/2020	4/6 and 4/7/2020	4/21 and 4/22/2020	5/4 and 5/5/2020	6/1 and 6/2/2020
Indeno(1,2,3-c,d)pyrene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Isophorone	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Naphthalene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Nitrobenzene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
N-Nitrosodimethylamine	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
N-Nitroso-Di-N-Propylamine	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
N-Nitrosodiphenylamine	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Pentachlorophenol	ug/L	NA	Quarterly	57 U	NAn	NAn	57 U	NAn	NAn	NAn
Phenanthrene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Phenol	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Pyrene	ug/L	NA	Quarterly	9.5 U	NAn	NAn	9.5 U	NAn	NAn	NAn
Pyridine	ug/L	NA	Quarterly	19 U	NAn	NAn	19 U	NAn	NAn	NAn
Cadmium	ug/L	3400	Yearly	1 U	NAn	NAn	0.13 J	NAn	NAn	NAn
Copper	ug/L	6100	Yearly	20	NAn	NAn	20	NAn	NAn	NAn
Molybdenum	ug/L	430	Quarterly	190	NAn	NAn	280	200	230	220
Nickel	ug/L	5600	Quarterly	5.2	NAn	NAn	4.5	NAn	NAn	NAn
Selenium	ug/L	660	Quarterly	19	NAn	NAn	19	NAn	NAn	NAn
Zinc	ug/L	15600	Quarterly	4.8 U	NAn	NAn	2.3 J	NAn	NAn	NAn
Arsenic	ug/L	330	Yearly	4.6 J	NAn	NAn	15 U	NAn	NAn	NAn
Chromium	ug/L	3600	Yearly	10 U	NAn	NAn	10 U	NAn	NAn	NAn
Lead	ug/L	2200	Yearly	9 U	NAn	NAn	9 U	NAn	NAn	NAn
Silver	ug/L	2900	Yearly	1.2 J	NAn	NAn	10 U	NAn	NAn	NAn
Mercury	ug/L	130	Yearly	0.2 U	NAn	NAn	0.12 U	NAn	NAn	NAn
pH	pH Units	>5	Monthly	7.37	7.12	7.08	7.01	7.02	7.00	6.99

a/ ug/L = micrograms per liter

b/ NA = Not applicable - No permit limit

c/ Nan = Not analyzed

d/ resampled because quality control for analysis failed

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 TREATMENT PLANT EFFLUENT (MP-001)WATER QUALITY RADIONUCLIDES

APPENDIX A-4.1.4
SUMMARY OF TREATMENT PLANT EFFLUENT WATER QUALITY
RADIONUCLIDES (MP-001)

Isotope		Conc (pCi/L)[b/]	FINAL Q	MDC[c/]	CSU[d/]	Result minus CSU	Daily Maximum Value (pCi/L)	Permit Limit (pCi/L)
Americium-241	1/6 and 1/7/2020[a/]	0	UJ	0.0907	0.032	-0.032	-0.032	NA[e/]
Alpha, Gross	1/6 and 1/7/2020	9.931	UJ+	10.63	4.12	5.811	5.811	NA
Beta, Gross	1/6 and 1/7/2020	6.92	UJ+	17.04	5.02	1.9	1.9	NA
Plutonium-238	1/6 and 1/7/2020	0.026	UJ	0.077	0.045	-0.019	-0.019	NA
Plutonium-239/240	1/6 and 1/7/2020	0.031	J	0.0941	0.053	-0.022	-0.022	NA
Radium-226	1/6 and 1/7/2020	0.079	J	0.319	0.17	-0.091	-0.091	NA
Radium-228	1/6 and 1/7/2020	0.669	J	0.783	0.43	0.239	0.239	NA
Total Radium	1/6 and 1/7/2020	0.097	UJ	0.278	0.11	-0.013	-0.013	NA
Americium-241	4/6 and 4/7/2020[a/]	0.026	J	0.09135	0.05	-0.024	-0.024	NA
Alpha, Gross	4/6 and 4/7/2020	26.97	J+	15.59	6.884	20.086	20.086	NA
Beta, Gross	4/6 and 4/7/2020	7.885	U	14.6	4.466	3.419	3.419	NA
Plutonium-238	4/6 and 4/7/2020	0.004	UJ	0.072	0.026	-0.022	-0.022	NA
Plutonium-239/240	4/6 and 4/7/2020	0.008	J	0.0611	0.026	-0.017	-0.017	NA
Radium-226	4/6 and 4/7/2020	0.381	J	0.258	0.283	0.098	0.098	NA
Radium-228	4/6 and 4/7/2020	0.983		0.89	0.431	0.552	0.552	NA
Total Radium	4/6 and 4/7/2020	3.71	J+	0.198	0.557	3.153	3.153	NA

a/ Duration of test - 24 hours beginning 08:00 a.m.and ending 08:00 a.m on the next day

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

(VOCs)

INDIVIDUAL AND COMPOSITE DATA

APPENDIX A-4.2.1
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
(Volatile Organic Compounds)
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

	Sampling Date►		1/6/2020						
			INFLUENT SOURCE CONCENTRATIONS						
			TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP3310[f/]	
	% of Flow►		3%	22%	7%	43%	23%	3%	
Parameter Name	Permit Limit[g/]	Units							Composite Concentration
1,1,1,2-Tetrachloroethane	NA[h/]	ug/L[i/]	NAn[j/]	NAn	NAn	NAn	NAn	NAn	
1,1,1-Trichloroethane	NA	ug/L	33	99	0.38	3.3	< 0.16	< 32	23.72
1,1,2,2-Tetrachloroethane	NA	ug/L	< 1.1	< 4.2	< 0.21	< 0.21	< 0.21	< 42	0.00
1,1,2-Trichloroethane	NA	ug/L	< 1.4	< 5.4	< 0.27	< 0.27	< 0.27	< 54	0.00
1,1-Dichloroethane	NA	ug/L	85	240	14	6	< 0.22	210	63.13
1,1-Dichloroethene	NA	ug/L	27	80	0.51	4.1	< 0.23	< 46	20.56
1,2,3-Trichloropropane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,2-Dibromoethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,2-Dichlorobenzene	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,2-Dichloroethane	NA	ug/L	19	5.9	2.1	0.3	< 0.13	5100	134.71
1,2-Dichloropropane	NA	ug/L	< 0.9	< 3.6	< 0.18	< 0.18	< 0.18	< 36	0.00
1,3-Dichlorobenzene	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,4-Dichlorobenzene	NA	ug/L	1.8	< 3.2	0.37	< 0.16	< 0.16	68	1.85
2-Butanone (MEK)	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
2-Chloroethylvinylether	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
2-Hexanone	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
4-Methyl-2-pentanone (MIBK)	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Acetone	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Acrolein	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Acrylonitrile	NA	ug/L	< 7	< 28	< 1.4	< 1.4	< 1.4	< 280	0.00
Benzene	NA	ug/L	< 0.8	< 3.2	< 0.16	< 0.16	< 0.16	710	18.46
Bromodichloromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Bromoform	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Bromomethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Carbon Disulfide	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Carbon Tetrachloride	NA	ug/L	< 0.95	< 3.8	< 0.19	< 0.19	< 0.19	< 38	0.00
Chlorobenzene	NA	ug/L	< 0.85	< 3.4	< 0.17	< 0.17	< 0.17	< 34	0.00
Chloroethane	NA	ug/L	< 2.1	< 8.2	< 0.41	< 0.41	< 0.41	< 82	0.00
Chloroform	NA	ug/L	2.8	7.2	4.7	< 0.16	< 0.16	70	3.77
Chloromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
cis-1,2-Dichloroethene	NA	ug/L	330	970	4.6	15	< 0.15	44	226.35
cis-1,3-Dichloropropene	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Dibromochloromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Dibromomethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Dichlorodifluoromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Ethylbenzene	NA	ug/L	< 0.8	< 3.2	< 0.16	< 0.16	< 0.16	160	4.16
Methylene Chloride	NA	ug/L	< 4.7	< 19	< 0.94	< 0.94	< 0.94	< 190	0.00
Methyl-t-butyl ether	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	

APPENDIX A-4.2.1
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
(Volatile Organic Compounds)
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

	Sampling Date►		2/4/2020						
			INFLUENT SOURCE CONCENTRATIONS						
			TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP3310[f/]	
	% of Flow►		2%	22%	8%	44%	22%	3%	
Parameter Name	Permit Limit[g/]	Units							Composite Concentration
1,1,1,2-Tetrachloroethane	NA[h/]	ug/L[i/]	NAn	NAn	NAn	NAn	NAn	NAn	
1,1,1-Trichloroethane	NA	ug/L	14	70	0.28	2.9	< 0.16	0.52	16.69
1,1,2,2-Tetrachloroethane	NA	ug/L	< 0.21	< 2.1	< 0.21	< 0.21	< 0.21	< 0.21	0.00
1,1,2-Trichloroethane	NA	ug/L	< 0.27	< 2.7	< 0.27	< 0.27	< 0.27	< 0.27	0.00
1,1-Dichloroethane	NA	ug/L	36	160	9.9	4.4	< 0.22	84	40.12
1,1-Dichloroethene	NA	ug/L	11	56	< 0.23	3.7	< 0.23	5.3	14.07
1,2,3-Trichloropropane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,2-Dibromoethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,2-Dichlorobenzene	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,2-Dichloroethane	NA	ug/L	7.3	< 1.3	0.61	0.26	< 0.13	3600	117.30
1,2-Dichloropropane	NA	ug/L	< 0.18	< 1.8	< 0.18	< 0.18	< 0.18	< 0.18	0.00
1,3-Dichlorobenzene	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
1,4-Dichlorobenzene	NA	ug/L	0.64	< 1.6	< 0.16	< 0.16	< 0.16	25	0.66
2-Butanone (MEK)	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
2-Chloroethylvinylether	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
2-Hexanone	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
4-Methyl-2-pentanone (MIBK)	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Acetone	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Acrolein	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Acrylonitrile	NA	ug/L	< 1.4	< 14	< 1.4	< 1.4	< 1.4	< 1.4	0.00
Benzene	NA	ug/L	< 0.16	< 1.6	< 0.16	< 0.16	< 0.16	780	22.10
Bromodichloromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Bromoform	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Bromomethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Carbon Disulfide	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Carbon Tetrachloride	NA	ug/L	< 0.19	< 1.9	< 0.19	< 0.19	< 0.19	< 0.19	0.00
Chlorobenzene	NA	ug/L	< 0.17	< 1.7	< 0.17	< 0.17	< 0.17	10	0.26
Chloroethane	NA	ug/L	< 0.41	< 4.1	< 0.41	< 0.41	< 0.41	170	4.42
Chloroform	NA	ug/L	0.59	< 1.6	3.1	< 0.16	< 0.16	8	0.72
Chloromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
cis-1,2-Dichloroethene	NA	ug/L	140	670	3	11	< 0.15	23	153.04
cis-1,3-Dichloropropene	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Dibromochloromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Dibromomethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Dichlorodifluoromethane	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	
Ethylbenzene	NA	ug/L	< 0.16	< 1.6	< 0.16	< 0.16	< 0.16	170	4.42
Methylene Chloride	NA	ug/L	< 0.94	< 9.4	< 0.94	< 0.94	< 0.94	3.2	0.08
Methyl-t-butyl ether	NA	ug/L	NAn	NAn	NAn	NAn	NAn	NAn	

APPENDIX A-4.2.1
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
(Volatile Organic Compounds)
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

	Sampling Date►		4/7/2020						
			INFLUENT SOURCE CONCENTRATIONS						
			TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP3310[f/]	
	% of Flow►		4%	21%	6%	41%	25%	3%	
Parameter Name	Permit Limit[g/]	Units							Composite Concentration
1,1,1,2-Tetrachloroethane	NA[h/]	ug/L[i/]	< 0.4	< 2	< 0.2	< 0.2	< 0.2	< 40	
1,1,1-Trichloroethane	NA	ug/L	17	73	0.29	2.3	< 0.2	< 41	16.71
1,1,2,2-Tetrachloroethane	NA	ug/L	< 0.25	< 1.2	< 0.12	< 0.12	< 0.12	< 25	0.00
1,1,2-Trichloroethane	NA	ug/L	< 0.46	< 2.3	< 0.23	< 0.23	< 0.23	< 46	0.00
1,1-Dichloroethane	NA	ug/L	44	190	11	4.3	< 0.2	71	45.50
1,1-Dichloroethene	NA	ug/L	14	65	0.3	3.7	< 0.24	< 48	15.50
1,2,3-Trichloropropane	NA	ug/L	< 0.59	< 2.9	< 0.29	< 0.29	< 0.29	< 59	
1,2-Dibromoethane	NA	ug/L	< 0.43	< 2.2	< 0.22	< 0.22	< 0.22	< 43	
1,2-Dichlorobenzene	NA	ug/L	< 0.34	< 1.7	< 0.17	< 0.17	< 0.17	< 34	
1,2-Dichloroethane	NA	ug/L	12	2.6	0.52	< 0.17	< 0.17	4000	117.07
1,2-Dichloropropane	NA	ug/L	< 0.36	< 1.8	< 0.18	< 0.18	< 0.18	< 36	0.00
1,3-Dichlorobenzene	NA	ug/L	< 0.33	< 1.6	< 0.16	< 0.16	< 0.16	< 33	
1,4-Dichlorobenzene	NA	ug/L	< 0.31	< 1.6	< 0.16	< 0.16	< 0.16	< 31	0.00
2-Butanone (MEK)	NA	ug/L	< 2.9	< 14	< 1.4	< 1.4	< 1.4	3700	
2-Chloroethylvinylether	NA	ug/L	< 0.42	< 2.1	< 0.21	< 0.21	< 0.21	< 42	
2-Hexanone	NA	ug/L	< 0.84	< 4.2	< 0.42	< 0.42	< 0.42	< 84	
4-Methyl-2-pentanone (MIBK)	NA	ug/L	< 0.93	< 4.6	< 0.46	< 0.46	< 0.46	< 93	
Acetone	NA	ug/L	< 16	< 80	< 8	< 8	< 8	3300	95.70
Acrolein	NA	ug/L	< 3.6	< 18	< 1.8	< 1.8	< 1.8	< 360	
Acrylonitrile	NA	ug/L	< 2.2	< 11	< 1.1	< 1.1	< 1.1	< 220	0.00
Benzene	NA	ug/L	< 0.36	< 1.8	< 0.18	< 0.18	< 0.18	800	23.20
Bromodichloromethane	NA	ug/L	< 0.31	< 1.5	< 0.15	< 0.15	< 0.15	< 31	
Bromoform	NA	ug/L	< 1.3	< 6.7	< 0.67	< 0.67	< 0.67	< 130	
Bromomethane	NA	ug/L	< 2.2	< 11	< 1.1	< 1.1	< 1.1	< 220	
Carbon Disulfide	NA	ug/L	< 0.64	< 3.2	< 0.32	< 0.32	< 0.32	< 64	
Carbon Tetrachloride	NA	ug/L	< 0.48	< 2.4	< 0.24	< 0.24	< 0.24	< 48	0.00
Chlorobenzene	NA	ug/L	< 0.35	< 1.8	< 0.18	< 0.18	< 0.18	< 35	0.00
Chloroethane	NA	ug/L	< 0.71	< 3.6	< 0.36	< 0.36	< 0.36	< 71	0.00
Chloroform	NA	ug/L	0.73	< 2.2	4.1	< 0.22	< 0.22	< 44	0.29
Chloromethane	NA	ug/L	< 1.1	< 5.7	< 0.57	< 0.57	< 0.57	< 110	
cis-1,2-Dichloroethene	NA	ug/L	170	730	3.5	10	< 0.15	< 30	157.74
cis-1,3-Dichloropropene	NA	ug/L	< 0.28	< 1.4	< 0.14	< 0.14	< 0.14	< 28	
Dibromochloromethane	NA	ug/L	< 0.43	< 2.1	< 0.21	< 0.21	< 0.21	< 43	
Dibromomethane	NA	ug/L	< 0.24	< 1.2	< 0.12	< 0.12	< 0.12	< 24	
Dichlorodifluoromethane	NA	ug/L	1.3	< 3.5	< 0.35	< 0.35	< 0.35	< 69	
Ethylbenzene	NA	ug/L	< 0.36	< 1.8	< 0.18	< 0.18	< 0.18	170	4.93
Methylene Chloride	NA	ug/L	< 0.35	< 1.7	< 0.17	< 0.17	< 0.17	< 35	0.00
Methyl-t-butyl ether	NA	ug/L	1.8	< 1.6	< 0.16	< 0.16	< 0.16	< 32	

Footnotes:

a/ RWST - Raw Water Storage Tank

b/ NBBW - North Boundary Barrier Wall

c/ MW38 Area

d/ North End On-Site water

e/ North End Off-Site water

f/ BTS Tank 3310 influent is comprised of North Toe Extraction System water and Landfill Gas Condensate

g/ 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.

h/ NA - Not Applicable - no limit listed in the Metro permit

i/ µg/L - micrograms per liter

j/ NAn - not analyzed

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 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Date→	1/6/2020	1/6/2020	1/6/2020	1/7/2020	1/7/2020	1/7/2020				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
	TP-110[a/]	TP-120[b/]	TP-140[c/]	TP-150[d/]	TP-160[e/]	TP3310[f/]				
Compound	Conc (ug/L[g/])	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Volume per day[h/]	Total (lbs/day[i/])	Permit Limit[j/] (lbs/day)
1,4-Dioxane[k/]	450	830	< 19	< 19	< 19	19000	695.38	47876	0.28	0.032

Date→	2/3/2020	2/3/2020	2/3/2020	2/4/2020	2/4/2020	2/4/2020				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
	TP-110	TP-120	TP-140	TP-150	TP-160	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	200	640	< 19	20	< 19	17000	592.82	45828	0.23	0.032

Date→	3/2/2020	3/2/2020	3/2/2020	3/3/2020	3/3/2020	3/3/2020				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
	TP-110	TP-120	TP-140	TP-150	TP-160	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	180	710	18	23	2.3	18000	660.27	47555	0.26	0.032

Date→	4/6/2020	4/6/2020	4/6/2020	4/7/2020	4/7/2020	4/7/2020				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
	TP-110	TP-120	TP-140	TP-150	TP-160	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	210	740	18	20	2.2	17000	664.48	50973	0.28	0.032

Date→	5/4/2020	5/4/2020	5/4/2020	5/5/2020	5/5/2020	5/5/2020				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
	TP-110	TP-120	TP-140	TP-150	TP-160	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	260	900	17	21	1.8	18000	616.82	50038	0.26	0.032

Date→	6/1/2020	6/1/2020	6/1/2020	6/2/2020	6/2/2020	6/2/2020				
Time→	12:00	16:00	20:00	0:00	4:00	8:00				
	TP-110	TP-120	TP-140	TP-150	TP-160	TP3310				
Compound	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Conc (ug/L)	Composite Conc (ug/L)	Volume per day	Total (lbs/day)	Permit Limit (lbs/day)
1,4-Dioxane	230	1100	18	23	1.8	18000	657.7262	49734	0.27	0.032

Footnotes:

a/ RWST - Raw Water Storage Tank

b/ NBBW - North Boundary Barrier Wall

c/ MW38 Area

d/ North End On-Site water

e/ North End Off-Site water

f/ BTS Tank 3310 influent is comprised of North Toe Extraction System water and Landfill Gas Condensate

g/ ug/L = micrograms per liter

h/ Volume per day recorded on Composite Sampling Record

i/ lbs/day = pounds per day

j/ 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.

k/ 1,4-Dioxane analyzed by low-level method (SW8260SIM)

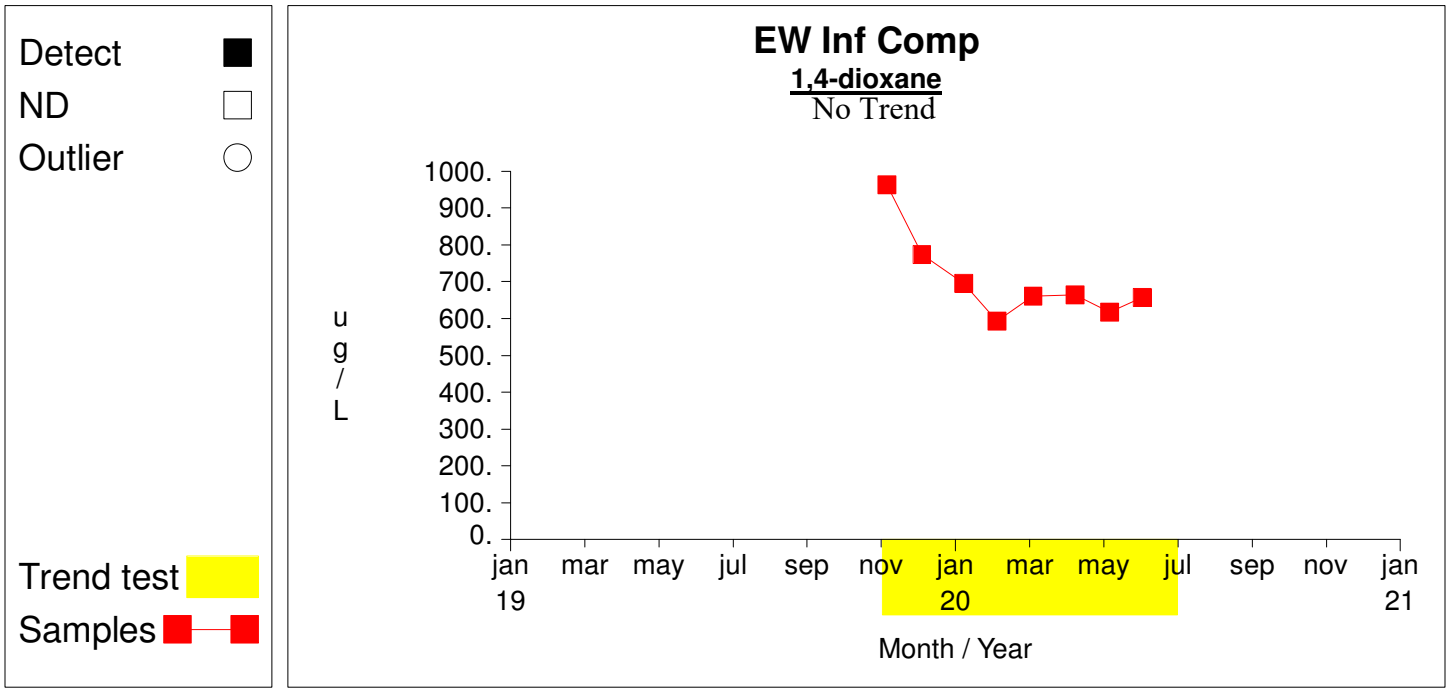
APPENDIX A-4.2.2.2

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(1,4-DIOXANE)

TREND ANALYSIS

Time Series



Graph 1

DUMPSTAT Sen's Test

APPENDIX A-4.2.3

TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

MOLYBDENUM

APPENDIX A-4.2.3.1

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(1,4-DIOXANE)

INDIVIDUAL AND COMPOSITE RESULTS

APPENDIX A-4.2.3.1
SUMMARY OF EARLY WARNING INFLUENT WATER QUALITY
MOLYBDENUM
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Sampling Date	Effluent Limit[g/]	Influent Source	% of Flow	Concentration (ug/L[h/])
1/14/2020	430	TP-110[a/]	3%	0.87
		TP-120[b/]	22%	0.56
		TP-140[c/]	7%	0.97
		TP-150[d/]	43%	430
		TP-160[e/]	23%	2.5
		TP3310[f/]	3%	8.3
		Composite Concentration		**181.65**
2/4/2020	430	TP-110	2%	0.54
		TP-120	22%	0.75
		TP-140	8%	0.85
		TP-150	44%	570
		TP-160	22%	2.7
		TP3310	3%	8
		Composite Concentration		**251.28**
3/3/2020	430	TP-110	2%	0.45
		TP-120	21%	< 0.37
		TP-140	7%	0.61
		TP-150	42%	550
		TP-160	26%	2.8
		TP3310	3%	10
		Composite Concentration		**229.29**
4/21/2020	430	TP-110	2%	0.66
		TP-120	21%	0.49
		TP-140	7%	0.96
		TP-150	41%	490
		TP-160	27%	2.1
		TP3310	2%	9
		Composite Concentration		**280.00**
5/5/2020	430	TP-110	2%	0.47
		TP-120	21%	0.44
		TP-140	8%	0.64
		TP-150	41%	630
		TP-160	27%	2.8
		TP3310	2%	10
		Composite Concentration		**256.91**
6/2/2020	430	TP-110	2%	0.81
		TP-120	21%	0.66
		TP-140	7%	1.4
		TP-150	40%	580
		TP-160	28%	3.3
		TP3310	2%	6.7
		Composite Concentration		**233.33**

Footnotes:

a/ RWST - Raw Water Storage Tank
b/ NBBW - North Boundary Barrier Wall
c/ MW38 Area
d/ North End On-Site water
e/ North End Off-Site water
f/ BTS Tank 3310 influent is comprised of North Toe Extraction System water and Landfill Gas Condensate
g/ Effluent 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.
h/ µg/L - micrograms per liter

Note: Under "Influent Source Concentrations" when a value is shown as "<", the associated numerical value is the reporting limit and indicates the compound is not detected; however, the composite concentration for all influent sources is calculated using 0 as opposed to the RL in accordance with Section E.1(c) of the Discharge Permit No. 2360-6.

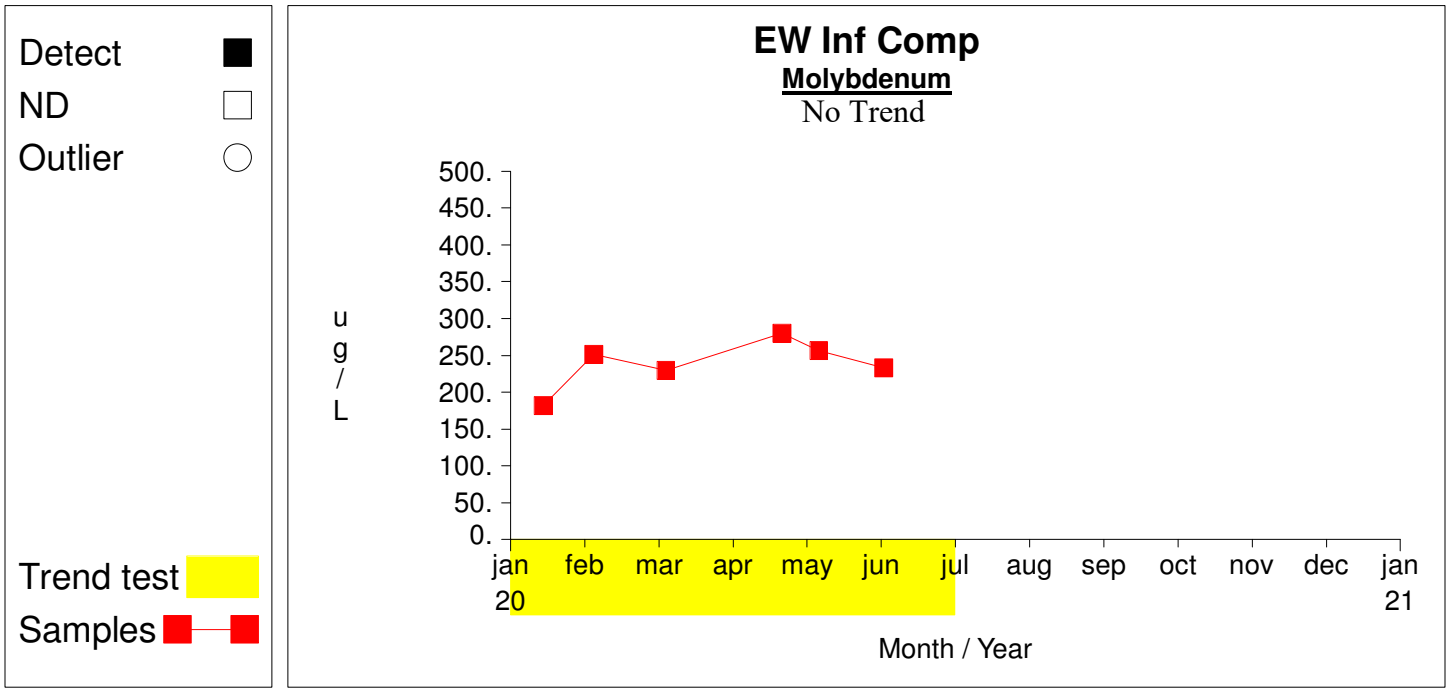
APPENDIX A-4.2.3.2

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(1,4-DIOXANE)

TREND ANALYSIS

Time Series



Graph 1

DUMPSTAT Sen's Test

APPENDIX A-4.2.4

SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY

(METALS RADIONUCLIDES AND SVOCs)

APPENDIX A-4.2.4
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY
METALS AND SVOCs AND RADIONUCLIDES
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Method	Parameter Name[a/]	Permit Limit [b/]	Units[c/]	4/6/20 Result	Final Q[d/]
Metals					
E200.7	Silver	2900	ug/L	0.96	J
E200.7	Chromium	3600	ug/L	10	U
E200.7	Arsenic	330	ug/L	15	U
E200.7	Lead	2200	ug/L	9	U
E200.8	Molybdenum	430	ug/L	250	
E200.8	Nickel	5600	ug/L	5.6	
E200.8	Selenium	660	ug/L	20	
E200.8	Zinc	15600	ug/L	9	J
E200.8	Copper	6100	ug/L	1.9	J
E200.8	Cadmium	3400	ug/L	1	U
E245.1	Mercury	130	ug/L	0.047	J
Semivolatile Organic Compounds					
625	Benzo(g,h,i)Perylene	NA[c/]	ug/L	9.5	U
625	Benzo(k)fluoranthene	NA	ug/L	9.5	U
625	2,4-Dinitrotoluene	NA	ug/L	9.5	U
625	4,6-Dinitro-2-Methylphenol	NA	ug/L	57	U
625	Hexachlorocyclopentadiene	NA	ug/L	47	U
625	Chrysene	NA	ug/L	9.5	U
625	Benzo(a)anthracene	NA	ug/L	9.5	U
625	Pentachlorophenol	NA	ug/L	57	U
625	4-Bromophenyl phenyl ether	NA	ug/L	9.5	U
625	2-Chlorophenol	NA	ug/L	9.5	U
625	Pyridine	NA	ug/L	3.4	J
625	Benzidine	NA	ug/L	140	U
625	Acenaphthylene	NA	ug/L	9.5	U
625	N-Nitrosodiphenylamine	NA	ug/L	9.5	U
625	aniline	NA	ug/L	9.5	U
625	Bis(2-Chloroethoxy)methane	NA	ug/L	9.5	U
625	Benzo(a)pyrene	NA	ug/L	9.5	U
625	Hexachlorobutadiene	NA	ug/L	9.5	U
625	Carbazole	NA	ug/L	9.5	U
625	Di-n-octylphthalate	NA	ug/L	9.5	U
625	Fluorene	NA	ug/L	9.5	U
625	2,4-Dimethylphenol	NA	ug/L	2.6	J
625	Dibenz(a,h)anthracene	NA	ug/L	9.5	U
625	2-Nitrophenol	NA	ug/L	19	U
625	Dimethylphthalate	NA	ug/L	9.5	U
625	Hexachloroethane	NA	ug/L	9.5	U
625	N-Nitrosodimethylamine	NA	ug/L	9.5	U
625	3,3'-Dichlorobenzidine	NA	ug/L	47	U
625	C10	NA	ug/L	9.5	U
625	2,4-Dinitrophenol	NA	ug/L	57	U
625	Acetophenone	NA	ug/L	9.5	U
625	4-Nitrophenol	NA	ug/L	47	U
625	Nitrobenzene	NA	ug/L	9.5	U
625	2-Chloronaphthalene	NA	ug/L	9.5	U
625	Bis(2-Chloroethyl)Ether	NA	ug/L	9.5	U
625	Anthracene	NA	ug/L	9.5	U
625	2,4,6-Trichlorophenol	NA	ug/L	19	U
625	Indeno(1,2,3-c,d)pyrene	NA	ug/L	9.5	U
625	Diethylphthalate	NA	ug/L	9.5	U
625	1,2,4-Trichlorobenzene	NA	ug/L	9.5	U
625	2,6-Dinitrotoluene	NA	ug/L	9.5	U
625	Phenol	NA	ug/L	9.5	U

APPENDIX A-4.2.4
SUMMARY OF TREATMENT PLANT EARLY WARNING INFLUENT WATER QUALITY METALS AND SVOCs AND RADIONUCLIDES
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Method	Parameter Name[a/]	Permit Limit [b/]	Units[c/]	4/6/20 Result	Final Q[d/]
625	Isophorone	NA	ug/L	9.5	U
625	bis(2-Ethylhexyl)phthalate	NA	ug/L	9.5	U
625	Di-N-Butylphthalate	NA	ug/L	9.5	U
625	Butyl benzyl phthalate	NA	ug/L	9.5	U
625	4-Chlorophenyl phenyl ether	NA	ug/L	9.5	U
625	4-Chloro-3-Methylphenol	NA	ug/L	9.5	U
625	C18	NA	ug/L	9.5	U
625	Bis(2-Chloroisopropyl) Ether	NA	ug/L	9.5	U
625	Naphthalene	NA	ug/L	9.5	U
625	Acenaphthene	NA	ug/L	9.5	U
625	2-Methylnaphthalene	NA	ug/L	3.8	U
625	Hexachlorobenzene	NA	ug/L	9.5	U
625	Benzoic Acid	NA	ug/L	57	U
625	Pyrene	NA	ug/L	9.5	U
625	N-Nitroso-Di-N-Propylamine	NA	ug/L	9.5	U
625	Benzo(b)fluoranthene	NA	ug/L	9.5	U
625	Fluoranthene	NA	ug/L	9.5	U
625	Phenanthrene	NA	ug/L	9.5	U
625	2,4-Dichlorophenol	NA	ug/L	9.5	U
Radionuclides					
E.900.0	Alpha, Gross	NA	pCi/l	21.57 +/- 5.48	J+
E.900.0	Beta, Gross	NA	pCi/l	5.94 +/- 3.95	U
EPA 600/7-79-081	Plutonium-238	NA	pCi/l	-0.005 +/- 0.031	UJ
EPA 600/7-79-081	Plutonium-239/240	NA	pCi/l	-0.017 +/- 0.031	UJ
EPA-RA-05	Radium-228	NA	pCi/l	0.72 +/- 0.41	U
ER110 LANL	Americium-241	NA	pCi/l	0.01 +/- 0.061	U
SM 7500-RA-B	Radium-226	NA	pCi/l	0.37 +/- 0.32	J
SM 7500-RA-B	Total Radium	NA	pCi/l	6.57 +/- 0.93	J+

a/ Annual parameter list includes all compounds from the Metro permit except for VOCs 1,4-dioxane, and molybdenum, presented in Tables A-4.2.1 through

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 pCi/L = picoCuries per liter

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 RCRA WASTE

DISPOSED AND TREATED OFFSITE

TABLE B-1
SUMMARY OF WASTE DISPOSED AND TREATED OFFSITE
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Date	Manifest No.	Waste Description	Quantity	Units	Facility	EPA Authorization[a/]
1/31/2020	1187512	WTP Sludge (Profile # 1004322)	15	CY[b/]	DADS[c/]	Not Required by WMP[d/]
5/26/2020	1187513	WTP Sludge (Profile # 1004322)	15	CY	DADS	Not Required by WMP

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/ CY=cubic yards

c/ DADS=Denver Arapahoe Disposal Site

d/ WMP=Waste Management Plan

APPENDIX B-2

WASTE MANIFESTS

11.74 T

Please print or type
(Form designed for use on elite (12-pitch typewriter)

NON-HAZARDOUS WASTE MANIFEST

WM WASTE MANAGEMENT 228.521

1187512

GENERATOR

1. Generator's Mailing Address & Phone
Lowry Environmental Trust
3500 S. Gun Club Road Aurora, CO 80018
303 693-2811

Generator's Project Address

2. Bill to: Lowry Trust
2a. Account # D 7147

3. Transporter: Company Name
Waste Management 403503

3a. Transporter's Phone

4. Transporter: Company Name

4a. Transporter's Phone

5. Designated Management Facility Name and Site Address
Denver Arapahoe Disposal Site
3500 South Gun Club Road
Aurora, CO 80018

5a. Facility's Phone
(720) 876-2620

6. Waste Code/Profile #	Waste Description	Quantity	Units
1004322	Non Regulated Solid "WWTP Sludge"	15	yd3

NON-FRIABLE ASBESTOS WASTE ONLY (Friable may not be shipped on this manifest)

Waste Code/Profile #	Waste Description	Quantity	Units or Drums
	Non-Friable Asbestos		

7. Regulatory Agency:
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246

24 HOUR EMERGENCY PHONE NUMBER
(_ _ _) _ _ _ – _ _ _ _

8. Contractor/Generator Certification:
I hereby certify that the above described waste is not hazardous waste as defined by federal, state or local regulations and does not contain regulated quantities of PCB's or radioactive materials. This waste has been accurately classified, described, packaged, marked and labeled and is in proper condition for transportation according to applicable international and governmental regulations.

8a. Contractor/Generator

Printed/Typed Full Name	Signature (Full Name)	Month	Day	Year
Timothy C. Shannon Agent for Lowry Trust		1	30	20

TRANSPORTER

9. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Full Name	Signature (Full Name)	Month	Day	Year

10. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Full Name	Signature (Full Name)	Month	Day	Year

FACILITY

11. Discrepancy Indication Space

Initials of Person noting discrepancy _____ Date _____

12. Ticket # 3528135

13. Management Method/Location ☐ Solidification ☐ Monofill ☒ Landfill ☐ Bio-Beds

Grid Location (if applicable): _____

14. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 11.

Printed/Typed Full Name	Signature (Full Name)	Month	Day	Year
Merrie Clark	mc	1	31	20

TRANSPORTER COPY

11.09T

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

WM WASTE MANAGEMENT 228,521

1187513

GENERATOR

1. Generator's Mailing Address & Phone
Lowry Environmental Trust
3500 S. Gun Club Road Aurora, CO 80018
303 693-2811

Generator's Project Address

2. Bill to: Lowry Trust
2a. Account # D 7147

3. Transporter: Company Name
Waste management - DADS

3a. Transporter's Phone

4. Transporter: Company Name

4a. Transporter's Phone

5. Designated Management Facility Name and Site Address
Denver Arapahoe Disposal Site
3500 South Gun Club Road
Aurora, CO 80018

5a. Facility's Phone
(720) 876-2620

6. Waste Code/Profile #	Waste Description	Quantity	Units
1004322	Non Regulated Solid ~~WWTP Sludge~~	15	yds

NON-FRIABLE ASBESTOS WASTE ONLY (Friable may not be shipped on this manifest)

Waste Code/Profile #	Waste Description	Quantity	Units or Drums
	Non-Friable Asbestos		

7. Regulatory Agency:
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246

24 HOUR EMERGENCY PHONE NUMBER
(_ _ _) _ _ _ – _ _ _ _

8. Contractor/Generator Certification:
I hereby certify that the above described waste is not hazardous waste as defined by federal, state or local regulations and does not contain regulated quantities of PCB's or radioactive materials. This waste has been accurately classified, described, packaged, marked and labeled and is in proper condition for transportation according to applicable international and governmental regulations.

TRANSPORTER

8a. Contractor/Generator
Printed/Typed Full Name: Timothy C. S ~~AGENT FOR~~ Lowry Trust
Signature (Full Name):
Month 5 Day 26 Year 20

9. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Full Name: Guy McWilliams
Signature (Full Name):
Month 5 Day 26 Year 20

10. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Full Name
Signature (Full Name)
Month . Day . Year .

FACILITY

11. Discrepancy indication Space

12. Ticket # 3580705

Initials of Person noting discrepancy _____ Date _____

13. Management Method/Location ☐ Solidification ☐ Monofill ☒ Landfill ☐ Bio-Beds
32

Grid Location (if applicable): _____

14. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 11.

Printed/Typed Full Name: Marie Clark
Signature (Full Name): mc
Month 5 Day 26 Year 20

ORIGINAL – RETURN TO GENERATOR

APPENDIX C

GROUNDWATER

APPENDIX C-1

NEW MONITORING WELL LOGS

NO NEW MONITORING WELLS WERE INSTALLED FROM JANUARY TO JUNE 2020

APPENDIX C-2

MONITORING WELL HYDROGRAPHS

See the folder on this DVD

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.

APPENDIX C-3.1

COMPLIANCE EVALUATION STATISTICAL TESTING

Data Summary Table

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
B-313	1,4-Dioxane	2/27/2018	13		ug/L	0.9
B-313	1,4-Dioxane	5/17/2018	9.6		ug/L	0.9
B-313	1,4-Dioxane	6/27/2018	12		ug/L	0.9
B-313	1,4-Dioxane	8/7/2018	11		ug/L	0.9
B-313	1,4-Dioxane	1/3/2019	10		ug/L	0.9
B-313	1,4-Dioxane	4/16/2019	14		ug/L	0.9
B-313	1,4-Dioxane	7/16/2019	2.3		ug/l	0.9
B-313	1,4-Dioxane	10/15/2019	7.2		ug/l	0.9
B-313	1,4-Dioxane	1/28/2020	20		ug/L	0.9
B-313	1,4-Dioxane	4/28/2020	21		ug/L	0.9
B-313	Nitrogen, Nitrate	10/31/2017	33000		ug/L	2500
B-313	Nitrogen, Nitrate	2/27/2018	31000		ug/L	10000
B-313	Nitrogen, Nitrate	5/17/2018	23000		ug/L	10000
B-313	Nitrogen, Nitrate	8/7/2018	29000		ug/L	10000
B-313	Nitrogen, Nitrate	1/3/2019	21000		ug/L	5000
B-313	Nitrogen, Nitrate	4/16/2019	22000		ug/L	10000
B-313	Nitrogen, Nitrate	7/16/2019	47000		ug/L	10000
B-313	Nitrogen, Nitrate	10/17/2019	40000		ug/L	2500
B-313	Nitrogen, Nitrate	1/28/2020	30000		ug/L	2500
B-313	Nitrogen, Nitrate	4/28/2020	28000		ug/L	10000
B-326-UD	1,4-Dioxane	1/25/2018	5.5		ug/L	0.9
B-326-UD	1,4-Dioxane	4/30/2018	3.1		ug/L	0.9
B-326-UD	1,4-Dioxane	7/31/2018	3.9		ug/L	0.9
B-326-UD	1,4-Dioxane	12/28/2018	3.1		ug/L	0.9
B-326-UD	1,4-Dioxane	3/21/2019	5		ug/L	0.9
B-326-UD	1,4-Dioxane	6/17/2019	6.5		ug/L	0.9
B-326-UD	1,4-Dioxane	8/26/2019	7		ug/l	0.9
B-326-UD	1,4-Dioxane	12/11/2019	7.1		ug/l	0.9
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	Nitrogen, Nitrate	8/10/2011	1800		ug/L	500
B-326-UD	Nitrogen, Nitrate	8/22/2013	22000		ug/L	2500
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-WD	1,4-Dioxane	1/25/2018	4.2		ug/L	0.9
B-326-WD	1,4-Dioxane	4/30/2018	3.1		ug/L	0.9
B-326-WD	1,4-Dioxane	9/5/2018	2.2		ug/L	0.9
B-326-WD	1,4-Dioxane	12/21/2018	4.8		ug/L	0.9
B-326-WD	1,4-Dioxane	3/18/2019	7.2		ug/L	0.9
B-326-WD	1,4-Dioxane	6/17/2019	7.8		ug/L	0.9
B-326-WD	1,4-Dioxane	8/26/2019	10		ug/l	0.9
B-326-WD	1,4-Dioxane	12/11/2019	8.8		ug/l	0.9
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-712-LD	1,4-Dioxane	6/19/2006	0.5	U	ug/l	5
B-712-LD	1,4-Dioxane	7/24/2006	0.5	U	ug/l	5
B-712-LD	1,4-Dioxane	3/1/2007	0.95	J	ug/l	5

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
B-712-LD	1,4-Dioxane	5/29/2007	0.5	U	ug/l	5
B-712-LD	1,4-Dioxane	8/17/2009	0.5	U	ug/l	5
B-712-LD	1,4-Dioxane	7/21/2011	0.5	U	ug/l	5
B-712-LD	1,4-Dioxane	8/8/2013	0.5	U	ug/l	5
B-712-LD	1,4-Dioxane	7/27/2015	0.15	U	ug/L	0.9
B-712-LD	1,4-Dioxane	7/28/2017	0.15	U	ug/L	0.9
B-712-LD	1,4-Dioxane	8/21/2018	0.15	U	ug/L	0.9
BM-11X-100N	Tetrachloroethene	11/2/2015	7.1		ug/L	1
BM-11X-100N	Tetrachloroethene	4/20/2016	5.5		ug/L	1
BM-11X-100N	Tetrachloroethene	10/20/2016	6.3		ug/L	1
BM-11X-100N	Tetrachloroethene	4/20/2017	5.1		ug/L	1
BM-11X-100N	Tetrachloroethene	10/20/2017	4.6		ug/L	1
BM-11X-100N	Tetrachloroethene	4/17/2018	5.9		ug/L	1
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	Trichloroethene	11/2/2015	6.9		ug/L	1
BM-11X-100N	Trichloroethene	4/20/2016	5.9		ug/L	1
BM-11X-100N	Trichloroethene	10/20/2016	5.5		ug/L	1
BM-11X-100N	Trichloroethene	4/20/2017	4.5		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-15E2	Nitrogen, Nitrate	6/9/2016	17000		ug/L	2500
BM-15E2	Nitrogen, Nitrate	11/16/2016	39000		ug/L	5000
BM-15E2	Nitrogen, Nitrate	6/15/2017	20000		ug/L	5000
BM-15E2	Nitrogen, Nitrate	6/20/2017	19000		ug/L	2500
BM-15E2	Nitrogen, Nitrate	11/3/2017	17000		ug/L	2500
BM-15E2	Nitrogen, Nitrate	5/17/2018	14000		ug/L	5000
BM-15E2	Nitrogen, Nitrate	10/25/2018	19000		ug/L	2500
BM-15E2	Nitrogen, Nitrate	4/26/2019	16000		ug/L	10000
BM-15E2	Nitrogen, Nitrate	11/6/2019	18000		ug/L	2500
BM-15E2	Nitrogen, Nitrate	5/7/2020	19000		ug/L	2500
BM-15N6	Nitrogen, Nitrate	5/11/2016	41000		ug/L	5000
BM-15N6	Nitrogen, Nitrate	10/24/2016	46000		ug/L	5000
BM-15N6	Nitrogen, Nitrate	4/25/2017	46000		ug/L	5000
BM-15N6	Nitrogen, Nitrate	6/13/2017	44000		ug/L	2500
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
GW-109	1,4-Dioxane	11/2/2016	3.3		ug/L	0.9
GW-109	1,4-Dioxane	5/10/2017	0.76	J	ug/L	0.9
GW-109	1,4-Dioxane	10/27/2017	0.95		ug/L	0.9
GW-109	1,4-Dioxane	5/4/2018	0.54	J	ug/L	0.9
GW-109	1,4-Dioxane	6/27/2018	0.42	J	ug/L	0.9
GW-109	1,4-Dioxane	7/31/2018	0.54	J	ug/L	0.9

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
GW-109	1,4-Dioxane	1/3/2019	0.53	J	ug/L	0.9
GW-109	1,4-Dioxane	4/16/2019	9.7		ug/L	0.9
GW-109	1,4-Dioxane	3/2/2020	41		ug/L	0.9
GW-109	1,4-Dioxane	6/1/2020	19	J	ug/L	200
GW-109	1,4-Dioxane	6/1/2020	20		ug/L	0.9
MW106-UD	1,4-Dioxane	7/21/2006	0.5	U	ug/l	5
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
MW38-830N-230E	1,4-Dioxane	11/10/2015	9.2		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	5/16/2016	7.7		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	10/25/2016	10		ug/L	0.9
MW38-830N-230E	1,4-Dioxane	4/26/2017	12		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	Chloroform	11/10/2015	5.2		ug/L	1
MW38-830N-230E	Chloroform	5/16/2016	5		ug/L	1
MW38-830N-230E	Chloroform	10/25/2016	5.5		ug/L	1
MW38-830N-230E	Chloroform	4/26/2017	6.4		ug/L	1
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
MW62-WDR	1,4-Dioxane	2/7/2017	5.4		ug/L	0.9
MW62-WDR	1,4-Dioxane	5/17/2017	5.3		ug/L	0.9
MW62-WDR	1,4-Dioxane	8/1/2017	5.8		ug/L	0.9
MW62-WDR	1,4-Dioxane	10/13/2017	4.6		ug/L	0.9
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	Nitrogen, Nitrate	2/7/2017	140000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	5/17/2017	110000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	8/1/2017	110000		ug/L	10000
MW62-WDR	Nitrogen, Nitrate	10/13/2017	120000		ug/L	10000
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

TABLE C-3.1
COMPLIANCE WELL DATA FOR STATISTICS
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Well ID	Constituent/Parameter	Date Sampled	Result	Qualifier[a/]	Units[b/]	Reporting Limit
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, Nitrite	2/7/2017	5400		ug/L	1000
MW62-WDR	Nitrogen, Nitrite	5/17/2017	5200		ug/L	500
MW62-WDR	Nitrogen, Nitrite	8/1/2017	5100		ug/L	500
MW62-WDR	Nitrogen, Nitrite	10/13/2017	3600		ug/L	500
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
MW74-WD	Nitrogen, Nitrate	11/10/2015	15000		ug/L	2500
MW74-WD	Nitrogen, Nitrate	4/19/2016	8500		ug/L	500
MW74-WD	Nitrogen, Nitrate	11/1/2016	28000		ug/L	2500
MW74-WD	Nitrogen, Nitrate	5/17/2017	30000		ug/L	2500
MW74-WD	Nitrogen, Nitrate	11/1/2017	3700		ug/L	500
MW74-WD	Nitrogen, Nitrate	5/1/2018	1200		ug/L	500
MW74-WD	Nitrogen, Nitrate	8/1/2018	4300		ug/L	500
MW74-WD	Nitrogen, Nitrate	5/2/2019	3200		ug/L	500
MW74-WD	Nitrogen, Nitrate	10/22/2019	8900		ug/L	500
MW74-WD	Nitrogen, Nitrate	5/7/2020	2400		ug/L	500
MW77-WD	1,4-Dioxane	11/12/2015	15		ug/L	0.9
MW77-WD	1,4-Dioxane	5/16/2016	3.5		ug/L	0.9
MW77-WD	1,4-Dioxane	10/31/2016	14		ug/L	0.9
MW77-WD	1,4-Dioxane	4/24/2017	20		ug/L	0.9
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	Nitrogen, Nitrate	11/12/2015	23000		ug/L	5000
MW77-WD	Nitrogen, Nitrate	5/16/2016	35000		ug/L	2500
MW77-WD	Nitrogen, Nitrate	10/31/2016	16000		ug/L	5000
MW77-WD	Nitrogen, Nitrate	4/24/2017	24000		ug/L	5000
MW77-WD	Nitrogen, Nitrate	10/26/2017	27000		ug/L	2500
MW77-WD	Nitrogen, Nitrate	5/3/2018	26000		ug/L	5000
MW77-WD	Nitrogen, Nitrate	8/2/2018	9700		ug/L	500
MW77-WD	Nitrogen, Nitrate	5/2/2019	17000		ug/L	5000
MW77-WD	Nitrogen, Nitrate	10/22/2019	17000		ug/L	2500
MW77-WD	Nitrogen, Nitrate	5/4/2020	18000		ug/L	5000

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.
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

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 5.18/4/2020 1:58:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-b-313

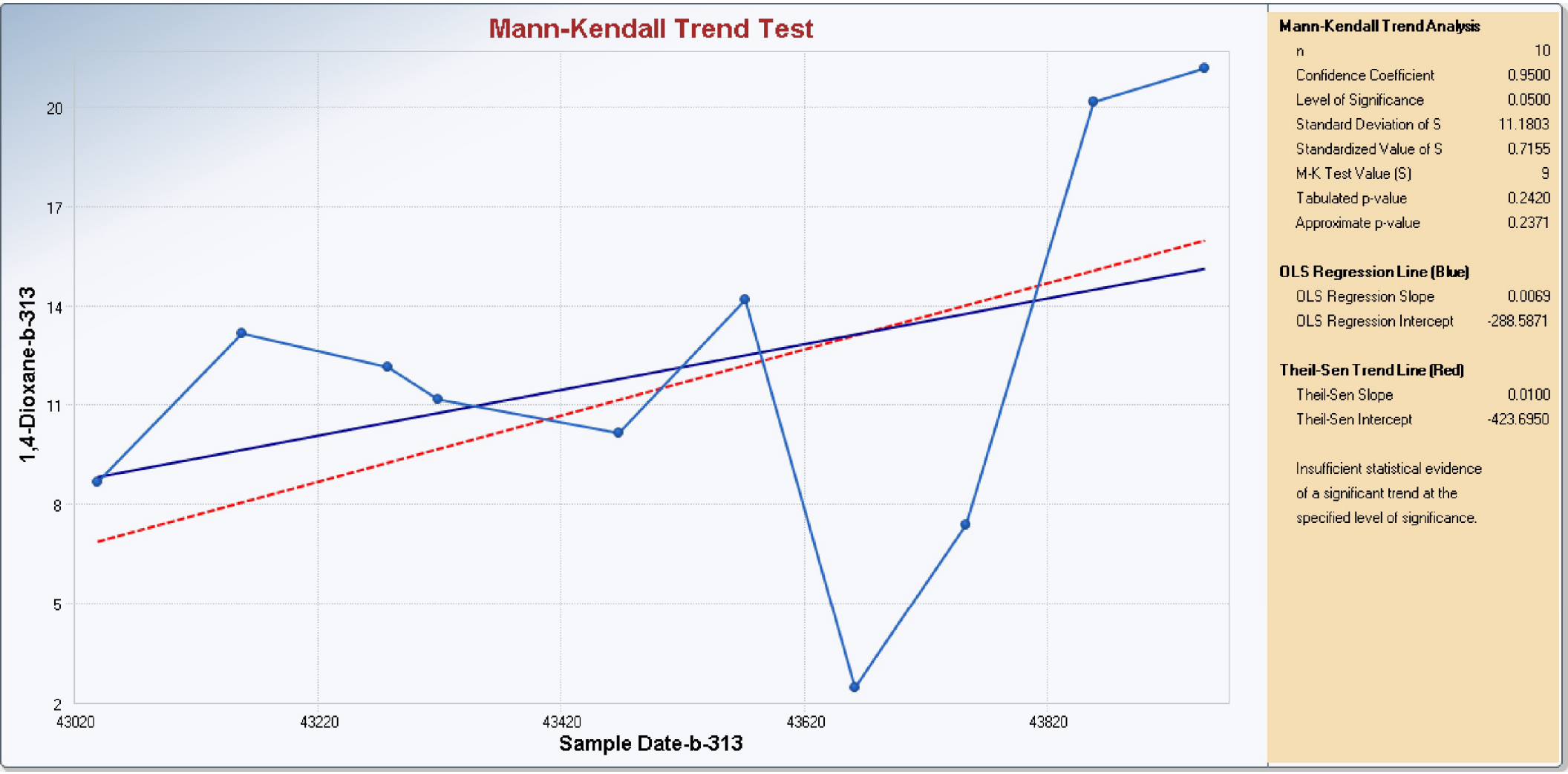
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	2.3
Maximum	21
Mean	11.9
Geometric Mean	10.36
Median	11.5
Standard Deviation	5.62
Coefficient of Variation	0.472

Mann-Kendall Test

M-K Test Value (S)	9
Tabulated p-value	0.242
Standard Deviation of S	11.18
Standardized Value of S	0.716
Approximate p-value	0.237

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	0.7155
M-K Test Value (S)	9
Tabulated p-value	0.2420
Approximate p-value	0.2371

OLS Regression Line (Blue)

OLS Regression Slope	0.0069
OLS Regression Intercept	-288.5871

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0100
Theil-Sen Intercept	-423.6950

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 5.18/4/2020 1:55:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-b-313

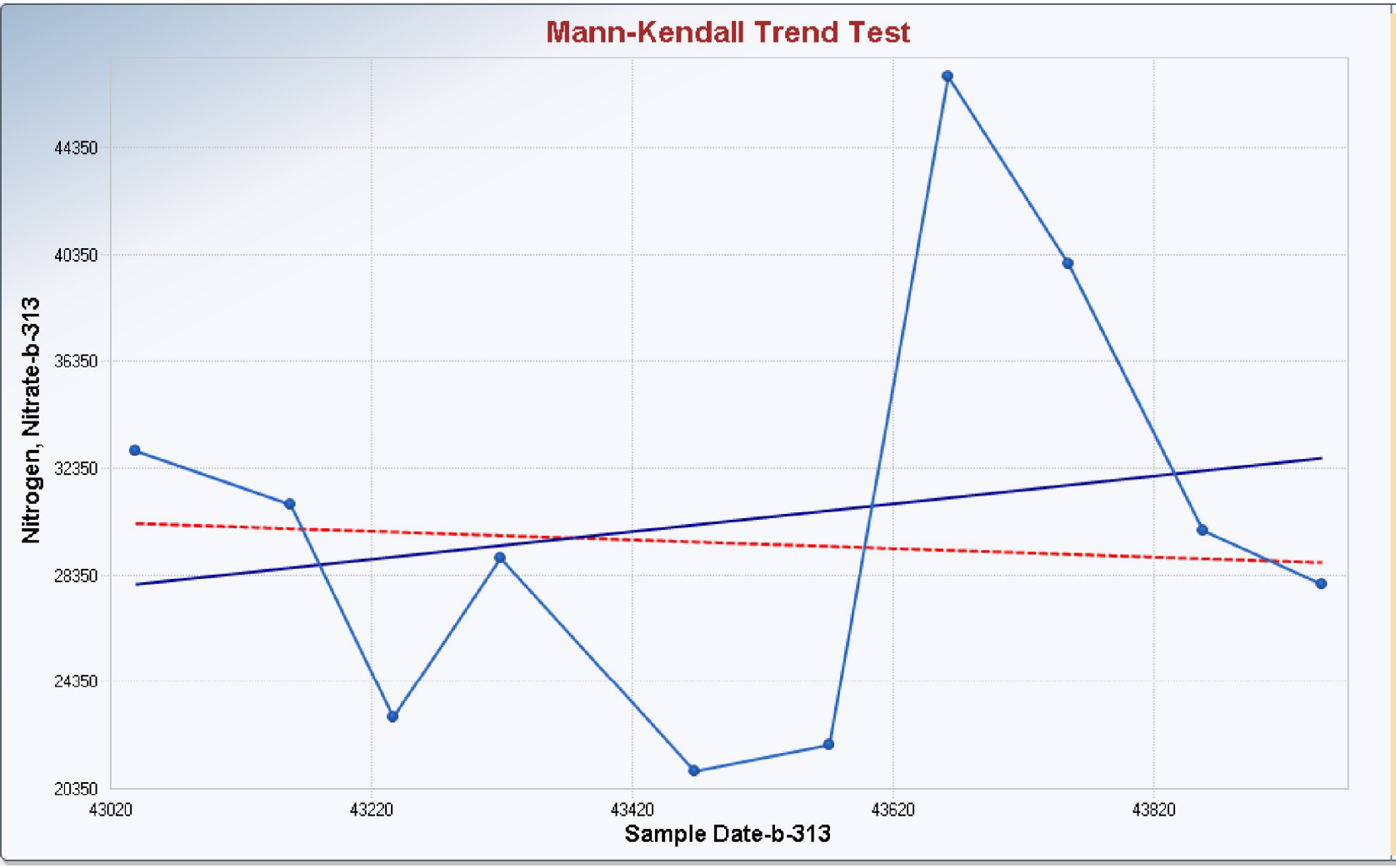
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	21000
Maximum	47000
Mean	30400
Geometric Mean	29492
Median	29500
Standard Deviation	8140
Coefficient of Variation	0.268

Mann-Kendall Test

M-K Test Value (S)	-3
Tabulated p-value	0.431
Standard Deviation of S	11.18
Standardized Value of S	-0.179
Approximate p-value	0.429

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	-0.1789
M-K Test Value (S)	-3
Tabulated p-value	0.4310
Approximate p-value	0.4290

OLS Regression Line (Blue)

OLS Regression Slope	5.1446
OLS Regression Intercept	-193,399.3741

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1.5873
Theil-Sen Intercept	98,578.5714

Insufficient statistical evidence of a significant trend at the specified level of significance.

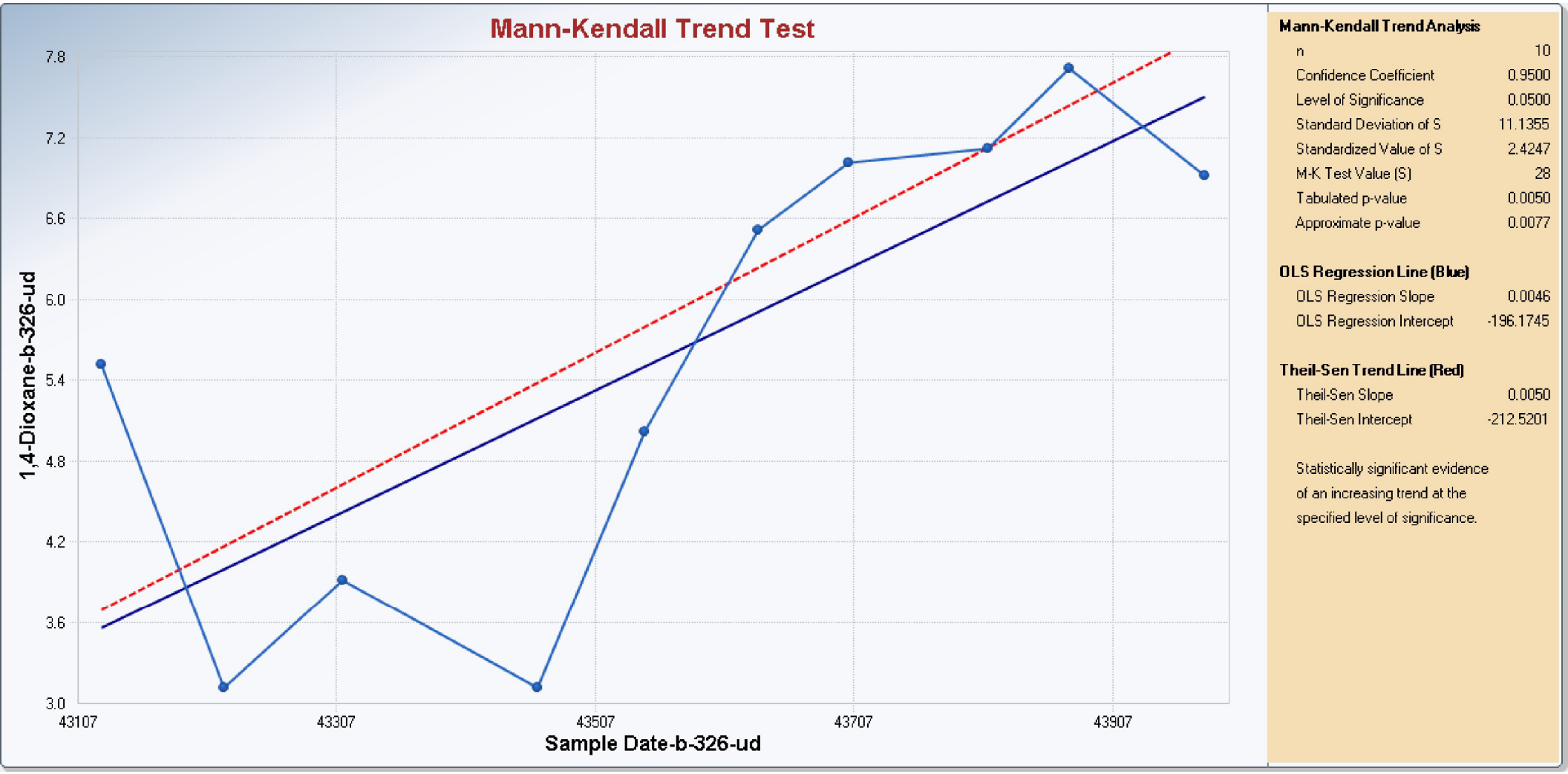
Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.18/4/2020 1:58:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

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	3.1
Maximum	7.7
Mean	5.58
Geometric Mean	5.306
Median	6
Standard Deviation	1.728
Coefficient of Variation	0.31

Mann-Kendall Test	
M-K Test Value (S)	28
Tabulated p-value	0.005
Standard Deviation of S	11.14
Standardized Value of S	2.425
Approximate p-value	0.00766

Statistically significant evidence of an increasing trend at the specified level of significance.


Mann-Kendall Trend Test
1,4-Dioxane-b-326-ud
7.8
7.2
6.6
6.0
5.4
4.8
4.2
3.6
3.0
43107
43307
43507
43707
43907
Sample Date-b-326-ud
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 2.4247
M-K Test Value (S) 28
Tabulated p-value 0.0050
Approximate p-value 0.0077
OLS Regression Line (Blue)
OLS Regression Slope 0.0046
OLS Regression Intercept -196.1745
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0050
Theil-Sen Intercept -212.5201
Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.18/4/2020 1:55:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-b-326-ud

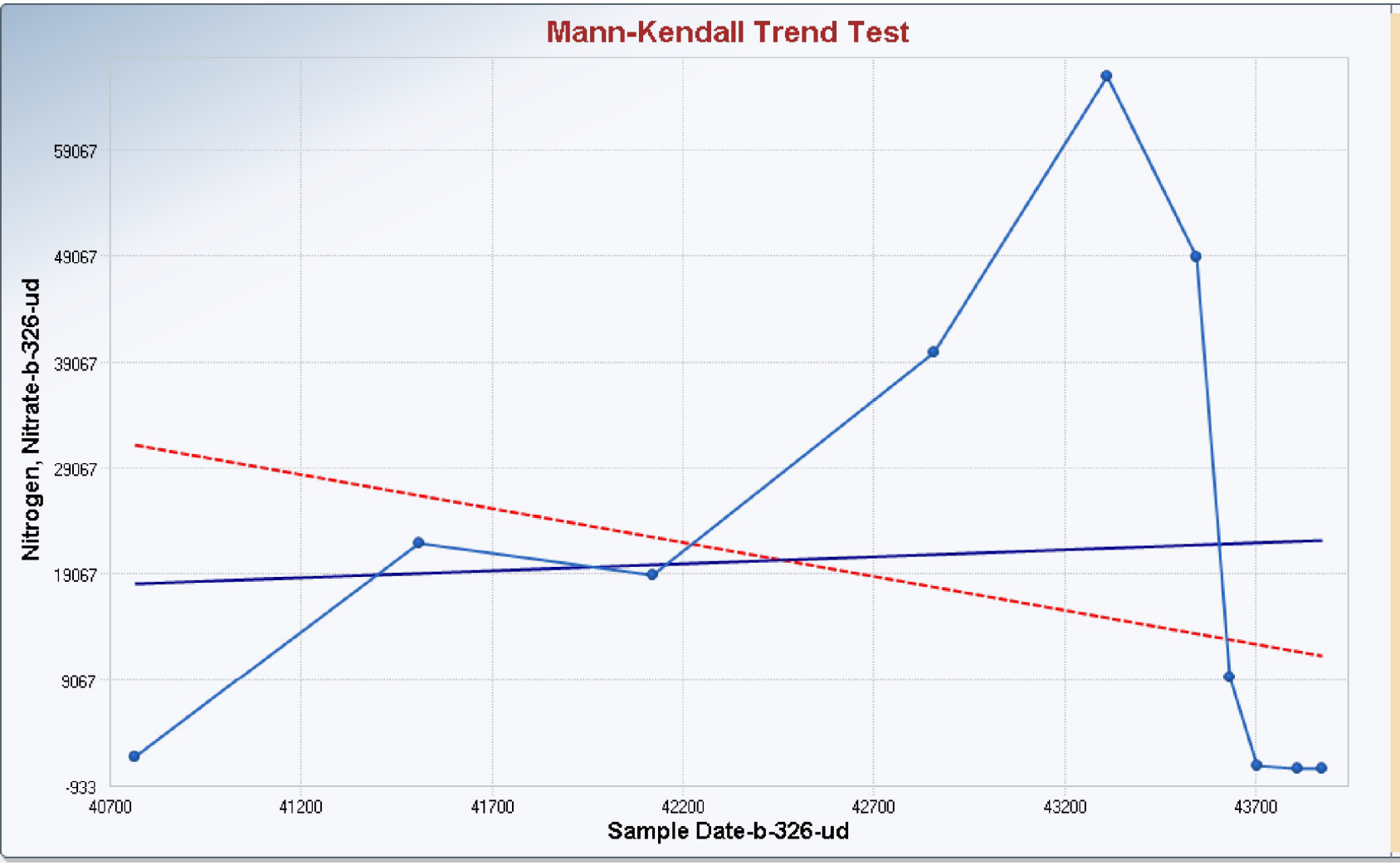
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	700
Maximum	66000
Mean	20952
Geometric Mean	7346
Median	14150
Standard Deviation	23343
Coefficient of Variation	1.114

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	1.3234
OLS Regression Intercept	-35,837.5874

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-6.4196
Theil-Sen Intercept	292,943.1502

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 5.18/4/2020 1:58:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-b-326-wd

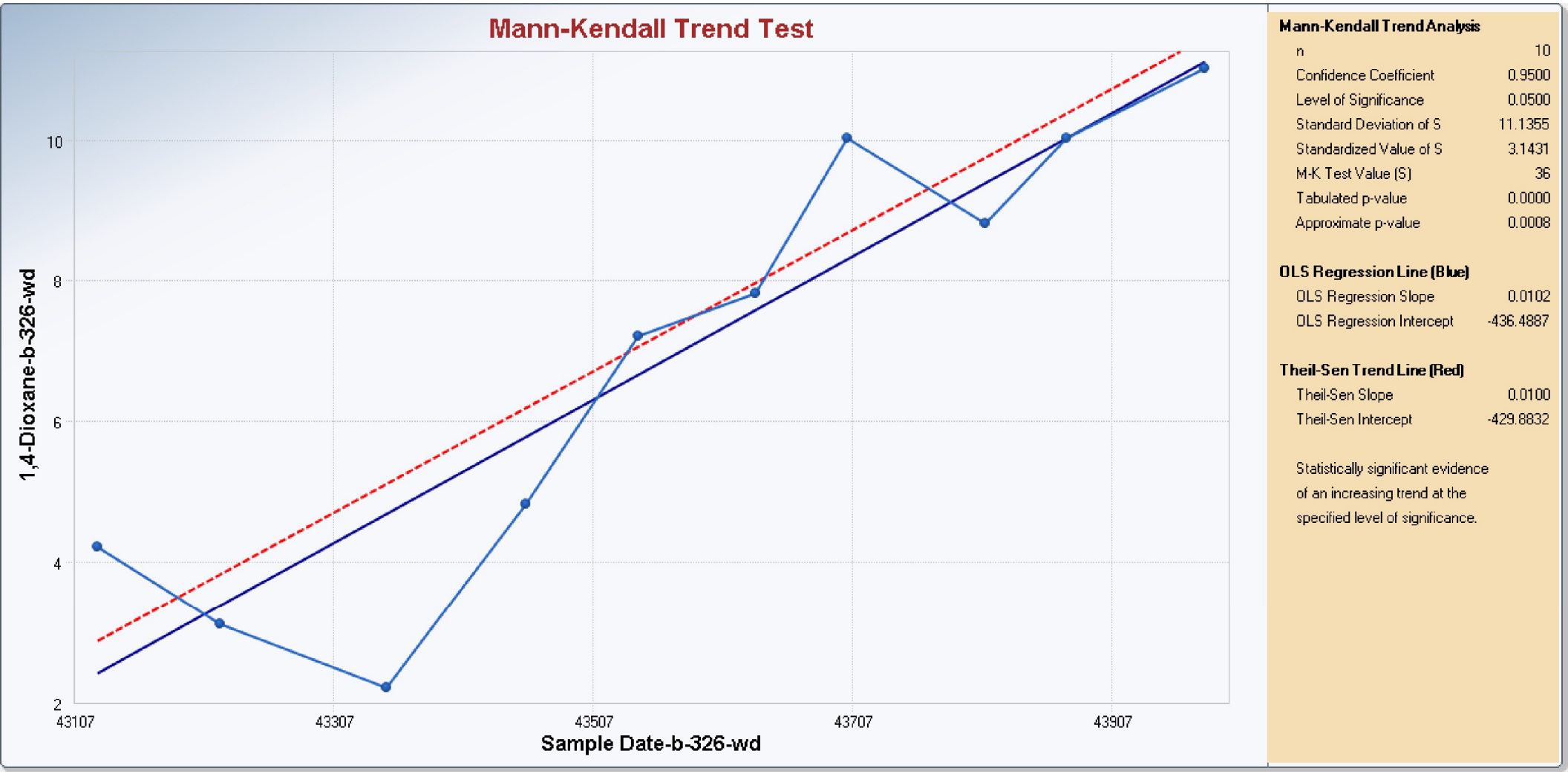
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	2.2
Maximum	11
Mean	6.91
Geometric Mean	6.129
Median	7.5
Standard Deviation	3.141
Coefficient of Variation	0.454

Mann-Kendall Test

M-K Test Value (S)	36
Tabulated p-value	0
Standard Deviation of S	11.14
Standardized Value of S	3.143
Approximate p-value	8.3586E-4

Statistically significant evidence of an increasing trend at the specified level of significance.


Mann-Kendall Trend Test
1,4-Dioxane-b-326-wd
10
8
6
4
2
43107
43307
43507
43707
43907
Sample Date-b-326-wd
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 3.1431
M-K Test Value (S) 36
Tabulated p-value 0.0000
Approximate p-value 0.0008
OLS Regression Line (Blue)
OLS Regression Slope 0.0102
OLS Regression Intercept -436.4887
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0100
Theil-Sen Intercept -429.8832
Statistically significant evidence of an increasing trend at the specified level of significance.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.18/4/2020 1:47:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_f.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Trichloroethene-bm-11x-100n

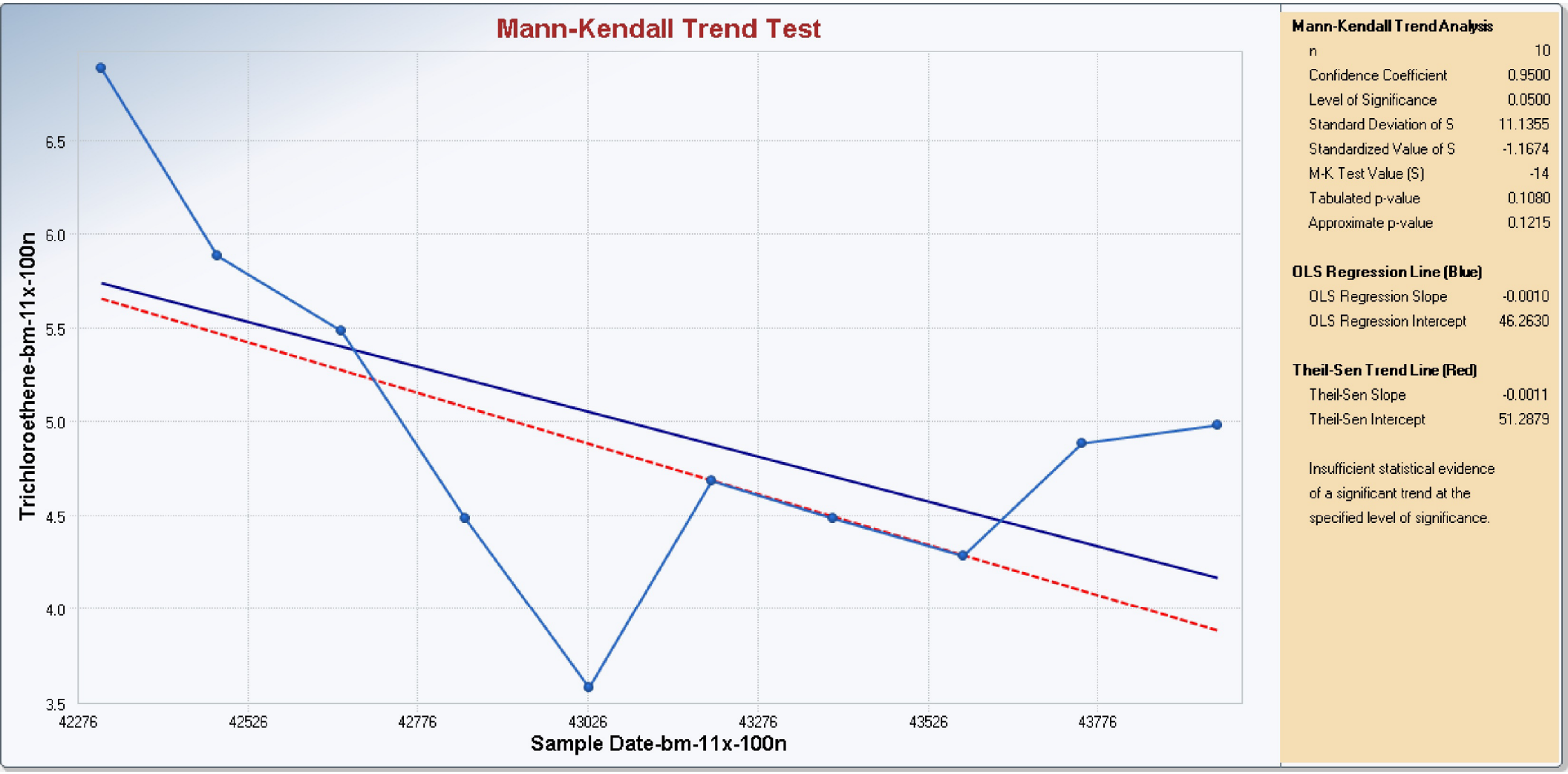
General Statistics

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	6.9
Mean	4.98
Geometric Mean	4.906
Median	4.8
Standard Deviation	0.926
Coefficient of Variation	0.186

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
Trichloroethene-bm-11x-100n
6.5
6.0
5.5
5.0
4.5
4.0
3.5
42276
42526
42776
43026
43276
43526
43776
Sample Date-bm-11x-100n
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 -0.0010
OLS Regression Intercept 46.2630
Theil-Sen Trend Line (Red)
Theil-Sen Slope -0.0011
Theil-Sen Intercept 51.2879
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 5.18/4/2020 1:53:49 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_e.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Tetrachloroethene-bm-11x-100n

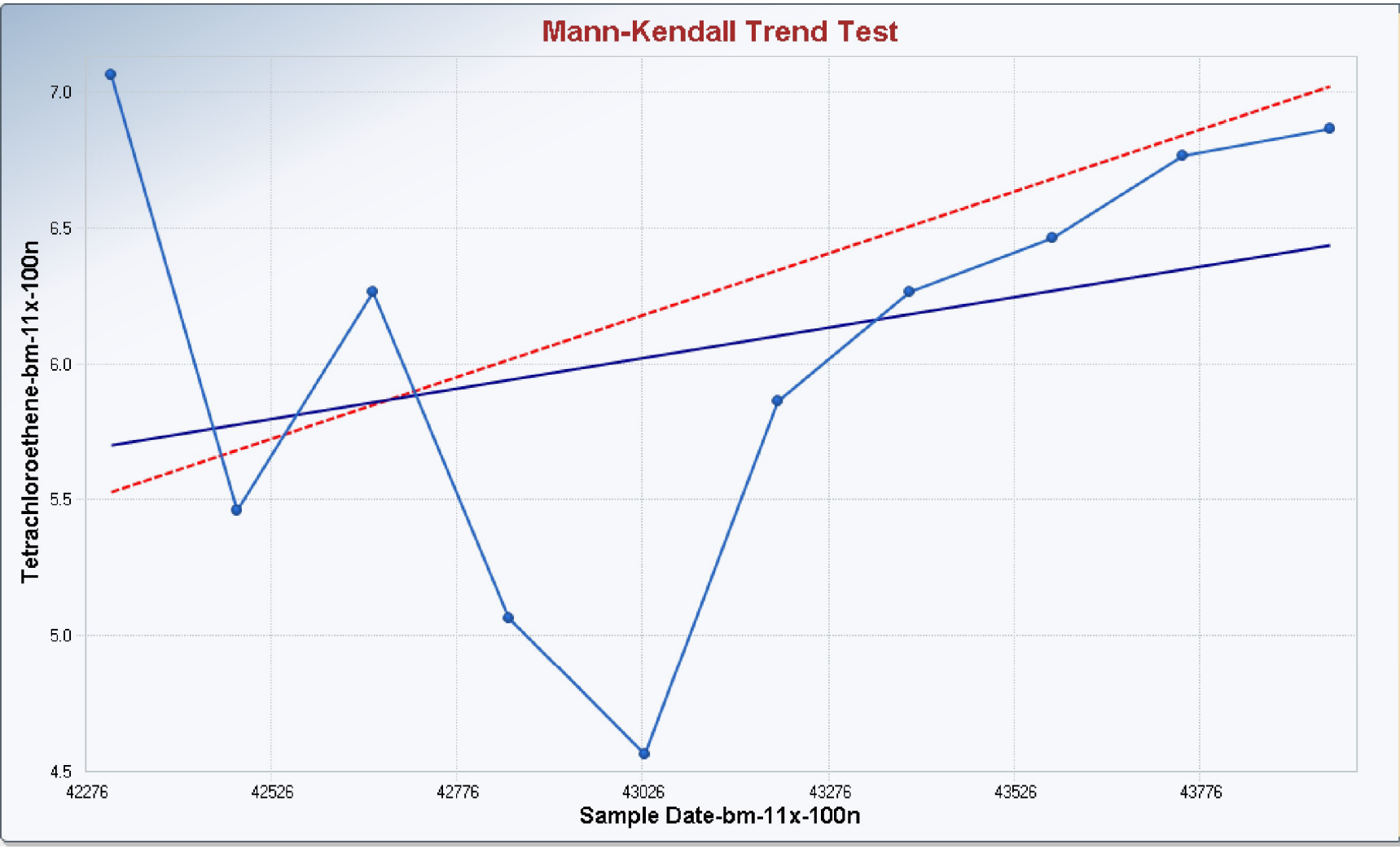
General Statistics

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	7.1
Mean	6.1
Geometric Mean	6.047
Median	6.3
Standard Deviation	0.818
Coefficient of Variation	0.134

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 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	0.0004
OLS Regression Intercept	-13.1514

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0009
Theil-Sen Intercept	-32.9691

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 5.18/4/2020 1:55:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-bm-15e2

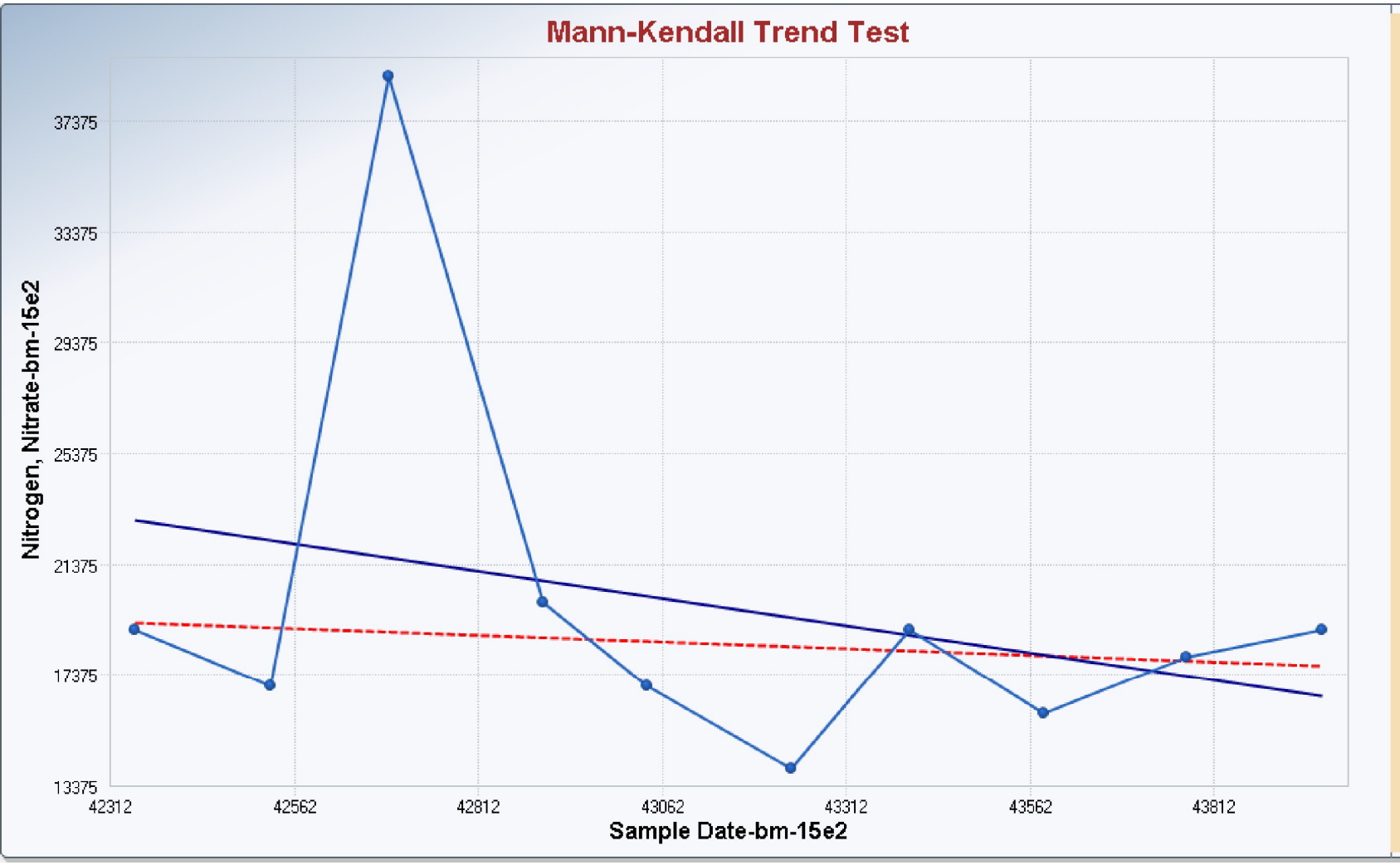
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	14000
Maximum	39000
Mean	19800
Geometric Mean	19032
Median	18500
Standard Deviation	6973
Coefficient of Variation	0.352

Mann-Kendall Test

M-K Test Value (S)	-7
Tabulated p-value	0.3
Standard Deviation of S	10.97
Standardized Value of S	-0.547
Approximate p-value	0.292

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	10.9697
Standardized Value of S	-0.5470
M-K Test Value (S)	-7
Tabulated p-value	0.3000
Approximate p-value	0.2922

OLS Regression Line (Blue)

OLS Regression Slope	-3.9447
OLS Regression Intercept	189,998.1679

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.9461
Theil-Sen Intercept	59,313.1504

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 5.18/4/2020 1:55:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-bm-15n6

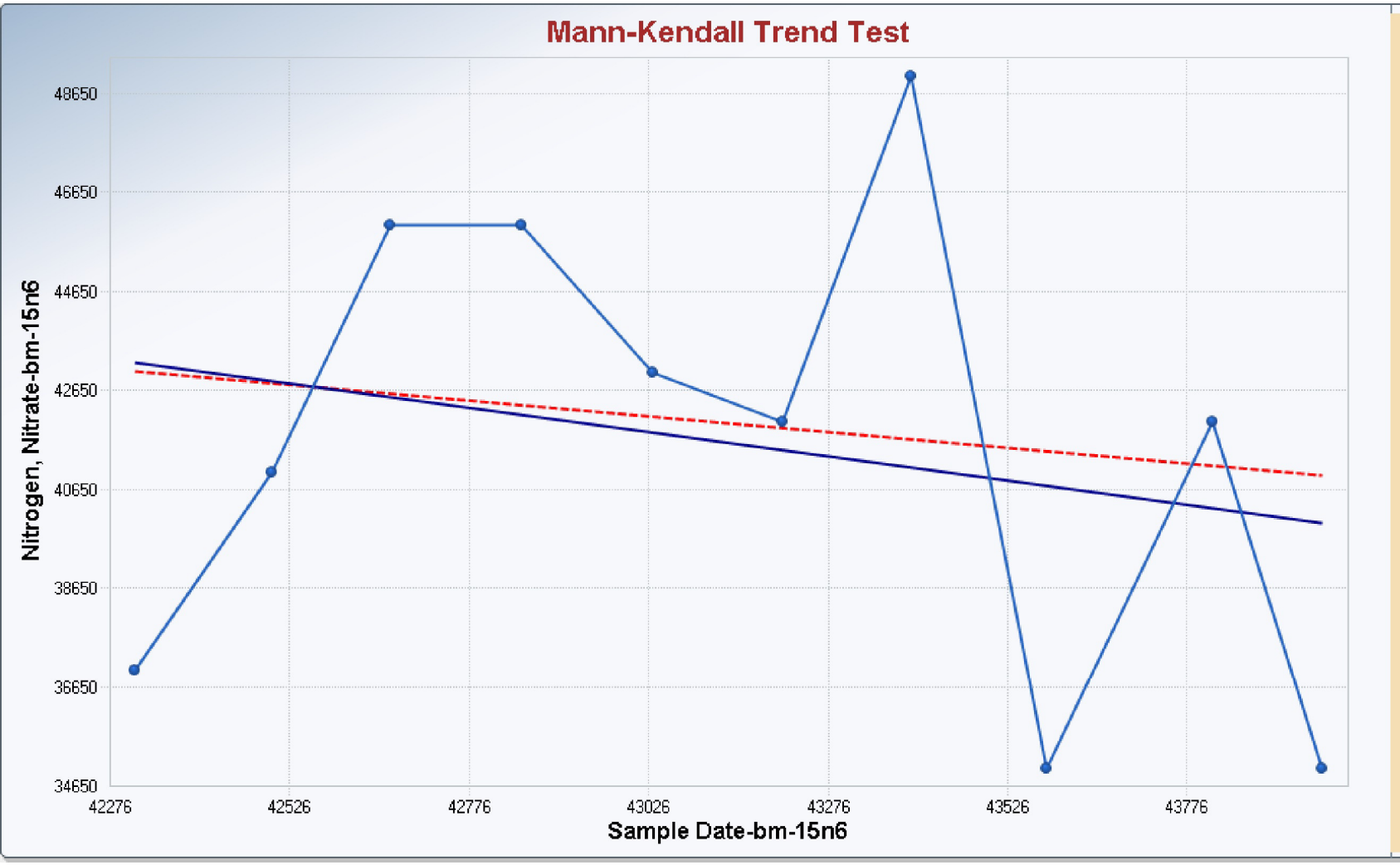
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	35000
Maximum	49000
Mean	41600
Geometric Mean	41350
Median	42000
Standard Deviation	4766
Coefficient of Variation	0.115

Mann-Kendall Test

M-K Test Value (S)	-6
Tabulated p-value	0.3
Standard Deviation of S	11.05
Standardized Value of S	-0.453
Approximate p-value	0.325

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	11.0454
Standardized Value of S	-0.4527
M-K Test Value (S)	-6
Tabulated p-value	0.3000
Approximate p-value	0.3254

OLS Regression Line (Blue)

OLS Regression Slope	-1.9588
OLS Regression Intercept	126,085.6981

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1.2837
Theil-Sen Intercept	97,356.2259

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 5.18/11/2020 12:56:09 PM	
From File	GW-109 14D DATA.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-gw-109

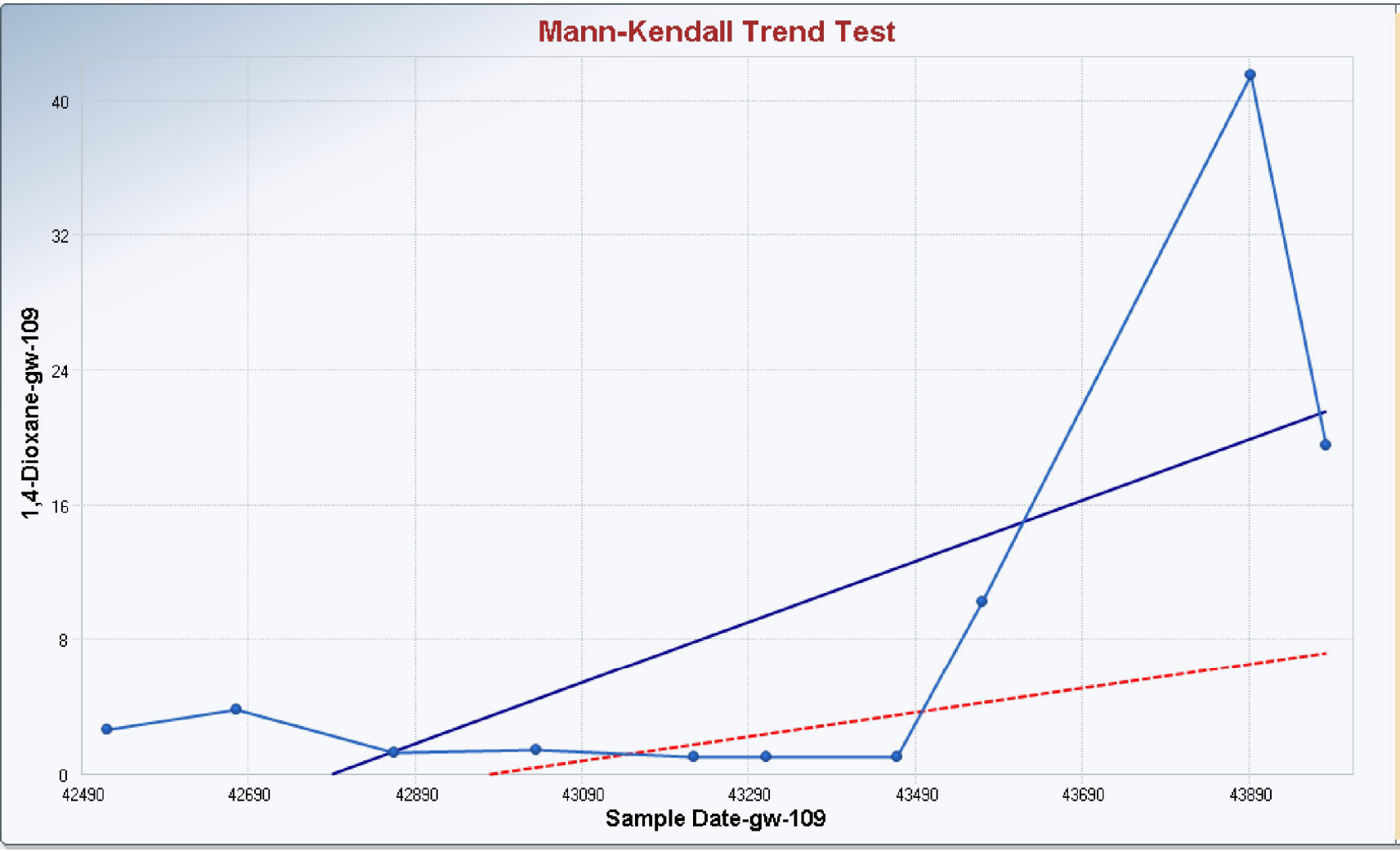
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.53
Maximum	41
Mean	7.942
Geometric Mean	2.393
Median	1.525
Standard Deviation	13.17
Coefficient of Variation	1.659

Mann-Kendall Test

M-K Test Value (S)	6
Tabulated p-value	0.3
Standard Deviation of S	11.14
Standardized Value of S	0.449
Approximate p-value	0.327

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	0.4490
M-K Test Value (S)	6
Tabulated p-value	0.3000
Approximate p-value	0.3267

OLS Regression Line (Blue)

OLS Regression Slope	0.0182
OLS Regression Intercept	-777.4088

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0072
Theil-Sen Intercept	-311.6529

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 5.18/4/2020 1:58:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw38-830n-230e

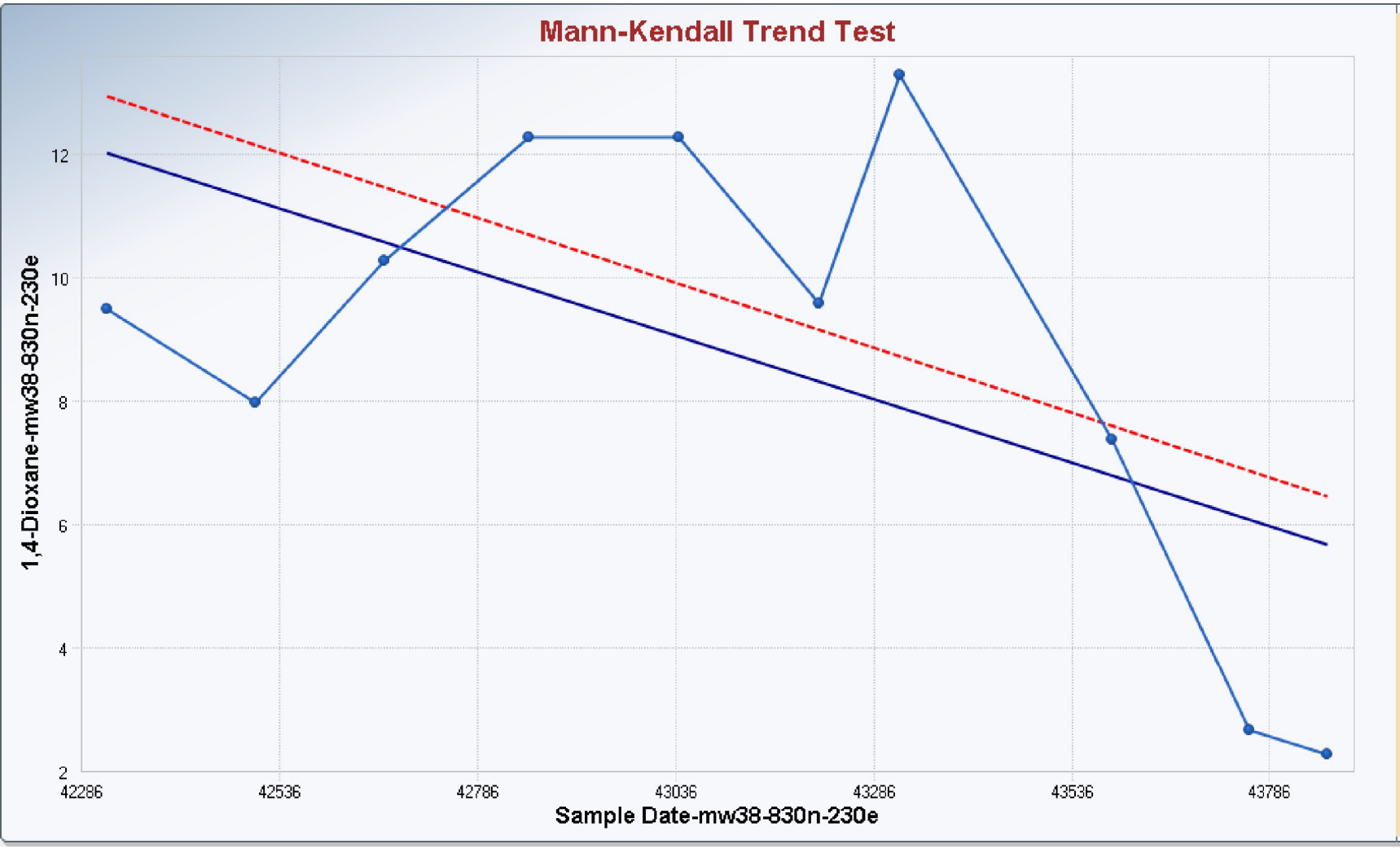
General Statistics

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	8.47
Geometric Mean	7.284
Median	9.25
Standard Deviation	3.803
Coefficient of Variation	0.449

Mann-Kendall Test

M-K Test Value (S)	-12
Tabulated p-value	0.146
Standard Deviation of S	11.14
Standardized Value of S	-0.988
Approximate p-value	0.162

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	-0.9878
M-K Test Value (S)	-12
Tabulated p-value	0.1460
Approximate p-value	0.1616

OLS Regression Line (Blue)

OLS Regression Slope	-0.0041
OLS Regression Intercept	185.3899

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0042
Theil-Sen Intercept	191.0766

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 5.18/4/2020 1:57:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_b.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Chloroform-mw38-830n-230e

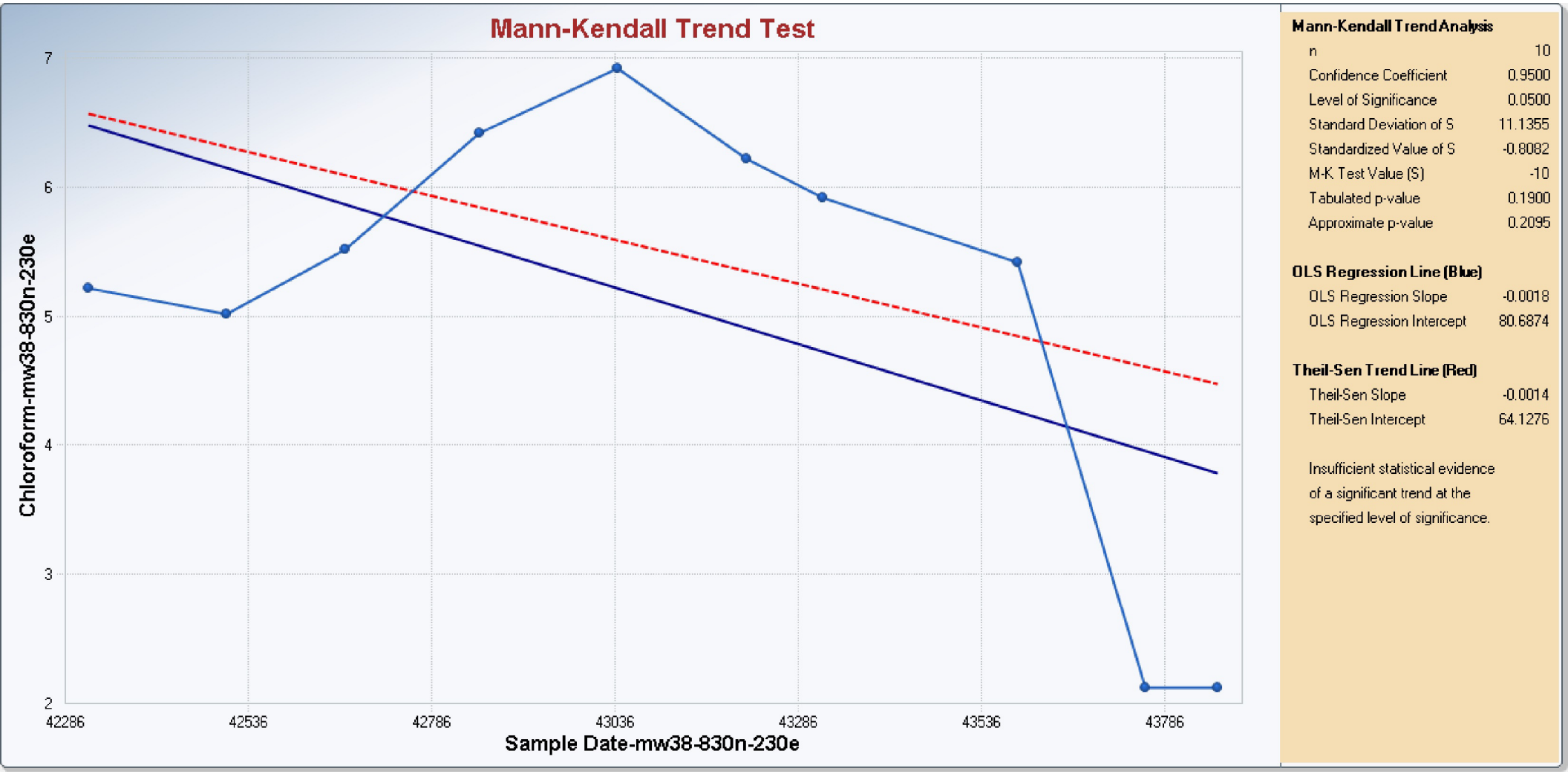
General Statistics

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	5.07
Geometric Mean	4.721
Median	5.45
Standard Deviation	1.668
Coefficient of Variation	0.329

Mann-Kendall Test

M-K Test Value (S)	-10
Tabulated p-value	0.19
Standard Deviation of S	11.14
Standardized Value of S	-0.808
Approximate p-value	0.209

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
Chloroform-mw38-830n-230e
7
6
5
4
3
2
42286
42536
42786
43036
43286
43536
43786
Sample Date-mw38-830n-230e
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 -0.8082
M-K Test Value (S) -10
Tabulated p-value 0.1900
Approximate p-value 0.2095
OLS Regression Line (Blue)
OLS Regression Slope -0.0018
OLS Regression Intercept 80.6874
Theil-Sen Trend Line (Red)
Theil-Sen Slope -0.0014
Theil-Sen Intercept 64.1276
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 5.18/4/2020 1:58:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw62-wdr

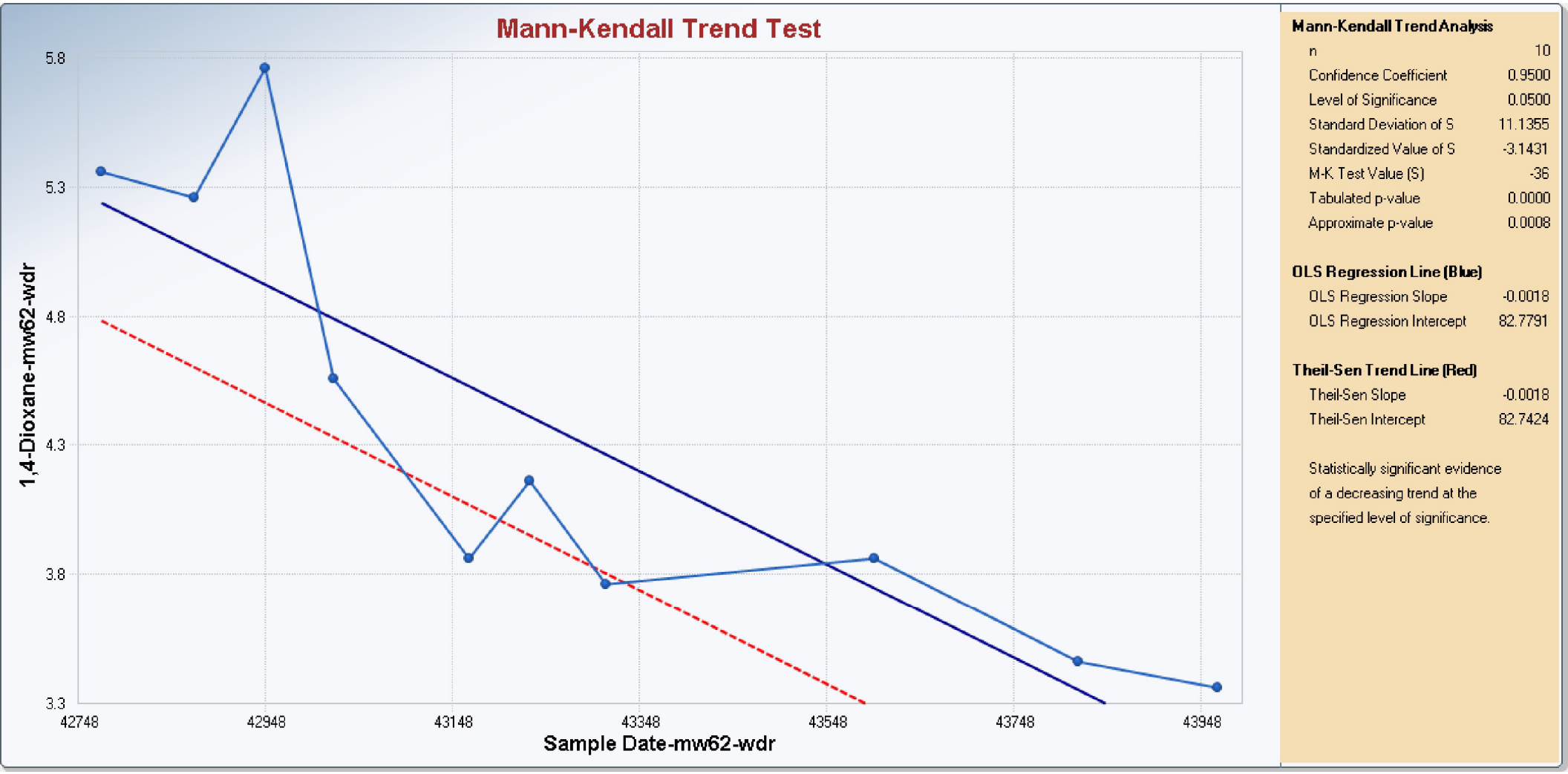
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	3.4
Maximum	5.8
Mean	4.38
Geometric Mean	4.309
Median	4.05
Standard Deviation	0.851
Coefficient of Variation	0.194

Mann-Kendall Test

M-K Test Value (S)	-36
Tabulated p-value	0
Standard Deviation of S	11.14
Standardized Value of S	-3.143
Approximate p-value	8.3586E-4

Statistically significant evidence of a decreasing trend at the specified level of significance.


Mann-Kendall Trend Test
1,4-Dioxane-mw62-wdr
5.8
5.3
4.8
4.3
3.8
3.3
42748
42948
43148
43348
43548
43748
43948
Sample Date-mw62-wdr
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 -3.1431
M-K Test Value (S) -36
Tabulated p-value 0.0000
Approximate p-value 0.0008
OLS Regression Line (Blue)
OLS Regression Slope -0.0018
OLS Regression Intercept 82.7791
Theil-Sen Trend Line (Red)
Theil-Sen Slope -0.0018
Theil-Sen Intercept 82.7424
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 5.18/4/2020 1:54:43 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_d.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrite-mw62-wdr

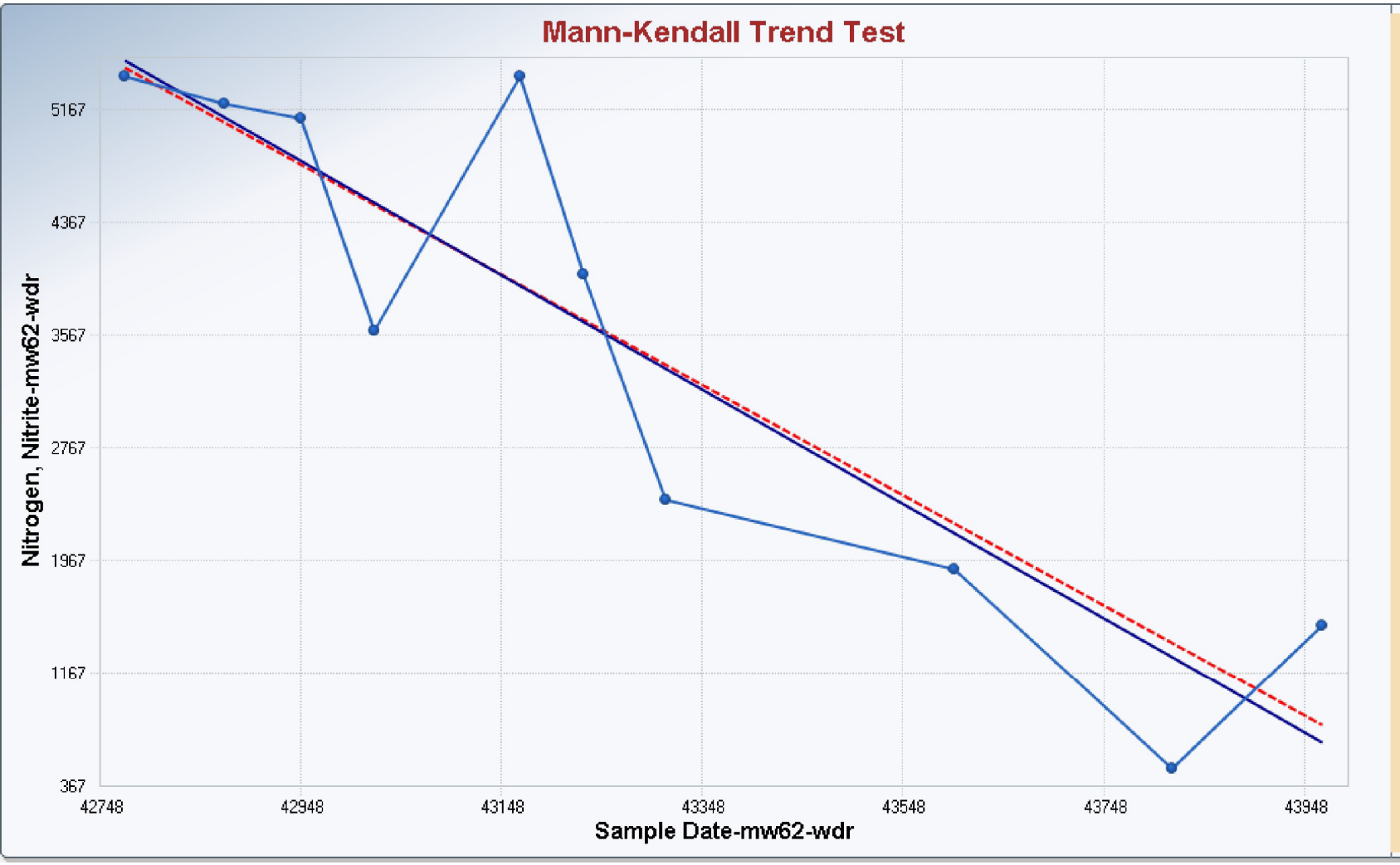
General Statistics

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	3499
Geometric Mean	2865
Median	3800
Standard Deviation	1818
Coefficient of Variation	0.52

Mann-Kendall Test

M-K Test Value (S)	-34
Tabulated p-value	0
Standard Deviation of S	11.14
Standardized Value of S	-2.963
Approximate p-value	0.00152

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	-2.9635
M-K Test Value (S)	-34
Tabulated p-value	0.0000
Approximate p-value	0.0015

OLS Regression Line (Blue)

OLS Regression Slope	-4.0583
OLS Regression Intercept	179,103.8302

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-3.9119
Theil-Sen Intercept	172,788.4025

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 5.18/4/2020 1:55:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-mw62-wdr

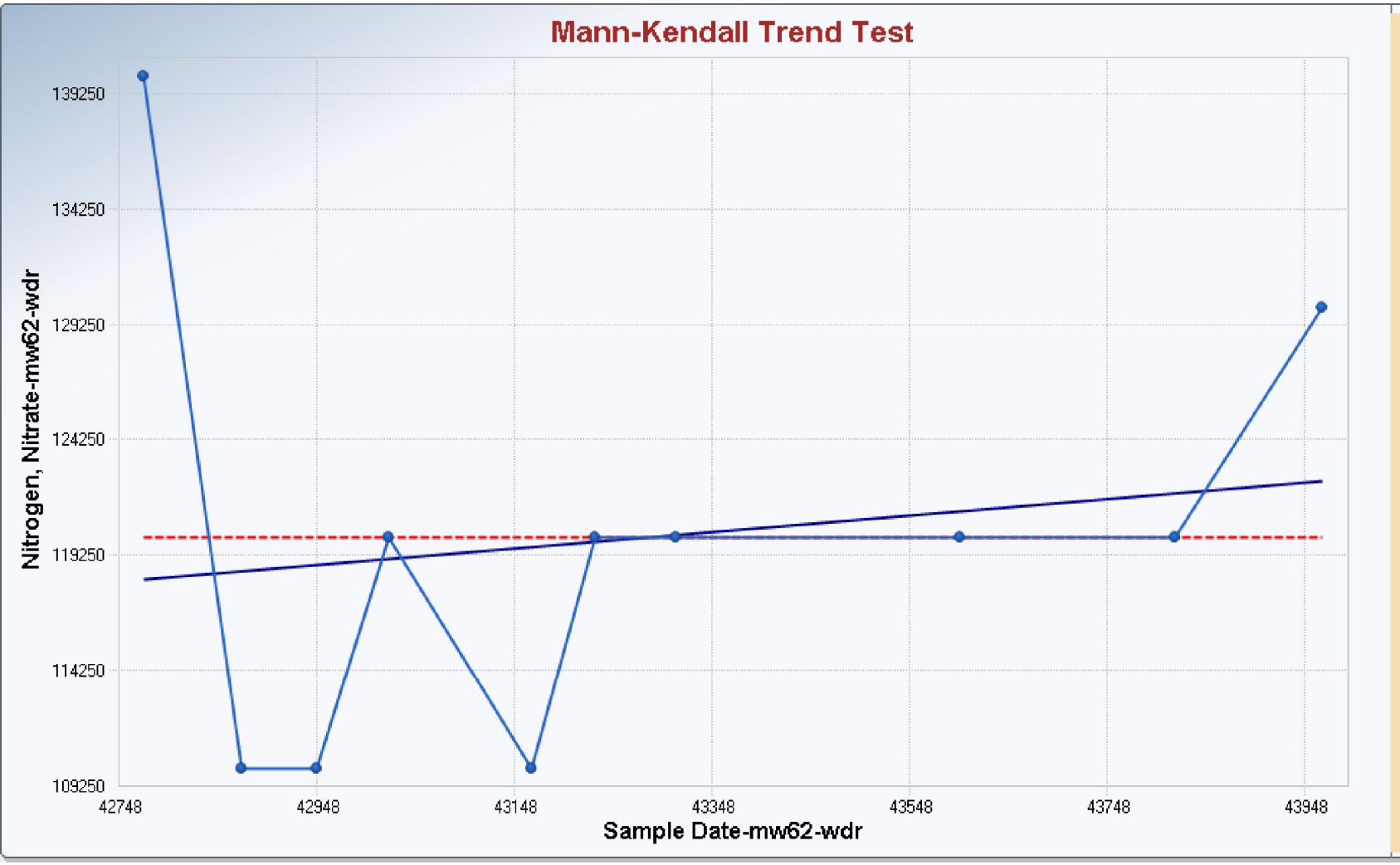
General Statistics

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	140000
Mean	120000
Geometric Mean	119678
Median	120000
Standard Deviation	9428
Coefficient of Variation	0.0786

Mann-Kendall Test

M-K Test Value (S)	12
Tabulated p-value	0.146
Standard Deviation of S	10.23
Standardized Value of S	1.075
Approximate p-value	0.141

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	1.0752
M-K Test Value (S)	12
Tabulated p-value	0.1460
Approximate p-value	0.1411

OLS Regression Line (Blue)

OLS Regression Slope	3.5601
OLS Regression Intercept	-34,048.1274

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.

	Mann-Kendall Trend Test Analysis	
User Selected Options		
Date/Time of Computation	ProUCL 5.18/4/2020 1:55:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-mw74-wd

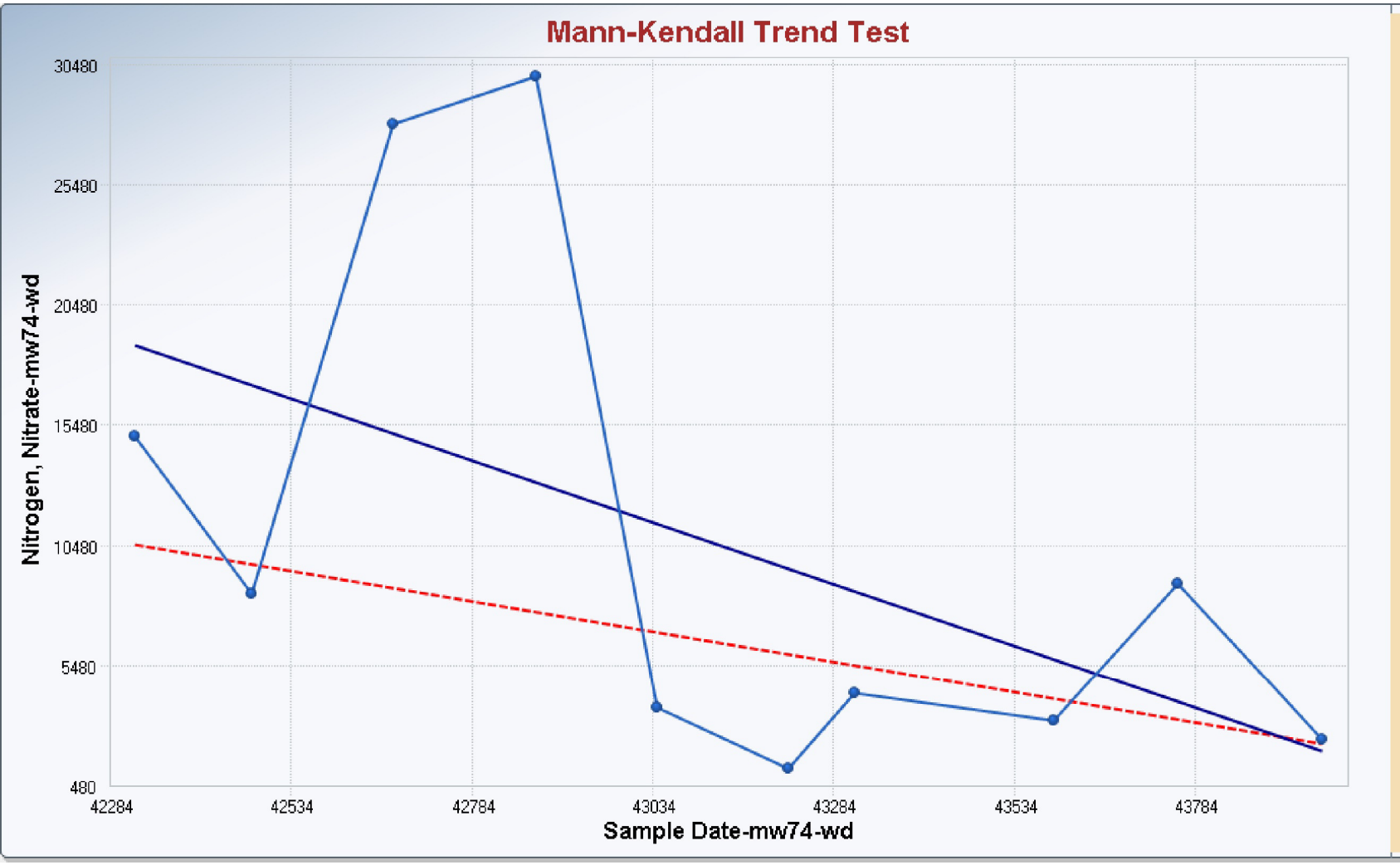
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	1200
Maximum	30000
Mean	10520
Geometric Mean	6524
Median	6400
Standard Deviation	10559
Coefficient of Variation	1.004

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	-10.2930
OLS Regression Intercept	454,377.7888

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-5.0360
Theil-Sen Intercept	223,603.9568

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 5.18/4/2020 1:58:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw77-wd

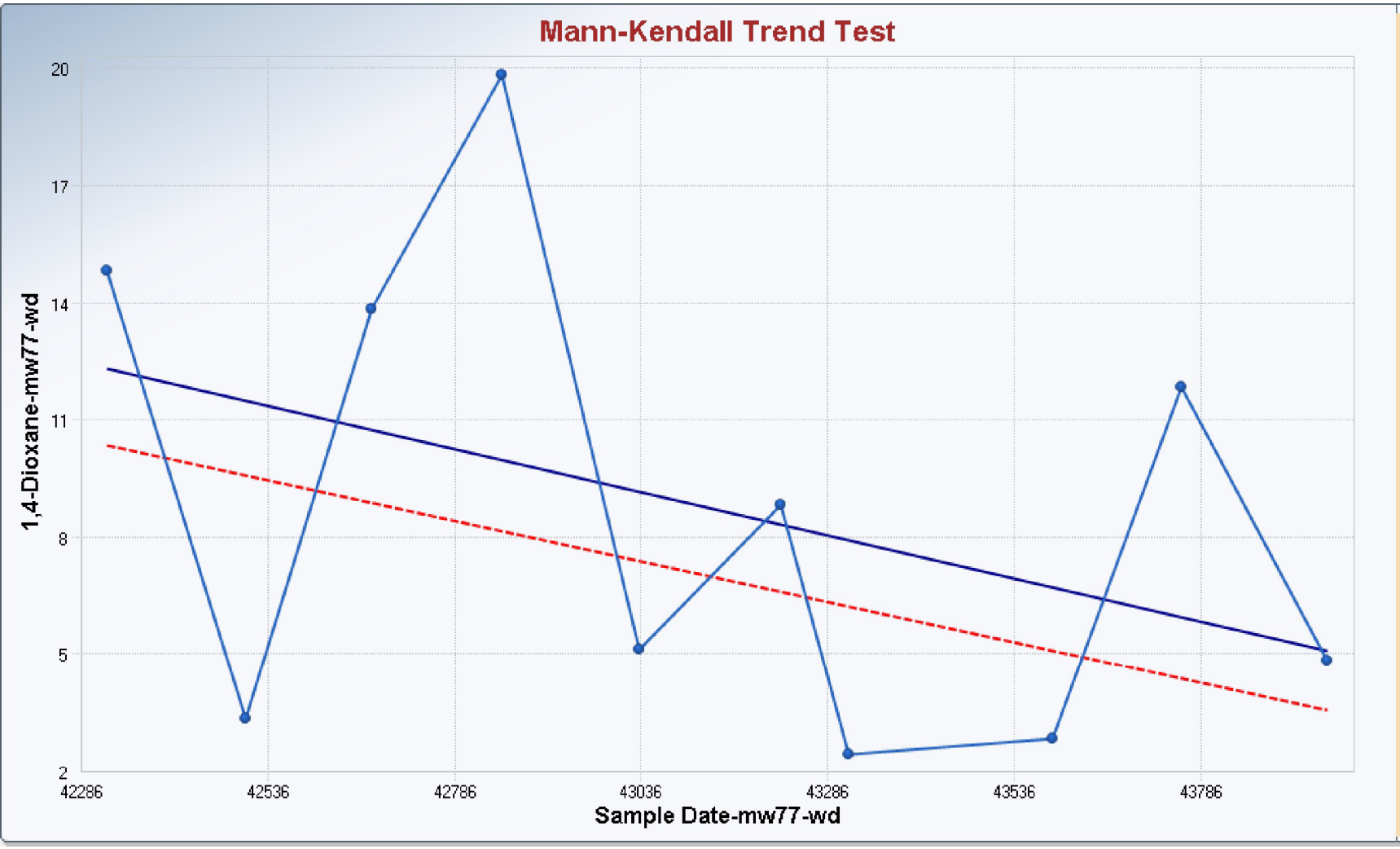
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	2.6
Maximum	20
Mean	8.94
Geometric Mean	7.106
Median	7.15
Standard Deviation	6.036
Coefficient of Variation	0.675

Mann-Kendall Test

M-K Test Value (S)	-13
Tabulated p-value	0.146
Standard Deviation of S	11.18
Standardized Value of S	-1.073
Approximate p-value	0.142

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	-1.0733
M-K Test Value (S)	-13
Tabulated p-value	0.1460
Approximate p-value	0.1416

OLS Regression Line (Blue)

OLS Regression Slope	-0.0044
OLS Regression Intercept	199.1735

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.0042
Theil-Sen Intercept	186.5271

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 5.18/4/2020 1:55:38 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Nitrogen, Nitrate-mw77-wd

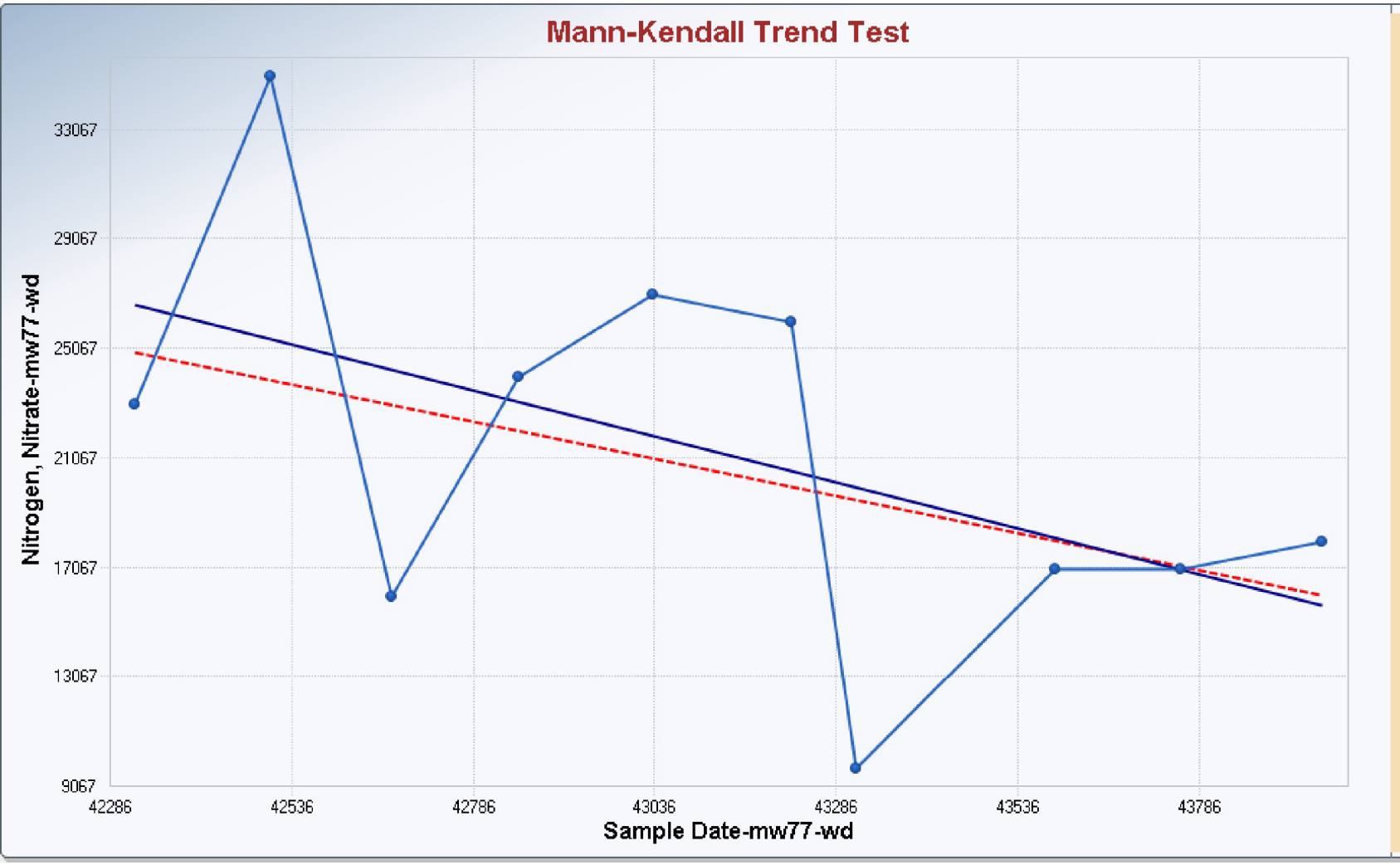
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	9700
Maximum	35000
Mean	21270
Geometric Mean	20134
Median	20500
Standard Deviation	7172
Coefficient of Variation	0.337

Mann-Kendall Test

M-K Test Value (S)	-10
Tabulated p-value	0.19
Standard Deviation of S	11.14
Standardized Value of S	-0.808
Approximate p-value	0.209

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	-0.8082
M-K Test Value (S)	-10
Tabulated p-value	0.1900
Approximate p-value	0.2095

OLS Regression Line (Blue)

OLS Regression Slope	-6.7086
OLS Regression Intercept	310,561.5273

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-5.4250
Theil-Sen Intercept	254,470.1627

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 5.18/4/2020 1:58:55 PM	
From File	COMPLIANCE M-K DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-mw106-ud

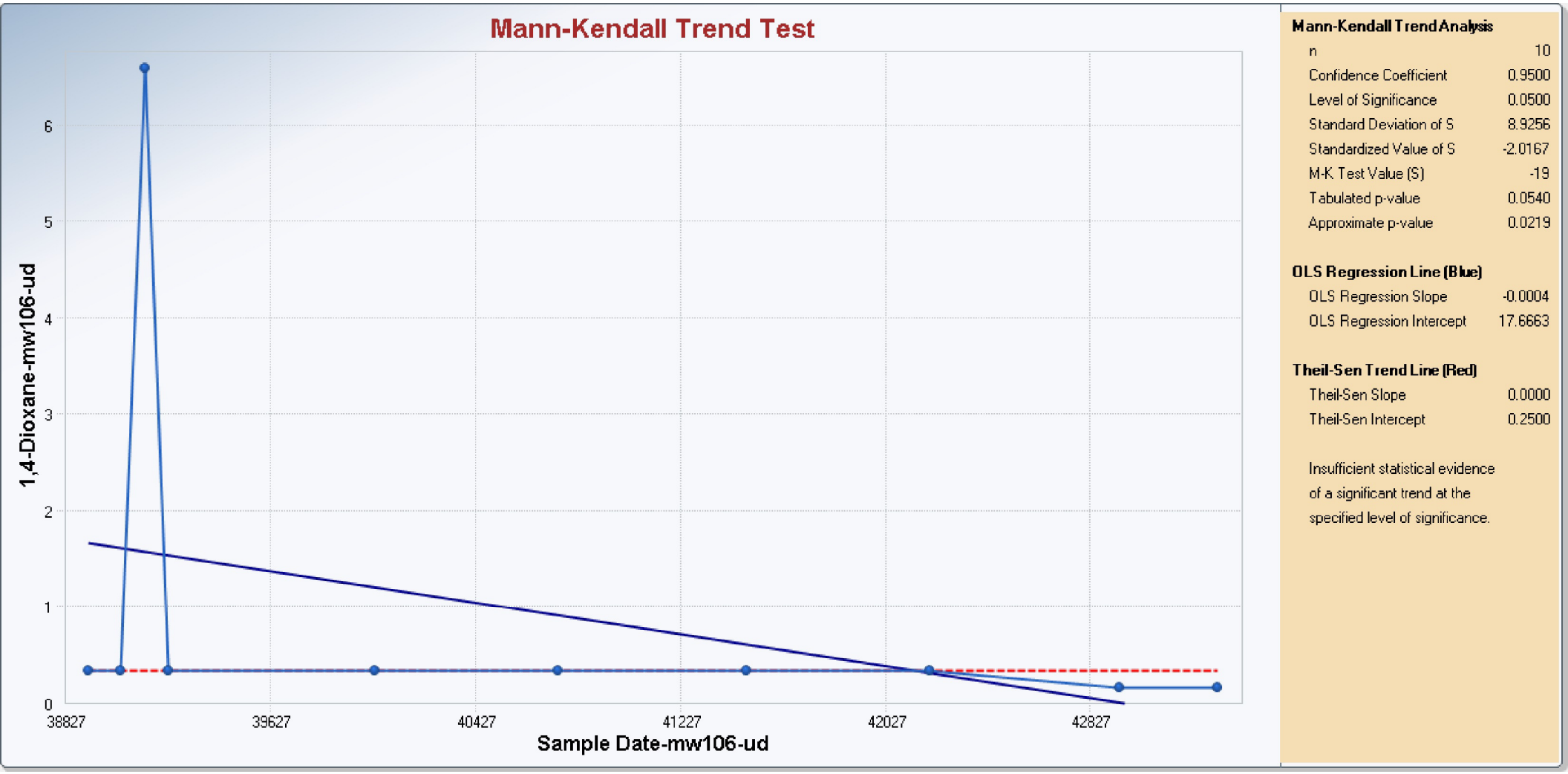
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.075
Maximum	6.5
Mean	0.84
Geometric Mean	0.272
Median	0.25
Standard Deviation	1.99
Coefficient of Variation	2.369

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 Test
1,4-Dioxane-mw106-ud
0
1
2
3
4
5
6
38827
39627
40427
41227
42027
42827
Sample Date-mw106-ud
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 -0.0004
OLS Regression Intercept 17.6663
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 0.2500
Insufficient statistical evidence of a significant trend at the specified level of significance.

APPENDIX C-3.3

COMPLIANCE EVALUATION STATISTICAL TESTING

Goodness-of-Fit Testing

1				**Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects**								
2		**User Selected Options**										
3		Date/Time of Computation		ProUCL 5.18/5/2020 1:41:42 PM								
4		From File		COMPLIANCE DATA 1H2020 rev_a.xls								
5		Full Precision		OFF								
6		Confidence Coefficient		0.95								
7												
8												
9	**1,4-Dioxane (b-313)**											
10												
11			**Raw Statistics**									
12			Number of Valid Observations	10								
13			Number of Distinct Observations	10								
14			Minimum	2.3								
15			Maximum	21								
16			Mean of Raw Data	11.9								
17			Standard Deviation of Raw Data	5.62								
18			Khat	3.759								
19			Theta hat	3.166								
20			Kstar	2.698								
21			Theta star	4.411								
22			Mean of Log Transformed Data	2.338								
23			Standard Deviation of Log Transformed Data	0.627								
24												
25			**Normal GOF Test Results**									
26												
27			Correlation Coefficient R	0.979								
28			Shapiro Wilk Test Statistic	0.961								
29			Shapiro Wilk Critical (0.05) Value	0.842								
30			Approximate Shapiro Wilk P Value	0.776								
31			Lilliefors Test Statistic	0.154								
32			Lilliefors Critical (0.05) Value	0.262								
33	**Data appear Normal at (0.05) Significance Level**											
34												
35			**Gamma GOF Test Results**									
36												
37			Correlation Coefficient R	0.964								
38			A-D Test Statistic	0.341								
39			A-D Critical (0.05) Value	0.73								
40			K-S Test Statistic	0.139								
41			K-S Critical(0.05) Value	0.268								
42	**Data appear Gamma Distributed at (0.05) Significance Level**											
43												
44			**Lognormal GOF Test Results**									
45												
46			Correlation Coefficient R	0.92								
47			Shapiro Wilk Test Statistic	0.864								
48			Shapiro Wilk Critical (0.05) Value	0.842								
49			Approximate Shapiro Wilk P Value	0.0576								
50			Lilliefors Test Statistic	0.181								
51			Lilliefors Critical (0.05) Value	0.262	C-3.3-1							
52	**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 5.18/5/2020 1:49:57 PM	
From File	COMPLIANCE DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

Nitrogen, Nitrate (b-313)

Raw Statistics	
Number of Valid Observations	10
Number of Distinct Observations	10
Minimum	21000
Maximum	47000
Mean of Raw Data	30400
Standard Deviation of Raw Data	8140
Khat	16.66
Theta hat	1825
Kstar	11.73
Theta star	2592
Mean of Log Transformed Data	10.29
Standard Deviation of Log Transformed Data	0.256

Normal GOF Test Results	
Correlation Coefficient R	0.958
Shapiro Wilk Test Statistic	0.918
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.333
Lilliefors Test Statistic	0.175
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results	
Correlation Coefficient R	0.978
A-D Test Statistic	0.291
A-D Critical (0.05) Value	0.725
K-S Test Statistic	0.142
K-S Critical(0.05) Value	0.266

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results		
Correlation Coefficient R	0.979	
Shapiro Wilk Test Statistic	0.952	
Shapiro Wilk Critical (0.05) Value	0.842	
Approximate Shapiro Wilk P Value	0.732	
Lilliefors Test Statistic	0.134	
Lilliefors Critical (0.05) Value	0.262	C-3.3-2

Data appear Lognormal at (0.05) Significance Level

1				**Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects**								
2			**User Selected Options**									
3			Date/Time of Computation	ProUCL 5.18/5/2020 1:49:57 PM								
4			From File	COMPLIANCE DATA 1H2020 rev_c.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	0.95								
7												
53												
54	**Nitrogen, Nitrate (b-326-ud)**											
55												
56			**Raw Statistics**									
57			Number of Valid Observations	10								
58			Number of Distinct Observations	10								
59			Minimum	700								
60			Maximum	66000								
61			Mean of Raw Data	20952								
62			Standard Deviation of Raw Data	23343								
63			Khat	0.591								
64			Theta hat	35458								
65			Kstar	0.48								
66			Theta star	43623								
67			Mean of Log Transformed Data	8.902								
68			Standard Deviation of Log Transformed Data	1.835								
69												
70			**Normal GOF Test Results**									
71												
72			Correlation Coefficient R	0.93								
73			Shapiro Wilk Test Statistic	0.85								
74			Shapiro Wilk Critical (0.05) Value	0.842								
75			Approximate Shapiro Wilk P Value	0.0753								
76			Lilliefors Test Statistic	0.194								
77			Lilliefors Critical (0.05) Value	0.262								
78	**Data appear Normal at (0.05) Significance Level**											
79												
80			**Gamma GOF Test Results**									
81												
82			Correlation Coefficient R	0.96								
83			A-D Test Statistic	0.476								
84			A-D Critical (0.05) Value	0.77								
85			K-S Test Statistic	0.211								
86			K-S Critical(0.05) Value	0.279								
87	**Data appear Gamma Distributed at (0.05) Significance Level**											
88												
89			**Lognormal GOF Test Results**									
90												
91			Correlation Coefficient R	0.946								
92			Shapiro Wilk Test Statistic	0.865								
93			Shapiro Wilk Critical (0.05) Value	0.842								
94			Approximate Shapiro Wilk P Value	0.152								
95			Lilliefors Test Statistic	0.198								
96			Lilliefors Critical (0.05) Value	0.262	C-3.3-3							
97	**Data appear Lognormal at (0.05) Significance Level**											

1				**Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects**								
2		**User Selected Options**										
3		Date/Time of Computation		ProUCL 5.18/5/2020 1:53:40 PM								
4		From File		COMPLIANCE DATA 1H2020 rev_e.xls								
5		Full Precision		OFF								
6		Confidence Coefficient		0.95								
7												
8												
9	**Tetrachloroethene (bm-11x-100n)**											
10												
11			**Raw Statistics**									
12				Number of Valid Observations	10							
13				Number of Distinct Observations	9							
14				Minimum	4.6							
15				Maximum	7.1							
16				Mean of Raw Data	6.1							
17				Standard Deviation of Raw Data	0.818							
18				Khat	58							
19				Theta hat	0.105							
20				Kstar	40.67							
21				Theta star	0.15							
22				Mean of Log Transformed Data	1.8							
23				Standard Deviation of Log Transformed Data	0.141							
24												
25			**Normal GOF Test Results**									
26												
27				Correlation Coefficient R	0.975							
28				Shapiro Wilk Test Statistic	0.94							
29				Shapiro Wilk Critical (0.05) Value	0.842							
30				Approximate Shapiro Wilk P Value	0.625							
31				Lilliefors Test Statistic	0.197							
32				Lilliefors Critical (0.05) Value	0.262							
33	**Data appear Normal at (0.05) Significance Level**											
34												
35			**Gamma GOF Test Results**									
36												
37				Correlation Coefficient R	0.961							
38				A-D Test Statistic	0.356							
39				A-D Critical (0.05) Value	0.724							
40				K-S Test Statistic	0.214							
41				K-S Critical(0.05) Value	0.266							
42	**Data appear Gamma Distributed at (0.05) Significance Level**											
43												
44			**Lognormal GOF Test Results**									
45												
46				Correlation Coefficient R	0.963							
47				Shapiro Wilk Test Statistic	0.92							
48				Shapiro Wilk Critical (0.05) Value	0.842							
49				Approximate Shapiro Wilk P Value	0.396							
50				Lilliefors Test Statistic	0.214							
51				Lilliefors Critical (0.05) Value	0.262	C-3.3-4						
52	**Data appear Lognormal at (0.05) Significance Level**											

1				**Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects**								
2		**User Selected Options**										
3		Date/Time of Computation		ProUCL 5.18/5/2020 1:55:16 PM								
4		From File		COMPLIANCE DATA 1H2020 rev_f.xls								
5		Full Precision		OFF								
6		Confidence Coefficient		0.95								
7												
8												
9	**Trichloroethene (bm-11x-100n)**											
10												
11			**Raw Statistics**									
12				Number of Valid Observations	10							
13				Number of Distinct Observations	9							
14				Minimum	3.6							
15				Maximum	6.9							
16				Mean of Raw Data	4.98							
17				Standard Deviation of Raw Data	0.926							
18				Khat	33.69							
19				Theta hat	0.148							
20				Kstar	23.65							
21				Theta star	0.211							
22				Mean of Log Transformed Data	1.591							
23				Standard Deviation of Log Transformed Data	0.181							
24												
25			**Normal GOF Test Results**									
26												
27				Correlation Coefficient R	0.966							
28				Shapiro Wilk Test Statistic	0.947							
29				Shapiro Wilk Critical (0.05) Value	0.842							
30				Approximate Shapiro Wilk P Value	0.516							
31				Lilliefors Test Statistic	0.191							
32				Lilliefors Critical (0.05) Value	0.262							
33	**Data appear Normal at (0.05) Significance Level**											
34												
35			**Gamma GOF Test Results**									
36												
37				Correlation Coefficient R	0.98							
38				A-D Test Statistic	0.254							
39				A-D Critical (0.05) Value	0.724							
40				K-S Test Statistic	0.168							
41				K-S Critical(0.05) Value	0.266							
42	**Data appear Gamma Distributed at (0.05) Significance Level**											
43												
44			**Lognormal GOF Test Results**									
45												
46				Correlation Coefficient R	0.98							
47				Shapiro Wilk Test Statistic	0.974							
48				Shapiro Wilk Critical (0.05) Value	0.842							
49				Approximate Shapiro Wilk P Value	0.834							
50				Lilliefors Test Statistic	0.158							
51				Lilliefors Critical (0.05) Value	0.262	C-3.3-5						
52	**Data appear Lognormal at (0.05) Significance Level**											

1				**Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects**								
2		**User Selected Options**										
3		Date/Time of Computation		ProUCL 5.18/5/2020 1:49:57 PM								
4		From File		COMPLIANCE DATA 1H2020 rev_c.xls								
5		Full Precision		OFF								
6		Confidence Coefficient		0.95								
7												
8												
99	**Nitrogen, Nitrate (bm-15e2)**											
100												
101			**Raw Statistics**									
102				Number of Valid Observations	10							
103				Number of Distinct Observations	7							
104				Minimum	14000							
105				Maximum	39000							
106				Mean of Raw Data	19800							
107				Standard Deviation of Raw Data	6973							
108				Khat	12.8							
109				Theta hat	1547							
110				Kstar	9.025							
111				Theta star	2194							
112				Mean of Log Transformed Data	9.854							
113				Standard Deviation of Log Transformed Data	0.273							
114												
115			**Normal GOF Test Results**									
116												
117				Correlation Coefficient R	0.76							
118				Shapiro Wilk Test Statistic	0.613							
119				Shapiro Wilk Critical (0.05) Value	0.842							
120				Approximate Shapiro Wilk P Value	7.0180E-5							
121				Lilliefors Test Statistic	0.389							
122				Lilliefors Critical (0.05) Value	0.262							
123	**Data not Normal at (0.05) Significance Level**											
124												
125			**Gamma GOF Test Results**									
126												
127				Correlation Coefficient R	0.816							
128				A-D Test Statistic	1.339							
129				A-D Critical (0.05) Value	0.725							
130				K-S Test Statistic	0.349							
131				K-S Critical(0.05) Value	0.267							
132	**Data not Gamma Distributed at (0.05) Significance Level**											
133												
134			**Lognormal GOF Test Results**									
135												
136				Correlation Coefficient R	0.835							
137				Shapiro Wilk Test Statistic	0.733							
138				Shapiro Wilk Critical (0.05) Value	0.842							
139				Approximate Shapiro Wilk P Value	0.00133							
140				Lilliefors Test Statistic	0.328							
141				Lilliefors Critical (0.05) Value	0.262	C-3.3-6						
142	**Data not 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 5.18/5/2020 1:49:57 PM
	From File	COMPLIANCE DATA 1H2020 rev_c.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

Nitrogen, Nitrate (bm-15n6)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	7
Minimum	35000
Maximum	49000
Mean of Raw Data	41600
Standard Deviation of Raw Data	4766
Khat	83.26
Theta hat	499.6
Kstar	58.35
Theta star	713
Mean of Log Transformed Data	10.63
Standard Deviation of Log Transformed Data	0.116

Normal GOF Test Results

Correlation Coefficient R	0.975
Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.613
Lilliefors Test Statistic	0.15
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.972
A-D Test Statistic	0.364
A-D Critical (0.05) Value	0.724
K-S Test Statistic	0.162
K-S Critical(0.05) Value	0.266

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.97
Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.514
Lilliefors Test Statistic	0.171
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 5.18/5/2020 1:41:42 PM
	From File	COMPLIANCE DATA 1H2020 rev_a.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

1,4-Dioxane (gw-109)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	0.53
Maximum	41
Mean of Raw Data	7.842
Standard Deviation of Raw Data	13.08
Khat	0.528
Theta hat	14.84
Kstar	0.436
Theta star	17.97
Mean of Log Transformed Data	0.867
Standard Deviation of Log Transformed Data	1.61

Normal GOF Test Results

Correlation Coefficient R	0.797
Shapiro Wilk Test Statistic	0.65
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	2.4163E-4
Lilliefors Test Statistic	0.336
Lilliefors Critical (0.05) Value	0.262

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.99
A-D Test Statistic	0.81
A-D Critical (0.05) Value	0.775
K-S Test Statistic	0.242
K-S Critical(0.05) Value	0.28

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.942	
Shapiro Wilk Test Statistic	0.867	
Shapiro Wilk Critical (0.05) Value	0.842	
Approximate Shapiro Wilk P Value	0.133	
Lilliefors Test Statistic	0.216	
Lilliefors Critical (0.05) Value	0.262	C-3.3-8

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 5.18/5/2020 1:47:46 PM	
From File	COMPLIANCE DATA 1H2020 rev_b.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	

Chloroform (mw38-830n-230e)

Raw Statistics		
Number of Valid Observations	10	
Number of Distinct Observations	9	
Minimum	2.1	
Maximum	6.9	
Mean of Raw Data	5.07	
Standard Deviation of Raw Data	1.668	
Khat	7.176	
Theta hat	0.707	
Kstar	5.09	
Theta star	0.996	
Mean of Log Transformed Data	1.552	
Standard Deviation of Log Transformed Data	0.438	

Normal GOF Test Results		
Correlation Coefficient R	0.906	
Shapiro Wilk Test Statistic	0.815	
Shapiro Wilk Critical (0.05) Value	0.842	
Approximate Shapiro Wilk P Value	0.0246	
Lilliefors Test Statistic	0.283	
Lilliefors Critical (0.05) Value	0.262	

Data not Normal at (0.05) Significance Level

Gamma GOF Test Results		
Correlation Coefficient R	0.853	
A-D Test Statistic	1.229	
A-D Critical (0.05) Value	0.728	
K-S Test Statistic	0.335	
K-S Critical(0.05) Value	0.267	

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results		
Correlation Coefficient R	0.848	
Shapiro Wilk Test Statistic	0.716	
Shapiro Wilk Critical (0.05) Value	0.842	
Approximate Shapiro Wilk P Value	0.00177	
Lilliefors Test Statistic	0.352	
Lilliefors Critical (0.05) Value	0.262	C-3.3-9

Data not 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 5.18/5/2020 1:41:42 PM
	From File	COMPLIANCE DATA 1H2020 rev_a.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	9
Minimum	2
Maximum	13
Mean of Raw Data	8.47
Standard Deviation of Raw Data	3.803
Khat	3.472
Theta hat	2.44
Kstar	2.497
Theta star	3.392
Mean of Log Transformed Data	1.986
Standard Deviation of Log Transformed Data	0.663

Normal GOF Test Results

Correlation Coefficient R	0.954
Shapiro Wilk Test Statistic	0.897
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.25
Lilliefors Test Statistic	0.176
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.885
A-D Test Statistic	0.857
A-D Critical (0.05) Value	0.731
K-S Test Statistic	0.246
K-S Critical(0.05) Value	0.268

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.882
Shapiro Wilk Test Statistic	0.773
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.00799
Lilliefors Test Statistic	0.285
Lilliefors Critical (0.05) Value	0.262

C-3.3-11

Data not 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 5.18/5/2020 1:49:57 PM
	From File	COMPLIANCE DATA 1H2020 rev_c.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

Nitrogen, Nitrate (mw62-wdr)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	4
Minimum	110000
Maximum	140000
Mean of Raw Data	120000
Standard Deviation of Raw Data	9428
Khat	186.5
Theta hat	643.6
Kstar	130.6
Theta star	919
Mean of Log Transformed Data	11.69
Standard Deviation of Log Transformed Data	0.0766

Normal GOF Test Results

Correlation Coefficient R	0.914
Shapiro Wilk Test Statistic	0.841
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.0406
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	0.923
A-D Test Statistic	0.766
A-D Critical (0.05) Value	0.724
K-S Test Statistic	0.29
K-S Critical(0.05) Value	0.266

Data not Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.921
Shapiro Wilk Test Statistic	0.851
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.0555
Lilliefors Test Statistic	0.286
Lilliefors Critical (0.05) Value	0.262

Data appear Approximate_Lognormal at (0.05) Significance Level

1				**Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects**								
2		**User Selected Options**										
3		Date/Time of Computation		ProUCL 5.18/5/2020 1:49:57 PM								
4		From File		COMPLIANCE DATA 1H2020 rev_c.xls								
5		Full Precision		OFF								
6		Confidence Coefficient		0.95								
7												
238	**Nitrogen, Nitrate (mw74-wd)**											
239												
240			**Raw Statistics**									
241				Number of Valid Observations	10							
242				Number of Distinct Observations	10							
243				Minimum	1200							
244				Maximum	30000							
245				Mean of Raw Data	10520							
246				Standard Deviation of Raw Data	10559							
247				Khat	1.186							
248				Theta hat	8874							
249				Kstar	0.897							
250				Theta star	11734							
251				Mean of Log Transformed Data	8.783							
252				Standard Deviation of Log Transformed Data	1.063							
253												
254			**Normal GOF Test Results**									
255												
256				Correlation Coefficient R	0.899							
257				Shapiro Wilk Test Statistic	0.797							
258				Shapiro Wilk Critical (0.05) Value	0.842							
259				Approximate Shapiro Wilk P Value	0.0173							
260				Lilliefors Test Statistic	0.261							
261				Lilliefors Critical (0.05) Value	0.262							
262	**Data appear Approximate Normal at (0.05) Significance Level**											
263												
264			**Gamma GOF Test Results**									
265												
266				Correlation Coefficient R	0.962							
267				A-D Test Statistic	0.377							
268				A-D Critical (0.05) Value	0.745							
269				K-S Test Statistic	0.199							
270				K-S Critical(0.05) Value	0.273							
271	**Data appear Gamma Distributed at (0.05) Significance Level**											
272												
273			**Lognormal GOF Test Results**									
274												
275				Correlation Coefficient R	0.985							
276				Shapiro Wilk Test Statistic	0.957							
277				Shapiro Wilk Critical (0.05) Value	0.842							
278				Approximate Shapiro Wilk P Value	0.85							
279				Lilliefors Test Statistic	0.152							
280				Lilliefors Critical (0.05) Value	0.262							
281	**Data appear Lognormal at (0.05) Significance Level**											
282												

	A	B	C	D	E	F	G	H	I	J	K	L
283	**Nitrogen, Nitrate (mw77-wd)**											
284												
285				**Raw Statistics**								
286					Number of Valid Observations	10						
287					Number of Distinct Observations	9						
288					Minimum	9700						
289					Maximum	35000						
290					Mean of Raw Data	21270						
291					Standard Deviation of Raw Data	7172						
292					Khat	9.277						
293					Theta hat	2293						
294					Kstar	6.561						
295					Theta star	3242						
296					Mean of Log Transformed Data	9.91						
297					Standard Deviation of Log Transformed Data	0.359						
298												
299				**Normal GOF Test Results**								
300												
301					Correlation Coefficient R	0.977						
302					Shapiro Wilk Test Statistic	0.964						
303					Shapiro Wilk Critical (0.05) Value	0.842						
304					Approximate Shapiro Wilk P Value	0.74						
305					Lilliefors Test Statistic	0.176						
306					Lilliefors Critical (0.05) Value	0.262						
307	**Data appear Normal at (0.05) Significance Level**											
308												
309				**Gamma GOF Test Results**								
310												
311					Correlation Coefficient R	0.982						
312					A-D Test Statistic	0.27						
313					A-D Critical (0.05) Value	0.726						
314					K-S Test Statistic	0.149						
315					K-S Critical(0.05) Value	0.267						
316	**Data appear Gamma Distributed at (0.05) Significance Level**											
317												
318				**Lognormal GOF Test Results**								
319												
320					Correlation Coefficient R	0.969						
321					Shapiro Wilk Test Statistic	0.952						
322					Shapiro Wilk Critical (0.05) Value	0.842						
323					Approximate Shapiro Wilk P Value	0.573						
324					Lilliefors Test Statistic	0.161						
325					Lilliefors Critical (0.05) Value	0.262						
326	**Data appear Lognormal at (0.05) Significance Level**											

	A	B	C	D	E	F	G	H	I	J	K	L
1				**Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects**								
2		**User Selected Options**										
3		Date/Time of Computation		ProUCL 5.18/5/2020 1:41:42 PM								
4		From File		COMPLIANCE DATA 1H2020 rev_a.xls								
5		Full Precision		OFF								
6		Confidence Coefficient		0.95								
7												
100												
147	**1,4-Dioxane (mw77-wd)**											
148												
149			**Raw Statistics**									
150				Number of Valid Observations		10						
151				Number of Distinct Observations		10						
152				Minimum		2.6						
153				Maximum		20						
154				Mean of Raw Data		8.94						
155				Standard Deviation of Raw Data		6.036						
156				Khat		2.33						
157				Theta hat		3.836						
158				Kstar		1.698						
159				Theta star		5.265						
160				Mean of Log Transformed Data		1.961						
161				Standard Deviation of Log Transformed Data		0.737						
162												
163			**Normal GOF Test Results**									
164												
165				Correlation Coefficient R		0.957						
166				Shapiro Wilk Test Statistic		0.901						
167				Shapiro Wilk Critical (0.05) Value		0.842						
168				Approximate Shapiro Wilk P Value		0.286						
169				Lilliefors Test Statistic		0.227						
170				Lilliefors Critical (0.05) Value		0.262						
171	**Data appear Normal at (0.05) Significance Level**											
172												
173			**Gamma GOF Test Results**									
174												
175				Correlation Coefficient R		0.977						
176				A-D Test Statistic		0.381						
177				A-D Critical (0.05) Value		0.734						
178				K-S Test Statistic		0.194						
179				K-S Critical(0.05) Value		0.269						
180	**Data appear Gamma Distributed at (0.05) Significance Level**											
181												
182			**Lognormal GOF Test Results**									
183												
184				Correlation Coefficient R		0.973						
185				Shapiro Wilk Test Statistic		0.925						
186				Shapiro Wilk Critical (0.05) Value		0.842						
187				Approximate Shapiro Wilk P Value		0.559						
188				Lilliefors Test Statistic		0.162						
189				Lilliefors Critical (0.05) Value		0.262	C-3.3-15					
190	**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 5.18/5/2020 1:49:57 PM
	From File	COMPLIANCE DATA 1H2020 rev_c.xls
	Full Precision	OFF
	Confidence Coefficient	0.95

Nitrogen, Nitrate (mw77-wd)

Raw Statistics

Number of Valid Observations	10
Number of Distinct Observations	9
Minimum	9700
Maximum	35000
Mean of Raw Data	21270
Standard Deviation of Raw Data	7172
Khat	9.277
Theta hat	2293
Kstar	6.561
Theta star	3242
Mean of Log Transformed Data	9.91
Standard Deviation of Log Transformed Data	0.359

Normal GOF Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.964
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.74
Lilliefors Test Statistic	0.176
Lilliefors Critical (0.05) Value	0.262

Data appear Normal at (0.05) Significance Level

Gamma GOF Test Results

Correlation Coefficient R	0.982
A-D Test Statistic	0.27
A-D Critical (0.05) Value	0.726
K-S Test Statistic	0.149
K-S Critical(0.05) Value	0.267

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal GOF Test Results

Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical (0.05) Value	0.842
Approximate Shapiro Wilk P Value	0.573
Lilliefors Test Statistic	0.161
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

	A	B	C	D	E	F	G	H	I	J	K
1					**Outlier Tests for Selected Uncensored Variables**						
2				**User Selected Options**							
3				Date/Time of Computation	ProUCL 5.18/5/2020 11:29:50 AM						
4					From File	COMPLIANCE DATA 1H2020 rev_a.xls					
5					Full Precision	OFF					
6											
7											
8				**Dixon's Outlier Test for 1,4-Dioxane (b-313)**							
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 21 is a Potential Outlier (Upper Tail)?**										
16											
17	Test Statistic: 0.072										
18											
19	For 10% significance level, 21 is not an outlier.										
20	For 5% significance level, 21 is not an outlier.										
21	For 1% significance level, 21 is not an outlier.										
22											
23	**2. Observation Value 2.3 is a Potential Outlier (Lower Tail)?**										
24											
25	Test Statistic: 0.277										
26											
27	For 10% significance level, 2.3 is not an outlier.										
28	For 5% significance level, 2.3 is not an outlier.										
29	For 1% significance level, 2.3 is not an outlier.										
30											
31											

	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 5.19/12/2020 2:33:13 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for Nitrogen, Nitrate (b-313)**											
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 47000 is a Potential Outlier (Upper Tail)**											
16												
17	Test Statistic: 0.280											
18												
19	For 10% significance level, 47000 is not an outlier.											
20	For 5% significance level, 47000 is not an outlier.											
21	For 1% significance level, 47000 is not an outlier.											
22												
23	**2. Observation Value 21000 is a Potential Outlier (Lower Tail)**											
24												
25	Test Statistic: 0.053											
26												
27	For 10% significance level, 21000 is not an outlier.											
28	For 5% significance level, 21000 is not an outlier.											
29	For 1% significance level, 21000 is not an outlier.											
30												

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.18/5/2020 11:29:50 AM	
From File	COMPLIANCE DATA 1H2020 rev_a.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: 0.130

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 3.1 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.000

For 10% significance level, 3.1 is not an outlier.

For 5% significance level, 3.1 is not an outlier.

For 1% significance level, 3.1 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 5.19/12/2020 2:33:13 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
31												
32	**Dixon's Outlier Test for Nitrogen, Nitrate (b-326-ud)**											
33												
34	Number of Observations = 10											
35	10% critical value: 0.409											
36	5% critical value: 0.477											
37	1% critical value: 0.597											
38												
39	**1. Observation Value 66000 is a Potential Outlier (Upper Tail)**											
40												
41	Test Statistic: 0.260											
42												
43	For 10% significance level, 66000 is not an outlier.											
44	For 5% significance level, 66000 is not an outlier.											
45	For 1% significance level, 66000 is not an outlier.											
46												
47	**2. Observation Value 700 is a Potential Outlier (Lower Tail)?**											
48												
49	Test Statistic: 0.001											
50												
51	For 10% significance level, 700 is not an outlier.											
52	For 5% significance level, 700 is not an outlier.											
53	For 1% significance level, 700 is not an outlier.											
54												

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.18/5/2020 11:29:50 AM	
From File	COMPLIANCE DATA 1H2020 rev_a.xls	
Full Precision	OFF	

Dixon's Outlier Test for 1,4-Dioxane (b-326-wd)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 11 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.127

For 10% significance level, 11 is not an outlier.

For 5% significance level, 11 is not an outlier.

For 1% significance level, 11 is not an outlier.

2. Observation Value 2.2 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.115

For 10% significance level, 2.2 is not an outlier.

For 5% significance level, 2.2 is not an outlier.

For 1% significance level, 2.2 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 5.18/5/2020 12:23:24 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_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 7.1 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.100											
18												
19	For 10% significance level, 7.1 is not an outlier.											
20	For 5% significance level, 7.1 is not an outlier.											
21	For 1% significance level, 7.1 is not an outlier.											
22												
23	**2. Observation Value 4.6 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.217											
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												

	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 5.18/5/2020 12:25:14 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_f.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for Trichloroethene (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 6.9 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.385											
18												
19	For 10% significance level, 6.9 is not an outlier.											
20	For 5% significance level, 6.9 is not an outlier.											
21	For 1% significance level, 6.9 is not an outlier.											
22												
23	**2. Observation Value 3.6 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.304											
26												
27	For 10% significance level, 3.6 is not an outlier.											
28	For 5% significance level, 3.6 is not an outlier.											
29	For 1% significance level, 3.6 is not an outlier.											
30												

	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 5.19/12/2020 2:33:13 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
55												
56	**Dixon's Outlier Test for Nitrogen, Nitrate (bm-15e2)**											
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 39000 is a Potential Outlier (Upper Tail)**											
64												
65	Test Statistic: 0.826											
66												
67	For 10% significance level, 39000 is an outlier.											
68	For 5% significance level, 39000 is an outlier.											
69	For 1% significance level, 39000 is an outlier.											
70												
71	**2. Observation Value 14000 is a Potential Outlier (Lower Tail)**											
72												
73	Test Statistic: 0.333											
74												
75	For 10% significance level, 14000 is not an outlier.											
76	For 5% significance level, 14000 is not an outlier.											
77	For 1% significance level, 14000 is not an outlier.											
78												

	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 5.19/12/2020 2:33:13 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
55												
79												
80	**Dixon's Outlier Test for Nitrogen, Nitrate (bm-15n6)**											
81												
82	Number of Observations = 10											
83	10% critical value: 0.409											
84	5% critical value: 0.477											
85	1% critical value: 0.597											
86												
87	**1. Observation Value 49000 is a Potential Outlier (Upper Tail)**											
88												
89	Test Statistic: 0.214											
90												
91	For 10% significance level, 49000 is not an outlier.											
92	For 5% significance level, 49000 is not an outlier.											
93	For 1% significance level, 49000 is not an outlier.											
94												
95	**2. Observation Value 35000 is a Potential Outlier (Lower Tail)**											
96												
97	Test Statistic: 0.000											
98												
99	For 10% significance level, 35000 is not an outlier.											
100	For 5% significance level, 35000 is not an outlier.											
101	For 1% significance level, 35000 is not an outlier.											
102												

	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 5.18/11/2020 12:58:49 PM							
4				From File	GW-109 14D DATA CORRECTED.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for 1,4-Dioxane (gw-109)**											
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 41 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.519											
18												
19	For 10% significance level, 41 is an outlier.											
20	For 5% significance level, 41 is an outlier.											
21	For 1% significance level, 41 is not an outlier.											
22												
23	**2. Observation Value 0.53 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.001											
26												
27	For 10% significance level, 0.53 is not an outlier.											
28	For 5% significance level, 0.53 is not an outlier.											
29	For 1% significance level, 0.53 is not an outlier.											
30												

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.18/5/2020 11:29:50 AM	
From File	COMPLIANCE DATA 1H2020 rev_a.xls	
Full Precision	OFF	

Dixon's Outlier Test for 1,4-Dioxane (gw-109)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 41 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.544

For 10% significance level, 41 is an outlier.

For 5% significance level, 41 is an outlier.

For 1% significance level, 41 is not an outlier.

2. Observation Value 0.53 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.001

For 10% significance level, 0.53 is not an outlier.

For 5% significance level, 0.53 is not an outlier.

For 1% significance level, 0.53 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 5.18/5/2020 11:29:50 AM							
4					From File	COMPLIANCE DATA 1H2020 rev_a.xls						
5					Full Precision	OFF						
6												
103												
127												
128				**Dixon's Outlier Test for 1,4-Dioxane (mw38-830n-230e)**								
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 13 is a Potential Outlier (Upper Tail)?**											
136												
137	Test Statistic: 0.094											
138												
139	For 10% significance level, 13 is not an outlier.											
140	For 5% significance level, 13 is not an outlier.											
141	For 1% significance level, 13 is not an outlier.											
142												
143	**2. Observation Value 2 is a Potential Outlier (Lower Tail)?**											
144												
145	Test Statistic: 0.040											
146												
147	For 10% significance level, 2 is not an outlier.											
148	For 5% significance level, 2 is not an outlier.											
149	For 1% significance level, 2 is not an outlier.											
150												
151												

	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 5.18/5/2020 12:17:30 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for Chloroform (mw38-830n-230e)**											
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 6.9 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.104											
18												
19	For 10% significance level, 6.9 is not an outlier.											
20	For 5% significance level, 6.9 is not an outlier.											
21	For 1% significance level, 6.9 is not an outlier.											
22												
23	**2. Observation Value 2.1 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.000											
26												
27	For 10% significance level, 2.1 is not an outlier.											
28	For 5% significance level, 2.1 is not an outlier.											
29	For 1% significance level, 2.1 is not an outlier.											
30												

	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 5.18/5/2020 11:29:50 AM							
4					From File	COMPLIANCE DATA 1H2020 rev_a.xls						
5					Full Precision	OFF						
6												
151												
152					**Dixon's Outlier Test for 1,4-Dioxane (mw62-wdr)**							
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 5.8 is a Potential Outlier (Upper Tail)?**											
160												
161	Test Statistic: 0.174											
162												
163	For 10% significance level, 5.8 is not an outlier.											
164	For 5% significance level, 5.8 is not an outlier.											
165	For 1% significance level, 5.8 is not an outlier.											
166												
167	**2. Observation Value 3.4 is a Potential Outlier (Lower Tail)?**											
168												
169	Test Statistic: 0.050											
170												
171	For 10% significance level, 3.4 is not an outlier.											
172	For 5% significance level, 3.4 is not an outlier.											
173	For 1% significance level, 3.4 is not an outlier.											
174												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Variables replacing nondetects with 1/2 the Detection Limit**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.18/5/2020 11:18:36 AM							
4				From File	COMPLIANCE DATA 1H2020 rev_d.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for Nitrogen, Nitrite (mw62-wdr)**											
9												
10	Total N = 10											
11	Number NDs = 1											
12	Number Detects = 9											
13	Number Data (n) = 10											
14	10% critical value: 0.409											
15	5% critical value: 0.477											
16	1% critical value: 0.597											
17	Note: NDs replaced by DL/2 in Outlier Test											
18												
19	**1. Data Value 5400 is a Potential Outlier (Upper Tail)?**											
20												
21	Test Statistic: 0.000											
22												
23	For 10% significance level, 5400 is not an outlier.											
24	For 5% significance level, 5400 is not an outlier.											
25	For 1% significance level, 5400 is not an outlier.											
26												
27	**2. Data Value 490 is a Potential Outlier (Lower Tail)?**											
28												
29	Test Statistic: 0.206											
30												
31	For 10% significance level, 490 is not an outlier.											
32	For 5% significance level, 490 is not an outlier.											
33	For 1% significance level, 490 is not an outlier.											
34												

	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 5.19/12/2020 2:33:13 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
103												
104	**Dixon's Outlier Test for Nitrogen, Nitrate (mw62-wdr)**											
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 140000 is a Potential Outlier (Upper Tai**											
112												
113	Test Statistic: 0.333											
114												
115	For 10% significance level, 140000 is not an outlier.											
116	For 5% significance level, 140000 is not an outlier.											
117	For 1% significance level, 140000 is not an outlier.											
118												
119	**2. Observation Value 110000 is a Potential Outlier (Lower Tail**											
120												
121	Test Statistic: 0.000											
122												
123	For 10% significance level, 110000 is not an outlier.											
124	For 5% significance level, 110000 is not an outlier.											
125	For 1% significance level, 110000 is not an outlier.											
126												

	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 5.19/12/2020 2:33:13 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
127												
128	**Dixon's Outlier Test for Nitrogen, Nitrate (mw74-wd)**											
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 30000 is a Potential Outlier (Upper Tail)**											
136												
137	Test Statistic: 0.072											
138												
139	For 10% significance level, 30000 is not an outlier.											
140	For 5% significance level, 30000 is not an outlier.											
141	For 1% significance level, 30000 is not an outlier.											
142												
143	**2. Observation Value 1200 is a Potential Outlier (Lower Tail)?**											
144												
145	Test Statistic: 0.045											
146												
147	For 10% significance level, 1200 is not an outlier.											
148	For 5% significance level, 1200 is not an outlier.											
149	For 1% significance level, 1200 is not an outlier.											
150												

	Outlier Tests for Selected Uncensored Variables	
	User Selected Options	
Date/Time of Computation	ProUCL 5.18/5/2020 11:29:50 AM	
From File	COMPLIANCE DATA 1H2020 rev_a.xls	
Full Precision	OFF	

Dixon's Outlier Test for 1,4-Dioxane (mw77-wd)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 20 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.294

For 10% significance level, 20 is not an outlier.

For 5% significance level, 20 is not an outlier.

For 1% significance level, 20 is not an outlier.

2. Observation Value 2.6 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.032

For 10% significance level, 2.6 is not an outlier.

For 5% significance level, 2.6 is not an outlier.

For 1% significance level, 2.6 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 5.19/12/2020 2:33:13 PM							
4				From File	COMPLIANCE DATA 1H2020 rev_b.xls							
5				Full Precision	OFF							
6												
151												
152	**Dixon's Outlier Test for Nitrogen, Nitrate (mw77-wd)**											
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 35000 is a Potential Outlier (Upper Tail)**											
160												
161	Test Statistic: 0.421											
162												
163	For 10% significance level, 35000 is an outlier.											
164	For 5% significance level, 35000 is not an outlier.											
165	For 1% significance level, 35000 is not an outlier.											
166												
167	**2. Observation Value 9700 is a Potential Outlier (Lower Tail)?**											
168												
169	Test Statistic: 0.364											
170												
171	For 10% significance level, 9700 is not an outlier.											
172	For 5% significance level, 9700 is not an outlier.											
173	For 1% significance level, 9700 is not an outlier.											
174												

1					**Outlier Tests for Selected Variables replacing nondetects with 1/2 the Detection Limit**							
2				**User Selected Options**								
3			Date/Time of Computation		ProUCL 5.18/5/2020 11:21:50 AM							
4				From File	COMPLIANCE DATA 1H2020 rev_a.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for 1,4-Dioxane (mw106-ud)**											
9												
10	Total N = 10											
11	Number NDs = 9											
12	Number Detects = 1											
13	Number Data (n) = 10											
14	10% critical value: 0.409											
15	5% critical value: 0.477											
16	1% critical value: 0.597											
17	Note: NDs replaced by DL/2 in Outlier Test											
18												
19	**1. Data Value 6.5 is a Potential Outlier (Upper Tail)?**											
20												
21	Test Statistic: 0.973											
22												
23	For 10% significance level, 6.5 is an outlier.											
24	For 5% significance level, 6.5 is an outlier.											
25	For 1% significance level, 6.5 is an outlier.											
26												
27	**2. Data Value 0.075 is a Potential Outlier (Lower Tail)?**											
28												
29	Test Statistic: 0.000											
30												
31	For 10% significance level, 0.075 is not an outlier.											
32	For 5% significance level, 0.075 is not an outlier.											
33	For 1% significance level, 0.075 is not an outlier.											
34												
35												

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 5.18/6/2020 8:38:50 AM
From File	COMPLIANCE DATA 1H2020 rev_a.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	False
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	-196.2	59.72	-3.285	0.0111
mple Date_b-326	0.00463	0.00137	3.378	0.00967

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	15.8	1	15.8	11.41	0.0097
Error	11.08	8	1.384		
Total	26.88	9			

R Square	0.588
Adjusted R Square	0.536
Sqrt(MSE) = Scale	1.177

Regression Table

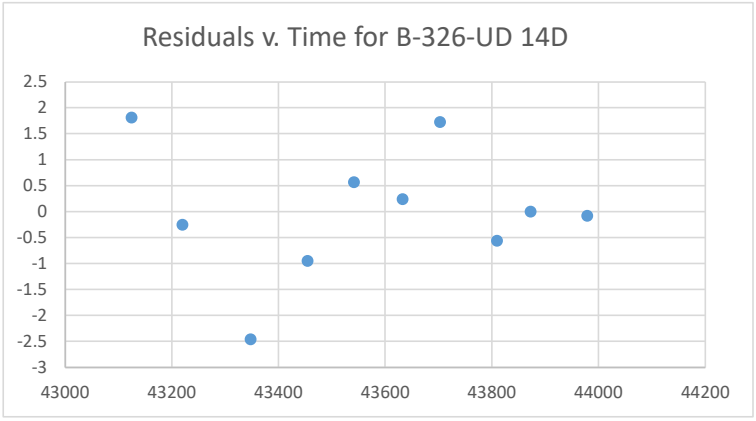
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	5.5	3.537	1.963	1.668
2	3.1	3.977	-0.877	-0.746
3	3.9	4.403	-0.503	-0.428
4	3.1	5.098	-1.998	-1.698
5	5	5.482	-0.482	-0.41
6	6.5	5.89	0.61	0.519
7	7	6.214	0.786	0.668
8	7.1	6.71	0.39	0.332
9	7.7	7.001	0.699	0.594
10	6.9	7.488	-0.588	-0.499

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	43125	5.5	3.537	0.71	1.374	2.217	4.857	0.982	6.093	1.963
2	43220	3.1	3.977	0.603	1.322	2.856	5.098	1.519	6.436	-0.877
3	43312	3.9	4.403	0.51	1.282	3.455	5.351	2.019	6.788	-0.503
4	43462	3.1	5.098	0.399	1.242	4.357	5.839	2.788	7.408	-1.998
5	43545	5	5.482	0.373	1.234	4.788	6.176	3.187	7.778	-0.482
6	43633	6.5	5.89	0.383	1.237	5.177	6.602	3.589	8.191	0.61

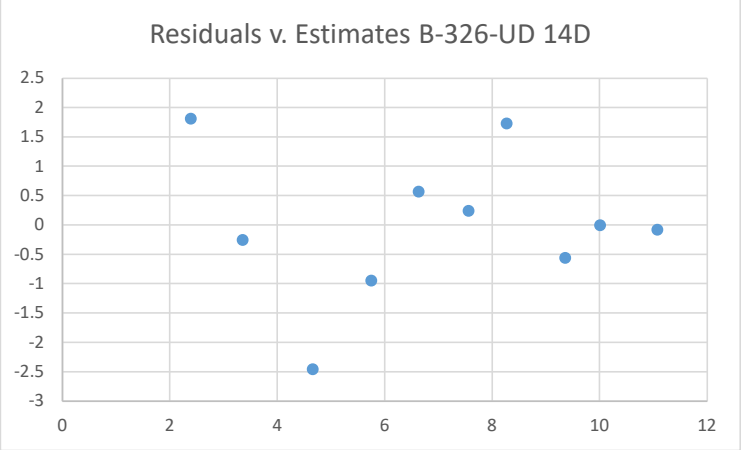
7	43703	7	6.214	0.417	1.248	5.439	6.989	3.893	8.535	0.786
8	43810	7.1	6.71	0.5	1.279	5.779	7.64	4.332	9.087	0.39
9	43873	7.7	7.001	0.562	1.304	5.957	8.046	4.577	9.426	0.699
10	43978	6.9	7.488	0.676	1.357	6.23	8.745	4.964	10.01	-0.588

	X Vector	Residuals
1/25/2018	43125	1.963
4/30/2018	43220	-0.877
7/31/2018	43312	-0.503
12/28/2018	43462	-1.998
3/21/2019	43545	-0.482
6/17/2019	43633	0.61
8/26/2019	43703	0.786
12/11/2019	43810	0.39
2/12/2020	43873	0.699
5/27/2020	43978	-0.588



CONSTANT

Yhat	Residuals
3.537	1.963
3.977	-0.877
4.403	-0.503
5.098	-1.998
5.482	-0.482
5.89	0.61
6.214	0.786
6.71	0.39
7.001	0.699
7.488	-0.588



CONSTANT

Shapiro-Wilks Test for Normality

	Residuals ascending	Residuals descending	Column C-I	Coeffiicient	
1	-1.998	1.963	3.961	0.5739	2.273218
2	-0.877	0.786	1.663	0.3291	0.547293
3	-0.588	0.699	1.287	0.2141	0.275547
4	-0.503	0.61	1.113	0.1224	0.136231
5	-0.482	0.39	0.872	0.0399	0.034793
6	0.39	-0.482	-0.872	b=	3.267082
7	0.61	-0.503	-1.113	StdDev=	1.109363
8	0.699	-0.588	-1.287	SW=	0.963674
9	0.786	-0.877	-1.663	Critical pt =	0.842
10	1.963	-1.998	-3.961		

SW= Shapiro-Wilk Statistic

5%

Assume Normal

B-326-WD 1,4-DIOXANE

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.18/6/2020 8:38:50 AM
From File	COMPLIANCE DATA 1H2020 rev_a.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	False
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-wd
Number Reported (Y values)	10
Independent Variable (x-data)	Sample Date_b-326-wd
Number Reported (x-values)	10

Regression Estimates and Inference Table

Parameter	Estimates	Std. Error	T-values	p-values
intercept	-436.5	67.76	-6.441	2.0016E-4
nple Date_b-326-	0.0102	0.00156	6.543	1.7972E-4

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	74.79	1	74.79	42.82	0.0002
Error	13.98	8	1.747		
Total	88.77	9			

R Square	0.843
Adjusted R Square	0.823
Sqrt(MSE) = Scale	1.322

Regression Table

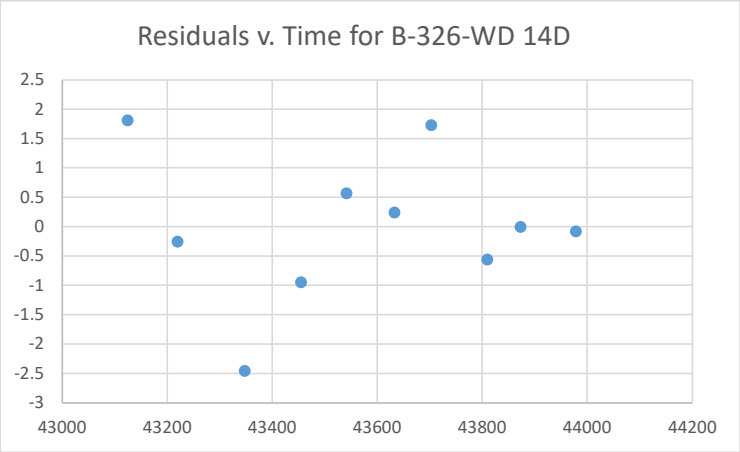
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	4.2	2.393	1.807	1.367
2	3.1	3.36	-0.26	-0.197
3	2.2	4.663	-2.463	-1.863
4	4.8	5.752	-0.952	-0.72
5	7.2	6.637	0.563	0.426
6	7.8	7.563	0.237	0.179
7	10	8.276	1.724	1.305
8	8.8	9.365	-0.565	-0.427
9	10	10.01	-0.00584	-0.00442
10	11	11.08	-0.0846	-0.064

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	43125	4.2	2.393	0.807	1.549	0.893	3.894	-0.486	5.273	1.807
2	43220	3.1	3.36	0.685	1.489	2.087	4.634	0.592	6.128	-0.26
3	43348	2.2	4.663	0.541	1.428	3.657	5.669	2.007	7.319	-2.463
4	43455	4.8	5.752	0.454	1.397	4.908	6.596	3.153	8.351	-0.952
5	43542	7.2	6.637	0.42	1.387	5.856	7.418	4.058	9.216	0.563
6	43633	7.8	7.563	0.43	1.39	6.764	8.362	4.979	10.15	0.237

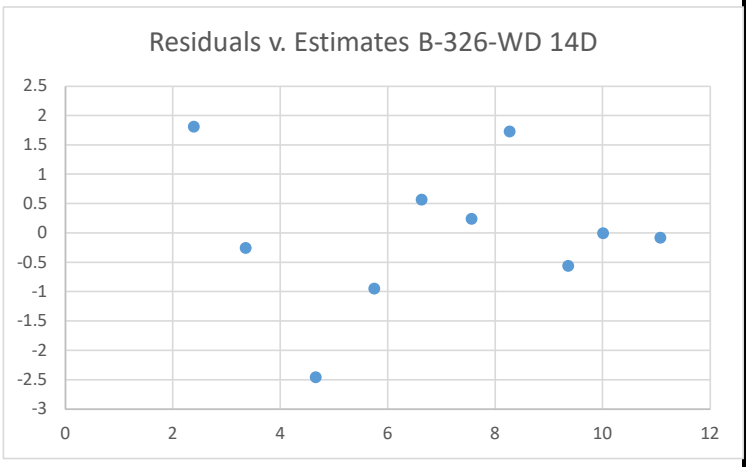
7	43703	10	8.276	0.467	1.402	7.407	9.144	5.669	10.88	1.724
8	43810	8.8	9.365	0.562	1.436	8.32	10.41	6.694	12.04	-0.565
9	43873	10	10.01	0.631	1.465	8.832	11.18	7.282	12.73	-0.00584
10	43979	11	11.08	0.763	1.526	9.666	12.5	8.247	13.92	-0.0846

	X Vector	Residuals
43125	43125	1.807
43220	43220	-0.26
43348	43348	-2.463
43455	43455	-0.952
43542	43542	0.563
43633	43633	0.237
43703	43703	1.724
43810	43810	-0.565
43873	43873	-0.00584
43979	43979	-0.0846



CONSTANT

	Yhat	Residuals
	2.393	1.807
	3.36	-0.26
	4.663	-2.463
	5.752	-0.952
	6.637	0.563
	7.563	0.237
	8.276	1.724
	9.365	-0.565
	10.01	-0.00584
	11.08	-0.0846



CONSTANT

Shapiro-Wilks Test for Normality

	Residuals ascending	Residuals descending	Column C-b	Coefficient a	
1	-2.463	1.807	4.27	0.5739	2.450553
2	-0.952	1.724	2.676	0.3291	0.880672
3	-0.565	0.563	1.128	0.2141	0.241505
4	-0.26	0.237	0.497	0.1224	0.060833
5	-0.0846	-0.00584	0.07876	0.0399	0.003143
6	-0.00584	-0.0846	-0.07876	b=	3.636705
7	0.237	-0.26	-0.497	StdDev=	1.246205
8	0.563	-0.565	-1.128	SW=	0.946225
9	1.724	-0.952	-2.676	Critical pt =	0.842 5%
10	1.807	-2.463	-4.27		

SW= Shapiro-Wilk Statistic

Assume Normal

MW62-WDR 1,4-DIOXANE

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.18/6/2020 8:38:50 AM
From File	COMPLIANCE DATA 1H2020 rev_a.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	False
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	82.78	16.31	5.077	9.5679E-4
ıple Date_mw62·	-0.00181	3.7680E-4	-4.808	0.00134

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	4.841	1	4.841	23.12	0.0013
Error	1.675	8	0.209		
Total	6.516	9			

R Square	0.743
Adjusted R Square	0.711
Sqrt(MSE) = Scale	0.458

Regression Table

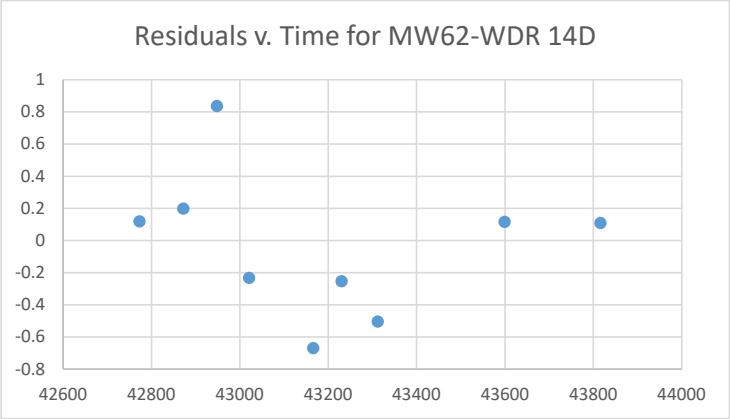
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	5.4	5.281	0.119	0.26
2	5.3	5.101	0.199	0.434
3	5.8	4.964	0.836	1.828
4	4.6	4.832	-0.232	-0.506
5	3.9	4.569	-0.669	-1.462
6	4.2	4.453	-0.253	-0.553
7	3.8	4.304	-0.504	-1.102
8	3.9	3.784	0.116	0.253
9	3.5	3.391	0.109	0.238
10	3.4	3.121	0.279	0.609

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	42773	5.4	5.281	0.237	0.515	4.841	5.721	4.323	6.239	0.119
2	42872	5.3	5.101	0.208	0.503	4.714	5.489	4.166	6.036	0.199
3	42948	5.8	4.964	0.189	0.495	4.613	5.315	4.043	5.884	0.836
4	43021	4.6	4.832	0.172	0.489	4.511	5.152	3.922	5.741	-0.232
5	43166	3.9	4.569	0.15	0.482	4.29	4.848	3.673	5.464	-0.669
6	43230	4.2	4.453	0.145	0.48	4.182	4.723	3.56	5.346	-0.253
7	43312	3.8	4.304	0.146	0.48	4.034	4.575	3.411	5.197	-0.504

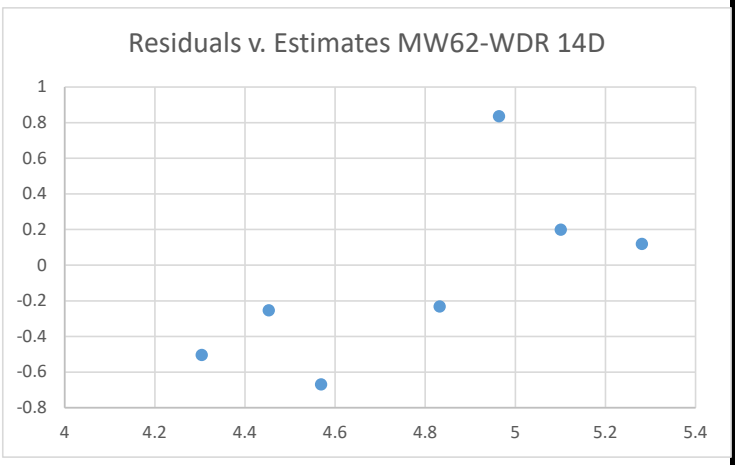
8	43599	3.9	3.784	0.19	0.496	3.43	4.138	2.863	4.706	0.116
9	43816	3.5	3.391	0.251	0.522	2.923	3.859	2.42	4.362	0.109
10	43965	3.4	3.121	0.299	0.547	2.565	3.677	2.105	4.138	0.279

	X Vector	Residuals
2/7/2017	42773	0.119
5/17/2017	42872	0.199
8/1/2017	42948	0.836
10/13/2017	43021	-0.232
3/7/2018	43166	-0.669
5/10/2018	43230	-0.253
7/31/2018	43312	-0.504
5/14/2019	43599	0.116
12/17/2019	43816	0.109
5/14/2020	43965	0.279



CONSTANT

	Yhat	Residuals
	5.281	0.119
	5.101	0.199
	4.964	0.836
	4.832	-0.232
	4.569	-0.669
	4.453	-0.253
	4.304	-0.504
	3.784	0.116
	3.391	0.109
	3.121	0.279



NOT CONSTANT

Shapiro-Wilks Test for Normality

SW= Shapiro-Wilk Statistic

	Residuals ascending	Residuals descending	Column C-I	Coeffiicient a_{n-i+1}	
1	-0.669	0.836	1.505	0.5739	0.86372
2	-0.504	0.279	0.783	0.3291	0.257685
3	-0.253	0.199	0.452	0.2141	0.096773
4	-0.232	0.119	0.351	0.1224	0.042962
5	0.109	0.116	0.007	0.0399	0.000279
6	0.116	0.109	-0.007	b=	1.26142
7	0.119	-0.232	-0.351	StdDev=	0.335167
8	0.199	-0.253	-0.452	SW=	1.573818
9	0.279	-0.504	-0.783	Critical pt =	0.842 5%
10	0.836	-0.669	-1.505		

Assume Normal

MW62-WDR N02

Ordinary Least Squares Linear Regression Output Sheet

User Selected Options	
Date/Time of Computation	ProUCL 5.18/6/2020 8:38:00 AM
From File	COMPLIANCE DATA 1H2020 rev_d.xls
Full Precision	OFF
Display Limits	True
Confidence Level for Intervals	0.9
Display Regresion Diagnostics	False
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, Nitrite_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	171305	27779	6.167	2.6903E-4
Sample Date_mw62-wdr	-3.877	0.642	-6.039	3.0959E-4

OLS ANOVA Table

Source of Variation	SS	DOF	MS	F-Value	P-Value
Regression	22165494	1	22165494	36.47	0.0003
Error	4861866	8	607733		
Total	27027360	9			

R Square	0.82
Adjusted R Square	0.798
Sqrt(MSE) = Scale	779.6

Regression Table

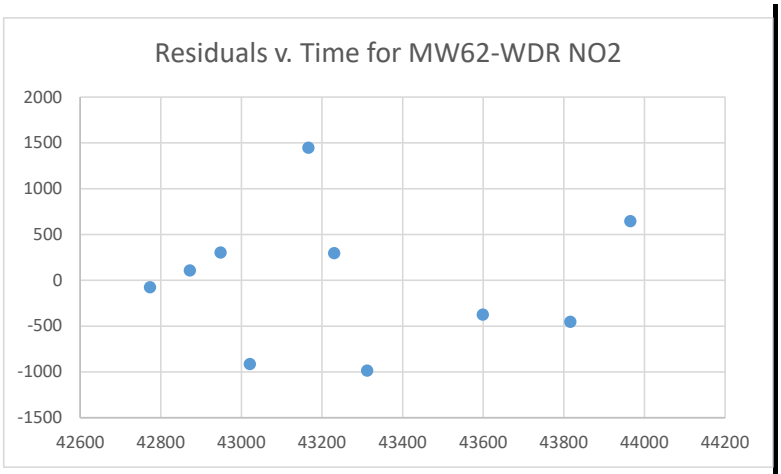
Obs	Y Vector	Yhat	Residuals	Res/Scale
1	5400	5476	-75.63	-0.097
2	5200	5092	108.2	0.139
3	5100	4797	302.8	0.388
4	3600	4514	-914.1	-1.173
5	5400	3952	1448	1.857
6	4000	3704	296.1	0.38
7	2400	3386	-985.9	-1.265
8	1900	2273	-373.3	-0.479
9	980	1432	-451.9	-0.58
10	1500	854.3	645.7	0.828

Summary Table for Prediction and Confidence Limits

Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LCL	UCL	LPL	UPL	Residuals
1	42773	5400	5476	403.3	877.7	4726	6226	3843	7108	-75.63
2	42872	5200	5092	355.1	856.7	4431	5752	3499	6685	108.2
3	42948	5100	4797	321.8	843.4	4199	5396	3229	6365	302.8
4	43021	3600	4514	293.9	833.1	3968	5061	2965	6063	-914.1
5	43166	5400	3952	255.4	820.4	3477	4427	2426	5477	1448
6	43230	4000	3704	247.9	818	3243	4165	2183	5225	296.1

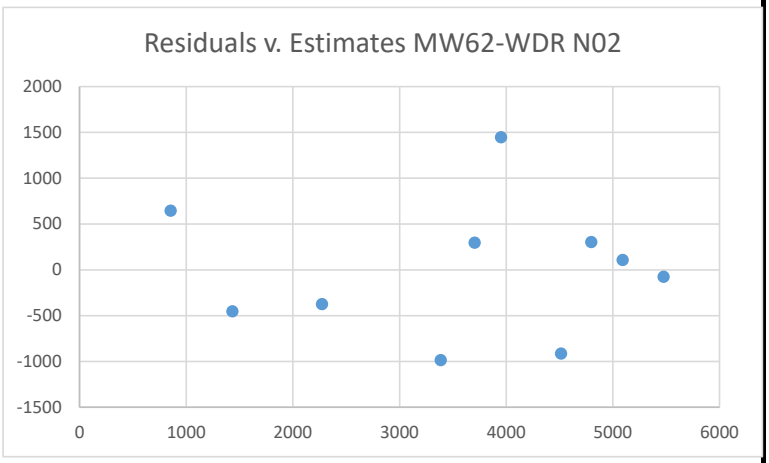
7	43312	2400	3386	248	818.1	2925	3847	1865	4907	-985.9
8	43599	1900	2273	324.5	844.4	1670	2877	703	3844	-373.3
9	43816	980	1432	428.4	889.5	635.3	2229	-222.2	3086	-451.9
10	43965	1500	854.3	509.6	931.4	-93.4	1802	-877.7	2586	645.7

	X Vector	Residuals
2/7/2017	42773	-75.63
5/17/2017	42872	108.2
8/1/2017	42948	302.8
10/13/2017	43021	-914.1
3/7/2018	43166	1448
5/10/2018	43230	296.1
7/31/2018	43312	-985.9
5/14/2019	43599	-373.3
12/17/2019	43816	-451.9
5/14/2020	43965	645.7



CONSTANT

	Yhat	Residuals
	5476	-75.63
	5092	108.2
	4797	302.8
	4514	-914.1
	3952	1448
	3704	296.1
	3386	-985.9
	2273	-373.3
	1432	-451.9
	854.3	645.7



CONSTANT

Shapiro-Wilks Test for Normality

SW= Shapiro-Wilk Statistic

	Residuals ascending	Residuals descendin g	Column C-B	Coeffiicient a_{n-i+1}		
1	-985.9	1448	2433.9	0.5739	1396.81521	
2	-914.1	645.7	1559.8	0.3291	513.33018	
3	-451.9	302.8	754.7	0.2141	161.58127	
4	-373.3	296.1	669.4	0.1224	81.93456	
5	-75.63	108.2	183.83	0.0399	7.334817	
6	108.2	-75.63	-183.83	b=	2160.996037	
7	296.1	-373.3	-669.4	StdDev=	734.9653655	
8	302.8	-451.9	-754.7	SW=	0.960575894	
9	645.7	-914.1	-1559.8	Critical pt =	0.842	5%
10	1448	-985.9	-2433.9			

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 5.18/5/2020 2:17:47 PM
From File	COMPLIANCE DATA 1H2020 rev_a.xls
Full Precision	OFF
Confidence Coefficient	90%

1,4-Dioxane (b-313)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	2.3	Mean	11.9
Maximum	21	Median	11.5
SD	5.62	SD of logged Data	0.627
Coefficient of Variation	0.472	Skewness	0.204

Normal GOF Test

Shapiro Wilk Test Statistic	0.961	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.154	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	14.36	90% Adjusted-CLT UCL (Chen-1995)	14.26
		90% Modified-t UCL (Johnson-1978)	14.38

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 5.18/5/2020 2:21:26 PM
From File	COMPLIANCE DATA 1H2020 rev_c.xls
Full Precision	OFF
Confidence Coefficient	90%

Nitrogen, Nitrate (b-313)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	21000	Mean	30400
Maximum	47000	Median	29500
SD	8140	SD of logged Data	0.256
Coefficient of Variation	0.268	Skewness	0.935

Normal GOF Test

Shapiro Wilk Test Statistic	0.918	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.175	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	33960	90% Adjusted-CLT UCL (Chen-1995)	34243
		90% Modified-t UCL (Johnson-1978)	34087

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 5.18/5/2020 2:21:26 PM
From File	COMPLIANCE DATA 1H2020 rev_c.xls
Full Precision	OFF
Confidence Coefficient	90%

Nitrogen, Nitrate (b-326-ud)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	700	Mean	20952
Maximum	66000	Median	14150
SD	23343	SD of logged Data	1.835
Coefficient of Variation	1.114	Skewness	0.953

Normal GOF Test

Shapiro Wilk Test Statistic	0.85	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.194	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	31161	90% Adjusted-CLT UCL (Chen-1995)	32000
		90% Modified-t UCL (Johnson-1978)	31532

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

	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 5.18/5/2020 2:27:05 PM							
5				From File	COMPLIANCE DATA 1H2020 rev_e.xls							
6				Full Precision	OFF							
7				Confidence Coefficient	90%							
8												
9												
10	**Tetrachloroethene (bm-11x-100n)**											
11												
12	**General Statistics**											
13						Total Number of Observations	10			Number of Distinct Observations	9	
14										Number of Missing Observations	0	
15						Minimum	4.6			Mean	6.1	
16						Maximum	7.1			Median	6.3	
17						SD	0.818			SD of logged Data	0.141	
18						Coefficient of Variation	0.134			Skewness	-0.676	
19												
20	**Normal GOF Test**											
21						Shapiro Wilk Test Statistic	0.94			**Shapiro Wilk GOF Test**		
22						5% Shapiro Wilk Critical Value	0.842			Data appear Normal at 5% Significance Level		
23						Lilliefors Test Statistic	0.197			**Lilliefors GOF Test**		
24						5% Lilliefors Critical Value	0.262			Data appear Normal at 5% Significance Level		
25	**Data appear Normal at 5% Significance Level**											
26												
27	**Assuming Normal Distribution**											
28						**90% Normal UCL**				**90% UCLs (Adjusted for Skewness)**		
29						90% Student's-t UCL	6.458			90% Adjusted-CLT UCL (Chen-1995)	6.392	
30										90% Modified-t UCL (Johnson-1978)	6.448	
31												
32	**Suggested UCL to Use**											
33	**Recommendation Provided only for 95% Confidence Coefficient**											
34												
35	**Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be**											
36	**reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.**											
37												

Normal UCL Statistics for Uncensored Full Data Sets		
User Selected Options		
Date/Time of Computation	ProUCL 5.18/12/2020 2:13:24 PM	
From File	COMPLIANCE DATA 1H2020 rev_e.xls	
Full Precision	OFF	
Confidence Coefficient	90%	

Trichloroethene (bm-11x-100n)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	3.6	Mean	4.98
Maximum	6.9	Median	4.8
SD	0.926	SD of logged Data	0.181
Coefficient of Variation	0.186	Skewness	0.842

Normal GOF Test

Shapiro Wilk Test Statistic	0.947	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.191	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	5.385	90% Adjusted-CLT UCL (Chen-1995)	5.411
		90% Modified-t UCL (Johnson-1978)	5.398

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 5.18/5/2020 2:34:14 PM
From File	COMPLIANCE DATA 1H2020 rev_c.xls
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Nitrogen, Nitrate (bm-15e2)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	14000	Mean	19800
Maximum	39000	Median	18500
SD	6973	Std. Error of Mean	2205
Coefficient of Variation	0.352	Skewness	2.776
Mean of logged Data	9.854	SD of logged Data	0.273

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	22850	90% Adjusted-CLT UCL (Chen-1995)	24008
		90% Modified-t UCL (Johnson-1978)	23172

Nonparametric Distribution Free UCLs

90% CLT UCL	22626	90% Jackknife UCL	22850
90% Standard Bootstrap UCL	22426	90% Bootstrap-t UCL	29524
90% Hall's Bootstrap UCL	39214	90% Percentile Bootstrap UCL	22500
90% BCA Bootstrap UCL	23800		
90% Chebyshev(Mean, Sd) UCL	26415	95% Chebyshev(Mean, Sd) UCL	29412
97.5% Chebyshev(Mean, Sd) UCL	33570	99% Chebyshev(Mean, Sd) UCL	41740

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 5.18/5/2020 2:21:26 PM	
From File	COMPLIANCE DATA 1H2020 rev_c.xls	
Full Precision	OFF	
Confidence Coefficient	90%	

Nitrogen, Nitrate (bm-15n6)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	35000	Mean	41600
Maximum	49000	Median	42000
SD	4766	SD of logged Data	0.116
Coefficient of Variation	0.115	Skewness	-0.121

Normal GOF Test

Shapiro Wilk Test Statistic	0.935	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.15	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	43684	90% Adjusted-CLT UCL (Chen-1995)	43490
		90% Modified-t UCL (Johnson-1978)	43675

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	**Gamma UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.19/13/2020 8:36:41 AM								
5	From File			COMPLIANCE DATA 1H2020 rev.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			90%								
8	Number of Bootstrap Operations			2000								
9												
112												
113	**1,4-Dioxane (gw-109)**											
114												
115	**General Statistics**											
116	Total Number of Observations					10	Number of Distinct Observations					9
117							Number of Missing Observations					0
118	Minimum					0.53	Mean					7.942
119	Maximum					41	Median					1.525
120	SD					13.17	SD of logged Data					1.617
121	Coefficient of Variation					1.659	Skewness					2.166
122												
123	**Gamma GOF Test**											
124	A-D Test Statistic					0.817	**Anderson-Darling Gamma GOF Test**					
125	5% A-D Critical Value					0.775	Data Not Gamma Distributed at 5% Significance Level					
126	K-S Test Statistic					0.242	**Kolmogorov-Smirnov Gamma GOF Test**					
127	5% K-S Critical Value					0.28	Data appear Gamma Distributed at 5% Significance Level					
128	**Data appear to Follow Approximate Gamma Distribution at 5% Significance Level**											
129												
130	**Gamma Statistics**											
131	k hat (MLE)					0.525	k star (bias corrected MLE)					0.434
132	Theta hat (MLE)					15.12	Theta star (bias corrected MLE)					18.28
133	nu hat (MLE)					10.51	nu star (bias corrected)					8.689
134	MLE Mean (bias corrected)					7.942	MLE Sd (bias corrected)					12.05
135							Approximate Chi Square Value (0.1)					3.956
136	Adjusted Level of Significance					0.0724	Adjusted Chi Square Value					3.542
137												
138	**Assuming Gamma Distribution**											
139	90% Approximate Gamma UCL (use when n>=50)					17.45	90% Adjusted Gamma UCL (use when n<50)					19.48
140												
141	**Suggested UCL to Use**											
142	**Recommendation Provided only for 95% Confidence Coefficient**											
143												

Confidence interval online calculators

Index

One mean	Online calculator of confidence intervals of one mean: the asymptotic approximation when the sample size is LARGE, the Chebyshev's largest confidence interval, and the exact confidence intervals of exponentially or normally distributed variables.
One proportion	Online calculator of the exact confidence interval of a proportion (i.e. Bernoulli / binomial distribution).
One SD	Online calculator of the confidence interval of the standard deviation of a normally distributed variable.
One correlation	Online calculator of the confidence interval of the Pearson's correlation between two normally distributed variables.

One mean confidence intervals

Sample mean: 7.842

Corrected sample SD: 13.08

Sample size: 10

Confidence: 0.90

- ○ Asymptotic approximation (sample must be LARGE)
- ○ Chebyshev's largest CI (assuming SD=σ)
- ○ Exact CI for Exponential distribution
- ◉ Exact CI for Normal distribution

Confidence interval: 0.2597698, 15.42423

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Normal UCL Statistics for Uncensored Full Data Sets		
User Selected Options		
Date/Time of Computation	ProUCL 5.18/5/2020 2:17:47 PM	
From File	COMPLIANCE DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	90%	

1,4-Dioxane (mw38-830n-230e)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	2	Mean	8.47
Maximum	13	Median	9.25
SD	3.803	SD of logged Data	0.663
Coefficient of Variation	0.449	Skewness	-0.788

Normal GOF Test

Shapiro Wilk Test Statistic	0.897	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.176	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	10.13	90% Adjusted-CLT UCL (Chen-1995)	9.797
		90% Modified-t UCL (Johnson-1978)	10.08

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.

Nonparametric UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.18/5/2020 2:31:15 PM
From File	COMPLIANCE DATA 1H2020 rev_b.xls
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Chloroform (mw38-830n-230e)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	2.1	Mean	5.07
Maximum	6.9	Median	5.45
SD	1.668	Std. Error of Mean	0.527
Coefficient of Variation	0.329	Skewness	-1.25
Mean of logged Data	1.552	SD of logged Data	0.438

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	5.8	90% Adjusted-CLT UCL (Chen-1995)	5.597
		90% Modified-t UCL (Johnson-1978)	5.765

Nonparametric Distribution Free UCLs

90% CLT UCL	5.746	90% Jackknife UCL	5.8
90% Standard Bootstrap UCL	5.73	90% Bootstrap-t UCL	5.637
90% Hall's Bootstrap UCL	5.609	90% Percentile Bootstrap UCL	5.7
90% BCA Bootstrap UCL	5.6		
90% Chebyshev(Mean, Sd) UCL	6.652	95% Chebyshev(Mean, Sd) UCL	7.369
97.5% Chebyshev(Mean, Sd) UCL	8.364	99% Chebyshev(Mean, Sd) UCL	10.32

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.

Nonparametric UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.18/5/2020 2:34:14 PM
From File	COMPLIANCE DATA 1H2020 rev_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	4
		Number of Missing Observations	0
Minimum	110000	Mean	120000
Maximum	140000	Median	120000
SD	9428	Std. Error of Mean	2981
Coefficient of Variation	0.0786	Skewness	0.994
Mean of logged Data	11.69	SD of logged Data	0.0766

Nonparametric Distribution Free UCL Statistics

Data appear Approximate Lognormal Distributed at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	124123	90% Adjusted-CLT UCL (Chen-1995)	124490
		90% Modified-t UCL (Johnson-1978)	124280

Nonparametric Distribution Free UCLs

90% CLT UCL	123821	90% Jackknife UCL	124123
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% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	128944	95% Chebyshev(Mean, Sd) UCL	132996
97.5% Chebyshev(Mean, Sd) UCL	138619	99% Chebyshev(Mean, Sd) UCL	149665

Suggested UCL to Use

Data appear Approximate Lognormal, May want to try Lognormal Distribution

	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 5.18/5/2020 2:21:26 PM							
5				From File	COMPLIANCE DATA 1H2020 rev_c.xls							
6				Full Precision	OFF							
7				Confidence Coefficient	90%							
8												
90												
91	**Nitrogen, Nitrate (mw74-wd)**											
92												
93	**General Statistics**											
94						Total Number of Observations	10				Number of Distinct Observations	10	
95											Number of Missing Observations	0
96						Minimum	1200				Mean	10520
97						Maximum	30000				Median	6400
98						SD	10559				SD of logged Data	1.063
99						Coefficient of Variation	1.004				Skewness	1.241
100												
101	**Normal GOF Test**											
102						Shapiro Wilk Test Statistic	0.797				**Shapiro Wilk GOF Test**	
103						5% Shapiro Wilk Critical Value	0.842				Data Not Normal at 5% Significance Level	
104						Lilliefors Test Statistic	0.261				**Lilliefors GOF Test**	
105						5% Lilliefors Critical Value	0.262				Data appear Normal at 5% Significance Level	
106	**Data appear Approximate Normal at 5% Significance Level**											
107												
108	**Assuming Normal Distribution**											
109						**90% Normal UCL**					**90% UCLs (Adjusted for Skewness)**	
110						90% Student's-t UCL	15138				90% Adjusted-CLT UCL (Chen-1995)	15735
111											90% Modified-t UCL (Johnson-1978)	15356
112												
113	**Suggested UCL to Use**											
114	**Recommendation Provided only for 95% Confidence Coefficient**											

Normal UCL Statistics for Uncensored Full Data Sets		
User Selected Options		
Date/Time of Computation	ProUCL 5.18/5/2020 2:17:47 PM	
From File	COMPLIANCE DATA 1H2020 rev_a.xls	
Full Precision	OFF	
Confidence Coefficient	90%	

1,4-Dioxane (mw77-wd)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	2.6	Mean	8.94
Maximum	20	Median	7.15
SD	6.036	SD of logged Data	0.737
Coefficient of Variation	0.675	Skewness	0.631

Normal GOF Test

Shapiro Wilk Test Statistic	0.901	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	11.58	90% Adjusted-CLT UCL (Chen-1995)	11.66
		90% Modified-t UCL (Johnson-1978)	11.64

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

	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 5.18/5/2020 2:21:26 PM							
5				From File	COMPLIANCE DATA 1H2020 rev_c.xls							
6				Full Precision	OFF							
7				Confidence Coefficient	90%							
8												
117	**Nitrogen, Nitrate (mw77-wd)**											
118												
119	**General Statistics**											
120						Total Number of Observations	10				Number of Distinct Observations	9	
121											Number of Missing Observations	0	
122						Minimum	9700				Mean	21270	
123						Maximum	35000				Median	20500	
124						SD	7172				SD of logged Data	0.359	
125						Coefficient of Variation	0.337				Skewness	0.385	
126													
127	**Normal GOF Test**											
128						Shapiro Wilk Test Statistic	0.964				**Shapiro Wilk GOF Test**		
129						5% Shapiro Wilk Critical Value	0.842				Data appear Normal at 5% Significance Level		
130						Lilliefors Test Statistic	0.176				**Lilliefors GOF Test**		
131						5% Lilliefors Critical Value	0.262				Data appear Normal at 5% Significance Level		
132	**Data appear Normal at 5% Significance Level**											
133												
134	**Assuming Normal Distribution**											
135						**90% Normal UCL**					**90% UCLs (Adjusted for Skewness)**		
136						90% Student's-t UCL	24407				90% Adjusted-CLT UCL (Chen-1995)	24374	
137											90% Modified-t UCL (Johnson-1978)	24453	
138													
139	**Suggested UCL to Use**											
140	**Recommendation Provided only for 95% Confidence Coefficient**											
141													

APPENDIX C-4

EFFECTIVENESS ASSESSMENT

APPENDIX C-4.1

EFFECTIVENESS ASSESSMENT

Determination of Hydraulic Gradients

(PM-1I&X through PM-15I&X)

MASTER I	Date	Water Elev	MASTER LO	Date	Water Elev	Difference
PM-1I	7/3/2018	5772.14	PM-1X	7/3/2018	5773.12	-0.98
PM-1I	10/3/2018	5772.66	PM-1X	10/3/2018	5774.01	-1.35
PM-1I	1/17/2019	5772.24	PM-1X	1/17/2019	5772.72	-0.48
PM-1I	4/12/2019	5771.67	PM-1X	4/12/2019	5775.05	-3.38
PM-1I	7/8/2019	5772.23	PM-1X	7/8/2019	5775.83	-3.6
PM-1I	10/4/2019	5772.61	PM-1X	10/4/2019	5774.13	-1.52
PM-1I	1/16/2020	5772.16	PM-1X	1/16/2020	5772.79	-0.63
PM-1I	4/20/2020	5771.42	PM-1X	4/20/2020	5772.66	-1.24

		Minimum	-3.6
		Maximum	-0.48
Mean Interior Water Level	5772.14125	Avg. Diff	-1.647
Mean Exterior Water Level	5773.79	Diff of the Means	-1.648

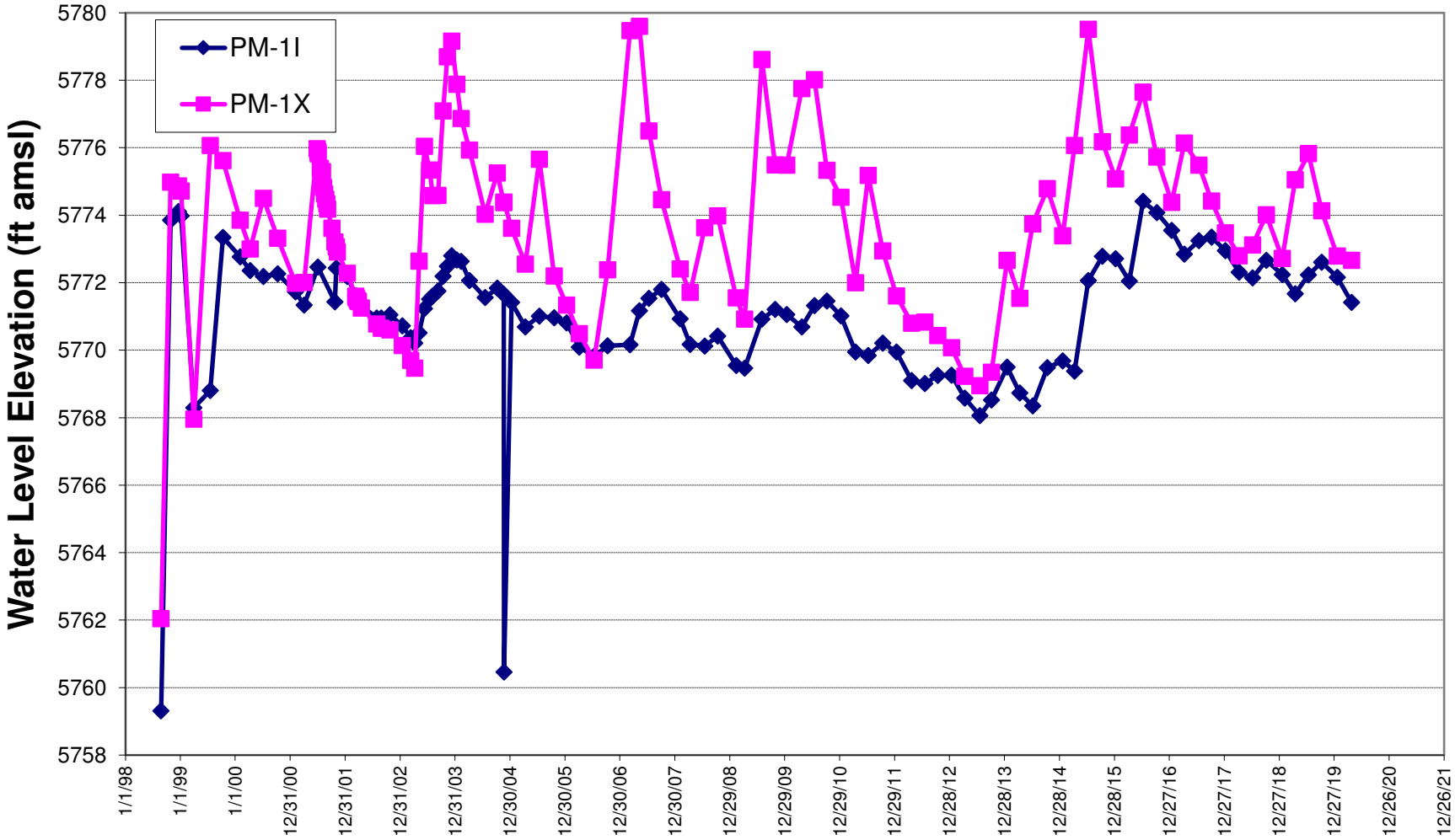
Sum of the Squares of Deviations		
Interior	1.25	
Exterior	9.7838875000003	
Standard Deviation (pooled)	0.8877	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	
80% Confidence Interval	0.3977	80% LCL -2.05
95% Confidence Interval	0.8409	95% UCL -0.81

Effectiveness Decision

Inward Gradient exists

Data Sufficiency

PM-1 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-2I	7/2/2018	5770.33	PM-2X	7/2/2018	5777.57	-7.24
PM-2I	10/1/2018	5770.27	PM-2X	10/1/2018	5777.37	-7.1
PM-2I	1/10/2019	5770.34	PM-2X	1/10/2019	5777.47	-7.13
PM-2I	4/10/2019	5770.58	PM-2X	4/10/2019	5777.66	-7.08
	7/3/2019	5770.35	PM-2X	7/3/2019	5777.34	-6.99
	10/2/2019	5770.25	PM-2X	10/2/2019	5777.31	-7.06
	1/9/2020	5770.45	PM-2X	1/9/2020	5777.48	-7.03
	4/14/2020	5770.14	PM-2X	4/14/2020	5777.84	-7.7

		Minimum	-7.7
		Maximum	-6.99
Mean Interior Water Level	5770.34	Avg. Diff	-7.166
Mean Exterior Water Level	5777.51	Diff of the Means	-7.166

Sum of the Squares of Deviations		
Interior	0.1229	
Exterior	0.2258	
Standard Deviation (pooled)	0.1578	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	

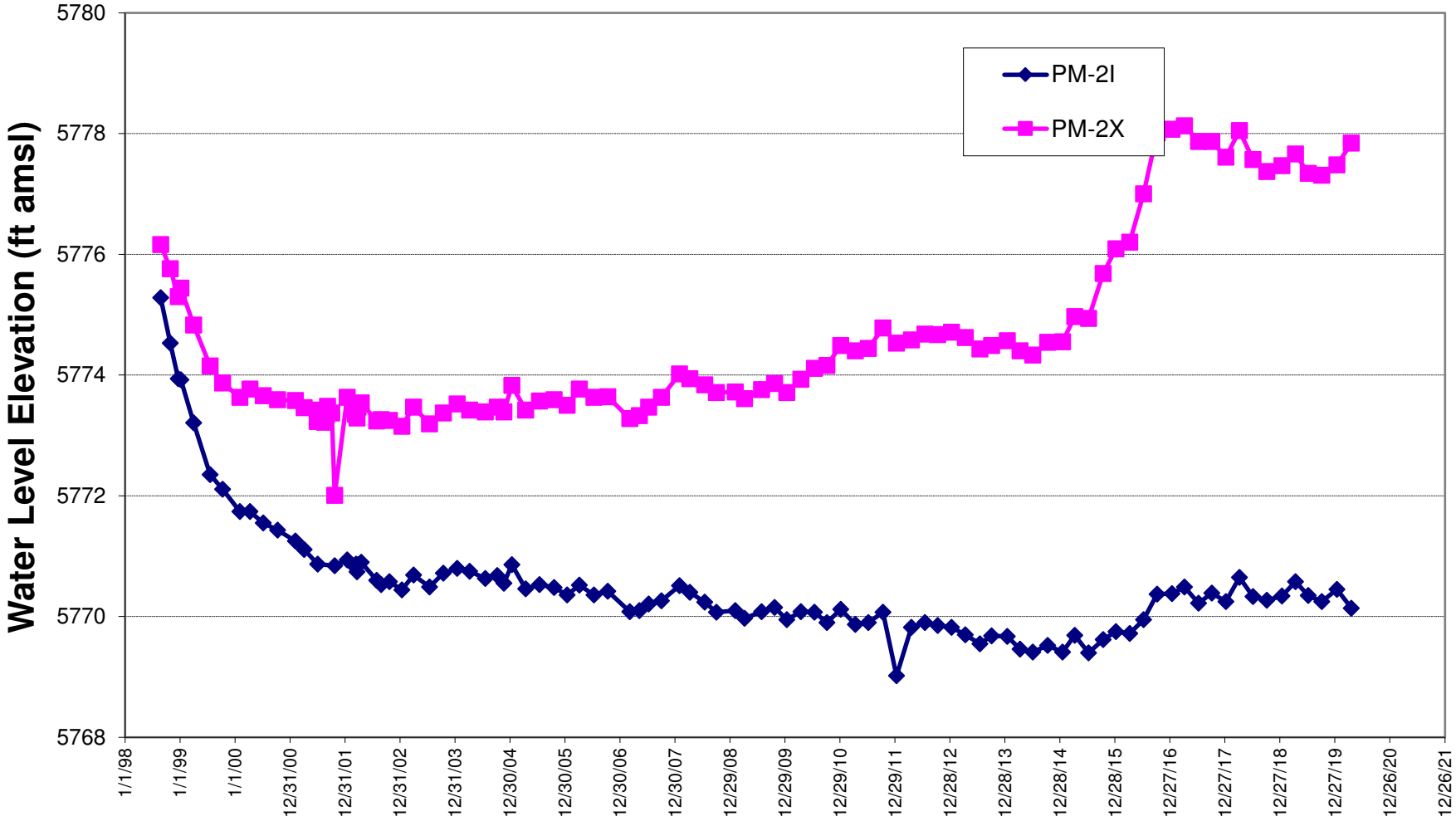
80% Confidence Interval	0.0707	80% LCL	-7.24
95% Confidence Interval	0.1495	95% UCL	-7.02

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-2 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-3I	7/2/2018	5779.72	PM-3X	7/2/2018	5779.2	0.52
PM-3I	10/1/2018	5779.57	PM-3X	10/1/2018	5779.05	0.52
PM-3I	1/10/2019	5779.68	PM-3X	1/10/2019	5779.1	0.58
PM-3I	4/10/2019	5779.99	PM-3X	4/10/2019	5779.31	0.68
PM-3I	7/3/2019	5779.57	PM-3X	7/3/2019	5778.82	0.75
PM-3I	10/2/2019	5779.39	PM-3X	10/2/2019	5778.65	0.74
PM-3I	1/9/2020	5779.59	PM-3X	1/9/2020	5778.81	0.78
PM-3I	4/14/2020	5779.2	PM-3X	4/14/2020	5778.46	0.74

		Minimum	0.52
		Maximum	0.78
Mean Interior Water Level	5779.59	Avg. Diff	0.664
Mean Exterior Water Level	5778.93	Diff of the Means	0.664

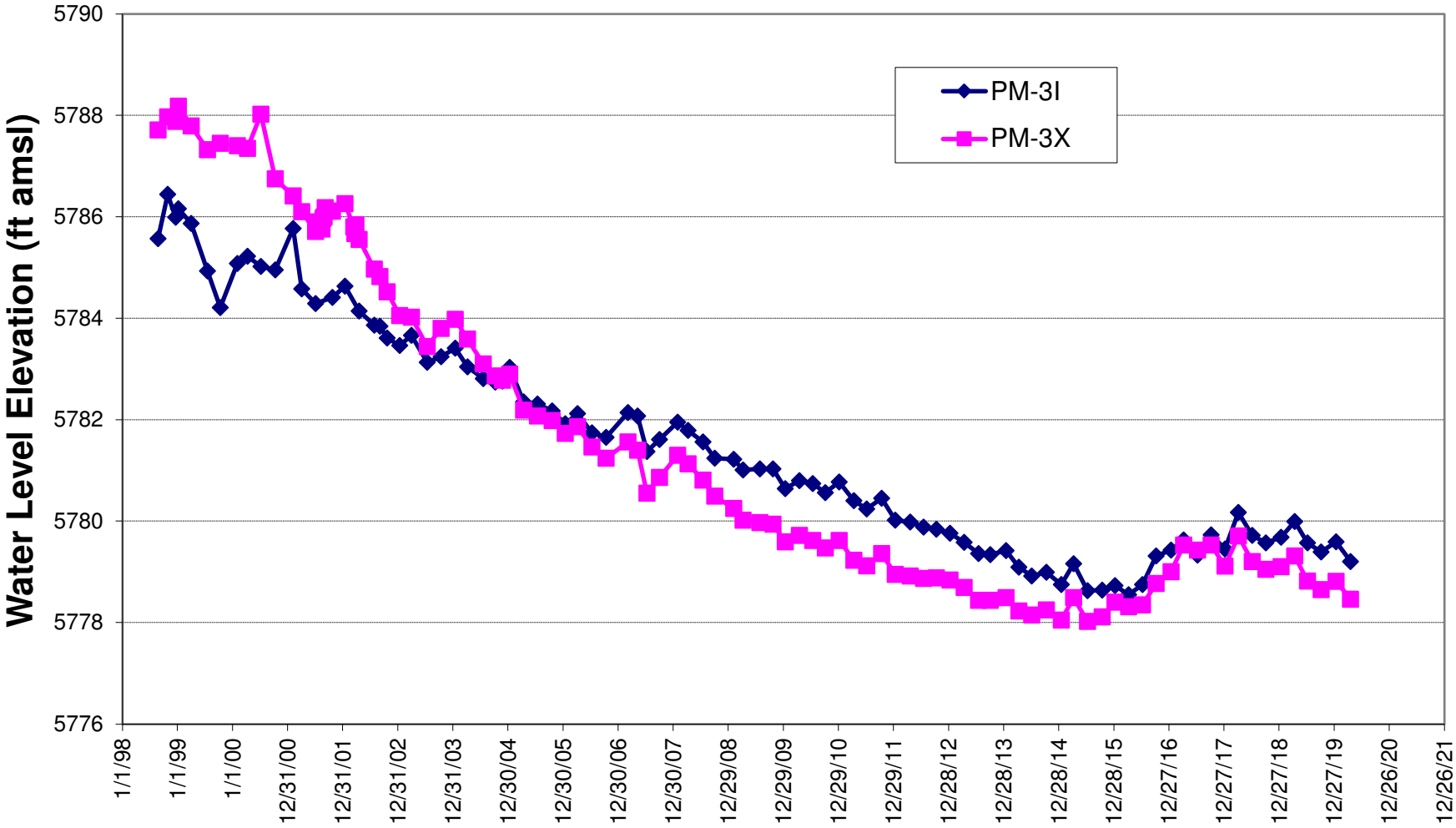
Sum of the Squares of Deviations		
Interior	0.3779	
Exterior	0.5862	
Standard Deviation (pooled)	0.2624	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	
80% Confidence Interval	0.1176	80% LCL 0.55
95% Cpnfidence Interval	0.2486	95% UCL 0.91

Effectiveness Decision

Outward Gradient exists

Data Sufficiency

PM-3 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LO	Date	Water Elev	Difference
PM-4I	7/2/2018	5794.88	PM-4X	7/2/2018	5795.22	-0.34
PM-4I	10/1/2018	5794.51	PM-4X	10/1/2018	5794.83	-0.32
PM-4I	1/10/2019	5794.4	PM-4X	1/10/2019	5794.71	-0.31
PM-4I	4/10/2019	5794.47	PM-4X	4/10/2019	5794.68	-0.21
PM-4I	7/3/2019	5794.13	PM-4X	7/3/2019	5794.37	-0.24
PM-4I	10/2/2019	5793.95	PM-4X	10/2/2019	5794.18	-0.23
PM-4I	1/9/2020	5793.97	PM-4X	1/9/2020	5794.18	-0.21
PM-4I	4/15/2020	5793.79	PM-4X	4/15/2020	5794.06	-0.27

		Minimum	-0.34
		Maximum	-0.21
Mean Interior Water Level	5794.26	Avg. Diff	-0.266
Mean Exterior Water Level	5794.53	Diff of the Means	-0.266

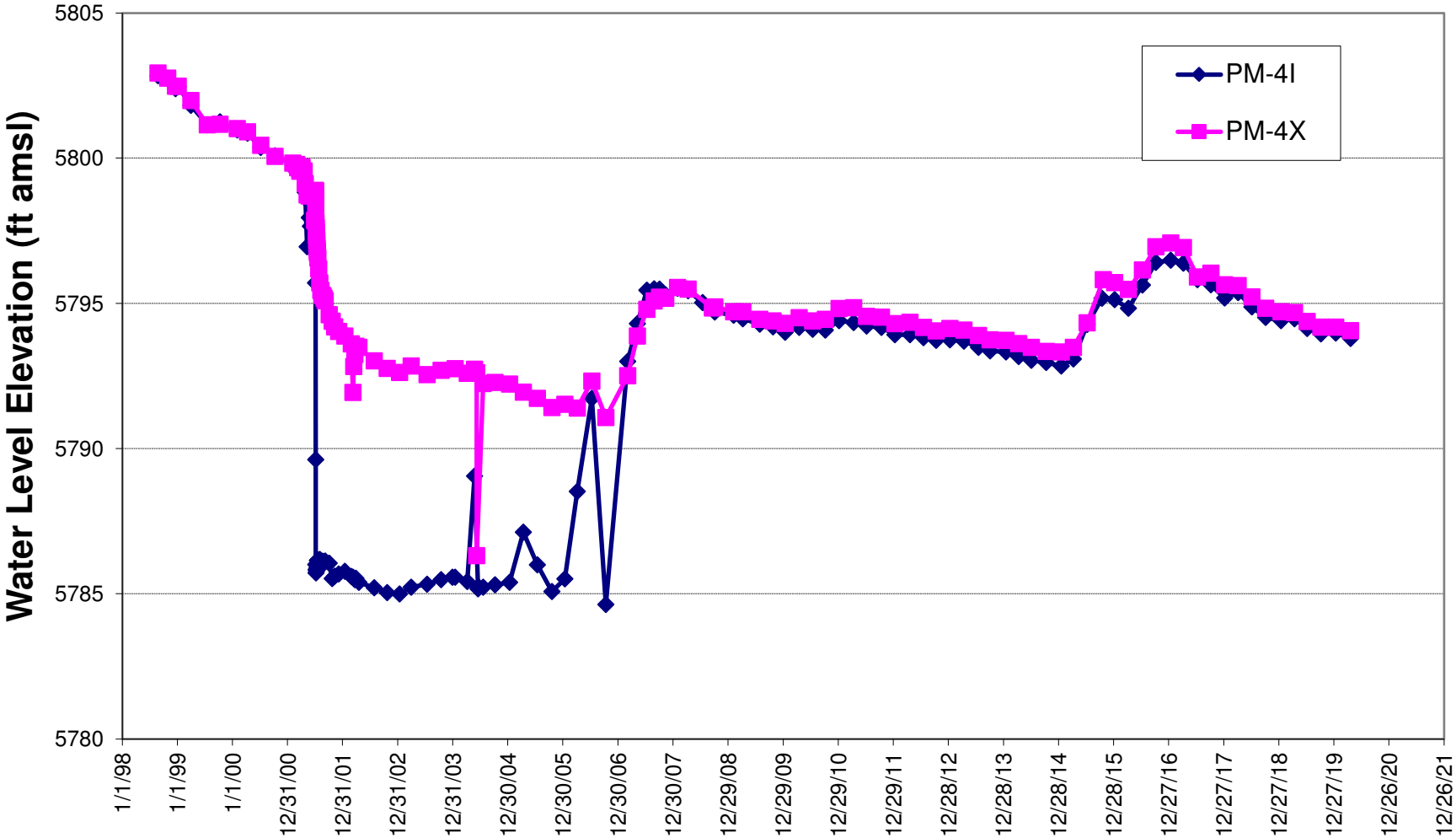
Sum of the Squares of Deviations		
Interior	0.9286	
Exterior	1.1125	
Standard Deviation (pooled)	0.3818	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	
80% Confidence Interval	0.1711	80% LCL -0.44
95% Confidence Interval	0.3617	95% UCL 0.10

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-4 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-5I	7/2/2018	5798.1	PM-5X	7/2/2018	5799.24	-1.14
PM-5I	10/1/2018	5799.47	PM-5X	10/1/2018	5799.65	-0.18
PM-5I	1/10/2019	5798.59	PM-5X	1/10/2019	5799.47	-0.88
PM-5I	4/10/2019	5798.14	PM-5X	4/10/2019	5799.12	-0.98
	7/3/2019	5800.05	PM-5X	7/3/2019	5799.97	0.08
	10/2/2019	5799.33	PM-5X	10/2/2019	5800.3	-0.97
	1/9/2020	5798.63	PM-5X	1/9/2020	5799.85	-1.22
	4/15/2020	5798.26	PM-5X	4/15/2020	5799.27	-1.01

		Minimum	-1.22
		Maximum	0.08
Mean Interior Water Level	5798.82	Avg. Diff	-0.788
Mean Exterior Water Level	5799.61	Diff of the Means	-0.787

Sum of the Squares of Deviations		
Interior	3.5789	
Exterior	1.1771	
Standard Deviation (pooled)	0.5828	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	

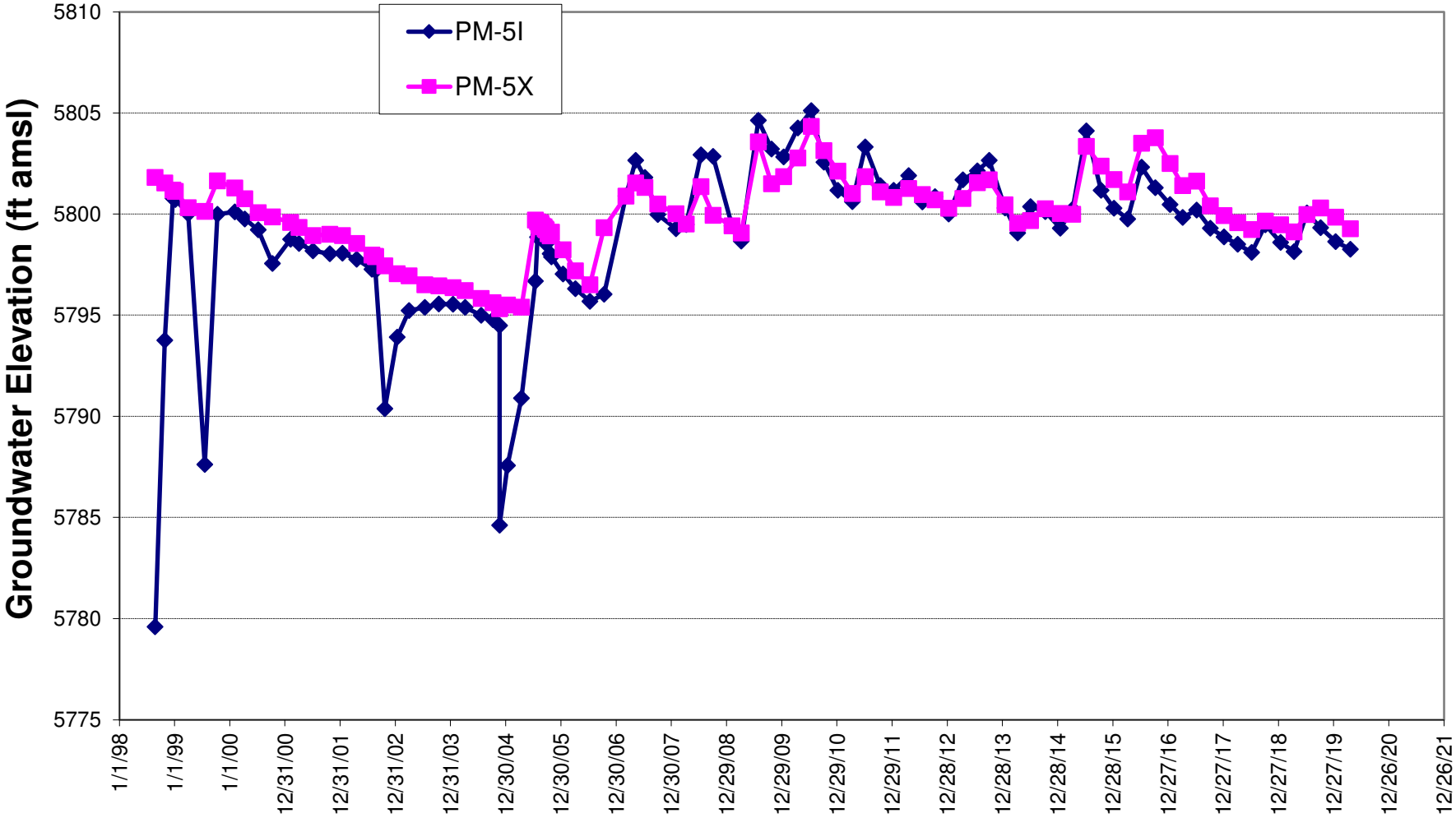
80% Confidence Interval	0.261	80% LCL	-1.05
95% Confidence Interval	0.552	95% UCL	-0.24

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-5 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LO	Date	Water Elev	Difference
PM-6I	7/2/2018	5797.17	PM-6X	7/2/2018	5793.36	3.81
PM-6I	10/1/2018	5797.16	PM-6X	10/1/2018	5793.47	3.69
PM-6I	1/11/2019	5797.24	PM-6X	1/11/2019	5793.54	3.7
PM-6I	4/10/2019	5797.62	PM-6X	4/10/2019	5793.96	3.66
	7/3/2019	5797.45	PM-6X	7/3/2019	5793.71	3.74
	10/2/2019	5797.4	PM-6X	10/2/2019	5793.78	3.62
	1/9/2020	5797.68	PM-6X	1/9/2020	5793.99	3.69
	4/15/2020	5797.63	PM-6X	4/15/2020	5793.79	3.84

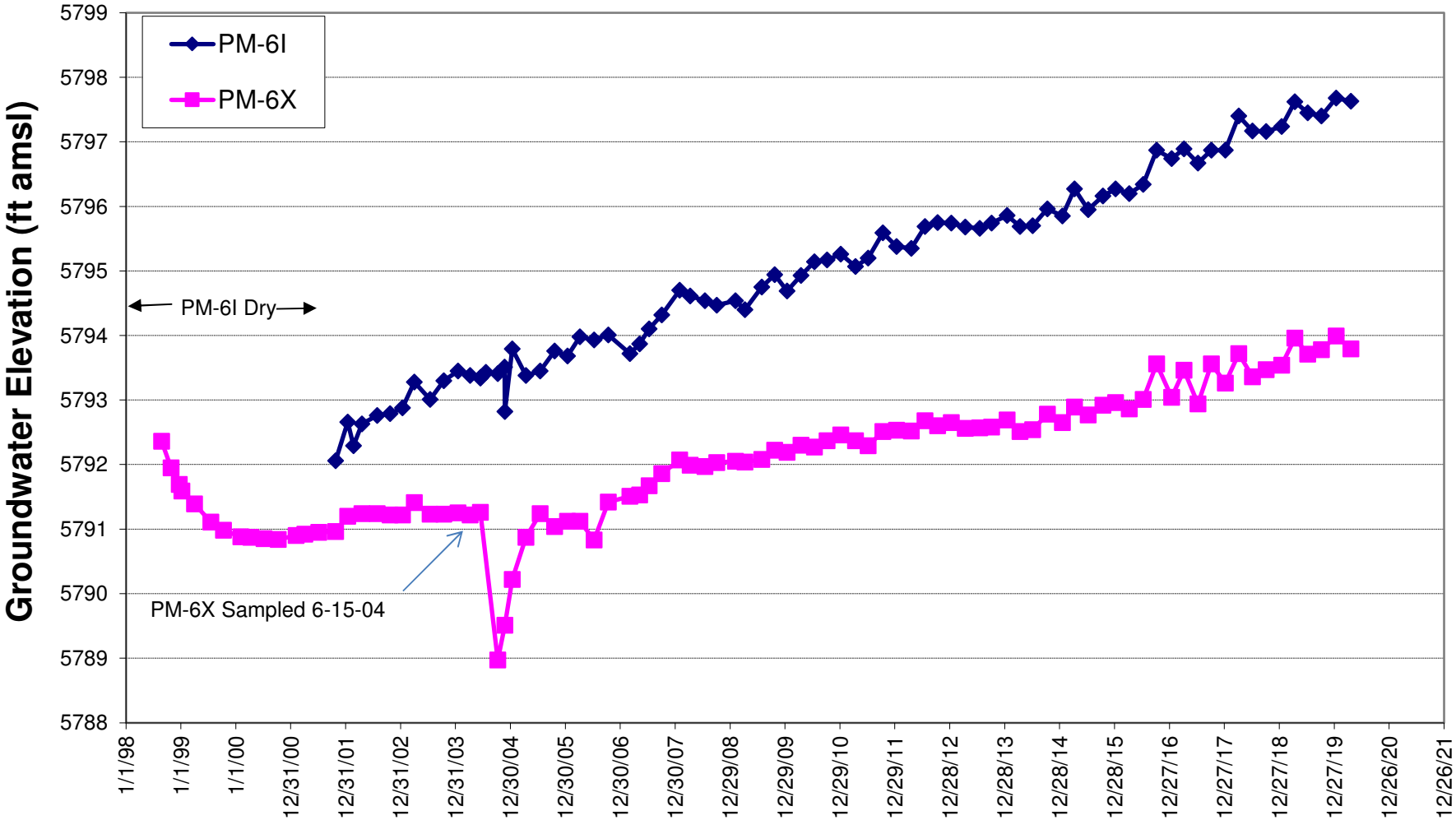
		Minimum	3.62
		Maximum	3.84
Mean Interior Water Level	5797.42	Avg. Diff	3.719
Mean Exterior Water Level	5793.70	Diff of the Means	3.719

Sum of the Squares of Deviations		
Interior	0.3155	
Exterior	0.3604	
Standard Deviation (pooled)	0.2197	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	
80% Confidence Interval	0.0984	80% LCL 3.62
95% Cpnfidence Interval	0.2081	95% UCL 3.93

Effectiveness Decision — Data Sufficiency

Outward Gradient exists

PM-6 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-7I	7/2/2018	5810.74	PM-7X	7/2/2018	5816.90	-6.16
PM-7I	10/1/2018	5810.61	PM-7X	10/1/2018	5816.99	-6.38
PM-7I	1/11/2019	5810.61	PM-7X	1/11/2019	5817.02	-6.41
PM-7I	4/10/2019	5810.99	PM-7X	4/10/2019	5817.47	-6.48
	7/3/2019	5811.19	PM-7X	7/3/2019	5819.46	-8.27
	10/2/2019	5811.36	PM-7X	10/2/2019	5819.05	-7.69
	1/9/2020	5811.43	PM-7X	1/9/2020	5818.64	-7.21
	4/15/2020	5811.05	PM-7X	4/15/2020	5817.87	-6.82

		Minimum	-8.27
		Maximum	-6.16
Mean Interior Water Level	5811.00	Avg. Diff	-6.928
Mean Exterior Water Level	5817.93	Diff of the Means	-6.928

Sum of the Squares of Deviations		
Interior	0.7249	
Exterior	7.0870	
Standard Deviation (pooled)	0.7470	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	

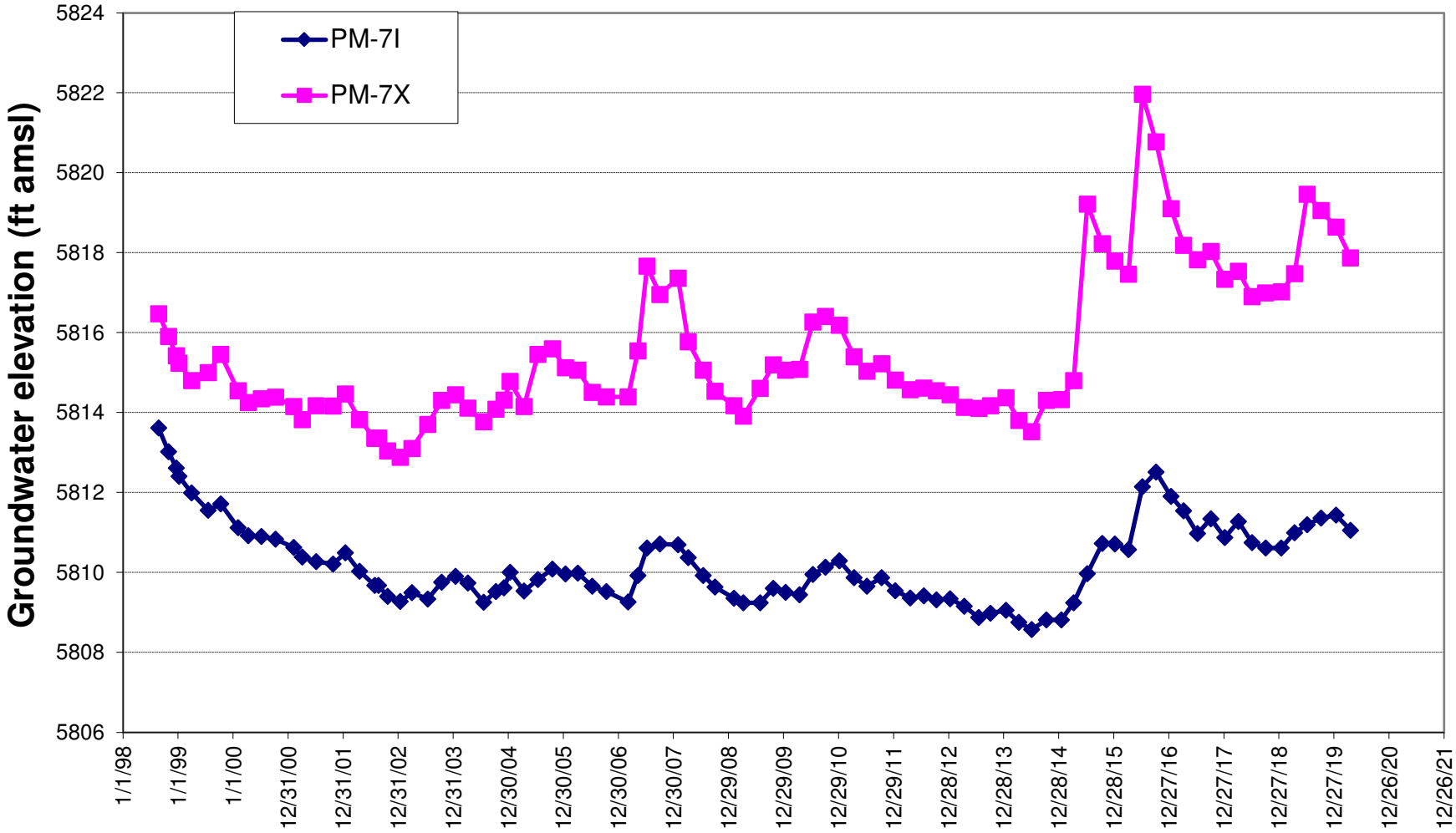
80% Confidence Interval	0.3347	80% LCL	-7.26
95% Cpnfidence Interval	0.7076	95% UCL	-6.22

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-7 well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-8I	7/2/2018	5817.68	PM-8X	7/2/2018	5826.8	-9.12
PM-8I	10/1/2018	5817.78	PM-8X	10/1/2018	5826.93	-9.15
PM-8I	1/11/2019	5817.65	PM-8X	1/11/2019	5826.7	-9.05
PM-8I	4/10/2019	5818.42	PM-8X	4/10/2019	5828.34	-9.92
	7/3/2019	5818.69	PM-8X	7/3/2019	5827.82	-9.13
	10/2/2019	5817.77	PM-8X	10/2/2019	5825.95	-8.18
	1/9/2020	5817.22	PM-8X	1/9/2020	5825.73	-8.51
	4/15/2020	5816.91	PM-8X	4/15/2020	5826.35	-9.44

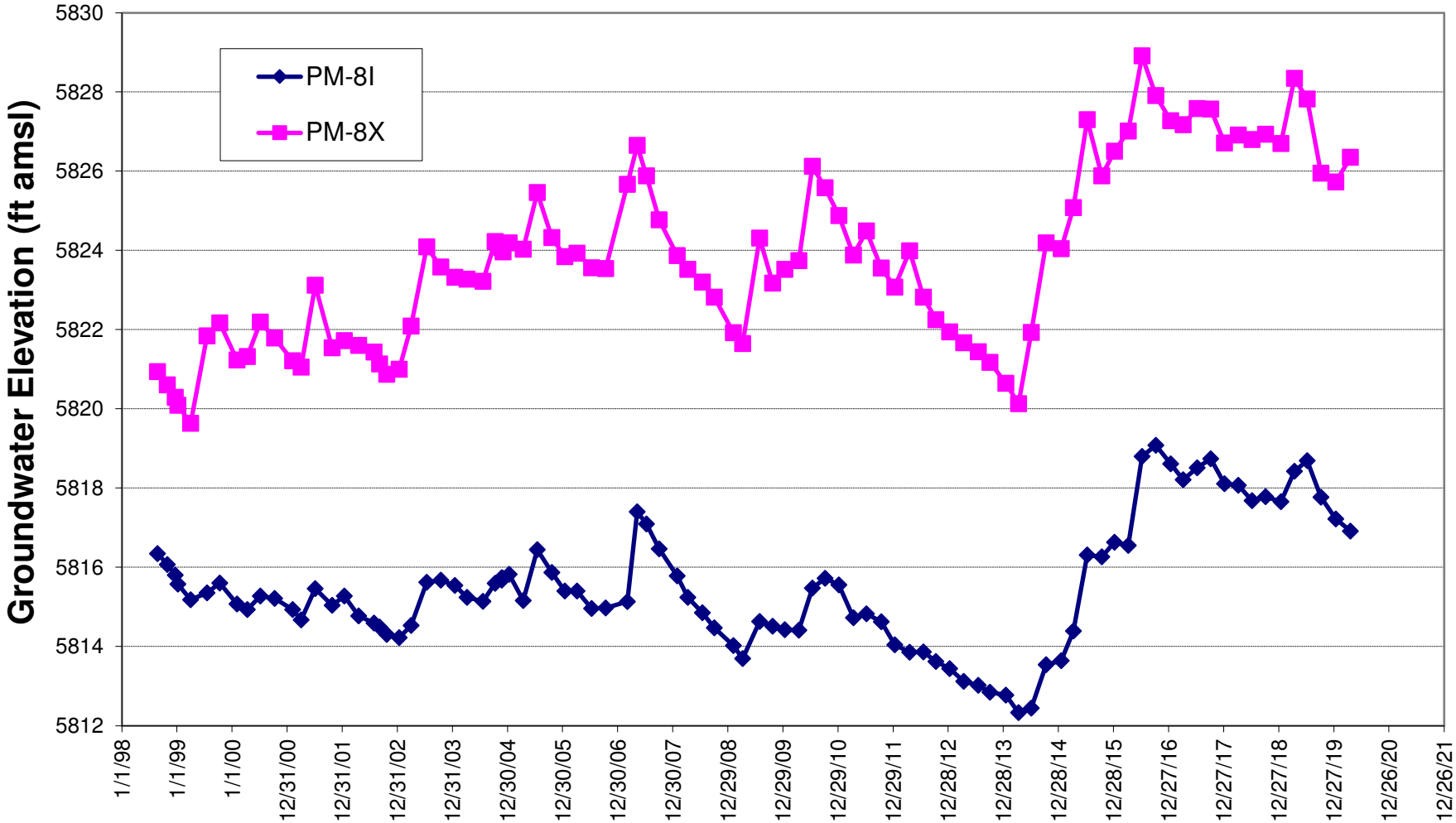
			Minimum	-9.92
			Maximum	-8.18
Mean Interior Water Level		5817.77	Avg. Diff	-9.062
Mean Exterior Water Level		5826.83	Diff of the Means	-9.063
Sum of the Squares of Deviations				
	Interior	2.3334		
	Exterior	5.5028		
Standard Deviation (pooled)		0.7481		
t-statistics	degrees of freedom =	7		
	α = 5%	1.8946		
	α = 20%	0.896		
80% Confidence Interval		0.3352	80% LCL	-9.40
95% Cpnfidence Interval		0.7087	95% UCL	-8.35

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-8 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-9I	7/2/2018	5817.48	PM-9X	7/2/2018	5826.31	-8.83
PM-9I	10/1/2018	5817.42	PM-9X	10/1/2018	5826.76	-9.34
PM-9I	1/11/2019	5817.38	PM-9X	1/11/2019	5825.97	-8.59
PM-9I	4/10/2019	5818.24	PM-9X	4/10/2019	5828.78	-10.54
PM-9I	7/3/2019	5818.59	PM-9X	7/3/2019	5827.68	-9.09
PM-9I	10/2/2019	5817.12	PM-9X	10/2/2019	5825.47	-8.35
	1/9/2020	5816.57	PM-9X	1/9/2020	5824.91	-8.34
	4/15/2020	5816.45	PM-9X	4/15/2020	5826.55	-10.1

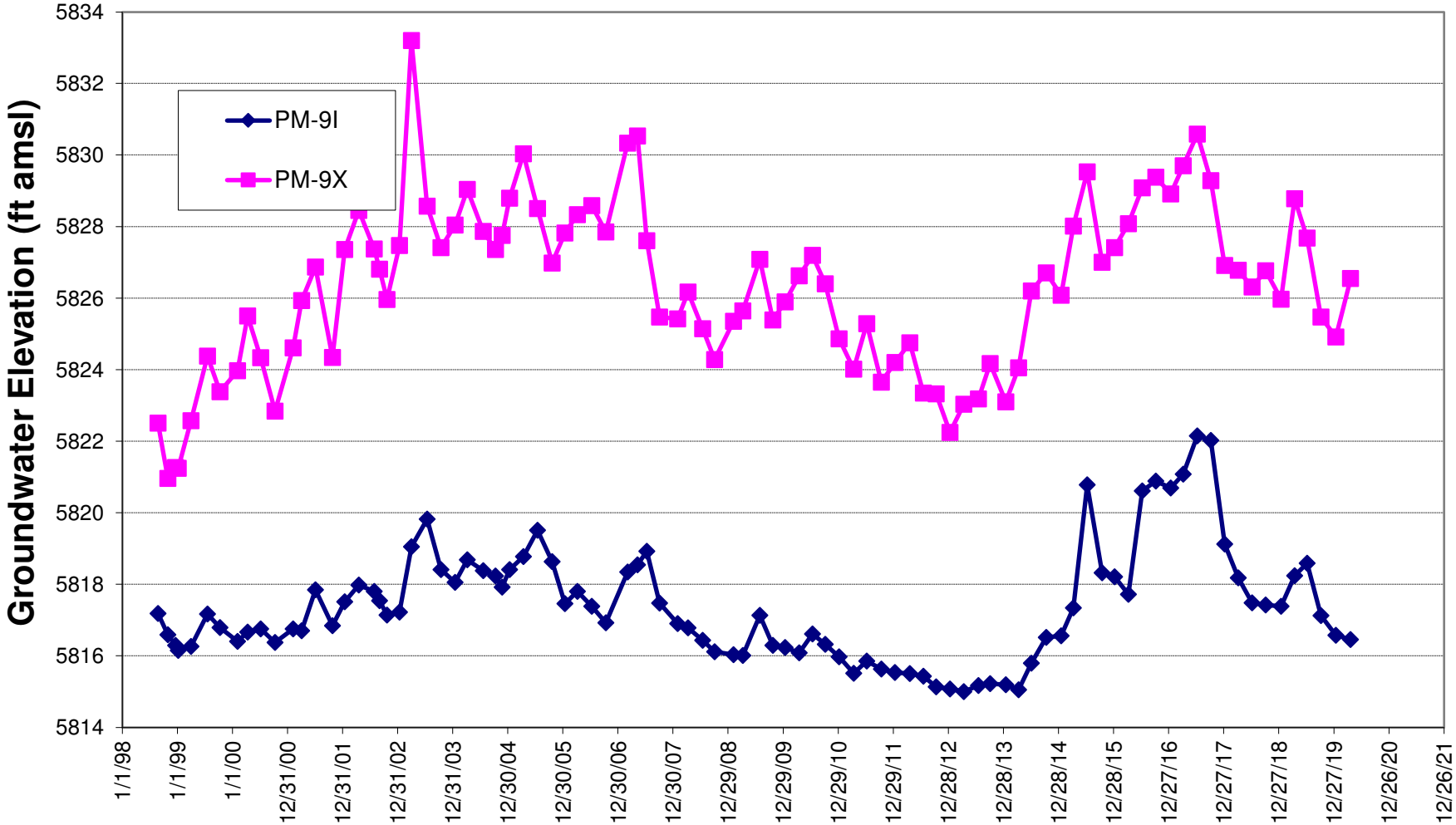
			Minimum	-10.54
			Maximum	-8.34
Mean Interior Water Level		5817.41	Avg. Diff	-9.148
Mean Exterior Water Level		5826.55	Diff of the Means	-9.148
Sum of the Squares of Deviations				
	Interior	3.7984		
	Exterior	10.5438		
Standard Deviation (pooled)		1.0121		
t-statistics	degrees of freedom =	7		
	α = 5%	1.8946		
	α = 20%	0.896		
80% Confidence Interval		0.4534	80% LCL	-9.60
95% Confidence Interval		0.9588	95% UCL	-8.19

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-9 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LO	Date	Water Elev	Difference
PM-10I	7/2/2018	5816.17	PM-10X	7/2/2018	5821.18	-5.01
PM-10I	10/1/2018	5816.38	PM-10X	10/1/2018	5821.54	-5.16
PM-10I	1/11/2019	5815.67	PM-10X	1/11/2019	5820.82	-5.15
PM-10I	4/10/2019	5816.6	PM-10X	4/10/2019	5822.41	-5.81
	7/3/2019	5817.01	PM-10X	7/3/2019	5822.27	-5.26
	10/2/2019	5815.75	PM-10X	10/2/2019	5820.67	-4.92
	1/9/2020	5814.89	PM-10X	1/9/2020	5819.52	-4.63
	4/15/2020	5814.81	PM-10X	4/15/2020	5820.47	-5.66

		Minimum	-5.81
		Maximum	-4.63
Mean Interior Water Level	5815.91	Avg. Diff	-5.200
Mean Exterior Water Level	5821.11	Diff of the Means	-5.200

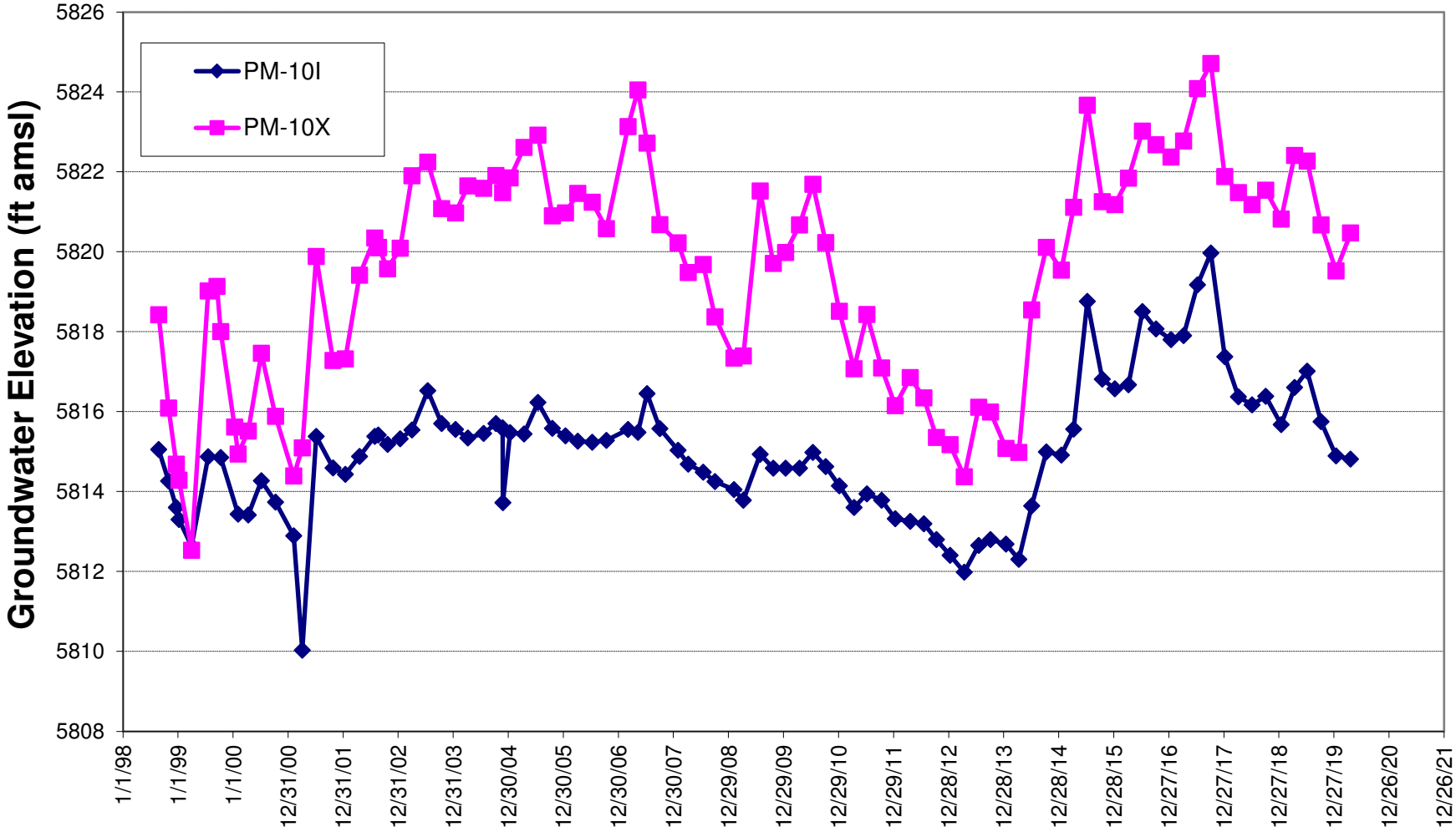
Sum of the Squares of Deviations		
Interior	4.3082	
Exterior	6.4408	
Standard Deviation (pooled)	0.88	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	
80% Confidence Interval	0.3926	80% LCL -5.59
95% Cpnfidence Interval	0.8301	95% UCL -4.37

Effectiveness Decision

Inward Gradient exists

Data Sufficiency

PM-10 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LO	Date	Water Elev	Difference
PM-11I	7/5/2018	5773.74	PM-11X	7/5/2018	5797.49	-23.75
PM-11I	10/1/2018	5773.76	PM-11X	10/1/2018	5798.09	-24.33
PM-11I	1/7/2019	5774.17	PM-11X	1/7/2019	5796.58	-22.41
PM-11I	4/9/2019	5773.91	PM-11X	4/9/2019	5799.51	-25.6
	7/2/2019	5773.87	PM-11X	7/2/2019	5798.77	-24.9
	10/2/2019	5773.84	PM-11X	10/3/2019	5796.54	-22.7
	1/13/2020	5773.71	PM-11X	1/13/2020	5795.74	-22.03
	4/16/2020	5773.78	PM-11X	4/16/2020	5795.61	-21.83

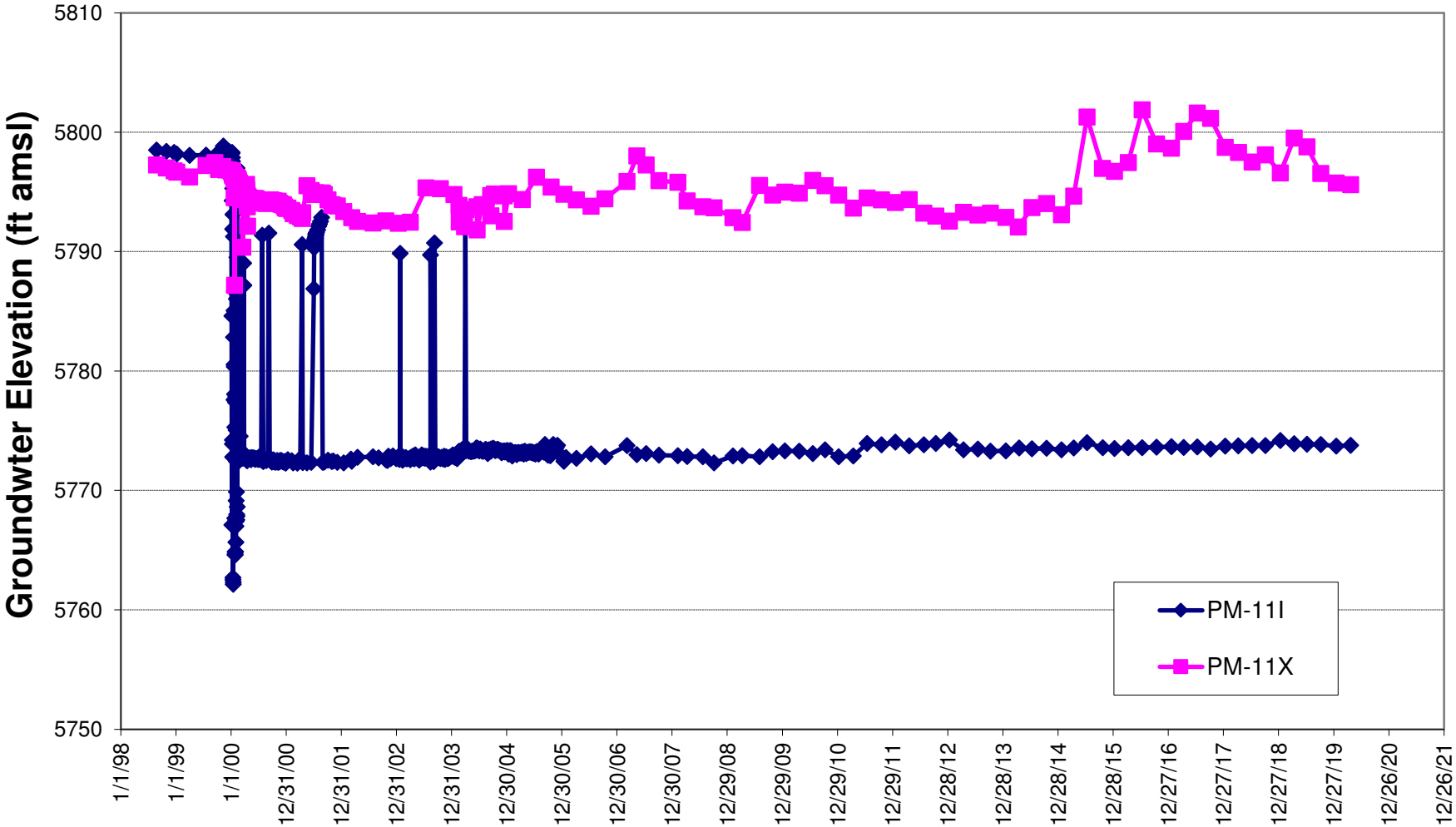
			Minimum	-25.6
			Maximum	-21.83
Mean Interior Water Level		5773.85	Avg. Diff	-23.444
Mean Exterior Water Level		5797.29	Diff of the Means	-23.444
Sum of the Squares of Deviations				
	Interior	0.1511		
	Exterior	14.0903		
Standard Deviation (pooled)		1.0086		
t-statistics	degrees of freedom =	7		
	α = 5%	1.8946		
	α = 20%	0.896		
80% Confidence Interval		0.4518	80% LCL	-23.90
95% Confidence Interval		0.9554	95% UCL	-22.49

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-11 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-12I	7/5/2018	5762.81	PM-12X	7/5/2018	5767.4	-4.59
PM-12I	10/1/2018	5762.65	PM-12X	10/1/2018	5767.48	-4.83
PM-12I	1/7/2019	5762.69	PM-12X	1/7/2019	5767.92	-5.23
PM-12I	4/9/2019	5762.73	PM-12X	4/9/2019	5767.58	-4.85
	7/2/2019	5762.7	PM-12X	7/2/2019	5767.6	-4.9
	10/3/2019	5762.7	PM-12X	10/3/2019	5768.89	-6.19
	1/13/2020	5762.93	PM-12X	1/13/2020	5769.18	-6.25
	4/16/2020	5763.09	PM-12X	4/16/2020	5768.54	-5.45

		Minimum	-6.25
		Maximum	-4.59
Mean Interior Water Level	5762.79	Avg. Diff	-5.286
Mean Exterior Water Level	5768.07	Diff of the Means	-5.286

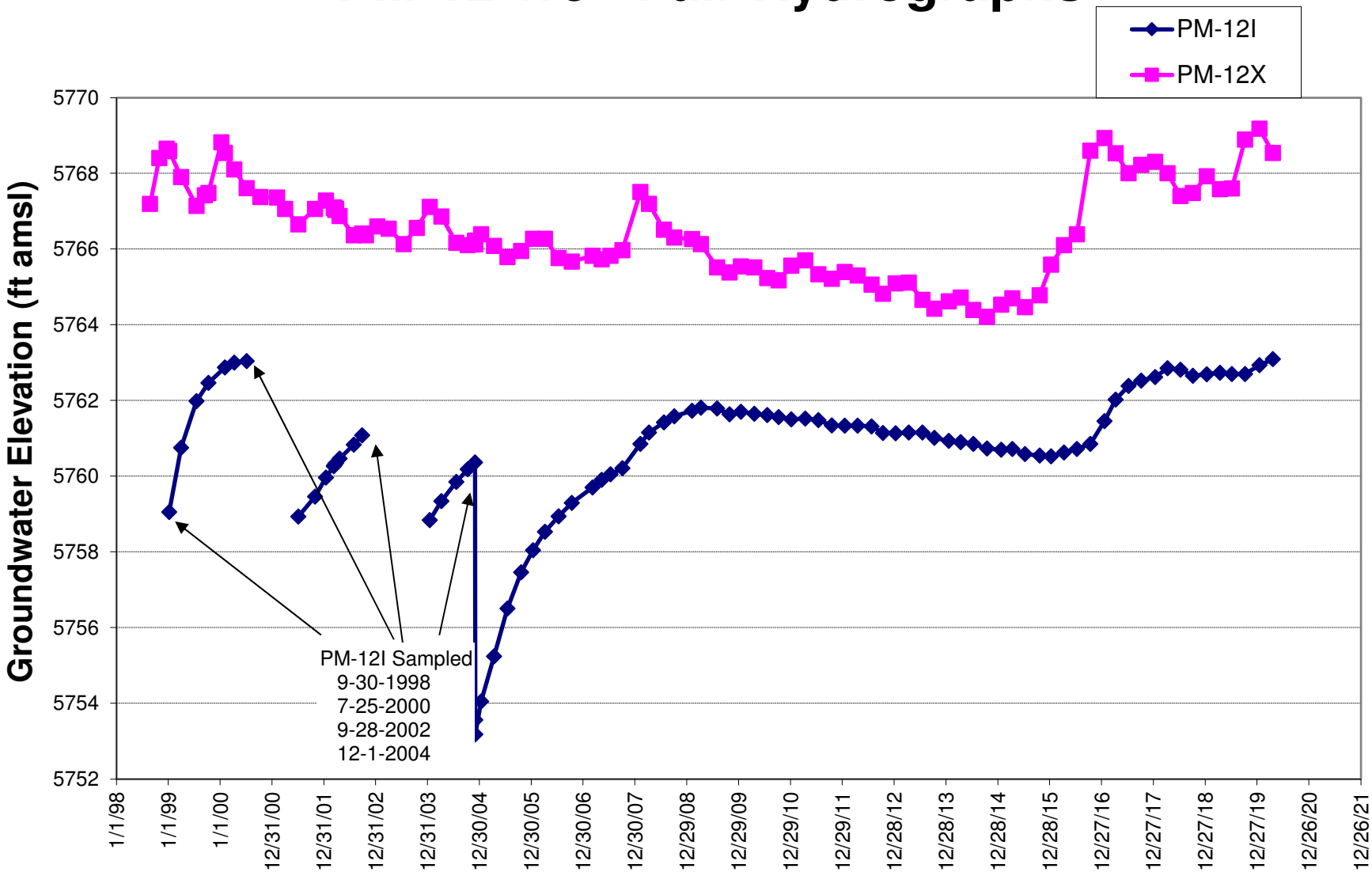
Sum of the Squares of Deviations		
Interior	0.1593	
Exterior	3.4058	
Standard Deviation (pooled)	0.5046	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	
80% Confidence Interval	0.2261	80% LCL -5.51
95% Confidence Interval	0.4780	95% UCL -4.81

Effectiveness Decision

Data Sufficiency

Inward Gradient exists

PM-12 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER L	Date	Water Elev	Difference
PM-13I	7/5/2018	5753.91	PM-13X	7/5/2018	5752.55	1.36
PM-13I	10/1/2018	dry	PM-13X	10/1/2018	5752.63	#VALUE!
PM-13I	1/7/2019	dry	PM-13X	1/7/2019	dry	#VALUE!
PM-13I	4/9/2019	dry	PM-13X	4/9/2019	5752.12	#VALUE!
PM-13I	7/2/2019	dry	PM-13X	7/2/2019	dry	#VALUE!
PM-13I	10/3/2019	dry	PM-13X	10/3/2019	5752.16	#VALUE!
PM-13I	1/13/2020	dry	PM-13X	1/13/2020	0	#VALUE!
PM-13I	4/16/2020	dry	PM-13X	4/16/2020	5752.3	#VALUE!

		Minimum	#VALUE!
		Maximum	#VALUE!
Mean Interior Water Level	5753.91	Avg. Diff	#VALUE!
Mean Exterior Water Level	4793.63	Diff of the Means	960.283

Sum of the Squares of Deviations

Interior	#VALUE!
Exterior	#VALUE!
Standard Deviation (pooled)	#VALUE!

t-statistics	degrees of freedom =	7
	α = 5%	1.8946
	α = 20%	0.896

80% Confidence Interval	#VALUE!	80% LCL	#VALUE!
95% Confidence Interval	#VALUE!	95% UCL	#VALUE!

Effectiveness Decision

#VALUE!

#VALUE!

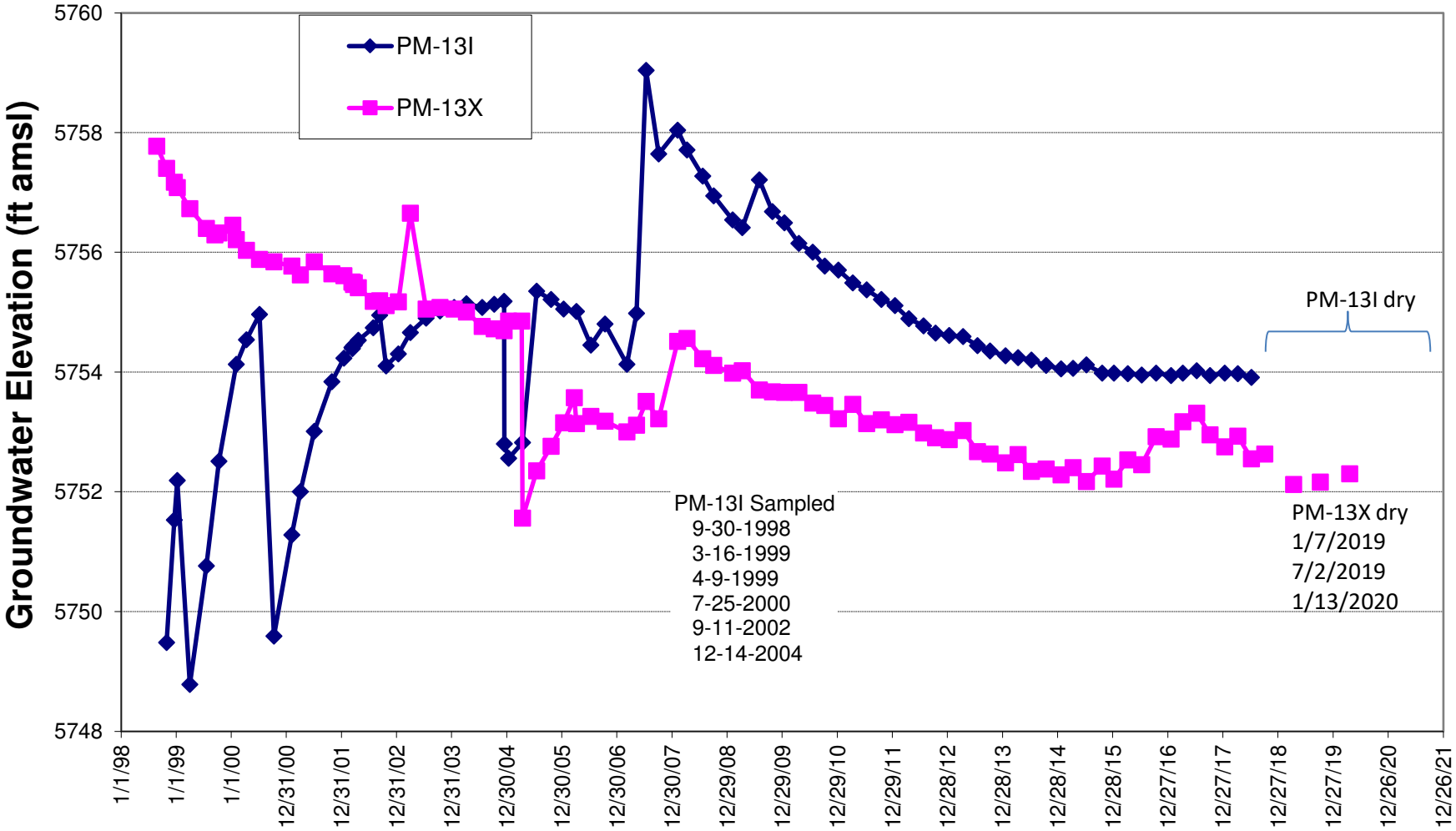
Data Sufficiency

#VALUE!

#VALUE!

Unable to calculate gradient

PM-13 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-14I	7/5/2018	5749.53	PM-14X	7/5/2018	5748.46	1.07
PM-14I	10/1/2018	5749.49	PM-14X	10/1/2018	5748.44	1.05
PM-14I	1/7/2019	5749.89	PM-14X	1/7/2019	5748.78	1.11
PM-14I	4/9/2019	5749.76	PM-14X	4/9/2019	5748.64	1.12
	7/2/2019	5749.16	PM-14X	7/2/2019	5748.01	1.15
	10/3/2019	5749.06	PM-14X	10/3/2019	5748.01	1.05
	1/13/2020	5749.47	PM-14X	1/13/2020	5748.43	1.04
	4/16/2020	5749.21	PM-14X	4/16/2020	5748.19	1.02

		Minimum	1.02
		Maximum	1.15
Mean Interior Water Level	5749.45	Avg. Diff	1.076
Mean Exterior Water Level	5748.37	Diff of the Means	1.076

Sum of the Squares of Deviations		
Interior	0.5918	
Exterior	0.5492	
Standard Deviation (pooled)	0.2855	
t-statistics degrees of freedom =	7	
α = 5%	1.8946	
α = 20%	0.896	

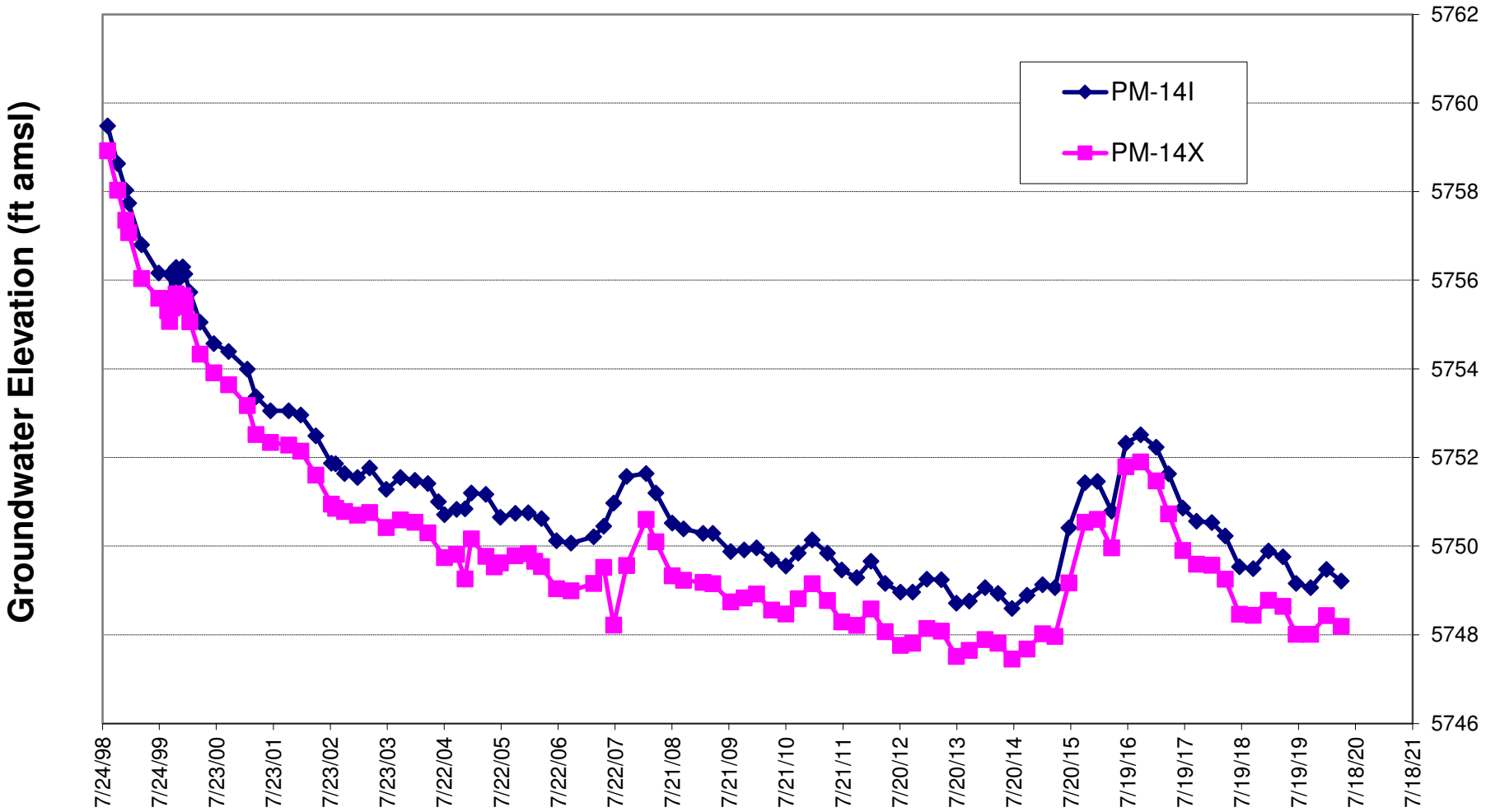
80% Confidence Interval	0.1279	80% LCL	0.95
95% Cpnfidence Interval	0.2704	95% UCL	1.35

Effectiveness Decision

Outward Gradient exists

Data Sufficiency

PM-14 Well Pair Hydrographs



MASTER L	Date	Water Elev	MASTER LC	Date	Water Elev	Difference
PM-15I	7/5/2018	5723.91	PM-15X	7/5/2018	5735.43	-11.52
PM-15I	10/1/2018	5723.80	PM-15X	10/1/2018	5736.13	-12.33
PM-15I	1/7/2019	5724.07	PM-15X	1/7/2019	5736.19	-12.12
PM-15I	4/10/2019	5723.77	PM-15X	4/10/2019	5735.87	-12.10
	7/2/2019	5723.81	PM-15X	7/2/2019	5736.64	-12.83
	10/2/2019	5723.78	PM-15X	10/3/2019	5736.81	-13.03
	1/13/2020	5723.57	PM-15X	1/13/2020	5736.52	-12.95
	4/17/2020	5723.69	PM-15X	4/17/2020	5735.80	-12.11

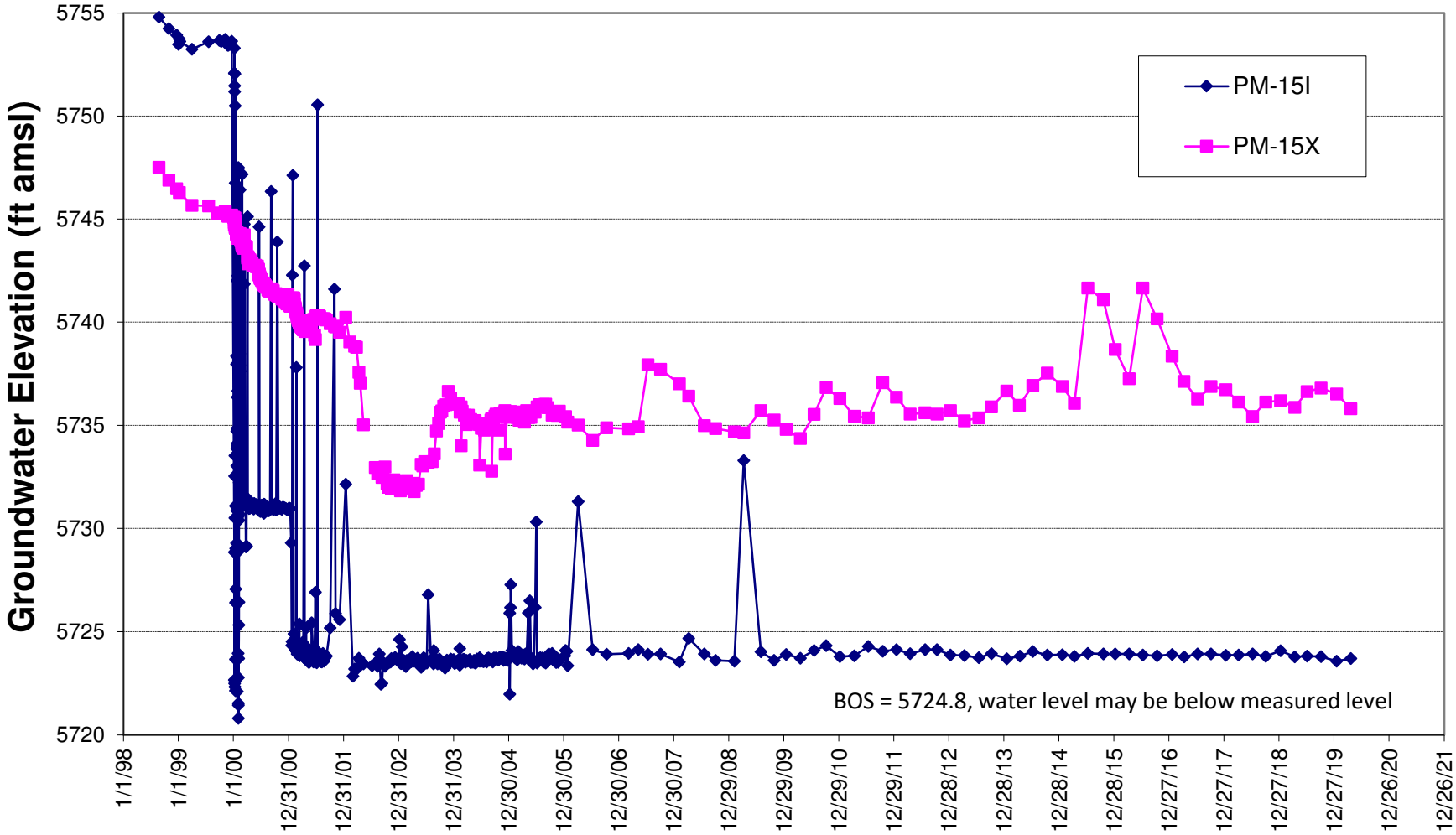
			Minimum	-13.03
			Maximum	-11.52
Mean Interior Water Level		5723.80	Avg. Diff	-12.374
Mean Exterior Water Level		5736.17	Diff of the Means	-12.374
Sum of the Squares of Deviations				
	Interior	0.1514		
	Exterior	1.5294		
Standard Deviation (pooled)		0.3465		
t-statistics	degrees of freedom =	7		
	α = 5%	1.8946		
	α = 20%	0.896		
80% Confidence Interval		0.1552	80% LCL	-12.53
95% Confidence Interval		0.3282	95% UCL	-12.05

Effectiveness Decision

Inward Gradient exists

Data Sufficiency

PM-15 Well Pair Hydrographs



APPENDIX C-4.2

EFFECTIVENESS ASSESSMENT

Data Summary Table for Wells with Outward Gradients

(PM-3X, PM-6X, PM-13X, and PM-14X)

APPENDIX C-4.2

Analytical Data Summary for PM-13X

Dates	1,1,1-trichloroethane (ug/L)	1,1-dichloroethane (ug/L)	1,4-dioxane (ug/L)	Tetrachloroethene (ug/L)	Trichloroethene (ug/L)
9/22/2005	2.20	44	<284.00	.82	1.30
12/20/2005	2.20	40		.94	1.40
3/23/2006	1.90	41		.90	1.30
6/2/2006	.86	21		.54	.77
7/28/2006	1.50	34		.79	1.20
11/28/2006	1.70	41		1.10	1.40
2/6/2007	2.00	43		1.70	1.90
6/8/2007	.81	35		1.30	1.60
11/5/2007	2.00	43		2.00	2.30
5/16/2008	1.90	46		1.20	1.70
12/8/2008	.59	18		.48	1.10
5/12/2009	1.10	33		1.00	1.40
11/25/2009	1.00	33		.83	1.50
6/11/2010	1.00	39		1.20	1.70
11/19/2010	1.40	41		1.60	1.70
6/7/2011	1.10	39		.93	1.70
12/9/2011	1.10	32		.87	1.40
6/21/2012	.74	32		.70	1.00
12/10/2012	.80	33		.48	.99
6/18/2013	.85	35		1.00	1.40
12/19/2013	.86	37		.82	1.40
6/18/2014	.72	32		1.20	1.50
12/22/2014	.58	28		.62	1.00
6/2/2015	.76	31		1.60	1.70
12/21/2015	.83	33		1.70	1.90
6/21/2016	.69	34		1.00	1.40
12/20/2016	.60	30		1.30	1.60
6/29/2017	.53	27		1.60	1.70
10/17/2017	.47	29	<.15	.59	1.00
6/20/2018	.49	30	<.15	1.00	1.40
10/30/2018	.50	23	<.15	1.60	1.50
6/11/2019	.43	26	<.15	1.60	1.00
12/18/2019	.17	27	<.09	1.30	1.20
6/8/2020	.92	29	.35	1.20	1.50

APPENDIX C-4.2

Analytical Data Summary for PM-14X

Dates	1,1,1-trichloroethane (ug/L)	1,1-dichloroethane (ug/L)	1,4-dioxane (ug/L)	Tetrachloroethene (ug/L)	Trichloroethene (ug/L)
6/15/2004	.31	4.6		<.26	<.16
6/8/2005	<.16	3.9	<.19	<.20	<.16
8/26/2005	.23	3.9	<.19	<.20	.17
11/21/2005	.22	3.9	<.19	<.20	<.16
2/21/2006	.17	3.2	<.50	<.20	.21
6/12/2006	<.16	4.2		<.20	<.16
7/26/2006	.17	3.7	<.50	<.20	.17
11/28/2006	<.16	4.3		<.20	.20
2/5/2007	.20	3.7	<.50	<.20	<.16
8/2/2007	<.16	4.1	<.50	<.20	<.16
10/17/2007	<.16	4.5	<.50	<.20	.22
5/5/2008	.19	3.7	<.50	<.20	<.16
10/29/2008	<.16	3.1	<.50	<.20	<.16
4/16/2009	<.16	3.1	<.50	<.20	<.16
11/11/2009	<.16	3.9	<.50	<.20	<.16
4/27/2010	<.16	3.5	<.50	<.20	<.16
11/2/2010	<.16	3.2	<.50	<.20	<.16
5/4/2011	<.16	3.2	<.50	<.20	.19
11/29/2011	<.16	3.8	<.50	<.20	.20
5/21/2012	<.16	3.7	<.50	<.20	<.16
10/25/2012	<.16	3.8	<.50	<.20	<.16
4/23/2013	<.16	4.1	<.50	<.20	<.16
10/15/2013	<.16	3.6	<.50	<.20	<.16
4/23/2014			<.50		
4/24/2014	<.16	3.3		<.20	<.16
10/27/2014	<.16	4.0	<.50	<.20	<.16
4/20/2015	<.16	3.0	<.50	<.20	<.16
11/2/2015	<.16	2.9	<.15	<.20	<.16
4/20/2016	<.16	3.0	<.15	<.20	.17
11/1/2016	<.16	2.6	<.15	<.20	<.16
4/20/2017	<.16	3.0	<.15	<.20	<.16
10/13/2017	<.16	2.8	<.15	<.20	<.16
4/18/2018	<.16	2.6	<.15	<.20	<.16
10/19/2018	<.16	2.5	<.15	<.20	<.16
4/26/2019	<.16	2.5	<.15	<.20	<.16
11/7/2019	<.16	4.0	<.40	<.20	.23
5/13/2020	<.16	3.0	<.09	<.20	<.16

Prepared by: Parsons

APPENDIX C-4.2

Analytical Data Summary for PM-3X

Dates	1,1,1-trichloroethane (ug/L)	1,1-dichloroethane (ug/L)	1,4-dioxane (ug/L)	Tetrachloroethene (ug/L)	Trichloroethene (ug/L)
6/13/2006	<.16	.33		1.00	.44
8/1/2006	<.16	.26		1.30	.39
12/12/2006	<.16	.28		1.20	.42
2/8/2007	<.16	.29		1.00	.33
6/8/2007	<.16	<.16		.46	.24
8/10/2007	<.16	.34		.54	.28
10/23/2007	<.16	.30		.48	.33
2/22/2008	<.16	.26		.86	.32
5/9/2008	<.16	.28		.99	.34
12/11/2008	<.16	.35		.60	.32
5/12/2009	<.16	.31		.21	.16
11/25/2009	<.16	.34		.46	.22
5/27/2010	<.16	.38		1.00	.48
11/19/2010	<.16	.48		.65	.24
6/2/2011	<.16	.51		<.20	<.16
12/8/2011	<.16	.40		.57	.22
6/12/2012	<.16	.42		.82	.33
12/5/2012	<.16	.47		.39	.26
5/28/2013	<.16	.49		.65	.63
12/19/2013	<.16	.47		.42	.20
6/18/2014	<.16	.41		.38	.16
12/29/2014	<.16	.32		.39	.17
6/3/2015	<.16	.50		.32	.28
12/21/2015	<.16	.45		.55	.26
6/27/2016	<.16	.50		.63	.27
12/29/2016	<.16	<.22		<.20	<.16
6/29/2017	<.16	.33		.42	.24
10/17/2017	<.16	.40	<.15	.27	.17
6/22/2018	.16	.57	<.15	.77	.37
11/1/2018	<.16	.44	<.15	.77	.30
6/11/2019	<.16	.37	<.15	.33	.17
12/18/2019	<.16	<.22	<.09	.24	<.16
6/8/2020	<.16	.60	<.09	.73	<.16

Prepared by: Parsons

APPENDIX C-4.2

Analytical Data Summary for PM-6X

Dates	1,1,1-trichloroethane (ug/L)	1,1-dichloroethane (ug/L)	1,4-dioxane (ug/L)	Tetrachloroethene (ug/L)	Trichloroethene (ug/L)
6/15/2004	<.16	<.22		<.26	<.16
9/22/2005	<.16	<.16		<.20	<.16
12/20/2005	<.16	<.16		<.20	<.16
3/23/2006	<.16	<.16		<.20	<.16
6/2/2006	<.16	<.16		<.20	<.16
7/28/2006	<.16	<.16		<.20	<.16
11/28/2006	<.16	<.16		<.20	<.16
2/6/2007	<.16	<.16		<.20	<.16
8/10/2007	<.16	<.16		<.20	<.16
10/23/2007	<.16	<.16		<.20	<.16
5/9/2008	<.16	<.16		<.20	<.16
12/8/2008	<.16	<.16		<.20	<.16
5/5/2009	<.16	<.16		<.20	<.16
11/25/2009	<.16	<.16		<.20	<.16
5/27/2010	<.16	<.22		<.20	<.16
11/19/2010	<.16	<.22		<.20	<.16
6/2/2011	<.16	<.22		<.20	<.16
12/7/2011	<.16	<.22		<.20	<.16
6/21/2012	<.16	<.22		<.20	<.16
12/5/2012	<.16	<.22		<.20	<.16
5/28/2013	<.16	<.22		<.20	<.16
12/16/2013	<.16	<.22		<.20	<.16
6/17/2014	<.16	<.22		<.20	<.16
12/22/2014	<.16	<.22		<.20	<.16
6/2/2015	<.16	<.22		<.20	<.16
12/23/2015	<.16	<.22		<.20	<.16
6/21/2016	<.16	<.22		<.20	<.16
12/20/2016	<.16	<.22		<.20	<.16
6/29/2017	<.16	<.22		<.20	<.16
10/17/2017	<.16	<.22	<.15	<.20	<.16
6/21/2018	<.16	<.22	<.15	<.20	<.16
10/16/2018	<.16	<.22	<.15	<.20	<.16
6/12/2019	<.16	<.22	<.15	<.20	<.16
12/18/2019	<.16	<.22	<.09	<.20	<.16
6/8/2020	<.16	<.22	<.09	<.20	<.16

Prepared by: Parsons

APPENDIX C-4.3

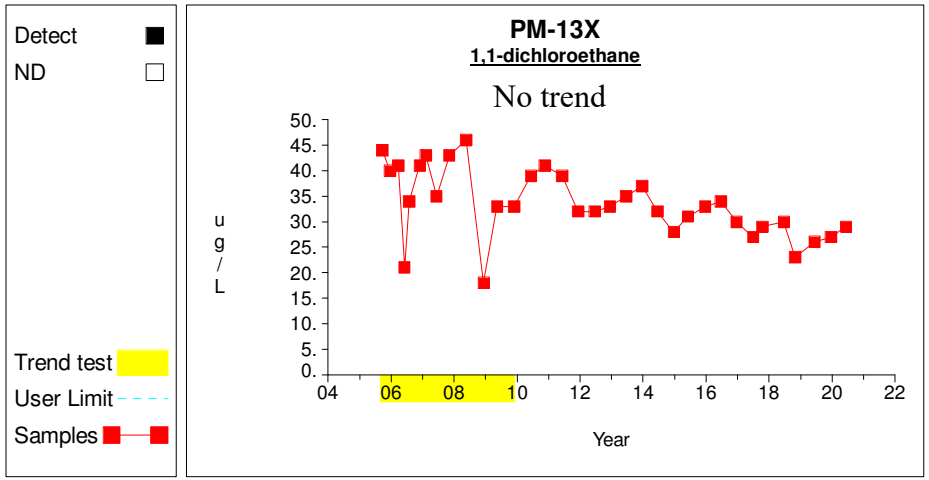
EFFECTIVENESS ASSESSMENT

Trend Analysis for Wells with Outward Gradients

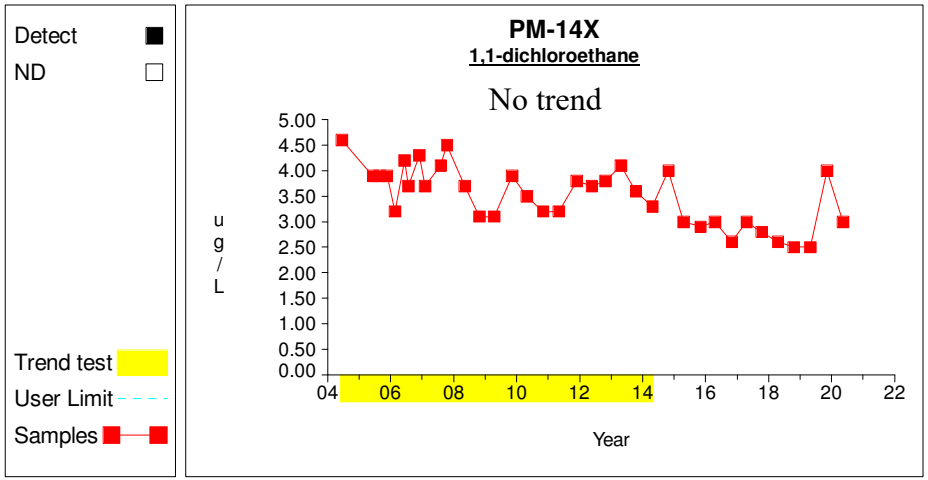
(PM-3X, PM-6X, PM-13X, and PM-14X)

(Baseline Data Set)

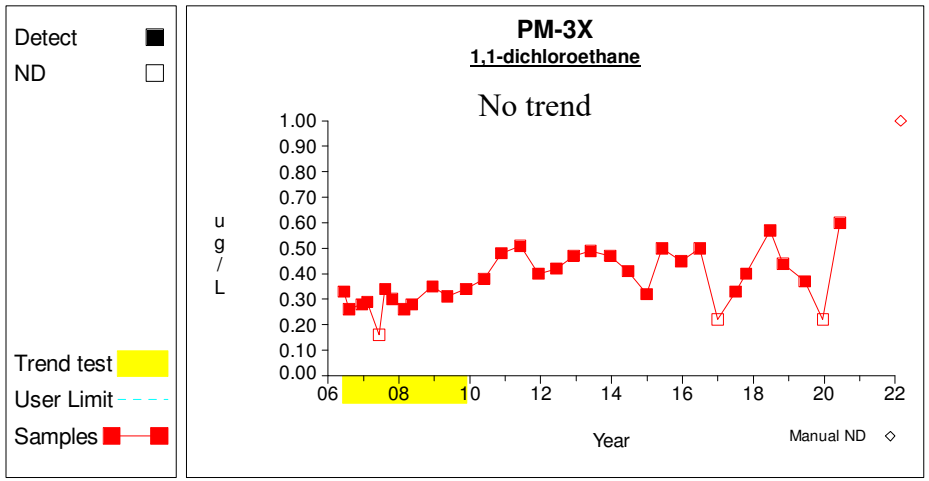
Appendix C-4.3
Trend Analysis for Wells with Outward Gradients



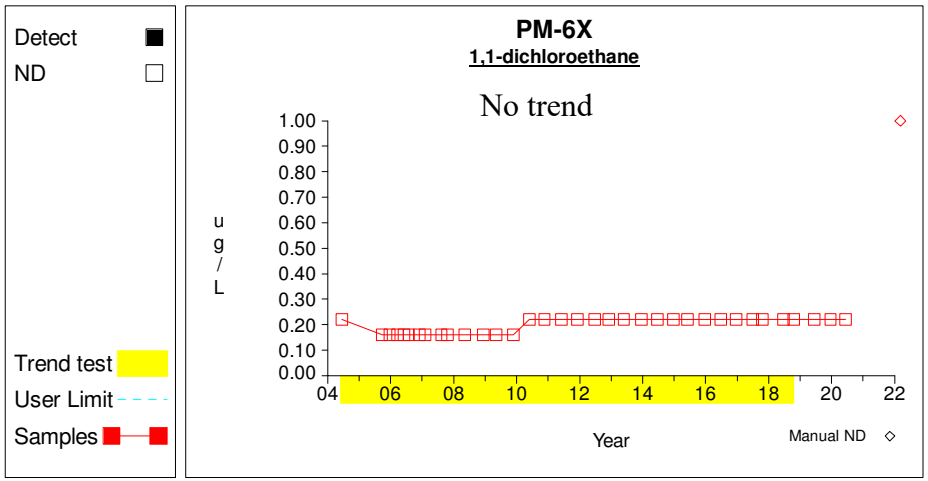
Graph 1



Graph 2



Graph 3

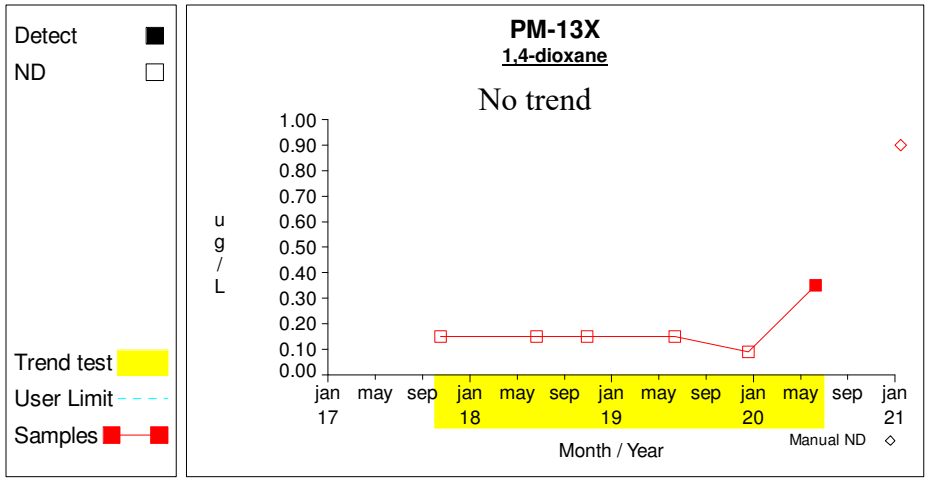


Graph 4

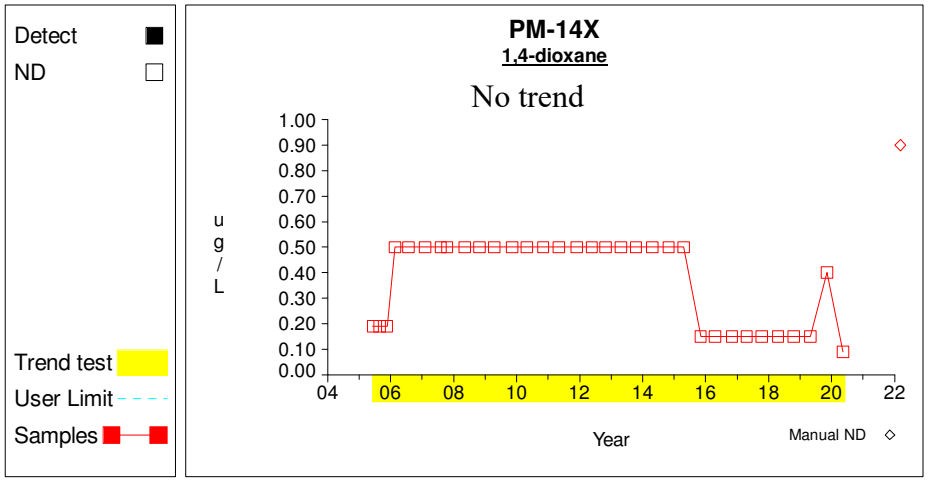
Prepared by: Parsons

Determined by Sen's Test for Trend

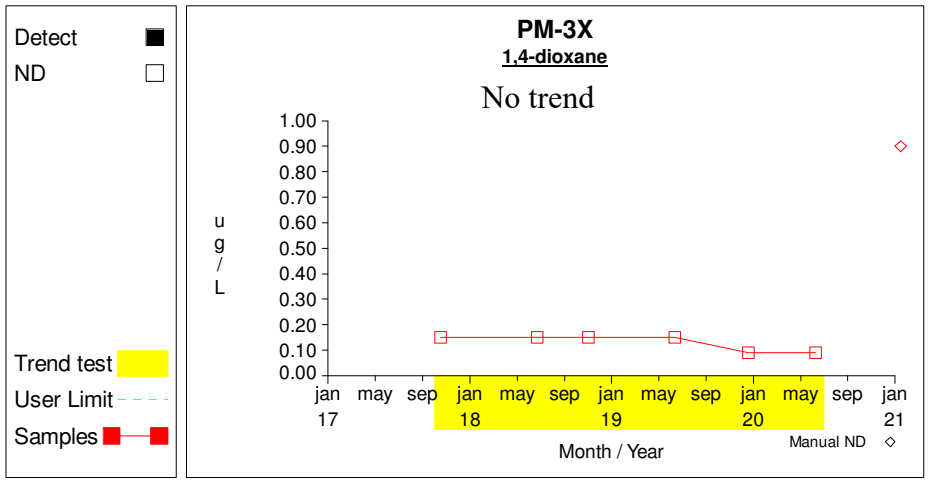
Appendix C-4.3
Trend Analysis for Wells with Outward Gradients



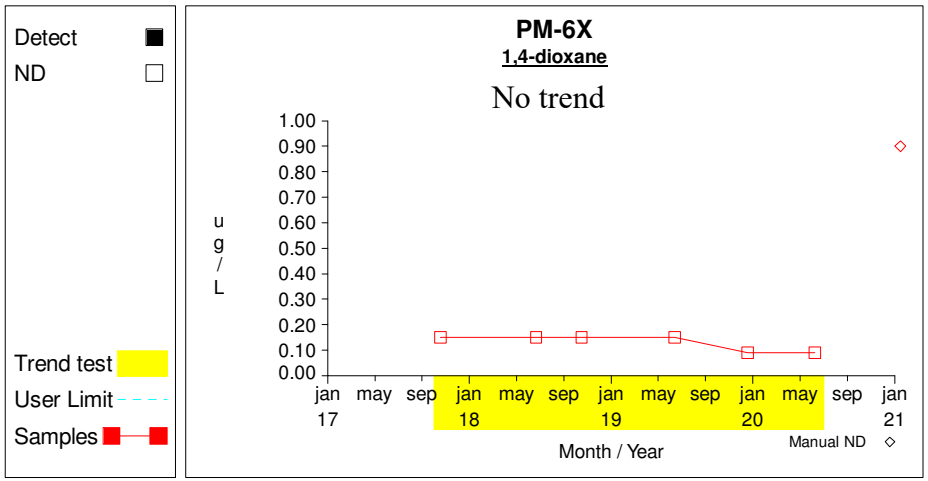
Graph 1



Graph 2



Graph 3

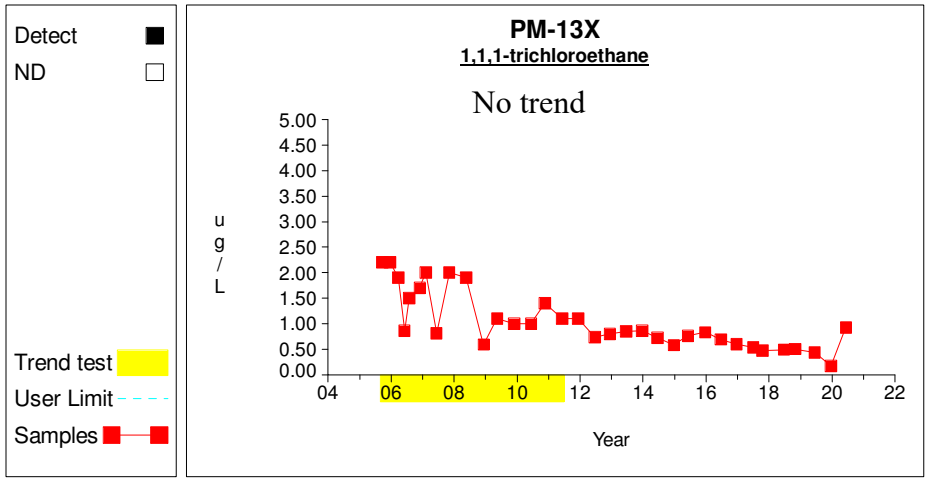


Graph 4

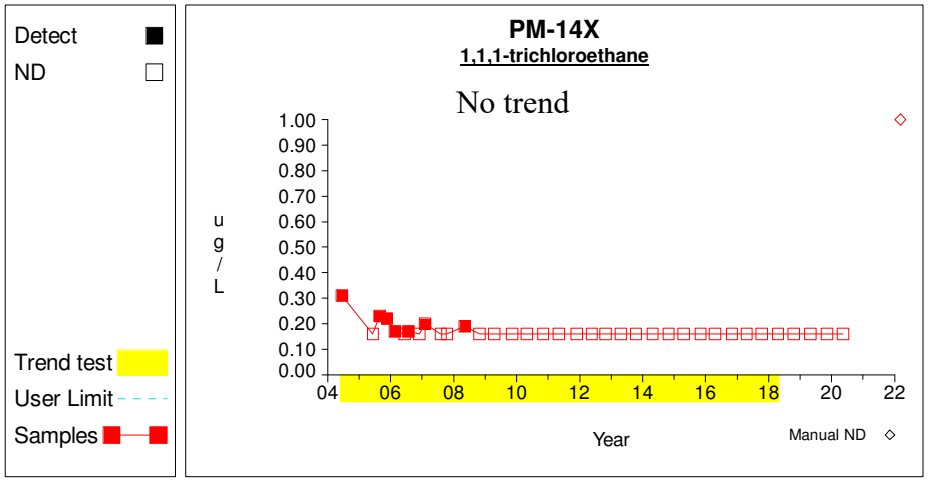
Determined by Sen's Test for Trend

Prepared by: Parsons

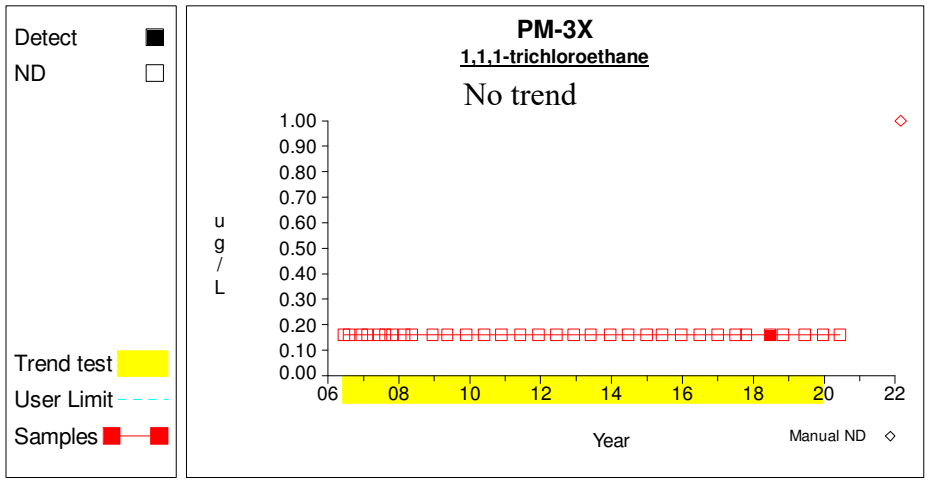
Appendix C-4.3
Trend Analysis for Wells with Outward Gradients



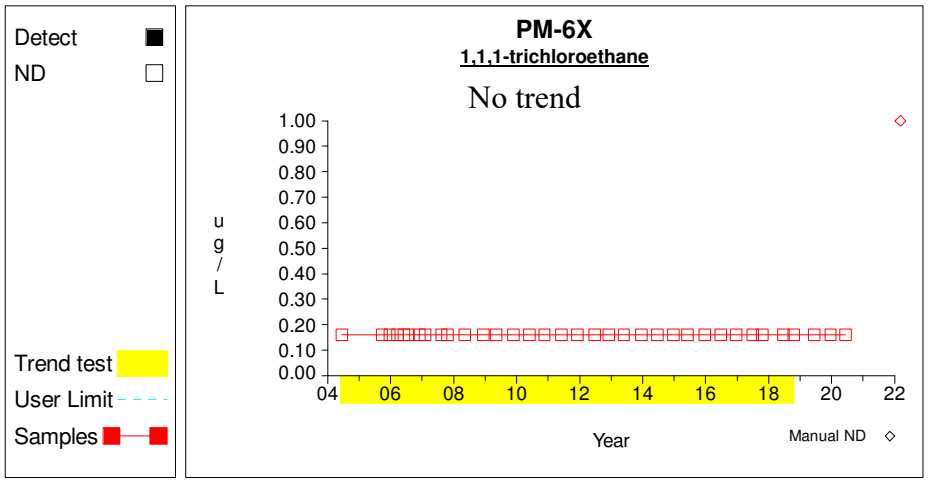
Graph 1



Graph 2



Graph 3

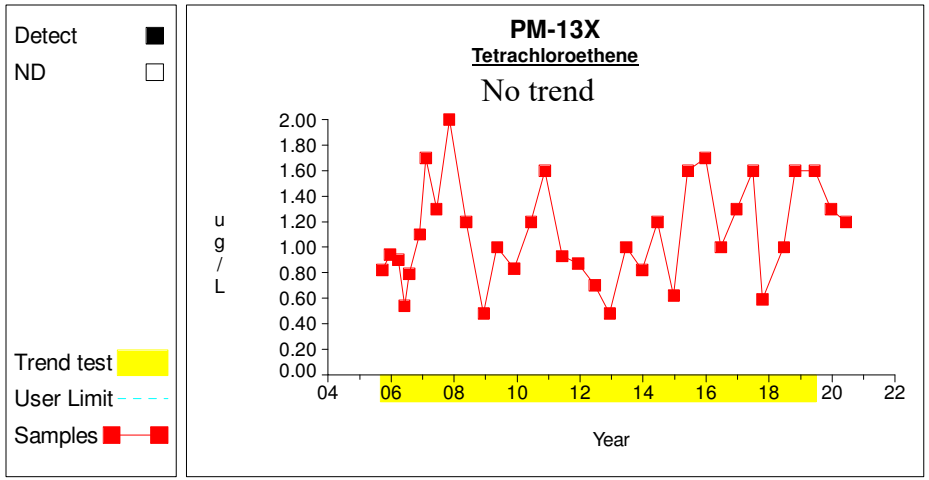


Graph 4

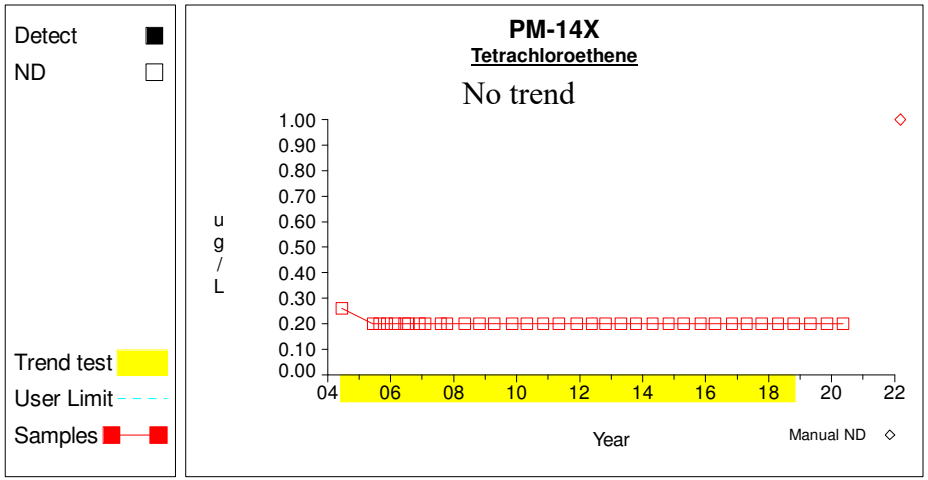
Determined by Sen's Test for Trend

Prepared by: Parsons

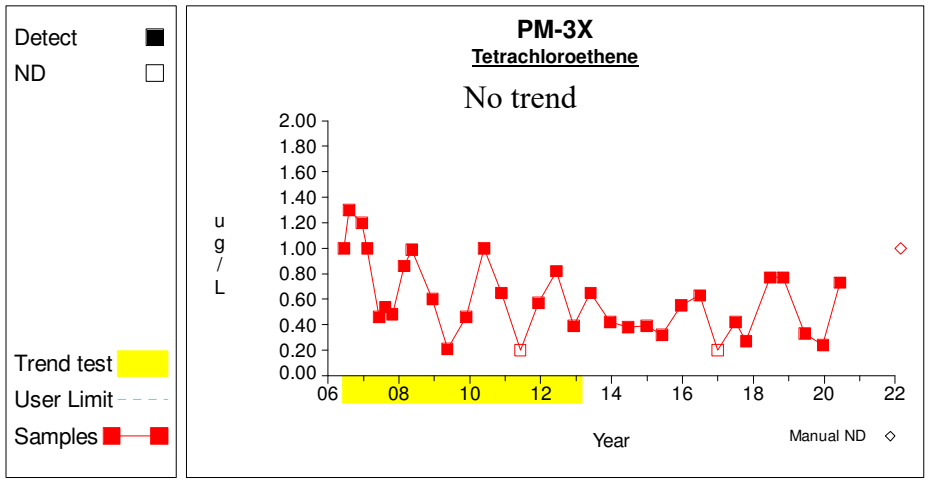
Appendix C-4.3
Trend Analysis for Wells with Outward Gradients



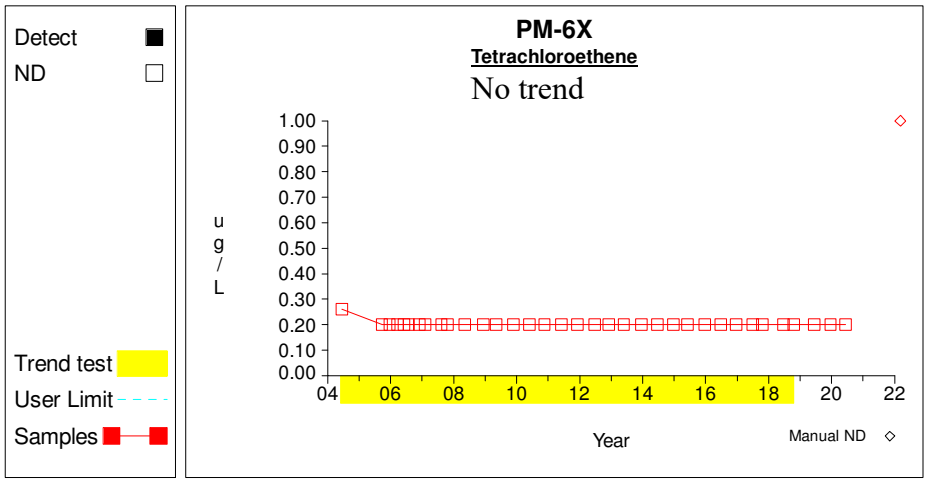
Graph 1



Graph 2



Graph 3

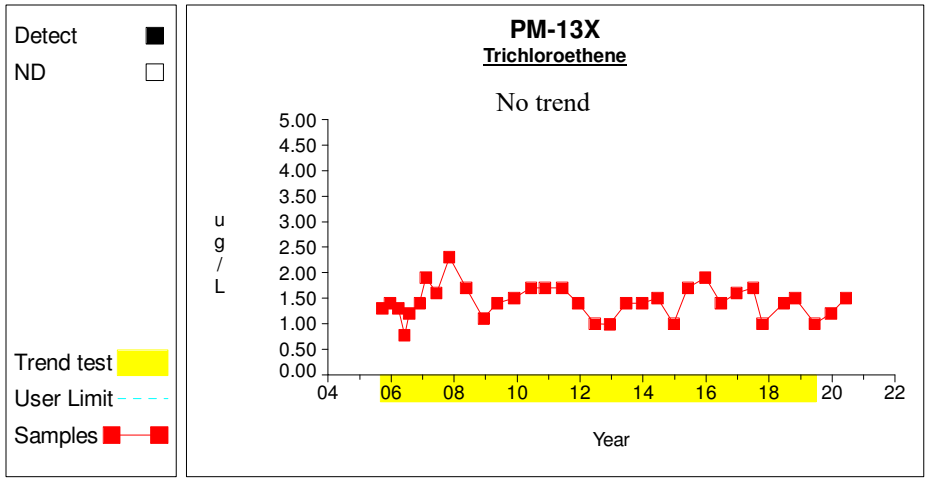


Graph 4

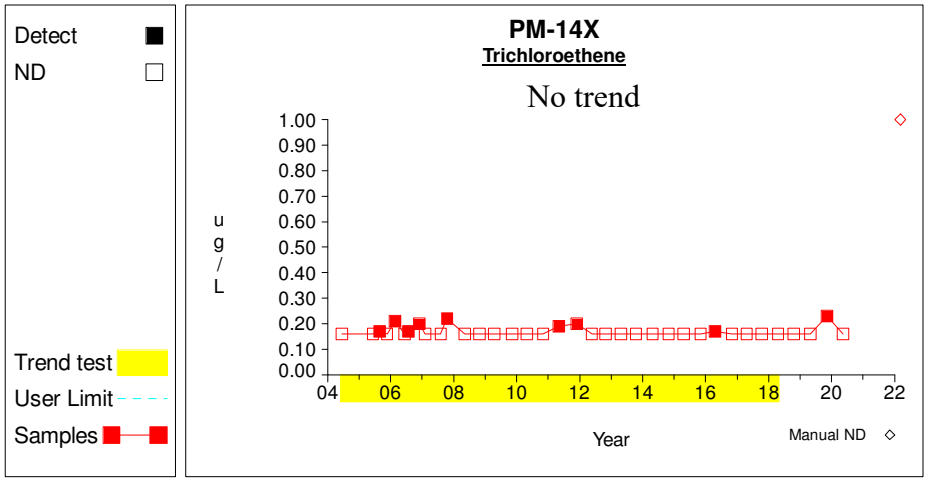
Determined by Sen's Test for Trend

Prepared by: Parsons

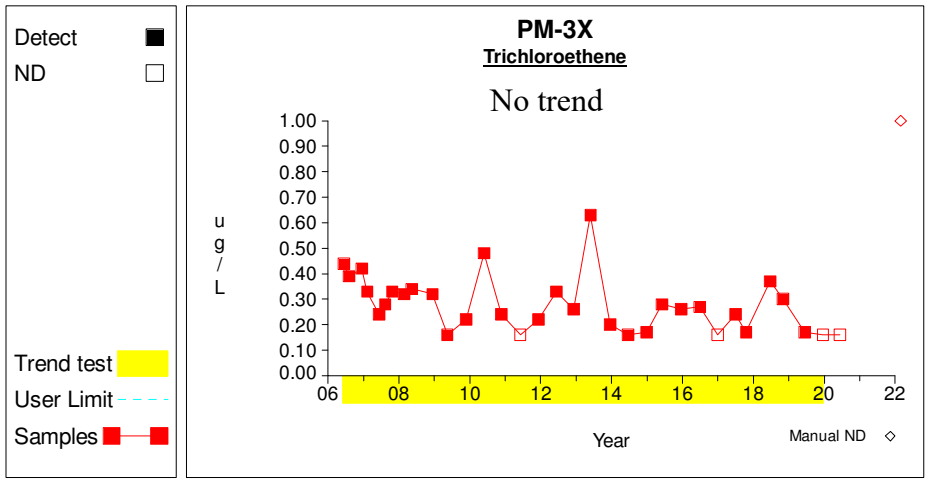
Appendix C-4.3
Trend Analysis for Wells with Outward Gradients



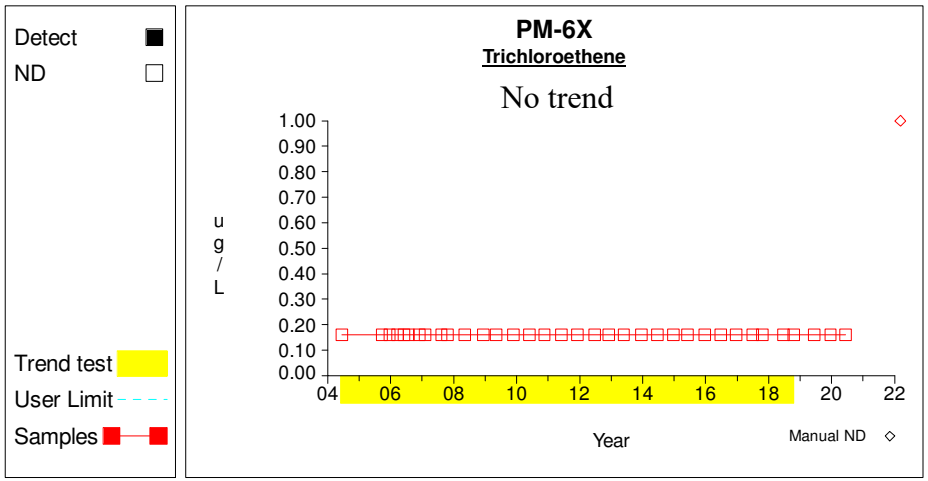
Graph 1



Graph 2



Graph 3



Graph 4

Prepared by: Parsons

APPENDIX C-4.4

EFFECTIVENESS ASSESSMENT

Shewhart-CUSUM Test for Wells with Outward Gradients

(PM-3X, PM-6X, PM-13X, and PM-14X)

APPENDIX C-4.4

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

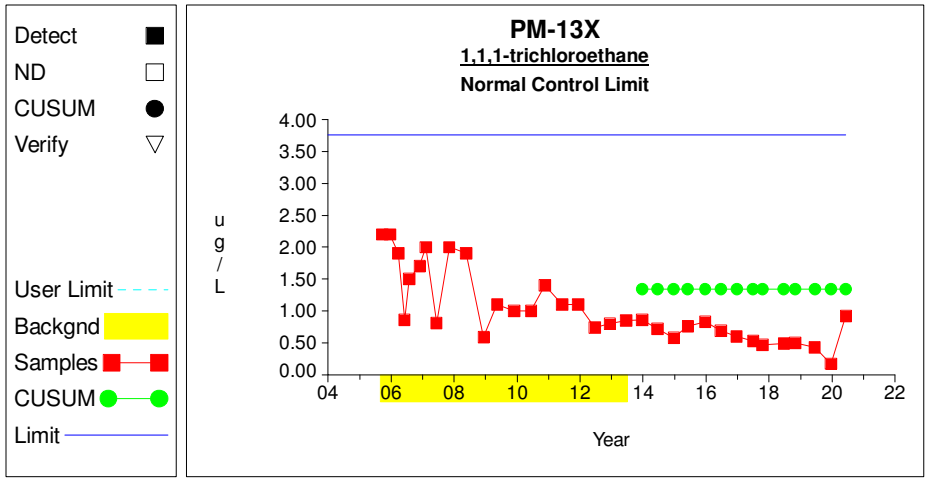
Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
1,1,1-trichloroethane	ug/L	PM-13X	20	14	34	1.3375	0.5383	0.1700	0.9200	1.3375	1.3375	3.7599	normal		
1,1,1-trichloroethane	ug/L	PM-14X	24	12	36	0.7704	0.3663	0.1600	0.1600	0.7704	0.7704	2.4188	normal		
1,1,1-trichloroethane	ug/L	PM-3X	12	21	33								nonpar *		**
1,1,1-trichloroethane	ug/L	PM-6X	32	3	35			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.

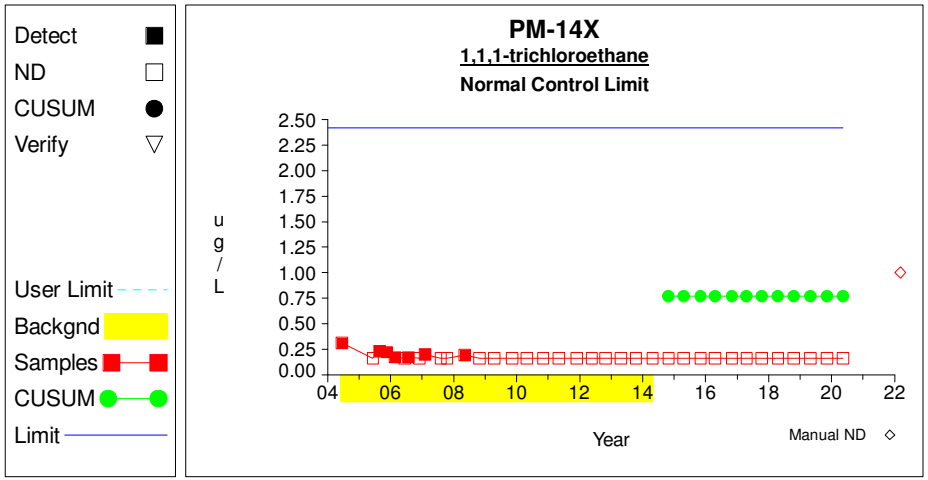
Prepared by: Parsons

APPENDIX C-4.4

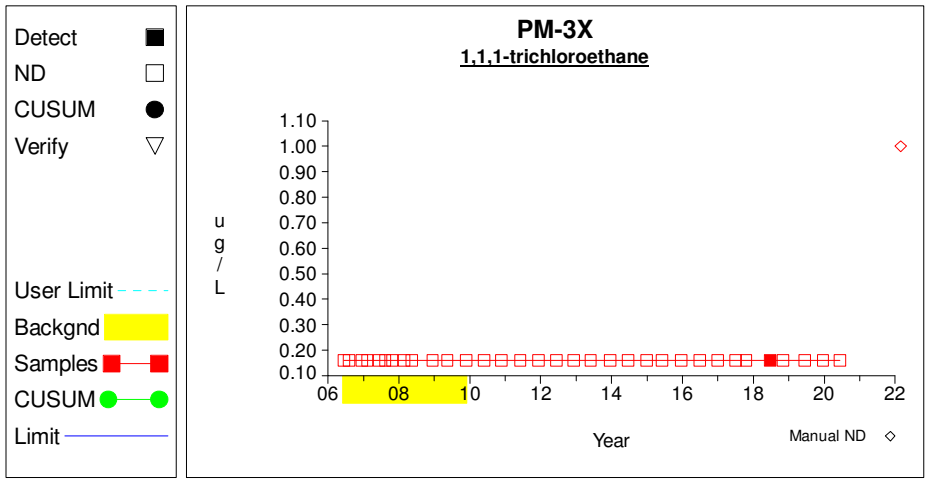
Intra-Well Control Charts / Prediction Limits



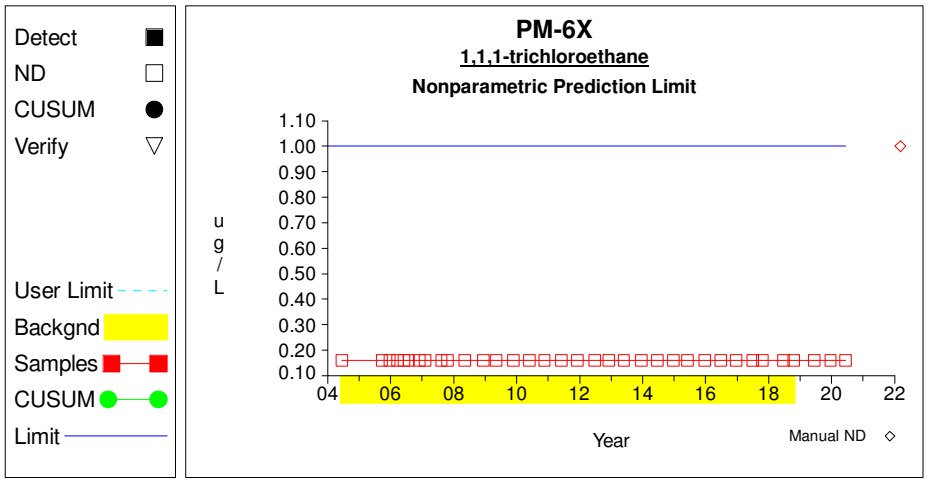
Graph 1



Graph 2



Graph 3



Graph 4

Prepared by: Parsons

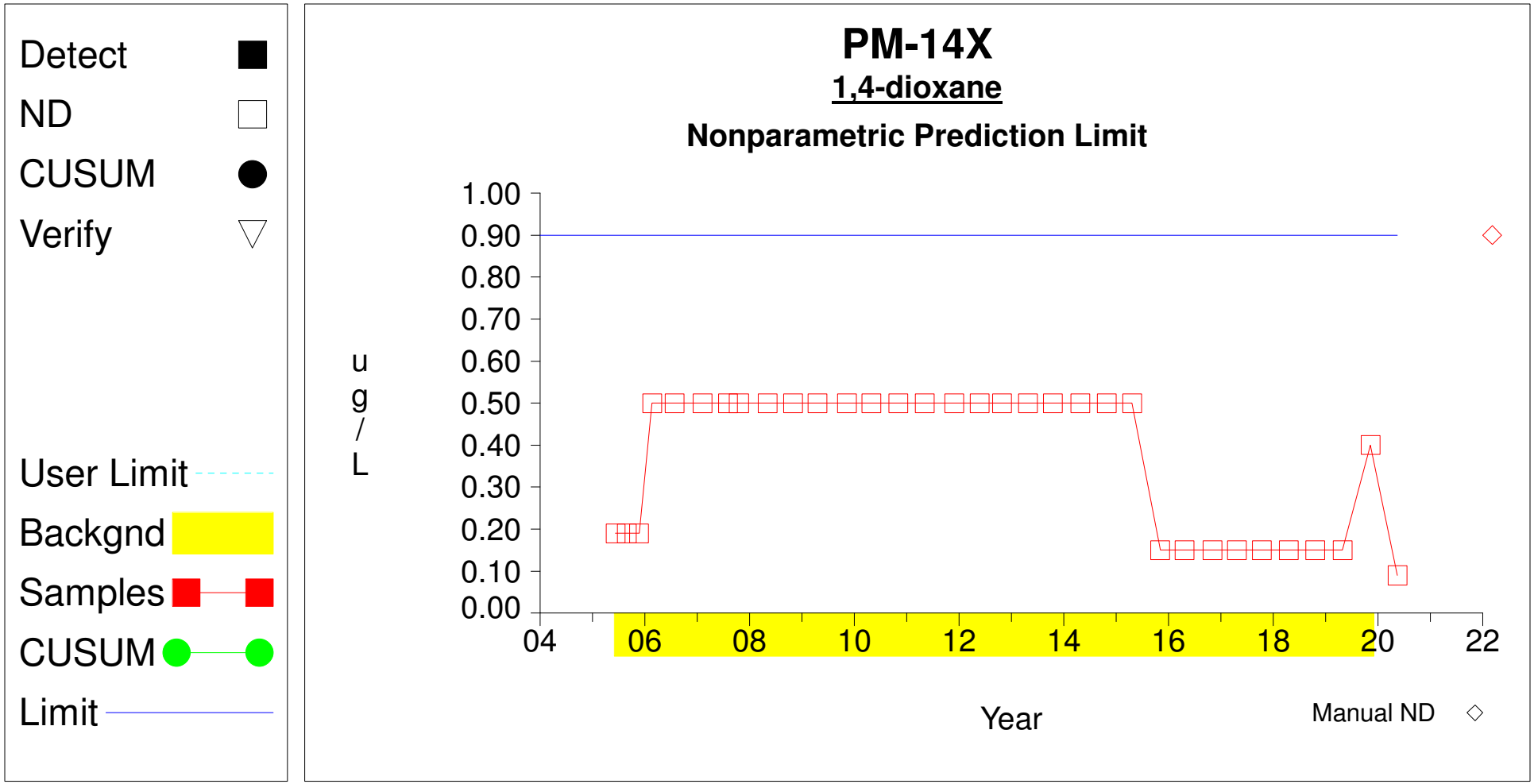
Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

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	1	33			0.9000	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.

Prepared by: Parsons

Intra-Well Control Charts / Prediction Limits



Graph 1

Prepared by: Parsons

APPENDIX C-4.4

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

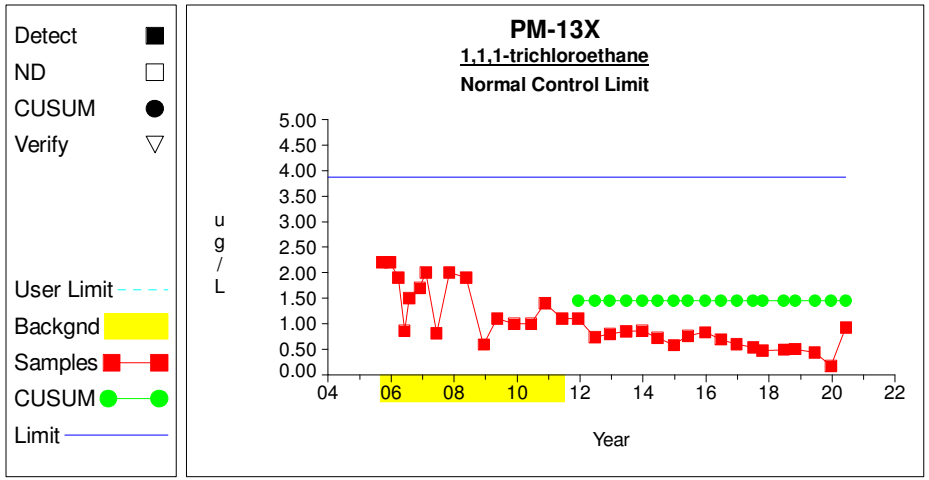
Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
1,1,1-trichloroethane	ug/L	PM-13X	16	18	34	1.4538	0.5385	0.1700	0.9200	1.4538	1.4538	3.8770	normal		
1,1,1-trichloroethane	ug/L	PM-14X	32	4	36			0.1600	0.1600			1.0000	nonpar	.99	**
1,1,1-trichloroethane	ug/L	PM-3X	32	1	33			1.0000	0.1600			1.0000	nonpar	.99	**
1,1,1-trichloroethane	ug/L	PM-6X	32	3	35			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.

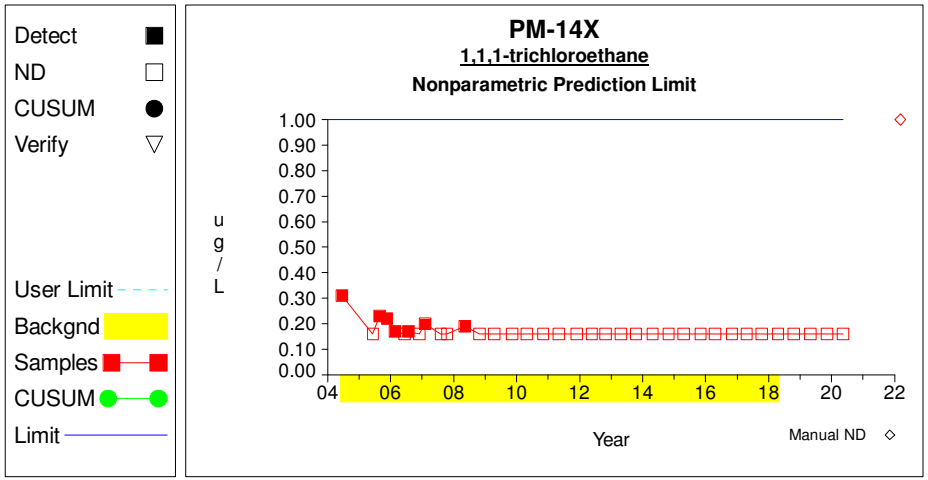
Prepared by: Parsons

APPENDIX C-4.4

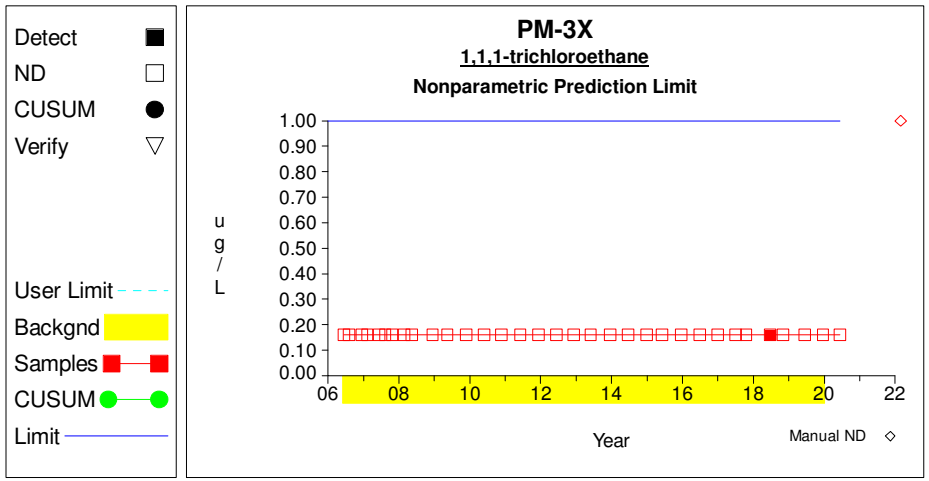
Intra-Well Control Charts / Prediction Limits



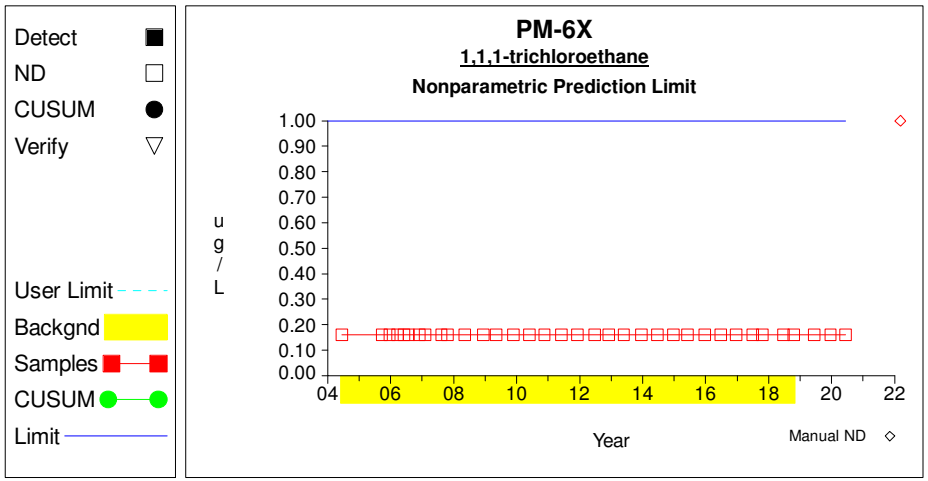
Graph 1



Graph 2



Graph 3



Graph 4

Prepared by: Parsons

APPENDIX C-4.4

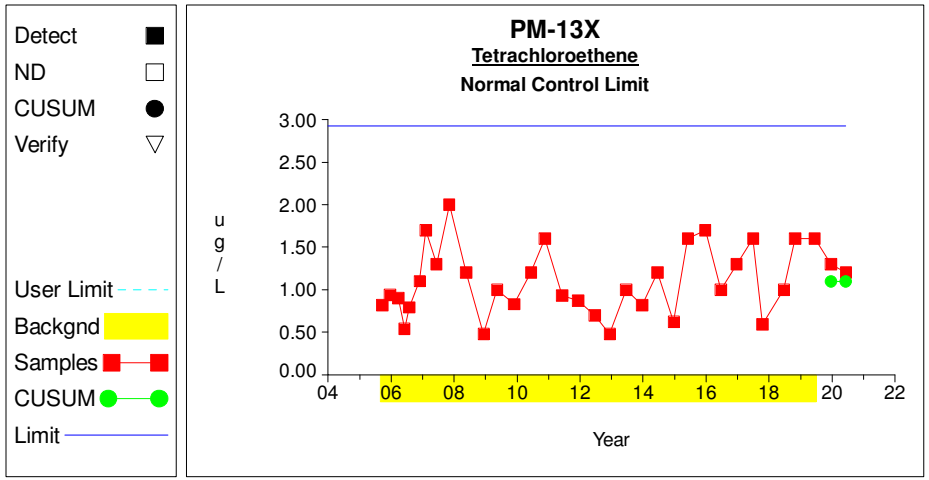
Summary Statistics and Intermediate Computations for Combined Shewhart-Cusum Control Charts

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	2	34	1.0941	0.4070	1.3000	1.2000	1.0941	1.0941	2.9255	normal		
Tetrachloroethene	ug/L	PM-14X	32	4	36			0.2000	0.2000			1.0000	nonpar	.99	**
Tetrachloroethene	ug/L	PM-3X	18	15	33	0.7517	0.3069	0.2400	0.7300	0.7517	0.7517	2.1326	normal		
Tetrachloroethene	ug/L	PM-6X	32	3	35			0.2000	0.2000			1.0000	nonpar	.99	**

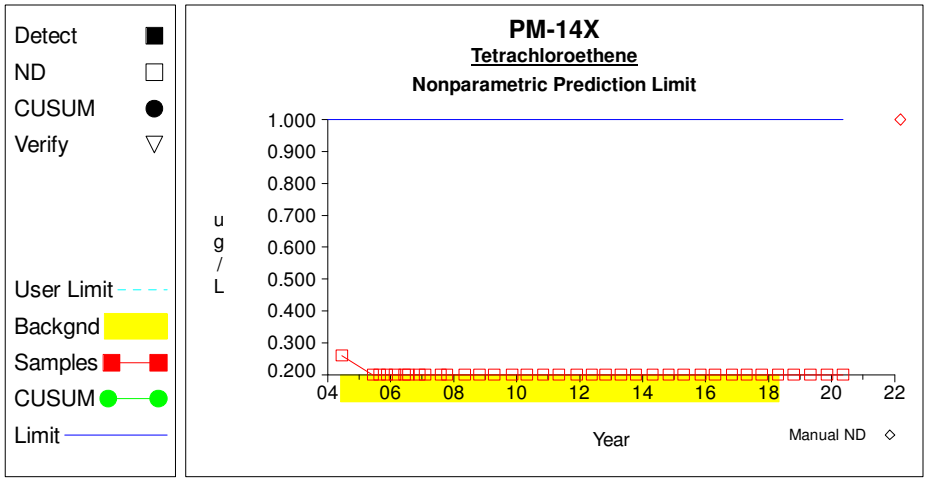
N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Prepared by: Parsons

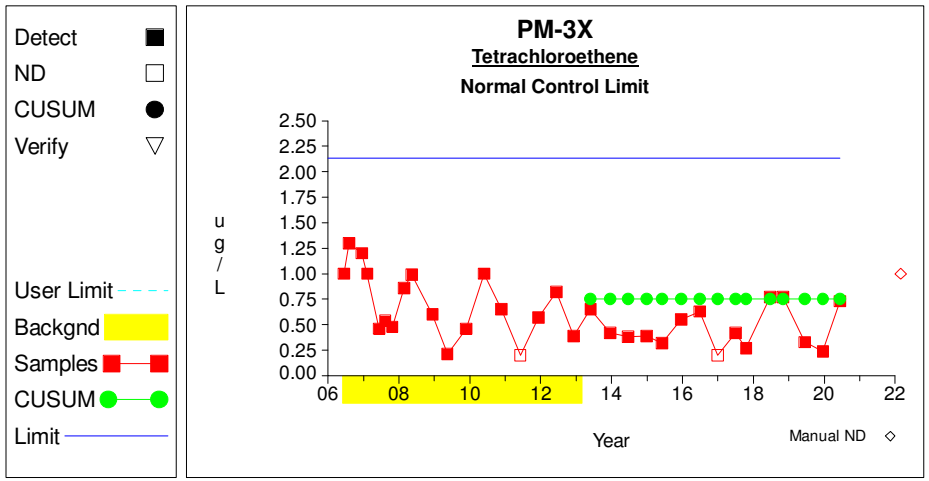
Intra-Well Control Charts / Prediction Limits



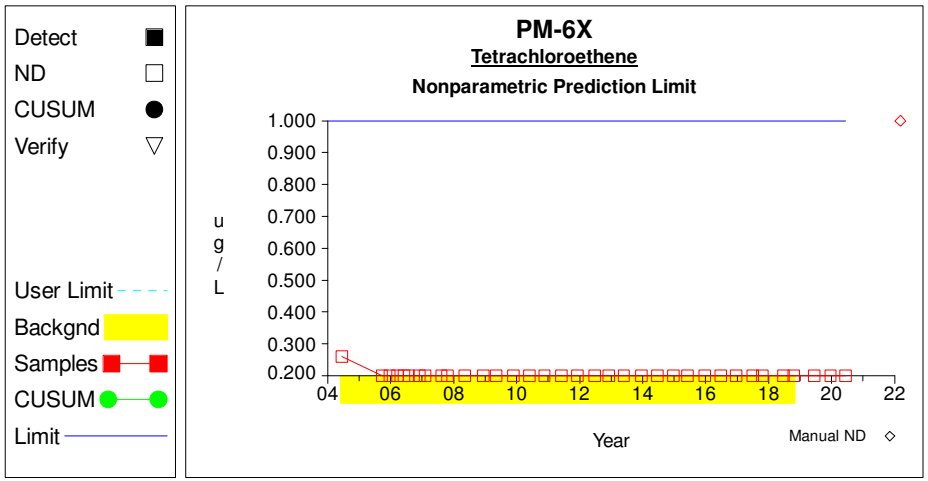
Graph 1



Graph 2



Graph 3



Graph 4

Prepared by: Parsons

APPENDIX C-4.4

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	32	2	34	1.4331	0.3253	1.2000	1.5000	1.4331	1.4331	2.8969	normal		
Trichloroethene	ug/L	PM-14X	32	4	36	0.7978	0.3559	0.2300	0.1600	0.7978	0.7978	2.3995	normal		
Trichloroethene	ug/L	PM-3X	18	15	33	0.3511	0.1822	0.1600	0.1600	0.3511	0.3511	1.1709	normal		
Trichloroethene	ug/L	PM-6X	32	3	35			0.1600	0.1600			1.0000	nonpar	.99	**

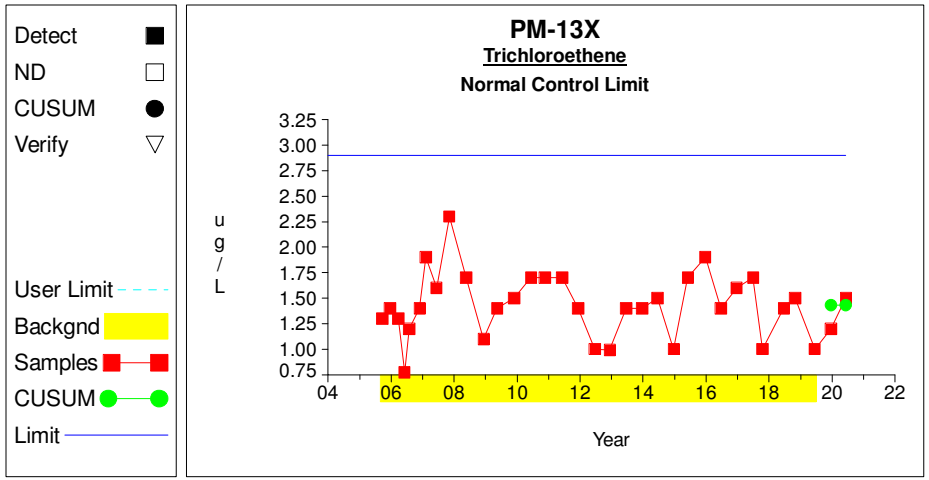
N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one verification resample (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Prepared by: Parsons

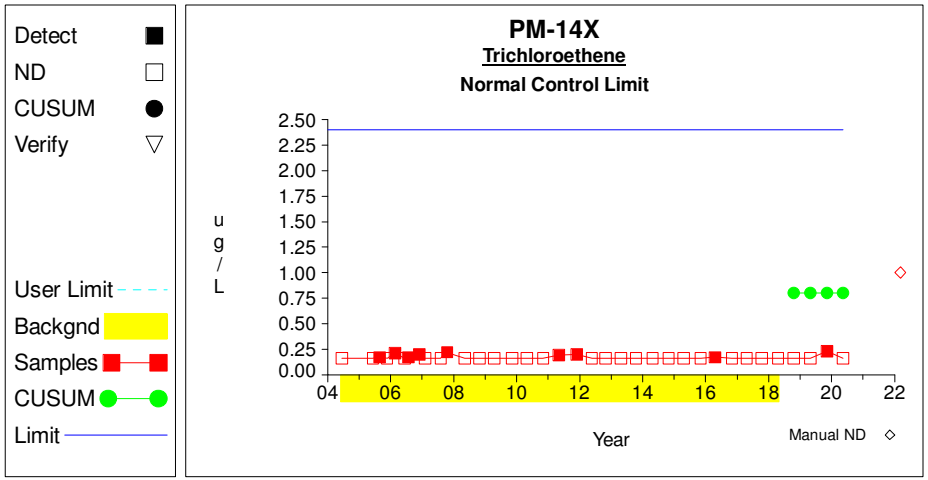
APPENDIX C-4.4

Compliance Monitoring

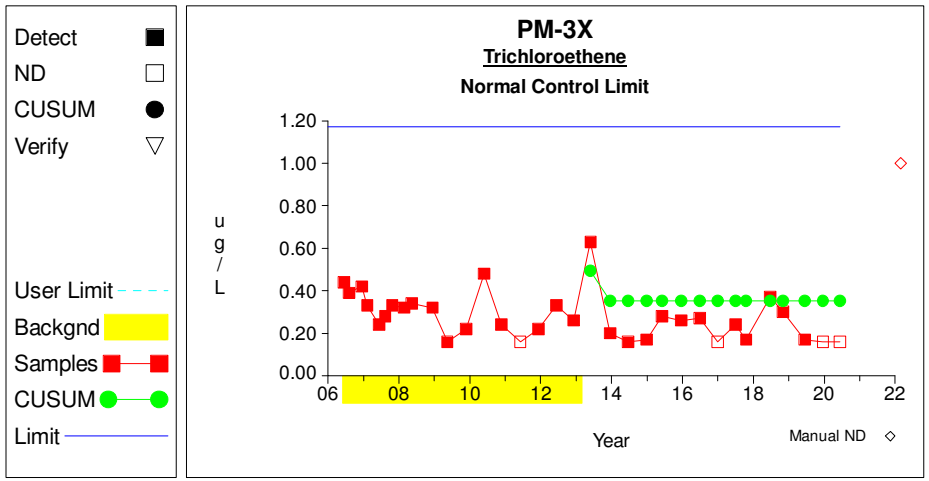
Intra-Well Control Charts / Prediction Limits



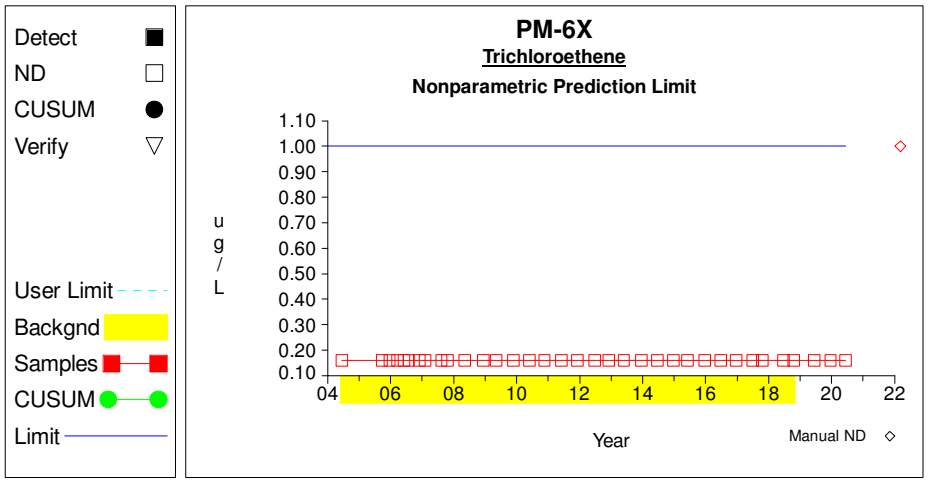
Graph 1



Graph 2



Graph 3



Graph 4

Prepared by: Parsons

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 2020 OPERATIONS AND MAINTENANCE STATUS
REPORT LOWRY LANDFILL SUPERFUND SITE

Group-ID	Sample Date	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroeth	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	9/14/2005										10 U				5 U									500 U	500 U					
B-712-LD	12/12/2005	1 U	1 U	1 U	1 U	1 U	0.42 J	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	500 U	500 U	1 U	1 U	0.5 U	1 U	2 U
B-712-LD	3/15/2006	1 U	1 U	1 U	1 U	1 U	0.42 J	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
B-712-LD	6/19/2006	1 U	1 U	1 U	1 U	1 U	0.45 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	300 J	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	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
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	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

TABLE C-5.1
VERTICAL MIGRATION WELL DATA
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS
REPORT LOWRY LANDFILL SUPERFUND SITE

Group-ID	Sample Date	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroeth	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	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
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

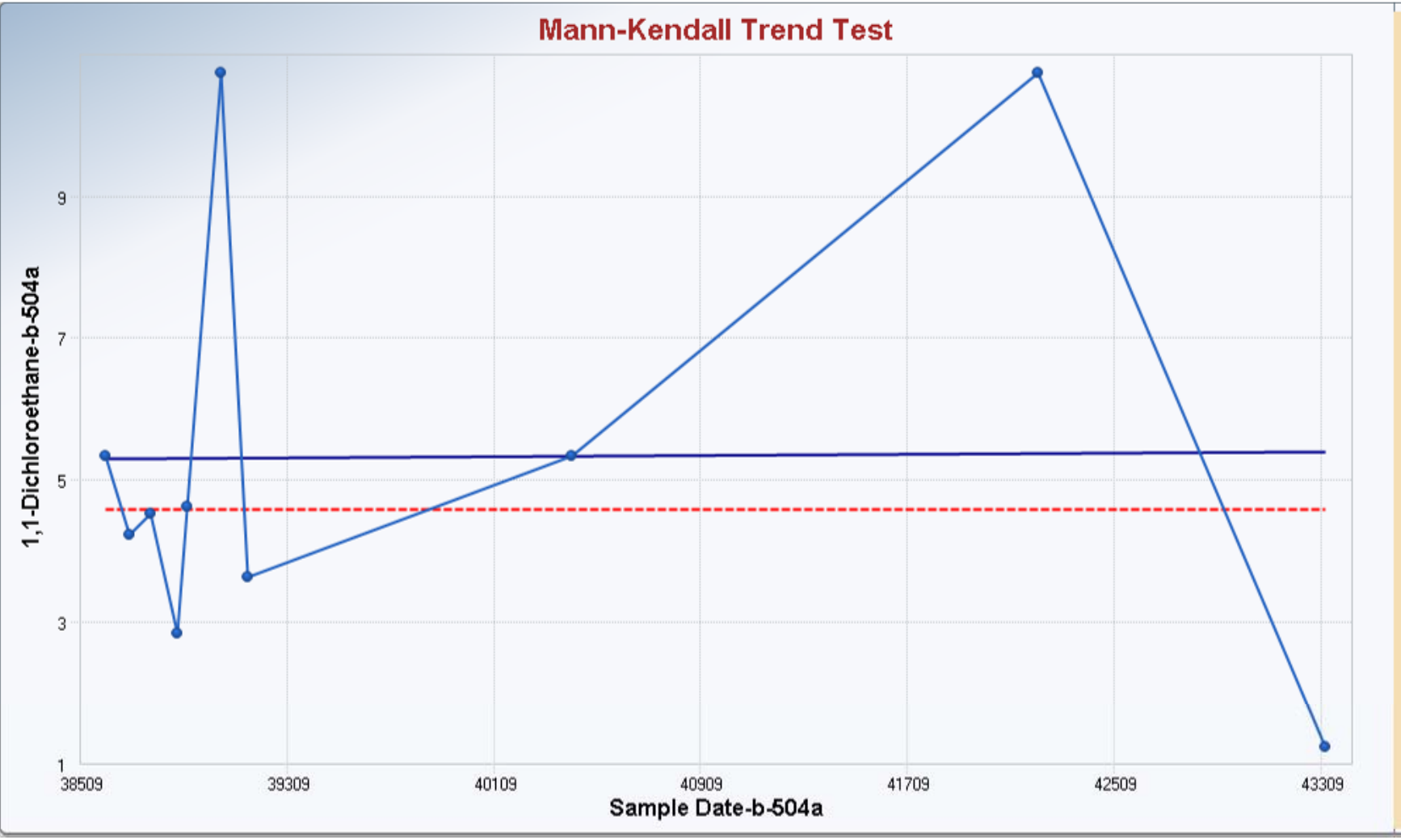
General Statistics

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 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

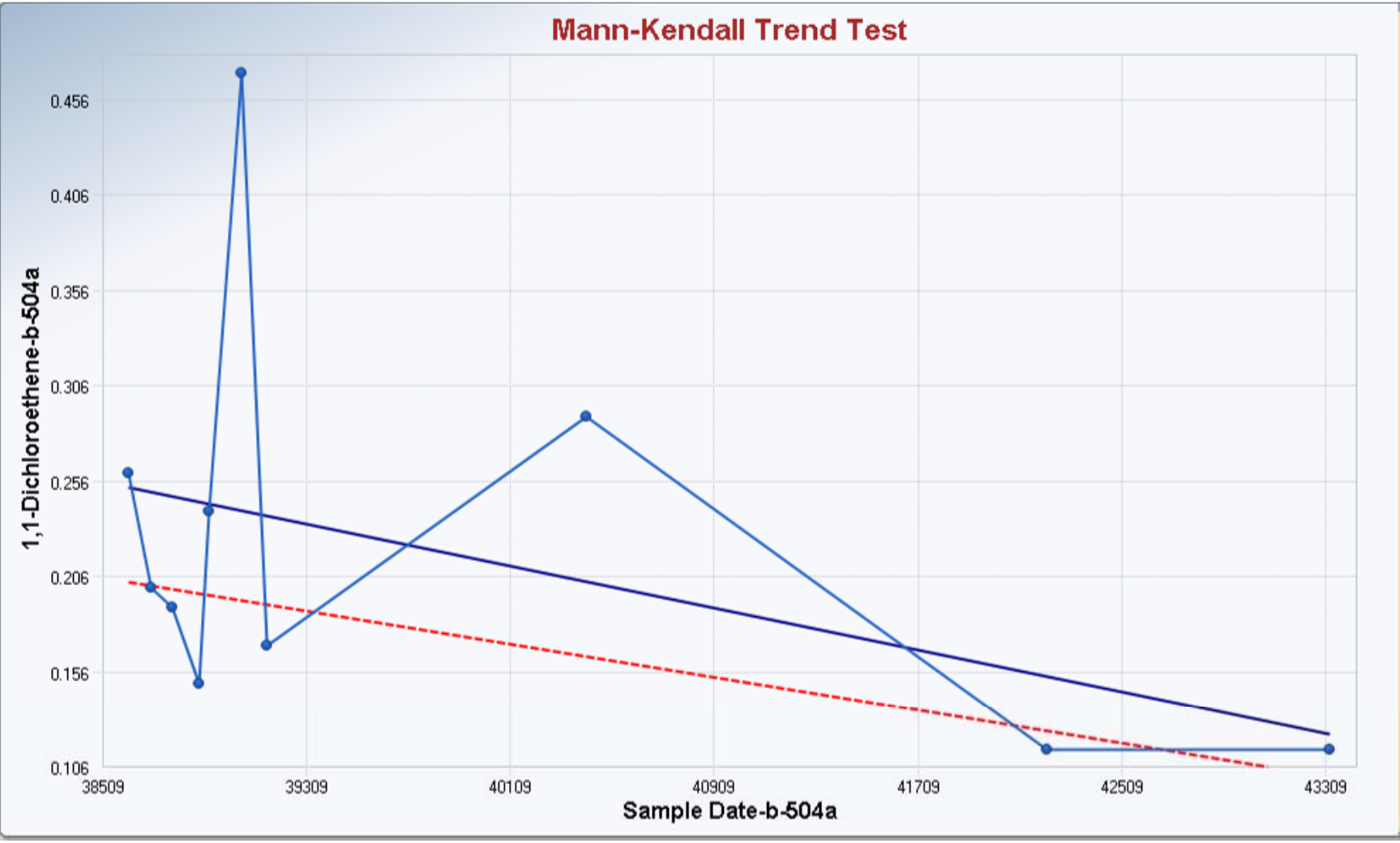
General Statistics

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 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

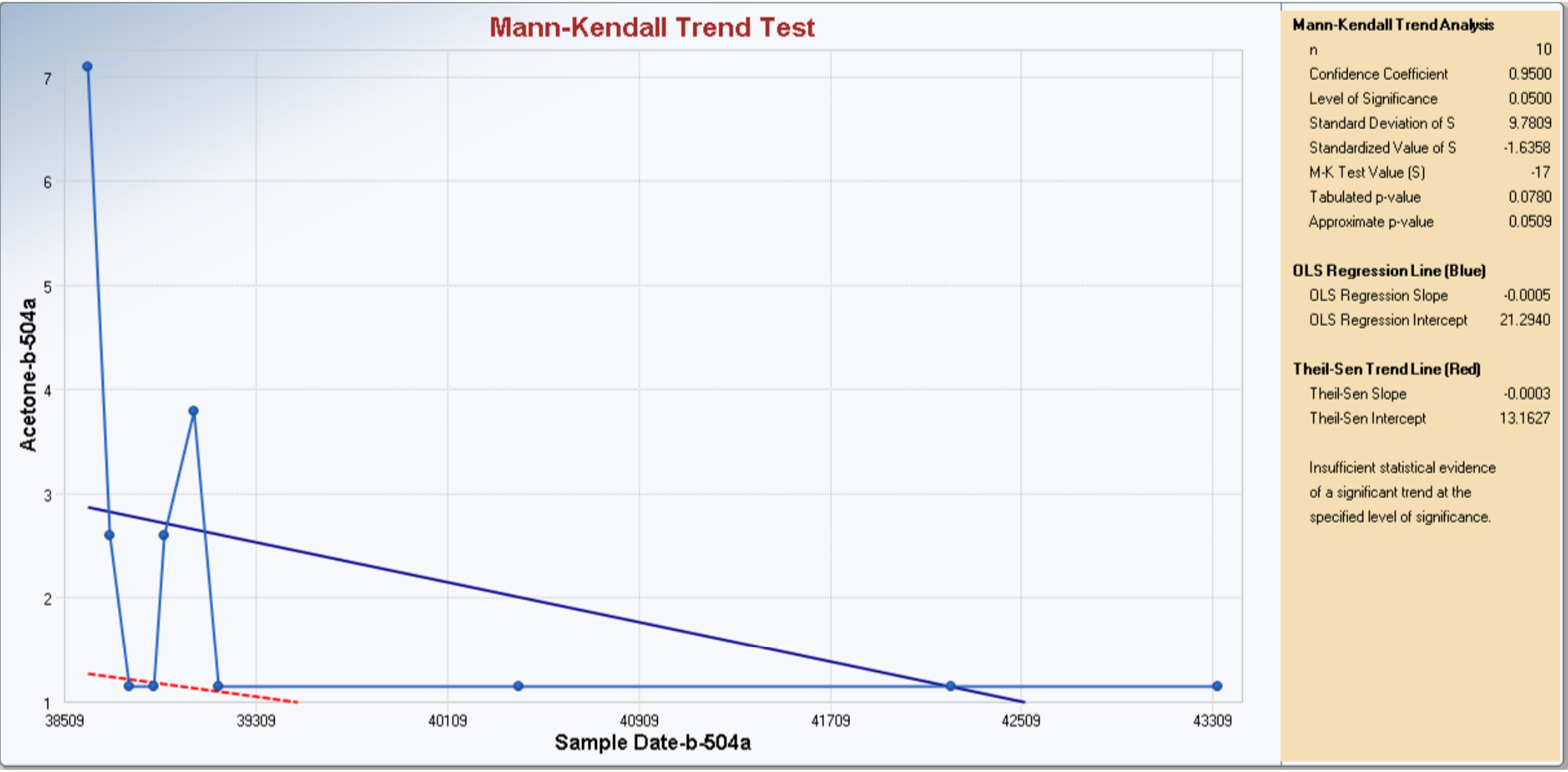
General Statistics

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

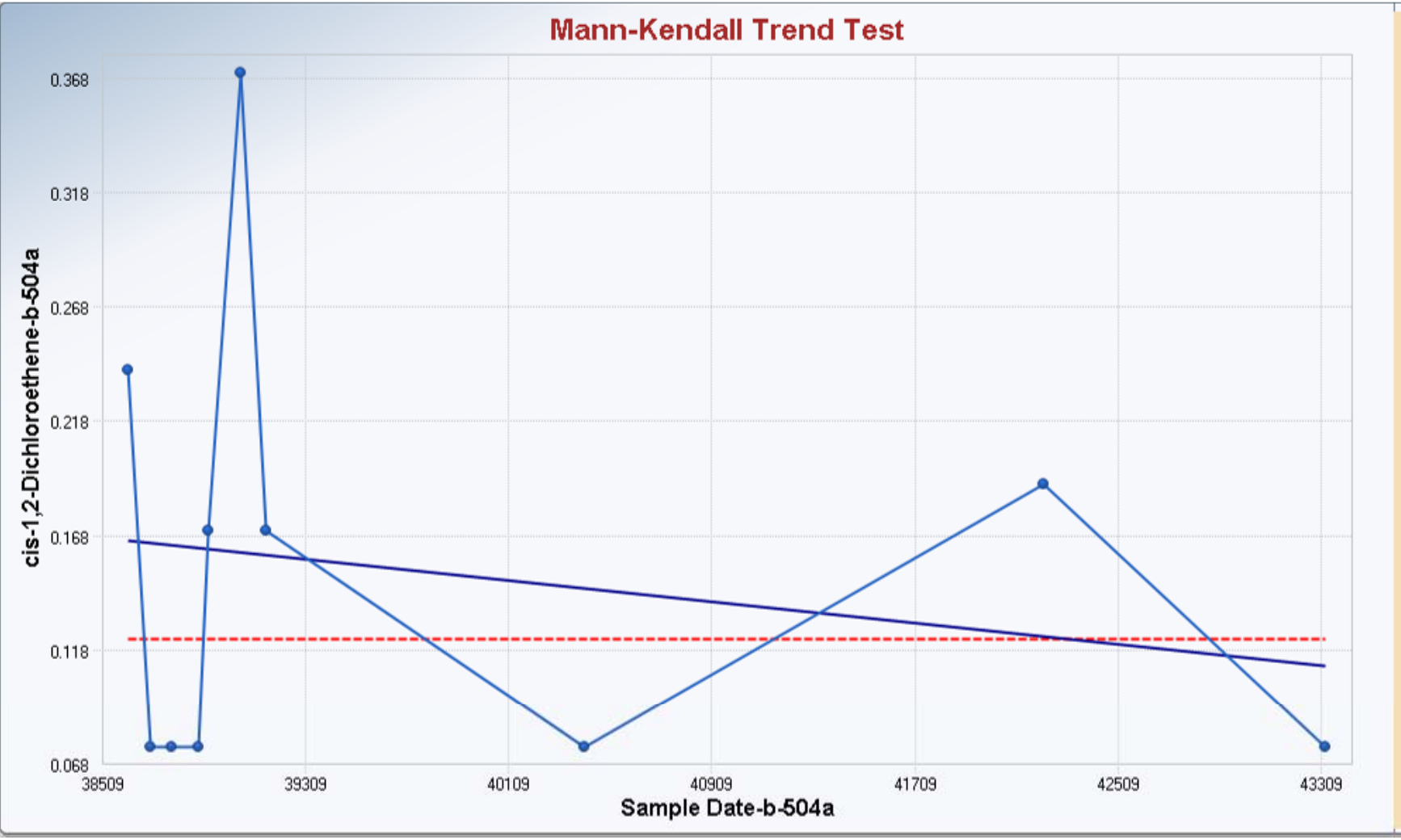
General Statistics

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 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

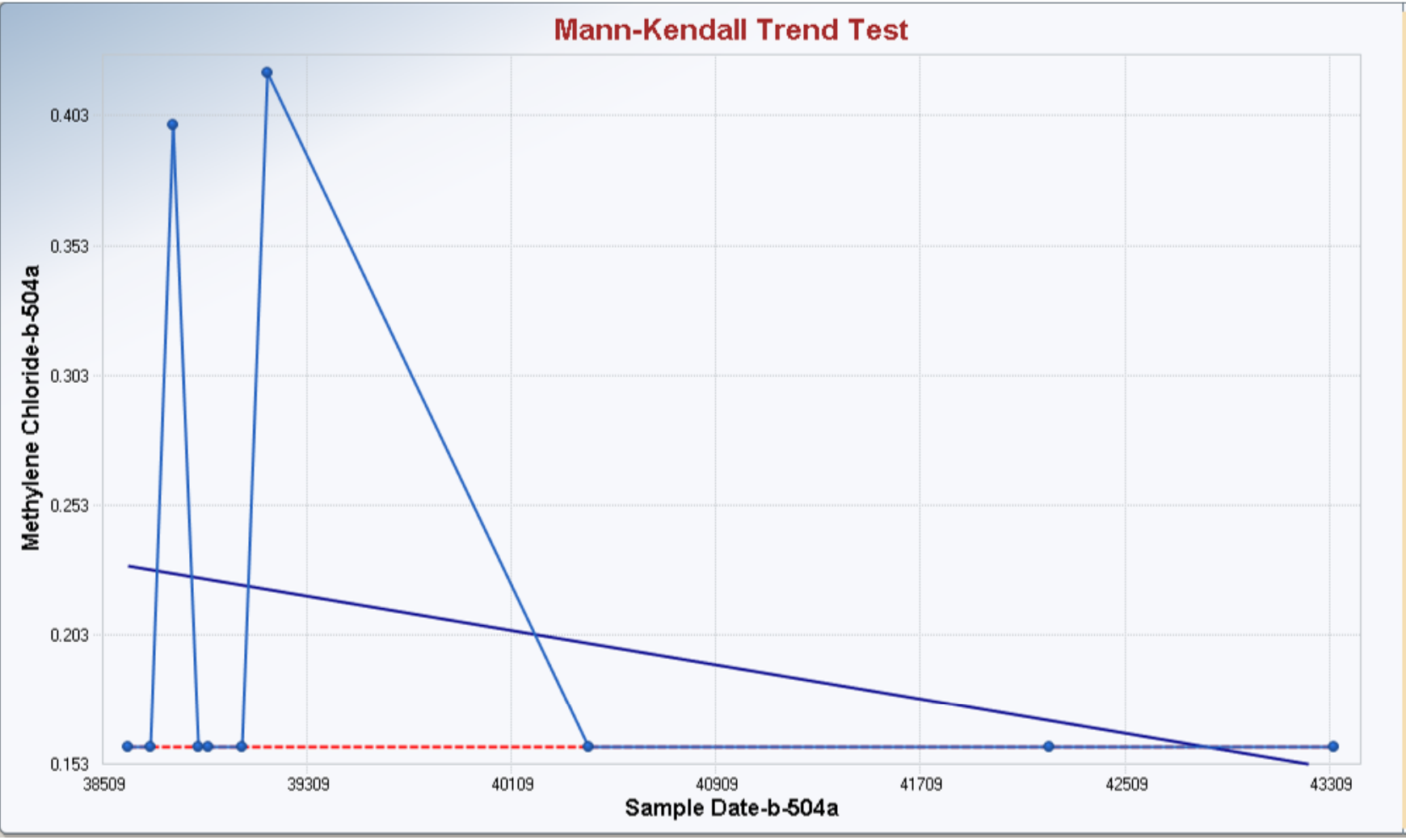
General Statistics

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

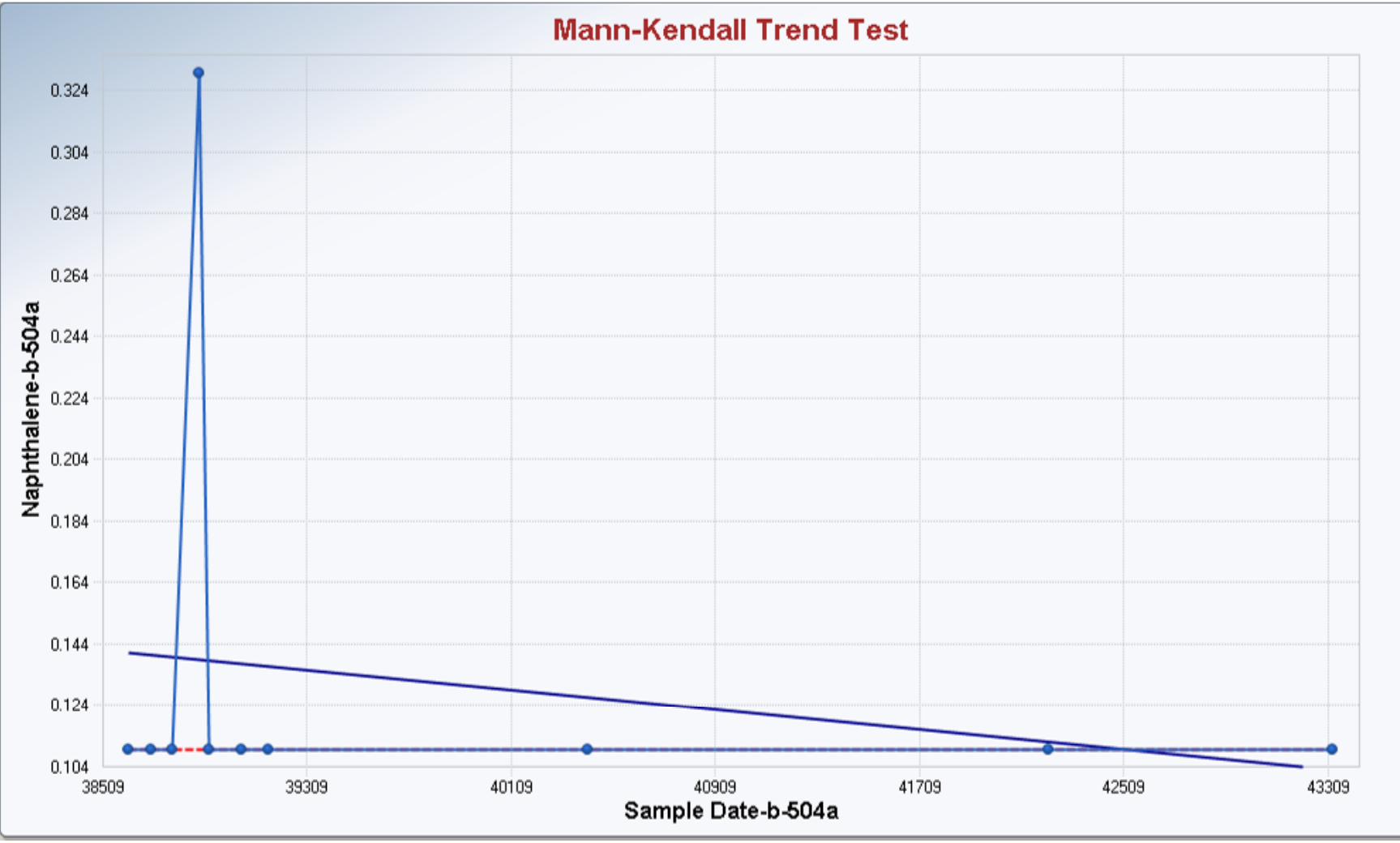
General Statistics

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

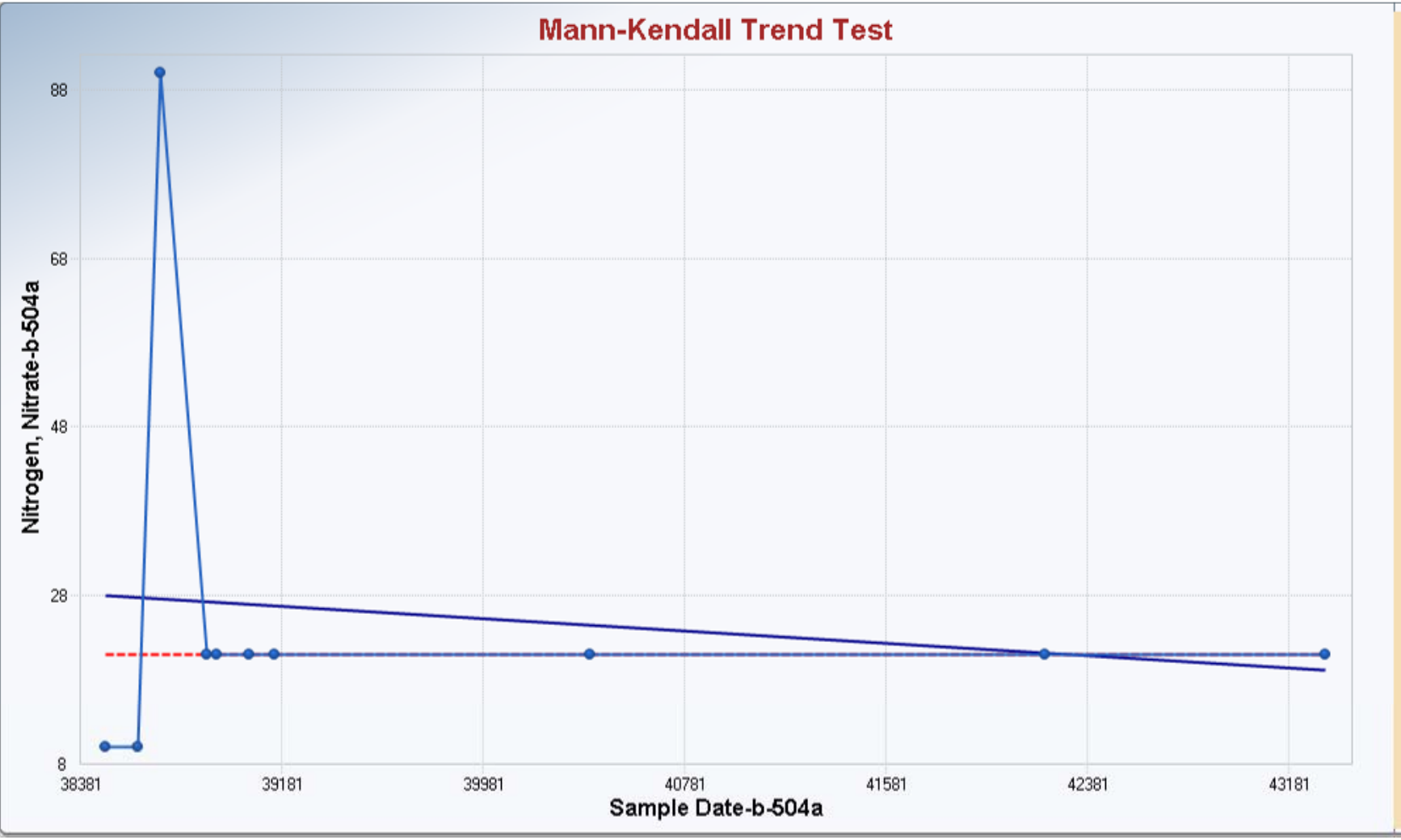
General Statistics

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

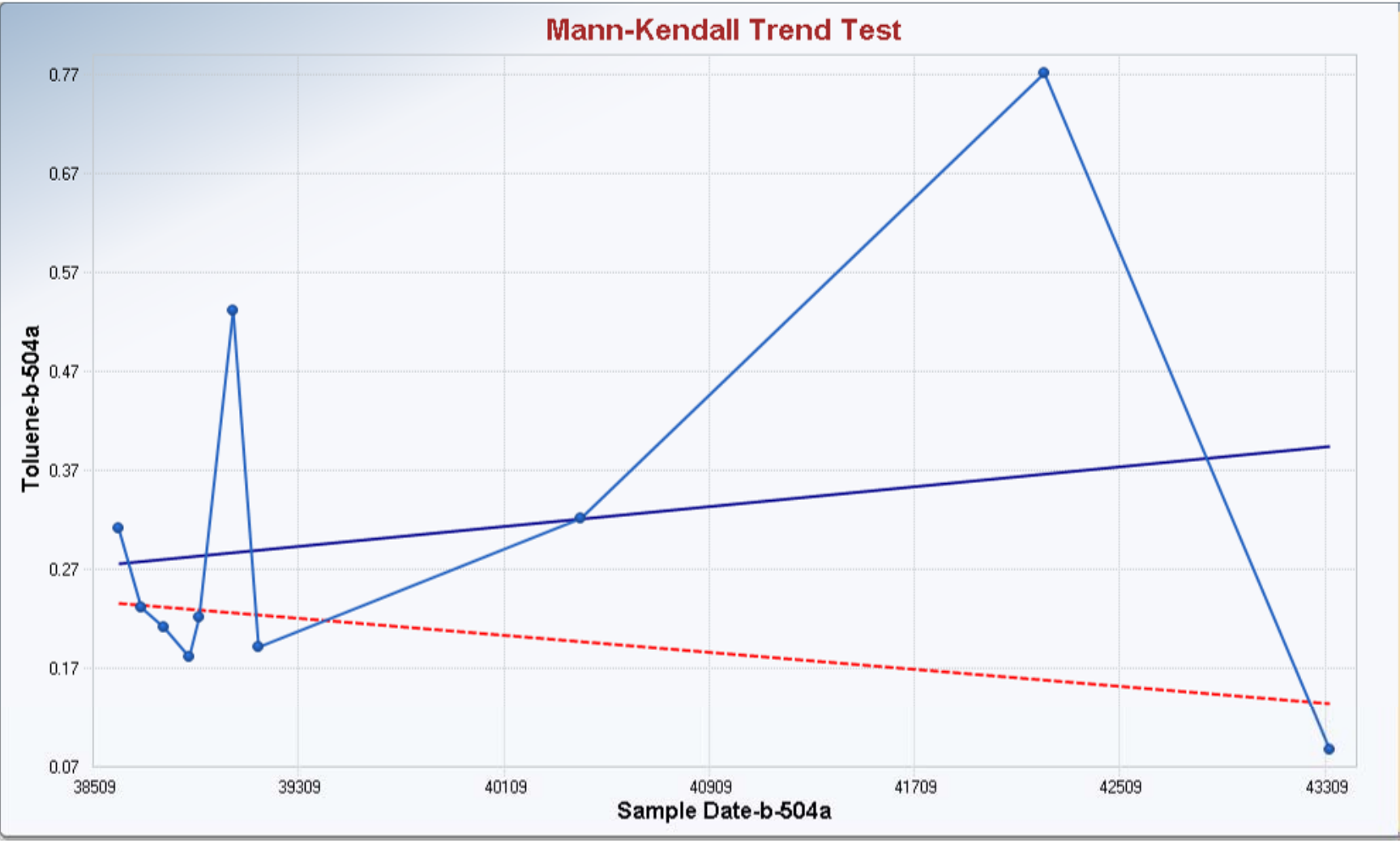
General Statistics

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

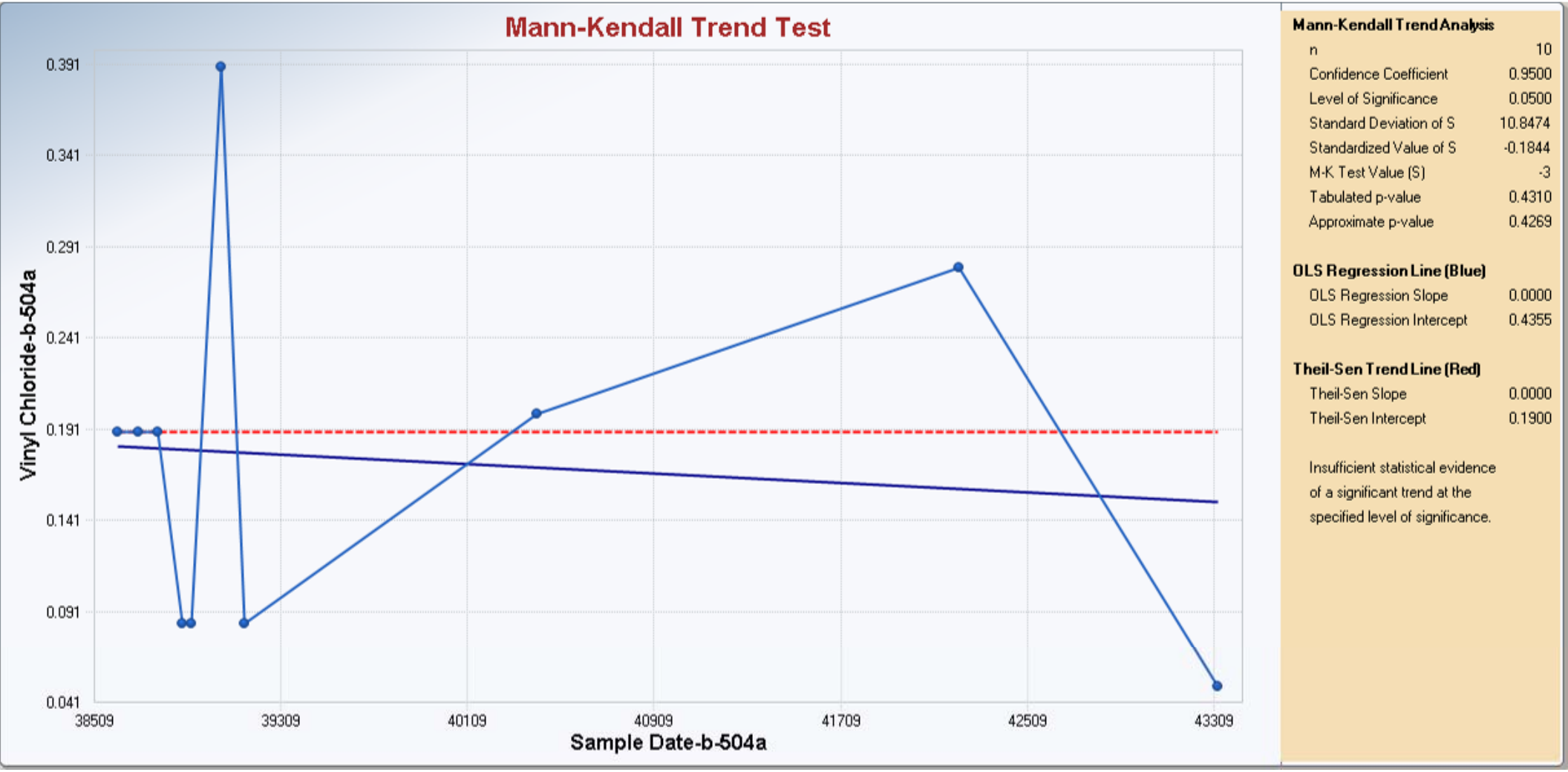
General Statistics

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.

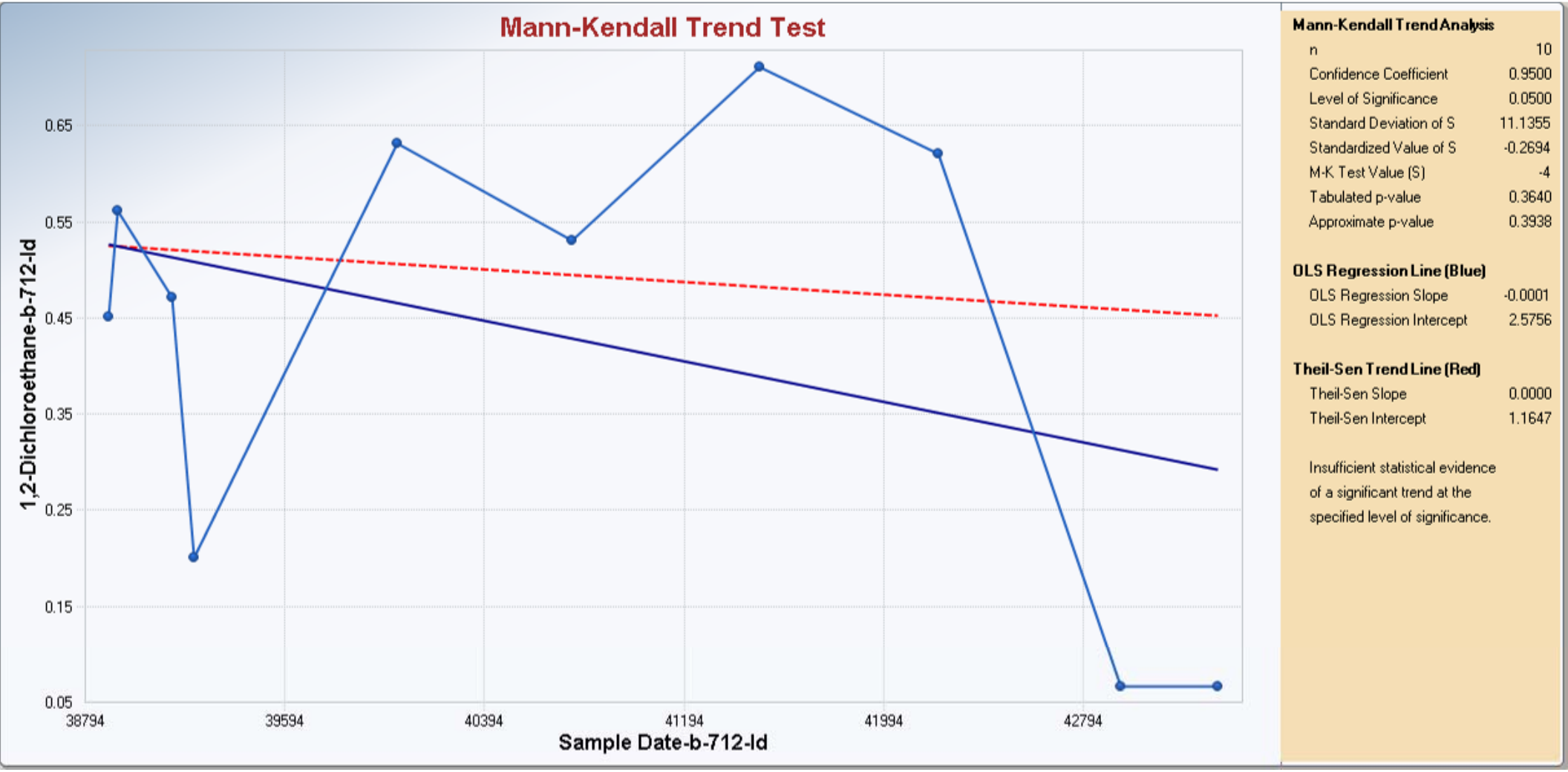
Mann-Kendall Trend Test Analysis		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/4/2019 9:29:25 AM	
From File	VERT MIG DATA_b.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

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	0.43
Geometric Mean	0.329
Median	0.5
Standard Deviation	0.236
Coefficient of Variation	0.55

Mann-Kendall Test	
M-K Test Value (S)	-4
Tabulated p-value	0.364
Standard Deviation of S	11.14
Standardized Value of S	-0.269
Approximate p-value	0.394

Insufficient evidence to identify a significant trend at the specified level of significance.


Mann-Kendall Trend Test
1,2-Dichloroethane-b-712-ld
0.65
0.55
0.45
0.35
0.25
0.15
0.05
38794
39594
40394
41194
41994
42794
Sample Date-b-712-ld
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 -0.2694
M-K Test Value (S) -4
Tabulated p-value 0.3640
Approximate p-value 0.3938
OLS Regression Line (Blue)
OLS Regression Slope -0.0001
OLS Regression Intercept 2.5756
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 1.1647
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 5.12/17/2019 10:16:34 AM	
From File	MANN KENDALL DATA_a.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

1,4-Dioxane-b-712-ld

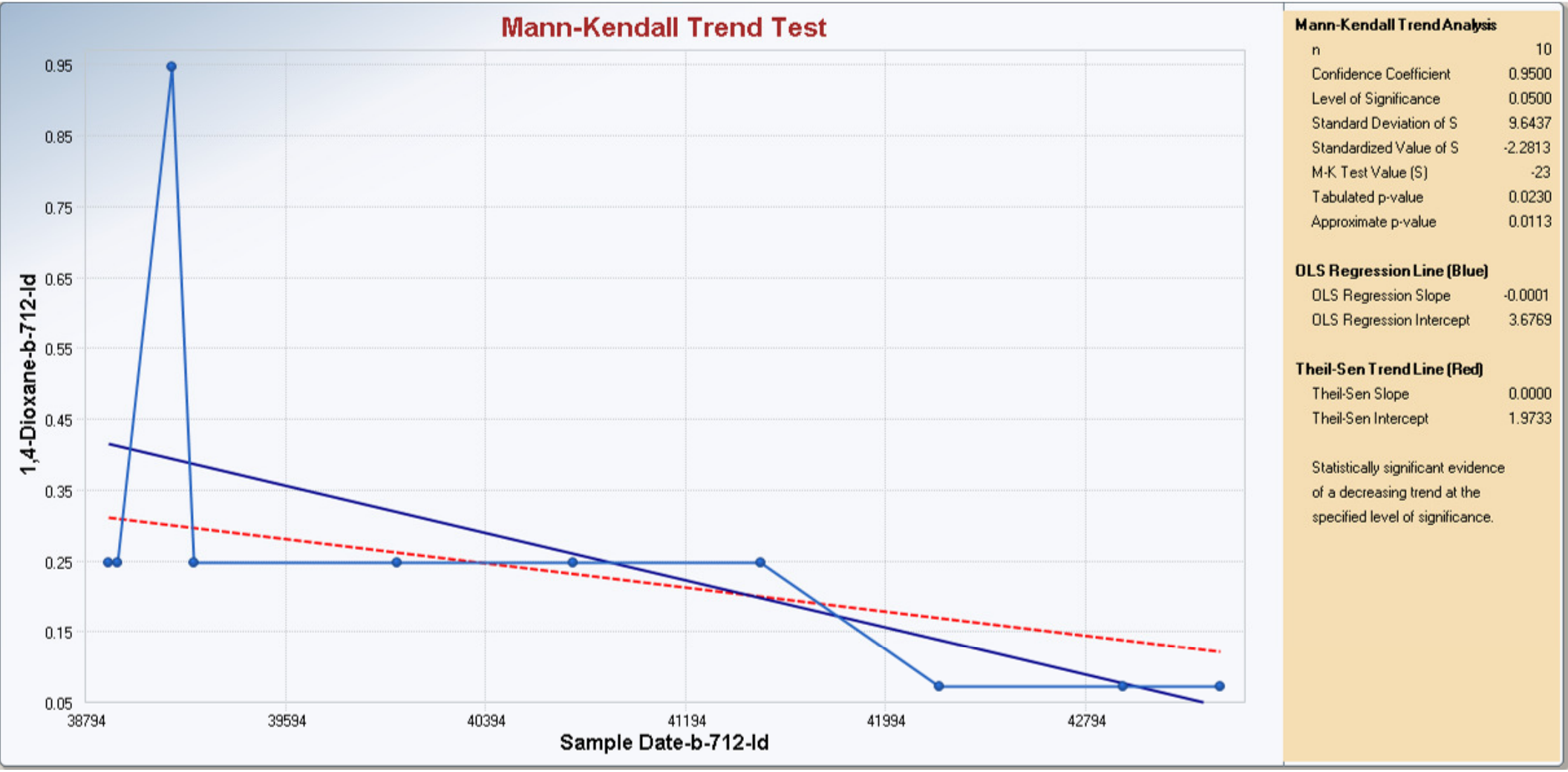
General Statistics

Number of Events Reported (m)	10
Number of Missing Events	0
Number or Reported Events Used	10
Number Values Reported (n)	10
Minimum	0.075
Maximum	0.95
Mean	0.268
Geometric Mean	0.199
Median	0.25
Standard Deviation	0.254
Coefficient of Variation	0.948

Mann-Kendall Test

M-K Test Value (S)	-23
Tabulated p-value	0.023
Standard Deviation of S	9.644
Standardized Value of S	-2.281
Approximate p-value	0.0113

Statistically significant evidence of a decreasing trend at the specified level of significance.


Mann-Kendall Trend Test
1,4-Dioxane-b-712-Id
0.95
0.85
0.75
0.65
0.55
0.45
0.35
0.25
0.15
0.05
38794
39594
40394
41194
41994
42794
Sample Date-b-712-Id
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 9.6437
Standardized Value of S -2.2813
M-K Test Value (S) -23
Tabulated p-value 0.0230
Approximate p-value 0.0113
OLS Regression Line (Blue)
OLS Regression Slope -0.0001
OLS Regression Intercept 3.6769
Theil-Sen Trend Line (Red)
Theil-Sen Slope 0.0000
Theil-Sen Intercept 1.9733
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 9:27:53 AM	
From File	VERT MIG DATA_e.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Arsenic-b-712-ld

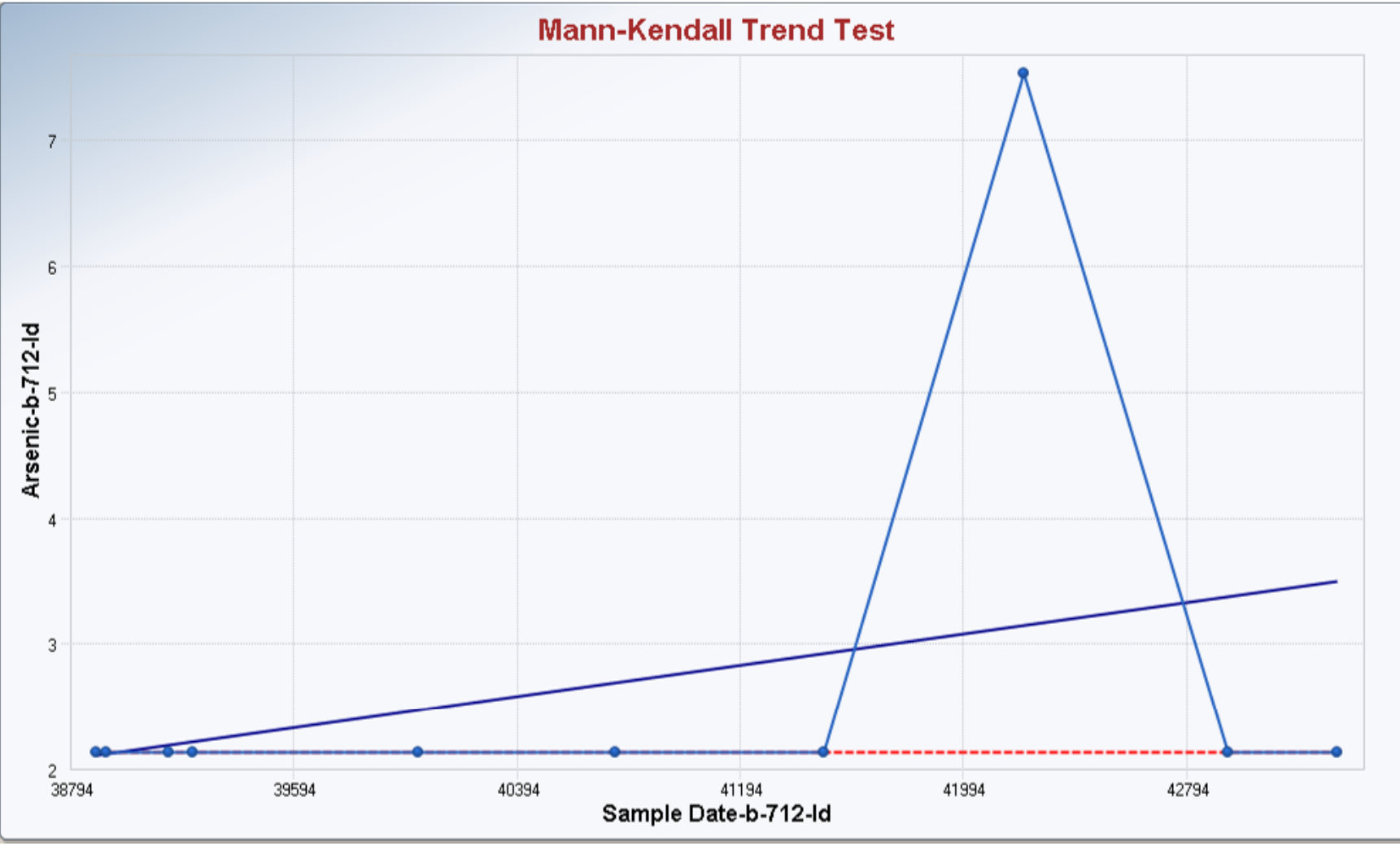
General Statistics

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)	5
Tabulated p-value	0.364
Standard Deviation of S	5.745
Standardized Value of S	0.696
Approximate p-value	0.243

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	0.6963
M-K Test Value (S)	5
Tabulated p-value	0.3640
Approximate p-value	0.2431

OLS Regression Line (Blue)

OLS Regression Slope	0.0003
OLS Regression Intercept	-9.9083

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 5.13/4/2019 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-712-ld

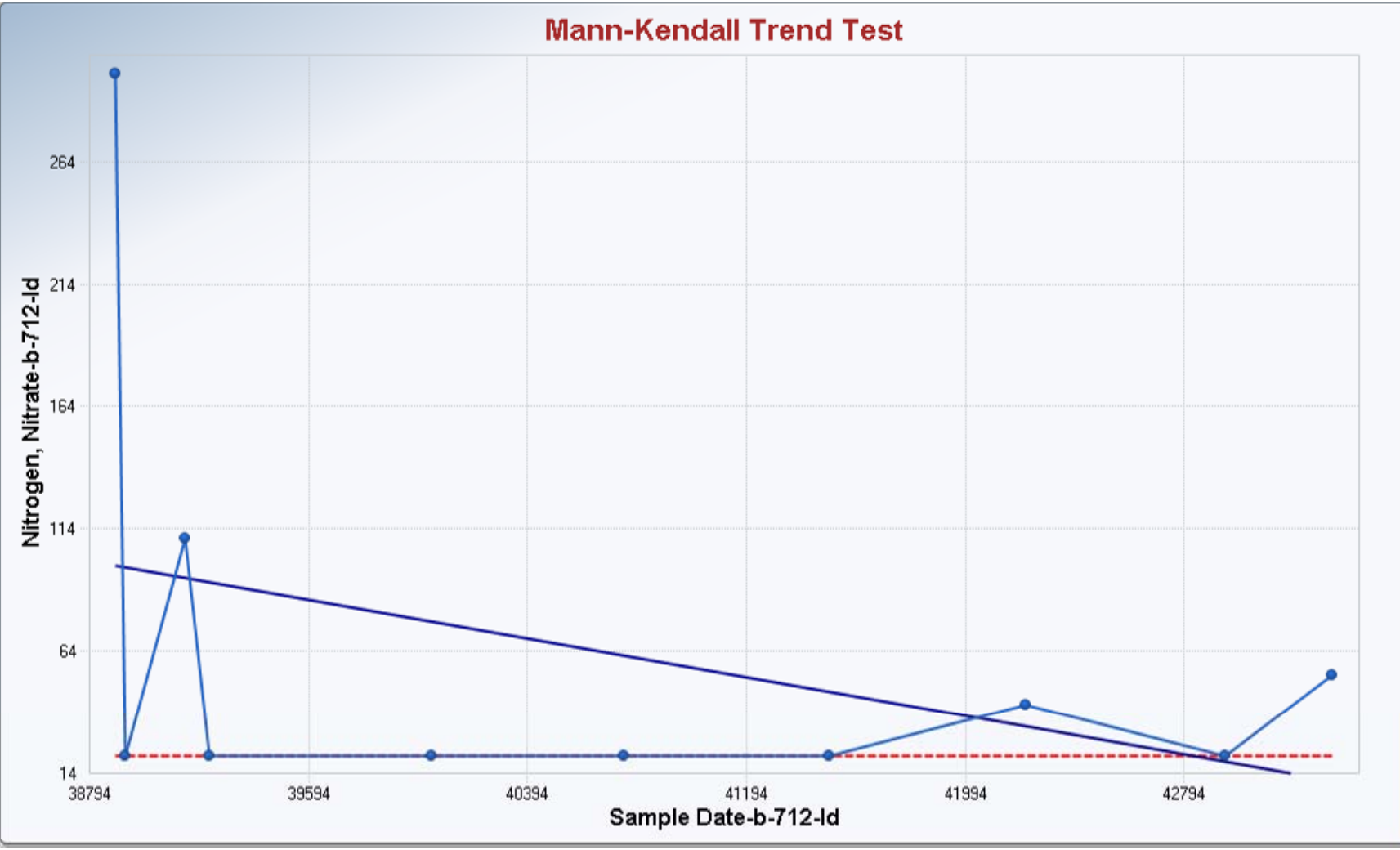
General Statistics

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	300
Mean	63.2
Geometric Mean	38.08
Median	21
Standard Deviation	87.87
Coefficient of Variation	1.39

Mann-Kendall Test

M-K Test Value (S)	-4
Tabulated p-value	0.364
Standard Deviation of S	9.832
Standardized Value of S	-0.305
Approximate p-value	0.38

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	-0.3051
M-K Test Value (S)	-4
Tabulated p-value	0.3640
Approximate p-value	0.3801

OLS Regression Line (Blue)

OLS Regression Slope	-0.0199
OLS Regression Intercept	872.1000

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 9:26:14 AM	
From File	VERT MIG DATA_g.xls	
Full Precision	OFF	
Confidence Coefficient	0.95	
Level of Significance	0.05	

Methylene Chloride-c-702p3

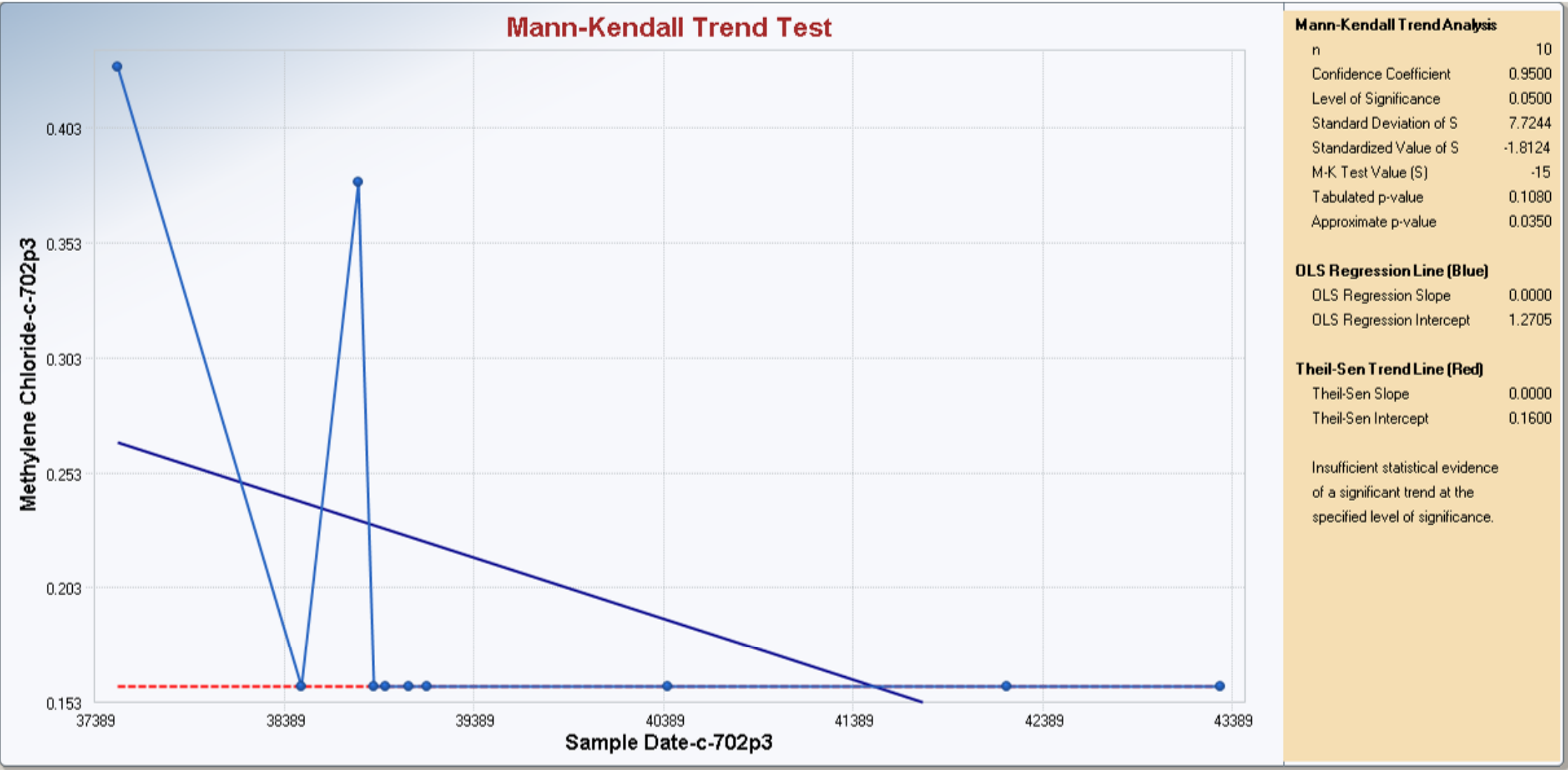
General Statistics

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

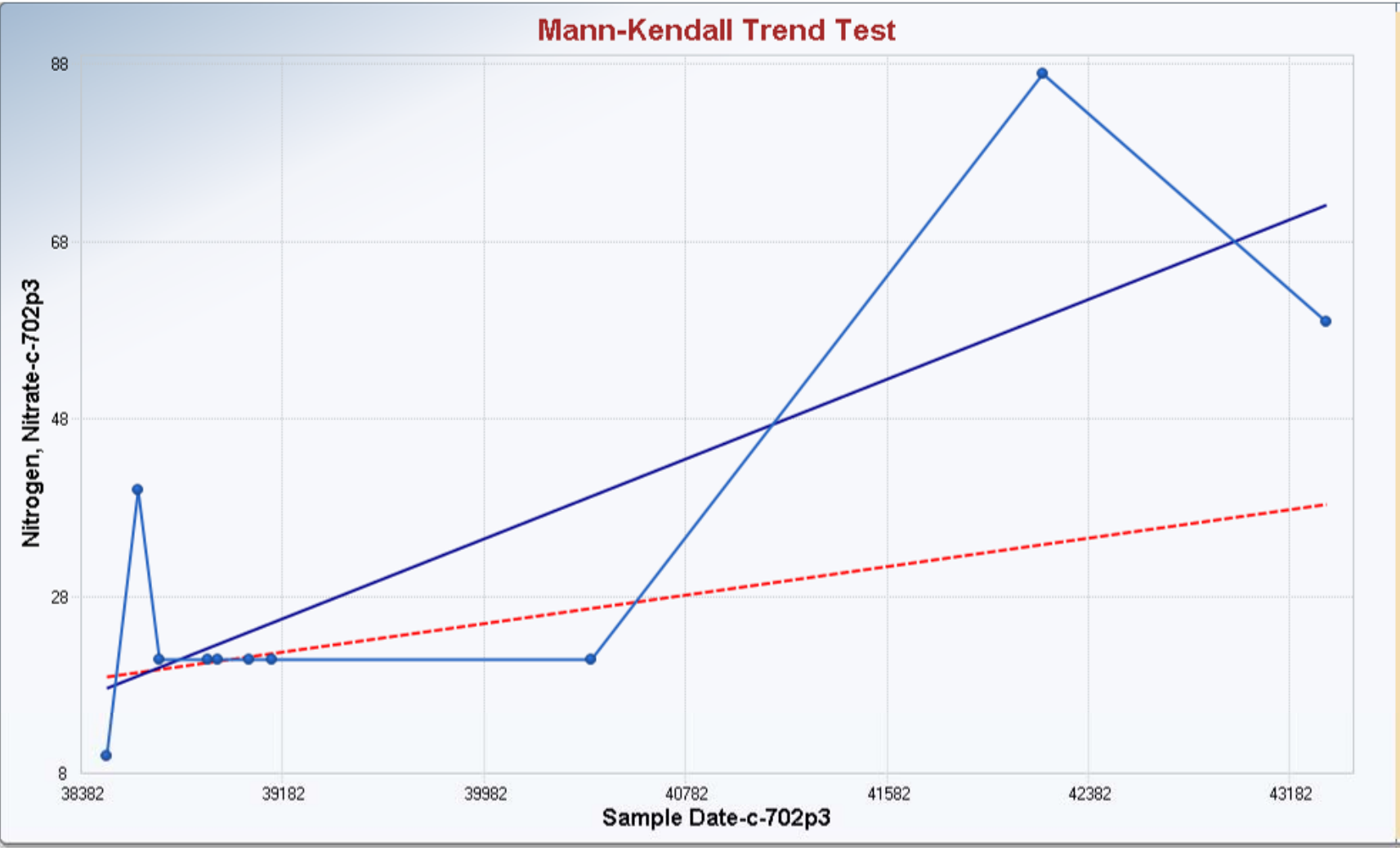
General Statistics

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)

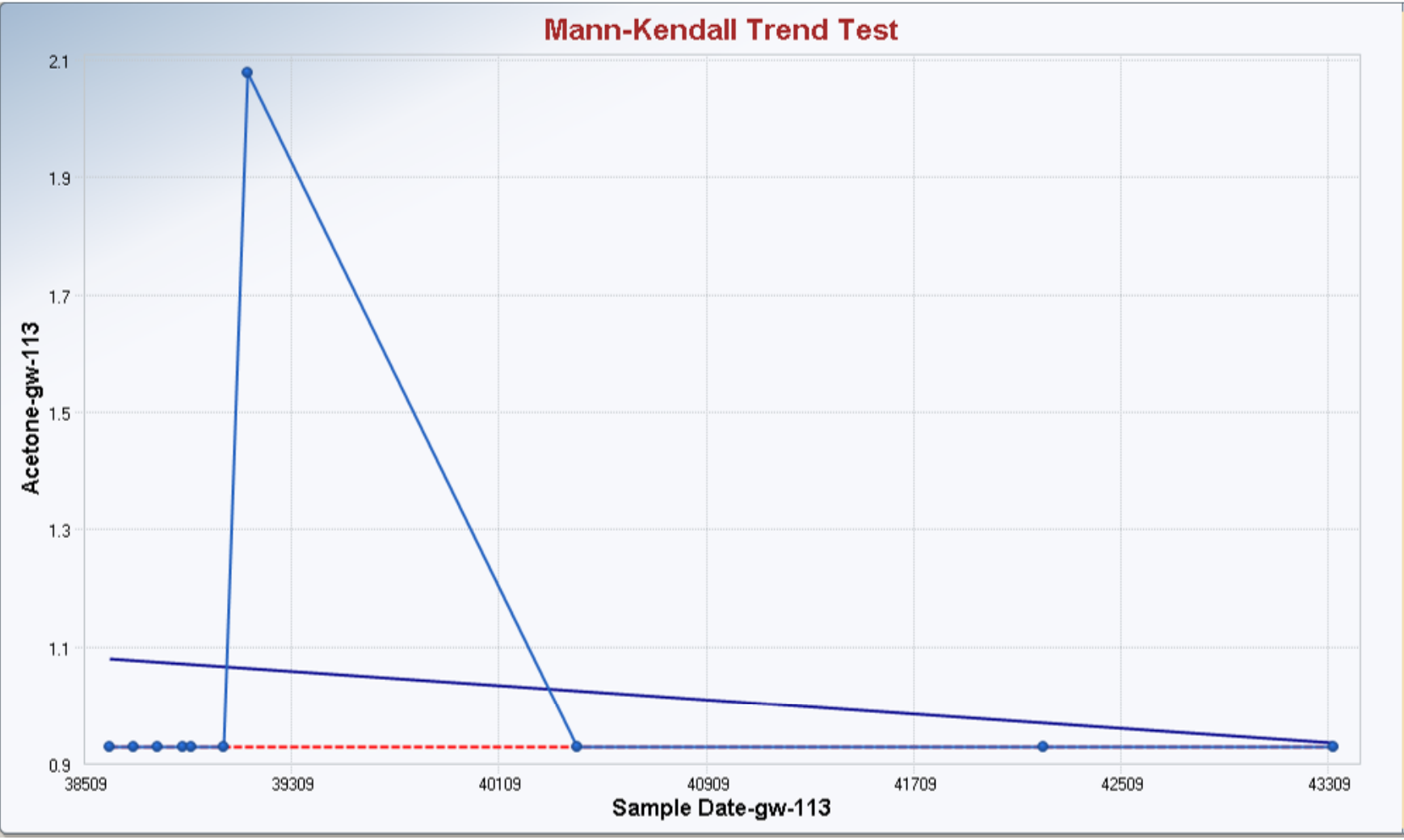
OLS Regression Slope	0.0113
OLS Regression Intercept	-415.2403

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.

	A	B	C	D	E	F	G	H	I	J	K	L
1				**Mann-Kendall Trend Test Analysis**								
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.13/4/2019 9:28:31 AM								
4			From File	VERT MIG DATA_d.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	0.95								
7			Level of Significance	0.05								
8												
9												
33			**Acetone-gw-113**									
34												
35			**General Statistics**									
36			Number of Events Reported (m)	10								
37			Number of Missing Events	0								
38			Number or Reported Events Used	10								
39			Number Values Reported (n)	10								
40			Minimum	0.95								
41			Maximum	2.1								
42			Mean	1.065								
43			Geometric Mean	1.028								
44			Median	0.95								
45			Standard Deviation	0.364								
46			Coefficient of Variation	0.341								
47												
48			**Mann-Kendall Test**									
49			M-K Test Value (S)	3								
50			Tabulated p-value	0.431								
51			Standard Deviation of S	5.745								
52			Standardized Value of S	0.348								
53			Approximate p-value	0.364								
54												
55	**Insufficient evidence to identify a significant**											
56	**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

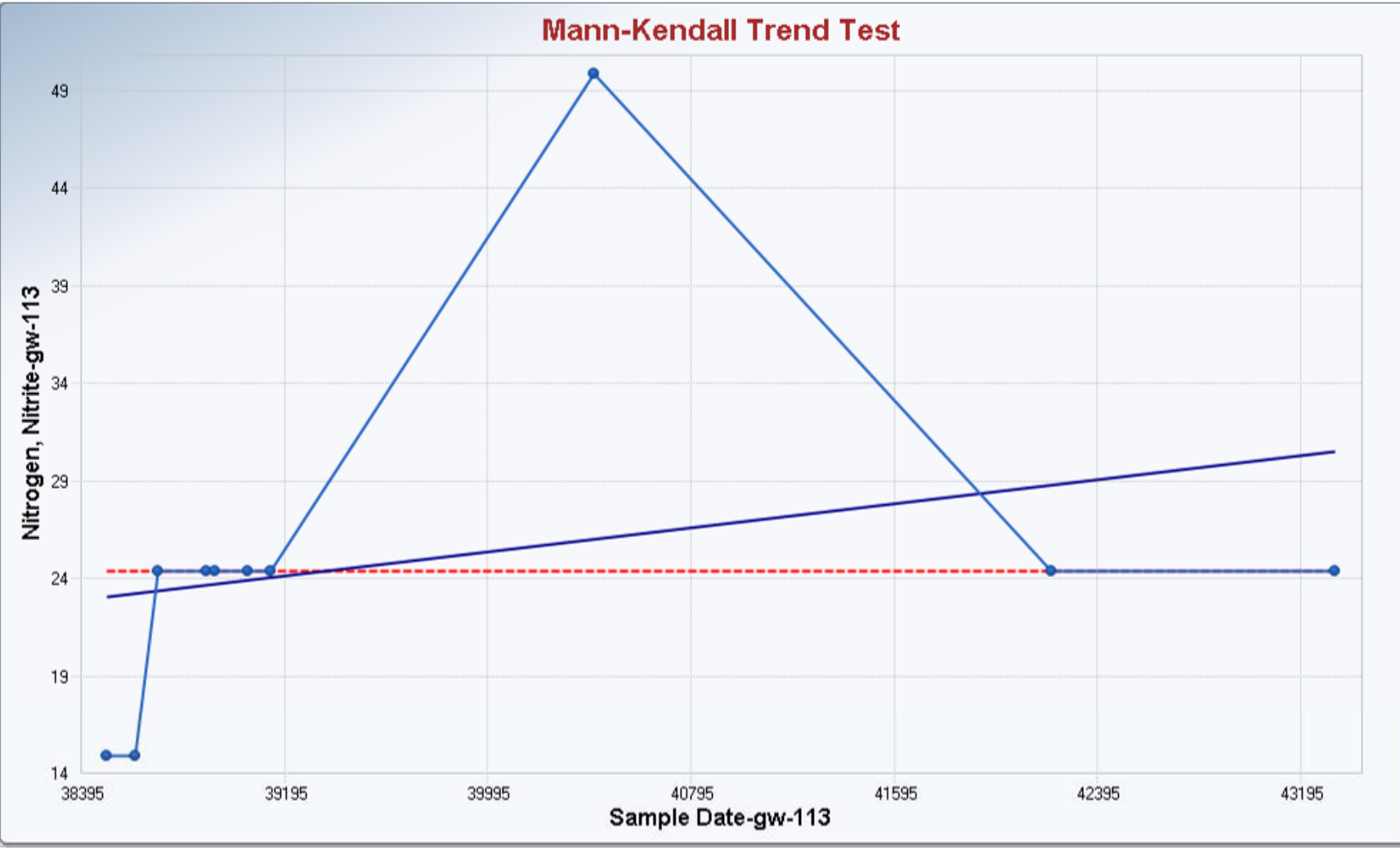
General Statistics

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

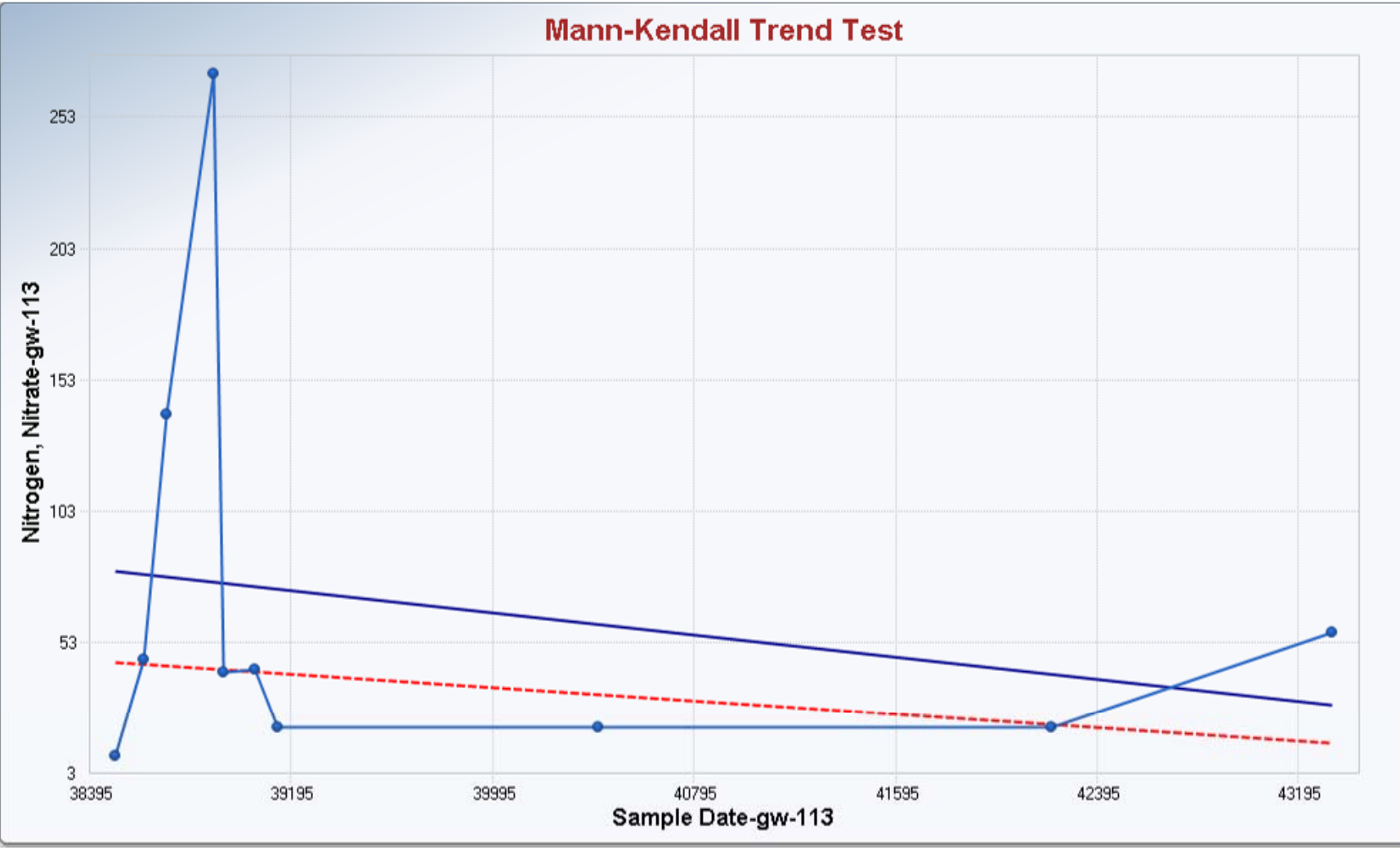
General Statistics

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

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Variables replacing nondetects with 1/2 the Detection Limit**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.12/17/2019 11:22:58 AM							
4				From File	DIXONS DATA_a.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for 1,4-Dioxane (b-712-ld)**											
9												
10	Total N = 10											
11	Number NDs = 9											
12	Number Detects = 1											
13	Number Data (n) = 10											
14	10% critical value: 0.409											
15	5% critical value: 0.477											
16	1% critical value: 0.597											
17	Note: NDs replaced by DL/2 in Outlier Test											
18												
19	**1. Data Value 0.95 is a Potential Outlier (Upper Tail)?**											
20												
21	Test Statistic: 0.800											
22												
23	For 10% significance level, 0.95 is an outlier.											
24	For 5% significance level, 0.95 is an outlier.											
25	For 1% significance level, 0.95 is an outlier.											
26												
27	**2. Data Value 0.075 is a Potential Outlier (Lower Tail)?**											
28												
29	Test Statistic: 0.000											
30												
31	For 10% significance level, 0.075 is not an outlier.											
32	For 5% significance level, 0.075 is not an outlier.											
33	For 1% significance level, 0.075 is not an outlier.											
34												
61												
62												

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 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
Section	Master Loc	Parameter Name	Sample Date	Result	Final Q
31	B-313	Nitrogen, Nitrate	1/28/2020	30000	
31	B-313	Nitrogen, Nitrate	4/28/2020	28000	
31	B-313	1,4-Dioxane	1/28/2020	20	
31	B-313	1,1,1-Trichloroethane	1/28/2020	1	U
31	B-313	1,1,1-Trichloroethane	4/28/2020	1	U
31	B-313	1,1,2,2-Tetrachloroethane	1/28/2020	1	U
31	B-313	1,1,2,2-Tetrachloroethane	4/28/2020	1	U
31	B-313	1,1,2-Trichloroethane	1/28/2020	1	U
31	B-313	1,1,2-Trichloroethane	4/28/2020	1	U
31	B-313	1,1-Dichloroethane	1/28/2020	1	U
31	B-313	1,1-Dichloroethane	4/28/2020	1	U
31	B-313	1,1-Dichloroethene	1/28/2020	1	U
31	B-313	1,1-Dichloroethene	4/28/2020	1	U
31	B-313	1,2-Dibromo-3-chloropropane	4/28/2020	5	U
31	B-313	1,2-Dichloroethane	1/28/2020	1	U
31	B-313	1,2-Dichloroethane	4/28/2020	1	U
31	B-313	1,2-Dichloropropane	1/28/2020	1	U
31	B-313	1,2-Dichloropropane	4/28/2020	1	U
31	B-313	1,4-Dioxane	4/28/2020	21	
31	B-313	2-Butanone (MEK)	4/28/2020	5	U
31	B-313	2-Hexanone	4/28/2020	5	U
31	B-313	4-Methyl-2-pentanone (MIBK)	4/28/2020	5	U
31	B-313	Acetone	1/28/2020	10	U
31	B-313	Acetone	4/28/2020	10	U
31	B-313	Benzene	1/28/2020	1	U
31	B-313	Benzene	4/28/2020	1	U
31	B-313	Bromodichloromethane	1/28/2020	1	U
31	B-313	Bromodichloromethane	4/28/2020	1	U
31	B-313	Bromoform	1/28/2020	1	U
31	B-313	Bromoform	4/28/2020	1	U
31	B-313	Carbon Tetrachloride	1/28/2020	1	U
31	B-313	Carbon Tetrachloride	4/28/2020	1	U
31	B-313	Chlorobenzene	1/28/2020	1	U
31	B-313	Chlorobenzene	4/28/2020	1	U
31	B-313	Chloroethane	4/28/2020	2	U
31	B-313	Chloroform	1/28/2020	1	U
31	B-313	Chloroform	4/28/2020	1	U
31	B-313	cis-1,2-Dichloroethene	1/28/2020	1	U
31	B-313	cis-1,2-Dichloroethene	4/28/2020	1	U
31	B-313	Dibromochloromethane	1/28/2020	1	U
31	B-313	Dibromochloromethane	4/28/2020	1	U
31	B-313	Ethylbenzene	1/28/2020	1	U
31	B-313	Ethylbenzene	4/28/2020	1	U
31	B-313	Methylene Chloride	1/28/2020	1	U
31	B-313	Methylene Chloride	4/28/2020	1	U
31	B-313	Naphthalene	1/28/2020	1	U
31	B-313	Styrene	4/28/2020	1	U
31	B-313	Tetrachloroethene	1/28/2020	1	U
31	B-313	Tetrachloroethene	4/28/2020	1	U
31	B-313	Toluene	1/28/2020	1	U
31	B-313	Toluene	4/28/2020	1	U
31	B-313	Trans-1,2-Dichloroethene	1/28/2020	0.5	U
31	B-313	Trans-1,2-Dichloroethene	4/28/2020	0.5	U
31	B-313	Trans-1,3-Dichloropropene	4/28/2020	1	U
31	B-313	Trichloroethene	1/28/2020	1	U
31	B-313	Trichloroethene	4/28/2020	1	U
31	B-313	Vinyl Chloride	1/28/2020	2	U
31	B-313	Vinyl Chloride	4/28/2020	2	U

APPENDIX C-6.1
NORTH END - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
31	B-313	Xylenes, Total	4/28/2020	2	U
31	B-313-UD	1,4-Dioxane	1/27/2020	0.9	U
31	B-313-UD	1,1,1-Trichloroethane	1/27/2020	1	U
31	B-313-UD	1,1,1-Trichloroethane	4/29/2020	1	U
31	B-313-UD	1,1,2,2-Tetrachloroethane	1/27/2020	1	U
31	B-313-UD	1,1,2,2-Tetrachloroethane	4/29/2020	1	U
31	B-313-UD	1,1,2-Trichloroethane	1/27/2020	1	U
31	B-313-UD	1,1,2-Trichloroethane	4/29/2020	1	U
31	B-313-UD	1,1-Dichloroethane	1/27/2020	1	U
31	B-313-UD	1,1-Dichloroethane	4/29/2020	1	U
31	B-313-UD	1,1-Dichloroethene	1/27/2020	1	U
31	B-313-UD	1,1-Dichloroethene	4/29/2020	1	U
31	B-313-UD	1,2-Dichloroethane	1/27/2020	1	U
31	B-313-UD	1,2-Dichloroethane	4/29/2020	1	U
31	B-313-UD	1,2-Dichloropropane	1/27/2020	1	U
31	B-313-UD	1,2-Dichloropropane	4/29/2020	1	U
31	B-313-UD	1,4-Dioxane	4/29/2020	0.9	U
31	B-313-UD	Acetone	1/27/2020	10	U
31	B-313-UD	Acetone	4/29/2020	10	U
31	B-313-UD	Benzene	1/27/2020	1	U
31	B-313-UD	Benzene	4/29/2020	1	U
31	B-313-UD	Bromodichloromethane	1/27/2020	1	U
31	B-313-UD	Bromodichloromethane	4/29/2020	1	U
31	B-313-UD	Bromoform	1/27/2020	1	U
31	B-313-UD	Bromoform	4/29/2020	1	U
31	B-313-UD	Carbon Tetrachloride	1/27/2020	1	U
31	B-313-UD	Carbon Tetrachloride	4/29/2020	1	U
31	B-313-UD	Chlorobenzene	1/27/2020	1	U
31	B-313-UD	Chlorobenzene	4/29/2020	1	U
31	B-313-UD	Chloroform	1/27/2020	1	U
31	B-313-UD	Chloroform	4/29/2020	1	U
31	B-313-UD	cis-1,2-Dichloroethene	1/27/2020	1	U
31	B-313-UD	cis-1,2-Dichloroethene	4/29/2020	1	U
31	B-313-UD	Dibromochloromethane	1/27/2020	1	U
31	B-313-UD	Dibromochloromethane	4/29/2020	1	U
31	B-313-UD	Ethylbenzene	1/27/2020	1	U
31	B-313-UD	Ethylbenzene	4/29/2020	1	U
31	B-313-UD	Methylene Chloride	1/27/2020	1	U
31	B-313-UD	Methylene Chloride	4/29/2020	1	U
31	B-313-UD	Naphthalene	1/27/2020	1	U
31	B-313-UD	Naphthalene	4/29/2020	1	U
31	B-313-UD	Tetrachloroethene	1/27/2020	1	U
31	B-313-UD	Tetrachloroethene	4/29/2020	1	U
31	B-313-UD	Toluene	1/27/2020	1	U
31	B-313-UD	Toluene	4/29/2020	1	U
31	B-313-UD	Trans-1,2-Dichloroethene	1/27/2020	0.5	U
31	B-313-UD	Trans-1,2-Dichloroethene	4/29/2020	0.5	U
31	B-313-UD	Trichloroethene	1/27/2020	1	U
31	B-313-UD	Trichloroethene	4/29/2020	1	U
31	B-313-UD	Vinyl Chloride	1/27/2020	2	U
31	B-313-UD	Vinyl Chloride	4/29/2020	2	U
31	B-314	Nitrogen, Nitrate	5/18/2020	200	J
31	B-314	1,4-Dioxane	5/18/2020	0.9	U
31	B-314	1,1,1-Trichloroethane	5/18/2020	1	U
31	B-314	1,1,2,2-Tetrachloroethane	5/18/2020	1	U
31	B-314	1,1,2-Trichloroethane	5/18/2020	1	U
31	B-314	1,1-Dichloroethane	5/18/2020	1.3	
31	B-314	1,1-Dichloroethene	5/18/2020	1	U
31	B-314	1,2-Dichloroethane	5/18/2020	1	U

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31	B-314	1,2-Dichloropropane	5/18/2020	1	U
31	B-314	Acetone	5/18/2020	10	U
31	B-314	Benzene	5/18/2020	1	U
31	B-314	Bromodichloromethane	5/18/2020	1	U
31	B-314	Bromoform	5/18/2020	1	U
31	B-314	Carbon Tetrachloride	5/18/2020	1	U
31	B-314	Chlorobenzene	5/18/2020	1	U
31	B-314	Chloroform	5/18/2020	1	U
31	B-314	cis-1,2-Dichloroethene	5/18/2020	1	U
31	B-314	Dibromochloromethane	5/18/2020	1	U
31	B-314	Ethylbenzene	5/18/2020	1	U
31	B-314	Methylene Chloride	5/18/2020	1	U
31	B-314	Naphthalene	5/18/2020	1	U
31	B-314	Tetrachloroethene	5/18/2020	1	U
31	B-314	Toluene	5/18/2020	1	U
31	B-314	Trans-1,2-Dichloroethene	5/18/2020	0.5	U
31	B-314	Trichloroethene	5/18/2020	1	U
31	B-314	Vinyl Chloride	5/18/2020	2	U
31	B-321	Nitrogen, Nitrate	2/24/2020	29000	
31	B-321	Nitrogen, Nitrate	4/29/2020	35000	
31	B-321	1,4-Dioxane	2/24/2020	48	
31	B-321	1,4-Dioxane	4/29/2020	18	
31	B-326-UD	Nitrogen, Nitrate	2/12/2020	730	
31	B-326-UD	1,4-Dioxane	2/12/2020	7.7	
31	B-326-UD	1,1,1-Trichloroethane	2/12/2020	1	U
31	B-326-UD	1,1,1-Trichloroethane	5/27/2020	1	U
31	B-326-UD	1,1,2,2-Tetrachloroethane	2/12/2020	1	U
31	B-326-UD	1,1,2,2-Tetrachloroethane	5/27/2020	1	U
31	B-326-UD	1,1,2-Trichloroethane	2/12/2020	1	U
31	B-326-UD	1,1,2-Trichloroethane	5/27/2020	1	U
31	B-326-UD	1,1-Dichloroethane	2/12/2020	1	U
31	B-326-UD	1,1-Dichloroethane	5/27/2020	1	U
31	B-326-UD	1,1-Dichloroethene	2/12/2020	1	U
31	B-326-UD	1,1-Dichloroethene	5/27/2020	1	U
31	B-326-UD	1,2-Dichloroethane	2/12/2020	1	U
31	B-326-UD	1,2-Dichloroethane	5/27/2020	1	U
31	B-326-UD	1,2-Dichloropropane	2/12/2020	1	U
31	B-326-UD	1,2-Dichloropropane	5/27/2020	1	U
31	B-326-UD	1,4-Dioxane	5/27/2020	6.9	
31	B-326-UD	Acetone	2/12/2020	10	U
31	B-326-UD	Acetone	5/27/2020	10	U
31	B-326-UD	Benzene	2/12/2020	1	U
31	B-326-UD	Benzene	5/27/2020	1	U
31	B-326-UD	Bromodichloromethane	2/12/2020	1	U
31	B-326-UD	Bromodichloromethane	5/27/2020	1	U
31	B-326-UD	Bromoform	2/12/2020	1	U
31	B-326-UD	Bromoform	5/27/2020	1	U
31	B-326-UD	Carbon Tetrachloride	2/12/2020	1	U
31	B-326-UD	Carbon Tetrachloride	5/27/2020	1	U
31	B-326-UD	Chlorobenzene	2/12/2020	1	U
31	B-326-UD	Chlorobenzene	5/27/2020	1	U
31	B-326-UD	Chloroform	2/12/2020	1	U
31	B-326-UD	Chloroform	5/27/2020	1	U
31	B-326-UD	cis-1,2-Dichloroethene	2/12/2020	1	U
31	B-326-UD	cis-1,2-Dichloroethene	5/27/2020	1	U
31	B-326-UD	Dibromochloromethane	2/12/2020	1	U
31	B-326-UD	Dibromochloromethane	5/27/2020	1	U
31	B-326-UD	Ethylbenzene	2/12/2020	1	U
31	B-326-UD	Ethylbenzene	5/27/2020	1	U

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31	B-326-UD	Methylene Chloride	2/12/2020	1	U
31	B-326-UD	Methylene Chloride	5/27/2020	1	U
31	B-326-UD	Naphthalene	2/12/2020	1	U
31	B-326-UD	Naphthalene	5/27/2020	1	U
31	B-326-UD	Tetrachloroethene	2/12/2020	1	U
31	B-326-UD	Tetrachloroethene	5/27/2020	1	U
31	B-326-UD	Toluene	2/12/2020	1	U
31	B-326-UD	Toluene	5/27/2020	1	U
31	B-326-UD	Trans-1,2-Dichloroethene	2/12/2020	0.5	U
31	B-326-UD	Trans-1,2-Dichloroethene	5/27/2020	0.5	U
31	B-326-UD	Trichloroethene	2/12/2020	1	U
31	B-326-UD	Trichloroethene	5/27/2020	1	U
31	B-326-UD	Vinyl Chloride	2/12/2020	2	U
31	B-326-UD	Vinyl Chloride	5/27/2020	2	U
31	B-326-WD	Nitrogen, Nitrate	2/12/2020	21000	
31	B-326-WD	Nitrogen, Nitrate	5/28/2020	16000	
31	B-326-WD	1,4-Dioxane	2/12/2020	10	
31	B-326-WD	1,1,1-Trichloroethane	2/12/2020	1	U
31	B-326-WD	1,1,1-Trichloroethane	5/28/2020	1	U
31	B-326-WD	1,1,2,2-Tetrachloroethane	2/12/2020	1	U
31	B-326-WD	1,1,2,2-Tetrachloroethane	5/28/2020	1	U
31	B-326-WD	1,1,2-Trichloroethane	2/12/2020	1	U
31	B-326-WD	1,1,2-Trichloroethane	5/28/2020	1	U
31	B-326-WD	1,1-Dichloroethane	2/12/2020	1	U
31	B-326-WD	1,1-Dichloroethane	5/28/2020	1	U
31	B-326-WD	1,1-Dichloroethene	2/12/2020	1	U
31	B-326-WD	1,1-Dichloroethene	5/28/2020	1	U
31	B-326-WD	1,2-Dichloroethane	2/12/2020	1	U
31	B-326-WD	1,2-Dichloroethane	5/28/2020	1	U
31	B-326-WD	1,2-Dichloropropane	2/12/2020	1	U
31	B-326-WD	1,2-Dichloropropane	5/28/2020	1	U
31	B-326-WD	1,4-Dioxane	5/28/2020	11	
31	B-326-WD	Acetone	2/12/2020	10	U
31	B-326-WD	Acetone	5/28/2020	10	U
31	B-326-WD	Benzene	2/12/2020	1	U
31	B-326-WD	Benzene	5/28/2020	1	U
31	B-326-WD	Bromodichloromethane	2/12/2020	1	U
31	B-326-WD	Bromodichloromethane	5/28/2020	1	U
31	B-326-WD	Bromoform	2/12/2020	1	U
31	B-326-WD	Bromoform	5/28/2020	1	U
31	B-326-WD	Carbon Tetrachloride	2/12/2020	1	U
31	B-326-WD	Carbon Tetrachloride	5/28/2020	1	U
31	B-326-WD	Chlorobenzene	2/12/2020	1	U
31	B-326-WD	Chlorobenzene	5/28/2020	1	U
31	B-326-WD	Chloroform	2/12/2020	0.3	J
31	B-326-WD	Chloroform	5/28/2020	0.31	J
31	B-326-WD	cis-1,2-Dichloroethene	2/12/2020	1	U
31	B-326-WD	cis-1,2-Dichloroethene	5/28/2020	1	U
31	B-326-WD	Dibromochloromethane	2/12/2020	1	U
31	B-326-WD	Dibromochloromethane	5/28/2020	1	U
31	B-326-WD	Ethylbenzene	2/12/2020	1	U
31	B-326-WD	Ethylbenzene	5/28/2020	1	U
31	B-326-WD	Methylene Chloride	2/12/2020	1	U
31	B-326-WD	Methylene Chloride	5/28/2020	1	U
31	B-326-WD	Naphthalene	2/12/2020	1	U
31	B-326-WD	Naphthalene	5/28/2020	1	U
31	B-326-WD	Tetrachloroethene	2/12/2020	1	U
31	B-326-WD	Tetrachloroethene	5/28/2020	1	U
31	B-326-WD	Toluene	2/12/2020	1	U

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31	B-326-WD	Toluene	5/28/2020	1	U
31	B-326-WD	Trans-1,2-Dichloroethene	2/12/2020	0.5	U
31	B-326-WD	Trans-1,2-Dichloroethene	5/28/2020	0.5	U
31	B-326-WD	Trichloroethene	2/12/2020	1	U
31	B-326-WD	Trichloroethene	5/28/2020	1	U
31	B-326-WD	Vinyl Chloride	2/12/2020	2	U
31	B-326-WD	Vinyl Chloride	5/28/2020	2	U
31	GW-109	Nitrogen, Nitrate	3/2/2020	500	U
31	GW-109	1,4-Dioxane	3/2/2020	41	
31	GW-109	1,1,1-Trichloroethane	3/2/2020	1	R
31	GW-109	1,1,1-Trichloroethane	6/1/2020	1	U
31	GW-109	1,1,2,2-Tetrachloroethane	3/2/2020	1	R
31	GW-109	1,1,2,2-Tetrachloroethane	6/1/2020	1	U
31	GW-109	1,1,2-Trichloroethane	3/2/2020	1	R
31	GW-109	1,1,2-Trichloroethane	6/1/2020	1	U
31	GW-109	1,1-Dichloroethane	3/2/2020	0.5	R
31	GW-109	1,1-Dichloroethane	6/1/2020	1	U
31	GW-109	1,1-Dichloroethene	3/2/2020	1	R
31	GW-109	1,1-Dichloroethene	6/1/2020	1	U
31	GW-109	1,2-Dichloroethane	3/2/2020	1	R
31	GW-109	1,2-Dichloroethane	6/1/2020	1	U
31	GW-109	1,2-Dichloropropane	3/2/2020	1	R
31	GW-109	1,2-Dichloropropane	6/1/2020	1	U
31	GW-109	1,4-Dioxane	6/1/2020	20	
31	GW-109	Acetone	3/2/2020	4	R
31	GW-109	Acetone	6/1/2020	3	J
31	GW-109	Benzene	3/2/2020	1	R
31	GW-109	Benzene	6/1/2020	1	U
31	GW-109	Bromodichloromethane	3/2/2020	1	R
31	GW-109	Bromodichloromethane	6/1/2020	1	U
31	GW-109	Bromoform	3/2/2020	1	R
31	GW-109	Bromoform	6/1/2020	1	U
31	GW-109	Carbon Tetrachloride	3/2/2020	1	R
31	GW-109	Carbon Tetrachloride	6/1/2020	1	U
31	GW-109	Chlorobenzene	3/2/2020	1	R
31	GW-109	Chlorobenzene	6/1/2020	1	U
31	GW-109	Chloroform	3/2/2020	1	R
31	GW-109	Chloroform	6/1/2020	1	U
31	GW-109	cis-1,2-Dichloroethene	3/2/2020	1	R
31	GW-109	cis-1,2-Dichloroethene	6/1/2020	1	U
31	GW-109	Dibromochloromethane	3/2/2020	1	R
31	GW-109	Dibromochloromethane	6/1/2020	1	U
31	GW-109	Ethylbenzene	3/2/2020	1	R
31	GW-109	Ethylbenzene	6/1/2020	1	U
31	GW-109	Methylene Chloride	3/2/2020	1	R
31	GW-109	Methylene Chloride	6/1/2020	1	U
31	GW-109	Naphthalene	3/2/2020	1	R
31	GW-109	Naphthalene	6/1/2020	1	U
31	GW-109	Tetrachloroethene	3/2/2020	1	R
31	GW-109	Tetrachloroethene	6/1/2020	1	U
31	GW-109	Toluene	3/2/2020	1	R
31	GW-109	Toluene	6/1/2020	1	U
31	GW-109	Trans-1,2-Dichloroethene	3/2/2020	0.5	R
31	GW-109	Trans-1,2-Dichloroethene	6/1/2020	0.5	U
31	GW-109	Trichloroethene	3/2/2020	1	R
31	GW-109	Trichloroethene	6/1/2020	1	U
31	GW-109	Vinyl Chloride	3/2/2020	2	R
31	GW-109	Vinyl Chloride	6/1/2020	2	U
31	MW05-WD	1,4-Dioxane	2/26/2020	4.7	

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31	MW113-EW-1	Nitrogen, Nitrate	1/21/2020	3800	
31	MW113-EW-1	Nitrogen, Nitrate	4/28/2020	4100	
31	MW113-EW-1	1,4-Dioxane	1/21/2020	93	
31	MW113-EW-1	1,4-Dioxane	4/28/2020	92	
31	MW113-LD	Nitrogen, Nitrate	4/21/2020	500	U
31	MW113-UD	1,4-Dioxane	1/27/2020	130	
31	MW113-UD	1,1,1-Trichloroethane	1/27/2020	1	U
31	MW113-UD	1,1,1-Trichloroethane	4/28/2020	1	U
31	MW113-UD	1,1,2,2-Tetrachloroethane	1/27/2020	1	U
31	MW113-UD	1,1,2,2-Tetrachloroethane	4/28/2020	1	U
31	MW113-UD	1,1,2-Trichloroethane	1/27/2020	1	U
31	MW113-UD	1,1,2-Trichloroethane	4/28/2020	1	U
31	MW113-UD	1,1-Dichloroethane	1/27/2020	0.75	J
31	MW113-UD	1,1-Dichloroethane	4/28/2020	1	
31	MW113-UD	1,1-Dichloroethene	1/27/2020	1	U
31	MW113-UD	1,1-Dichloroethene	4/28/2020	1	U
31	MW113-UD	1,2-Dichloroethane	1/27/2020	1	U
31	MW113-UD	1,2-Dichloroethane	4/28/2020	1	U
31	MW113-UD	1,2-Dichloropropane	1/27/2020	1	U
31	MW113-UD	1,2-Dichloropropane	4/28/2020	1	U
31	MW113-UD	1,4-Dioxane	4/28/2020	150	
31	MW113-UD	Acetone	1/27/2020	10	U
31	MW113-UD	Acetone	4/28/2020	10	U
31	MW113-UD	Benzene	1/27/2020	1	U
31	MW113-UD	Benzene	4/28/2020	1	U
31	MW113-UD	Bromodichloromethane	1/27/2020	1	U
31	MW113-UD	Bromodichloromethane	4/28/2020	1	U
31	MW113-UD	Bromoform	1/27/2020	1	U
31	MW113-UD	Bromoform	4/28/2020	1	U
31	MW113-UD	Carbon Tetrachloride	1/27/2020	1	U
31	MW113-UD	Carbon Tetrachloride	4/28/2020	1	U
31	MW113-UD	Chlorobenzene	1/27/2020	1	U
31	MW113-UD	Chlorobenzene	4/28/2020	1	U
31	MW113-UD	Chloroform	1/27/2020	1	U
31	MW113-UD	Chloroform	4/28/2020	1	U
31	MW113-UD	cis-1,2-Dichloroethene	1/27/2020	0.16	J
31	MW113-UD	cis-1,2-Dichloroethene	4/28/2020	1	U
31	MW113-UD	Dibromochloromethane	1/27/2020	1	U
31	MW113-UD	Dibromochloromethane	4/28/2020	1	U
31	MW113-UD	Ethylbenzene	1/27/2020	1	U
31	MW113-UD	Ethylbenzene	4/28/2020	1	U
31	MW113-UD	Methylene Chloride	1/27/2020	1	U
31	MW113-UD	Methylene Chloride	4/28/2020	1	U
31	MW113-UD	Naphthalene	1/27/2020	1	U
31	MW113-UD	Naphthalene	4/28/2020	1	U
31	MW113-UD	Tetrachloroethene	1/27/2020	1	U
31	MW113-UD	Tetrachloroethene	4/28/2020	1	U
31	MW113-UD	Toluene	1/27/2020	1	U
31	MW113-UD	Toluene	4/28/2020	1	U
31	MW113-UD	Trans-1,2-Dichloroethene	1/27/2020	0.5	U
31	MW113-UD	Trans-1,2-Dichloroethene	4/28/2020	0.5	U
31	MW113-UD	Trichloroethene	1/27/2020	0.16	J
31	MW113-UD	Trichloroethene	4/28/2020	1	U
31	MW113-UD	Vinyl Chloride	1/27/2020	2	U
31	MW113-UD	Vinyl Chloride	4/28/2020	2	U
31	MW113-WD	Nitrogen, Nitrate	4/21/2020	2200	
31	MW113-WD	1,4-Dioxane	1/27/2020	14	
31	MW113-WD	1,1,1-Trichloroethane	1/27/2020	1	U
31	MW113-WD	1,1,1-Trichloroethane	5/19/2020	1	U

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31	MW113-WD	1,1,2,2-Tetrachloroethane	1/27/2020	1	U
31	MW113-WD	1,1,2,2-Tetrachloroethane	5/19/2020	1	U
31	MW113-WD	1,1,2-Trichloroethane	1/27/2020	1	U
31	MW113-WD	1,1,2-Trichloroethane	5/19/2020	1	U
31	MW113-WD	1,1-Dichloroethane	1/27/2020	0.22	J
31	MW113-WD	1,1-Dichloroethane	5/19/2020	1	U
31	MW113-WD	1,1-Dichloroethene	1/27/2020	1	U
31	MW113-WD	1,1-Dichloroethene	5/19/2020	1	U
31	MW113-WD	1,2-Dichloroethane	1/27/2020	1	U
31	MW113-WD	1,2-Dichloroethane	5/19/2020	1	U
31	MW113-WD	1,2-Dichloropropane	1/27/2020	1	U
31	MW113-WD	1,2-Dichloropropane	5/19/2020	1	U
31	MW113-WD	1,4-Dioxane	5/19/2020	19	
31	MW113-WD	Acetone	1/27/2020	10	U
31	MW113-WD	Acetone	5/19/2020	10	U
31	MW113-WD	Benzene	1/27/2020	1	U
31	MW113-WD	Benzene	5/19/2020	1	U
31	MW113-WD	Bromodichloromethane	1/27/2020	1	U
31	MW113-WD	Bromodichloromethane	5/19/2020	1	U
31	MW113-WD	Bromoform	1/27/2020	1	U
31	MW113-WD	Bromoform	5/19/2020	1	U
31	MW113-WD	Carbon Tetrachloride	1/27/2020	1	U
31	MW113-WD	Carbon Tetrachloride	5/19/2020	1	U
31	MW113-WD	Chlorobenzene	1/27/2020	1	U
31	MW113-WD	Chlorobenzene	5/19/2020	1	U
31	MW113-WD	Chloroform	1/27/2020	1	U
31	MW113-WD	Chloroform	5/19/2020	1	U
31	MW113-WD	cis-1,2-Dichloroethene	1/27/2020	1	U
31	MW113-WD	cis-1,2-Dichloroethene	5/19/2020	1	U
31	MW113-WD	Dibromochloromethane	1/27/2020	1	U
31	MW113-WD	Dibromochloromethane	5/19/2020	1	U
31	MW113-WD	Ethylbenzene	1/27/2020	1	U
31	MW113-WD	Ethylbenzene	5/19/2020	1	U
31	MW113-WD	Methylene Chloride	1/27/2020	1	U
31	MW113-WD	Methylene Chloride	5/19/2020	1	U
31	MW113-WD	Naphthalene	1/27/2020	1	U
31	MW113-WD	Naphthalene	5/19/2020	1	U
31	MW113-WD	Tetrachloroethene	1/27/2020	0.31	J
31	MW113-WD	Tetrachloroethene	5/19/2020	1	U
31	MW113-WD	Toluene	1/27/2020	1	U
31	MW113-WD	Toluene	5/19/2020	1	U
31	MW113-WD	Trans-1,2-Dichloroethene	1/27/2020	0.5	U
31	MW113-WD	Trans-1,2-Dichloroethene	5/19/2020	0.5	U
31	MW113-WD	Trichloroethene	1/27/2020	0.18	J
31	MW113-WD	Trichloroethene	5/19/2020	1	U
31	MW113-WD	Vinyl Chloride	1/27/2020	2	U
31	MW113-WD	Vinyl Chloride	5/19/2020	2	U
31	MW114-WD	1,4-Dioxane	2/18/2020	2.4	
31	MW114-WD	1,4-Dioxane	5/18/2020	0.98	
31	MW118-WD	1,4-Dioxane	2/18/2020	0.96	
31	MW118-WD	1,4-Dioxane	5/18/2020	0.62	J
31	MW121-WDR	1,4-Dioxane	1/22/2020	1	
31	MW122-WDR	1,4-Dioxane	1/22/2020	2.3	
31	MW123-WD	1,4-Dioxane	1/22/2020	0.95	
31	MW124-WD	1,4-Dioxane	1/23/2020	0.43	J
31	MW125-WD	1,4-Dioxane	1/23/2020	0.28	J
31	MW129-WD	1,4-Dioxane	1/23/2020	7.7	
31	MW132-WD	1,4-Dioxane	1/21/2020	22	
31	MW132-WD	1,4-Dioxane	5/6/2020	18	

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Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
30	MW135-WD	1,4-Dioxane	1/29/2020	6.3	
30	MW141-WD	1,4-Dioxane	1/29/2020	3.5	
19	MW142-WD	1,4-Dioxane	1/30/2020	2	
24	MW144-WD	1,4-Dioxane	1/30/2020	0.9	U
31	MW151-WD	1,4-Dioxane	1/22/2020	2.4	
31	MW151-WD	1,4-Dioxane	5/6/2020	1.2	
31	MW153-EW-1	1,4-Dioxane	2/20/2020	2.4	
31	MW153-EW-1	1,4-Dioxane	5/19/2020	2	
31	MW154-EW-1	1,4-Dioxane	2/20/2020	2.6	
31	MW154-EW-1	1,4-Dioxane	5/21/2020	1.7	
31	MW155-EW-1	1,4-Dioxane	2/20/2020	1.6	
31	MW155-EW-1	1,4-Dioxane	5/21/2020	0.86	J
31	MW156-EW-1	1,4-Dioxane	2/24/2020	1.1	
31	MW156-EW-1	1,4-Dioxane	5/27/2020	0.5	J
31	MW156-WD	1,4-Dioxane	2/11/2020	0.69	J
31	MW156-WD	1,4-Dioxane	5/26/2020	0.56	J
31	MW157-WD	1,4-Dioxane	2/11/2020	0.29	J
31	MW157-WD	1,4-Dioxane	5/26/2020	0.57	J
31	MW160-WD	1,4-Dioxane	2/20/2020	3.7	
31	MW160-WD	1,4-Dioxane	5/19/2020	2.7	
13	MW176-DEN	1,4-Dioxane	2/19/2020	0.69	J
13	MW176-DEN	1,4-Dioxane	5/27/2020	0.56	J
31	NBBW-IW-3	1,4-Dioxane	6/2/2020	110	
31	NBBW-IW-3	1,4-Dioxane	6/9/2020	120	
31	NBBW-IW-3	1,4-Dioxane	6/16/2020	110	
31	NBBW-IW-3	1,4-Dioxane	6/23/2020	120	
31	NBBW-IW-3	1,4-Dioxane	6/30/2020	120	
19	Pingle	1,4-Dioxane	6/25/2020	0.9	U
31	PTP-13	1,4-Dioxane	2/27/2020	16	
31	PTP-13	1,1,1-Trichloroethane	2/27/2020	1	U
31	PTP-13	1,1,1-Trichloroethane	6/2/2020	1	U
31	PTP-13	1,1,2,2-Tetrachloroethane	2/27/2020	1	U
31	PTP-13	1,1,2,2-Tetrachloroethane	6/2/2020	1	U
31	PTP-13	1,1,2-Trichloroethane	2/27/2020	1	U
31	PTP-13	1,1,2-Trichloroethane	6/2/2020	1	U
31	PTP-13	1,1-Dichloroethane	2/27/2020	1	U
31	PTP-13	1,1-Dichloroethane	6/2/2020	1	U
31	PTP-13	1,1-Dichloroethene	2/27/2020	1	U
31	PTP-13	1,1-Dichloroethene	6/2/2020	1	U
31	PTP-13	1,2-Dichloroethane	2/27/2020	1	U
31	PTP-13	1,2-Dichloroethane	6/2/2020	1	U
31	PTP-13	1,2-Dichloropropane	2/27/2020	1	U
31	PTP-13	1,2-Dichloropropane	6/2/2020	1	U
31	PTP-13	1,4-Dioxane	6/2/2020	10	
31	PTP-13	Acetone	2/27/2020	10	U
31	PTP-13	Acetone	6/2/2020	10	U
31	PTP-13	Benzene	2/27/2020	1	U
31	PTP-13	Benzene	6/2/2020	1	U
31	PTP-13	Bromodichloromethane	2/27/2020	1	U
31	PTP-13	Bromodichloromethane	6/2/2020	1	U
31	PTP-13	Bromoform	2/27/2020	1	U
31	PTP-13	Bromoform	6/2/2020	1	U
31	PTP-13	Carbon Tetrachloride	2/27/2020	1	U
31	PTP-13	Carbon Tetrachloride	6/2/2020	1	U
31	PTP-13	Chlorobenzene	2/27/2020	1	U
31	PTP-13	Chlorobenzene	6/2/2020	1	U
31	PTP-13	Chloroform	2/27/2020	1	U
31	PTP-13	Chloroform	6/2/2020	1	U
31	PTP-13	cis-1,2-Dichloroethene	2/27/2020	1	U

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Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
31	PTP-13	cis-1,2-Dichloroethene	6/2/2020	1	U
31	PTP-13	Dibromochloromethane	2/27/2020	1	U
31	PTP-13	Dibromochloromethane	6/2/2020	1	U
31	PTP-13	Ethylbenzene	2/27/2020	1	U
31	PTP-13	Ethylbenzene	6/2/2020	1	U
31	PTP-13	Methylene Chloride	2/27/2020	1	U
31	PTP-13	Methylene Chloride	6/2/2020	1	U
31	PTP-13	Naphthalene	2/27/2020	1	U
31	PTP-13	Naphthalene	6/2/2020	1	U
31	PTP-13	Tetrachloroethene	2/27/2020	0.23	J
31	PTP-13	Tetrachloroethene	6/2/2020	1	U
31	PTP-13	Toluene	2/27/2020	1	U
31	PTP-13	Toluene	6/2/2020	1	U
31	PTP-13	Trans-1,2-Dichloroethene	2/27/2020	0.5	U
31	PTP-13	Trans-1,2-Dichloroethene	6/2/2020	0.5	U
31	PTP-13	Trichloroethene	2/27/2020	1	U
31	PTP-13	Trichloroethene	6/2/2020	1	U
31	PTP-13	Vinyl Chloride	2/27/2020	2	U
31	PTP-13	Vinyl Chloride	6/2/2020	2	U
31	PTP-14	1,4-Dioxane	3/4/2020	26	J
31	PTP-14	1,1,1-Trichloroethane	3/4/2020	1	U
31	PTP-14	1,1,1-Trichloroethane	6/2/2020	1	U
31	PTP-14	1,1,2,2-Tetrachloroethane	3/4/2020	1	U
31	PTP-14	1,1,2,2-Tetrachloroethane	6/2/2020	1	U
31	PTP-14	1,1,2-Trichloroethane	3/4/2020	1	U
31	PTP-14	1,1,2-Trichloroethane	6/2/2020	1	U
31	PTP-14	1,1-Dichloroethane	3/4/2020	1	U
31	PTP-14	1,1-Dichloroethane	6/2/2020	0.46	J
31	PTP-14	1,1-Dichloroethene	3/4/2020	1	U
31	PTP-14	1,1-Dichloroethene	6/2/2020	1	U
31	PTP-14	1,2-Dichloroethane	3/4/2020	1	U
31	PTP-14	1,2-Dichloroethane	6/2/2020	1	U
31	PTP-14	1,2-Dichloropropane	3/4/2020	1	U
31	PTP-14	1,2-Dichloropropane	6/2/2020	1	U
31	PTP-14	1,4-Dioxane	6/2/2020	120	J
31	PTP-14	Acetone	3/4/2020	10	U
31	PTP-14	Acetone	6/2/2020	10	U
31	PTP-14	Benzene	3/4/2020	1	U
31	PTP-14	Benzene	6/2/2020	1	U
31	PTP-14	Bromodichloromethane	3/4/2020	1	U
31	PTP-14	Bromodichloromethane	6/2/2020	1	U
31	PTP-14	Bromoform	3/4/2020	1	U
31	PTP-14	Bromoform	6/2/2020	1	U
31	PTP-14	Carbon Tetrachloride	3/4/2020	1	U
31	PTP-14	Carbon Tetrachloride	6/2/2020	1	U
31	PTP-14	Chlorobenzene	3/4/2020	1	U
31	PTP-14	Chlorobenzene	6/2/2020	1	U
31	PTP-14	Chloroform	3/4/2020	1	U
31	PTP-14	Chloroform	6/2/2020	1	U
31	PTP-14	cis-1,2-Dichloroethene	3/4/2020	1	U
31	PTP-14	cis-1,2-Dichloroethene	6/2/2020	1	U
31	PTP-14	Dibromochloromethane	3/4/2020	1	U
31	PTP-14	Dibromochloromethane	6/2/2020	1	U
31	PTP-14	Ethylbenzene	3/4/2020	1	U
31	PTP-14	Ethylbenzene	6/2/2020	1	U
31	PTP-14	Methylene Chloride	3/4/2020	1	U
31	PTP-14	Methylene Chloride	6/2/2020	1	U
31	PTP-14	Naphthalene	3/4/2020	1	U
31	PTP-14	Naphthalene	6/2/2020	1	U

APPENDIX C-6.1
NORTH END - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Section	Well ID	Parameter Name	Date Sampled	Result (µg/L)[a/]	Qualifier[b/]
31	PTP-14	Tetrachloroethene	3/4/2020	1	U
31	PTP-14	Tetrachloroethene	6/2/2020	1	U
31	PTP-14	Toluene	3/4/2020	1	U
31	PTP-14	Toluene	6/2/2020	1	U
31	PTP-14	Trans-1,2-Dichloroethene	3/4/2020	0.5	U
31	PTP-14	Trans-1,2-Dichloroethene	6/2/2020	0.5	U
31	PTP-14	Trichloroethene	3/4/2020	1	U
31	PTP-14	Trichloroethene	6/2/2020	1	U
31	PTP-14	Vinyl Chloride	3/4/2020	2	U
31	PTP-14	Vinyl Chloride	6/2/2020	2	U
19	Reed	1,4-Dioxane	6/25/2020	0.9	U

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 2020 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	2/13/2020	1.1	
31	MW102-WD	1,4-Dioxane	5/21/2020	1.3	
31	MW103-WD	1,4-Dioxane	1/30/2020	0.42	J
31	MW103-WD	1,4-Dioxane	5/6/2020	0.76	J
31	MW170-EW-1	1,1,1-Trichloroethane	2/11/2020	2.8	
31	MW170-EW-1	1,1,1-Trichloroethane	5/12/2020	3.2	
31	MW170-EW-1	1,1,2,2-Tetrachloroethane	2/11/2020	1	U
31	MW170-EW-1	1,1,2,2-Tetrachloroethane	5/12/2020	1	U
31	MW170-EW-1	1,1,2-Trichloroethane	2/11/2020	1	U
31	MW170-EW-1	1,1,2-Trichloroethane	5/12/2020	1	U
31	MW170-EW-1	1,1-Dichloroethane	2/11/2020	5.1	
31	MW170-EW-1	1,1-Dichloroethane	5/12/2020	5.6	
31	MW170-EW-1	1,1-Dichloroethene	2/11/2020	4.3	
31	MW170-EW-1	1,1-Dichloroethene	5/12/2020	4.1	
31	MW170-EW-1	1,2-Dichloroethane	2/11/2020	0.14	J
31	MW170-EW-1	1,2-Dichloroethane	5/12/2020	1	U
31	MW170-EW-1	1,2-Dichloropropane	2/11/2020	1	U
31	MW170-EW-1	1,2-Dichloropropane	5/12/2020	1	U
31	MW170-EW-1	1,4-Dioxane	2/11/2020	18	
31	MW170-EW-1	1,4-Dioxane	5/12/2020	16	
31	MW170-EW-1	Acetone	2/11/2020	10	U
31	MW170-EW-1	Acetone	5/12/2020	10	U
31	MW170-EW-1	Benzene	2/11/2020	1	U
31	MW170-EW-1	Benzene	5/12/2020	1	U
31	MW170-EW-1	Bromodichloromethane	2/11/2020	1	U
31	MW170-EW-1	Bromodichloromethane	5/12/2020	1	U
31	MW170-EW-1	Bromoform	2/11/2020	1	U
31	MW170-EW-1	Bromoform	5/12/2020	1	U
31	MW170-EW-1	Carbon Tetrachloride	2/11/2020	1	U
31	MW170-EW-1	Carbon Tetrachloride	5/12/2020	1	U
31	MW170-EW-1	Chlorobenzene	2/11/2020	1	U
31	MW170-EW-1	Chlorobenzene	5/12/2020	1	U
31	MW170-EW-1	Chloroform	2/11/2020	1	U
31	MW170-EW-1	Chloroform	5/12/2020	1	U
31	MW170-EW-1	cis-1,2-Dichloroethene	2/11/2020	13	
31	MW170-EW-1	cis-1,2-Dichloroethene	5/12/2020	13	
31	MW170-EW-1	Dibromochloromethane	2/11/2020	1	U
31	MW170-EW-1	Dibromochloromethane	5/12/2020	1	U
31	MW170-EW-1	Ethylbenzene	2/11/2020	1	U
31	MW170-EW-1	Ethylbenzene	5/12/2020	1	U
31	MW170-EW-1	Methylene Chloride	2/11/2020	1	U
31	MW170-EW-1	Methylene Chloride	5/12/2020	1	U
31	MW170-EW-1	Naphthalene	2/11/2020	1	U
31	MW170-EW-1	Naphthalene	5/12/2020	1	U
31	MW170-EW-1	Nitrogen, Nitrate	2/11/2020	8100	
31	MW170-EW-1	Nitrogen, Nitrate	5/12/2020	8700	
31	MW170-EW-1	Tetrachloroethene	2/11/2020	1.3	
31	MW170-EW-1	Tetrachloroethene	5/12/2020	1.4	
31	MW170-EW-1	Toluene	2/11/2020	1	U
31	MW170-EW-1	Toluene	5/12/2020	1	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	2/11/2020	0.5	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	5/12/2020	0.5	U
31	MW170-EW-1	Trichloroethene	2/11/2020	0.5	J

TABLE C-6.2
MW77 AREA - ALL ORGANICS AND NITRATE
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Section	Well ID	Parameter Name	Date Sampled	Result (ug/L)[a/]	Qualifier[b/]
31	MW170-EW-1	Trichloroethene	5/12/2020	0.48	J
31	MW170-EW-1	Vinyl Chloride	2/11/2020	2	U
31	MW170-EW-1	Vinyl Chloride	5/12/2020	2	U
31	MW23-UPPER-C	1,1,1-Trichloroethane	5/18/2020	1	U
31	MW23-UPPER-C	1,1,2,2-Tetrachloroethane	5/18/2020	1	U
31	MW23-UPPER-C	1,1,2-Trichloroethane	5/18/2020	1	U
31	MW23-UPPER-C	1,1-Dichloroethane	5/18/2020	1	U
31	MW23-UPPER-C	1,1-Dichloroethene	5/18/2020	1	U
31	MW23-UPPER-C	1,2-Dichloroethane	5/18/2020	1	U
31	MW23-UPPER-C	1,2-Dichloropropane	5/18/2020	1	U
31	MW23-UPPER-C	1,4-Dioxane	5/18/2020	0.9	U
31	MW23-UPPER-C	Acetone	5/18/2020	10	U
31	MW23-UPPER-C	Benzene	5/18/2020	1	U
31	MW23-UPPER-C	Bromodichloromethane	5/18/2020	1	U
31	MW23-UPPER-C	Bromoform	5/18/2020	1	U
31	MW23-UPPER-C	Carbon Tetrachloride	5/18/2020	1	U
31	MW23-UPPER-C	Chlorobenzene	5/18/2020	1	U
31	MW23-UPPER-C	Chloroform	5/18/2020	1	U
31	MW23-UPPER-C	cis-1,2-Dichloroethene	5/18/2020	1	U
31	MW23-UPPER-C	Dibromochloromethane	5/18/2020	1	U
31	MW23-UPPER-C	Ethylbenzene	5/18/2020	1	U
31	MW23-UPPER-C	Methylene Chloride	5/18/2020	1	U
31	MW23-UPPER-C	Naphthalene	5/18/2020	1	U
31	MW23-UPPER-C	Nitrogen, Nitrate	5/18/2020	110	J
31	MW23-UPPER-C	Tetrachloroethene	5/18/2020	1	U
31	MW23-UPPER-C	Toluene	5/18/2020	1	U
31	MW23-UPPER-C	Trans-1,2-Dichloroethene	5/18/2020	0.5	U
31	MW23-UPPER-C	Trichloroethene	5/18/2020	1	U
31	MW23-UPPER-C	Vinyl Chloride	5/18/2020	2	U
31	MW77-EW-1	1,4-Dioxane	2/13/2020	3	
31	MW77-EW-1	1,4-Dioxane	5/21/2020	2.8	
31	MW77-EW-2	1,4-Dioxane	2/13/2020	0.12	J
31	MW77-EW-2	1,4-Dioxane	5/21/2020	0.17	J
31	MW77-WD	1,1,1-Trichloroethane	5/4/2020	1	U
31	MW77-WD	1,1,2,2-Tetrachloroethane	5/4/2020	1	U
31	MW77-WD	1,1,2-Trichloroethane	5/4/2020	1	U
31	MW77-WD	1,1-Dichloroethane	5/4/2020	1	U
31	MW77-WD	1,1-Dichloroethene	5/4/2020	0.43	J
31	MW77-WD	1,2-Dichloroethane	5/4/2020	1	U
31	MW77-WD	1,2-Dichloropropane	5/4/2020	1	U
31	MW77-WD	1,4-Dioxane	5/4/2020	5	
31	MW77-WD	Acetone	5/4/2020	10	U
31	MW77-WD	Benzene	5/4/2020	1	U
31	MW77-WD	Bromodichloromethane	5/4/2020	1	U
31	MW77-WD	Bromoform	5/4/2020	1	U
31	MW77-WD	Carbon Tetrachloride	5/4/2020	1	U
31	MW77-WD	Chlorobenzene	5/4/2020	1	U
31	MW77-WD	Chloroform	5/4/2020	1	U
31	MW77-WD	cis-1,2-Dichloroethene	5/4/2020	1	U
31	MW77-WD	Dibromochloromethane	5/4/2020	1	U
31	MW77-WD	Ethylbenzene	5/4/2020	1	U
31	MW77-WD	Methylene Chloride	5/4/2020	1	U
31	MW77-WD	Naphthalene	5/4/2020	1	U

TABLE C-6.2
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Section	Well ID	Parameter Name	Date Sampled	Result (ug/L)[a/]	Qualifier[b/]
31	MW77-WD	Nitrogen, Nitrate	5/4/2020	18000	
31	MW77-WD	Tetrachloroethene	5/4/2020	0.61	J
31	MW77-WD	Toluene	5/4/2020	1	U
31	MW77-WD	Trans-1,2-Dichloroethene	5/4/2020	0.5	U
31	MW77-WD	Trichloroethene	5/4/2020	0.18	J
31	MW77-WD	Vinyl Chloride	5/4/2020	2	U
31	MW98-WD	1,4-Dioxane	2/13/2020	11	
31	MW98-WD	1,4-Dioxane	5/21/2020	8.6	
31	MW170-EW-1	Ethylbenzene	10/15/2019	1	U
31	MW170-EW-1	Ethylbenzene	11/12/2019	1	U
31	MW170-EW-1	Ethylbenzene	12/10/2019	1	U
31	MW170-EW-1	Methylene Chloride	7/17/2019	1	U
31	MW170-EW-1	Methylene Chloride	8/19/2019	1	U
31	MW170-EW-1	Methylene Chloride	9/17/2019	1	U
31	MW170-EW-1	Methylene Chloride	10/15/2019	1	U
31	MW170-EW-1	Methylene Chloride	11/12/2019	1	U
31	MW170-EW-1	Methylene Chloride	12/10/2019	1	U
31	MW170-EW-1	Naphthalene	7/17/2019	1	U
31	MW170-EW-1	Naphthalene	8/19/2019	1	U
31	MW170-EW-1	Naphthalene	9/17/2019	1	U
31	MW170-EW-1	Naphthalene	10/15/2019	1	U
31	MW170-EW-1	Naphthalene	11/12/2019	1	U
31	MW170-EW-1	Naphthalene	12/10/2019	1	U
31	MW170-EW-1	Nitrogen, Nitrate	7/17/2019	7800	
31	MW170-EW-1	Nitrogen, Nitrate	8/19/2019	7500	
31	MW170-EW-1	Nitrogen, Nitrate	9/17/2019	7400	
31	MW170-EW-1	Nitrogen, Nitrate	10/15/2019	7700	
31	MW170-EW-1	Nitrogen, Nitrate	11/12/2019	7800	
31	MW170-EW-1	Nitrogen, Nitrate	12/10/2019	8300	
31	MW170-EW-1	Tetrachloroethene	7/17/2019	1.4	
31	MW170-EW-1	Tetrachloroethene	8/19/2019	1.6	
31	MW170-EW-1	Tetrachloroethene	9/17/2019	1.1	
31	MW170-EW-1	Tetrachloroethene	10/15/2019	1.3	
31	MW170-EW-1	Tetrachloroethene	11/12/2019	1.2	
31	MW170-EW-1	Tetrachloroethene	12/10/2019	1.6	
31	MW170-EW-1	Toluene	7/17/2019	1	U
31	MW170-EW-1	Toluene	8/19/2019	1	U
31	MW170-EW-1	Toluene	9/17/2019	1	U
31	MW170-EW-1	Toluene	10/15/2019	1	U
31	MW170-EW-1	Toluene	11/12/2019	1	U
31	MW170-EW-1	Toluene	12/10/2019	1	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	7/17/2019	0.5	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	8/19/2019	0.5	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	9/17/2019	0.5	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	10/15/2019	0.5	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	11/12/2019	0.5	U
31	MW170-EW-1	Trans-1,2-Dichloroethene	12/10/2019	0.5	U
31	MW170-EW-1	Trichloroethene	7/17/2019	0.62	J
31	MW170-EW-1	Trichloroethene	8/19/2019	0.73	J
31	MW170-EW-1	Trichloroethene	9/17/2019	0.43	J
31	MW170-EW-1	Trichloroethene	10/15/2019	0.51	J
31	MW170-EW-1	Trichloroethene	11/12/2019	0.48	J
31	MW170-EW-1	Trichloroethene	12/10/2019	0.62	J

TABLE C-6.2
MW77 AREA - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 2020 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	Vinyl Chloride	7/17/2019	2	U
31	MW170-EW-1	Vinyl Chloride	8/19/2019	2	U
31	MW170-EW-1	Vinyl Chloride	9/17/2019	2	U
31	MW170-EW-1	Vinyl Chloride	10/15/2019	2	U
31	MW170-EW-1	Vinyl Chloride	11/12/2019	2	U
31	MW170-EW-1	Vinyl Chloride	12/10/2019	2	U
31	MW23-UPPER-C	1,1,1-Trichloroethane	11/13/2019	1	U
31	MW23-UPPER-C	1,1,2,2-Tetrachloroethane	11/13/2019	1	U
31	MW23-UPPER-C	1,1,2-Trichloroethane	11/13/2019	1	U
31	MW23-UPPER-C	1,1-Dichloroethane	11/13/2019	1	U
31	MW23-UPPER-C	1,1-Dichloroethene	11/13/2019	1	U
31	MW23-UPPER-C	1,2-Dichloroethane	11/13/2019	1	U
31	MW23-UPPER-C	1,2-Dichloropropane	11/13/2019	1	U
31	MW23-UPPER-C	1,4-Dioxane	11/13/2019	0.9	U
31	MW23-UPPER-C	1,4-Dioxane	11/13/2019	200	U
31	MW23-UPPER-C	Acetone	11/13/2019	10	U
31	MW23-UPPER-C	Benzene	11/13/2019	1	U
31	MW23-UPPER-C	Bromodichloromethane	11/13/2019	1	U
31	MW23-UPPER-C	Bromoform	11/13/2019	1	U
31	MW23-UPPER-C	Carbon Tetrachloride	11/13/2019	1	U
31	MW23-UPPER-C	Chlorobenzene	11/13/2019	1	U
31	MW23-UPPER-C	Chloroform	11/13/2019	1	U
31	MW23-UPPER-C	cis-1,2-Dichloroethene	11/13/2019	1	U
31	MW23-UPPER-C	Dibromochloromethane	11/13/2019	1	U
31	MW23-UPPER-C	Ethylbenzene	11/13/2019	1	U
31	MW23-UPPER-C	Methylene Chloride	11/13/2019	1	U
31	MW23-UPPER-C	Naphthalene	11/13/2019	1	U
31	MW23-UPPER-C	Nitrogen, Nitrate	11/13/2019	110	J
31	MW23-UPPER-C	Tetrachloroethene	11/13/2019	1	U
31	MW23-UPPER-C	Toluene	11/13/2019	1	U
31	MW23-UPPER-C	Trans-1,2-Dichloroethene	11/13/2019	0.5	U
31	MW23-UPPER-C	Trichloroethene	11/13/2019	1	U
31	MW23-UPPER-C	Vinyl Chloride	11/13/2019	2	U
31	MW77-EW-1	1,4-Dioxane	7/24/2019	3.3	
31	MW77-EW-1	1,4-Dioxane	10/23/2019	4.5	
31	MW77-EW-2	1,4-Dioxane	7/24/2019	0.9	U
31	MW77-EW-2	1,4-Dioxane	10/23/2019	0.9	U
31	MW77-WD	1,1,1-Trichloroethane	10/22/2019	1	U
31	MW77-WD	1,1,2,2-Tetrachloroethane	10/22/2019	1	U
31	MW77-WD	1,1,2-Trichloroethane	10/22/2019	1	U
31	MW77-WD	1,1-Dichloroethane	10/22/2019	0.91	J
31	MW77-WD	1,1-Dichloroethene	10/22/2019	1.7	
31	MW77-WD	1,2-Dichloroethane	10/22/2019	0.28	J
31	MW77-WD	1,2-Dichloropropane	10/22/2019	1	U
31	MW77-WD	1,4-Dioxane	10/22/2019	12	
31	MW77-WD	1,4-Dioxane	10/22/2019	200	U
31	MW77-WD	Acetone	10/22/2019	10	U
31	MW77-WD	Benzene	10/22/2019	1	U
31	MW77-WD	Bromodichloromethane	10/22/2019	1	U
31	MW77-WD	Bromoform	10/22/2019	1	U
31	MW77-WD	Carbon Tetrachloride	10/22/2019	1	U
31	MW77-WD	Chlorobenzene	10/22/2019	1	U
31	MW77-WD	Chloroform	10/22/2019	1	U

TABLE C-6.2
MW77 AREA - ALL ORGANICS AND NITRATE
JANUARY THROUGH JUNE 2020 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	cis-1,2-Dichloroethene	10/22/2019	1	U
31	MW77-WD	Dibromochloromethane	10/22/2019	1	U
31	MW77-WD	Ethylbenzene	10/22/2019	1	U
31	MW77-WD	Methylene Chloride	10/22/2019	1	U
31	MW77-WD	Naphthalene	10/22/2019	1	U
31	MW77-WD	Nitrogen, Nitrate	10/22/2019	17000	
31	MW77-WD	Tetrachloroethene	10/22/2019	1.3	
31	MW77-WD	Toluene	10/22/2019	1	U
31	MW77-WD	Trans-1,2-Dichloroethene	10/22/2019	0.5	U
31	MW77-WD	Trichloroethene	10/22/2019	0.18	J
31	MW77-WD	Vinyl Chloride	10/22/2019	2	U
31	MW98-WD	1,4-Dioxane	7/24/2019	11	
31	MW98-WD	1,4-Dioxane	10/23/2019	12	

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 D

LANDFILL GAS

APPENDIX D-1

LFG QUALITY AND EXTRACTION WELL PRESSURES

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2020 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	1/28/20 8:08	56.2	34.9	0	8.9	74.5	-0.54	-0.55	0.111	7.7	24.24	No Adj. Made
LOWEW30A	2/18/20 8:24	48.6	30.1	1.6	19.7	73.6	-0.87	-0.87	0.137	8.5	24.31	No Adj. Made
LOWEW30A	3/16/20 8:23	48	31.5	0.7	19.8	75.3	-0.69	-0.68	0.095	7.1	24.25	No Adj. Made
LOWEW30A	4/28/20 7:10	52.9	34.5	0	12.6	77.6	-0.79	-0.78	0.122	8.0	24.29	No Adj. Made
LOWEW30A	5/21/20 8:14	50.4	33.9	0.1	15.6	77.8	-0.72	-0.71	0.166	9.3	24.21	No Adj. Made
LOWEW30A	6/25/20 8:20	50	33.2	0	16.8	79.9	-0.30	-0.31	0.134	8.4	24.22	No Adj. Made
LOWEW34A	1/28/20 9:15	45.1	30.2	0	24.7	66.3	-5.31	-5.32	0.310	7.6	24.25	No Adj. Made
LOWEW34A	2/18/20 9:16	35.5	24.6	4.8	35.1	62.4	-3.15	-2.99	0.383	8.5	24.31	No Adj. Made
LOWEW34A	3/16/20 8:46	43.7	29	0.7	26.6	60.8	-2.11	-2.10	0.035	2.6	24.24	No Adj. Made
LOWEW34A	4/28/20 8:00	46.7	29.7	0	23.6	66.5	-3.57	-3.56	0.101	4.4	24.30	No Adj. Made
LOWEW34A	5/21/20 8:37	44.2	30	0.1	25.7	69.2	-4.14	-4.14	0.169	5.6	24.20	No Adj. Made
LOWEW34A	6/25/20 8:44	45	29.9	0	25.1	75.8	-3.83	-3.83	0.170	5.6	24.23	No Adj. Made
LOWEW40A	1/27/20 9:13	47.8	39.2	0	13	59.3	-1.13	-1.11	1.543	4.0	24.09	No Adj. Made
LOWEW40A	2/17/20 9:21	44.1	35.3	1.7	18.9	55.1	-1.74	-1.74	1.597	4.1	24.08	No Adj. Made
LOWEW40A	3/11/20 8:53	45.5	35.2	0.5	18.8	59.8	-0.59	-0.58	1.779	4.4	24.20	No Adj. Made
LOWEW40A	4/27/20 9:02	48.5	37.1	0	14.4	67.3	-0.91	-0.91	2.090	4.7	24.31	No Adj. Made
LOWEW40A	5/20/20 9:07	45.3	35.3	0.1	19.3	71.9	-0.42	-0.41	1.901	4.5	24.10	Inc. Flow/Vac.
LOWEW40A	6/18/20 9:24	47.9	35.3	0.1	16.7	67	-2.23	-2.23	2.345	5.0	24.39	No Adj. Made
LOWREW01	1/28/20 11:08	16.3	29.9	0	53.8	58.4	-0.07	-0.08	2.028	2.9	24.27	No Adj. Made
LOWREW01	2/18/20 10:31	13.7	25.5	1.3	59.5	54.9	-0.38	-0.39	2.242	3.0	24.35	Dec. Flow/Vac.
LOWREW01	3/16/20 9:50	14.8	27.3	0.3	57.6	60.2	-0.14	-0.16	0.460	1.4	24.29	No Adj. Made
LOWREW01	4/28/20 10:42	15.5	26.9	0	57.6	76.2	-0.10	-0.09	1.070	2.0	24.32	No Adj. Made
LOWREW01	5/21/20 9:46	15	26.7	0	58.3	69.8	-0.22	-0.21	2.004	2.8	24.22	No Adj. Made
LOWREW01	6/25/20 9:57	13.7	25.5	0	60.8	89.4	-0.20	-0.20	1.709	2.6	24.25	No Adj. Made
LOWREW02	1/28/20 11:03	7.1	25.8	0.1	67	62.2	-0.13	-0.14	2.339	3.0	24.26	No Adj. Made
LOWREW02	2/18/20 10:29	5.9	21.6	1.2	71.3	61.8	-0.32	-0.32	2.635	3.2	24.35	Dec. Flow/Vac.
LOWREW02	3/16/20 9:47	4.5	22.5	0.4	72.6	60.9	-0.16	-0.15	0.491	1.4	24.29	No Adj. Made
LOWREW02	4/28/20 10:39	7	24	0	69	69	-0.06	-0.05	3.065	3.5	24.31	No Adj. Made
LOWREW02	5/21/20 9:43	6.2	24.2	0	69.6	73.4	-0.16	-0.14	3.833	3.8	24.22	Dec. Flow/Vac.
LOWREW02	6/25/20 9:54	5.7	23.3	0	71	94	-0.09	-0.08	0.369	1.2	24.17	No Adj. Made
LOWREW03	1/28/20 10:58	23.6	32.4	0	44	58	-0.03	-0.03	0.458	1.4	24.27	No Adj. Made
LOWREW03	2/18/20 10:26	20.9	27.3	1.1	50.7	55.3	-0.21	-0.23	0.543	1.5	24.35	No Adj. Made
LOWREW03	3/16/20 9:45	21.7	29.1	0.4	48.8	60.2	-0.23	-0.23	0.396	1.3	24.28	No Adj. Made
LOWREW03	4/28/20 10:32	23.5	30.6	0	45.9	67	-0.06	-0.03	1.282	2.3	24.31	No Adj. Made

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2020 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
LOWREW03	5/21/20 9:41	21.1	28.1	0	50.8	73.7	-0.07	-0.05	2.038	2.9	24.22	Dec. Flow/Vac.
LOWREW03	6/25/20 9:51	21.3	28.1	0	50.6	93.9	-0.03	-0.03	0.289	1.1	24.25	No Adj. Made
LOWREW04	1/28/20 10:54	16.6	30.2	0	53.2	57.4	-0.15	-0.16	1.975	2.8	24.27	No Adj. Made
LOWREW04	2/18/20 10:22	12.7	24.5	1	61.8	56.6	-0.51	-0.50	2.200	3.0	24.35	Dec. Flow/Vac.
LOWREW04	3/16/20 9:42	13.2	25.5	0.4	60.9	60.9	-0.32	-0.32	0.633	1.6	24.28	No Adj. Made
LOWREW04	4/28/20 10:26	13.8	26.8	0	59.4	74.4	-0.06	-0.05	0.749	1.7	24.31	No Adj. Made
LOWREW04	5/21/20 9:38	13.1	23.9	0.2	62.8	77	-0.12	-0.12	1.339	2.3	24.22	No Adj. Made
LOWREW04	6/25/20 9:48	13.9	23	0	63.1	90.5	-0.14	-0.15	1.245	2.2	24.25	No Adj. Made
LOWREW05	1/28/20 10:46	21.9	29.7	0	48.4	56.3	-0.15	-0.13	2.136	3.0	24.27	No Adj. Made
LOWREW05	2/18/20 10:17	17.1	25.7	1.3	55.9	56.2	-0.48	-0.49	2.356	3.1	24.34	Dec. Flow/Vac.
LOWREW05	3/16/20 9:38	22.8	28.2	0.4	48.6	59.9	-0.39	-0.39	0.716	1.7	24.28	No Adj. Made
LOWREW05	4/28/20 10:18	22	27.1	0	50.9	80	-0.07	-0.08	0.465	1.4	24.31	No Adj. Made
LOWREW05	5/21/20 9:34	20.9	26.7	0.1	52.3	75.9	-0.06	-0.06	0.633	1.6	24.22	No Adj. Made
LOWREW05	6/25/20 9:43	24.2	26.9	0	48.9	92.3	-0.06	-0.06	0.426	1.3	24.25	No Adj. Made
LOWREW06	1/28/20 10:42	11.1	25.3	0	63.6	64	-0.18	-0.18	1.916	2.8	24.27	No Adj. Made
LOWREW06	2/18/20 10:10	9.6	21.6	1.4	67.4	61.6	-0.47	-0.44	2.206	3.0	24.33	Dec. Flow/Vac.
LOWREW06	3/16/20 9:36	9.4	23.7	0.5	66.4	64.3	-0.33	-0.33	1.109	2.1	24.27	No Adj. Made
LOWREW06	4/28/20 10:11	11.5	24.5	0	64	74.5	-0.10	-0.07	0.680	1.6	24.30	No Adj. Made
LOWREW06	5/21/20 9:31	10.2	23.3	0.1	66.4	70.4	-0.09	-0.08	0.983	2.0	24.21	No Adj. Made
LOWREW06	6/25/20 9:40	10.2	23.2	0	66.6	91.9	-0.12	-0.12	0.846	1.8	24.24	No Adj. Made
LOWREW07	1/28/20 10:36	38.2	35.7	0	26.1	58.7	-0.14	-0.11	2.588	3.3	24.27	No Adj. Made
LOWREW07	2/18/20 10:07	35.1	31.4	1	32.5	57.2	-0.44	-0.34	2.527	3.3	24.33	No Adj. Made
LOWREW07	3/16/20 9:33	33.2	31.5	0.4	34.9	61.4	-0.38	-0.39	3.188	3.7	24.27	No Adj. Made
LOWREW07	4/28/20 10:05	34.6	33	0	32.4	66.3	-0.09	-0.10	2.571	3.3	24.31	No Adj. Made
LOWREW07	5/21/20 9:29	35.5	31.9	0	32.6	67.2	-0.18	-0.17	3.365	3.8	24.21	No Adj. Made
LOWREW07	6/25/20 9:38	32.3	30.1	0	37.6	85.7	-0.23	-0.22	2.907	3.4	24.24	No Adj. Made
LOWREW08	1/28/20 9:27	23.3	31.1	0.1	45.5	57.2	-0.08	-0.08	1.588	2.6	24.25	No Adj. Made
LOWREW08	2/18/20 9:24	20.7	28.1	1.1	50.1	49.8	-0.40	-0.21	1.715	2.7	24.32	Dec. Flow/Vac.
LOWREW08	3/16/20 8:53	20.2	29.2	0.4	50.2	57.1	-0.27	-0.28	0.530	1.5	24.25	No Adj. Made
LOWREW08	4/28/20 8:28	20.4	28.3	0	51.3	65	-0.10	-0.11	0.367	1.2	24.33	No Adj. Made
LOWREW08	5/21/20 8:44	19.5	27.5	0.1	52.9	73	-0.12	-0.12	0.604	1.6	24.20	No Adj. Made
LOWREW08	6/25/20 8:50	17.6	26.2	0.1	56.1	87.2	-0.05	-0.04	0.360	1.2	24.22	No Adj. Made
LOWREW09	1/28/20 9:21	0.4	21.1	2.8	75.7	58.8	-0.19	-0.04	3.311	5.7	24.25	Fully Closed
LOWREW09	2/18/20 9:20	0.5	16.8	8.3	74.4	51.5	-0.46	-0.41	1.657	4.1	24.31	Fully Closed

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2020 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
LOWREW09	3/16/20 8:50	2.6	23.7	0.4	73.3	59	-0.27	-0.25	1.119	3.3	24.25	Fully Closed
LOWREW09	4/28/20 8:36	1.9	23.7	0.2	74.2	70.7	-0.07	-0.09	1.616	3.9	24.30	Fully Closed
LOWREW09	5/21/20 8:40	0.7	24.6	1.8	72.9	74.6	-0.24	-0.24	1.057	3.1	24.20	Fully Closed
LOWREW09	6/25/20 8:47	4.8	22.4	0.1	72.7	85.1	-0.24	0.01	3.150	5.4	24.22	Fully Closed
LOWREW10	1/27/20 10:16	9.2	24.5	0	66.3	65.7	-0.36	-0.30	3.812	6.1	24.09	Fully Closed
LOWREW10	2/17/20 10:03	4.9	19.3	6.7	69.1	57	-0.41	-0.37	1.503	3.9	24.07	Fully Closed
LOWREW10	3/11/20 9:34	11.1	23.8	0.6	64.5	71.1	-0.37	-0.25	6.636	8.0	24.18	No Adj. Made
LOWREW10	4/27/20 10:09	9.2	24.7	0	66.1	81.8	-0.04	-0.02	5.846	7.4	24.30	Fully Closed
LOWREW10	5/20/20 9:34	12.2	26.5	0.1	61.2	82	-0.18	-0.06	1.804	4.1	24.09	Fully Closed
LOWREW10	6/18/20 9:55	1.5	10	16.5	72	77.9	-0.54	-0.48	3.637	6.0	24.38	Fully Closed
LOWREW11	1/27/20 10:02	19	29.9	0	51.1	55.3	-0.12	-0.11	0.817	1.8	24.08	No Adj. Made
LOWREW11	2/17/20 10:00	15.7	26	1.8	56.5	52.1	-0.37	-0.38	0.864	1.9	24.07	No Adj. Made
LOWREW11	3/11/20 9:31	17.8	28.2	0.6	53.4	61.5	-0.03	-0.03	0.781	1.8	24.17	No Adj. Made
LOWREW11	4/27/20 9:47	15.7	26.6	0	57.7	74.9	-0.14	-0.11	0.828	1.8	24.30	No Adj. Made
LOWREW11	5/20/20 9:30	18	26.6	0.1	55.3	76.1	-0.26	-0.26	0.857	1.8	24.07	No Adj. Made
LOWREW11	6/18/20 9:51	14.6	27.3	0	58.1	67.7	-0.46	-0.45	0.999	2.0	24.39	No Adj. Made
LOWREW12	1/27/20 9:54	18.9	29.6	0	51.5	51.3	-1.88	-1.88	0.783	1.8	24.09	No Adj. Made
LOWREW12	2/17/20 9:54	17	26.3	1.8	54.9	49.3	-2.21	-2.22	1.203	2.2	24.06	No Adj. Made
LOWREW12	3/11/20 9:25	17.2	26.2	0.7	55.9	57.5	-1.98	-1.98	1.156	2.2	24.18	No Adj. Made
LOWREW12	4/27/20 9:43	16	25.4	0.1	58.5	70.3	-2.17	-2.19	1.296	2.3	24.29	No Adj. Made
LOWREW12	5/20/20 9:25	16.7	25.6	0.2	57.5	76.2	-1.76	-1.76	1.143	2.1	24.08	No Adj. Made
LOWREW12	6/18/20 9:45	14.7	25.7	0	59.6	66.4	-2.48	-2.48	1.144	2.1	24.38	No Adj. Made
LOWREW13	1/27/20 9:49	22.5	29.4	0.1	48	55.8	-0.37	-0.34	0.237	3.5	24.09	No Adj. Made
LOWREW13	2/17/20 9:51	21.9	28.6	1.4	48.1	55.2	-0.51	-0.51	0.345	4.2	24.07	Dec. Flow/Vac.
LOWREW13	3/11/20 9:22	21.6	30	0.5	47.9	59.7	-0.04	-0.03	0.076	2.0	24.18	No Adj. Made
LOWREW13	4/27/20 9:39	21.2	27.8	0	51	71.9	-0.10	-0.10	0.006	0.7	24.30	No Adj. Made
LOWREW13	5/20/20 9:23	21.7	27.3	0.1	50.9	74.8	-0.18	-0.19	0.093	2.2	24.08	No Adj. Made
LOWREW13	6/18/20 9:42	18.9	28.1	0	53	66.4	-0.69	-0.67	0.087	2.1	24.38	No Adj. Made
LOWREW14	1/27/20 8:45	28.5	31.3	0	40.2	52.2	-0.33	-0.32	1.361	2.4	24.07	No Adj. Made
LOWREW14	2/17/20 8:55	26.4	30	1.4	42.2	51.2	-0.70	-0.68	1.230	2.3	24.06	No Adj. Made
LOWREW14	3/11/20 8:30	28.7	30.6	0.4	40.3	56.2	-0.04	-0.04	1.376	2.4	24.19	No Adj. Made
LOWREW14	4/24/20 10:14	28	30.1	0	41.9	60	-0.39	-0.41	1.707	2.7	24.31	No Adj. Made
LOWREW14	5/20/20 8:51	27.1	29.1	0.1	43.7	72	-0.25	-0.23	1.467	2.5	24.09	Inc. Flow/Vac.
LOWREW14	6/18/20 9:06	24.5	27.2	0.2	48.1	64.8	-0.78	-0.77	1.729	2.7	24.37	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
LOWREW15	1/27/20 8:41	28.5	30	0	41.5	52.8	-0.34	-0.34	0.081	2.1	24.08	No Adj. Made
LOWREW15	2/17/20 8:51	26.4	27.9	1.3	44.4	53.2	-0.65	-0.64	0.128	2.6	24.06	Dec. Flow/Vac.
LOWREW15	3/11/20 8:27	26.7	26.8	0.6	45.9	54.1	-0.02	-0.02	0.112	2.5	24.19	No Adj. Made
LOWREW15	4/24/20 10:01	27.5	27.6	0	44.9	59.5	-0.51	-0.50	0.228	3.5	24.31	No Adj. Made
LOWREW15	5/20/20 8:48	26.7	26.3	0.1	46.9	71.2	-0.14	-0.18	0.123	2.6	24.08	Inc. Flow/Vac.
LOWREW15	6/18/20 9:03	25.4	27.2	0	47.4	64.5	-0.86	-0.85	0.238	3.6	24.37	No Adj. Made
LOWREW16	1/27/20 8:30	21.4	32.3	0	46.3	47.6	-0.43	-0.41	1.023	2.1	24.09	No Adj. Made
LOWREW16	2/17/20 8:42	20.2	29.1	1.4	49.3	48.7	-0.61	-0.61	1.026	2.1	24.07	No Adj. Made
LOWREW16	3/11/20 8:20	22	29.1	0.5	48.4	52.5	-0.04	-0.04	1.176	2.2	24.19	No Adj. Made
LOWREW16	4/24/20 9:41	24.2	31.1	0	44.7	57.9	-0.46	-0.46	1.421	2.4	24.30	No Adj. Made
LOWREW16	5/20/20 8:43	23.4	29.6	0.1	46.9	71.1	-0.30	-0.29	1.200	2.2	24.09	No Adj. Made
LOWREW16	6/18/20 8:56	20.3	28.2	0.1	51.4	63.6	-0.85	-0.82	1.145	2.2	24.38	No Adj. Made
LOWREW17	1/27/20 8:16	10.1	26.6	0	63.3	50.1	-0.30	-0.30	0.088	2.1	24.09	No Adj. Made
LOWREW17	2/17/20 8:34	9.2	24.4	1.2	65.2	51.6	-0.33	-0.33	0.103	2.3	24.08	No Adj. Made
LOWREW17	3/11/20 8:13	9.2	23.7	0.6	66.5	53.4	-0.24	-0.23	0.115	2.4	24.21	No Adj. Made
LOWREW17	4/24/20 9:32	7	23	0	70	59.6	-0.19	-0.20	0.190	3.1	24.32	No Adj. Made
LOWREW17	5/20/20 8:37	7.8	22.8	0.2	69.2	69.3	-0.04	-0.04	0.145	2.7	24.10	No Adj. Made
LOWREW17	6/18/20 8:49	6.5	22.6	0.0	70.9	62.6	-0.49	-0.49	0.128	2.6	24.39	No Adj. Made
LOWREW18	1/27/20 8:00	11.0	25.8	0.0	63.2	43.5	-0.27	-0.26	0.625	1.6	24.11	No Adj. Made
LOWREW18	2/17/20 8:25	10.1	24.4	1.2	64.3	42.6	-0.27	-0.28	0.531	1.5	24.10	No Adj. Made
LOWREW18	3/11/20 8:07	10.1	23.9	0.6	65.4	47.1	-0.26	-0.26	0.704	1.7	24.23	No Adj. Made
LOWREW18	4/24/20 9:12	7.1	23.1	0.0	69.8	57.8	-0.34	-0.33	2.950	3.4	24.33	No Adj. Made
LOWREW18	5/20/20 8:32	6.8	22.9	0.1	70.2	68.5	-0.13	-0.12	2.633	3.2	24.11	No Adj. Made
LOWREW18	6/18/20 8:39	6.4	22.3	0.2	71.1	62.0	-0.54	-0.54	2.437	3.1	24.39	No Adj. Made
LOWREW19	1/27/20 7:54	19.4	29.9	0.1	50.6	42.8	-0.17	-0.17	0.578	1.6	24.11	No Adj. Made
LOWREW19	2/17/20 8:21	16.2	26.8	1.2	55.8	45.6	-0.30	-0.30	0.545	1.5	24.10	No Adj. Made
LOWREW19	3/11/20 8:03	19.7	27.9	0.5	51.9	46.2	-0.32	-0.28	0.691	1.7	24.23	No Adj. Made
LOWREW19	4/24/20 9:05	17.0	26.9	0.0	56.1	56.0	-0.20	-0.19	3.206	3.6	24.34	No Adj. Made
LOWREW19	5/20/20 8:29	17.5	27.1	0.2	55.2	67.3	-0.04	-0.06	3.009	3.5	24.12	Dec. Flow/Vac.
LOWREW19	6/18/20 8:36	14.2	24.9	0.1	60.8	60.8	-0.30	-0.31	0.396	1.3	24.39	No Adj. Made
LOWREW20	1/27/20 7:48	25.4	31.0	0.1	43.5	46.1	-0.08	-0.09	0.703	1.7	24.11	No Adj. Made
LOWREW20	2/17/20 8:15	17.6	25.1	2.6	54.7	46.4	-0.15	-0.17	0.657	1.7	24.10	No Adj. Made
LOWREW20	3/11/20 8:01	33.2	30.5	0.6	35.7	50.0	-0.17	-0.16	0.831	1.9	24.23	No Adj. Made
LOWREW20	4/24/20 8:42	17.7	25.5	0.4	56.4	60.3	-0.11	-0.12	4.710	4.4	24.37	

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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
LOWREW20	5/20/20 8:27	26.0	28.5	0.3	45.2	67.2	-0.03	-0.05	4.026	4.1	24.10	Dec. Flow/Vac.
LOWREW20	6/18/20 8:33	16.3	19.4	0.8	63.5	63.7	-0.32	-0.31	0.921	2.0	24.44	No Adj. Made
LOWREW21	1/28/20 10:01	18.5	28.8	0.0	52.7	64.5	-0.03	-0.04	1.541	2.5	24.26	No Adj. Made
LOWREW21	2/18/20 9:52	14.6	24.8	1.4	59.2	58.2	-0.43	-0.42	1.733	2.7	24.32	Dec. Flow/Vac.
LOWREW21	3/16/20 9:19	17.5	28.5	0.4	53.6	59.6	-0.25	-0.25	0.100	0.6	24.18	No Adj. Made
LOWREW21	4/28/20 9:30	17.7	29.2	0.0	53.1	78.9	-0.03	-0.02	0.270	1.0	24.30	No Adj. Made
LOWREW21	5/21/20 9:12	18.5	28.1	0.1	53.3	75.2	-0.05	-0.06	0.542	1.5	24.21	No Adj. Made
LOWREW21	6/25/20 9:20	19.6	27.6	0.0	52.8	90.2	-0.12	-0.06	0.377	1.2	24.23	No Adj. Made
LOWREW22	1/28/20 10:08	14.5	28.7	0.0	56.8	63.5	-0.10	-0.10	0.210	3.3	24.26	No Adj. Made
LOWREW22	2/18/20 9:55	10.9	24.2	1.6	63.3	55.6	-0.49	-0.47	0.229	3.5	24.33	Dec. Flow/Vac.
LOWREW22	3/16/20 9:21	14.1	26.5	0.5	58.9	60.7	-0.37	-0.35	0.010	0.7	24.27	No Adj. Made
LOWREW22	4/28/20 9:38	14.0	26.6	0.0	59.4	73.3	-0.07	-0.08	0.046	1.5	24.30	No Adj. Made
LOWREW22	5/21/20 9:14	13.0	25.8	0.0	61.2	71.7	-0.16	-0.16	0.188	3.1	24.21	Dec. Flow/Vac.
LOWREW22	6/25/20 9:22	19.4	28.3	0.0	52.3	90.2	-0.06	-0.04	0.017	0.9	24.24	No Adj. Made
LOWREW23	1/28/20 10:25	9.0	25.7	1.0	64.3	76.8	-0.04	-0.09	0.129	2.5	24.26	Fully Closed
LOWREW23	2/18/20 9:58	1.3	15.0	17.3	66.4	51.5	-0.37	-0.29	0.148	2.8	24.33	Fully Closed
LOWREW23	3/16/20 9:24	1.7	14.7	15.6	68.0	76.0	-0.36	-0.20	1.130	7.5	24.27	Fully Closed
LOWREW23	4/28/20 9:46	9.8	22.0	2.3	65.9	78.8	-0.01	-0.03	0.406	4.5	24.30	Fully Closed
LOWREW23	5/21/20 9:17	1.7	16.9	6.7	74.7	88.7	-0.24	-0.03	1.467	8.3	24.22	Fully Closed
LOWREW23	6/25/20 9:27	10.8	26.3	0.0	62.9	93.5	-0.04	-0.03	0.778	6.1	24.24	Fully Closed
LOWREW24	1/28/20 10:21	11.9	27.9	0.0	60.2	63.1	-0.03	-0.04	0.054	1.7	24.27	No Adj. Made
LOWREW24	2/18/20 10:00	8.5	19.4	1.3	70.8	54.3	-0.52	-0.51	0.020	1.0	24.33	No Adj. Made
LOWREW24	3/16/20 9:28	10.6	23.1	0.6	65.7	63.5	-0.42	-0.42	0.069	1.9	24.27	No Adj. Made
LOWREW24	4/28/20 9:51	10.7	26.7	0.0	62.6	72.7	-0.12	-0.13	0.060	1.7	24.30	No Adj. Made
LOWREW24	5/21/20 9:24	11.9	24.0	0.2	63.9	70.2	-0.22	-0.21	0.325	4.1	24.22	Dec. Flow/Vac.
LOWREW24	6/25/20 9:31	17.7	28.3	0.0	54.0	86.9	-0.12	-0.12	0.016	0.9	24.24	No Adj. Made
LOWREW25	1/28/20 10:30	8.8	26.6	0.0	64.6	60.8	-0.20	-0.19	2.355	3.0	24.26	No Adj. Made
LOWREW25	2/18/20 10:04	8.0	25.5	0.8	65.7	56.7	-0.39	-0.40	2.575	3.2	24.34	Dec. Flow/Vac.
LOWREW25	3/16/20 9:30	7.4	23.0	0.5	69.1	60.0	-0.28	-0.28	0.386	1.2	24.27	No Adj. Made
LOWREW25	4/28/20 9:59	7.3	23.4	0.0	69.3	75.4	-0.03	-0.03	0.262	1.0	24.29	No Adj. Made
LOWREW25	5/21/20 9:26	7.1	21.7	0.1	71.1	71.7	-0.10	-0.10	0.565	1.5	24.21	No Adj. Made
LOWREW25	6/25/20 9:35	6.8	23.9	0.0	69.3	90.9	-0.11	-0.02	0.387	1.2	24.21	No Adj. Made
LOWREW26	1/28/20 9:57	30.8	33.6	0.0	35.6	63.2	-0.16	-0.17	0.023	1.1	24.26	No Adj. Made
LOWREW26	2/18/20 9:49	28.6	29.7	1.3	40.4	57.2	-0.66	-0.65	0.108	2.4	24.32	Dec. Flow/Vac.

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LOWREW26	3/16/20 9:16	29.8	31.6	0.4	38.2	61.3	-0.47	-0.47	0.034	1.4	24.25	No Adj. Made
LOWREW26	4/28/20 9:21	31.3	32.8	0.0	35.9	69.8	-0.28	-0.28	0.049	1.6	24.30	No Adj. Made
LOWREW26	5/21/20 9:09	30.3	32.3	0.0	37.4	70.7	-0.36	-0.35	0.284	3.9	24.20	No Adj. Made
LOWREW26	6/25/20 9:16	28.9	32.2	0.0	38.9	82.7	-0.14	-0.15	0.111	2.4	24.22	No Adj. Made
LOWREW27	1/28/20 9:48	17.0	30.2	0.0	52.8	59.9	-0.23	-0.23	0.174	3.0	24.25	No Adj. Made
LOWREW27	2/18/20 9:42	14.7	24.7	1.7	58.9	54.5	-0.68	-0.68	0.211	3.3	24.32	Dec. Flow/Vac.
LOWREW27	3/16/20 9:11	16.6	28.5	0.4	54.5	59.4	-0.54	-0.54	0.046	1.5	24.25	No Adj. Made
LOWREW27	4/28/20 9:09	16.0	28.9	0.0	55.1	68.0	-0.40	-0.40	0.065	1.8	24.30	No Adj. Made
LOWREW27	5/21/20 9:02	15.6	29.0	0.0	55.4	68.9	-0.38	-0.39	0.071	1.9	24.21	No Adj. Made
LOWREW27	6/25/20 9:07	15.9	26.5	0.1	57.5	77.9	-0.13	-0.13	0.096	2.2	24.22	No Adj. Made
LOWREW28	1/28/20 9:40	11.8	28.4	0.0	59.8	60.9	-0.40	-0.40	0.122	2.5	24.26	No Adj. Made
LOWREW28	2/18/20 9:36	5.5	21.0	1.6	71.9	55.5	-0.85	-0.83	0.185	3.1	24.31	Dec. Flow/Vac.
LOWREW28	3/16/20 9:02	9.6	25.3	0.5	64.6	58.9	-0.60	-0.61	0.031	1.2	24.25	No Adj. Made
LOWREW28	4/28/20 9:01	6.6	25.5	0.0	67.9	68.2	-0.44	-0.44	0.171	2.9	24.29	No Adj. Made
LOWREW28	5/21/20 8:55	7.5	26.0	0.0	66.5	67.5	-0.54	-0.53	0.242	3.5	24.20	Dec. Flow/Vac.
LOWREW28	6/25/20 8:58	21.5	28.2	0.0	50.3	83.5	-0.17	-0.17	0.052	1.6	24.22	No Adj. Made
LOWREW29	1/28/20 9:31	29.7	31.4	0.0	38.9	58.8	-0.36	-0.36	1.806	2.8	24.26	No Adj. Made
LOWREW29	2/18/20 9:30	22.1	28.1	1.3	48.5	55.0	-0.81	-0.82	3.963	4.1	24.31	Dec. Flow/Vac.
LOWREW29	3/16/20 8:55	35.6	30.4	0.5	33.5	56.7	-0.62	-0.61	1.168	2.2	24.23	No Adj. Made
LOWREW29	4/28/20 8:43	30.7	30.3	0.0	39.0	63.7	-0.61	-0.61	1.266	2.3	24.29	No Adj. Made
LOWREW29	5/21/20 8:47	25.4	27.8	0.1	46.7	65.6	-0.39	-0.39	1.095	2.1	24.20	No Adj. Made
LOWREW29	6/25/20 8:53	38.4	30.6	0.0	31.0	81.0	-0.08	-0.09	0.963	2.0	24.22	No Adj. Made
LOWREW30	1/28/20 8:04	33.3	32.8	0.0	33.9	60.8	-0.36	-0.37	0.159	2.9	24.23	No Adj. Made
LOWREW30	2/18/20 8:22	29.6	27.5	1.2	41.7	59.2	-0.65	-0.62	0.158	2.9	24.30	Dec. Flow/Vac.
LOWREW30	3/16/20 8:21	31.3	26.5	0.6	41.6	62.0	-0.49	-0.49	0.066	1.9	24.30	No Adj. Made
LOWREW30	4/28/20 7:06	29.2	31.8	0.0	39.0	68.6	-0.47	-0.47	0.032	1.3	24.29	No Adj. Made
LOWREW30	5/21/20 8:12	30.3	30.1	0.2	39.4	71.1	-0.44	-0.43	0.059	1.8	24.29	No Adj. Made
LOWREW30	6/25/20 8:18	32.8	30.9	0.1	36.2	81.0	-0.16	-0.16	0.047	1.6	24.22	No Adj. Made
LOWREW31	1/28/20 8:15	25.7	32.7	0.0	41.6	61.6	-0.51	-0.51	0.132	2.6	24.24	No Adj. Made
LOWREW31	2/18/20 8:28	29.2	32.1	0.0	38.7	59.5	-0.78	-0.77	0.213	3.4	24.31	No Adj. Made
LOWREW31	3/16/20 8:26	25.8	29.9	0.5	43.8	57.3	-0.61	-0.61	0.018	1.0	24.25	No Adj. Made
LOWREW31	4/28/20 7:19	27.2	31.1	0.0	41.7	66.7	-0.71	-0.71	0.202	3.2	24.29	No Adj. Made
LOWREW31	5/21/20 8:16	25.4	29.4	0.2	45.0	74.7	-0.59	-0.60	0.089	2.1	24.21	No Adj. Made
LOWREW31	6/25/20 8:23	30.1	29.3	0.1	40.5	81.3	-0.22	-0.22	0.267	3.7	24.22	Dec. Flow/Vac.

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
LOWREW32	1/28/20 8:28	25.0	32.5	0.0	42.5	63.6	-0.48	-0.50	0.724	2.7	24.23	No Adj. Made
LOWREW32	2/18/20 8:38	22.5	28.9	1.3	47.3	60.8	-0.95	-0.91	0.442	2.1	24.32	Dec. Flow/Vac.
LOWREW32	3/16/20 8:32	28.3	29.8	0.5	41.4	63.8	-0.68	-0.67	0.992	3.2	24.24	Dec. Flow/Vac.
LOWREW32	4/28/20 7:34	24.5	30.9	0.0	44.6	66.1	-1.00	-0.95	0.176	1.3	24.33	No Adj. Made
LOWREW32	5/21/20 8:23	24.3	29.9	0.1	45.7	73.7	-0.62	-0.59	0.571	2.4	24.21	No Adj. Made
LOWREW32	6/25/20 8:29	33.3	30.4	0.0	36.3	80.5	-0.17	-0.16	0.419	2.1	24.22	No Adj. Made
LOWREW33	1/28/20 8:50	34.5	32.2	0.0	33.3	65.7	-0.42	-0.41	2.401	5.0	24.24	No Adj. Made
LOWREW33	2/18/20 8:46	21.3	28.1	2.2	48.4	50.3	-0.91	-0.91	0.330	1.8	24.31	No Adj. Made
LOWREW33	3/16/20 8:39	31.1	29.6	0.5	38.8	58.8	-0.62	-0.63	0.262	1.7	24.24	No Adj. Made
LOWREW33	4/28/20 7:45	25.9	29.8	0.0	44.3	67.8	-0.73	-0.73	0.170	1.3	24.30	No Adj. Made
LOWREW33	5/21/20 8:29	26.5	29.8	0.0	43.7	70.5	-0.55	-0.53	0.243	1.6	24.20	No Adj. Made
LOWREW33	6/25/20 8:34	35.8	30.1	0.0	34.1	81.5	-0.13	-0.13	0.163	1.3	24.21	No Adj. Made
LOWREW34	1/28/20 9:12	13.8	27.6	0.0	58.6	61.3	-0.05	-0.03	0.302	1.7	24.25	No Adj. Made
LOWREW34	2/18/20 9:11	12.2	21.6	1.5	64.7	53.3	-0.32	-0.32	0.431	2.1	24.30	No Adj. Made
LOWREW34	3/16/20 8:44	16.6	25.1	0.5	57.8	53.5	-0.23	-0.23	0.250	1.6	24.22	No Adj. Made
LOWREW34	4/28/20 7:56	16.1	27.1	0.0	56.8	65.8	-0.11	-0.11	0.024	0.5	24.32	No Adj. Made
LOWREW34	5/21/20 8:35	16.6	26.3	0.0	57.1	70.3	-0.13	-0.13	0.093	1.0	24.20	No Adj. Made
LOWREW34	6/25/20 8:42	15.4	26.0	0.0	58.6	82.6	-0.06	-0.06	0.118	1.1	24.21	No Adj. Made
LOWREW35	1/27/20 10:22	20.2	30.9	0.0	48.9	59.0	-0.20	-0.20	0.182	3.1	24.09	No Adj. Made
LOWREW35	2/17/20 10:06	17.3	28.2	1.3	53.2	45.3	-0.72	-0.73	0.063	1.8	24.08	No Adj. Made
LOWREW35	3/11/20 9:38	30.9	29.9	0.3	38.9	61.0	-0.19	-0.19	0.039	1.4	24.19	No Adj. Made
LOWREW35	4/27/20 10:18	21.9	27.8	0.0	50.3	70.4	-0.01	-0.01	0.083	2.1	24.30	No Adj. Made
LOWREW35	5/20/20 9:37	23.8	27.5	0.1	48.6	71.5	-0.11	-0.11	0.068	1.9	24.09	No Adj. Made
LOWREW35	6/18/20 9:58	12.9	21.8	0.2	65.1	67.7	-0.90	-0.88	0.263	3.7	24.38	Dec. Flow/Vac.
LOWREW36	1/27/20 10:50	39.9	35.7	0.0	24.4	60.8	-0.18	-0.19	0.561	2.4	24.12	No Adj. Made
LOWREW36	2/17/20 10:20	34.4	32.0	1.6	32.0	55.3	-0.62	-0.61	0.530	2.4	24.09	No Adj. Made
LOWREW36	3/11/20 10:04	40.7	34.3	0.2	24.8	65.3	-0.08	-0.09	0.518	2.3	24.20	No Adj. Made
LOWREW36	4/28/20 7:02	35.0	34.2	0.0	30.8	65.7	-0.60	-0.61	0.652	2.6	24.29	No Adj. Made
LOWREW36	5/20/20 9:49	39.3	31.8	0.1	28.8	72.8	-0.20	-0.20	0.684	2.7	24.09	Inc. Flow/Vac.
LOWREW36	6/25/20 8:14	37.5	33.8	0.0	28.7	77.0	-0.34	-0.34	1.048	3.3	24.22	No Adj. Made
LOWREW37	1/27/20 10:40	42.0	35.8	0.0	22.2	56.8	-0.18	-0.16	1.000	2.1	24.11	No Adj. Made
LOWREW37	2/17/20 10:15	40.1	33.2	1.4	25.3	51.8	-0.70	-0.70	1.016	2.1	24.08	No Adj. Made
LOWREW37	3/11/20 9:52	44.1	34.0	0.2	21.7	62.6	-0.18	-0.18	1.240	2.3	24.19	No Adj. Made
LOWREW37	4/28/20 6:52	40.3	35.2	0.0	24.5	65.1	-0.69	-0.69	1.500	2.5	24.29	No Adj. Made

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LOWREW37	5/20/20 9:44	43.1	31.9	0.1	24.9	74.4	-0.20	-0.20	1.406	2.5	24.09	Inc. Flow/Vac.
LOWREW37	6/18/20 10:06	38.2	33.2	0.0	28.6	66.9	-0.83	-0.82	1.996	2.9	24.39	No Adj. Made
LOWREW38	1/27/20 10:29	56.7	35.4	0.0	7.9	58.0	-0.10	-0.09	1.054	2.2	24.10	No Adj. Made
LOWREW38	2/17/20 10:10	45.5	32.6	1.2	20.7	55.7	-0.68	-0.69	1.162	2.3	24.08	No Adj. Made
LOWREW38	3/11/20 9:41	58.8	34.4	0.2	6.6	64.6	-0.29	-0.29	1.260	2.4	24.19	No Adj. Made
LOWREW38	4/28/20 6:32	44.9	33.6	0.0	21.5	61.6	-0.63	-0.63	2.766	3.5	24.27	No Adj. Made
LOWREW38	5/20/20 9:39	60.5	32.6	0.1	6.8	76.9	-0.25	-0.25	2.622	3.5	24.09	Inc. Flow/Vac.
LOWREW38	6/18/20 10:01	30.0	29.0	0.1	40.9	69.4	-0.92	-0.92	6.131	5.1	24.39	No Adj. Made
LOWREW39	1/27/20 10:11	50.9	37.1	0.0	12.0	59.9	-0.17	-0.17	1.129	3.5	24.08	No Adj. Made
LOWREW39	2/17/20 9:57	46.7	33.9	1.3	18.1	57.5	-0.75	-0.74	1.176	3.6	24.07	No Adj. Made
LOWREW39	3/11/20 9:28	50.2	34.9	0.3	14.6	63.0	-0.26	-0.25	1.303	3.8	24.18	No Adj. Made
LOWREW39	4/27/20 9:58	48.1	34.7	0.0	17.2	69.3	-0.04	-0.04	1.475	4.0	24.29	No Adj. Made
LOWREW39	5/20/20 9:28	50.5	34.5	0.1	14.9	73.8	-0.39	-0.41	1.341	3.7	24.08	Inc. Flow/Vac.
LOWREW39	6/18/20 9:48	45.2	33.9	0.0	20.9	68.0	-0.86	-0.87	2.013	4.6	24.37	No Adj. Made
LOWREW40	1/27/20 9:08	27.5	34.0	0.0	38.5	54.7	-0.23	-0.22	0.620	1.6	24.09	No Adj. Made
LOWREW40	2/17/20 9:18	22.8	31.6	1.2	44.4	52.0	-0.56	-0.54	0.697	1.7	24.08	No Adj. Made
LOWREW40	3/11/20 8:51	26.9	32.4	0.3	40.4	55.7	-0.06	-0.05	0.791	1.8	24.20	No Adj. Made
LOWREW40	4/27/20 8:58	22.1	31.0	0.0	46.9	69.6	-0.04	-0.03	0.724	1.7	24.31	No Adj. Made
LOWREW40	5/20/20 9:05	27.2	32.4	0.0	40.4	74.3	-0.31	-0.31	0.549	1.5	24.10	Inc. Flow/Vac.
LOWREW40	6/18/20 9:22	18.8	29.2	0.0	52.0	67.1	-0.53	-0.51	0.589	1.5	24.39	No Adj. Made
LOWREW41	1/27/20 9:27	24.4	31.4	0.0	44.2	54.3	-0.30	-0.30	0.877	1.9	24.09	No Adj. Made
LOWREW41	2/17/20 9:30	20.2	28.2	1.4	50.2	52.1	-0.92	-0.93	0.951	2.0	24.08	No Adj. Made
LOWREW41	3/11/20 9:03	27.4	30.5	0.4	41.7	57.2	-0.08	-0.08	1.005	2.1	24.19	No Adj. Made
LOWREW41	4/27/20 9:21	22.3	29.4	0.0	48.3	69.7	-0.17	-0.16	1.068	2.1	24.31	No Adj. Made
LOWREW41	5/20/20 9:12	27.8	30.2	0.1	41.9	69.8	-0.32	-0.32	1.028	2.1	24.10	No Adj. Made
LOWREW41	6/18/20 9:29	17.8	27.0	0.0	55.2	66.9	-1.22	-1.21	1.047	2.1	24.39	No Adj. Made
LOWREW42	1/27/20 9:36	27.3	31.8	0.0	40.9	74.0	-0.39	-0.33	0.205	3.2	24.09	No Adj. Made
LOWREW42	2/17/20 9:42	22.0	28.6	1.2	48.2	73.2	-0.69	-0.69	0.380	4.4	24.07	No Adj. Made
LOWREW42	3/11/20 9:13	30.4	30.9	0.3	38.4	73.4	-0.17	-0.17	0.028	1.2	24.19	No Adj. Made
LOWREW42	4/27/20 9:30	23.2	28.7	0.0	48.1	79.6	-0.02	-0.02	0.144	2.7	24.31	No Adj. Made
LOWREW42	5/20/20 9:17	31.6	29.2	0.1	39.1	78.8	-0.40	-0.40	0.254	3.7	24.09	No Adj. Made
LOWREW42	6/18/20 9:36	14.5	26.8	0.0	58.7	80.3	-0.98	-0.95	0.292	3.8	24.38	No Adj. Made
LOWREW43	1/27/20 9:43	50.5	34.7	0.0	14.8	61.2	-0.17	-0.17	0.231	3.6	24.09	No Adj. Made
LOWREW43	2/17/20 9:47	31.0	29.1	1.2	38.7	60.2	-0.61	-0.56	0.243	3.6	24.07	Dec. Flow/Vac.

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LOWREW43	3/11/20 9:16	48.2	33.4	0.2	18.2	59.9	-0.25	-0.25	0.079	2.1	24.18	No Adj. Made
LOWREW43	4/27/20 9:36	31.4	30.6	0.0	38.0	73.1	-0.04	-0.06	0.055	1.7	24.30	No Adj. Made
LOWREW43	5/20/20 9:20	59.0	33.4	0.1	7.5	72.4	-0.40	-0.38	0.338	4.5	24.09	Inc. Flow/Vac.
LOWREW43	6/18/20 9:39	17.5	27.4	0.0	55.1	67.3	-0.89	-0.89	0.442	4.8	24.38	No Adj. Made
LOWREW44	1/27/20 8:49	40.4	34.4	0.1	25.1	54.5	-0.36	-0.36	2.857	3.5	24.07	No Adj. Made
LOWREW44	2/17/20 9:01	37.0	34.5	1.2	27.3	54.0	-0.83	-0.84	2.656	3.4	24.06	No Adj. Made
LOWREW44	3/11/20 8:33	39.6	33.4	0.4	26.6	55.4	-0.05	-0.05	1.072	2.2	24.18	No Adj. Made
LOWREW44	4/24/20 10:23	37.4	34.7	0.0	27.9	60.7	-0.50	-0.51	1.288	2.3	24.10	No Adj. Made
LOWREW44	5/20/20 8:54	39.4	32.5	0.1	28.0	72.3	-0.35	-0.34	1.168	2.2	24.08	Inc. Flow/Vac.
LOWREW44	6/18/20 9:09	35.7	33.1	0.0	31.2	64.9	-0.96	-0.97	2.108	3.0	24.37	No Adj. Made
LOWREW45	1/27/20 9:04	26.0	33.9	0.0	40.1	60.1	-0.28	-0.26	0.175	3.0	24.09	No Adj. Made
LOWREW45	2/17/20 9:13	21.7	30.7	1.1	46.5	58.0	-0.40	-0.42	0.132	2.6	24.07	Dec. Flow/Vac.
LOWREW45	3/11/20 8:48	28.1	31.9	0.4	39.6	57.8	-0.06	-0.05	0.145	2.8	24.19	No Adj. Made
LOWREW45	4/27/20 8:53	25.9	31.8	0.0	42.3	66.2	-0.04	-0.04	0.036	1.4	24.31	No Adj. Made
LOWREW45	5/20/20 9:03	27.6	32.2	0.0	40.2	70.5	-0.28	-0.28	0.080	2.0	24.10	Inc. Flow/Vac.
LOWREW45	6/18/20 9:18	21.9	29.0	0.0	49.1	66.1	-0.51	-0.49	0.061	1.8	24.38	No Adj. Made
LOWREW46	1/27/20 8:58	32.5	33.2	0.0	34.3	58.7	-0.27	-0.28	1.193	3.5	24.08	No Adj. Made
LOWREW46	2/17/20 9:08	28.9	31.6	1.2	38.3	57.1	-0.61	-0.60	1.176	3.5	24.06	Dec. Flow/Vac.
LOWREW46	3/11/20 8:40	37.9	34.3	0.3	27.5	55.2	-0.12	-0.11	0.269	1.7	24.18	No Adj. Made
LOWREW46	4/27/20 8:48	37.5	33.9	0.0	28.6	67.1	-0.07	-0.07	0.281	1.7	24.31	No Adj. Made
LOWREW46	5/20/20 9:00	37.9	32.6	0.2	29.3	72.9	-0.31	-0.32	0.133	1.2	24.09	Inc. Flow/Vac.
LOWREW46	6/18/20 9:15	26.9	30.2	0.0	42.9	66.2	-0.61	-0.61	0.647	2.6	24.38	No Adj. Made
LOWREW47	1/27/20 8:53	24.4	32.3	0.1	43.2	52.3	-0.28	-0.28	0.880	3.0	24.08	No Adj. Made
LOWREW47	2/17/20 9:04	22.1	30.6	1.2	46.1	44.0	-0.64	-0.63	0.663	2.6	24.06	No Adj. Made
LOWREW47	3/11/20 8:37	22.7	30.5	0.3	46.5	53.4	-0.05	-0.05	0.062	0.8	24.19	No Adj. Made
LOWREW47	4/27/20 8:45	23.5	28.1	0.2	48.2	66.6	-0.04	-0.05	0.017	0.4	24.29	No Adj. Made
LOWREW47	5/20/20 8:57	24.0	29.7	0.1	46.2	71.2	-0.25	-0.25	0.096	1.0	24.08	Inc. Flow/Vac.
LOWREW47	6/18/20 9:12	19.8	28.4	0.1	51.7	61.9	-0.73	-0.73	0.162	1.3	24.37	No Adj. Made
LOWREW48	1/27/20 8:05	15.7	30.0	0.0	54.3	51.3	-0.21	-0.22	1.374	2.4	24.10	
LOWREW48	2/17/20 8:29	10.2	25.5	1.3	63.0	53.3	-0.40	-0.18	1.313	2.3	24.09	No Adj. Made
LOWREW48	3/11/20 8:10	25.3	30.9	0.5	43.3	54.2	-0.02	-0.02	1.586	2.6	24.22	No Adj. Made
LOWREW48	4/24/20 9:24	8.0	25.3	0.0	66.7	61.1	-0.26	-0.27	1.810	2.7	24.32	No Adj. Made
LOWREW48	5/20/20 8:35	27.8	29.9	0.2	42.1	69.3	-0.14	-0.16	1.751	2.7	24.11	No Adj. Made
LOWREW48	6/18/20 8:46	7.8	25.1	0.0	67.1	65.0	-0.52	-0.52	1.492	2.4	24.39	Dec. Flow/Vac.

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LOWREW49	1/27/20 8:23	23.7	32.4	0.0	43.9	54.0	-0.36	-0.35	0.221	3.4	24.09	No Adj. Made
LOWREW49	2/17/20 8:38	15.2	28.5	1.3	55.0	56.2	-0.63	-0.62	0.245	3.6	24.07	No Adj. Made
LOWREW49	3/11/20 8:17	30.2	32.5	0.4	36.9	53.8	-0.03	-0.03	0.026	1.2	24.21	No Adj. Made
LOWREW49	4/24/20 9:36	15.5	27.0	0.0	57.5	61.4	-0.42	-0.43	0.195	3.2	24.31	No Adj. Made
LOWREW49	5/20/20 8:40	28.0	30.5	0.1	41.4	69.9	-0.23	-0.23	0.124	2.6	24.10	No Adj. Made
LOWREW49	6/18/20 8:52	14.5	27.2	0.0	58.3	64.1	-0.79	-0.78	0.111	2.4	24.38	No Adj. Made
LOWREW50	1/27/20 8:37	32.7	32.8	0.0	34.5	56.4	-0.56	-0.56	0.219	3.4	24.09	No Adj. Made
LOWREW50	2/17/20 8:47	24.2	29.1	1.3	45.4	57.2	-0.83	-0.66	0.272	3.8	24.06	No Adj. Made
LOWREW50	3/11/20 8:23	42.0	32.8	0.4	24.8	54.9	-0.07	-0.08	-0.170	0.0	24.19	No Adj. Made
LOWREW50	4/24/20 9:49	16.3	27.6	0.0	56.1	60.3	-0.61	-0.59	0.084	2.1	24.30	No Adj. Made
LOWREW50	5/20/20 8:46	39.5	31.4	0.1	29.0	72.0	-0.11	-0.05	0.099	2.3	24.08	Inc. Flow/Vac.
LOWREW50	6/18/20 9:00	19.5	26.4	0.2	53.9	66.1	-1.00	-0.96	0.134	2.6	24.37	No Adj. Made
LOWREW55	1/27/20 9:19	49.1	36.3	0.0	14.6	69.7	-2.68	-2.68	0.452	15.3	24.09	No Adj. Made
LOWREW55	2/17/20 9:25	44.6	34.3	2.2	18.9	69.7	-3.37	-3.02	0.585	17.3	24.08	Dec. Flow/Vac.
LOWREW55	3/11/20 9:00	47.6	35.6	0.5	16.3	68.4	-1.01	-0.95	0.095	7.0	24.20	No Adj. Made
LOWREW55	4/27/20 9:11	50.0	37.3	0.0	12.7	72.3	-1.53	-1.52	0.130	8.2	24.31	No Adj. Made
LOWREW55	5/20/20 9:10	47.5	35.3	0.2	17.0	72.9	-0.87	-0.87	0.144	8.6	24.10	No Adj. Made
LOWREW55	6/18/20 9:26	48.0	35.9	0.0	16.1	71.5	-2.79	-2.79	0.123	8.0	24.39	No Adj. Made
LOWREW56	1/27/20 9:32	42.9	35.5	0.0	21.6	64.5	-0.42	-0.41	0.430	4.9	24.09	No Adj. Made
LOWREW56	2/17/20 9:38	34.7	31.6	1.3	32.4	63.4	-1.17	-1.16	0.327	4.2	24.08	No Adj. Made
LOWREW56	3/11/20 9:07	45.4	34.6	0.3	19.7	65.5	-0.04	-0.03	0.193	3.3	24.19	No Adj. Made
LOWREW56	4/27/20 9:24	40.9	33.2	0.0	25.9	70.2	-0.31	-0.30	0.148	2.8	24.31	No Adj. Made
LOWREW56	5/20/20 9:15	44.3	34.3	0.0	21.4	72.3	-0.25	-0.23	0.236	3.6	24.09	Inc. Flow/Vac.
LOWREW56	6/18/20 9:32	31.7	31.1	0.0	37.2	70.2	-1.50	-1.51	0.450	4.9	24.39	No Adj. Made
LOWREW57	1/27/20 10:45	51.2	36.5	0.0	12.3	75.2	-1.65	-1.66	1.091	7.8	24.11	No Adj. Made
LOWREW57	2/17/20 10:18	44.6	31.1	2.7	21.6	73.2	-2.22	-2.19	1.359	8.7	23.91	No Adj. Made
LOWREW57	3/11/20 9:54	48.5	34.2	0.4	16.9	75.9	-1.18	-1.18	1.237	8.3	24.19	No Adj. Made
LOWREW57	4/28/20 6:58	48.7	35.8	0.0	15.5	76.1	-2.51	-2.52	1.388	8.7	24.29	No Adj. Made
LOWREW57	5/20/20 9:46	47.8	34.1	0.1	18.0	79.1	-1.23	-1.22	1.261	8.3	24.09	No Adj. Made
LOWREW57	6/25/20 8:12	49.5	34.3	0.2	16.0	82.3	-1.80	-1.80	1.236	8.2	24.23	No Adj. Made
LOWREW58	1/27/20 10:34	42.1	31.2	0.0	26.7	62.6	-0.15	-0.15	0.087	2.2	24.10	No Adj. Made
LOWREW58	2/17/20 10:13	37.9	29.6	1.2	31.3	59.6	-0.74	-0.74	0.112	2.5	24.08	No Adj. Made
LOWREW58	3/11/20 9:47	42.2	29.7	0.3	27.8	67.6	-0.20	-0.20	0.091	2.3	24.19	No Adj. Made
LOWREW58	4/28/20 6:36	41.4	31.5	0.0	27.1	65.7	-0.69	-0.69	0.167	3.0	24.27	No Adj. Made

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2020 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
LOWREW58	5/20/20 9:42	41.7	29.0	0.1	29.2	76.4	-0.24	-0.24	0.144	2.8	24.09	No Adj. Made
LOWREW58	6/18/20 10:04	35.9	29.0	0.0	35.1	71.0	-0.85	-0.86	0.143	2.8	24.39	No Adj. Made
LOWREW59	1/28/20 8:34	47.7	33.3	0.0	19.0	62.9	-0.51	-0.51	0.441	5.0	24.23	No Adj. Made
LOWREW59	2/18/20 8:41	44.6	31.4	1.4	22.6	61.3	-0.95	-0.92	0.603	5.8	24.31	Dec. Flow/Vac.
LOWREW59	3/16/20 8:36	46.5	31.4	0.5	21.6	65.5	-0.66	-0.66	0.439	5.0	24.24	No Adj. Made
LOWREW59	4/28/20 7:41	48.0	32.3	0.0	19.7	69.7	-0.80	-0.79	0.396	4.7	24.29	No Adj. Made
LOWREW59	5/21/20 8:26	49.8	32.0	0.0	18.2	70.0	-0.55	-0.55	0.447	5.0	24.20	No Adj. Made
LOWREW59	6/25/20 8:32	44.8	30.2	0.0	25.0	78.4	-0.26	-0.22	0.365	4.5	24.21	No Adj. Made
LOWREW5A	1/28/20 10:49	27.8	32.1	0.0	40.1	49.5	-0.21	-0.22	0.511	1.5	24.27	No Adj. Made
LOWREW5A	2/18/20 10:19	25.1	28.7	1.0	45.2	49.4	-0.73	-0.73	0.481	1.4	24.35	No Adj. Made
LOWREW5A	3/16/20 9:40	26.4	29.3	0.4	43.9	58.5	-0.66	-0.65	0.406	1.3	24.28	No Adj. Made
LOWREW5A	4/28/20 10:21	26.8	30.1	0.0	43.1	77.8	-0.25	-0.24	0.148	0.8	24.30	No Adj. Made
LOWREW5A	5/21/20 9:36	25.6	28.3	0.1	46.0	72.2	-0.23	-0.22	0.372	1.2	24.22	No Adj. Made
LOWREW5A	6/25/20 9:45	25.5	26.5	0.1	47.9	91.5	-0.17	-0.17	0.254	1.0	24.25	No Adj. Made
LOWREW60	1/28/20 8:22	51.4	35.9	0.0	12.7	63.2	-0.51	-0.50	0.345	4.4	24.23	No Adj. Made
LOWREW60	2/18/20 8:32	46.0	31.7	1.3	21.0	58.4	-0.91	-0.89	0.201	3.4	24.32	No Adj. Made
LOWREW60	3/16/20 8:29	47.6	33.3	0.5	18.6	61.4	-0.62	-0.61	0.028	1.3	24.25	No Adj. Made
LOWREW60	4/28/20 7:24	47.4	33.9	0.0	18.7	68.4	-0.69	-0.69	0.004	0.5	24.30	No Adj. Made
LOWREW60	5/21/20 8:19	46.6	32.7	0.1	20.6	70.9	-0.59	-0.58	0.033	1.4	24.21	No Adj. Made
LOWREW60	6/25/20 8:26	47.3	32.1	0.1	20.5	81.6	-0.16	-0.15	0.048	1.6	24.22	No Adj. Made
LOWREW61	1/28/20 9:36	44.7	33.4	0.0	21.9	65.0	-0.28	-0.29	0.114	2.5	24.26	No Adj. Made
LOWREW61	2/18/20 9:34	39.5	30.8	1.2	28.5	58.4	-0.83	-0.82	0.088	2.2	24.32	No Adj. Made
LOWREW61	3/16/20 8:58	43.2	32.0	0.4	24.4	61.3	-0.58	-0.59	0.105	2.4	24.25	No Adj. Made
LOWREW61	4/28/20 8:48	45.1	32.9	0.0	22.0	69.8	-0.47	-0.47	0.082	2.1	24.29	No Adj. Made
LOWREW61	5/21/20 8:51	42.7	31.8	0.0	25.5	70.8	-0.35	-0.37	0.113	2.5	24.20	Inc. Flow/Vac.
LOWREW61	6/25/20 8:56	42.5	31.2	0.0	26.3	84.3	-0.14	-0.13	0.137	2.7	24.22	No Adj. Made
LOWREW62	1/28/20 8:56	45.9	32.3	0.0	21.8	63.8	-0.95	-0.98	0.487	5.3	24.23	No Adj. Made
LOWREW62	2/18/20 9:07	43.5	28.0	1.5	27.0	62.4	-1.34	-1.27	0.550	5.6	24.37	No Adj. Made
LOWREW62	3/16/20 8:42	44.7	30.5	0.5	24.3	65.5	-0.22	-0.24	0.367	4.6	24.25	No Adj. Made
LOWREW62	4/28/20 7:51	45.1	30.9	0.0	24.0	68.9	-1.09	-1.10	0.293	4.1	24.29	No Adj. Made
LOWREW62	5/21/20 8:32	44.7	30.5	0.1	24.7	71.4	-0.92	-0.91	0.361	4.5	24.20	No Adj. Made
LOWREW62	6/25/20 8:37	43.4	30.3	0.0	26.3	80.3	-0.55	-0.54	0.367	4.5	24.21	No Adj. Made
LOWREW63	1/28/20 9:53	37.5	37.0	0.0	25.5	62.6	-0.79	-0.78	0.450	4.9	24.25	No Adj. Made
LOWREW63	2/18/20 9:45	31.5	31.6	1.4	35.5	58.5	-1.32	-1.32	0.302	4.0	24.32	Dec. Flow/Vac.

APPENDIX D-1
LANDFILL GAS EXTRACTION WELL MONITORING
JANUARY THROUGH JUNE 2020 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
LOWREW63	3/16/20 9:13	34.3	34.6	0.5	30.6	60.2	-1.02	-1.02	0.340	4.3	24.25	No Adj. Made
LOWREW63	4/28/20 9:16	34.5	35.1	0.0	30.4	65.4	-1.03	-1.02	0.291	3.9	24.29	No Adj. Made
LOWREW63	5/21/20 9:05	32.9	33.4	0.1	33.6	66.4	-0.94	-0.93	0.497	5.1	24.21	No Adj. Made
LOWREW63	6/25/20 9:12	37.2	36.1	0.0	26.7	75.7	-0.50	-0.50	0.289	3.9	24.22	No Adj. Made
LOWREW64	1/28/20 9:44	41.8	38.3	0.0	19.9	60.0	-2.00	-2.00	0.158	2.9	24.26	No Adj. Made
LOWREW64	2/18/20 9:40	38.6	35.2	1.6	24.6	56.1	-2.62	-2.57	0.375	4.5	24.32	No Adj. Made
LOWREW64	3/16/20 9:05	41.3	35.8	0.7	22.2	59.6	-2.40	-2.36	0.251	3.7	24.25	No Adj. Made
LOWREW64	4/28/20 9:05	40.4	36.4	0.3	22.9	68.9	-1.92	-2.00	0.111	2.4	24.30	No Adj. Made
LOWREW64	5/21/20 8:59	41.0	36.7	0.0	22.3	70.0	-2.31	-2.31	0.173	3.0	24.21	No Adj. Made
LOWREW64	6/25/20 9:01	42.7	36.8	0.0	20.5	82.3	-1.66	-1.65	0.138	2.7	24.22	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 2020 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	1/7/2020 12:40	29.8	26	4.3	39.9	-23.5	47.1	228	4131.2	
LOWRINLT	1/9/2020 12:59	26.8	23.3	4.7	45.2	-21.69	46.9	224	3649.8	
LOWRINLT	1/16/2020 13:34	29.6	25.2	4.6	40.6	-23.83	46.1	229	4109.6	
LOWRINLT	1/20/2020 14:47	28.8	25.7	4.6	40.9	-23.72	45.8	231	4039.58	
LOWRINLT	1/24/2020 12:08	29	24.8	4.3	41.9	-23.72	45.4	229	4032.42	
LOWRINLT	1/30/2020 12:39	27.4	25.9	4.6	42.1	-24.31	45.1	226	3760.03	
LOWRINLT	1/31/2020 12:24	27.7	23.9	4.6	43.8	-24.02	45	226	3801.19	
LOWRINLT	2/6/2020 13:20	26	26.8	4.8	42.4	-14.52	45	173	2731.19	
LOWRINLT	2/7/2020 12:38	25	22.9	5	47.1	-23.85	44.8	224	3400.32	
LOWRINLT	2/12/2020 12:57	25.1	25.5	4.8	44.6	-25.16	44.4	225	3429.16	
LOWRINLT	2/14/2020 12:50	30.3	27.2	4	38.5	-24.15	44.4	22.3	410.28	
LOWRINLT	2/20/2020 12:59	24.5	24.2	4.9	46.4	-25.66	44.1	189	2811.64	
LOWRINLT	2/21/2020 14:26	23	27.4	5.3	44.3	-27.14	44.1	202	2821.05	
LOWRINLT	2/27/2020 13:56	24.9	23.2	5.8	46.1	-26	43.7	198	2993.62	
LOWRINLT	2/28/2020 12:29	25.1	23.7	5.7	45.5	-25.75	43.7	197	3002.42	
LOWRINLT	3/4/2020 14:13	27	24.3	5.9	42.8	-25.66	43.6	194	3180.51	
LOWRINLT	3/6/2020 13:47	26.5	24.5	5.5	43.5	-25.33	43.7	193	3105.52	
LOWRINLT	3/12/2020 9:03	21.4	26.9	5.9	45.8	-24.31	44.1	191	2481.87	
LOWRINLT	3/13/2020 14:15	28.2	24.5	5.1	42.2	-24.31	44.2	195	3338.99	
LOWRINLT	3/18/2020 14:04	28.6	23.8	5.4	42.2	-23.89	44.9	187	3247.43	
LOWRINLT	3/24/2020 14:21	26.8	24.4	5.5	43.3	-23.55	45.1	187	3043.04	
LOWRINLT	3/27/2020 12:20	27.1	24.4	5.8	42.7	-27.02	45	200	3291.02	
LOWRINLT	4/2/2020 13:35	23	19.2	6.6	51.2	-26.68	45.3	200	2793.12	
LOWRINLT	4/3/2020 13:40	25.9	20.3	5.8	48	-26.34	45.4	200	3145.3	
LOWRINLT	4/9/2020 14:14	29.8	27.9	2.3	40	-27.35	46	176	3184.64	
LOWRINLT	4/10/2020 13:47	32.5	29.5	2.5	35.5	-26.72	46.2	174	3433.72	
LOWRINLT	4/15/2020 13:08	34.1	27.3	2	36.6	-28.16	46.7	178	3685.58	
LOWRINLT	4/21/2020 10:42	30.1	28	2.3	39.6	-27.9	46.9	174	3180.15	
LOWRINLT	4/24/2020 13:46	28.7	27.6	2.4	41.3	-27.35	47.2	174	3032.24	
LOWRINLT	4/30/2020 8:22	31.8	29.1	1.9	37.2	-26.76	48	193	3726.63	
LOWRINLT	5/1/2020 7:02	29.5	26.6	2.7	41.2	-27.35	48.1	191	3421.27	
LOWRINLT	5/6/2020 13:31	34.5	29.4	1.5	34.6	-27.30	49.4	192	4025.40	
LOWRINLT	5/8/2020 13:27	32.8	27.7	2.1	37.4	-27.03	49.8	192	3822.10	
LOWRINLT	5/12/2020 9:03	32.0	30.9	1.7	35.4	-26.13	50.5	186	3614.05	

APPENDIX D-2.1
FLARE STATION MONITORING
JANUARY THROUGH JUNE 2020 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	5/15/2020 10:21	32.4	28.7	1.6	37.3	-26.27	51.0	185	3638.00	
LOWRINLT	5/22/2020 9:52	29.8	29.3	1.8	39.1	-27.73	52.2	188	3401.78	
LOWRINLT	5/27/2020 9:18	24.4	24.8	4.2	46.6	-26.00	53.2	198	2933.50	
LOWRINLT	5/29/2020 8:00	26.9	24.9	4.5	43.7	-25.12	53.5	203	3315.74	
LOWRINLT	6/2/2020 12:00	22.6	22.3	5.2	49.9	-23.72	54.2	202	2771.99	
LOWRINLT	6/5/2020 11:44	30.6	28.0	2.2	39.2	-25.33	54.9	177	3288.72	
LOWRINLT	6/11/2020 12:46	27.5	26.9	1.9	43.7	-24.65	55.8	172	2872.06	
LOWRINLT	6/16/2020 12:59	34.4	29.5	1.7	34.4	-23.64	56.3	169	3530.02	
LOWRINLT	6/19/2020 13:35	30.5	25.7	3.3	40.5	-24.65	56.7	169	3129.81	
LOWRINLT	6/25/2020 12:26	26.0	22.3	5.2	46.5	-24.10	57.7	165	2604.89	
LOWRINLT	6/26/2020 12:05	26.2	22.3	5.1	46.4	-24.31	57.8	166	2640.83	
LOWRINLT	6/30/2020 9:07	23.7	22.0	5.5	48.8	-23.51	58.4	161	2316.89	

* 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 2020 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	1/7/2020 12:49	40.9	33.8	1.3	24.0	7.48	103	498	12369.80	
DADS Blower Flare	DASPFLR1	1/9/2020 13:06	40.3	32.0	1.3	26.4	6.97	97	503	12298.80	
DADS Blower Flare	DASPFLR1	1/16/2020 13:43	42.2	35.5	1.2	21.1	7.36	98	496	12722.90	
DADS Blower Flare	DASPFLR1	1/24/2020 12:22	41.2	34.2	1.1	23.5	7.34	102	497	12433.27	
DADS Blower Flare	DASPFLR1	1/30/2020 12:48	39.2	33.9	1.2	25.7	7.47	98	502	11948.72	
DADS Blower Flare	DASPFLR1	2/6/2020 13:32	37.1	35.7	1.6	25.6	7.34	83	499	11241.03	
DADS Blower Flare	DASPFLR1	2/7/2020 12:48	35.8	31.6	1.5	31.1	7.09	95	502	10912.36	
DADS Blower Flare	DASPFLR1	2/12/2020 13:08	35.7	33.0	1.6	29.7	7.60	93	500	10838.52	
DADS Blower Flare	DASPFLR1	2/21/2020 14:32	35.1	38.9	1.5	24.5	7.26	100	504	10741.61	
DADS Blower Flare	DASPFLR1	2/27/2020 14:04	37.3	33.0	1.5	28.2	7.68	95	500	11324.28	
DADS Blower Flare	DASPFLR1	3/4/2020 14:23	38.9	33.2	1.9	26.0	7.56	98	498	11762.80	
DADS Blower Flare	DASPFLR1	3/6/2020 13:53	38.7	33.6	1.6	26.1	8.10	105	498	11702.32	
DADS Blower Flare	DASPFLR1	3/12/2020 9:12	31.6	37.0	1.6	29.8	7.77	93	503	9651.32	
DADS Blower Flare	DASPFLR1	3/13/2020 14:24	41.9	33.5	1.3	23.3	7.47	91	502	12771.72	
DADS Blower Flare	DASPFLR1	3/18/2020 14:13	42.8	33.6	1.6	22.0	8.02	102	495	12864.14	
DADS Blower Flare	DASPFLR1	4/2/2020 13:46	37.4	27.0	2.1	33.5	7.09	96	501	11377.35	
DADS Blower Flare	DASPFLR1	4/3/2020 13:46	39.2	27.9	1.7	31.2	7.56	97	497	11829.71	
DADS Blower Flare	DASPFLR1	4/9/2020 14:24	40.8	31.6	0.5	27.1	7.85	102	499	12362.11	
DADS Blower Flare	DASPFLR1	4/10/2020 13:54	45.3	33.3	0.5	20.9	8.06	110	497	13670.56	
DADS Blower Flare	DASPFLR1	4/15/2020 13:36	43.7	34.5	0.4	21.4	7.98	110	497	13187.72	
DADS Blower Flare	DASPFLR1	4/24/2020 13:55	36.2	33.1	0.5	30.2	7.30	104	495	10880.42	
DADS Blower Flare	DASPFLR1	5/1/2020 7:10	38.2	31.3	0.6	29.9	7.43	112	500	11597.52	
DADS Blower Flare	DASPFLR1	5/6/2020 13:49	43.7	35.0	0.4	20.9	7.67	119	497	13189.20	
DADS Blower Flare	DASPFLR1	5/8/2020 13:38	41.7	32.4	0.4	25.5	7.34	109	497	12588.40	
DADS Blower Flare	DASPFLR1	5/12/2020 9:16	43.3	35.5	0.3	20.9	7.64	110	500	13145.88	
DADS Blower Flare	DASPFLR1	5/22/2020 10:04	38.2	34.4	0.3	27.1	7.05	126	497	11527.93	
DADS Blower Flare	DASPFLR1	5/27/2020 9:26	33.6	30.6	1.1	34.7	8.10	130	497	10139.75	
DADS Blower Flare	DASPFLR1	6/2/2020 12:12	33.0	30.8	1.4	34.8	8.15	130	501	10038.84	
DADS Blower Flare	DASPFLR1	6/5/2020 11:52	39.0	32.8	0.3	27.9	8.02	137	503	11911.44	
DADS Blower Flare	DASPFLR1	6/11/2020 12:55	33.6	32.9	0.3	33.2	7.89	129	504	10282.57	
DADS Blower Flare	DASPFLR1	6/19/2020 14:43	40.7	33.2	0.5	25.6	8.10	108	504	12455.37	
DADS Blower Flare	DASPFLR1	6/25/2020 12:34	38.9	32.2	0.7	28.2	7.81	138	506	11951.76	

APPENDIX D-2.2
GAS-TO-ENERGY PLANT MONITORING
JANUARY THROUGH JUNE 2020 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	6/26/2020 12:16	38.5	31.8	0.7	29.0	8.10	132	506	11828.86	

* 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 2020 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	1/7/2020 13:13	49.2	38.3	0.4	12.1	10.47	94	1542	34140.80	
Flare Station 3	DASPFLR3	1/9/2020 13:36	48.3	36.8	0.4	14.5	9.98	86	1528	34140.80	
Flare Station 3	DASPFLR3	1/16/2020 13:59	50.7	40.8	0.4	8.1	9.56	85	1514	34140.80	
Flare Station 3	DASPFLR3	1/24/2020 12:45	49.5	34.1	0.7	15.7	9.71	92	1484	44603.70	
Flare Station 3	DASPFLR3	1/30/2020 13:14	45.5	36.9	0.6	17.0	9.12	86	1425	39369.33	
Flare Station 3	DASPFLR3	2/6/2020 13:46	44.3	43.2	0.4	12.1	15.49	88	1959	52695.06	
Flare Station 3	DASPFLR3	2/7/2020 13:09	48.1	37.7	0.4	13.8	12.49	86	1755	51257.09	
Flare Station 3	DASPFLR3	2/12/2020 13:37	46.5	38.5	0.8	14.2	8.61	80	1403	39613.42	
Flare Station 3	DASPFLR3	2/20/2020 13:29	42.4	36.6	1.2	19.8	13.47	89	1763	45388.93	
Flare Station 3	DASPFLR3	2/21/2020 14:51	40.6	42.6	0.8	16.0	10.26	88	1568	38654.84	
Flare Station 3	DASPFLR3	2/27/2020 14:26	47.6	37.6	0.5	14.3	8.40	85	1379	39856.85	
Flare Station 3	DASPFLR3	3/4/2020 14:45	47.6	38.2	0.9	13.3	8.36	89	1333	38527.33	
Flare Station 3	DASPFLR3	3/6/2020 14:10	46.4	37.5	0.6	15.5	8.10	92	1326	37358.83	
Flare Station 3	DASPFLR3	3/12/2020 9:40	39.6	43.7	0.4	16.3	7.43	78	1238	29767.86	
Flare Station 3	DASPFLR3	3/13/2020 14:40	49.0	38.3	0.6	12.1	7.77	77	1369	40731.58	
Flare Station 3	DASPFLR3	3/18/2020 14:36	48.7	35.9	0.6	14.8	8.02	91	1331	39358.52	
Flare Station 3	DASPFLR3	4/2/2020 14:09	48.0	34.6	0.9	16.5	7.09	76	1347	39259.12	
Flare Station 3	DASPFLR3	4/3/2020 14:05	47.8	35.0	0.7	16.5	8.10	79	1357	39385.79	
Flare Station 3	DASPFLR3	4/9/2020 14:44	47.8	35.9	0.3	16.0	7.30	87	1271	36889.71	
Flare Station 3	DASPFLR3	4/10/2020 14:13	48.9	38.4	0.3	12.4	9.08	95	1338	39728.00	
Flare Station 3	DASPFLR3	4/15/2020 13:32	49.2	34.5	0.3	16.0	8.10	90	1329	39702.86	
Flare Station 3	DASPFLR3	4/24/2020 14:23	47.7	37.7	0.4	14.2	8.44	90	1355	39245.46	
Flare Station 3	DASPFLR3	5/1/2020 7:25	47.4	37.3	0.6	14.7	8.78	92	1368	39372.79	
Flare Station 3	DASPFLR3	5/6/2020 14:11	49.1	37.5	0.5	12.9	8.11	97	1311	34140.80	
Flare Station 3	DASPFLR3	5/8/2020 13:58	51.2	37.9	0.4	10.5	7.15	90	1263	34140.80	
Flare Station 3	DASPFLR3	5/12/2020 9:44	50.4	37.0	0.6	12.0	7.43	89	1252	38314.81	
Flare Station 3	DASPFLR3	5/22/2020 10:31	46.0	37.2	0.6	16.2	6.75	97	1249	34886.07	
Flare Station 3	DASPFLR3	5/27/2020 9:48	43.6	35.6	0.9	19.9	6.75	99	1215	32165.81	
Flare Station 3	DASPFLR3	6/2/2020 12:35	44.6	32.6	1.0	21.8	6.96	102	1201	32524.43	
Flare Station 3	DASPFLR3	6/5/2020 12:17	46.8	37.4	0.6	15.2	7.09	107	1191	33844.60	
Flare Station 3	DASPFLR3	6/11/2020 13:21	45.3	36.9	0.6	17.2	9.16	109	1408	38728.67	
Flare Station 3	DASPFLR3	6/19/2020 13:59	46.6	35.3	0.4	17.7	11.82	100	1548	43801.46	
Flare Station 3	DASPFLR3	6/25/2020 13:06	49.6	38.3	0.5	11.6	8.74	110	1357	40868.93	

APPENDIX D-2.3
GAS-TO-ENERGY PLANT MONITORING
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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	6/26/2020 12:40	46.9	34.4	0.5	18.2	8.65	108	1371	39042.90	

* 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 2020 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	1/7/2020 12:59	51.1	39.8	0.3	8.8	66.36	68.4	1029.6	31955.60	
Gas Plant	DASPGAP1	1/9/2020 13:28	50.6	38.1	0.3	11.0	64.42	66.4	1027.6	31559.80	
Gas Plant	DASPGAP1	1/16/2020 13:50	52.7	42.7	0.2	4.4	57.20	93.3	1044.4	33414.30	
Gas Plant	DASPGAP1	1/24/2020 12:38	50.9	40.0	0.0	9.1	51.25	99.0	1042.5	32220.01	
Gas Plant	DASPGAP1	1/30/2020 13:03	51.6	39.4	0.0	9.0	91.43	96.5	1057.1	33120.55	
Gas Plant	DASPGAP1	2/7/2020 12:59	50.1	39.6	0.2	10.1	56.86	68.8	776.4	23618.65	
Gas Plant	DASPGAP1	2/12/2020 13:21	49.8	39.5	0.4	10.3	51.50	86.4	1073.1	32449.00	
Gas Plant	DASPGAP1	2/20/2020 13:16	49.0	39.0	0.4	11.6	50.99	96.0	1092.6	32507.91	
Gas Plant	DASPGAP1	2/21/2020 14:44	43.1	45.1	0.5	11.3	51.46	93.6	1036.0	27112.45	
Gas Plant	DASPGAP1	2/27/2020 14:13	50.0	38.8	0.2	11.0	52.01	93.3	1058.2	32126.95	
Gas Plant	DASPGAP1	3/4/2020 14:36	49.8	39.5	0.5	10.2	53.36	76.3	1052.5	31826.08	
Gas Plant	DASPGAP1	3/6/2020 14:02	49.1	39.9	0.3	10.7	52.26	70.1	1052.7	31384.69	
Gas Plant	DASPGAP1	3/12/2020 9:29	42.1	45.5	0.1	12.3	52.68	69.4	1082.8	27679.75	
Gas Plant	DASPGAP1	3/13/2020 14:32	50.6	38.6	0.0	10.8	52.34	73.1	1054.4	32395.72	
Gas Plant	DASPGAP1	3/18/2020 14:25	50.5	38.7	0.3	10.5	52.34	88.4	1055.2	32356.23	
Gas Plant	DASPGAP1	4/2/2020 13:55	48.6	39.1	0.6	11.7	50.99	87.1	1092.4	32236.64	
Gas Plant	DASPGAP1	4/3/2020 13:55	48.5	37.6	0.5	13.4	50.65	82.6	1092.0	32158.53	
Gas Plant	DASPGAP1	4/9/2020 14:33	50.4	38.8	0.3	10.5	52.34	99.1	1069.6	32732.84	
Gas Plant	DASPGAP1	4/10/2020 14:03	51.3	40.0	0.2	8.5	52.93	71.9	1029.8	32077.61	
Gas Plant	DASPGAP1	4/15/2020 13:25	51.6	39.0	0.2	9.2	52.34	79.0	1039.8	32578.51	
Gas Plant	DASPGAP1	4/24/2020 14:11	50.0	39.1	0.4	10.5	52.34	92.5	1030.8	31295.09	
Gas Plant	DASPGAP1	5/1/2020 7:17	50.0	37.8	0.7	11.5	51.50	73.6	1074.5	32621.82	
Gas Plant	DASPGAP1	5/6/2020 14:02	50.8	38.5	0.6	10.1	57.59	73.6	1055.0	32539.10	
Gas Plant	DASPGAP1	5/8/2020 13:47	53.4	38.2	0.5	7.9	58.28	99.0	1062.9	34140.80	
Gas Plant	DASPGAP1	5/12/2020 9:30	50.0	38.9	0.5	10.6	52.81	95.1	1054.5	32014.62	
Gas Plant	DASPGAP1	5/22/2020 10:21	48.5	38.7	0.7	12.1	53.02	79.8	1054.9	31065.96	
Gas Plant	DASPGAP1	5/27/2020 9:37	47.6	38.0	0.9	13.5	53.99	74.7	1087.1	31420.15	
Gas Plant	DASPGAP1	6/2/2020 12:24	48.2	37.5	0.8	13.5	54.71	87.4	1078.5	31564.50	
Gas Plant	DASPGAP1	6/5/2020 12:01	48.9	37.8	0.7	12.6	55.17	98.9	1052.6	31253.88	
Gas Plant	DASPGAP1	6/11/2020 13:10	47.4	38.0	0.7	13.9	52.43	79.2	820.7	23620.80	
Gas Plant	DASPGAP1	6/19/2020 13:42	51.0	39.4	0.2	9.4	52.01	87.7	1016.6	31481.26	
Gas Plant	DASPGAP1	6/25/2020 12:52	51.2	38.3	0.4	10.1	49.94	92.1	995.4	30945.63	
Gas Plant	DASPGAP1	6/26/2020 12:29	50.5	39.1	0.4	10.0	49.13	84.7	1009.7	30961.04	

APPENDIX D-2.4
GAS-TO-ENERGY PLANT MONITORING
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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	7/2/2020 12:54	49.3	39.0	0.3	11.4	50.32	95.2	748.4	22403.32	
Gas Plant	DASPGAP1	7/9/2020 14:25	50.8	38.9	0.2	10.1	50.32	93.0	969.8	29914.22	

* 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)		01/07/20		01/09/20	
Lowry Header - Monitoring					
Time (hh:mm)		1235		1254	
Technician (Initials)		CS		CS	
Control Panel - Digital Recorder					
Flow Rate (SCFM)		228		224	
Gas Temperature (F)		47.1		46.9	
Flare 2 - Monitoring					
Time (hh:mm)		1243		1300	
Technician (Initials)		CS		CS	
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)		41.0		41.0	
*Flare DP (InWC)		5.19		5.23	
*Flare Flame Temperature (F)		1047		1220	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		76		67	
*Gas Handling Skid Inlet Temperature (F)		36		38	
*Recirculation Valve Position (%Closed)		100		100	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		498		503	
*Total Flow (MMSCF)		555.09		556.54	
*Flow Pressure (InWC)		6.3		6.3	
*Flow Temperature (F)		103		97	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		211.37		212.82	
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		22787		22835	
*Blower 301 Vibration (In/Sec)		0.26		0.20	
*Blower 301 Speed (%Max)		87		88	
*Blower 301 Inlet Bearing Temp (F)		56		41	
*Blower 301 Outlet Bearing Temp (F)		100		84	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.2		13.3	
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-41.4		-41.3	
*Demister Outlet Pressure (InWC)		-43.3		-43.2	
*Demister DP (InWC)		+2.2		+1.9	
*Flame Arrester Inlet Pressure (InWC)		+7.5		+7.2	
*Flame Arrester Outlet Pressure (InWC)		+4.5		+4.4	
*Flame Arrester DP (InWC)		+3.0		+2.8	
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)		1306		1329	
Technician (Initials)		CS			
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)		39.4		39.7	
*Gas Handling Skid Inlet Temperature (F)		58		57	
*Panel Temperature (F)		82		73	
*Recirculation Valve Position (%Closed)		100		100	
*Flare Flame Temperature (F)		1271		963	
*Flame Arrestor Temperature (F)		93		83	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		301 846		301 896	
*Blower Speed (Blower | Speed (%Max))		75		75	
*Blower Vibration (Blower | Vibration (in/Sec))		0.04		0.03	
*Blower Current (Blower | Current (Amps))		41.5		40.9	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1542		1528	
*Total Flow (MMSCF)		109.80		114.30	
*Flow Pressure (inWC)		8.9		8.7	
*Flow Temperature (F)		94		86	
*Flow DP (inWC)		5.9		5.66	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		109.80		114.30	
*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		-39.4	
*Demister Outlet Pressure (inWC)		-41.3		-41.7	
*Demister DP (inWC)		+1.8		+2.3	
*Flame Arrester Inlet Pressure (inWC)		+10.5		+9.2	
*Flame Arrester Outlet Pressure (inWC)		+9.7		+8.3	
*Flame Arrester DP (inWC)		+0.8		+0.9	
*Fail-Close Valve Air Pressure (psi)		105		105	
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)		1253		1310	
Technician (Initials)		CS		CS	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		732 764		691 717	
*Power Setpoint (kWh) (Engine #2 | #1)		725 762		725 719	
Control Room - Laptop					
*Flow Total (MSCF)		511047.7		514023.5	
*Flow Rate (SCFM)		1029.6		1027.6	
*Discharge Gas Temperature (F)		68.4		66.4	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)		-40.3		-40.1	
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)				01/16/20	
Lowry Header - Monitoring					
Time (hh:mm)				1330	
Technician (Initials)				CS	
Control Panel - Digital Recorder					
Flow Rate (SCFM)				229	
Gas Temperature (F)				4C.1	
Flare 2 - Monitoring					
Time (hh:mm)				1335	
Technician (Initials)				CS	
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)				41.5	
*Flare DP (InWC)				5.15	
*Flare Flame Temperature (F)				1162	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				C4	
*Gas Handling Skid Inlet Temperature (F)				39	
*Recirculation Valve Position (%Closed)				100	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				496	
*Total Flow (MMSCF)				559.81	
*Flow Pressure (InWC)				C.1	
*Flow Temperature (F)				98	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				216.1	
*Reset Date/Time (mm/dd/yy hh:mm:ss)				———	
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				22944	
*Blower 301 Vibration (In/Sec)				0.30	
*Blower 301 Speed (%Max)				87	
*Blower 301 Inlet Bearing Temp (F)				4C	
*Blower 301 Outlet Bearing Temp (F)				97	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.4	
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-41.9	
*Demister Outlet Pressure (inWC)				-44.0	
*Demister DP (inWC)				+2.1	
*Flame Arrester Inlet Pressure (InWC)				+7.2	
*Flame Arrester Outlet Pressure (InWC)				+4.4	
*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)				1353	
Technician (Initials)				CS	
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)				39.7	
*Gas Handling Skid Inlet Temperature (F)				55	
*Panel Temperature (F)				67	
*Recirculation Valve Position (%Closed)				100	
*Flare Flame Temperature (F)				1321	
*Flame Arrestor Temperature (F)				82	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				301 1064	
*Blower Speed (Blower | Speed (%Max))				74	
*Blower Vibration (Blower | Vibration (In/Sec))				0.03	
*Blower Current (Blower | Current (Amps))				40.5	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1514	
*Total Flow (MMSCF)				131.06	
*Flow Pressure (InWC)				8.1	
*Flow Temperature (F)				65	
*Flow DP (InWC)				5.58	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				131.06	
*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	
*Demister Outlet Pressure (InWC)				-41.8	
*Demister DP (InWC)				+1.9	
*Flame Arrester Inlet Pressure (InWC)				+9.6	
*Flame Arrester Outlet Pressure (InWC)				+8.9	
*Flame Arrester DP (InWC)				+0.1	
*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)				1346	
Technician (Initials)				CS	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				719 704	
*Power Setpoint (kWh) (Engine #2 | #1)				738 731	
Control Room - Laptop					
*Flow Total (MSCF)				524504.5	
*Flow Rate (SCFM)				1044.4	
*Discharge Gas Temperature (F)				93.3	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)				-41.1	
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)	01/20/20				01/24/20
Lowry Header - Monitoring					
Time (hh:mm)	1443				1204
Technician (Initials)	CS				CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)	231				229
Gas Temperature (F)	45.8				45.4
Flare 2 - Monitoring					
Time (hh:mm)	1450				1210
Technician (Initials)	CS				CS
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)	41.0				41.3
*Flare DP (inWC)	5.15				5.18
*Flare Flame Temperature (F)	767				1231
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)	76				75
*Gas Handling Skid Inlet Temperature (F)	32				34
*Recirculation Valve Position (%Closed)	100				100
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)	498				497
*Total Flow (MMSCF)	562.74				565.41
*Flow Pressure (inWC)	6.3				6.3
*Flow Temperature (F)	96				102
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)	219.02				221.09
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)	23041				23130
*Blower 301 Vibration (In/Sec)	0.25				0.23
*Blower 301 Speed (%Max)	87				88
*Blower 301 Inlet Bearing Temp (F)	45				71
*Blower 301 Outlet Bearing Temp (F)	92				98
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)	13.2				13.4
Gas Handling Skid					
*Demister Inlet Pressure (inWC)	-41.2				-42.0
*Demister Outlet Pressure (inWC)	-43.6				-44.3
*Demister DP (inWC)	+2.4				+2.3
*Flame Arrester Inlet Pressure (inWC)	+7.3				+7.3
*Flame Arrester Outlet Pressure (inWC)	+4.5				+4.4
*Flame Arrester DP (inWC)	+2.8				+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)	1507				1235
Technician (Initials)	CS				CS
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				39.5
*Gas Handling Skid Inlet Temperature (F)	55				56
*Panel Temperature (F)	74				77
*Recirculation Valve Position (%Closed)	100				100
*Flare Flame Temperature (F)	1179				1276
*Flame Arrestor Temperature (F)	85				91
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))	301 1161				301 1254
*Blower Speed (Blower | Speed (%Max))	73				73
*Blower Vibration (Blower | Vibration (In/Sec))	0.03				0.03
*Blower Current (Blower | Current (Amps))	39.8				39.9
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)	1477				1484
*Total Flow (MMSCF)	139.73				148.27
*Flow Pressure (InWC)	8.0				8.1
*Flow Temperature (F)	87				92
*Flow DP (InWC)	5.35				5.44
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)	139.73				148.27
*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)	-38.6				-39.6
*Demister Outlet Pressure (inWC)	-42.1				-41.3
*Demister DP (InWC)	+3.5				+1.7
*Flame Arrester Inlet Pressure (InWC)	+9.5				+9.6
*Flame Arrester Outlet Pressure (InWC)	+8.7				+8.7
*Flame Arrester DP (InWC)	+0.8				+0.9
*Fail-Close Valve Air Pressure (psi)	105				105
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)	1590				1225
Technician (Initials)	CS				CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)	759 716				708 733
*Power Setpoint (kWh) (Engine #2 | #1)	700 733				745 721
Control Room - Laptop					
*Flow Total (MSCF)	530631.2				536385.6
*Flow Rate (SCFM)	1058.9				1042.5
*Discharge Gas Temperature (F)	95.8				99.0
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)	-43.2				-41.5
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)				01/30/20	01/31/20
Lowry Header - Monitoring					
Time (hh:mm)				1215	1221
Technician (Initials)				CS	CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)				226	226
Gas Temperature (F)				45.1	45.0
Flare 2 - Monitoring					
Time (hh:mm)				1249	1224
Technician (Initials)				CS	CS
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)				41.6	41.0
*Flare DP (InWC)				5.26	5.23
*Flare Flame Temperature (F)				950	1206
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				67	74
*Gas Handling Skid Inlet Temperature (F)				38	33
*Recirculation Valve Position (%Closed)				100	100
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				502	498
*Total Flow (MMSCF)				569.75	570.06
*Flow Pressure (InWC)				6.3	6.2
*Flow Temperature (F)				98	101
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				226.03	226.35
*Reset Date/Time (mm/dd/yy hh:mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				23274	23285
*Blower 301 Vibration (in/Sec)				0.24	0.27
*Blower 301 Speed (%Max)				88	87
*Blower 301 Inlet Bearing Temp (F)				44	45
*Blower 301 Outlet Bearing Temp (F)				92	103
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.5	13.5
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-42.1	-41.3
*Demister Outlet Pressure (InWC)				-44.5	-43.9
*Demister DP (InWC)				+2.4	+2.6
*Flame Arrester Inlet Pressure (InWC)				+7.4	+7.3
*Flame Arrester Outlet Pressure (InWC)				+4.5	+4.3
*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)				1305	1238
Technician (Initials)				CS	CS
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)				40.3	39.8
*Gas Handling Skid Inlet Temperature (F)				55	55
*Panel Temperature (F)				70	76
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				1325	1194
*Flame Arrestor Temperature (F)				82	88
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				301 1399	301 1422
*Blower Speed (Blower | Speed (%Max))				72	72
*Blower Vibration (Blower | Vibration (in/Sec))				0.03	0.03
*Blower Current (Blower | Current (Amps))				38.3	38.7
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1425	1434
*Total Flow (MMSCF)				160.85	163.19
*Flow Pressure (InWC)				7.7	7.7
*Flow Temperature (F)				84	90
*Flow DP (InWC)				4.95	5.06
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				160.85	163.19
*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)				-40.5	-39.5
*Demister Outlet Pressure (InWC)				-42.0	-41.2
*Demister DP (InWC)				+1.5	+1.7
*Flame Arrester Inlet Pressure (InWC)				+8.8	+8.8
*Flame Arrester Outlet Pressure (InWC)				+8.1	+8.1
*Flame Arrester DP (InWC)				+0.7	+0.7
*Fail-Close Valve Air Pressure (psi)				105	105
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)				1250	1251
Technician (Initials)				CS	CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				746 715	710 730
*Power Setpoint (kWh) (Engine #2 | #1)				723 725	726 732
Control Room - Laptop					
*Flow Total (MSCF)				545518.7	547052.7
*Flow Rate (SCFM)				1057.1	1050.7
*Discharge Gas Temperature (F)				96.5	93.8
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)				-42.5	-41.5
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)				02/06/20	02/07/20
Lowry Header - Monitoring					
Time (hh:mm)				1316	1220
Technician (Initials)				CS	CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)				173	224
Gas Temperature (F)				45.0	44.8
Flare 2 - Monitoring					
Time (hh:mm)				1321	1243
Technician (Initials)				CS	CS
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)				26.7	41.1
*Flare DP (InWC)				5.04	5.21
*Flare Flame Temperature (F)				1244	1207
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				64	56
*Gas Handling Skid Inlet Temperature (F)				37	40
*Recirculation Valve Position (%Closed)				100	100
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				499	502
*Total Flow (MMSCF)				574.41	574.79
*Flow Pressure (InWC)				6.0	6.0
*Flow Temperature (F)				63	95
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				230.70	231.05
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				23430	23442
*Blower 301 Vibration (In/Sec)				0.20	0.26
*Blower 301 Speed (%Max)				76	67
*Blower 301 Inlet Bearing Temp (F)				68	56
*Blower 301 Outlet Bearing Temp (F)				77	66
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				11.5	13.5
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-27.0	-41.9
*Demister Outlet Pressure (InWC)				-29.0	-43.9
*Demister DP (InWC)				+2.0	+2.0
*Flame Arrester Inlet Pressure (InWC)				+7.8	+7.1
*Flame Arrester Outlet Pressure (InWC)				+4.3	+4.3
*Flame Arrester DP (InWC)				+3.5	+2.7
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)				1333	1308
Technician (Initials)				CS	CS
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)				26.2	40.0
*Gas Handling Skid Inlet Temperature (F)				54	53
*Panel Temperature (F)				71	54
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				1241	1316
*Flame Arrestor Temperature (F)				84	82
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				302 427	302 457
*Blower Speed (Blower | Speed (%Max))				80	80
*Blower Vibration (Blower | Vibration (In/Sec))				0.05	0.03
*Blower Current (Blower | Current (Amps))				46.3	46.4
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1959	1755
*Total Flow (MMSCF)				177.89	180.51
*Flow Pressure (InWC)				13.1	10.2
*Flow Temperature (F)				86	86
*Flow DP (InWC)				9.17	7.41
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				177.89	180.51
*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)				-26.0	-40.1
*Demister Outlet Pressure (InWC)				-29.4	-43.2
*Demister DP (InWC)				+3.4	+3.2
*Flame Arrester Inlet Pressure (InWC)				+14.1	+12.5
*Flame Arrester Outlet Pressure (InWC)				+15.2	+11.5
*Flame Arrester DP (InWC)				+0.9	+1.0
*Fail-Close Valve Air Pressure (psi)				105	105
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)					1250
Technician (Initials)					CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					684 653
*Power Setpoint (kWh) (Engine #2 | #1)					CS
Control Room - Laptop					
*Flow Total (MSCF)					552366.6
*Flow Rate (SCFM)					776.4
*Discharge Gas Temperature (F)					68.8
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)					-39.5
Other					
*Visible Emissions (Yes/No, if yes explain)					NO
Note * Collect during device operation only					

Remarks

01/06 - Plant Down due to Maint. of Compressor

01/07 - Engine # 2 Down

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)			02/12/20		02/14/20
Lowry Header - Monitoring					
Time (hh:mm)			1243		1246
Technician (Initials)			CS		CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)			225		223
Gas Temperature (F)			44.4		44.4
Flare 2 - Monitoring					
Time (hh:mm)			1300		1253
Technician (Initials)			CS		CS
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		41.3
*Flare DP (InWC)			5.18		5.18
*Flare Flame Temperature (F)			1091		1193
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			55		77
*Gas Handling Skid Inlet Temperature (F)			40		30
*Recirculation Valve Position (%Closed)			100		100
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			500		499
*Total Flow (MMSCF)			578.41		579.84
*Flow Pressure (InWC)			6.1		6.3
*Flow Temperature (F)			93		99
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			234.69		236.13
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			23543		23611
*Blower 301 Vibration (In/Sec)			0.21		0.24
*Blower 301 Speed (%Max)			87		88
*Blower 301 Inlet Bearing Temp (F)			34		52
*Blower 301 Outlet Bearing Temp (F)			75		101
Control Panel - Blower Keypad			[redacted]		
*Blower 301 Current (Amps)			13.6		13.5
Gas Handling Skid					
*Demister Inlet Pressure (InWC)			-42.7		-41.2
*Demister Outlet Pressure (InWC)			-44.7		-43.8
*Demister DP (InWC)			+ 2.0		+ 2.6
*Flame Arrester Inlet Pressure (InWC)			+7.6		+7.8
*Flame Arrester Outlet Pressure (InWC)			+4.2		+4.4
*Flame Arrester DP (InWC)			+3.4		+3.4
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)			1326		1324
Technician (Initials)			CS		CS
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)			402		39.6
*Gas Handling Skid Inlet Temperature (F)			54		55
*Panel Temperature (F)			53		79
*Recirculation Valve Position (%Closed)			100		100
*Flare Flame Temperature (F)			1274		1266
*Flame Arrestor Temperature (F)			77		88
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			302 571		302 619
*Blower Speed (Blower | Speed (%Max))			72		74
*Blower Vibration (Blower | Vibration (in/Sec))			0.01		0.02
*Blower Current (Blower | Current (Amps))			36.7		36.5
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			1403		1459
*Total Flow (MMSCF)			192.70		196.74
*Flow Pressure (inWC)			7.2		8.0
*Flow Temperature (F)			80		89
*Flow DP (inWC)			4.73		5.20
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			192.70		196.74
*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		-39.5
*Demister Outlet Pressure (inWC)			-41.7		-41.5
*Demister DP (inWC)			+2.0		+2.0
*Flame Arrester Inlet Pressure (inWC)			+8.4		+9.5
*Flame Arrester Outlet Pressure (inWC)			+8.4		+8.5
*Flame Arrester DP (inWC)			+0.2		+0.7
*Fail-Close Valve Air Pressure (psi)			105		105
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)			1311		1305
Technician (Initials)			CL		CL
Engine Control Panel					
*Power Setpoint (kWh) (Engine #3 | #3)			685 698		0735 702
*Power Setpoint (kWh) (Engine #2 | #1)			724 714		728 741
Control Room - Laptop					
*Flow Total (MSCF)			5586339		SC1390.6
*Flow Rate (SCFM)			1073.1		1024.1
*Discharge Gas Temperature (F)			86.4		97.7
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)			-41.9		-43.1
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)				02/20/20	02/21/20
Lowry Header - Monitoring					
Time (hh:mm)				1252	1422
Technician (Initials)				CS	CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)				189	202
Gas Temperature (F)				44.1	44.1
Flare 2 - Monitoring					
Time (hh:mm)					1426
Technician (Initials)					CS
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)					41.6
*Flare DP (inWC)					5.24
*Flare Flame Temperature (F)					1275
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					72
*Gas Handling Skid Inlet Temperature (F)					31
*Recirculation Valve Position (%Closed)					100
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					504
*Total Flow (MMSCF)					580.07
*Flow Pressure (inWC)					C.3
*Flow Temperature (F)					100
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					236.35
*Reset Date/Time (mm/dd/yy hh mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					23618
*Blower 301 Vibration (In/Sec)					0.25
*Blower 301 Speed (%Max)					90
*Blower 301 Inlet Bearing Temp (F)					56
*Blower 301 Outlet Bearing Temp (F)					86
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					14.0
Gas Handling Skid					
*Demister Inlet Pressure (inWC)					-42.2
*Demister Outlet Pressure (inWC)					-44.8
*Demister DP (inWC)					
*Flame Arrester Inlet Pressure (inWC)					+7.4
*Flame Arrester Outlet Pressure (inWC)					+4.6
*Flame Arrester DP (inWC)					
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)				1322	1445
Technician (Initials)				CS	CS
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	40.3
*Gas Handling Skid Inlet Temperature (F)				52	54
*Panel Temperature (F)				66	72
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				1215	1052
*Flame Arrestor Temperature (F)				87	86
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				302 763	302 767
*Blower Speed (Blower | Speed (%Max))				80	76
*Blower Vibration (Blower | Vibration (in/Sec))				0.04	0.03
*Blower Current (Blower | Current (Amps))				47.4	42.7
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1763	1568
*Total Flow (MMSCF)				212.23	214.77
*Flow Pressure (inWC)				11.1	8.8
*Flow Temperature (F)				89	88
*Flow DP (inWC)				7.70	6.01
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				212.23	214.77
*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)				-40.2	-40.4
*Demister Outlet Pressure (inWC)				-42.9	-43.4
*Demister DP (inWC)				+2.7	+3.0
*Flame Arrester Inlet Pressure (inWC)				+13.5	+10.3
*Flame Arrester Outlet Pressure (inWC)				+12.5	+9.8
*Flame Arrester DP (inWC)				+1.0	+0.5
*Fail-Close Valve Air Pressure (psi)				105	105
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)				1305	1433
Technician (Initials)				CS	CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				714 691	724 741
*Power Setpoint (kWh) (Engine #2 | #1)				699 753	719 722
Control Room - Laptop					
*Flow Total (MSCF)				570588.6	572214.0
*Flow Rate (SCFM)				1092.6	1036.0
*Discharge Gas Temperature (F)				96.0	93.6
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)				-40.3	-42.7
Other					
*Visible Emissions (Yes/No, if yes explain)				NO	NO

Note * Collect during device operation only

Remarks

02/20 - Flare #2 Down; Needs ThermoCoupler

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)				08/27/20	02/28/20
Lowry Header - Monitoring					
Time (hh:mm)				1349	1224
Technician (Initials)				CB	CB
Control Panel - Digital Recorder					
Flow Rate (SCFM)				198	197
Gas Temperature (F)				43.7	43.7
Flare 2 - Monitoring					
Time (hh:mm)				1356	1229
Technician (Initials)				CB	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)				40.5	40.3
*Flare DP (InWC)				5.14	5.16
*Flare Flame Temperature (F)				1193	1097
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				76	75
*Gas Handling Skid Inlet Temperature (F)				29	30
*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)				584.06	584.74
*Flow Pressure (InWC)				6.3	6.3
*Flow Temperature (F)				95	100
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				240.34	241.02
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				23751	23774
*Blower 301 Vibration (In/Sec)				0.26	0.27
*Blower 301 Speed (%Max)				86	86
*Blower 301 Inlet Bearing Temp (F)				41	54
*Blower 301 Outlet Bearing Temp (F)				99	110
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.3	13.0
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-40.5	-40.2
*Demister Outlet Pressure (InWC)				-43.5	-42.8
*Demister DP (InWC)				+3.0	+2.6
*Flame Arrester Inlet Pressure (InWC)				+7.8	+7.8
*Flame Arrester Outlet Pressure (InWC)				+4.4	+4.5
*Flame Arrester DP (InWC)				+3.4	+3.3
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)				1417	1241
Technician (Initials)				CB	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)				40.2	39.7
*Gas Handling Skid Inlet Temperature (F)				54	54
*Panel Temperature (F)				73	78
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				1245	1254
*Flame Arrestor Temperature (F)				83	90
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				302 930	302 953
*Blower Speed (Blower | Speed (%Max))				71	71
*Blower Vibration (Blower | Vibration (In/Sec))				0.01	0.02
*Blower Current (Blower | Current (Amps))				36.4	36.6
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1379	1358
*Total Flow (MMSCF)				226.95	228.76
*Flow Pressure (inWC)				6.8	7.1
*Flow Temperature (F)				85	90
*Flow DP (inWC)				4.42	4.55
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				226.95	228.76
*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)				-38.8	-38.5
*Demister Outlet Pressure (inWC)				-42.7	-40.7
*Demister DP (inWC)				+3.9	+2.2
*Flame Arrester Inlet Pressure (inWC)				+8.1	+8.8
*Flame Arrester Outlet Pressure (inWC)				+7.8	+8.1
*Flame Arrester DP (inWC)				+0.3	+0.7
*Fail-Close Valve Air Pressure (psi)				105	105
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)				1486	1237
Technician (Initials)				CS	CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				722 735	698 713
*Power Setpoint (kWh) (Engine #2 | #1)				724 725	721 736
Control Room - Laptop					
*Flow Total (MSCF)				581323.8	582770.1
*Flow Rate (SCFM)				1058.2	1055.5
*Discharge Gas Temperature (F)				93.3	70.8
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)				-41.2	-43.5
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)			03/04/20		03/06/20
Lowry Header - Monitoring					
Time (hh:mm)			1408		1344
Technician (Initials)			CS		CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)			194		193
Gas Temperature (F)			43.6		43.7
Flare 2 - Monitoring					
Time (hh:mm)			1414		1348
Technician (Initials)			CS		CS
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)			39.4		39.6
*Flare DP (inWC)			5.22		5.24
*Flare Flame Temperature (F)			1185		1173
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			77		78
*Gas Handling Skid Inlet Temperature (F)			31		31
*Recirculation Valve Position (%Closed)			70		70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			498		498
*Total Flow (MMSCF)			588.39		589.82
*Flow Pressure (inWC)			6.2		6.4
*Flow Temperature (F)			98		105
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			244.67		246.10
*Reset Date/Time (mm/dd/yy hh mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			23895		23943
*Blower 301 Vibration (In/Sec)			0.25		0.24
*Blower 301 Speed (%Max)			66		66
*Blower 301 Inlet Bearing Temp (F)			64		64
*Blower 301 Outlet Bearing Temp (F)			97		115
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			13.0		13.2
Gas Handling Skid					
*Demister Inlet Pressure (inWC)			-40.1		-39.3
*Demister Outlet Pressure (inWC)			-42.2		-41.9
*Demister DP (inWC)			+2.1		+2.6
*Flame Arrester Inlet Pressure (inWC)			+8.0		+8.1
*Flame Arrester Outlet Pressure (inWC)			+4.5		+4.6
*Flame Arrester DP (inWC)			+3.5		+3.5
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)			1436		1402
Technician (Initials)			CS		CS
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		40.2
*Gas Handling Skid Inlet Temperature (F)			55		55
*Panel Temperature (F)			77		78
*Recirculation Valve Position (%Closed)			100		100
*Flare Flame Temperature (F)			1324		1301
*Flame Arrestor Temperature (F)			87		92
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			302 1074		301 1539
*Blower Speed (Blower | Speed (%Max))			71		70
*Blower Vibration (Blower | Vibration (In/Sec))			0.02		0.03
*Blower Current (Blower | Current (Amps))			36.6		35.9
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			1333		1326
*Total Flow (MMSCF)			238.61		242.21
*Flow Pressure (inWC)			7.1		6.9
*Flow Temperature (F)			89		92
*Flow DP (inWC)			4.33		4.30
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			238.61		242.21
*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)			-36.8		-39.2
*Demister Outlet Pressure (inWC)			-40.1		-41.5
*Demister DP (inWC)			+3.3		+2.3
*Flame Arrester Inlet Pressure (inWC)			+8.8		+8.5
*Flame Arrester Outlet Pressure (inWC)			+8.1		+8.1
*Flame Arrester DP (inWC)			+0.7		+0.4
*Fail-Close Valve Air Pressure (psi)			105		105
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)			1430		1354
Technician (Initials)			CD		CD
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			709 719		712 735
*Power Setpoint (kWh) (Engine #2 | #1)			722 733		729 744
Control Room - Laptop					
*Flow Total (MSCF)			590424.9		593542.9
*Flow Rate (SCFM)			1052.5		1052.7
*Discharge Gas Temperature (F)			76.3		70.1
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)			-42.7		-43.2
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)				03/12/20	03/13/20
Lowry Header - Monitoring					
Time (hh:mm)				0857	1410
Technician (Initials)				CS	CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)				191	195
Gas Temperature (F)				44.1	44.2
Flare 2 - Monitoring					
Time (hh:mm)				0904	1417
Technician (Initials)				CS	CS
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)				39.2	38.5
*Flare DP (InWC)				5.16	5.16
*Flare Flame Temperature (F)				847	880
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				64	60
*Gas Handling Skid Inlet Temperature (F)				38	40
*Recirculation Valve Position (%Closed)				70	70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				503	502
*Total Flow (MMSCF)				393.97	394.85
*Flow Pressure (InWC)				4.3	4.3
*Flow Temperature (F)				93	91
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				250.25	251.13
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				24081	24110
*Blower 301 Vibration (In/Sec)				0.25	0.26
*Blower 301 Speed (%Max)				65	65
*Blower 301 Inlet Bearing Temp (F)				41	38
*Blower 301 Outlet Bearing Temp (F)				76	66
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.0	13.1
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-39.5	-39.8
*Demister Outlet Pressure (InWC)				-41.5	-41.2
*Demister DP (InWC)				+ 2.0	+ 1.4
*Flame Arrester Inlet Pressure (InWC)				+7.6	+7.4
*Flame Arrester Outlet Pressure (InWC)				+4.5	+4.5
*Flame Arrester DP (InWC)				+3.1	+2.9
Flare					
*Visible Emissions (Yes/No, if yes explain)				NO	NO
*Spiralator Position (%Open)				80	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)				0930	1432
Technician (Initials)				CS	CS
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	40.1
*Gas Handling Skid Inlet Temperature (F)				53	54
*Panel Temperature (F)				65	56
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				973	1166
*Flame Arrestor Temperature (F)				75	74
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				301 1676	301 1707
*Blower Speed (Blower | Speed (%Max))				68	70
*Blower Vibration (Blower | Vibration (In/Sec))				0.02	0.02
*Blower Current (Blower | Current (Amps))				34.7	36.0
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1238	1369
*Total Flow (MMSCF)				252.92	255.15
*Flow Pressure (InWC)				5.9	6.3
*Flow Temperature (F)				78	77
*Flow DP (InWC)				3.75	4.47
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				252.92	255.15
*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	-38.8
*Demister Outlet Pressure (InWC)				-41.7	-41.8
*Demister DP (InWC)				+2.7	+3.0
*Flame Arrester Inlet Pressure (InWC)				+7.3	+8.0
*Flame Arrester Outlet Pressure (InWC)				+6.6	+7.0
*Flame Arrester DP (InWC)				+0.7	+1.0
*Fail-Close Valve Air Pressure (psi)				105	105
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)				0945	1425
Technician (Initials)				CZ	CZ
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				732 722	726 716
*Power Setpoint (kWh) (Engine #2 | #1)				730 722	722 717
Control Room - Laptop					
*Flow Total (MSCF)				G02399.3	G04280.1
*Flow Rate (SCFM)				1082.8	1054.4
*Discharge Gas Temperature (F)				69.4	73.1
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)				-41.8	-41.6
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)			03/18/20		
Lowry Header - Monitoring					
Time (hh:mm)			1358		
Technician (Initials)					
Control Panel - Digital Recorder					
Flow Rate (SCFM)			187		
Gas Temperature (F)			44.9		
Flare 2 - Monitoring					
Time (hh:mm)			1404		
Technician (Initials)			CS		
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)			37.7		
*Flare DP (inWC)			5.21		
*Flare Flame Temperature (F)			1226		
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			78		
*Gas Handling Skid Inlet Temperature (F)			36		
*Recirculation Valve Position (%Closed)			10		
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			495		
*Total Flow (MMSCF)			578.01		
*Flow Pressure (inWC)			6.6		
*Flow Temperature (F)			102		
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			254.30		
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			24216		
*Blower 301 Vibration (In/Sec)			0.23		
*Blower 301 Speed (%Max)			87		
*Blower 301 Inlet Bearing Temp (F)			90		
*Blower 301 Outlet Bearing Temp (F)			93		
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			13.1		
Gas Handling Skid					
*Demister Inlet Pressure (inWC)			-38.8		
*Demister Outlet Pressure (inWC)			-40.9		
*Demister DP (inWC)			+2.1		
*Flame Arrester Inlet Pressure (inWC)			+8.1		
*Flame Arrester Outlet Pressure (inWC)			+4.4		
*Flame Arrester DP (inWC)			+3.7		
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)			1425		
Technician (Initials)			CS		
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)			39.2		
*Gas Handling Skid Inlet Temperature (F)			57		
*Panel Temperature (F)			76		
*Recirculation Valve Position (%Closed)			100		
*Flare Flame Temperature (F)			1372		
*Flame Arrestor Temperature (F)			89		
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			501 1826		
*Blower Speed (Blower | Speed (%Max))			71		
*Blower Vibration (Blower | Vibration (In/Sec))			0.03		
*Blower Current (Blower | Current (Amps))			37.5		
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			1331		
*Total Flow (MMSCF)			264.83		
*Flow Pressure (InWC)			C.9		
*Flow Temperature (F)			91		
*Flow DP (InWC)			4.41		
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			264.83		
*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)			-39.2		
*Demister Outlet Pressure (InWC)			-41.2		
*Demister DP (InWC)			+2.0		
*Flame Arrester Inlet Pressure (InWC)			+8.4		
*Flame Arrester Outlet Pressure (InWC)			+8.1		
*Flame Arrester DP (InWC)			+0.3		
*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)			1418		
Technician (Initials)			CS		
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			745 731		
*Power Setpoint (kWh) (Engine #2 | #1)			726 716		
Control Room - Laptop					
*Flow Total (MSCF)			C.12050.3		
*Flow Rate (SCFM)			1055.2		
*Discharge Gas Temperature (F)			88.4		
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)			-42.1		
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)		03/24/20			03/27/20
Lowry Header - Monitoring					
Time (hh:mm)		1420			1213
Technician (Initials)		CS			CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)		187			200
Gas Temperature (F)		45.1			45.0
Flare 2 - Monitoring					
Time (hh:mm)		1423			1221
Technician (Initials)		CS			CS
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)		36.4			42.0
*Flare DP (inWC)		5.11			5.24
*Flare Flame Temperature (F)		1198			1093
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		78			66
*Gas Handling Skid Inlet Temperature (F)		34			39
*Recirculation Valve Position (%Closed)		70			70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		498			501
*Total Flow (MMSCF)		601.47			603.57
*Flow Pressure (inWC)		6.5			6.3
*Flow Temperature (F)		102			104
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		257.75			259.86
*Reset Date/Time (mm/dd/yy hh:mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		24331			24401
*Blower 301 Vibration (In/Sec)		0.27			0.26
*Blower 301 Speed (%Max)		85			89
*Blower 301 Inlet Bearing Temp (F)		56			44
*Blower 301 Outlet Bearing Temp (F)		107			93
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.0			13.7
Gas Handling Skid					
*Demister Inlet Pressure (inWC)		-36.1			-42.2
*Demister Outlet Pressure (inWC)		-38.6			-44.3
*Demister DP (inWC)		+2.5			+2.1
*Flame Arrester Inlet Pressure (inWC)		+8.5			+7.4
*Flame Arrester Outlet Pressure (inWC)		+4.7			+4.4
*Flame Arrester DP (inWC)		+3.8			+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)		1436			1300
Technician (Initials)		CS			CS
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)		40.7			39.6
*Gas Handling Skid Inlet Temperature (F)		54			54
*Panel Temperature (F)		76			84
*Recirculation Valve Position (%Closed)		100			100
*Flare Flame Temperature (F)		1241			1284
*Flame Arrestor Temperature (F)		90			81
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		301 1941			301 2012
*Blower Speed (Blower | Speed (%Max))		71			70
*Blower Vibration (Blower | Vibration (In/Sec))		0.03			0.02
*Blower Current (Blower | Current (Amps))		35.9			36.5
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1344			1337
*Total Flow (MMSCF)		274.51			280.35
*Flow Pressure (InWC)		6.9			6.6
*Flow Temperature (F)		90			84
*Flow DP (InWC)		4.28			4.38
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		274.52			280.35
*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)		-40.2			-39.5
*Demister Outlet Pressure (InWC)		-41.5			-40.9
*Demister DP (InWC)		+1.3			+1.4
*Flame Arrester Inlet Pressure (InWC)		+9.1			+8.1
*Flame Arrester Outlet Pressure (InWC)		+8.4			+7.4
*Flame Arrester DP (InWC)		+0.7			+0.7
*Fail-Close Valve Air Pressure (psi)		105			105
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)		1430			1228
Technician (Initials)		CS			CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		733 725			717 712
*Power Setpoint (kWh) (Engine #2 | #1)		733 728			719 716
Control Room - Laptop					
*Flow Total (MSCF)		G20623.2			G24991.9
*Flow Rate (SCFM)		1075.5			1055.3
*Discharge Gas Temperature (F)		100.4			94.6
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)		-42.4			-41.4
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)				04/02/20	04/03/20
Lowry Header - Monitoring					
Time (hh:mm)				1328	1328
Technician (Initials)				CS	CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)				200	200
Gas Temperature (F)				45.3	45.4
Flare 2 - Monitoring					
Time (hh:mm)				1336	1340
Technician (Initials)				CS	CS
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)				41.7	41.1
*Flare DP (InWC)				5.21	5.12
*Flare Flame Temperature (F)				1090	1166
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				50	63
*Gas Handling Skid Inlet Temperature (F)				46	41
*Recirculation Valve Position (%Closed)				70	70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				501	497
*Total Flow (MMSCF)				607.94	608.66
*Flow Pressure (InWC)				6.1	6.2
*Flow Temperature (F)				96	97
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				244.23	244.95
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				24546	24570
*Blower 301 Vibration (In/Sec)				0.27	0.27
*Blower 301 Speed (%Max)				67	67
*Blower 301 Inlet Bearing Temp (F)				30	39
*Blower 301 Outlet Bearing Temp (F)				75	73
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.6	134
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-42.8	-41.3
*Demister Outlet Pressure (InWC)				-45.5	-44.5
*Demister DP (InWC)				+2.7	+3.2
*Flame Arrester Inlet Pressure (InWC)				+7.4	+7.5
*Flame Arrester Outlet Pressure (InWC)				+4.3	+4.4
*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)				1358	1358
Technician (Initials)				CS	CS
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)				39.7	39.7
*Gas Handling Skid Inlet Temperature (F)				53	53
*Panel Temperature (F)				51	51
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				1231	1122
*Flame Arrestor Temperature (F)				72	74
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				301 2157	301 2181
*Blower Speed (Blower | Speed (%Max))				69	70
*Blower Vibration (Blower | Vibration (In/Sec))				0.01	0.02
*Blower Current (Blower | Current (Amps))				35.5	34.3
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1347	1357
*Total Flow (MMSCF)				291.95	293.80
*Flow Pressure (InWC)				6.4	6.4
*Flow Temperature (F)				76	79
*Flow DP (InWC)				4.37	4.43
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				291.95	293.84
*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	-39.2
*Demister Outlet Pressure (InWC)				-41.9	-41.1
*Demister DP (InWC)				+2.0	+1.9
*Flame Arrester Inlet Pressure (InWC)				+7.8	+8.1
*Flame Arrester Outlet Pressure (InWC)				+6.8	+7.4
*Flame Arrester DP (InWC)				+1.0	+0.7
*Fail-Close Valve Air Pressure (psi)				105	105
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)				1348	1347
Technician (Initials)				CG	CG
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				659 673	724 708
*Power Setpoint (kWh) (Engine #2 | #1)				715 735	728 722
Control Room - Laptop					
*Flow Total (MSCF)				634387.3	635971.4
*Flow Rate (SCFM)				1092.4	1092.0
*Discharge Gas Temperature (F)				87.1	82.6
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)				-40.6	-41.2
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)				04/09/20	04/10/20
Lowry Header - Monitoring					
Time (hh:mm)				1418	1343
Technician (Initials)				CB	CB
Control Panel - Digital Recorder					
Flow Rate (SCFM)				176	174
Gas Temperature (F)				46.0	46.2
Flare 2 - Monitoring					
Time (hh:mm)				1415	1347
Technician (Initials)				CB	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)				40.5	40.1
*Flare DP (InWC)				5.25	5.31
*Flare Flame Temperature (F)				1059	1172
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				77	78
*Gas Handling Skid Inlet Temperature (F)				37	39
*Recirculation Valve Position (%Closed)				70	70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				499	497
*Total Flow (MMSCF)				G13.00	G13.71
*Flow Pressure (InWC)				G.5	G.6
*Flow Temperature (F)				102	110
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				269.29	270.00
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				24715	24738
*Blower 301 Vibration (In/Sec)				0.27	0.23
*Blower 301 Speed (%Max)				87	79
*Blower 301 Inlet Bearing Temp (F)				52	114
*Blower 301 Outlet Bearing Temp (F)				99	109
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.2	13.5
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-40.2	-40.2
*Demister Outlet Pressure (InWC)				-42.2	-42.2
*Demister DP (InWC)				+2.0	+2.0
*Flame Arrester Inlet Pressure (InWC)				+7.9	+8.4
*Flame Arrester Outlet Pressure (InWC)				+4.5	+4.8
*Flame Arrester DP (InWC)				+3.4	+3.6
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)				1434	1484
Technician (Initials)				CB	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)				39.8	40.0
*Gas Handling Skid Inlet Temperature (F)				76	83
*Panel Temperature (F)				100	100
*Recirculation Valve Position (%Closed)				1275	1323
*Flare Flame Temperature (F)				84	93
*Flame Arrestor Temperature (F)					
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				302 1219	302 1243
*Blower Speed (Blower | Speed (%Max))				69	72
*Blower Vibration (Blower | Vibration (In/Sec))				0.02	0.02
*Blower Current (Blower | Current (Amps))				34.6	34.1
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1271	1338
*Total Flow (MMSCF)				305.79	307.62
*Flow Pressure (inWC)				6.3	7.3
*Flow Temperature (F)				87	95
*Flow DP (inWC)				3.99	4.44
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				305.79	307.63
*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	-39.5
*Demister Outlet Pressure (inWC)				-41.2	-41.8
*Demister DP (inWC)				+1.3	+2.3
*Flame Arrester Inlet Pressure (inWC)				+7.7	+9.1
*Flame Arrester Outlet Pressure (inWC)				+7.4	+8.5
*Flame Arrester DP (inWC)				+0.3	+0.6
*Fail-Close Valve Air Pressure (psi)				105	105
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)				1426	1355
Technician (Initials)				CZ	CZ
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				711 706	718 712
*Power Setpoint (kWh) (Engine #2 | #1)				728 715	715 723
Control Room - Laptop					
*Flow Total (MSCF)				C44900.8	C46377.2
*Flow Rate (SCFM)				1069.6	1029.8
*Discharge Gas Temperature (F)				99.1	71.9
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)				-41.8	-43.1
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)			04/15/20		
Lowry Header - Monitoring					
Time (hh:mm)			1302		
Technician (Initials)			CS		
Control Panel - Digital Recorder					
Flow Rate (SCFM)			178		
Gas Temperature (F)			46.7		
Flare 2 - Monitoring					
Time (hh:mm)			1308		
Technician (Initials)			CS		
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)			41.7		
*Flare DP (InWC)			5.26		
*Flare Flame Temperature (F)			1220		
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			74		
*Gas Handling Skid Inlet Temperature (F)			41		
*Recirculation Valve Position (%Closed)			70		
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			497		
*Total Flow (MMSCF)			17.09		
*Flow Pressure (InWC)			6.3		
*Flow Temperature (F)			110		
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			273.38		
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			24851		
*Blower 301 Vibration (In/Sec)			0.27		
*Blower 301 Speed (%Max)			89		
*Blower 301 Inlet Bearing Temp (F)			96		
*Blower 301 Outlet Bearing Temp (F)			105		
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			13.5		
Gas Handling Skid					
*Demister Inlet Pressure (InWC)			-41.8		
*Demister Outlet Pressure (InWC)			-44.3		
*Demister DP (InWC)			+2.5		
*Flame Arrester Inlet Pressure (InWC)			+7.8		
*Flame Arrester Outlet Pressure (InWC)			+4.4		
*Flame Arrester DP (InWC)			+3.4		
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)			1336		
Technician (Initials)			CS		
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)			56		
*Panel Temperature (F)			77		
*Recirculation Valve Position (%Closed)			100		
*Flare Flame Temperature (F)			1302		
*Flame Arrestor Temperature (F)			88		
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			302 1362		
*Blower Speed (Blower | Speed (%Max))			71		
*Blower Vibration (Blower | Vibration (In/Sec))			0.01		
*Blower Current (Blower | Current (Amps))			35.8		
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			1329		
*Total Flow (MMSCF)			318.90		
*Flow Pressure (inWC)			46		
*Flow Temperature (F)			40		
*Flow DP (inWC)			4.42		
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			318.92		
*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)			-39.2		
*Demister Outlet Pressure (inWC)			-40.9		
*Demister DP (inWC)			+1.7		
*Flame Arrester Inlet Pressure (inWC)			+8.1		
*Flame Arrester Outlet Pressure (inWC)			+7.4		
*Flame Arrester DP (inWC)			+0.7		
*Fail-Close Valve Air Pressure (psi)			105		
Flare					
*Visible Emissions (Yes/No, If yes explain)			No		
*Spiralator Position (%Open)			80		
*Manual Louver 1 Position (%Open)			80		
*Manual Louver 2 Position (%Open)			80		
Other					
*Heat Trace OK (Check for Yes)	☐	☐	✓	☐	☐
*Propane Tank Level OK (T1 | T2 (Check for Yes))	☐ ☐	☐ ☐	✓ ✓	☐ ☐	☐ ☐

Engine Plant 1 - Monitoring

Time (hh:mm)			1316		
Technician (Initials)			CS		
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			739 725		
*Power Setpoint (kWh) (Engine #2 | #1)			740 730		
Control Room - Laptop					
*Flow Total (MSCF)			652814.2		
*Flow Rate (SCFM)			1039.8		
*Discharge Gas Temperature (F)			79.0		
Engine Bay/Control Room Window					
*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)		04/21/20			04/24/20
Lowry Header - Monitoring					
Time (hh:mm)		1039			1338
Technician (Initials)		CS			CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)		174			174
Gas Temperature (F)		46.9			47.2
Flare 2 - Monitoring					
Time (hh:mm)		1045			1347
Technician (Initials)		CS			CS
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)		40.9			40.6
*Flare DP (InWC)		5.27			5.26
*Flare Flame Temperature (F)		1174			959
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		76			74
*Gas Handling Skid Inlet Temperature (F)		40			41
*Recirculation Valve Position (%Closed)		70			70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		496			495
*Total Flow (MMSCF)		621.34			623.60
*Flow Pressure (InWC)		6.4			6.3
*Flow Temperature (F)		111			104
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		277.63			279.88
*Reset Date/Time (mm/dd/yy hh:mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		24992			25067
*Blower 301 Vibration (In/Sec)		0.21			0.28
*Blower 301 Speed (%Max)		88			87
*Blower 301 Inlet Bearing Temp (F)		70			53
*Blower 301 Outlet Bearing Temp (F)		108			102
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.7			13.5
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-40.2			-40.5
*Demister Outlet Pressure (InWC)		-43.6			-43.9
*Demister DP (InWC)		+3.4			+3.4
*Flame Arrester Inlet Pressure (InWC)		+8.1			+7.4
*Flame Arrester Outlet Pressure (InWC)		+4.5			+4.3
*Flame Arrester DP (InWC)		+3.6			+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)		1057			1342
Technician (Initials)		CS			CS
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			39.9
*Gas Handling Skid Inlet Temperature (F)		88			58
*Panel Temperature (F)		79			74
*Recirculation Valve Position (%Closed)		100			100
*Flare Flame Temperature (F)		1261			1328
*Flame Arrestor Temperature (F)		92			89
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		302 1503			302 1579
*Blower Speed (Blower | Speed (%Max))		71			71
*Blower Vibration (Blower | Vibration (In/Sec))		0.02			0.02
*Blower Current (Blower | Current (Amps))		35.8			36.3
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1327			1355
*Total Flow (MMSCF)		330.17			336.25
*Flow Pressure (InWC)		6.7			7.4
*Flow Temperature (F)		93			90
*Flow DP (InWC)		4.40			4.45
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		330.17			336.25
*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)		-39.1			-39.6
*Demister Outlet Pressure (InWC)		-41.5			-41.2
*Demister DP (InWC)		+2.4			+1.6
*Flame Arrester Inlet Pressure (InWC)		+8.4			+8.7
*Flame Arrester Outlet Pressure (InWC)		+7.8			+7.8
*Flame Arrester DP (InWC)		+0.6			+0.9
*Fail-Close Valve Air Pressure (psi)		105			105
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)		1050			1357
Technician (Initials)		CB			CB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		715 734			612 661
*Power Setpoint (kWh) (Engine #2 | #1)		722 732			714 700
Control Room - Laptop					
*Flow Total (MSCF)		661623.9			666282.1
*Flow Rate (SCFM)		1045.3			1030.8
*Discharge Gas Temperature (F)		73.3			92.5
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)		-42.4			-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)				04/30/20	05/01/20
Lowry Header - Monitoring					
Time (hh:mm)				0817	0658
Technician (Initials)				CS	CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)				193	191
Gas Temperature (F)				48.0	48.1
Flare 2 - Monitoring					
Time (hh:mm)				0823	0702
Technician (Initials)				CS	CS
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)				42.1	42.3
*Flare DP (InWC)				5.27	5.32
*Flare Flame Temperature (F)				1205	1175
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				76	76
*Gas Handling Skid Inlet Temperature (F)				43	44
*Recirculation Valve Position (%Closed)				70	70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				497	500
*Total Flow (MMSCF)				627.76	628.44
*Flow Pressure (InWC)				6.4	6.4
*Flow Temperature (F)				113	112
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				284.05	284.72
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				25206	25229
*Blower 301 Vibration (In/Sec)				0.24	0.24
*Blower 301 Speed (%Max)				89	90
*Blower 301 Inlet Bearing Temp (F)				66	63
*Blower 301 Outlet Bearing Temp (F)				100	89
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.6	13.9
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-42.2	-42.2
*Demister Outlet Pressure (InWC)				-45.2	-45.2
*Demister DP (InWC)				+3.0	+3.0
*Flame Arrester Inlet Pressure (InWC)				+7.8	+7.8
*Flame Arrester Outlet Pressure (InWC)				+4.5	+4.6
*Flame Arrester DP (InWC)				+3.3	+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)				0843	0718
Technician (Initials)				CS	CS
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)				39.6	40.0
*Gas Handling Skid Inlet Temperature (F)				59	59
*Panel Temperature (F)				80	77
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				1281	1323
*Flame Arrestor Temperature (F)				92	90
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				302 1717	302 1740
*Blower Speed (Blower | Speed (%Max))				73	72
*Blower Vibration (Blower | Vibration (in/Sec))				0.03	0.02
*Blower Current (Blower | Current (Amps))				38.0	37.1
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1415	1368
*Total Flow (MMSCF)				348.69	350.62
*Flow Pressure (inWC)				7.7	7.3
*Flow Temperature (F)				94	92
*Flow DP (inWC)				4.97	4.60
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				348.69	350.62
*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	-40.2
*Demister Outlet Pressure (inWC)				-41.2	-41.6
*Demister DP (inWC)				+1.4	+1.4
*Flame Arrester Inlet Pressure (inWC)				+9.5	+9.1
*Flame Arrester Outlet Pressure (inWC)				+8.5	+8.1
*Flame Arrester DP (inWC)				+1.0	+1.0
*Fail-Close Valve Air Pressure (psi)				105	105
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)				0831	0711
Technician (Initials)				CB	CB
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				725 732	737 715
*Power Setpoint (kWh) (Engine #2 | #1)				722 736	723 724
Control Room - Laptop					
*Flow Total (MSCF)				6788C1.9	675249.8
*Flow Rate (SCFM)				1054.6	1074.5
*Discharge Gas Temperature (F)				72.0	73.6
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)				-43.3	-42.3
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)			05/06/20		05/08/20
Lowry Header - Monitoring					
Time (hh:mm)			1326		1319
Technician (Initials)			CS		CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)			192		192
Gas Temperature (F)			49.4		49.8
Flare 2 - Monitoring					
Time (hh:mm)			1332		1326
Technician (Initials)			CS		CS
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)			41.7		41.3
*Flare DP (InWC)			5.32		5.28
*Flare Flame Temperature (F)			1272		1142
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			76		78
*Gas Handling Skid Inlet Temperature (F)			47		45
*Recirculation Valve Position (%Closed)			70		70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)			497		497
*Total Flow (MMSCF)			G32.24		G33.68
*Flow Pressure (InWC)			G.5		G.3
*Flow Temperature (F)			119		109
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			288.53		289.97
*Reset Date/Time (mm/dd/yy hh.mm.ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			25355		25403
*Blower 301 Vibration (In/Sec)			0.24		0.24
*Blower 301 Speed (%Max)			90		88
*Blower 301 Inlet Bearing Temp (F)			81		86
*Blower 301 Outlet Bearing Temp (F)			113		91
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			13.7		13.5
Gas Handling Skid					
*Demister Inlet Pressure (InWC)			-41.9		-41.8
*Demister Outlet Pressure (InWC)			-44.8		-44.5
*Demister DP (InWC)			+3.2		+2.7
*Flame Arrester Inlet Pressure (InWC)			+7.6		+7.5
*Flame Arrester Outlet Pressure (InWC)			+4.7		+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)			1404		1348
Technician (Initials)			CS		CS
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)			39.6		39.7
*Gas Handling Skid Inlet Temperature (F)			62		61
*Panel Temperature (F)			83		74
*Recirculation Valve Position (%Closed)			100		100
*Flare Flame Temperature (F)			1162		1307
*Flame Arrestor Temperature (F)			96		88
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			302 1967		301 2205
*Blower Speed (Blower | Speed (%Max))			71		69
*Blower Vibration (Blower | Vibration (In/Sec))			0.02		0.03
*Blower Current (Blower | Current (Amps))			36.5		34.6
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			1311		1263
*Total Flow (MMSCF)			360.77		364.43
*Flow Pressure (inWC)			6.9		6.2
*Flow Temperature (F)			97		90
*Flow DP (inWC)			4.23		3.94
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			360.77		364.44
*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		-39.9
*Demister Outlet Pressure (inWC)			-41.3		-41.5
*Demister DP (inWC)			+1.6		+1.6
*Flame Arrester Inlet Pressure (inWC)			+8.2		+7.2
*Flame Arrester Outlet Pressure (inWC)			+7.5		+6.6
*Flame Arrester DP (inWC)			+0.7		+0.6
*Fail-Close Valve Air Pressure (psi)			105		105
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)			1354		1340
Technician (Initials)			CD		CD
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			723 733		733 735
*Power Setpoint (kWh) (Engine #2 | #1)			718 740		731 725
Control Room - Laptop					
*Flow Total (MSCF)			C834C4.7		C86529.9
*Flow Rate (SCFM)			1055.0		1062.9
*Discharge Gas Temperature (F)			73.6		99.0
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)			-42.4		-42.5
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)		05/12/20			05/15/20
Lowry Header - Monitoring					
Time (hh:mm)		0857			0919
Technician (Initials)		CS			CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)		186			185
Gas Temperature (F)		50.5			51.0
Flare 2 - Monitoring					
Time (hh:mm)		0905			1022
Technician (Initials)		CS			CS
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			40.7
*Flare DP (InWC)		5.28			5.28
*Flare Flame Temperature (F)		1179			1210
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		72			74
*Gas Handling Skid Inlet Temperature (F)		49			49
*Recirculation Valve Position (%Closed)		70			70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		500			502
*Total Flow (MMSCF)		636.43			636.63
*Flow Pressure (InWC)		6.3			6.5
*Flow Temperature (F)		110			115
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		292.72			294.92
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		25495			25528
*Blower 301 Vibration (In/Sec)		0.24			0.21
*Blower 301 Speed (%Max)		89			88
*Blower 301 Inlet Bearing Temp (F)		57			66
*Blower 301 Outlet Bearing Temp (F)		87			95
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.5			13.6
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-40.6			-40.9
*Demister Outlet Pressure (InWC)		-43.4			-43.5
*Demister DP (InWC)		+2.8			+2.6
*Flame Arrester Inlet Pressure (InWC)		+1.8			+7.4
*Flame Arrester Outlet Pressure (InWC)		+4.5			+4.5
*Flame Arrester DP (InWC)		+3.3			+3.4
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)		0933			1045
Technician (Initials)		CS			CS
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			39.9
*Gas Handling Skid Inlet Temperature (F)		C1			C2
*Panel Temperature (F)		73			74
*Recirculation Valve Position (%Closed)		100			100
*Flare Flame Temperature (F)		1096			998
*Flame Arrestor Temperature (F)		87			89
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		301 2297			301 2370
*Blower Speed (Blower | Speed (%Max))		C9			C7
*Blower Vibration (Blower | Vibration (In/Sec))		0.02			0.02
*Blower Current (Blower | Current (Amps))		34.4			32.2
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1252			1176
*Total Flow (MMSCF)		371.23			376.53
*Flow Pressure (inWC)		5.8			5.0
*Flow Temperature (F)		89			91
*Flow DP (inWC)		388			3.45
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		371.23			376.53
*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			-39.5
*Demister Outlet Pressure (inWC)		-41.2			-40.9
*Demister DP (inWC)		+1.7			+1.4
*Flame Arrester Inlet Pressure (inWC)		+7.4			+6.1
*Flame Arrester Outlet Pressure (inWC)		+6.7			+5.4
*Flame Arrester DP (inWC)		+0.7			+0.7
*Fail-Close Valve Air Pressure (psi)		105			105
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)		0920			1033
Technician (Initials)		CS			CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		717 722			0722 708
*Power Setpoint (kWh) (Engine #2 | #1)		729 716			714 725
Control Room - Laptop					
*Flow Total (MSCF)		G92398.1			G97080.6
*Flow Rate (SCFM)		1954.5			1091.9
*Discharge Gas Temperature (F)		95.1			100.1
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)		-42.5			-42.8
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)					05/22/20
Lowry Header - Monitoring					
Time (hh:mm)					0948
Technician (Initials)					CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)					188
Gas Temperature (F)					52.2
Flare 2 - Monitoring					
Time (hh:mm)					0955
Technician (Initials)					CS
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)					5.38
*Flare Flame Temperature (F)					1166
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)					75
*Gas Handling Skid Inlet Temperature (F)					53
*Recirculation Valve Position (%Closed)					70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)					497
*Total Flow (MMSCF)					643.67
*Flow Pressure (InWC)					6.6
*Flow Temperature (F)					126
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)					299.96
*Reset Date/Time (mm/dd/yy hh mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)					25736
*Blower 301 Vibration (In/Sec)					0.24
*Blower 301 Speed (%Max)					91
*Blower 301 Inlet Bearing Temp (F)					92
*Blower 301 Outlet Bearing Temp (F)					106
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)					13.9
Gas Handling Skid					
*Demister Inlet Pressure (InWC)					-43.2
*Demister Outlet Pressure (InWC)					-46.2
*Demister DP (InWC)					+3.0
*Flame Arrester Inlet Pressure (InWC)					+7.1
*Flame Arrester Outlet Pressure (InWC)					+4.6
*Flame Arrester DP (InWC)					+2.5
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))	☐ ☐	☐ ☐	☐ ☐	☐ ☐	✓ ✓
Flare 3 - Monitoring					
Time (hh:mm)					1023
Technician (Initials)					CS
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)					39.7
*Gas Handling Skid Inlet Temperature (F)					64
*Panel Temperature (F)					78
*Recirculation Valve Position (%Closed)					100
*Flare Flame Temperature (F)					1150
*Flame Arrestor Temperature (F)					96
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))					301 2538
*Blower Speed (Blower | Speed (%Max))					69
*Blower Vibration (Blower | Vibration (in/Sec))					0.03
*Blower Current (Blower | Current (Amps))					31.7
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)					1249
*Total Flow (MMSCF)					389.24
*Flow Pressure (InWC)					6.2
*Flow Temperature (F)					94
*Flow DP (InWC)					3.94
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)					389.24
*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)					-40.2
*Demister Outlet Pressure (InWC)					-41.3
*Demister DP (InWC)					+1.0
*Flame Arrester Inlet Pressure (InWC)					+6.7
*Flame Arrester Outlet Pressure (InWC)					+6.2
*Flame Arrester DP (InWC)					+0.5
*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)					1005
Technician (Initials)					CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)					672 709
*Power Setpoint (kWh) (Engine #2 | #1)					699 715
Control Room - Laptop					
*Flow Total (MSCF)					707379.1
*Flow Rate (SCFM)					1054.9
*Discharge Gas Temperature (F)					79.8
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)					-42.8
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)			05/27/20		05/29/20
Lowry Header - Monitoring					
Time (hh:mm)			0914		0757
Technician (Initials)			CS		CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)			198		203
Gas Temperature (F)			53.2		55
Flare 2 - Monitoring					
Time (hh:mm)			0920		0803
Technician (Initials)			CS		CS
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)			42.0		41.3
*Flare DP (InWC)			5.42		5.44
*Flare Flame Temperature (F)			1160		1143
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)			74		75
*Gas Handling Skid Inlet Temperature (F)			54		54
*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)			647.25		648.65
*Flow Pressure (InWC)			6.7		6.6
*Flow Temperature (F)			130		125
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)			303.54		304.94
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)			25855		25902
*Blower 301 Vibration (In/Sec)			0.24		0.21
*Blower 301 Speed (%Max)			91		90
*Blower 301 Inlet Bearing Temp (F)			97		81
*Blower 301 Outlet Bearing Temp (F)			114		106
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)			13.9		13.8
Gas Handling Skid					
*Demister Inlet Pressure (InWC)			-42.2		-41.9
*Demister Outlet Pressure (InWC)			-45.3		-45.2
*Demister DP (InWC)			+3.1		+3.3
*Flame Arrester Inlet Pressure (InWC)			+8.2		+7.8
*Flame Arrester Outlet Pressure (InWC)			+4.7		+4.6
*Flame Arrester DP (InWC)			+3.5		+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)			0940		0822
Technician (Initials)			CS		CS
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)			39.6		39.7
*Gas Handling Skid Inlet Temperature (F)			65		64
*Panel Temperature (F)			79		77
*Recirculation Valve Position (%Closed)			100		100
*Flare Flame Temperature (F)			1293		1265
*Flame Arrestor Temperature (F)			97		95
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))			301 2657		301 2704
*Blower Speed (Blower | Speed (%Max))			68		68
*Blower Vibration (Blower | Vibration (In/Sec))			0.03		0.02
*Blower Current (Blower | Current (Amps))			53.7		53.9
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)			1215		1219
*Total Flow (MMSCF)			398.39		401.74
*Flow Pressure (InWC)			5.7		5.7
*Flow Temperature (F)			99		97
*Flow DP (InWC)			3.67		3.74
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)			398.39		401.74
*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)			-39.2		-38.8
*Demister Outlet Pressure (InWC)			-40.9		-40.5
*Demister DP (InWC)			+1.7		+1.7
*Flame Arrester Inlet Pressure (InWC)			+7.1		+7.1
*Flame Arrester Outlet Pressure (InWC)			+6.4		+6.4
*Flame Arrester DP (InWC)			+0.7		+0.7
*Fail-Close Valve Air Pressure (psi)			105		105
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)			0928		0810
Technician (Initials)			CS		CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)			691 686		718 681
*Power Setpoint (kWh) (Engine #2 | #1)			723 728		743 748
Control Room - Laptop					
*Flow Total (MSCF)			7146489.1		7177630
*Flow Rate (SCFM)			1087.1		1097.1
*Discharge Gas Temperature (F)			74.7		75.2
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)			-42.9		-42.5
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)		06/02/20			06/05/20
Lowry Header Monitoring					
Time (hh:mm)		1154			1141
Technician (Initials)		CS			CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)		202			177
Gas Temperature (F)		54.2			54.9
Flare 2 - Monitoring					
Time (hh:mm)		1203			1146
Technician (Initials)		CS			CS
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)		40.2			39.4
*Flare DP (InWC)		5.44			5.57
*Flare Flame Temperature (F)		1119			1186
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		80			77
*Gas Handling Skid Inlet Temperature (F)		~~55~~			59
*Recirculation Valve Position (%Closed)		90			90
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		501			503
*Total Flow (MMSCF)		51.66			53.81
*Flow Pressure (InWC)		6.9			6.9
*Flow Temperature (F)		130			137
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		307.94			310.10
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		26002			26074
*Blower 301 Vibration (In/Sec)		0.23			0.24
*Blower 301 Speed (%Max)		89			90
*Blower 301 Inlet Bearing Temp (F)		99			112
*Blower 301 Outlet Bearing Temp (F)		124			131
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.9			13.8
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-40.5			-40.1
*Demister Outlet Pressure (InWC)		-43.1			-43.2
*Demister DP (InWC)		+2.6			+3.1
*Flame Arrester Inlet Pressure (InWC)		+8.1			+7.8
*Flame Arrester Outlet Pressure (InWC)		+4.8			+4.8
*Flame Arrester DP (InWC)		+3.3			+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)		1238			1287
Technician (Initials)		CS			CS
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			39.8
*Gas Handling Skid Inlet Temperature (F)		66			69
*Panel Temperature (F)		82			87
*Recirculation Valve Position (%Closed)		100			100
*Flare Flame Temperature (F)		1325			1388
*Flame Arrestor Temperature (F)		101			106
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		301 2804			302 1961
*Blower Speed (Blower | Speed (%Max))		68			72
*Blower Vibration (Blower | Vibration (In/Sec))		0.03			0.04
*Blower Current (Blower | Current (Amps))		333			55.4
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1201			1191
*Total Flow (MMSCF)		409.27			414.45
*Flow Pressure (InWC)		5.8			6.1
*Flow Temperature (F)		102			107
*Flow DP (InWC)		3.65			3.54
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		409.27			414.45
*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)		-39.3			-39.2
*Demister Outlet Pressure (InWC)		-40.7			-41.5
*Demister DP (InWC)		+1.4			+2.3
*Flame Arrester Inlet Pressure (InWC)		+7.3			+7.4
*Flame Arrester Outlet Pressure (InWC)		+6.7			+6.4
*Flame Arrester DP (InWC)		+0.6			+1.0
*Fail-Close Valve Air Pressure (psi)		105			105
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)		1217			1154
Technician (Initials)		CS			CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		720 700			695 691
*Power Setpoint (kWh) (Engine #2 | #1)		713 706			703 710
Control Room - Laptop					
*Flow Total (MSCF)		724124.2			728554.3
*Flow Rate (SCFM)		1078.5			1052.6
*Discharge Gas Temperature (F)		97.4			98.9
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)		-44.8			-44.7
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)				06/11/20	
Lowry Header - Monitoring					
Time (hh:mm)				1244	
Technician (Initials)				CS	
Control Panel - Digital Recorder					
Flow Rate (SCFM)				172	
Gas Temperature (F)				55.8	
Flare 2 - Monitoring					
Time (hh:mm)				1248	
Technician (Initials)				CS	
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)				37.9	
*Flare DP (InWC)				5.50	
*Flare Flame Temperature (F)				1043	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				76	
*Gas Handling Skid Inlet Temperature (F)				59	
*Recirculation Valve Position (%Closed)				70	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				504	
*Total Flow (MMSCF)				168.17	
*Flow Pressure (InWC)				6.8	
*Flow Temperature (F)				129	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				314.46	
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				26219	
*Blower 301 Vibration (In/Sec)				0.25	
*Blower 301 Speed (%Max)				57	
*Blower 301 Inlet Bearing Temp (F)				95	
*Blower 301 Outlet Bearing Temp (F)				119	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.1	
Gas Handling Skid					
*Demister Inlet Pressure (InWC)				-38.7	
*Demister Outlet Pressure (InWC)				-41.4	
*Demister DP (InWC)				+2.7	
*Flame Arrester Inlet Pressure (InWC)				+7.8	
*Flame Arrester Outlet Pressure (InWC)				+4.8	
*Flame Arrester DP (InWC)				+3.0	
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)				1314	
Technician (Initials)				CS	
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)				39.2	
*Gas Handling Skid Inlet Temperature (F)				69	
*Panel Temperature (F)				85	
*Recirculation Valve Position (%Closed)				100	
*Flare Flame Temperature (F)				1228	
*Flame Arrestor Temperature (F)				108	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				302 2106	
*Blower Speed (Blower | Speed (%Max))				77	
*Blower Vibration (Blower | Vibration (In/Sec))				0.07	
*Blower Current (Blower | Current (Amps))				44.1	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1408	
*Total Flow (MMSCF)				425.99	
*Flow Pressure (inWC)				8.4	
*Flow Temperature (F)				109	
*Flow DP (inWC)				5.13	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				425.99	
*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	
*Demister Outlet Pressure (inWC)				-43.3	
*Demister DP (inWC)				+3.5	
*Flame Arrester Inlet Pressure (inWC)				+10.0	
*Flame Arrester Outlet Pressure (inWC)				+9.1	
*Flame Arrester DP (inWC)				+9.0	
*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)				1301	
Technician (Initials)				CG	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				720 GTZ	
*Power Setpoint (kWh) (Engine #2 | #1)				704 —	
Control Room - Laptop					
*Flow Total (MSCF)				736662.6	
*Flow Rate (SCFM)				820.7	
*Discharge Gas Temperature (F)				79.2	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)				-42.3	
Other					
*Visible Emissions (Yes/No, if yes explain)				NO	

Note * Collect during device operation only

Remarks

08/11 - Engine #1 Down

Collection and Control System Monitoring

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday
Date (mm/dd/yy)		06/16/20			06/19/20
Lowry Header - Monitoring					
Time (hh:mm)		1253			1332
Technician (Initials)		CS			CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)		169			169
Gas Temperature (F)		56.3			56.7
Flare 2 - Monitoring					
Time (hh:mm)		1301			1434
Technician (Initials)		CS			CS
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)		37.4			39.9
*Flare DP (InWC)		5.41			5.25
*Flare Flame Temperature (F)		934			726
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		80			76
*Gas Handling Skid Inlet Temperature (F)		61			62
*Recirculation Valve Position (%Closed)		70			70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		496			504
*Total Flow (MMSCF)		661.78			633.96
*Flow Pressure (InWC)		7.1			6.5
*Flow Temperature (F)		133			108
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		318.07			320.25
*Reset Date/Time (mm/dd/yy hh mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		26339			26412
*Blower 301 Vibration (In/Sec)		0.24			0.42
*Blower 301 Speed (%Max)		89			89
*Blower 301 Inlet Bearing Temp (F)		104			112
*Blower 301 Outlet Bearing Temp (F)		121			126
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.6			14.6
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-36.1			-38.8
*Demister Outlet Pressure (InWC)		-41.2			-43.2
*Demister DP (InWC)		+5.1			+4.4
*Flame Arrester Inlet Pressure (InWC)		-18.4			+7.8
*Flame Arrester Outlet Pressure (InWC)		-15.1			+4.6
*Flame Arrester DP (InWC)		+3.3			+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)		1326			1347
Technician (Initials)		CS			CS
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			38.9
*Gas Handling Skid Inlet Temperature (F)		77			67
*Panel Temperature (F)		90			76
*Recirculation Valve Position (%Closed)		100			100
*Flare Flame Temperature (F)		1332			1041
*Flame Arrestor Temperature (F)		110			95
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		302 2227			302 2298
*Blower Speed (Blower | Speed (%Max))		74			76
*Blower Vibration (Blower | Vibration (In/Sec))		0.04			0.05
*Blower Current (Blower | Current (Amps))		37.1			41.7
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1272			1548
*Total Flow (MMSCF)		434.72			439.85
*Flow Pressure (InWC)		7.0			9.6
*Flow Temperature (F)		110			100
*Flow DP (InWC)		4.04			6.24
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		434.72			439.85
*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)		-38.2			-38.2
*Demister Outlet Pressure (InWC)		-42.2			-43.2
*Demister DP (InWC)		+4.0			+10.0
*Flame Arrester Inlet Pressure (InWC)		+8.1			+13.5
*Flame Arrester Outlet Pressure (InWC)		+7.4			+12.2
*Flame Arrester DP (InWC)		+0.7			+1.3
*Fail-Close Valve Air Pressure (psi)		105			105
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)		1320			1337
Technician (Initials)		BS			CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		681 704			735 692
*Power Setpoint (kWh) (Engine #2 | #1)		674 681			704 765
Control Room - Laptop					
*Flow Total (MSCF)		744178.6			748534.1
*Flow Rate (SCFM)		983.6			1016.6
*Discharge Gas Temperature (F)		106.6			87.7
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)		-44.2			-43.4
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)				06/25/20	06/26/20
Lowry Header - Monitoring					
Time (hh:mm)				1221	1201
Technician (Initials)				CS	CS
Control Panel - Digital Recorder					
Flow Rate (SCFM)				165	166
Gas Temperature (F)				57.7	57.8
Flare 2 - Monitoring					
Time (hh:mm)				1229	1209
Technician (Initials)				CS	CS
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)				37.9	38.2
*Flare DP (inWC)				5.58	5.51
*Flare Flame Temperature (F)				1098	756
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)				63	79
*Gas Handling Skid Inlet Temperature (F)				63	62
*Recirculation Valve Position (%Closed)				70	70
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)				506	506
*Total Flow (MMSCF)				268.22	268.93
*Flow Pressure (inWC)				0.9	0.9
*Flow Temperature (F)				138	132
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)				324.51	325.22
*Reset Date/Time (mm/dd/yy hh:mm ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)				26553	26577
*Blower 301 Vibration (In/Sec)				0.23	0.21
*Blower 301 Speed (%Max)				89	88
*Blower 301 Inlet Bearing Temp (F)				109	95
*Blower 301 Outlet Bearing Temp (F)				142	124
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)				13.8	13.7
Gas Handling Skid					
*Demister Inlet Pressure (inWC)				-37.4	-36.8
*Demister Outlet Pressure (inWC)				-40.9	-42.2
*Demister DP (inWC)				+3.5	+5.4
*Flame Arrester Inlet Pressure (inWC)				+8.0	+8.1
*Flame Arrester Outlet Pressure (inWC)				+4.9	+4.8
*Flame Arrester DP (inWC)				+3.1	+3.3
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)				1256	1233
Technician (Initials)				CS	CS
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)				39.4	40.4
*Gas Handling Skid Inlet Temperature (F)				72	71
*Panel Temperature (F)				86	86
*Recirculation Valve Position (%Closed)				100	100
*Flare Flame Temperature (F)				1360	1278
*Flame Arrestor Temperature (F)				109	108
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))				302 2439	302 2462
*Blower Speed (Blower | Speed (%Max))				74	73
*Blower Vibration (Blower | Vibration (In/Sec))				0.05	0.03
*Blower Current (Blower | Current (Amps))				38.2	37.2
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)				1357	1371
*Total Flow (MMSCF)				450.76	452.63
*Flow Pressure (InWC)				7.7	7.1
*Flow Temperature (F)				110	108
*Flow DP (InWC)				4.91	4.67
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)				450.76	452.63
*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)				-22.7	-17.5
*Demister Outlet Pressure (InWC)				-42.2	-42.0
*Demister DP (InWC)				+19.5	+24.5
*Flame Arrester Inlet Pressure (InWC)				+9.2	+8.8
*Flame Arrester Outlet Pressure (InWC)				+8.4	+7.5
*Flame Arrester DP (InWC)				+0.8	+1.3
*Fail-Close Valve Air Pressure (psi)				105	105
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)				1240	1220
Technician (Initials)				CS	CS
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)				705 690	712 646
*Power Setpoint (kWh) (Engine #2 | #1)				685 704	685 703
Control Room - Laptop					
*Flow Total (MSCF)				756671.9	758113.4
*Flow Rate (SCFM)				995.4	1009.7
*Discharge Gas Temperature (F)				92.1	84.7
Engine Bay/Control Room Window					
*Inlet Gas Pressure (InWC)				-44.4	-42.7
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)		06/30/20		07/02/20	
Lowry Header - Monitoring					
Time (hh:mm)		0904		1234	
Technician (Initials)		CS		CS	
Control Panel - Digital Recorder					
Flow Rate (SCFM)		1601		1600	
Gas Temperature (F)		58.4		58.9	
Flare 2 - Monitoring					
Time (hh:mm)		0908		1240	
Technician (Initials)		CS		CS	
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)		36.1		34.9	
*Flare DP (InWC)		5.45		5.56	
*Flare Flame Temperature (F)		1209		1113	
Control Panel - Touchscreen *(Press Next)*					
Panel Temperature (F)		77		78	
*Gas Handling Skid Inlet Temperature (F)		64		69	
*Recirculation Valve Position (%Closed)		70		70	
Control Panel - Touchscreen - Flare Flow Data *(Press Back 2x, Flare Flow Data)*					
*Flow Rate (SCFM)		505		502	
*Total Flow (MMSCF)		269.94		271.49	
*Flow Pressure (InWC)		6.6		6.9	
*Flow Temperature (F)		127		139	
Control Panel - Touchscreen *(Press Resettable Flow History, Analog Data Menu, Blower Data)*					
*Resettable Total Flow (MMSCF)		326.23		327.77	
*Reset Date/Time (mm/dd/yy hh:mm:ss)					
Control Panel - Touchscreen - Blower Data *(Press Main)*					
*Blower 301 Runtime (Hours)		26611		26662	
*Blower 301 Vibration (in/Sec)		0.26		0.20	
*Blower 301 Speed (%Max)		87		88	
*Blower 301 Inlet Bearing Temp (F)		83		109	
*Blower 301 Outlet Bearing Temp (F)		113		133	
Control Panel - Blower Keypad					
*Blower 301 Current (Amps)		13.4		14.0	
Gas Handling Skid					
*Demister Inlet Pressure (InWC)		-36.2		-35.5	
*Demister Outlet Pressure (InWC)		-40.9		-39.2	
*Demister DP (InWC)		+4.7		+3.7	
*Flame Arrester Inlet Pressure (InWC)		+7.4		+8.1	
*Flame Arrester Outlet Pressure (InWC)		+4.7		+4.8	
*Flame Arrester DP (InWC)		+2.7		+3.3	
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)		0938		1254	
Technician (Initials)		CS		CS	
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)		38.9		40.4	
*Gas Handling Skid Inlet Temperature (F)		71		73	
*Panel Temperature (F)		82		89	
*Recirculation Valve Position (%Closed)		100		100	
*Flare Flame Temperature (F)		1274		1827	
*Flame Arrestor Temperature (F)		106		115	
Control Panel - Touchscreen - Blower Data *(Press Back, Blower Menu, Select Current Blower)*					
*Blower Runtime (Blower | Runtime (Hours))		302 2555		302 2607	
*Blower Speed (Blower | Speed (%Max))		78		81	
*Blower Vibration (Blower | Vibration (In/Sec))		0.07		0.05	
*Blower Current (Blower | Current (Amps))		43.3		44.9	
Control Panel - Touchscreen - Flare Flow Data *(Press Back X2, Flare Flow Data)*					
*Flow Rate (SCFM)		1545		1601	
*Total Flow (MMSCF)		462.52		467.30	
*Flow Pressure (inWC)		9.5		10.3	
*Flow Temperature (F)		109		116	
*Flow DP (inWC)		5.99		6.57	
Control Panel - Touchscreen *(Press Resettable)*					
*Resettable Total Flow (MMSCF)		462.52		467.30	
*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)		-22.3		-38.2	
*Demister Outlet Pressure (inWC)		-42.2		-43.2	
*Demister DP (inWC)		+19.9		+5.0	
*Flame Arrester Inlet Pressure (inWC)		+10.1		+12.6	
*Flame Arrester Outlet Pressure (inWC)		+9.5		+11.5	
*Flame Arrester DP (inWC)		+0.6		+1.1	
*Fail-Close Valve Air Pressure (psi)		105		105	
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)		0920		1249	
Technician (Initials)		CR		CR	
Engine Control Panel					
*Power Setpoint (kWh) (Engine #4 | #3)		683 640		708 680	
*Power Setpoint (kWh) (Engine #2 | #1)		690 —		672 —	
Control Room - Laptop					
*Flow Total (MSCF)		762609.6		764950.3	
*Flow Rate (SCFM)		755.0		748.4	
*Discharge Gas Temperature (F)		72.2		95.2	
Engine Bay/Control Room Window					
*Inlet Gas Pressure (inWC)		-41.7		-41.8	
Other					
*Visible Emissions (Yes/No, if yes explain)		NO		NO	

Note * Collect during device operation only

Remarks

6/30 - Engine #1 Down
07/02 - Engine #1 Down

APPENDIX D-3

VISIBLE EMMISSION EVALUATIONS REPORT
CANDLESTICK FLARES



Visible Emission Evaluations Report

Waste Management Inc.
3500 South Gun Club Road
Aurora, Colorado 80018

Denver Arapahoe Disposal Site
(2) Candlestick Flares – VE

Test Date: February 26, 2020

AST Project No. 2020-0547

Prepared By
Alliance Source Testing, LLC
5530 Marshall Street
Arvada, CO 80002

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Houston, TX
Lewisville, TX
Little Rock, AR
Philadelphia, PA
Pittsburgh, PA
Roanoke, VA
Salt Lake City, UT

The Alliance Advantage

Regulatory Information

Permit No.
Regulatory Citations

Source Information

Source Name	*Target Parameter*
Flare 2, 2009 Perennial Candlestick Flare, MN: FL-6-C, SN: FL-1620; (Candlestick Flare West)	Visible Emissions
Flare 3, 2014 Perennial Candlestick Flare, MN: FL-10-C, SN: FL-1756; (Candlestick Flare East)	Visible Emissions

Contact Information

Test Location

Waste Management of Colorado
Denver Arapahoe Disposal Site
3500 S Gun Club Road
Aurora, Colorado 80018

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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.

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M. Willinger

March 12, 2020

Marty Willinger
Report Writer
Alliance Source Testing, LLC

Date

1.0 Introduction

Alliance Source Testing, LLC (AST) was retained by Waste Management of Colorado (WMC) desires EPA Method 22 visible emission (VE) observation services on two (2) candlestick flares in service at the Denver Arapahoe Disposal Site (DADS). The VE observation demonstrated compliance with Colorado Department of Public Health and Environment (CDPHE) requirements.

2.0 Visible Emissions Examination Results

AST conducted VE observations at the DADS facility on February 26, 2020. The Method 22 observations were conducted for a 120-minute period consisting of six, 20-minute observation periods per flare. A 5-minute rest period was conducted between each observation period as required by the method. A stopwatch was used to record the cumulative observed emission time over the six observation periods. All systems were operating normally during the evaluations. No visible emissions were observed during any of the observation periods. The testing results are summarized in the table below.

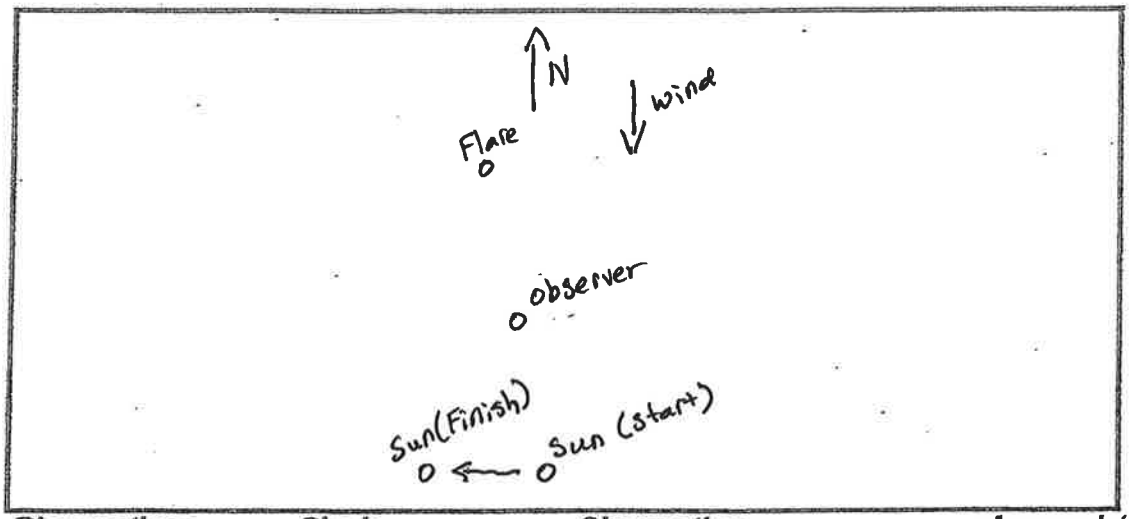
Emission Source	Observation Period (minutes:seconds)	Accumulated Time of Observed Emissions (minutes:seconds)	Limit
Flare 2 2009 Perennial Candlestick Flare MN: FL-6-C, SN: FL-1620 (Candlestick Flare West)	120:00	0:00	≤ 5 minutes accumulated per 120-minutes observation
Flare 3 2014 Perennial Candlestick Flare MN: FL-10-C, SN: FL-1756 (Candlestick Flare East)	120:00	0.00	≤ 5 minutes accumulated per 120-minutes observation

FUGITIVE OR SMOKE EMISSIONS INSPECTION
OUTDOOR LOCATION (Method 22)

2/2

Company Waste Management Location DADS Land Fill Company Rep. Patrick McKled	Observer Adam Locker Affiliation AST Date 2.26.2020
Sky Conditions sunny Precipitation none	Wind Direction South Wind Speed 7mph
Industry Land fill	Process Unit West Flare

Sketch process unit: Indicate observer position relative to source; indicate potential emission points and / or actual emission points.



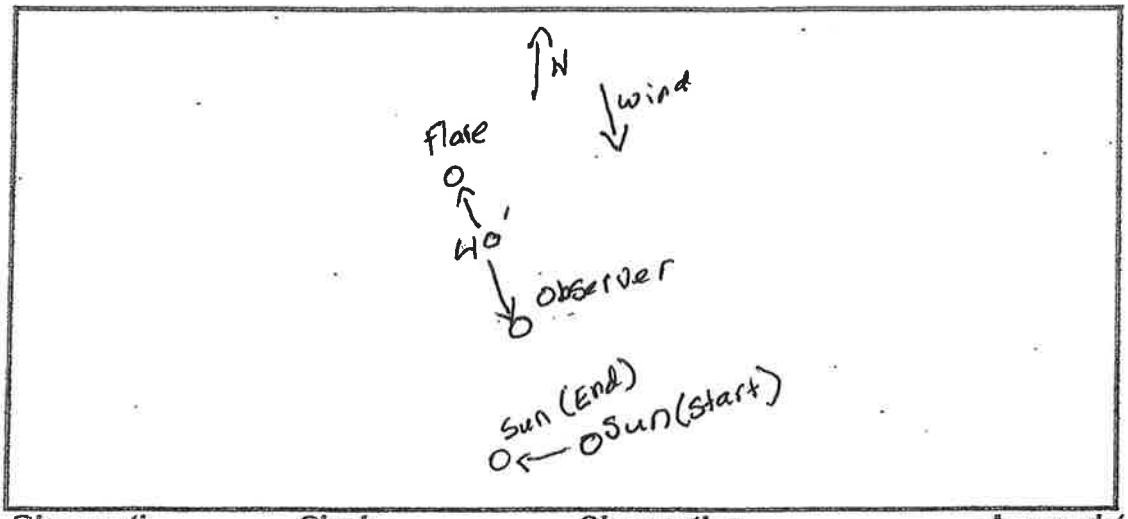
Observations	Clock Time	Observation period duration, min:sec	Accumulated emission time, min:sec
	11:40	0:00	
Begin observation	12:00	20:00	0:00
	12:05	20:00	
	12:25	40:00	0:00
	12:30	40:00	
	12:50	60:00	0:00
	12:55	60:00	
	13:15	80:00	0:00
	13:20	~~100:00~~ 80:00	
	13:40	100:00	0:00
	13:45	100:00	
	14:05	120:00	0:00
End observation			

FUGITIVE OR SMOKE EMISSIONS INSPECTION
OUTDOOR LOCATION (Method 22)

1/2

Company Waste Management Location DADS Landfill Company Rep. Patrick Meckled	Observer Adam Cocker Affiliation AST Date 2.26.2020
Sky Conditions Sunny Precipitation none	Wind Direction SSE Wind Speed 8 mph APL
Industry Landfill	Process Unit ~~West Flare~~ East Flare

Sketch process unit: Indicate observer position relative to source; indicate potential emission points and / or actual emission points.



Observations	Clock Time	Observation period duration, min:sec	Accumulated emission time, min:sec
	9:08	0:00	
Begin observation	9:28	20:00	0:00
	9:33	20:00	
	9:53	40:00	0:00
	9:58	40:00	
	10:18	60:00	0:00
	10:23	60:00	
	10:43	80:00	0:00
	10:48	80:00	
	11:08	100:00	0:00
	11:13	100:00	
	11:33	120:00	0:00
End observation			

APPENDIX D-4

ENGINES INLET METHANE AND HEAT CONTENT TEST



Test Report

Waste Management of Colorado Inc.
3500 South Gun Club Road
Aurora, Colorado 80018

Lowry / DADS Landfill
Gas to Energy Facility
Aurora, Colorado

Engines Inlet
Methane and Heat Content Test

Test Date: February 26, 2020

AST Project No. 2020-0548

Prepared By
Alliance Source Testing, LLC
5530 Marshall Street
Arvada, Colorado 80002

Regulatory Information

Regulatory Citation 40 CFR 60.18 – General Control Device Requirements

Source Information

Source Name	*Target Parameters*
Fuel Gas Line	CH_4, Heat Value

Contact Information

Test Location
Waste Management of Colorado, Inc.
3500 S. Gun Club Road
Aurora, CO 80018

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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.

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M. Willinger

March 28, 2020

Marty Willinger
Report Writer
Alliance Source Testing, LLC

Date

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APPENDICES

Appendix A Sample Calculations
Appendix B Laboratory Data

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	Pat Mekled
AST Personnel	Adam Locker

Summary of Results

2.0 Summary of Results

AST conducted performance testing at the WMC facility in Aurora, Colorado on February 26, 2020. At the fuel gas line to the generator engines, five (three for analysis and two backups) gas samples were collected in Tedlar bags for off-site gas analyses of methane and heat content. The fuel gas samples were analyzed at the AST laboratory in Arvada, Colorado in accordance with ASTM D-1945. The backup samples were not analyzed. The heat content was calculated from values published in ASTM D3588.

Table 2-1 provides a summary of the 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**	**Average**	***40 CFR §60.18 Performance Specifications***
Date	**02/26/20**	**02/26/20**	**02/26/20**	**--**	
Heat Content Data					
Concentration, Btu/scf	484.79	489.88	490.24	488.30	≥200 Btu/scf *§60.18(c)(3)(ii)*
Methane Data					
Concentration, mol %	47.99	48.49	48.53	48.34	

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	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
2/26/2020

F Factor Sample Calculations: Determination of Oxygen-Based F Factor (dry basis)

CH_4 - Fuel Gas Heat Content (Btu/scf)

$$= \frac{\text{Gas Heat Content (Btu/scf)} * \text{Volume Percent (\%)}}{100}$$

$$= \frac{1{,}010 * 47.99}{100}$$

CH_4 - Fuel Gas Heat Content (Btu/lb)

$$= \frac{\text{Fuel Gas Heat Content (Btu/scf)} * 379.4}{\text{Molecular Weight (gm/gm-mol)}}$$

$$= \frac{484.7 * 379.4}{28.67}$$

= **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	0.00	0.00
Carbon Dioxide	0.00	0.00
Hydrogen Sulfide	0.00	0.00
Methane	**484.68**	**6,413.98**
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	0.11	1.47
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	484.79	6,415.44

Fuel Gas Heat Content (Btu/scf)

= 484.7935

Fuel Gas Heat Content (Btu/lb)

= 6,415.4403

F-Factor (dscf/MMBtu)

= **Fuel Gas Elemental Weight Percentages (FGEWP)**

Hydrogen [H]	6.7502
Carbon [C]	36.7570
Sulfur [S]	0.0000
Nitrogen [N]	10.9426
Oxygen [O]	45.5503

K values (K)

H	3.64
C	1.53
S	0.57
N	0.14
O	-0.46

$$= \frac{1000000 * H\,(FGEWP) * H\,(K) + C\,(FGEWP) * C\,(K) + S\,(FGEWP) * S\,(K) + N\,(FGEWP) * N\,(K) + O\,(FGEWP) * O\,(K)}{\text{Heat Content (Btu/lb)}}$$

$$= \frac{1000000 * (6.7502 * 3.64) + (36.757 * 1.53) + (0 * 0.57) + (10.94 * 0.14) + (45.55 * -0.46)}{6415.4403}$$

= **9,568**

Waste Management of Colorado Inc
DADS / Lowry Landfill
Lowry, Colorado
Fuel Line Run 1
2/26/2020

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, LLC
Lab Services
5530 Marshall St.
Arvada, CO 80002
(720) 457-9504
www.stacktest.com

Analytical Laboratory Report

Waste Management Inc
3500 South Gun Club Road
Aurora, Colorado 80018

Project No. 2020-0548



Version No. LT 2018-00_18.1

Certification Statement

Alliance Source Testing, LLC (AST) has completed the analysis 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. Any deviations or problems are detailed in the relevant sections on the test report.

This document was prepared in portable document format (.pdf) and contains pages as identified in the bottom footer of this document.

Validation Signature

The analytical data and all QC contained within this report was reviewed and validated by the following individual.



James Davidson
Laboratory Manager

3/13/20
Date

Project Narrative

Analytical Method(s):	ASTM D1945 Standard Test Method for Analysis of Natural Gas by Gas Chromatography
Custody:	The samples were received by James Davidson on 2/26/20 in Arvada, CO. The samples were received in good condition with proper Chain-of-Custody documentation. No apparent container problems were noted upon receipt. Prior to analysis, the samples were kept secure with access limited to authorized personnel of AST.
Number of Samples:	3
Labeling:	Acceptable
Analyst:	Gaby De Los Santos - Laboratory Analyst James Davidson - Laboratory Manager
Equipment:	Agilent 7890B GC, SN: CN15533043
QC Notes:	The samples met the minimum criteria established by the relevant method.

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..... 20-0548

Unit..... Fuel Gas Line
Date Sampled..... 2/26/2020
Date Analyzed ..... 2/27/20 12:01 PM
Sample Number..... **Sample 1**

Sample Location..... Fuel Gas Line
Sample Pressure..... NA
Sample Temp..... NA
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	0.0044
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	0.0000
Carbon Dioxide	39.7302
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0000
Oxygen	1.0787
Nitrogen	11.1983
Methane	47.9884
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	28.67
Heat Content (Btu/scf)	484.79
Heat Content (Btu/lb)	6,416
F Factor (dscf/MMBtu)	9,568

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..... 20-0548

Unit..... Fuel Gas Line
Date Sampled..... 2/26/2020
Date Analyzed ..... 2/27/20 12:50 PM
Sample Number..... **Sample 1 duplicate**

Sample Location..... Fuel Gas Line
Sample Pressure..... NA
Sample Temp..... NA
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	0.0049
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	0.0000
Carbon Dioxide	39.7191
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0000
Oxygen	1.0153
Nitrogen	11.1688
Methane	48.0918
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	28.65
Heat Content (Btu/scf)	485.85
Heat Content (Btu/lb)	6,434
F Factor (dscf/MMBtu)	9,570

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..... 20-0548

Unit..... Fuel Gas Line
Date Sampled..... 2/26/2020
Date Analyzed ..... 2/27/20 1:29 PM
Sample Number..... **Sample 2**

Sample Location..... Fuel Gas Line
Sample Pressure..... NA
Sample Temp..... NA
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	0.0045
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	0.0000
Carbon Dioxide	40.5120
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0000
Oxygen	0.7279
Nitrogen	10.2642
Methane	48.4915
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	28.72
Heat Content (Btu/scf)	489.88
Heat Content (Btu/lb)	6,472
F Factor (dscf/MMBtu)	9,582

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..... 20-0548

Unit..... Fuel Gas Line
Date Sampled..... 2/26/2020
Date Analyzed ..... 2/27/20 2:28 PM
Sample Number..... **Sample 3**

Sample Location..... Fuel Gas Line
Sample Pressure..... NA
Sample Temp..... NA
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	0.0044
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	0.0000
Carbon Dioxide	40.4681
Ethylene	0.0000
Ethane	0.0000
Acetylene	0.0000
Hydrogen Sulfide	0.0000
Oxygen	0.7352
Nitrogen	10.2650
Methane	48.5274
Carbon Monoxide	0.0000
Cyclopropane	0.0000
Methylacetylene	0.0000
Neopentane	0.0000
TOTAL	100.0000

Molecular Weight (gm/gm-mol)	28.71
Heat Content (Btu/scf)	490.24
Heat Content (Btu/lb)	6,479
F Factor (dscf/MMBtu)	9,580

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..... 20-0548

Unit.....Calibration Check
Date Sampled..... NA
Sample Number..... **RRD005175**

Date Analyzed ..... 3/2/20 12:41 PM

Sample Location..... NA
Sample Pressure..... NA
Test Method..... ASTM D1945
Method of Analysis.... GC-TCD/FID
Instrument..... Agilent 7890 GC

Sample Temp..... NA
Sample Method..... RGA
Container..... Tedlar Bag

Components	Normalized Mole%	Certified Mole%
C6+	0.4017	0.5
Propane	6.7134	6.801
Propylene	0.0000	
Isobutane	0.6780	0.698
Propadiene	0.0000	
n-Butane	2.2044	2.3
1 - Butene	0.0000	
Isobutylene	0.0000	
trans-2-Butene	0.0000	
cis-2-Butene	0.0000	
1,3-Butadiene	0.0000	
Isopentane	0.3545	0.4
n-Pentane	0.5306	0.6
Helium	0.1194	
Hydrogen	0.0000	
Carbon Dioxide	2.6356	2.398
Ethylene	0.0000	
Ethane	9.7085	9.702
Acetylene	0.0000	
Hydrogen Sulfide	0.0000	
Oxygen	0.1112	0.1
Nitrogen	0.5538	0.506
Methane	75.9888	75.995
Carbon Monoxide	0.0000	
Cyclopropane	0.0000	
Methylacetylene	0.0000	
Neopentane	0.0000	
TOTAL	100.0000	

Molecular Weight (gm/gm-mol)	22.08
Heat Content (Btu/scf)	1256.70
Heat Content (Btu/lb)	21,593
F Factor (dscf/MMBtu)	8,730

AGP Cal Gas #2

ACCURATE GAS PRODUCTS, L.L.C.

OFFICE (337) 269-1217
FAX (337) 269-1978

CERTIFICATE OF ANALYSIS

ALLIANCE SOURCE TESTING
5530 MARSHALL ST.
ATTN: MIKE PEARSON
ARVADA, CO 80002

DATE: 9/12/19
INVOICE NO: 11989
PO NUMBER: OGLAB082719
QC NUMBER: 091219-4
SHIP VIA: FEDEX

CYL. NO	COMPONENT	REQUESTED MOLE %	ACTUAL MOLE %
RRD005175	NITROGEN	0.50%	0.506%
	OXYGEN	0.10%	0.100%
	METHANE	BALANCE	75.995%
	CARBON DIOXIDE	2.40%	2.398%
	ETHANE	9.70%	9.702%
	PROPANE	6.80%	6.801%
	ISOBUTANE	0.70%	0.698%
	N BUTANE	2.30%	2.300%
	ISOPENTANE	0.40%	0.400%
	N-PENTANE	0.60%	0.600%
	HEXANES+AGPSVI	0.50%	0.500%

74 PSIA CGA-510
1 YEAR SHELF LIFE

ERICH HOFMEISTER-ANALYST

CHRIS SHADLE-QC MANAGER

THE ABOVE CERTIFIED STANDARD WAS MANUFACTURED USING BALANCES TESTED AND ADJUSTED FOR ACCURACY, PRECISION, AND SENSITIVITY WITH N.I.S.T. TRACEABLE WEIGHTS. THE CALIBRATION PROCEDURE FOLLOWED IS OUTLINED IN PBS REVISION 1 ACCORDING TO MLD STD 5-662A, NIST TEST NUMBER 822/278785-10. TESTED 5/19. THIS STANDARD IS CERTIFIED TO BE WITHIN +/-2 MOLE% OF THE NUMBER REPORTED RELATIVE TO THE COMPONENT, AND WITH A GRAVIMETRIC UNCERTAINTY OF +/- 1%

Alliance SOURCE TESTING

Chain-Of-Custody

Version No. LT 2019-00_19.0

Alliance Source Testing, LLC - Lab Services
5530 Marshall St. Arvada, CO 80002
Phone (720) 457-9504

Client Name: Waste Management Inc.

City, State: Denver, CO

Source: Fuel Gas Line to the Generator Engines

Project No.: 20-0548

Turn Around Time: [✔] Standard [ ] Expedited ____ Number of Business Days

Blank Manuf./Lot #: _____

Blank Manuf./Lot #: _____

Sample ID	Number of Containers	Date Collected	Time Recovered	Collector Initials	HOLD	Method/Media: Method 5 — Filter Number - 83mm Quartz	Method 5 — Probe Nozzle Rinse - Acetone	ASTM D1945		ASTM D1945 — Fuel Gas Heat and Methane Content	ASTM D1945 — Hold	ASTM D1945	Method 26A — HCl - H_2SO_4 Solution	Method 26A — HBr - H_2SO_4 Solution	Method 26A — HF - H_2SO_4 Solution	Method 26A — Cl_2 - NaOH Solution	Method 26A — Br_2 - NaOH Solution
Fuel Gas Line - Sample 1	1	2/26/20	8:50	ARL						✔							
Fuel Gas Line - Sample 2	1	2/26/20	8:52	ARL						✔							
Fuel Gas Line - Sample 3	1	2/26/20	8:54	ARL						✔							
Fuel Gas Line - Sample 4	1	2/26/20	8:55	ARL	✔						✔						
Fuel Gas Line - Sample 5	1	2/26/20	8:57	ARL	✔						✔						

Relinquished By: Adam Locker — Date: 2/26/20

Received By: _____ — Date: 2/26/20

Sample Container Recieved Temperature (°F): _____

Notes: _____

Page ____ of ____

Last Page of Report

APPENDIX D-5

MONITORING PROBES

(METHANE PROBE MONITORING)

APPENDIX D-5
LFG GAS PROBE RESULTS (METHANE)
JANUARY THROUGH JUNE 2020 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 (%)
3/9/2020	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
5/20/2020	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 (%)
3/9/2020	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
5/20/2020	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)
3/9/2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									30.08	30.08
5/20/2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									29.86	29.76

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: 03/23/20 Weather: Approximately 12 inches of wet snow 3/19/20. Melting Slowly

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)				
	Map		**Not**	**Action Required?**		
	ID	**Acceptable**	**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(03-23-20).pdf_____

___Cover Inspection Photos (March2020).pdf____

Date: __03/23/20_____

Formal Cap Inspection performed this year after a wet Spring snowstorm. Melting snow soaked into the vegetation cover and did not run off because of the dry site conditions prior to this event.

Areas A,B,C,D,E,F and G appears near flat but have no sign of ponding other than very minor ponding that occurred in tire tracks. Will continue to closely monitor these areas for further signs of settling / ponding. Other minor ponding observed in and near roads or at toe of slopes.

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.

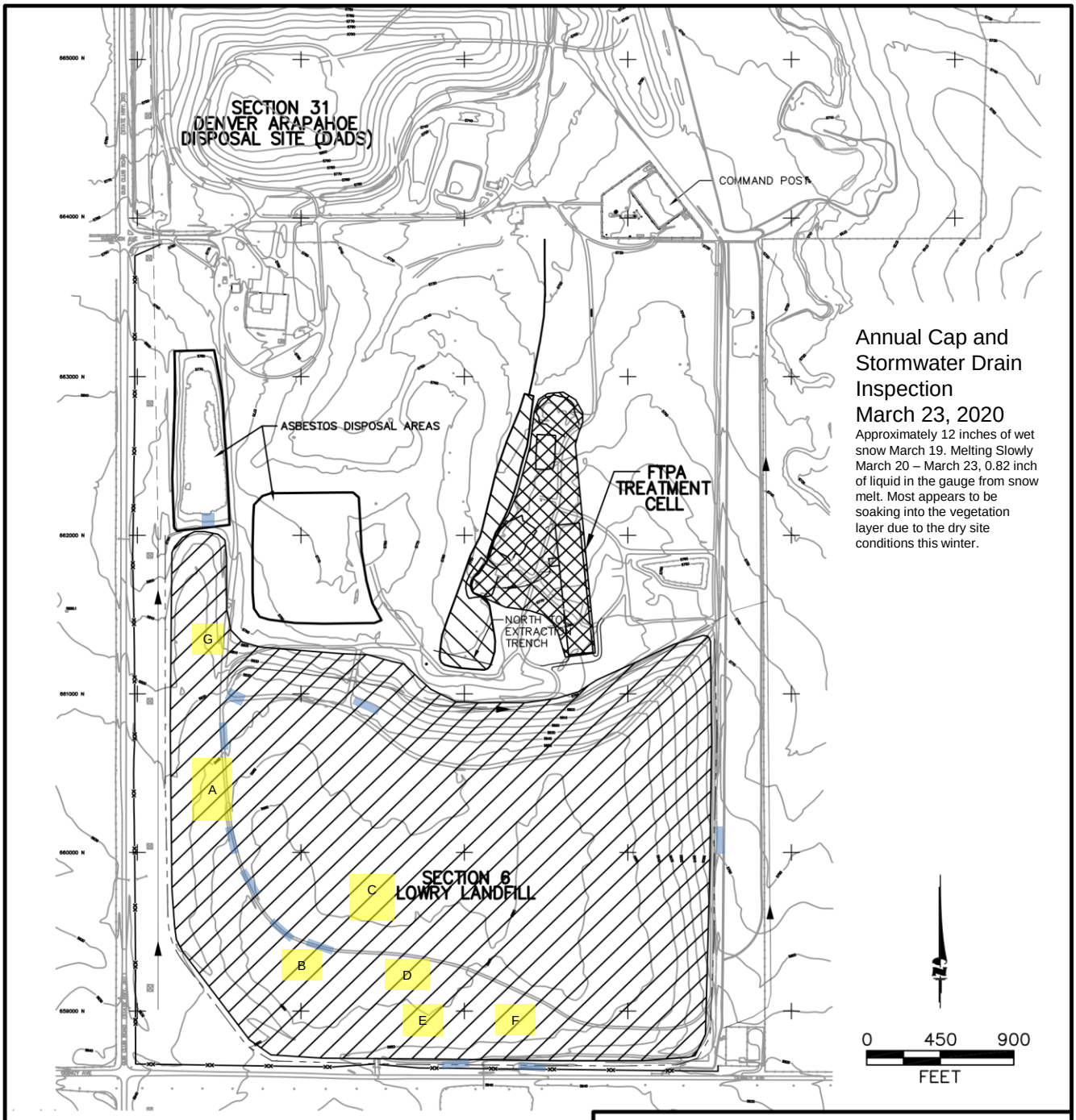


FIGURE 2.1

REMEDIAL COMPONENT LOCATION MAP

Lowry Landfill Superfund Site

PARSONS ENGINEERING SCIENCE, INC.

Denver, Colorado

March 2020 Cap and Drains Inspection Photo Documentation



Map ID A Looking South (Near Flat Area of Concern – No Ponding)



Filled Area (Formerly Watch Area E – No Ponding)

March 2020 Cap and Drains Inspection Photo Documentation



Minor Ponding on Road Near CTM-3



Minor Ponding on Cap Near Recently Disturbed Area Near CTM-3

March 2020 Cap and Drains Inspection Photo Documentation



Northside Cap Runoff Ditch Looking North West (minor ponding in road)



Map ID B Looking East (Near Flat Area of Concern – No Ponding)



Map ID C Looking South (Near Flat Area of Concern – No Ponding)



Map ID D Looking East (Near Flat Area of Concern – Minor Ponding in tire track)



Map ID E Looking South (Near Flat Area of Concern – No Ponding)



Map ID F Looking West (Near Flat Area of Concern – Minor Ponding in tire tracks)

March 2020 Cap and Drains Inspection Photo Documentation



Map ID G Looking North (Near Flat Area of Concern – No Ponding)



South East Cap Runoff Ditch Looking South Towards PM-11 System (Good Condition)

March 2020 Cap and Drains Inspection Photo Documentation



CAMU Area Looking North West (Good Condition)



East Side North Toe Slope Drainage Looking West from PM-15 Area (Good Condition)



East Side Stormwater Diversion Drainage Looking North from PM-15 Area (Good Condition)



East Side North Toe Slope Drainage Looking East Towards PM-15 Area (Good Condition)

March 2020 Cap and Drains Inspection Photo Documentation



East Side North Toe Slope Drainage Looking West (Good Condition)



North Slope Drainage Looking West (Good Condition)

March 2020 Cap and Drains Inspection Photo Documentation



West Side of North Slope Drainage Looking West (Good Condition)



North Toe Area Looking East (Good Condition)

March 2020 Cap and Drains Inspection Photo Documentation



North Toe Area Looking South from Corner of South Pit (Good Condition)



SWRA Cover Looking South Towards South Pit (Good Condition)



SWRA Cover Near North Pit Looking South Towards South Pit (Good Condition)



SWRA Cover Looking South Towards North Pit (Good Condition)



West Side Slope Drainage Looking East (Good Condition – Minor Ponding at Toe of Slope)



South West Corner Slope Drainage Swale Looking East (Good Condition)

March 2020 Cap and Drains Inspection Photo Documentation



Arapahoe County Snow Fence Looking South West from South West Corner of the Landfill (Good Condition)



South Slurry Wall Traffic Cap Looking West (Good Condition – Minor Ponding)



East Side Stormwater Diversion Ditch Looking North (Good Condition)



East Side Stormwater Diversion Ditch Looking South (Good Condition – Repairs Good)



East Side Stormwater Diversion Ditch Looking North (Good Condition – Repairs Good)



East Slurry Wall Traffic Cap Looking South (Good Condition – Minor Ponding)

APPENDIX E-2

BUFFER ZONE INSPECTIONS

APPENDIX E-2.1

MARCH 2020 BUFFER ZONE INSPECTION

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

Inspector: **Chris Carlson** Organization: **Parsons**

Date: **3/11/20**

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	Approximately 50 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

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	E		X	X		~30 LF of fence damaged
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	
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds	C	X			X	Weeds in the lane between Xcel areas
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: **_E_**
- Area: **~30** linier 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: _C_
- Area: **~100** feet by **~300** 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		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	
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: _____linier feet

- 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	A		X	X		~30 LF of fence damaged by antelope
Barbwire	B		X	X		~30 LF of fence damaged by vehicle
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	
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

- Map ID: **B**
- Area: **~30** 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

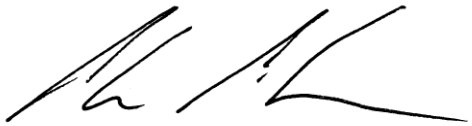
- Map ID: **NA**
- Area: _____feet by _____feet

- Map ID: **NA**
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Signature of Inspector:

Attachments



__**X**__ Yes ___ No

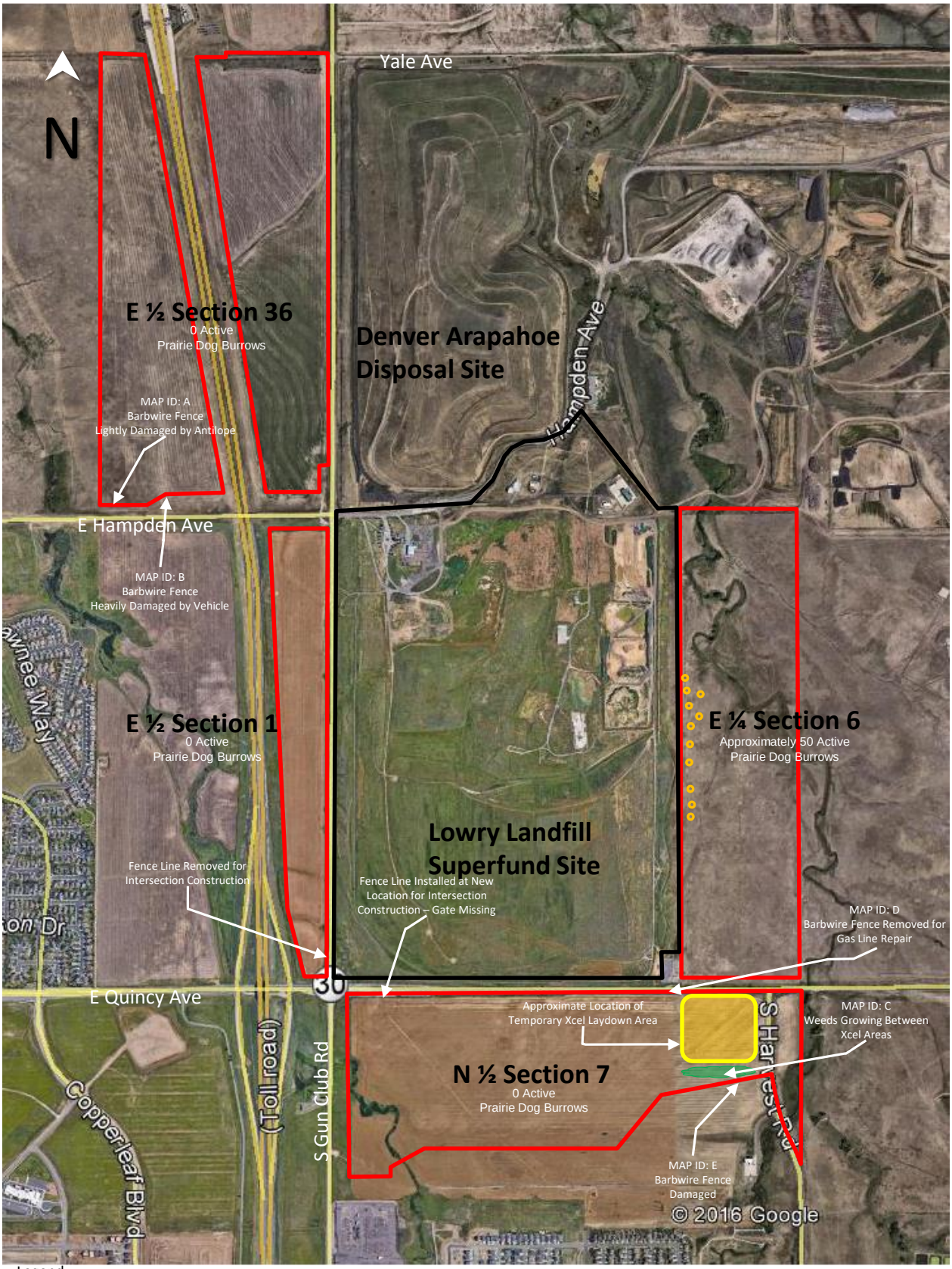
If yes, list attachments:

__**March 2020 Buffer Property Map.pdf**_____

__**Buffer Zone Pictures (3-11-20).pdf**_____

Date: __**3/11/20**_____

Actions taken: Prairie dogs are very slowly making a return to Section 6. Control not needed at this time, will wait and see how they survive winter. New and existing fence damage (MAP ID A and B) in Section 36 will be scheduled for the Fall of 2020.



Legend

- Lowry Landfill Site Boundary
- Lowry Trust Buffer Property
- Active Prairie Dog Burrows
- Weeds

March 11, 2020
Buffer Zone Inspection



E ½ Section 36 (MAP ID A) Historically Frequently Damaged by Antelope



E ½ Section 36 (MAP ID B) New Damaged to Fence Done by Vehicle



E ½ Section 36. New Fence Installed Along E-470



E ½ Section 36. Non-Active Prairie Dog Burrows



E ½ Section 36 Prairie Dog Holes – Mostly inactive but some occupied by rabbits



E ½ Section 1 Fencing Removed During Intersection Work



E ½ Section 1. New Fence Installed Along E-470



N ½ Section 7 Section (MAP ID C) Land between laydown area and Xcel substation has become overgrown with weeds. Restoration of the Laydown Yard Underway



N ½ Section 7 (MAP ID D) Fence Removed for Gas Line Repair Work



N ½ Section 7 (MAP ID E) Fence Damage Between Xcel and Trust Property



N ½ Section 7 New Fence Installed at New ROW Created by Wider Intersection



N ½ Section 7 New Fence Installed at New ROW – Gate Missing

Quarterly Buffer Zone Inspection March 11, 2020



N ½ Section 7 Fence in Poor Condition



E ¼ Section 6 Active Prairie Dog Burrows

APPENDIX E-2.2

JUNE 2020 BUFFER ZONE INSPECTION

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM

Inspector: **Chris Carlson** Organization: **Parsons**

Date: **6/8/20**

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		Not	Action Required?		
	ID	Acceptable	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	Approximately 50 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

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	D		X	X		~30 LF of fence damaged (repaired)
Barbwire		X			X	
Braces		X			X	
Other (litter, disposal)	E		X	X		Trash illegally dumped (cleaned up)

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	
Erosion		X			X	
Sediment Accumulation		X			X	
Obstruction of Culverts		X			X	
c) Vegetation						
Weeds	C	X			X	Weeds in the lane between Xcel areas
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: **_D_**
- Area: **~30** linier feet (multiple breaks)

- Map ID: **_E_**
- Area: **~30** linier feet (lock installed on tube gate)

- Map ID: **_F_**
- Area: **NA** (trash cleaned up by SEMA Construction)

- Map ID: _NA_
- Area: _____feet by _____feet

b) Terrain
- Map ID: _NA_
- Area: _____feet by _____feet
- Depth: _____feet

c) Vegetation
- Map ID: _C_
- Area: **~100** feet by **~300** 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		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	
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: _____linier feet

- 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	A		X	X		~30 LF of fence damaged by antelope
Barbwire	B		X	X		~30 LF of fence damaged by vehicle
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: **_A_**
- Area: **~30** linier feet

- Map ID: **_B_**
- Area: **~30** 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

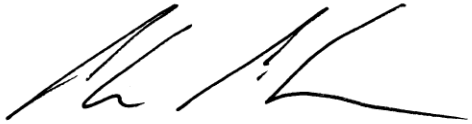
- Map ID: **_NA_**
- Area: _____feet by _____feet

- Map ID: **_NA_**
- Area: _____feet by _____feet

BUFFER ZONE FIELD INSPECTION AND MAINTENANCE FORM (Continued)

Signature of Inspector:

Attachments



__**X**__ Yes ___ No

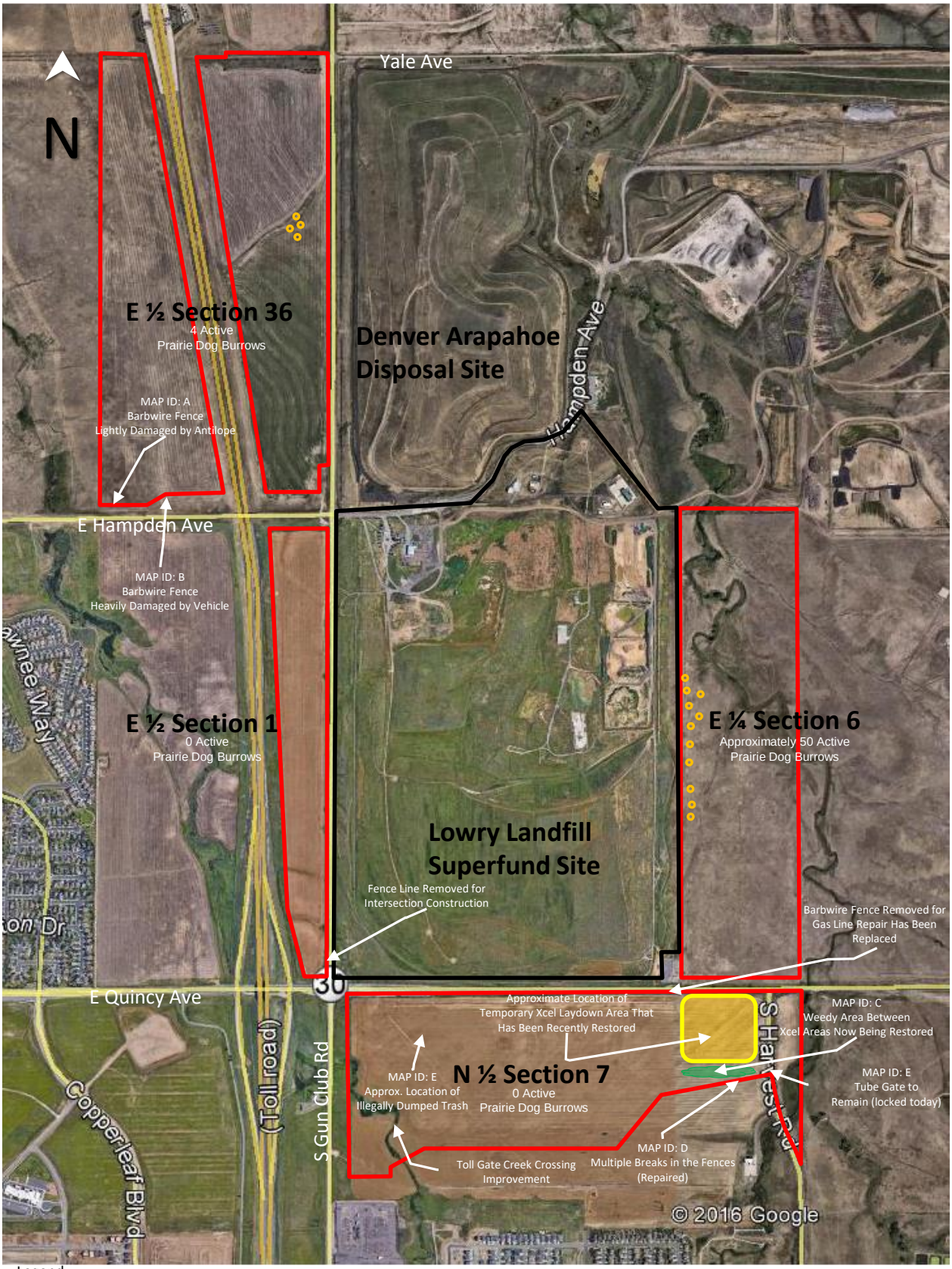
If yes, list attachments:

__**June 2020 Buffer Property Map.pdf**_____

__**Buffer Zone Pictures (6-8-20).pdf**_____

Date: __**6/8/20**_____

Actions taken: Prairie dogs are very slowly making a return to Sections 6 and 36. Control not needed at this time, will wait and see how they survive winter. New and existing fence damage (MAP ID A and B) in Section 36 will be scheduled for the Fall of 2020.



Legend

- Lowry Landfill Site Boundary
- Lowry Trust Buffer Property
- Active Prairie Dog Burrows
- Weeds

June 08, 2020
Buffer Zone Inspection



E ½ Section 36 (MAP ID A and B) Historically Frequently Damaged by Antelope and Damaged to Fence Done by Vehicle



E ½ Section 36. Non-Active and Active Prairie Dog Burrows



N ½ Section 7 Section (MAP ID C) Land between laydown area and Xcel substation. Restoration of the Laydown Yard Completed. Weedy area returned to farm ground.



N ½ Section 7 Section (MAP ID C) Land between laydown area and Xcel substation. Restoration of the Laydown Yard Completed. Weedy area returned to farm ground.



N ½ Section 7 (MAP ID D) Multiple Sections of Fence Damaged Between Xcel and Trust Property (believe Xcel restoration crew accidently started to remove the Trust's fencing)



N ½ Section 7 (MAP ID D) Multiple Sections of Fence Damaged Between Xcel and Trust Property (Xcel restoration crew returned and made repairs)



N ½ Section 7 (MAP ID E) 30-Foot Tube Gate near Harvest Rd to Remain (lock installed)



N ½ Section 7 Toll Gate Creek Crossing Improved by E.T. Tech with Rock on High Volume Overflow Side of the Culvert Crossing

Quarterly Buffer Zone Inspection June 8, 2020



N ½ Section 7 Toll Gate Creek Crossing Improved by E.T. Tech with a Texas Crossing on High Volume Overflow Side of the Culvert Crossing



N ½ Section 7 (MAP ID F) Load of Trash Illegally Dumped in the Field. Tracks Indicate the Field was Accessed from the SEMA Construction area at Gun Club and Quincy. SEMA removed the trash and Closed the Opening.

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 2020 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-326-UD & B-313 RAWP[c/]/Cessation	B-313	1/28/2020	280-133241-1	EUROFINS	NA
GW - Compliance/Effectiveness/B-326-UD & B-313 RAWP/Cessation	B-313	1/28/2020	280-133279-1	EUROFINS	NA
GW - Compliance/Effectiveness/B-326-UD & B-313 RAWP/Cessation	B-313	1/28/2020	A200503	PACE	NA
GW - Compliance/Effectiveness/B-326-UD & B-313 RAWP/Cessation	B-313	2/11/2020	280-133675-1	EUROFINS	NA
GW - Compliance/Effectiveness/B-326-UD & B-313 RAWP/Cessation	B-313	2/11/2020	280-133676-1	EUROFINS	NA
GW - Compliance/Effectiveness/B-326-UD & B-313 RAWP/Cessation	B-313	4/28/2020	280-135986-1	EUROFINS	NA
GW - Compliance/Effectiveness/B-326-UD & B-313 RAWP/Cessation	B-313	4/28/2020	A201804	PACE	X
GW - Compliance/Cessation	B-313-UD	1/27/2020	280-133252-1	EUROFINS	NA
GW - Compliance/Cessation	B-313-UD	1/27/2020	A200503	PACE	NA
GW - Compliance/Cessation	B-313-UD	2/6/2020	280-133522-1	EUROFINS	NA
GW - Compliance/Cessation	B-313-UD	2/6/2020	280-133523-1	EUROFINS	NA
GW - Compliance/Cessation	B-313-UD	4/29/2020	280-136084-1	EUROFINS	NA
GW - Compliance/Cessation	B-313-UD	4/29/2020	A201812	PACE	NA
GW - Compliance/Effectiveness	B-314	2/6/2020	280-133522-1	EUROFINS	NA
GW - Compliance/Effectiveness	B-314	2/6/2020	280-133523-1	EUROFINS	NA
GW - Compliance/Effectiveness	B-314	5/18/2020	280-136675-1	EUROFINS	NA
GW - Compliance/Effectiveness	B-314	5/18/2020	A202103	PACE	NA
GW - Compliance	B-314-UD	2/6/2020	280-133522-1	EUROFINS	NA
GW - Compliance	B-314-UD	2/6/2020	280-133523-1	EUROFINS	NA
GW-B-326-UD & B-313 RAWP/North End Monitoring	B-321	2/24/2020	280-134025-1	EUROFINS	NA
GW-B-326-UD & B-313 RAWP/North End Monitoring	B-321	2/24/2020	A200904	PACE	NA
GW-B-326-UD & B-313 RAWP/North End Monitoring	B-321	4/29/2020	280-136083-1	EUROFINS	NA
GW-B-326-UD & B-313 RAWP/North End Monitoring	B-321	4/29/2020	280-136085-1	EUROFINS	NA
GW-B-326-UD & B-313 RAWP/North End Monitoring	B-321	4/29/2020	A201812	PACE	NA
Soil - Molybdenum Investigation	B-323-WD AREA SOIL	2/26/2020	280-134097-1	EUROFINS	NA
Soil - Molybdenum Investigation	B-323-WD AREA SOIL	2/26/2020	280-134097-1	EUROFINS	X
GW - Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Cessation	B-326-UD	2/12/2020	280-133705-1	EUROFINS	NA
GW - Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Cessation	B-326-UD	2/12/2020	280-133710-1	EUROFINS	NA
GW - Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Cessation	B-326-UD	2/12/2020	280-133711-1	EUROFINS	NA
GW - Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Cessation	B-326-UD	2/12/2020	A200703	PACE	NA
GW - Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Cessation	B-326-UD	5/27/2020	280-137007-1	EUROFINS	NA
GW - Compliance/B-326-UD & B-313 RAWP/North End Monitoring/Cessation	B-326-UD	5/27/2020	A202207	PACE	X
GW - Compliance/Effectiveness/North End Monitoring/Cessation	B-326-WD	2/12/2020	280-133707-1	EUROFINS	NA
GW - Compliance/Effectiveness/North End Monitoring/Cessation	B-326-WD	2/12/2020	280-133710-1	EUROFINS	NA
GW - Compliance/Effectiveness/North End Monitoring/Cessation	B-326-WD	2/12/2020	280-133711-1	EUROFINS	NA
GW - Compliance/Effectiveness/North End Monitoring/Cessation	B-326-WD	2/12/2020	A200703	PACE	NA
GW - Compliance/Effectiveness/North End Monitoring/Cessation	B-326-WD	5/28/2020	280-137004-1	EUROFINS	X

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
GW - Compliance/Effectiveness/North End Monitoring/Cessation	B-326-WD	5/28/2020	A202207	PACE	X
Soil - Molybdenum Investigation	BH113-F, 31.2'	5/28/2020	280-137162-1	EUROFINS	NA
Soil - Molybdenum Investigation	BH113-F, 47.0'	5/28/2020	280-137162-1	EUROFINS	NA
GW - Compliance/Effectiveness	BM-11X-100N	4/30/2020	280-136082-1	EUROFINS	NA
GW - Compliance/Effectiveness	BM-11X-100N	4/30/2020	A201812	PACE	NA
GW - Compliance/Effectiveness	BM-11X-100S	4/30/2020	280-136082-1	EUROFINS	NA
GW - Compliance/Effectiveness	BM-11X-100S	4/30/2020	A201812	PACE	NA
GW - Compliance	BM-15E2	5/7/2020	280-136325-1	EUROFINS	NA
GW - Compliance	BM-15E2	5/7/2020	A201917	PACE	NA
GW - Compliance/Effectiveness	BM-15N6	5/13/2020	280-136526-1	EUROFINS	X
GW - Compliance/Effectiveness	BM-15N6	5/13/2020	A202008	PACE	NA
WTP - Early Warning	EARLY WARNING INFLUENT	4/6/2020	20-04032	EBS	X
WTP - Early Warning	EARLY WARNING INFLUENT	4/6/2020	280-135305-1	EUROFINS	NA
GW - Compliance	GW-106	5/12/2020	280-136457-1	EUROFINS	NA
GW - Compliance	GW-106	5/12/2020	280-136482-1	EUROFINS	NA
GW - Compliance	GW-106	5/12/2020	A202004	PACE	NA
GW - Compliance/Effectiveness/Cessation	GW-109	3/2/2020	280-134219-1	EUROFINS	NA
GW - Compliance/Effectiveness/Cessation	GW-109	3/2/2020	280-134222-1	EUROFINS	X
GW - Compliance/Effectiveness/Cessation	GW-109	3/2/2020	280-134224-1	EUROFINS	X
GW - Compliance/Effectiveness/Cessation	GW-109	3/2/2020	A201002	PACE	X
GW - Compliance/Effectiveness/Cessation	GW-109	6/1/2020	280-137156-1	EUROFINS	NA
GW - Compliance/Effectiveness/Cessation	GW-109	6/1/2020	A202303	PACE	NA
GW - Effectiveness	MNA-01	6/9/2020	280-137499-1	EUROFINS	NA
GW - Effectiveness	MNA-03	6/9/2020	280-137499-1	EUROFINS	NA
WTP[d/] - Compliance	MP001	4/22/2020	280-135814-1	EUROFINS	X
WTP - Compliance	MP-001	1/6/2020		field	NA
WTP - Compliance	MP-001	1/7/2020	20-01044	EBS[e/]	X
WTP - Compliance	MP-001	1/7/2020	280-132644-1	EUROFINS	X
WTP - Compliance	MP-001	2/3/2020		field	NA
WTP - Compliance	MP-001	2/4/2020	280-133454-1	EUROFINS	X
WTP - Compliance	MP-001	3/2/2020		field	NA
WTP - Compliance	MP-001	4/6/2020		field	NA
WTP - Compliance	MP-001	4/7/2020	20-04032	EBS	X
WTP - Compliance	MP-001	4/7/2020	280-135302-1	EUROFINS	X
WTP - Compliance	MP-001	4/21/2020		field	NA
WTP - Compliance	MP-001	5/4/2020		field	NA
WTP - Compliance	MP-001	5/5/2020	280-136221-1	EUROFINS	X
WTP - Compliance	MP-001	6/1/2020		field	NA
WTP - Compliance	MP-001	6/2/2020	280-137152-1	EUROFINS	X
WTP - Compliance	MP-001_010620_1200	1/6/2020	280-132634-1	EUROFINS	X
WTP - Compliance	MP-001_010620_1200	1/6/2020	280-132639-1	EUROFINS	X
WTP - Compliance	MP-001_010620_1200	1/6/2020	280-132643-1	EUROFINS	X
WTP - Compliance	MP-001_010620_1600	1/6/2020	280-132634-1	EUROFINS	X
WTP - Compliance	MP-001_010620_1600	1/6/2020	280-132639-1	EUROFINS	X
WTP - Compliance	MP-001_010620_1600	1/6/2020	280-132643-1	EUROFINS	X
WTP - Compliance	MP-001_010620_2000	1/6/2020	280-132634-1	EUROFINS	X
WTP - Compliance	MP-001_010620_2000	1/6/2020	280-132639-1	EUROFINS	X
WTP - Compliance	MP-001_010620_2000	1/6/2020	280-132643-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0000	1/7/2020	280-132634-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0000	1/7/2020	280-132639-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0000	1/7/2020	280-132643-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0400	1/7/2020	280-132634-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0400	1/7/2020	280-132639-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0400	1/7/2020	280-132643-1	EUROFINS	X

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WTP - Compliance	MP-001_010720_0800	1/7/2020	280-132634-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0800	1/7/2020	280-132639-1	EUROFINS	X
WTP - Compliance	MP-001_010720_0800	1/7/2020	280-132643-1	EUROFINS	X
WTP - Compliance	MP-001_012020_1200	1/20/2020	280-133062-1	EUROFINS	X
WTP - Compliance	MP-001_012020_1600	1/20/2020	280-133062-1	EUROFINS	X
WTP - Compliance	MP-001_012020_2000	1/20/2020	280-133062-1	EUROFINS	X
WTP - Compliance	MP-001_012120_0000	1/21/2020	280-133062-1	EUROFINS	X
WTP - Compliance	MP-001_012120_0400	1/21/2020	280-133062-1	EUROFINS	X
WTP - Compliance	MP-001_012120_0800	1/21/2020	280-133062-1	EUROFINS	X
WTP - Compliance	MP-001_020320_1200	2/3/2020	280-133456-1	EUROFINS	X
WTP - Compliance	MP-001_020320_1600	2/3/2020	280-133456-1	EUROFINS	X
WTP - Compliance	MP-001_020320_2000	2/3/2020	280-133456-1	EUROFINS	X
WTP - Compliance	MP-001_020420_0000	2/4/2020	280-133456-1	EUROFINS	X
WTP - Compliance	MP-001_020420_0400	2/4/2020	280-133456-1	EUROFINS	X
WTP - Compliance	MP-001_020420_0800	2/4/2020	280-133456-1	EUROFINS	X
WTP - Compliance	MP-001_030220_1200	3/2/2020	280-134226-1	EUROFINS	X
WTP - Compliance	MP-001_030220_1600	3/2/2020	280-134226-1	EUROFINS	X
WTP - Compliance	MP-001_030220_2000	3/2/2020	280-134226-1	EUROFINS	X
WTP - Compliance	MP-001_030320_0000	3/3/2020	280-134226-1	EUROFINS	X
WTP - Compliance	MP-001_030320_0400	3/3/2020	280-134226-1	EUROFINS	X
WTP - Compliance	MP-001_030320_0800	3/3/2020	280-134226-1	EUROFINS	X
WTP - Compliance	MP-001_040620_1200	4/6/2020	280-135303-1	EUROFINS	X
WTP - Compliance	MP-001_040620_1200	4/6/2020	280-135309-1	EUROFINS	X
WTP - Compliance	MP-001_040620_1200	4/6/2020	280-135319-1	EUROFINS	X
WTP - Compliance	MP-001_040620_1600	4/6/2020	280-135303-1	EUROFINS	X
WTP - Compliance	MP-001_040620_1600	4/6/2020	280-135309-1	EUROFINS	X
WTP - Compliance	MP-001_040620_1600	4/6/2020	280-135319-1	EUROFINS	X
WTP - Compliance	MP-001_040620_2000	4/6/2020	280-135303-1	EUROFINS	X
WTP - Compliance	MP-001_040620_2000	4/6/2020	280-135309-1	EUROFINS	X
WTP - Compliance	MP-001_040620_2000	4/6/2020	280-135319-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0000	4/7/2020	280-135303-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0000	4/7/2020	280-135309-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0000	4/7/2020	280-135319-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0400	4/7/2020	280-135303-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0400	4/7/2020	280-135309-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0400	4/7/2020	280-135319-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0800	4/7/2020	280-135303-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0800	4/7/2020	280-135309-1	EUROFINS	X
WTP - Compliance	MP-001_040720_0800	4/7/2020	280-135319-1	EUROFINS	X
WTP - Compliance	MP-001_050420_1200	5/4/2020	280-136219-1	EUROFINS	X
WTP - Compliance	MP-001_050420_1600	5/4/2020	280-136219-1	EUROFINS	X
WTP - Compliance	MP-001_050420_2000	5/4/2020	280-136219-1	EUROFINS	X
WTP - Compliance	MP-001_050520_0000	5/5/2020	280-136219-1	EUROFINS	X
WTP - Compliance	MP-001_050520_0400	5/5/2020	280-136219-1	EUROFINS	X
WTP - Compliance	MP-001_050520_0800	5/5/2020	280-136219-1	EUROFINS	X
WTP - Compliance	MP-001_060120_1200	6/1/2020	280-137153-1	EUROFINS	X
WTP - Compliance	MP-001_060120_1600	6/1/2020	280-137153-1	EUROFINS	X
WTP - Compliance	MP-001_060120_2000	6/1/2020	280-137153-1	EUROFINS	X
WTP - Compliance	MP-001_060220_0000	6/2/2020	280-137153-1	EUROFINS	X
WTP - Compliance	MP-001_060220_0400	6/2/2020	280-137153-1	EUROFINS	X
WTP - Compliance	MP-001_060220_0800	6/2/2020	280-137153-1	EUROFINS	X
GW - North End Monitoring	MW05-WD	2/26/2020	A200904	PACE	NA
GW - North End Monitoring	MW102-WD	2/13/2020	A200705	PACE	NA
GW - North End Monitoring	MW102-WD	5/21/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW102-WD	5/21/2020	A202115	PACE	NA
GW - North End Monitoring	MW103-WD	1/30/2020	A200510	PACE	NA
GW - North End Monitoring	MW103-WD	5/6/2020	280-136326-1	EUROFINS	NA
GW - North End Monitoring	MW103-WD	5/6/2020	A201917	PACE	NA
GW - Compliance	MW105-WD	2/3/2020	280-133421-1	EUROFINS	X
GW - Compliance	MW105-WD	2/3/2020	280-133422-1	EUROFINS	X
GW - Compliance	MW105-WD	2/3/2020	A200602	PACE	X
GW - Compliance	MW105-WD	6/24/2020	280-138043-1	EUROFINS	NA

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
GW - Compliance	MW108-WD	4/27/2020	280-135993-1	EUROFINS	X
GW - Compliance	MW108-WD	4/27/2020	A201804	PACE	X
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	12/24/2019	280-132406-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	12/24/2019	280-132410-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	12/31/2019	280-132490-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	12/31/2019	280-132491-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/7/2020	280-132641-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/7/2020	280-132642-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/15/2020	280-132855-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/15/2020	280-132857-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/21/2020	280-133046-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/21/2020	280-133055-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/21/2020	280-133057-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/21/2020	A200408	PACE	X
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/28/2020	280-133245-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	1/28/2020	280-133246-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	2/4/2020	280-133453-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	2/4/2020	280-133455-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	2/11/2020	280-133675-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	2/11/2020	280-133676-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	2/18/2020	280-133846-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	2/18/2020	280-133849-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	2/25/2020	280-134026-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	3/3/2020	280-134219-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	3/10/2020	280-134473-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	3/17/2020	280-134659-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	3/24/2020	280-134870-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	3/31/2020	280-135090-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	4/7/2020	280-135301-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	4/14/2020	280-135530-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	4/21/2020	280-135762-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	4/28/2020	280-135987-1	EUROFINS	NA

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GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	4/28/2020	280-135989-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	4/28/2020	A201804	PACE	X
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	5/5/2020	280-136215-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	5/5/2020	280-136217-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	5/12/2020	280-136457-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	5/12/2020	280-136481-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	5/19/2020	280-136715-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	5/19/2020	280-136718-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	5/26/2020	280-136928-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/2/2020	280-137155-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/9/2020	280-137442-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/9/2020	280-137443-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/16/2020	280-137710-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/16/2020	280-137716-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/23/2020	280-137932-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/23/2020	280-137936-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/30/2020	280-138148-1	EUROFINS	NA
GW - North End Monitoring/Molybdenum Investigation	MW113-EW-1	6/30/2020	280-138150-1	EUROFINS	NA
Soil - Molybdenum Investigation	MW113-EW-1 29 - 31.5	4/14/2020	L58480	ACZ	NA
Soil - Molybdenum Investigation	MW113-EW-1 29 - 31.5	4/24/2020	L58667	ACZ	NA
Soil - Molybdenum Investigation	MW113-EW-1 46.5 - 49	4/14/2020	L58480	ACZ	NA
Soil - Molybdenum Investigation	MW113-EW-1 46.5 - 49	4/24/2020	L58667	ACZ	NA
GW - Molybdenum Investigation	MW113-LD	4/21/2020	280-135760-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-LD	4/21/2020	280-135762-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	1/27/2020	280-133252-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	1/27/2020	A200503	PACE	NA
GW - North End Monitoring/Cessation	MW113-UD	2/11/2020	280-133675-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	2/11/2020	280-133676-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	3/24/2020	280-134870-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	4/28/2020	280-135989-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	4/28/2020	280-135991-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	4/28/2020	A201804	PACE	X
GW - North End Monitoring/Cessation	MW113-UD	5/19/2020	280-136715-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	5/19/2020	280-136718-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	6/23/2020	280-137932-1	EUROFINS	NA
GW - North End Monitoring/Cessation	MW113-UD	6/23/2020	280-137936-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-WD	1/27/2020	280-133252-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-WD	1/27/2020	A200503	PACE	NA
GW - Molybdenum Investigation	MW113-WD	2/5/2020	280-133521-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-WD	2/5/2020	280-133524-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-WD	4/21/2020	280-135760-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-WD	5/19/2020	280-136715-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-WD	5/19/2020	280-136716-1	EUROFINS	NA
GW - Molybdenum Investigation	MW113-WD	5/19/2020	280-136718-1	EUROFINS	NA

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
GW - Molybdenum Investigation	MW113-WD	5/19/2020	A202103	PACE	NA
GW - Molybdenum Investigation	MW113-WD	6/4/2020	280-137308-1	EUROFINS	NA
GW - North End Monitoring	MW114-WD	2/18/2020	280-133846-1	EUROFINS	NA
GW - North End Monitoring	MW114-WD	2/18/2020	280-133849-1	EUROFINS	NA
GW - North End Monitoring	MW114-WD	2/18/2020	A200802	PACE	NA
GW - North End Monitoring	MW114-WD	5/18/2020	280-136718-1	EUROFINS	NA
GW - North End Monitoring	MW114-WD	5/18/2020	A202103	PACE	NA
GW - North End Monitoring	MW118-WD	2/18/2020	280-133846-1	EUROFINS	NA
GW - North End Monitoring	MW118-WD	2/18/2020	280-133849-1	EUROFINS	NA
GW - North End Monitoring	MW118-WD	2/18/2020	A200802	PACE	NA
GW - North End Monitoring	MW118-WD	5/18/2020	280-136718-1	EUROFINS	NA
GW - North End Monitoring	MW118-WD	5/18/2020	A202103	PACE	NA
GW - North End Monitoring	MW121-WDR	1/22/2020	A200408	PACE	X
GW - North End Monitoring	MW122-WDR	1/22/2020	A200408	PACE	X
GW - North End Monitoring	MW123-WD	1/22/2020	A200410	PACE	NA
GW - North End Monitoring	MW124-WD	1/23/2020	A200410	PACE	NA
GW - North End Monitoring	MW125-WD	1/23/2020	A200410	PACE	NA
GW - North End Monitoring	MW129-WD	1/23/2020	A200410	PACE	NA
GW - North End Monitoring	MW132-WD	1/21/2020	A200408	PACE	X
GW - North End Monitoring	MW132-WD	3/3/2020	280-134219-1	EUROFINS	NA
GW - North End Monitoring	MW132-WD	5/6/2020	280-136326-1	EUROFINS	NA
GW - North End Monitoring	MW132-WD	5/6/2020	A201917	PACE	NA
GW - North End Monitoring	MW135-WD	1/29/2020	A200510	PACE	NA
GW - Molybdenum Investigation	MW139-WD	3/10/2020	280-134473-1	EUROFINS	NA
GW - North End Monitoring	MW141-WD	1/29/2020	A200510	PACE	NA
GW - North End Monitoring	MW142-WD	1/30/2020	A200510	PACE	NA
GW - North End Monitoring	MW144-WD	1/30/2020	A200510	PACE	NA
GW - North End Monitoring	MW151-WD	1/22/2020	A200408	PACE	X
GW - North End Monitoring	MW151-WD	5/6/2020	280-136326-1	EUROFINS	NA
GW - North End Monitoring	MW151-WD	5/6/2020	A201917	PACE	NA
GW - North End Monitoring	MW153-EW-1	2/20/2020	A200803	PACE	NA
GW - North End Monitoring	MW153-EW-1	5/19/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW153-EW-1	5/19/2020	A202115	PACE	NA
GW - North End Monitoring	MW154-EW-1	2/20/2020	A200803	PACE	NA
GW - North End Monitoring	MW154-EW-1	5/21/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW154-EW-1	5/21/2020	A202115	PACE	NA
GW - North End Monitoring	MW155-EW-1	2/20/2020	A200803	PACE	NA
GW - North End Monitoring	MW155-EW-1	5/21/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW155-EW-1	5/21/2020	A202115	PACE	NA
GW - North End Monitoring	MW156-EW-1	2/24/2020	A200904	PACE	NA
GW - North End Monitoring	MW156-EW-1	5/27/2020	280-137011-1	EUROFINS	NA
GW - North End Monitoring	MW156-EW-1	5/27/2020	A202207	PACE	X
GW - North End Monitoring	MW156-WD	2/11/2020	A200703	PACE	NA
GW - North End Monitoring	MW156-WD	5/26/2020	280-136928-1	EUROFINS	NA
GW - North End Monitoring	MW156-WD	5/26/2020	A202204	PACE	NA
GW - North End Monitoring	MW157-WD	2/11/2020	A200703	PACE	NA
GW - North End Monitoring	MW157-WD	5/26/2020	280-136928-1	EUROFINS	NA
GW - North End Monitoring	MW157-WD	5/26/2020	A202204	PACE	NA
GW - North End Monitoring	MW160-WD	2/20/2020	A200803	PACE	NA
GW - North End Monitoring	MW160-WD	5/19/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW160-WD	5/19/2020	A202115	PACE	NA
GW - MW77 Response Action	MW170-EW-1	12/24/2019	280-132406-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	12/24/2019	280-132410-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	12/31/2019	280-132490-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	12/31/2019	280-132491-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	1/7/2020	280-132641-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	1/7/2020	280-132642-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	1/15/2020	280-132855-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	1/15/2020	280-132857-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	1/21/2020	280-133055-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	1/21/2020	280-133057-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	1/28/2020	280-133245-1	EUROFINS	NA

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
GW - MW77 Response Action	MW170-EW-1	1/28/2020	280-133246-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/4/2020	280-133453-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/4/2020	280-133455-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/11/2020	280-133668-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/11/2020	280-133675-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/11/2020	280-133676-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/11/2020	A200703	PACE	NA
GW - MW77 Response Action	MW170-EW-1	2/18/2020	280-133846-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/18/2020	280-133849-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	2/25/2020	280-134026-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	3/3/2020	280-134219-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	3/10/2020	280-134473-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	3/17/2020	280-134659-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	5/12/2020	280-136481-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	5/12/2020	280-136488-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	5/12/2020	280-136490-1	EUROFINS	NA
GW - MW77 Response Action	MW170-EW-1	5/12/2020	A202004	PACE	NA
GW - North End Monitoring	MW176-DEN	2/19/2020	A200803	PACE	NA
GW - North End Monitoring	MW176-DEN	5/27/2020	280-137011-1	EUROFINS	NA
GW - North End Monitoring	MW176-DEN	5/27/2020	A202207	PACE	X
GW - Compliance	MW23-UPPER-C	5/18/2020	280-136675-1	EUROFINS	NA
GW - Compliance	MW23-UPPER-C	5/18/2020	A202103	PACE	NA
GW - Compliance	MW36-WDR	5/13/2020	280-136577-1	EUROFINS	X
GW - Compliance	MW36-WDR	5/13/2020	A202008	PACE	NA
GW - MW38 Source Control	MW38-1028N-256E	5/5/2020	280-136217-1	EUROFINS	NA
GW - MW38 Source Control	MW38-1028N-256E	5/5/2020	280-136218-1	EUROFINS	NA
GW - MW38 Source Control	MW38-1028N-256E	5/5/2020	A201903	PACE	NA
GW - MW38 Source Control	MW38-170S-140W	5/5/2020	280-136217-1	EUROFINS	NA
GW - MW38 Source Control	MW38-170S-140W	5/5/2020	280-136218-1	EUROFINS	NA
GW - MW38 Source Control	MW38-170S-140W	5/5/2020	A201903	PACE	NA
GW - MW38 Source Control	MW38-825S-445E	5/6/2020	280-136326-1	EUROFINS	NA
GW - MW38 Source Control	MW38-825S-445E	5/6/2020	280-136327-1	EUROFINS	NA
GW - MW38 Source Control	MW38-825S-445E	5/6/2020	A201917	PACE	NA
GW - Compliance	MW38-830N-230E	1/28/2020	280-133239-1	EUROFINS	NA
GW - Compliance	MW38-830N-230E	1/28/2020	280-133244-1	EUROFINS	NA
GW - Compliance	MW38-830N-230E	1/28/2020	A200503	PACE	NA
GW - Compliance	MW38-830N-230E	6/22/2020	280-137897-1	EUROFINS	NA
GW - Compliance	MW43-WD	2/4/2020	280-133448-1	EUROFINS	NA
GW - Compliance	MW43-WD	2/4/2020	280-133457-1	EUROFINS	NA
GW - Compliance	MW43-WD	2/4/2020	A200602	PACE	X
GW - Compliance	MW43-WD	6/25/2020	280-138043-1	EUROFINS	NA
GW - Compliance	MW54-WD	5/12/2020	280-136526-1	EUROFINS	X
GW - Compliance	MW54-WD	5/12/2020	A202008	PACE	NA
GW - Compliance	MW60-WD	1/29/2020	280-133275-1	EUROFINS	NA
GW - Compliance	MW60-WD	1/29/2020	280-133280-1	EUROFINS	NA
GW - Compliance	MW60-WD	1/29/2020	A200510	PACE	NA
GW - Compliance	MW60-WD	6/23/2020	280-137936-1	EUROFINS	NA
GW - Cessation	MW62-UD	2/11/2020	280-133675-1	EUROFINS	NA
GW - Cessation	MW62-UD	2/11/2020	280-133676-1	EUROFINS	NA
GW - Compliance/Effectiveness	MW62-WDR	2/10/2020	280-133675-1	EUROFINS	NA
GW - Compliance/Effectiveness	MW62-WDR	2/10/2020	280-133676-1	EUROFINS	NA
GW - Compliance/Effectiveness	MW62-WDR	5/14/2020	280-136577-1	EUROFINS	X
GW - Compliance/Effectiveness	MW62-WDR	5/14/2020	A202008	PACE	NA
GW - VES Performance	MW70-WD	5/14/2020	280-136578-1	EUROFINS	NA
GW - VES Performance	MW70-WD	5/14/2020	280-136579-1	EUROFINS	NA
GW - Compliance	MW71-WD	4/29/2020	280-136082-1	EUROFINS	NA
GW - Compliance	MW71-WD	4/29/2020	A201812	PACE	NA
GW - Compliance	MW74-WD	5/7/2020	280-136325-1	EUROFINS	NA
GW - Compliance	MW74-WD	5/7/2020	A201917	PACE	NA
GW - North End Monitoring	MW77-EW-1	2/13/2020	A200705	PACE	NA
GW - North End Monitoring	MW77-EW-1	5/21/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW77-EW-1	5/21/2020	A202115	PACE	NA

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
GW - North End Monitoring	MW77-EW-2	2/13/2020	A200705	PACE	NA
GW - North End Monitoring	MW77-EW-2	5/21/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW77-EW-2	5/21/2020	A202115	PACE	NA
GW - Compliance	MW77-WD	5/4/2020	280-136216-1	EUROFINS	NA
GW - Compliance	MW77-WD	5/4/2020	A201903	PACE	NA
GW - Compliance	MW78-WD	4/29/2020	280-136082-1	EUROFINS	NA
GW - Compliance	MW78-WD	4/29/2020	A201812	PACE	NA
GW - Compliance	MW90-UD	5/18/2020	280-136675-1	EUROFINS	NA
GW - Compliance	MW90-UD	5/18/2020	A202103	PACE	NA
GW - Compliance	MW90-WD	5/4/2020	280-136216-1	EUROFINS	NA
GW - Compliance	MW90-WD	5/4/2020	A201903	PACE	NA
GW - Compliance	MW91-UD	2/3/2020	280-133421-1	EUROFINS	X
GW - Compliance	MW91-UD	2/3/2020	280-133422-1	EUROFINS	X
GW - Compliance	MW91-UD	2/3/2020	A200602	PACE	X
GW - Compliance	MW91-WD	2/3/2020	280-133421-1	EUROFINS	X
GW - Compliance	MW91-WD	2/3/2020	280-133422-1	EUROFINS	X
GW - Compliance	MW91-WD	2/3/2020	A200602	PACE	X
GW - North End Monitoring	MW98-WD	2/13/2020	A200705	PACE	NA
GW - North End Monitoring	MW98-WD	5/21/2020	280-136819-1	EUROFINS	NA
GW - North End Monitoring	MW98-WD	5/21/2020	A202115	PACE	NA
GW - Molybdenum Investigation	NBBW-IW-2	3/31/2020	280-135090-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	3/11/2020	280-134512-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/2/2020	280-137155-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/2/2020	A202303	PACE	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/9/2020	280-137442-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/9/2020	280-137443-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/9/2020	A202412	PACE	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/16/2020	280-137710-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/16/2020	280-137716-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/16/2020	A202510	PACE	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/23/2020	280-137932-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/23/2020	280-137936-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/23/2020	A202607	PACE	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/30/2020	280-138148-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/30/2020	280-138150-1	EUROFINS	NA
GW - NBBW-IW-3 Response Action	NBBW-IW-3	6/30/2020	280-138152-1	EUROFINS	NA
Soil - Molybdenum Investigation	NBBW-IW-3, 30.8'	5/28/2020	280-137162-1	EUROFINS	NA
Homeowner Well	Pingle (NG)	6/25/2020	A202614	PACE	NA
GW - Effectiveness	PM-13X	6/8/2020	280-137443-1	EUROFINS	NA
GW - Effectiveness	PM-13X	6/8/2020	280-137449-1	EUROFINS	NA
GW - Effectiveness	PM-13X	6/8/2020	A202412	PACE	NA
GW - Compliance/Effectiveness	PM-14X	5/13/2020	280-136526-1	EUROFINS	X
GW - Compliance/Effectiveness	PM-14X	5/13/2020	A202008	PACE	NA
GW - Effectiveness	PM-3X	6/8/2020	280-137443-1	EUROFINS	NA
GW - Effectiveness	PM-3X	6/8/2020	280-137449-1	EUROFINS	NA
GW - Effectiveness	PM-3X	6/8/2020	A202412	PACE	NA
GW - Effectiveness	PM-6X	6/8/2020	280-137443-1	EUROFINS	NA
GW - Effectiveness	PM-6X	6/8/2020	280-137449-1	EUROFINS	NA
GW - Effectiveness	PM-6X	6/8/2020	A202412	PACE	NA
GW - Cessation	PTP-11	3/30/2020	280-135090-1	EUROFINS	NA
GW - Molybdenum Investigation	PTP-11	6/4/2020	280-137308-1	EUROFINS	NA
GW - Molybdenum Investigation	PTP-12	3/30/2020	280-135090-1	EUROFINS	NA
GW - Molybdenum Investigation	PTP-12	6/4/2020	280-137308-1	EUROFINS	NA
GW - North End Monitoring/Cessation	PTP-13	2/27/2020	280-134095-1	EUROFINS	NA
GW - North End Monitoring/Cessation	PTP-13	2/27/2020	280-134098-1	EUROFINS	NA
GW - North End Monitoring/Cessation	PTP-13	2/27/2020	A200906	PACE	NA
GW - North End Monitoring/Cessation	PTP-13	6/2/2020	280-137236-1	EUROFINS	X
GW - North End Monitoring/Cessation	PTP-13	6/2/2020	280-137239-1	EUROFINS	NA
GW - North End Monitoring/Cessation	PTP-13	6/2/2020	A202304	PACE	x
Soil - Molybdenum Investigation	PTP-13, 24.0'	5/28/2020	280-137162-1	EUROFINS	NA
GW - Cessation	PTP-14	3/4/2020	280-134322-1	EUROFINS	NA
GW - Cessation	PTP-14	3/4/2020	280-134324-1	EUROFINS	NA

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
GW - Cessation	PTP-14	3/4/2020	280-134328-1	EUROFINS	NA
GW - Cessation	PTP-14	3/4/2020	A201006	PACE	NA
GW - Cessation	PTP-14	6/2/2020	280-137236-1	EUROFINS	X
GW - Cessation	PTP-14	6/2/2020	280-137239-1	EUROFINS	NA
GW - Cessation	PTP-14	6/2/2020	A202304	PACE	x
GW - Molybdenum Investigation	PTP-15	3/30/2020	280-135090-1	EUROFINS	NA
GW - Molybdenum Investigation	PTP-18	3/5/2020	280-134326-1	EUROFINS	NA
GW - Molybdenum Investigation	PTP-18	3/5/2020	280-134328-1	EUROFINS	NA
GW - Molybdenum Investigation	PTP-21	3/31/2020	280-135090-1	EUROFINS	NA
Homeowner Well	REED	6/25/2020	A202614	PACE	NA
GW - Molybdenum Investigation/NBBW-IW-3 Response Action	TANK - A3900IM	6/9/2020	280-137439-1	EUROFINS	NA
GW - Molybdenum Investigation/NBBW-IW-3 Response Action	TANK - A4692	6/22/2020	280-137898-1	EUROFINS	NA
GW - Molybdenum Investigation/NBBW-IW-3 Response Action	TANK - T- 103	6/30/2020	280-138147-1	EUROFINS	NA
GW - Molybdenum Investigation/NBBW-IW-3 Response Action	TANK-A3900IM	6/25/2020	280-138041-1	EUROFINS	NA
GW - Molybdenum Investigation/NBBW-IW-3 Response Action	TANK-A4692	6/3/2020	280-137237-1	EUROFINS	NA
GW - Molybdenum Investigation/NBBW-IW-3 Response Action	TANK-T-104	6/16/2020	280-137715-1	EUROFINS	NA
WTP - Early Warning	TP-110	1/6/2020	280-132523-1	EUROFINS	NA
WTP - Early Warning	TP-110	1/14/2020	280-132833-1	EUROFINS	NA
WTP - Early Warning	TP-110	2/4/2020	280-133452-1	EUROFINS	NA
WTP - Early Warning	TP-110	3/3/2020	280-134229-1	EUROFINS	NA
WTP - Early Warning	TP-110	4/6/2020	280-135307-1	EUROFINS	NA
WTP - Early Warning	TP-110	4/21/2020	280-135765-1	EUROFINS	NA
WTP - Early Warning	TP-110	5/5/2020	280-136220-1	EUROFINS	NA
WTP - Early Warning	TP-110	6/1/2020	280-137154-1	EUROFINS	NA
WTP - Early Warning	TP-120	1/6/2020	280-132523-1	EUROFINS	NA
WTP - Early Warning	TP-120	1/14/2020	280-132833-1	EUROFINS	NA
WTP - Early Warning	TP-120	2/4/2020	280-133452-1	EUROFINS	NA
WTP - Early Warning	TP-120	3/3/2020	280-134229-1	EUROFINS	NA
WTP - Early Warning	TP-120	4/6/2020	280-135307-1	EUROFINS	NA
WTP - Early Warning	TP-120	4/21/2020	280-135765-1	EUROFINS	NA
WTP - Early Warning	TP-120	5/5/2020	280-136220-1	EUROFINS	NA
WTP - Early Warning	TP-120	6/1/2020	280-137154-1	EUROFINS	NA
WTP - Early Warning	TP-140	1/6/2020	280-132523-1	EUROFINS	NA
WTP - Early Warning	TP-140	1/14/2020	280-132833-1	EUROFINS	NA
WTP - Early Warning	TP-140	2/4/2020	280-133452-1	EUROFINS	NA
WTP - Early Warning	TP-140	3/3/2020	280-134229-1	EUROFINS	NA
WTP - Early Warning	TP-140	4/6/2020	280-135307-1	EUROFINS	NA
WTP - Early Warning	TP-140	4/21/2020	280-135765-1	EUROFINS	NA
WTP - Early Warning	TP-140	5/5/2020	280-136220-1	EUROFINS	NA
WTP - Early Warning	TP-140	6/1/2020	280-137154-1	EUROFINS	NA
WTP - Early Warning	TP-150	1/6/2020	280-132523-1	EUROFINS	NA
WTP - Early Warning	TP-150	1/6/2020	280-132525-1	EUROFINS	NA
WTP - Early Warning	TP-150	1/14/2020	280-132833-1	EUROFINS	NA
WTP - Early Warning	TP-150	2/4/2020	280-133452-1	EUROFINS	NA
WTP - Early Warning	TP-150	3/3/2020	280-134229-1	EUROFINS	NA
WTP - Early Warning	TP-150	4/6/2020	280-135307-1	EUROFINS	NA
WTP - Early Warning	TP-150	4/21/2020	280-135765-1	EUROFINS	NA
WTP - Early Warning	TP-150	5/5/2020	280-136220-1	EUROFINS	NA
WTP - Early Warning	TP-150	6/1/2020	280-137154-1	EUROFINS	NA
WTP - Early Warning	TP-160	1/6/2020	280-132523-1	EUROFINS	NA
WTP - Early Warning	TP-160	1/6/2020	280-132525-1	EUROFINS	NA
WTP - Early Warning	TP-160	1/14/2020	280-132833-1	EUROFINS	NA
WTP - Early Warning	TP-160	2/4/2020	280-133452-1	EUROFINS	NA
WTP - Early Warning	TP-160	3/3/2020	280-134229-1	EUROFINS	NA
WTP - Early Warning	TP-160	4/6/2020	280-135307-1	EUROFINS	NA
WTP - Early Warning	TP-160	4/21/2020	280-135765-1	EUROFINS	NA

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LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
WTP - Early Warning	TP-160	5/5/2020	280-136220-1	EUROFINS	NA
WTP - Early Warning	TP-160	6/1/2020	280-137154-1	EUROFINS	NA
WTP - Early Warning	TP-3110	5/5/2020	280-136220-1	EUROFINS	NA
WTP - Biotreatment System	TP-3110	5/5/2020	280-136220-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	12/31/2019	280-132493-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/6/2020	280-132524-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/14/2020	280-132832-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/21/2020	280-133065-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/28/2020	280-133255-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/4/2020	280-133451-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/4/2020	280-133458-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/11/2020	280-133674-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/18/2020	280-133851-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/25/2020	280-134028-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/3/2020	280-134228-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/3/2020	280-134230-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/10/2020	280-134472-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/17/2020	280-134663-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/24/2020	280-134882-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	3/31/2020	280-135099-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/7/2020	280-135296-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/14/2020	280-135535-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/21/2020	280-135764-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	4/28/2020	280-136025-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/5/2020	280-136222-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/12/2020	280-136486-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/19/2020	280-136712-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/19/2020	280-136713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/26/2020	280-136924-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/2/2020	280-137150-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/9/2020	280-137441-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/16/2020	280-137721-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/23/2020	280-137931-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/23/2020	280-137934-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/30/2020	280-138144-1	EUROFINS	NA
WTP - Biotreatment System	TP-3300	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	12/31/2019	280-132493-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	1/6/2020	280-132523-1	EUROFINS	NA

APPENDIX F-1
SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2020 OPERATIONS AND MAINTENANCE STATUS REPORT
LOWRY LANDFILL SUPERFUND SITE

Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
WTP - Biotreatment System/Early Warning	TP-3310	1/6/2020	280-132524-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	1/14/2020	280-132832-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	1/14/2020	280-132833-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	1/21/2020	280-133065-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	1/28/2020	280-133255-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	2/4/2020	280-133451-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	2/4/2020	280-133452-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	2/4/2020	280-133458-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	2/11/2020	280-133674-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	2/18/2020	280-133851-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	2/25/2020	280-134028-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	3/3/2020	280-134228-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	3/3/2020	280-134229-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/3/2020	280-134230-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/10/2020	280-134472-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/17/2020	280-134663-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/24/2020	280-134882-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	3/31/2020	280-135099-1	EUROFINS	NA
WTP - Early Warning	TP-3310	4/6/2020	280-135307-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	4/6/2020	280-135307-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	4/7/2020	280-135296-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	4/14/2020	280-135535-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	4/21/2020	280-135764-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	4/21/2020	280-135765-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	4/28/2020	280-136025-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	5/5/2020	280-136222-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	5/12/2020	280-136486-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	5/19/2020	280-136712-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	5/19/2020	280-136713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	5/26/2020	280-136924-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System/Early Warning	TP-3310	6/1/2020	280-137154-1	EUROFINS	NA

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SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2020 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	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/2/2020	280-137150-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/9/2020	280-137441-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/16/2020	280-137721-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/23/2020	280-137931-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/23/2020	280-137934-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/30/2020	280-138144-1	EUROFINS	NA
WTP - Biotreatment System	TP-3310	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	12/31/2019	280-132493-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/6/2020	280-132524-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/14/2020	280-132832-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/21/2020	280-133065-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/28/2020	280-133255-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/4/2020	280-133451-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/4/2020	280-133458-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/11/2020	280-133674-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/18/2020	280-133851-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/25/2020	280-134028-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/3/2020	280-134228-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/3/2020	280-134230-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/10/2020	280-134472-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/17/2020	280-134663-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/24/2020	280-134882-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	3/31/2020	280-135099-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/7/2020	280-135296-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/14/2020	280-135535-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/21/2020	280-135764-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	4/28/2020	280-136025-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/5/2020	280-136222-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/12/2020	280-136486-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/19/2020	280-136712-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/19/2020	280-136713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/26/2020	280-136924-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/2/2020	280-137150-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/9/2020	280-137441-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/16/2020	280-137721-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/23/2020	280-137931-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/23/2020	280-137934-1	EUROFINS	NA

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SAMPLE LOCATION CROSS-REFERENCE TABLE
JANUARY THROUGH JUNE 2020 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	6/30/2020	280-138144-1	EUROFINS	NA
WTP - Biotreatment System	TP-3320	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	2/4/2020	280-133451-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	3/3/2020	280-134228-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	5/19/2020	280-136712-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	6/23/2020	280-137934-1	EUROFINS	NA
WTP - Biotreatment System	TP-3331	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	2/4/2020	280-133451-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	3/3/2020	280-134228-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	5/19/2020	280-136712-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	6/23/2020	280-137934-1	EUROFINS	NA
WTP - Biotreatment System	TP-3332	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	2/4/2020	280-133451-1	EUROFINS	NA

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SAMPLE LOCATION CROSS-REFERENCE TABLE
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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
WTP - Biotreatment System	TP-3333	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	3/3/2020	280-134228-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	5/19/2020	280-136712-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	6/23/2020	280-137934-1	EUROFINS	NA
WTP - Biotreatment System	TP-3333	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	12/31/2019	280-132493-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/6/2020	280-132524-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/14/2020	280-132832-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/21/2020	280-133065-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/28/2020	280-133255-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/4/2020	280-133451-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/4/2020	280-133458-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/11/2020	280-133674-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/18/2020	280-133851-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/25/2020	280-134028-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/3/2020	280-134228-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/3/2020	280-134230-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/10/2020	280-134472-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/17/2020	280-134663-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/24/2020	280-134882-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	3/31/2020	280-135099-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/7/2020	280-135296-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/14/2020	280-135535-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/21/2020	280-135764-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	4/28/2020	280-136025-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	5/5/2020	280-136222-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	5/12/2020	280-136486-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	5/19/2020	280-136712-1	EUROFINS	NA

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
WTP - Biotreatment System	TP-3340	5/19/2020	280-136713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	5/26/2020	280-136924-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/2/2020	280-137150-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/9/2020	280-137441-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/16/2020	280-137721-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/23/2020	280-137931-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/23/2020	280-137934-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/30/2020	280-138144-1	EUROFINS	NA
WTP - Biotreatment System	TP-3340	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	12/24/2019	280-132405-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	12/31/2019	280-132493-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	1/6/2020	280-132524-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	1/14/2020	280-132832-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	1/21/2020	280-133065-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	1/28/2020	280-133255-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	2/4/2020	280-133458-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	2/11/2020	280-133674-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	2/18/2020	280-133851-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	2/25/2020	280-134028-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	3/3/2020	280-134230-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	3/10/2020	280-134472-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	3/17/2020	280-134663-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	3/24/2020	280-134882-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	3/31/2020	280-135099-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	4/7/2020	280-135296-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	4/14/2020	280-135535-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	4/21/2020	280-135764-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	4/28/2020	280-136025-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	5/5/2020	280-136222-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	5/12/2020	280-136486-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	5/19/2020	280-136713-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	5/26/2020	280-136924-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	6/2/2020	280-137150-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	6/9/2020	280-137441-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	6/16/2020	280-137721-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	6/23/2020	280-137931-1	EUROFINS	NA
WTP - Biotreatment System	TP-710	6/30/2020	280-138144-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	12/24/2019	280-132403-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	12/24/2019	280-132405-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	12/31/2019	280-132492-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	12/31/2019	280-132493-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/6/2020	280-132524-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/6/2020	280-132526-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/14/2020	280-132831-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/14/2020	280-132832-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/21/2020	280-133065-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/21/2020	280-133089-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/28/2020	280-133255-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	1/28/2020	280-133261-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/4/2020	280-133451-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/4/2020	280-133458-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/11/2020	280-133672-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/11/2020	280-133674-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/18/2020	280-133851-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/18/2020	280-133852-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/25/2020	280-134028-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	2/25/2020	280-134029-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/3/2020	280-134228-1	EUROFINS	NA

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
WTP - Biotreatment System	TP-730	3/3/2020	280-134230-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/10/2020	280-134472-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/10/2020	280-134475-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/17/2020	280-134656-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/17/2020	280-134663-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/24/2020	280-134878-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/24/2020	280-134882-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/31/2020	280-135092-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	3/31/2020	280-135099-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/7/2020	280-135293-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/7/2020	280-135296-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/14/2020	280-135528-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/14/2020	280-135535-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/21/2020	280-135764-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/21/2020	280-135761-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/28/2020	280-136024-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	4/28/2020	280-136025-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/5/2020	280-136222-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/5/2020	280-136223-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/12/2020	280-136486-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/12/2020	280-136487-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/19/2020	280-136712-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/19/2020	280-136713-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/26/2020	280-136924-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	5/26/2020	280-136925-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/2/2020	280-137146-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/2/2020	280-137150-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/9/2020	280-137441-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/9/2020	280-137448-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/16/2020	280-137713-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/16/2020	280-137721-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/23/2020	280-137931-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/23/2020	280-137934-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/30/2020	280-138144-1	EUROFINS	NA
WTP - Biotreatment System	TP-730	6/30/2020	280-138146-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	12/24/2019	280-132405-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	12/31/2019	280-132493-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	1/6/2020	280-132524-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	1/14/2020	280-132832-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	1/21/2020	280-133065-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	2/4/2020	280-133458-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	2/11/2020	280-133674-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	2/18/2020	280-133851-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	2/25/2020	280-134028-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	3/3/2020	280-134230-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	3/10/2020	280-134472-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	3/17/2020	280-134663-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	3/24/2020	280-134882-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	3/31/2020	280-135099-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	4/7/2020	280-135296-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	4/14/2020	280-135535-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	4/28/2020	280-136025-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	5/5/2020	280-136222-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	5/12/2020	280-136486-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	5/19/2020	280-136713-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	5/26/2020	280-136924-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	6/2/2020	280-137150-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	6/9/2020	280-137441-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	6/16/2020	280-137721-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	6/23/2020	280-137931-1	EUROFINS	NA
WTP - Biotreatment System	TP-740	6/30/2020	280-138144-1	EUROFINS	NA
GW - Compliance	U-518R-WD	4/27/2020	280-135993-1	EUROFINS	X

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Data Type	Sample Location	Sample Date	Project Number	Lab	Validated?[a/]
GW - Compliance	U-518R-WD	4/27/2020	A201804	PACE	X
WTP - SLUDGE	WTP SLUDGE	6/9/2020	20-06047	EBS	NA
WTP - SLUDGE	WTP SLUDGE	6/9/2020	280-137452-1	EUROFINS	NA

a/ Validated:
X = Level III validation
NA = Not required
b/ GW = groundwater
c/ RAWP = Response Action Work Plan
d/ WTP = Water Treatment Plant
e/ EBS - Eberline Services

APPENDIX F-2

ANALYTICAL DATA PACKAGES

AND

DATA VALIDATION REPORTS

The data packages and data validation reports are in a separate folder on this DVD

APPENDIX F-3

DATA QUALITY ASSESSMENT

APPENDIX F-3

DATA QUALITY ASSESSMENT

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OPERATIONS AND MAINTENANCE STATUS REPORT
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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, Cessation, and North End groundwater results, the Water Treatment Plant (WTP) Early Warning, 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:

- 280-133275 - Eurofins incorrectly logged in the sample MW60-WD as MW50-WD. The analyst started the batch before the lab corrected the sample ID to MW60-WD, so the raw data had the incorrect well ID in the data package. The package was corrected and resubmitted.
- 280-133523 - The Dissolved molybdenum result for sample B-314-UD was much higher than the total sample B-314-UD (280-133522-1), so the dissolved sample was re-analyzed. The reanalysis came back at 0.95 ug/l, which is in line with the total result for sample B-314-UD (1.3ug/l). The data was resubmitted by the laboratory.

- 280-136325 – The data package was resubmitted to include general chemistry raw data that was missing in the original expanded report.
- 280-132644 – MP-001: The QC for pyridine and aniline was not reported but the data was flagged as out-of-control. The reanalysis of these compounds for failed QC was also omitted from the data package. The reanalysis run was out of hold time so was not usable. These two compounds were resampled and reanalyzed with passing QC.
- 280-132639-1: The MP-001 MS/MSD was out of control for 2-chloroethyl vinyl ether. This compound is acid liable and does not work well with acid preservative so all VOCs will be collected in unpreserved bottles with a 7-day holding time. The sample was recollected and reanalyzed.

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 36 compliance, investigation, and effectiveness groundwater (GW) samples. Samples for validation were chosen at random:
- A representative set of the investigation wells (Cessation, 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

Because of the SDGs selected for validation, 15 samples associated with the 36 compliance and effectiveness well and 12 samples associated with investigation groundwater samples collected during the reporting period were validated for the compounds of concern. 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 (1,4-Dioxane),
- SW6010B (Metals),
- E300.0A (Nitrate and Nitrite, Sulfate, Chloride).
- SM2320B (Alkalinity)
- SM 2540D (Total Dissolved Solids)
- SW9056 (Anions in Soil)

The following groundwater samples were validated as indicated for each method:

MASTER LOC	Sample Date	300.0A	6010B	8260_SIM	8260B	9056	SM 2320B	SM 2540D
B-313	4/28/2020			X				
B-323-WD AREA SOIL	2/26/2020		X			X		
B-326-UD	5/27/2020			X				
B-326-WD	5/28/2020	X	X	X	X		X	X
BM-15N6	5/13/2020	X	X		X			
GW-109	3/2/2020	X	X	X	X			
MW105-WD	2/3/2020	X	X	X	X			
MW108-WD	4/27/2020	X	X	X	X			
MW113-EW-1	1/21/2020			X				
MW113-EW-1	4/28/2020			X				
MW113-UD	4/28/2020			X				
MW121-WDR	1/22/2020			X				
MW122-WDR	1/22/2020			X				
MW132-WD	1/21/2020			X				
MW151-WD	1/22/2020			X				
MW156-EW-1	5/27/2020			X				
MW176-DEN	5/27/2020			X				
MW36-WDR	5/13/2020	X	X		X			
MW43-WD	2/4/2020			X				
MW54-WD	5/12/2020	X	X		X			
MW62-WDR	5/14/2020	X	X		X			
MW91-UD	2/3/2020	X	X	X	X			

MASTER LOC	Sample Date	300.0A	6010B	8260_SIM	8260B	9056	SM 2320B	SM 2540D
MW91-WD	2/3/2020	X	X	X	X			
PM-14X	5/13/2020	X	X		X			
PTP-13	6/2/2020	X	X	x	X		X	X
PTP-14	6/2/2020	X	X	x	X		X	X
U-518R-WD	4/27/2020	X	X	X	X			

The results listed in the table below were qualified because out-of-control holding time resulting from improper preservation of a VOC sample. No other qualifiers were necessary for groundwater samples after validation.

Data Qualifications – Groundwater

MASTER LOC	Parameter Name	Sample Date	Result	Units	Final Q	HT
GW-109	1,1,1-Trichloroethane	3/2/2020	1	ug/L	R	R
GW-109	1,1,2,2-Tetrachloroethane	3/2/2020	1	ug/L	R	R
GW-109	1,1,2-Trichloroethane	3/2/2020	1	ug/L	R	R
GW-109	1,1-Dichloroethane	3/2/2020	0.5	ug/L	R	R
GW-109	1,1-Dichloroethene	3/2/2020	1	ug/L	R	R
GW-109	1,2-Dichloroethane	3/2/2020	1	ug/L	R	R
GW-109	1,2-Dichloropropane	3/2/2020	1	ug/L	R	R
GW-109	1,4-Dioxane	3/2/2020	37	ug/L	R	R
GW-109	Acetone	3/2/2020	4	ug/L	R	R
GW-109	Benzene	3/2/2020	1	ug/L	R	R
GW-109	Bromodichloromethane	3/2/2020	1	ug/L	R	R
GW-109	Bromoform	3/2/2020	1	ug/L	R	R
GW-109	Carbon Tetrachloride	3/2/2020	1	ug/L	R	R
GW-109	Chlorobenzene	3/2/2020	1	ug/L	R	R
GW-109	Chloroform	3/2/2020	1	ug/L	R	R
GW-109	cis-1,2-Dichloroethene	3/2/2020	1	ug/L	R	R
GW-109	Dibromochloromethane	3/2/2020	1	ug/L	R	R
GW-109	Ethylbenzene	3/2/2020	1	ug/L	R	R
GW-109	Methylene Chloride	3/2/2020	1	ug/L	R	R
GW-109	Naphthalene	3/2/2020	1	ug/L	R	R
GW-109	Tetrachloroethene	3/2/2020	1	ug/L	R	R
GW-109	Toluene	3/2/2020	1	ug/L	R	R
GW-109	Trans-1,2-Dichloroethene	3/2/2020	0.5	ug/L	R	R
GW-109	Trichloroethene	3/2/2020	1	ug/L	R	R
GW-109	Vinyl Chloride	3/2/2020	2	ug/L	R	R

HT = Holding Time

Holding Time

Holding times for sample extraction and/or analysis as required by the methods is calculated from the date and time of sample collection to the time of sample preparation and/or analysis. VOCs on GW-109 were qualified as rejected for exceeding holding time. The sample at lab receipt was at a pH greater than 2 and the analysis was performed eight days after sampling. Holding time may not exceed seven days if the sample is unpreserved. Because preserved VOA

vials are supplied by the laboratory the preservative may not have been acidic enough to bring the pH of the sample down to 2. The well was resampled.

F-3.2.2 WTP Effluent (MP-00l)

The WTP effluent sample (MP-001) was validated for the following methods:

- 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, and method blanks.

Data Qualifications – WTP Effluent

Sample ID	Sample Date	Parameter Name	Result	Units	Final Q	Unc	MS Rec	Chem Rec	MB	LCS Rec
MP-001_010620_1600	1/6/2020	2-Chloroethylvinylether	3	ug/L	R		R			
MP-001_010620_2000	1/6/2020	2-Chloroethylvinylether	3	ug/L	R		R			
MP-001_010620_1200	1/6/2020	2-Chloroethylvinylether	3	ug/L	R		R			
MP-001_010720_0400	1/7/2020	2-Chloroethylvinylether	3	ug/L	R		R			
MP-001_010720_0800	1/7/2020	2-Chloroethylvinylether	3	ug/L	R		R			
MP-001_010720_0000	1/7/2020	2-Chloroethylvinylether	3	ug/L	R		R			
MP-001	1/7/2020	Alpha, Gross	9.93	pCi/l	UJ+		S+		B+	
MP-001	1/7/2020	Americium-241	-7.0E-5	pCi/l	UJ			J		
MP-001	1/7/2020	Benzidine	140	ug/L	R		R			R
MP-001	1/7/2020	Beta, Gross	6.92	pCi/l	UJ+		S+			
MP-001	1/7/2020	Hexachloroethane	9.5	ug/L	R		R			R
MP-001	1/7/2020	Plutonium-238	0.0261	pCi/l	UJ			J		
MP-001	1/7/2020	Plutonium-239/240	0.031	pCi/l	J	Q		J		
MP-001	1/7/2020	Radium-226	0.079	pCi/l	J	Q		J		
MP-001	1/7/2020	Radium-228	0.67	pCi/l	J	Q		J		
MP-001	1/7/2020	Total Radium	0.097	pCi/l	UJ			J		
MP-001	1/7/2020	Zinc	4.8	ug/L	U				U	
MP-001	4/7/2020	Alpha, Gross	26.97	pCi/l	J+				B+	

Sample ID	Sample Date	Parameter Name	Result	Units	Final Q	Unc	MS Rec	Chem Rec	MB	LCS Rec
MP-001	4/7/2020	Americium-241	0.026	pCi/l	J	Q				
MP-001	4/7/2020	Mercury	0.12	ug/L	U				U	
MP-001	4/7/2020	Plutonium-238	0.0041	pCi/l	UJ			J		
MP-001	4/7/2020	Plutonium-239/240	0.0084	pCi/l	J	Q		J		
MP-001	4/7/2020	Radium-226	0.38	pCi/l	J	Q				
MP-001	4/7/2020	Total Radium	3.71	pCi/l	J+				B+	

MS Rec = Matrix Spike Recovery Chem Rec = Chemical Recovery (RADs) Unc = Uncertainty MB = Method Blank
Pres – Preservation Rep RPD = Replicate Relative Percent Difference
LCS Rec = Laboratory control sample recovery

Uncertainty

Two samples for plutonium-239/240 and radium-226 and one sample for radium-228 and americium-241 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

2-Chloroethylvinylether in six samples was rejected due to low matrix spike recoveries. This compound is acid liable and does not work well with acid preservative. To avoid this problem in the future, MP-001 samples will be collected in unpreserved vials. Benzidine and hexachloroethane were also rejected for out-of-control matrix spike recoveries. The LCs was also out of control indicating a problem with the analysis not the matrix. MP-001 was resampled for these three compounds.

Gross alpha and beta in one sample was out of control for matrix spike recoveries. Gross alpha and gross beta may be biased high as indicated by matrix spike recovery that was above the upper control limits. Qualifications resulting from matrix spike recoveries are most likely matrix-related because the associated LCSs were in control.

Chemical Recovery

Americium-241, radium-226, radium-228 and total radium in one sample , and plutonium-238 and -239/240 in two samples 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. Two gross alpha samples and one total radium sample were qualified as B+ (estimated with a high bias, J+). This indicates contamination originating from lab processes. Zn and mercury were qualified as U (not detected) because of lab contamination.

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 sample for benzidine and hexachloroethane were rejected for very low out-of-control LCS recoveries. MP-001 was resampled for these two compounds as stated in the matrix spike discussion above. Out-of-control LCS recoveries indicate a problem with the laboratory's analytical method but in this case the acid preservative affected the results.

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. The tables below present field duplicate precision for groundwater and WTP effluent where 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 – Groundwater

Sample ID	Sample Date	Analyte	RL	Sample	Dup	Range	RPD
B-326-WD	5/28/2020	1,4-Dioxane	0.9	11	11	0	0%
GW-106	5/12/2020	Nitrate as N	0.5	4.6	4.6	0	0%
MW108-WD	4/27/2020	Chloroform	1	0.43	0.43	0	0%
MW108-WD	4/27/2020	Naphthalene	1	0	0.27	0.27	
MW108-WD	4/27/2020	Nitrate as N	1	10.4	11	0.6	6%
MW113-EW-1	6/16/2020	Molybdenum, Dissolved	20	12000	11000	1000	9%
MW113-EW-1	2/18/2020	Molybdenum, Dissolved	30	7200	7300	100	1%
MW113-EW-1	3/10/2020	Molybdenum, Dissolved	30	7900	8000	100	1%
MW113-EW-1	5/26/2020	Molybdenum, Dissolved	30	7700	8200	500	6%

Sample ID	Sample Date	Analyte	RL	Sample	Dup	Range	RPD
MW113-EW-1	2/18/2020	Molybdenum, Total	30	6900	7100	200	3%
MW113-EW-1	3/10/2020	Molybdenum, Total	30	7900	7900	0	0%
MW113-EW-1	6/23/2020	Molybdenum, Total	20	15000	15000	0	0%
MW114-WD	2/18/202	1,4-Dioxane	0.9	2.4	1.6	0.8	
MW135-WD	1/29/2020	1,4-Dioxane	0.9	6.3	6.3	0	0%
MW170-EW-1	5/12/2020	Molybdenum	20	1.2	1.7	0.5	
MW170-EW-1	5/12/2020	Calcium	200	320000	310000	10000	3%
MW170-EW-1	5/12/2020	Magnesium	200	41000	40000	1000	2%
MW170-EW-1	5/12/2020	Potassium	3000	6000	5900	100	2%
MW170-EW-1	5/12/2020	Sodium	5000	210000	210000	0	0%
MW170-EW-1	5/12/2020	1,1,1-Trichloroethane	1	3.2	2.9	0.3	
MW170-EW-1	5/12/2020	1,1-Dichloroethane	1	5.6	5.2	0.4	7%
MW170-EW-1	5/12/2020	1,1-Dichloroethene	1	4.1	4.1	0	
MW170-EW-1	5/12/2020	cis-1,2-Dichloroethene	1	13	12	1	8%
MW170-EW-1	5/12/2020	Tetrachloroethene	1	1.4	1.3	0.1	
MW170-EW-1	5/12/2020	Trichloroethene	1	0.48	0.34	0.14	
MW170-EW-1	5/12/2020	Alkalinity	5	230	230	0	0%
MW170-EW-1	5/12/2020	Bicarbonate Alkalinity as CaCO3	5	230	230	0	0%
MW170-EW-1	5/12/2020	Total Dissolved Solids	20	1900	1800	100	5%
MW170-EW-1	5/12/200	1,4-Dioxane	0.9	16	16	0	0%
NBBW-IW-3	6/16/2020	1,4-Dioxane	0.9	110	120	10	9%

Field Duplicate Results – MP-001

Analyte	Sample Date	Sample ID	RL/ CRDL	Sample Conc (ug/L)	Dupe Conc (ug/L)	Range	RPD
Arsenic	1/7/2020	MP-001	15	4.6	0	4.6	
Chromium	1/7/2020	MP-001	10	0	0.87	0.87	
Copper	1/7/2020	MP-001	2.5	20	18	2	11%
Mercury	1/7/2020	MP-001	0.2	0	0.047	0.047	
Molybdenum	1/7/2020	MP-001	5	190	180	10	5%
Nickel	1/7/2020	MP-001	2.5	5.2	5.1	0.1	2%
Selenium	1/7/2020	MP-001	2.5	19	19	0	0%
Silver	1/7/2020	MP-001	10	1.2	0	1.2	
Zinc	1/7/2020	MP-001	10	4.8	3.1	1.7	

Analyte	Sample Date	Sample ID	RL/ CRDL	Sample Conc (ug/L)	Dupe Conc (ug/L)	Range	RPD
Cadmium	4/7/2020	MP-001	1	0.13	0.18	0.05	
Copper	4/7/2020	MP-001	2.5	20	20	0	0%
Mercury	4/7/2020	MP-001	0.2	0.12	0.1	0.02	18%
Molybdenum	4/7/2020	MP-001	5	280	270	10	4%
Nickel	4/7/2020	MP-001	2.5	4.5	4.2	0.3	7%
Selenium	4/7/2020	MP-001	2.5	19	20	1	5%
Zinc	4/7/2020	MP-001	10	2.3	0	2.3	
Molybdenum	5/5/2020	MP-001	2	230	0	230	
Molybdenum	6/2/2020	MP-001	2	220	0	220	
1,4-Dioxane	1/7/2020	MP-001_010720_0800	1.4	15	15	0	0%
1,4-Dioxane	3/3/2020	MP-001_030320_0800	1.4	14	15	1	7%
1,1,1-Trichloroethane	4/7/2020	MP-001_040720_0800	1	2.3	2.2	0.1	4%
1,1-Dichloroethane	4/7/2020	MP-001_040720_0800	1	31	31	0	0%
1,2-Dichloroethane	4/7/2020	MP-001_040720_0800	1	0.5	0.61	0.11	20%
1,4-Dioxane	4/7/2020	MP-001_040720_0800	1.4	15	15	0	0%
Chloroform	4/7/2020	MP-001_040720_0800	1	0.36	0	0.36	
1,4-Dioxane	5/5/2020	MP-001_050520_0800	1.4	16	14	2	13%
1,4-Dioxane	6/2/2020	MP-001_060220_0800	1.4	14	17	3	19%

No qualifiers are applied on the basis of 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

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 SW8270M (Figures F-3.9, F-3.10, and F-3.11). LCSs and MSs never exceeded the upper or lower control limit during the reporting period.

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, and F-3.18), and pyridine by method SW8270 (Figures F-3.19, F-3.20, and F-3.21). Control charts for pyridine for MS/MSD recoveries were not generated due to insufficient data but were plotted for reference. LCS, LCSD, MS and MSD results were generally in control for the reporting period except where noted above. The pyridine LCS and MS/MSDs appear to be trending down.

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 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 (except as noted), stored, and preserved. The samples that exceeded holding time were resampled or were for non-compliance purposes. Although blank contamination did occur, sample data quality was not adversely 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) (adjusted in the database if mg/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. The goal for meeting analytical holding times was l00% and was met for all reported compliance samples.

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).

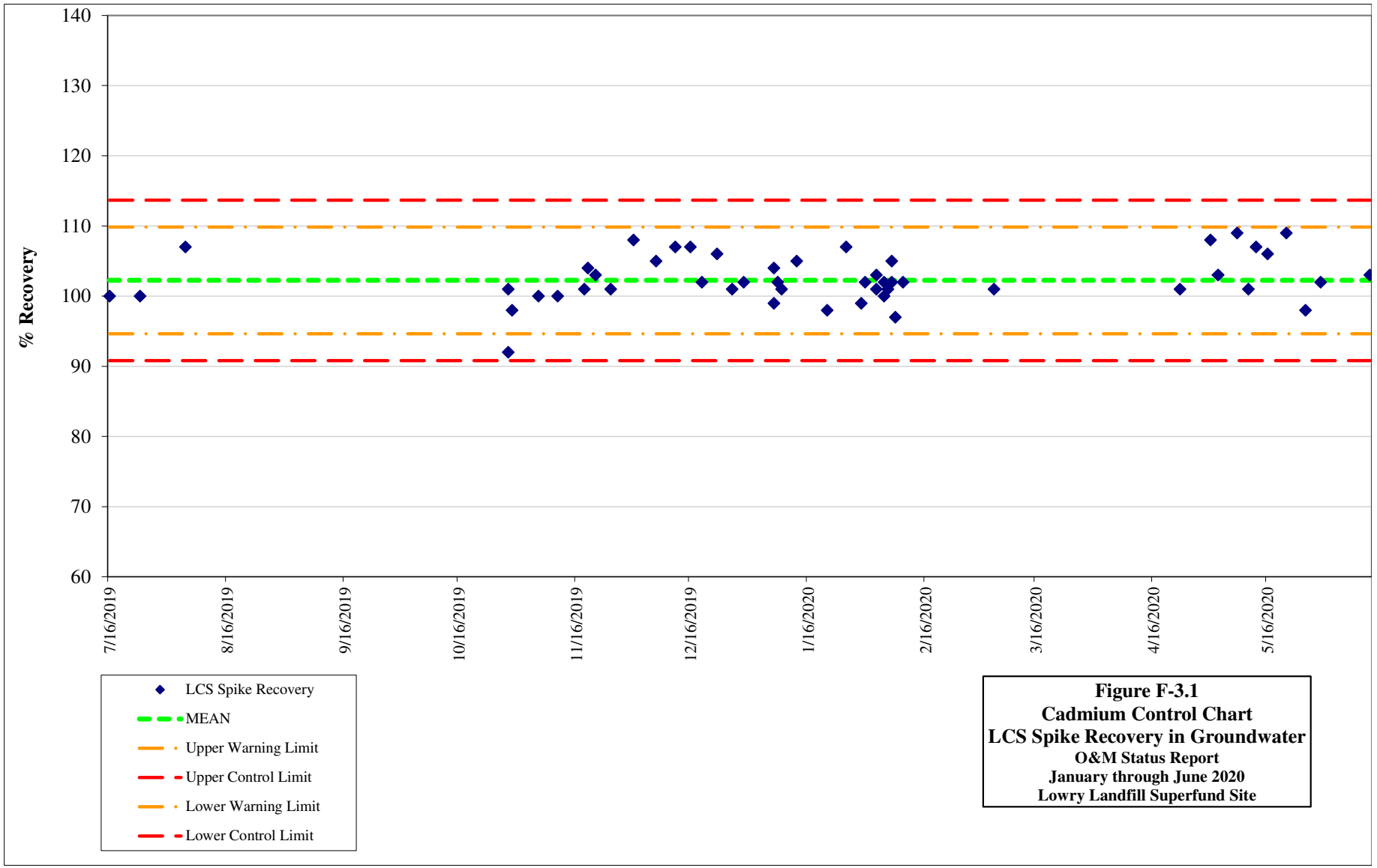

Figure F-3.1
Cadmium Control Chart
LCS Spike Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

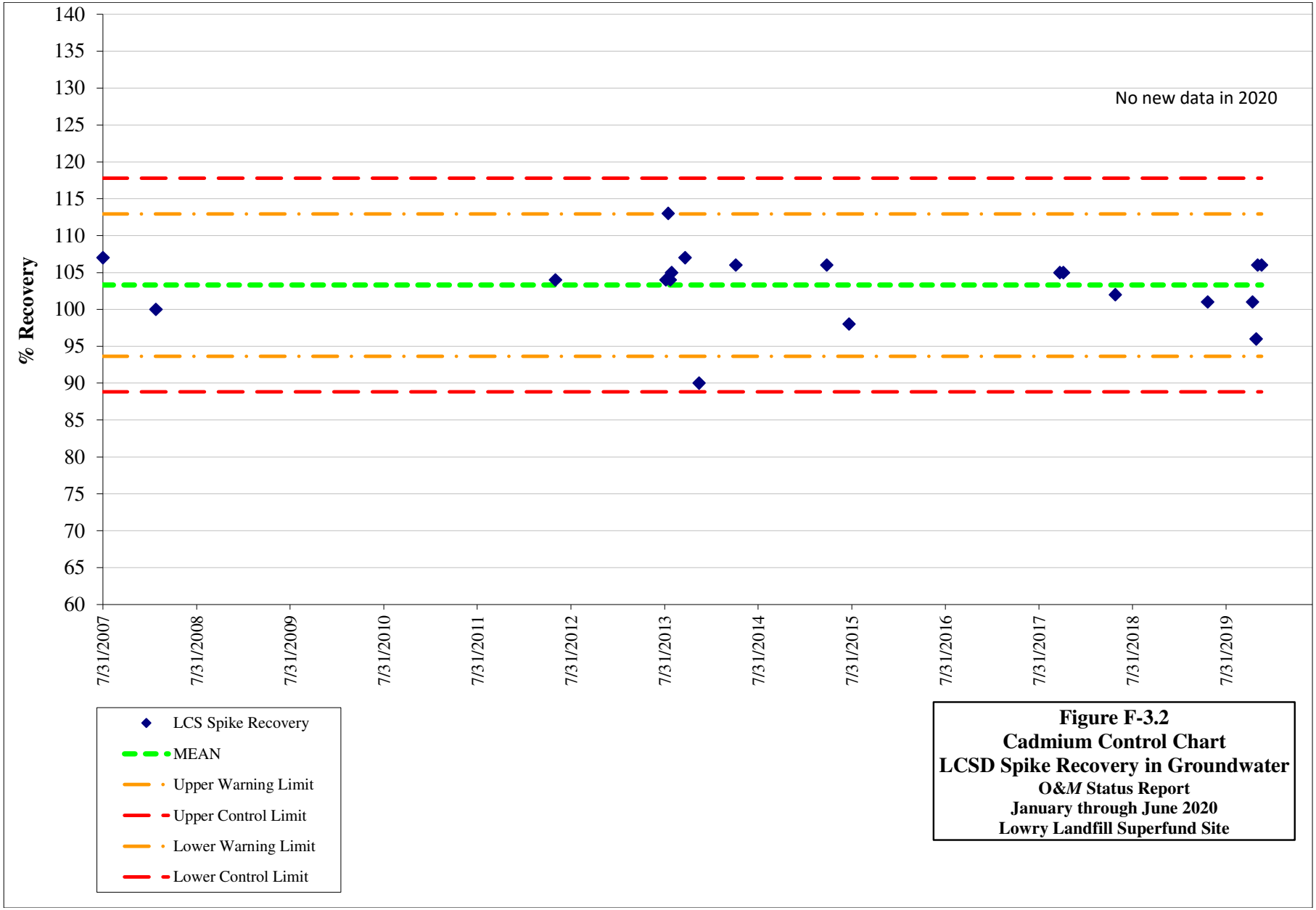

Figure F-3.2
Cadmium Control Chart
LCSD Spike Recovery in Groundwater
O&*M* Status Report
January through June 2020
Lowry Landfill Superfund Site

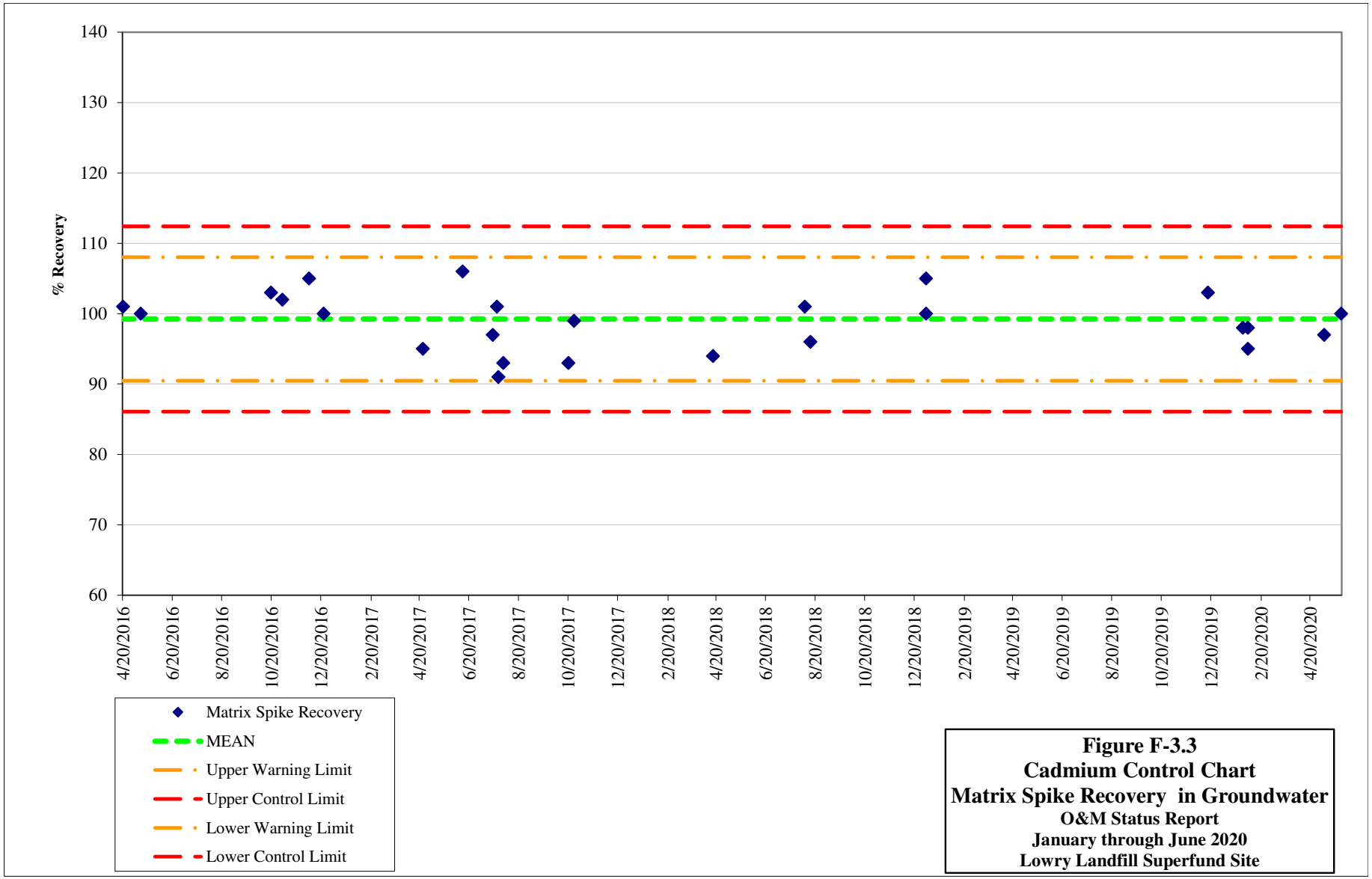

Figure F-3.3
Cadmium Control Chart
Matrix Spike Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

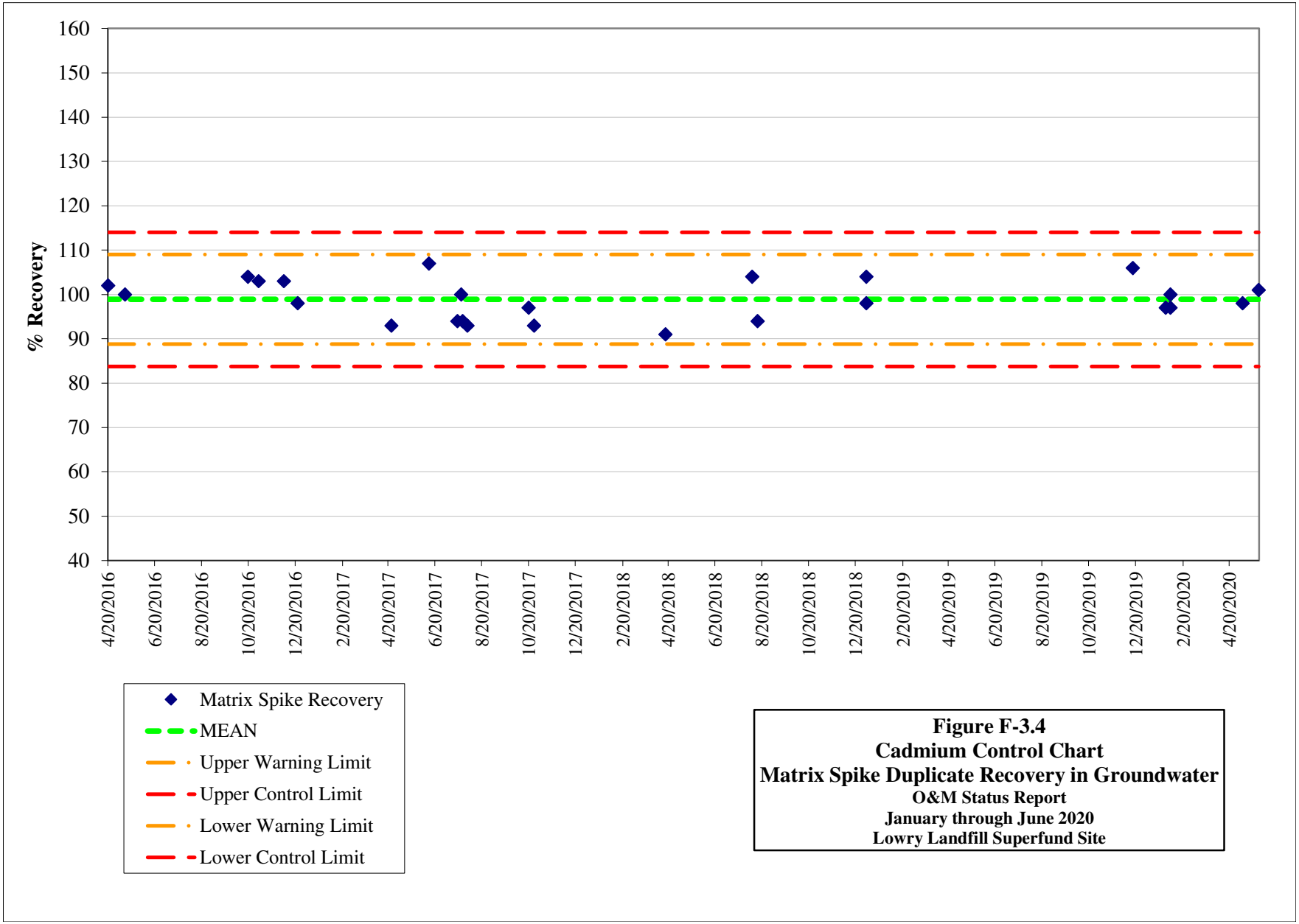

Figure F-3.4
Cadmium Control Chart
Matrix Spike Duplicate Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

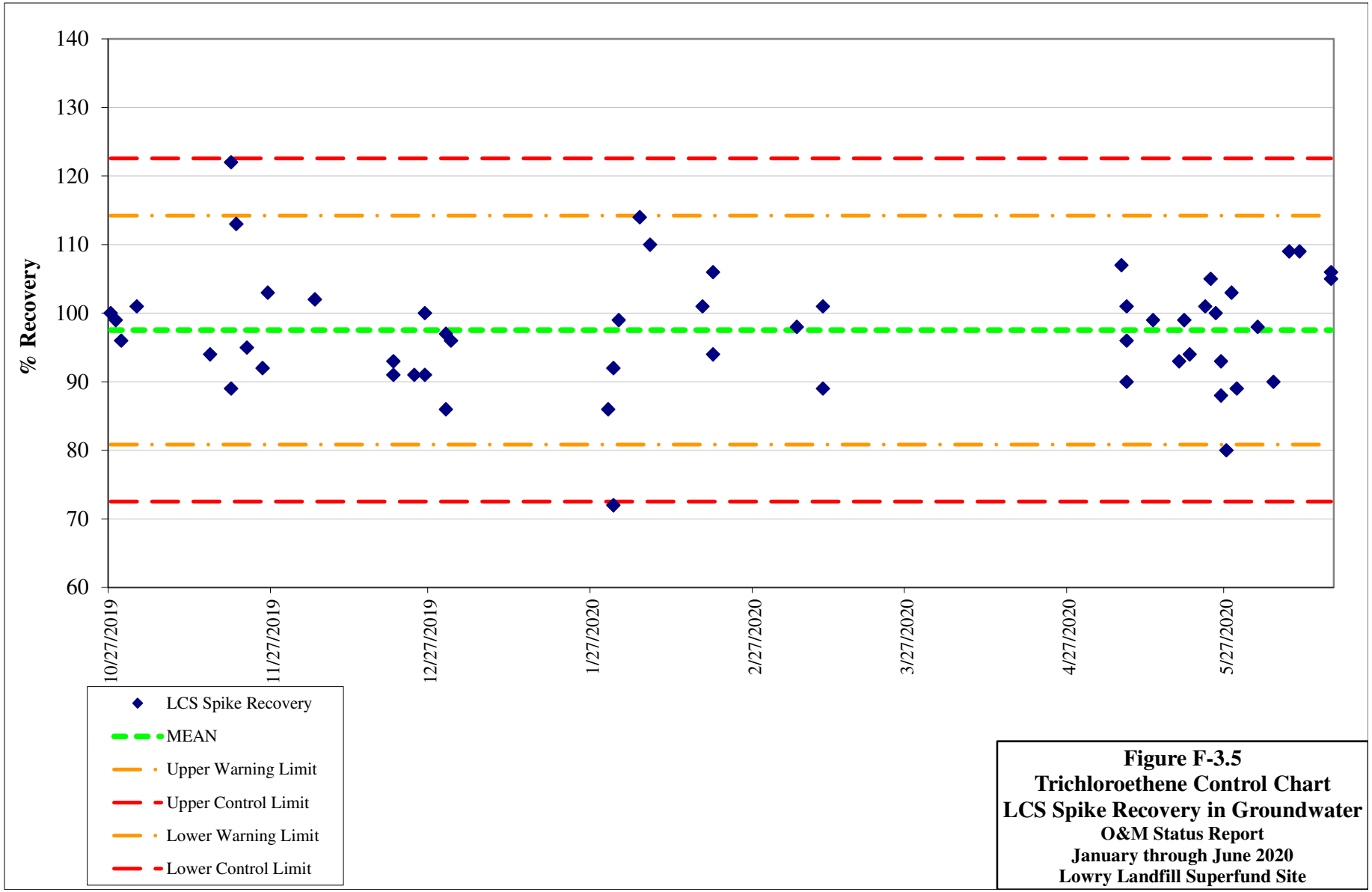

Figure F-3.5
Trichloroethene Control Chart
LCS Spike Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

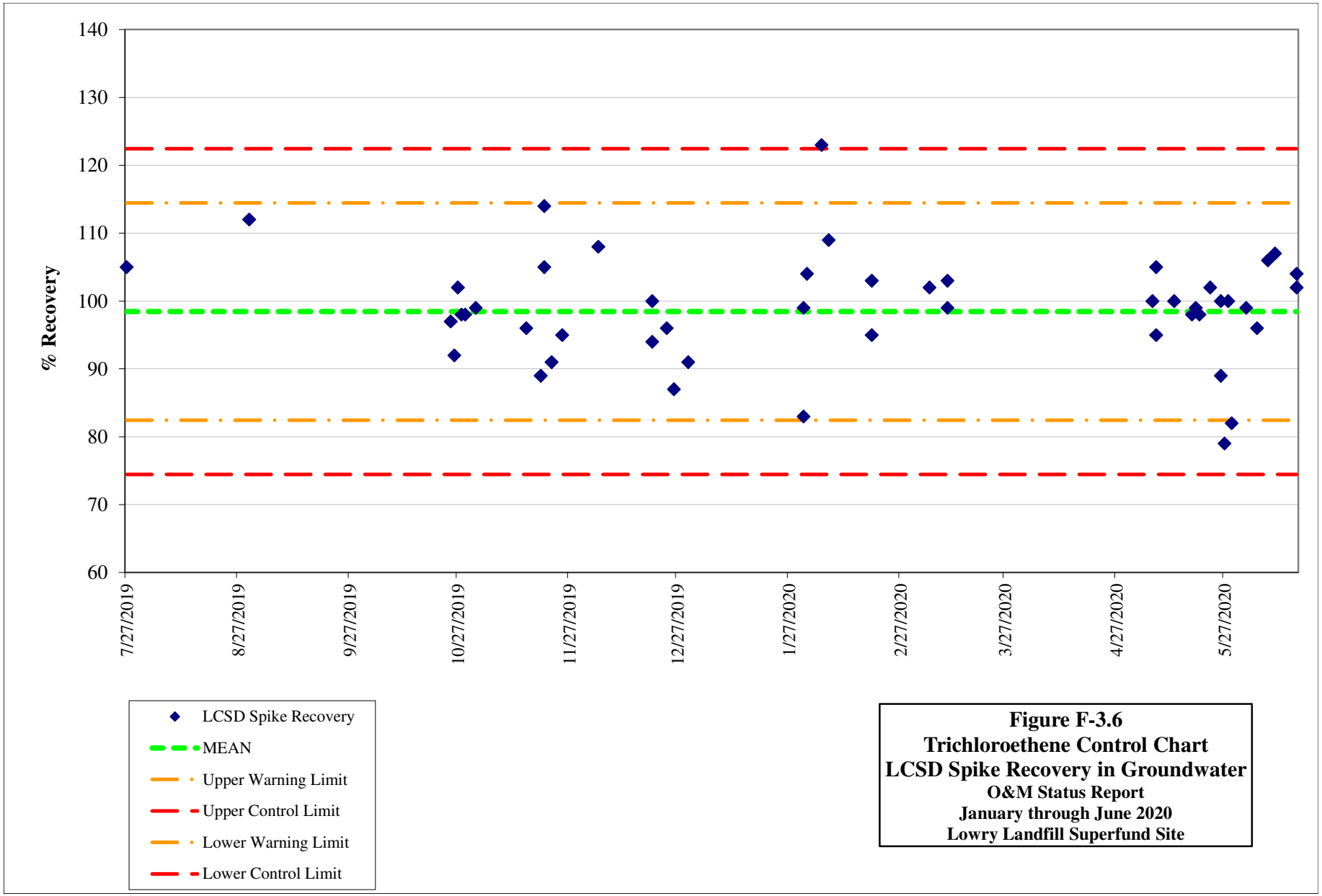

Figure F-3.6
Trichloroethene Control Chart
LCSD Spike Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

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Figures F-3.1 thru F-3.21 1H2020.xlsx

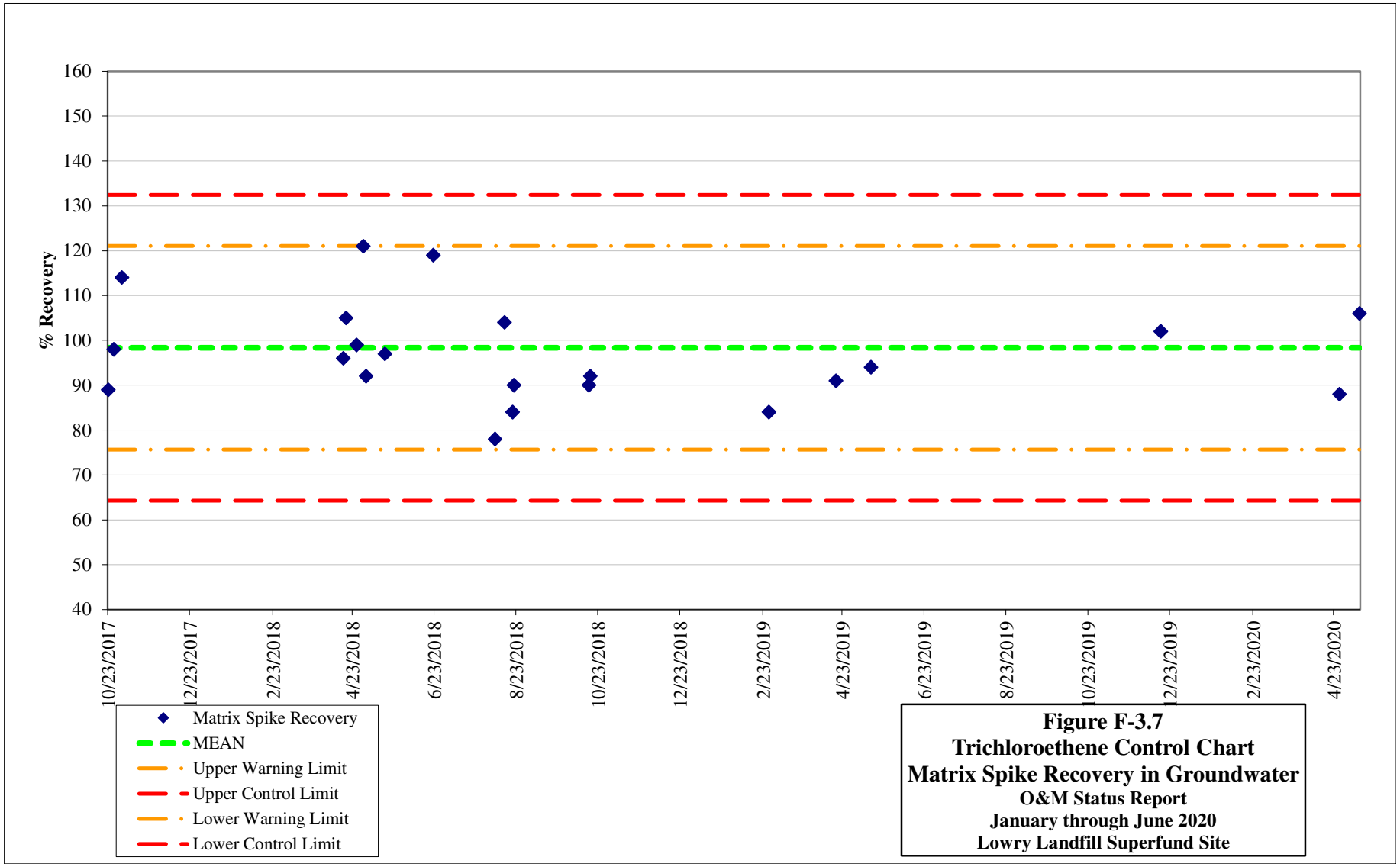

Figure F-3.7
Trichloroethene Control Chart
Matrix Spike Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

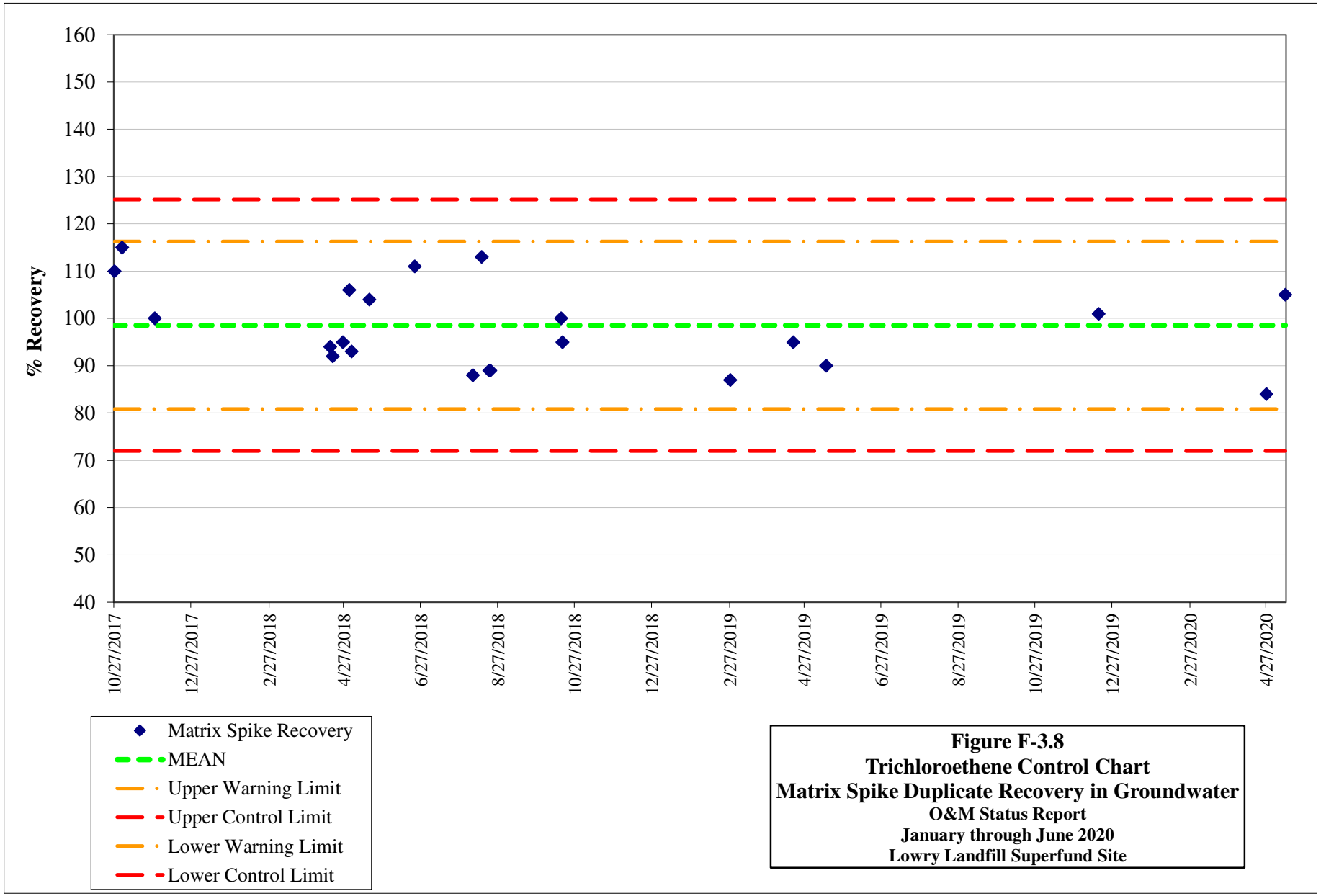

Figure F-3.8
Trichloroethene Control Chart
Matrix Spike Duplicate Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

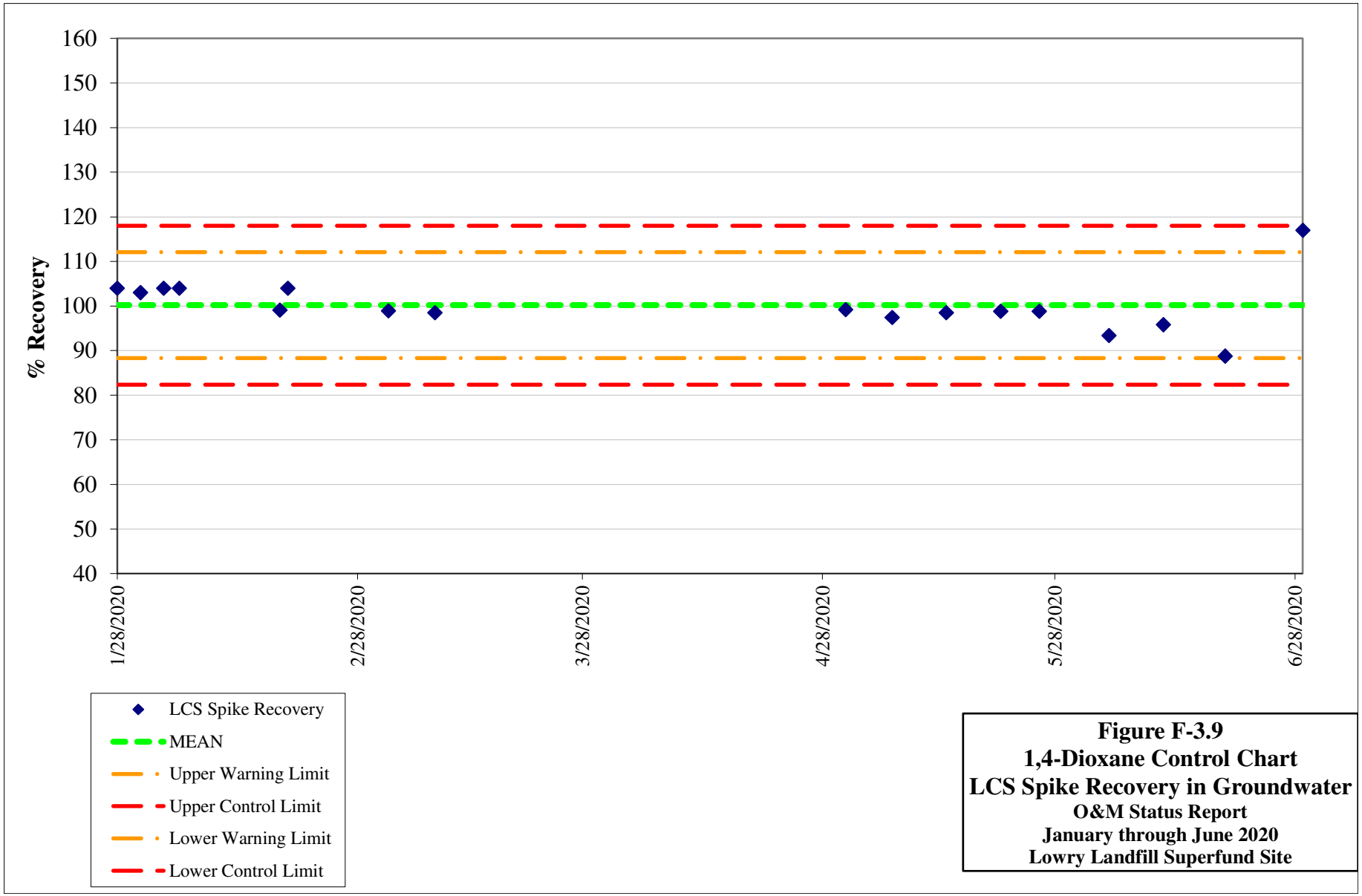

Figure F-3.9
1,4-Dioxane Control Chart
LCS Spike Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

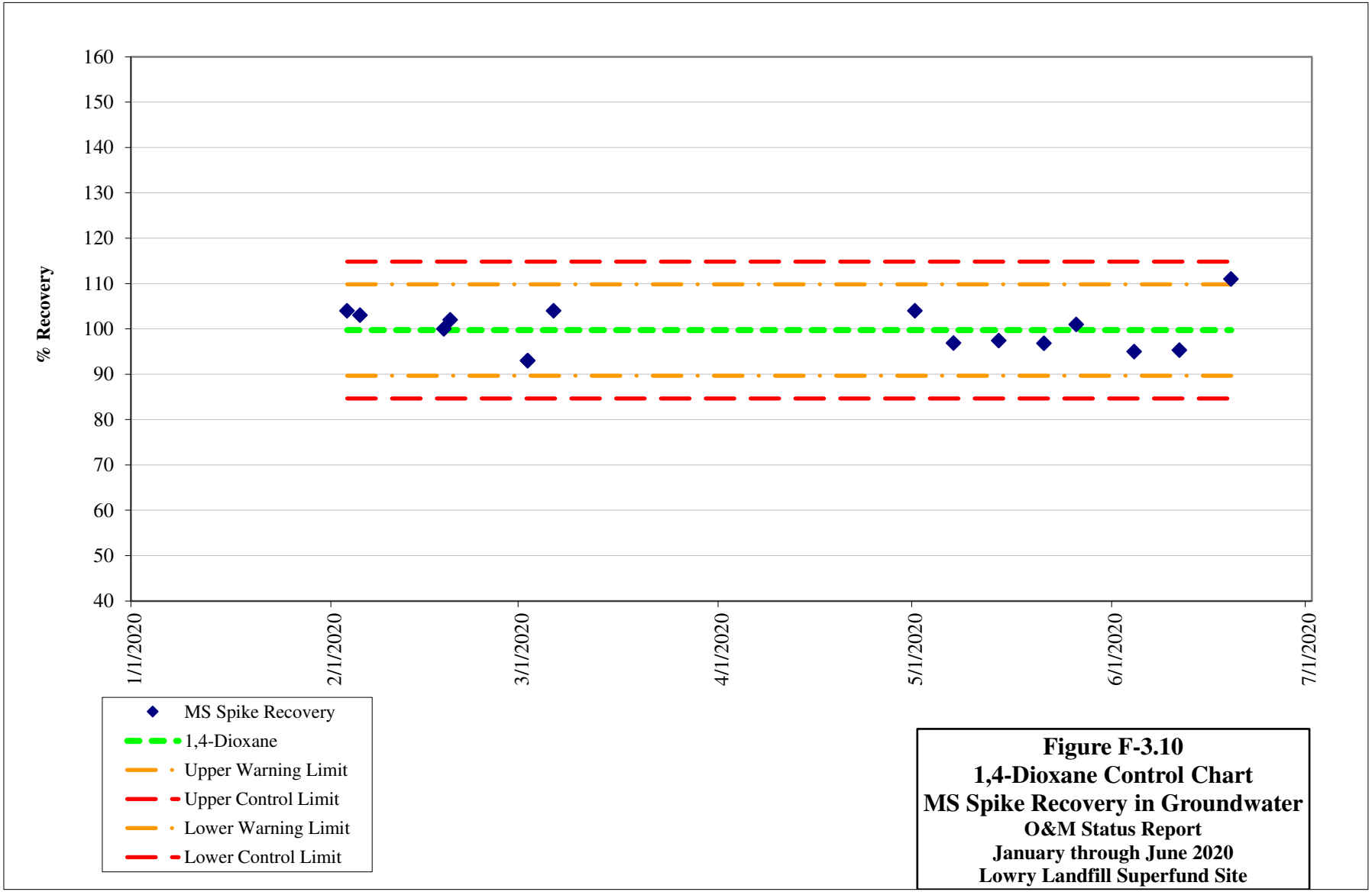

Figure F-3.10
1,4-Dioxane Control Chart
MS Spike Recovery in Groundwater
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

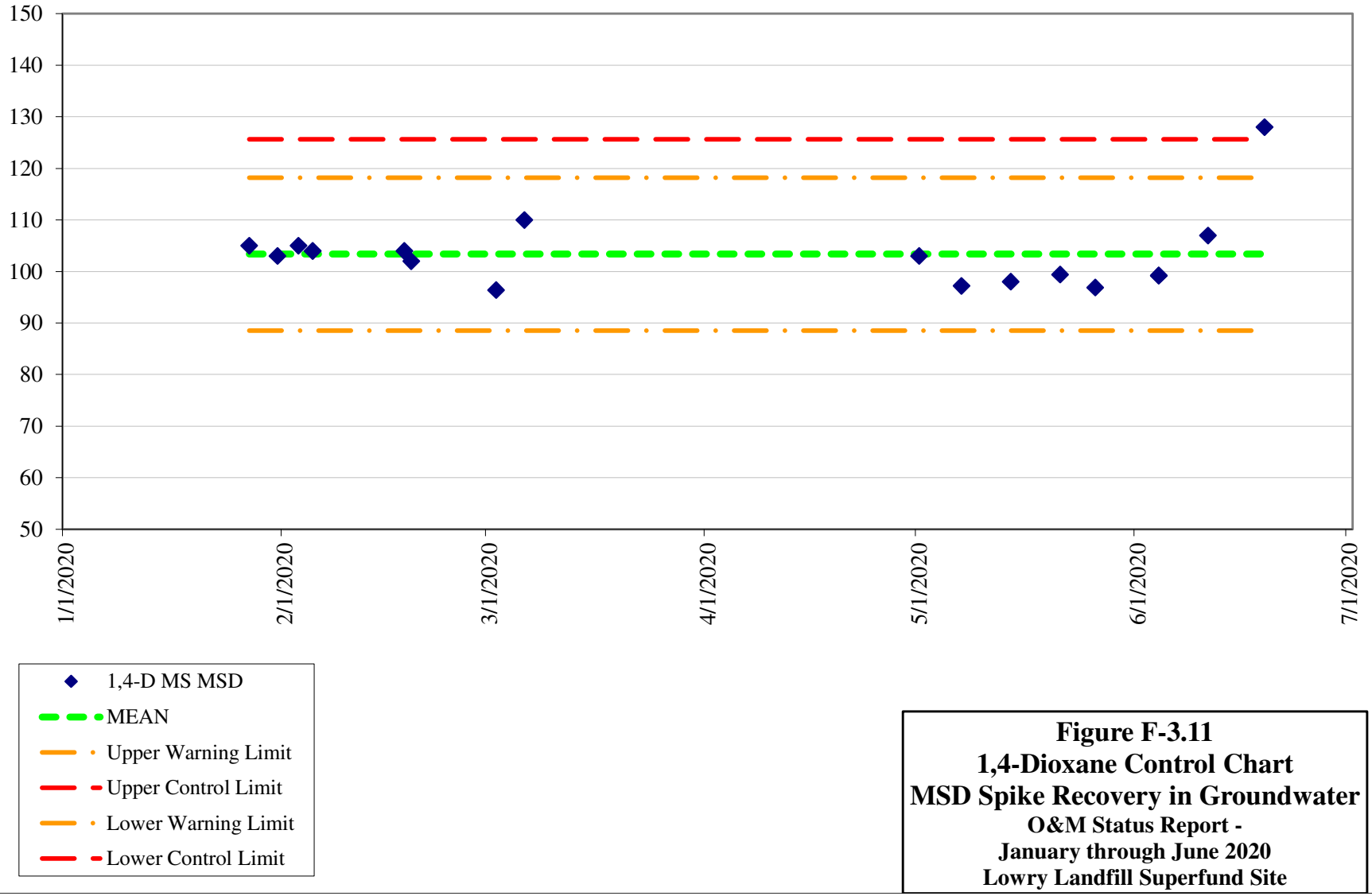

Figure F-3.11
1,4-Dioxane Control Chart
MSD Spike Recovery in Groundwater
O&M Status Report -
January through June 2020
Lowry Landfill Superfund Site

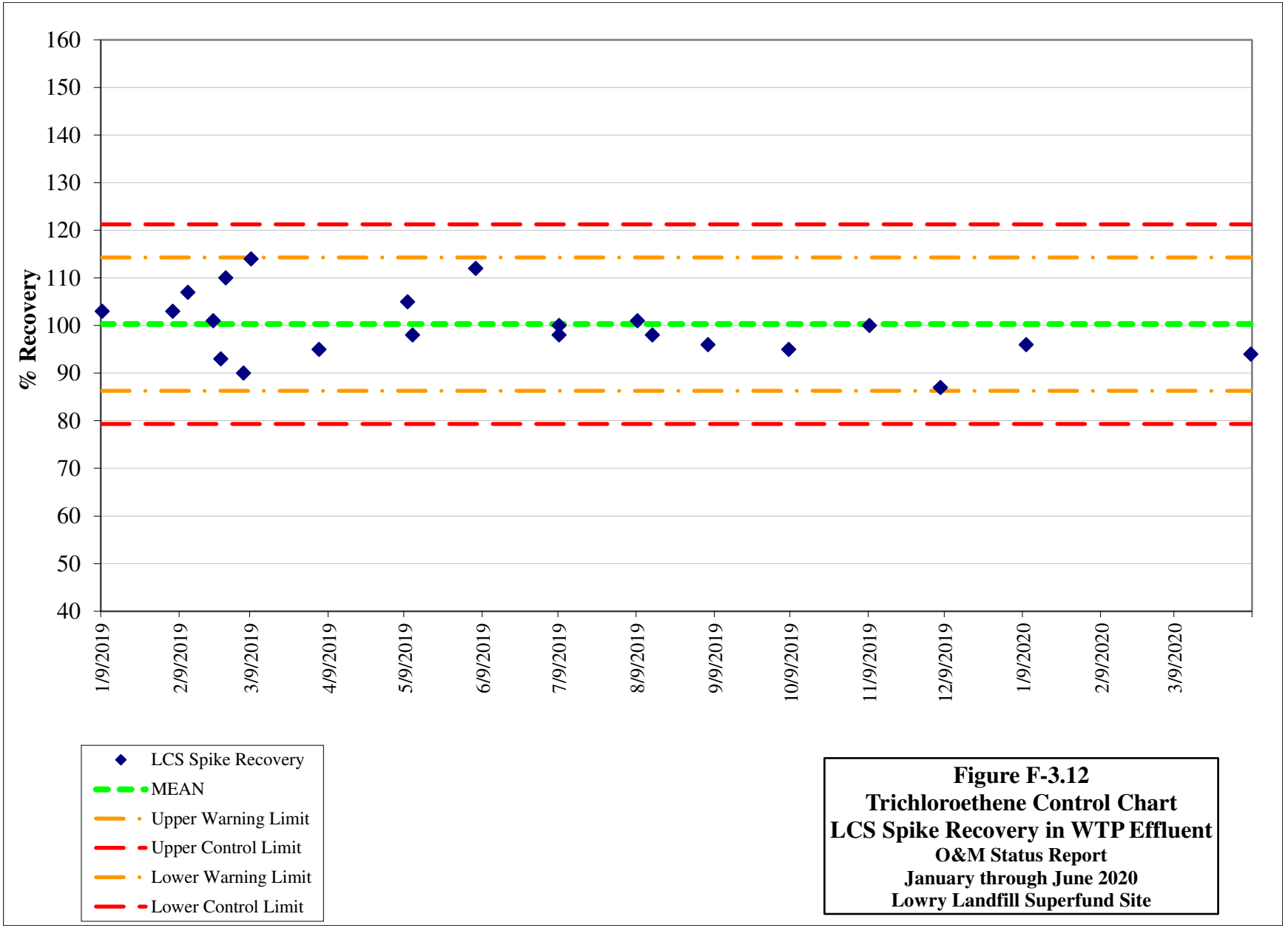

Figure F-3.12
Trichloroethene Control Chart
LCS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

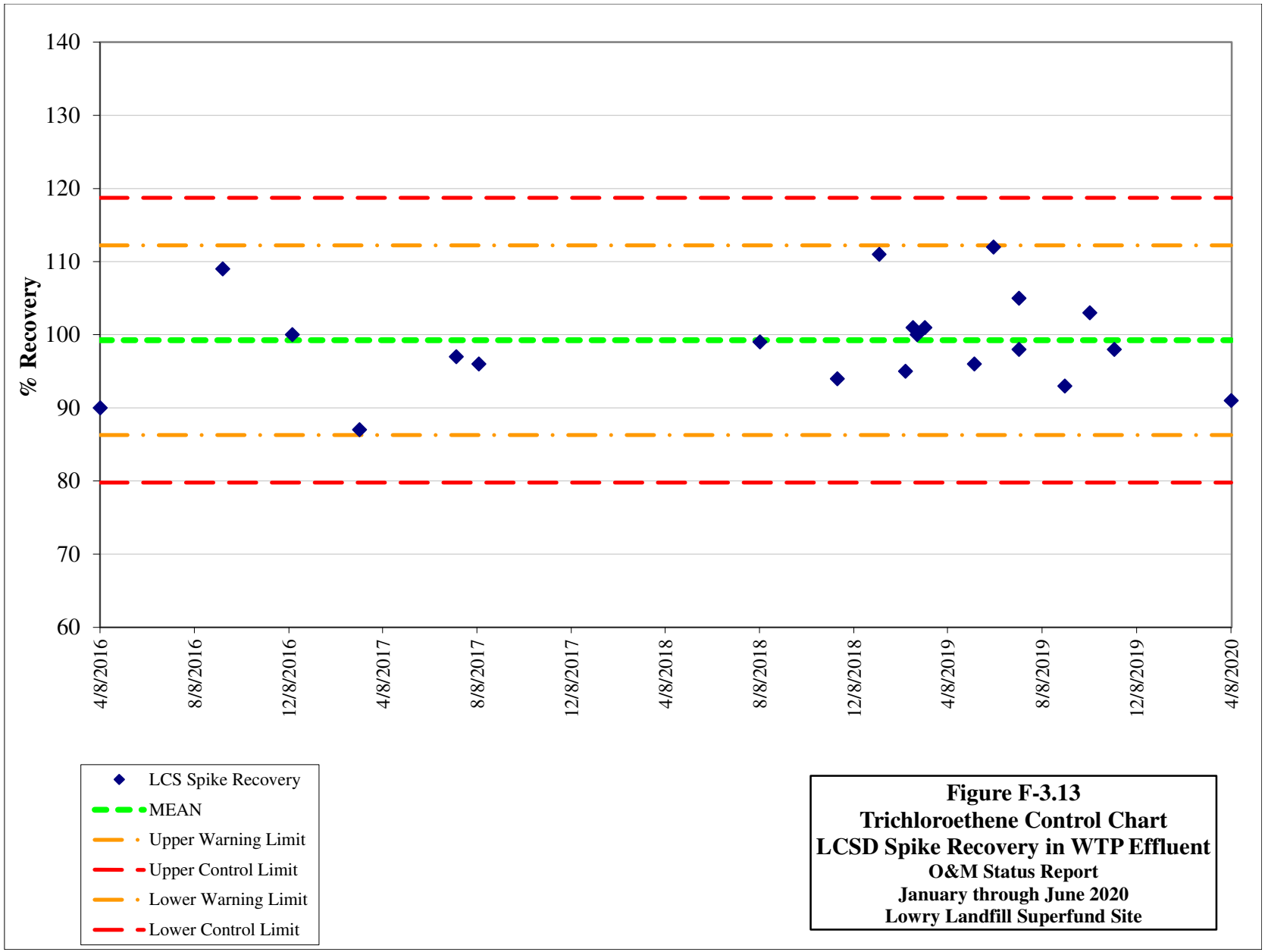

Figure F-3.13
Trichloroethene Control Chart
LCSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

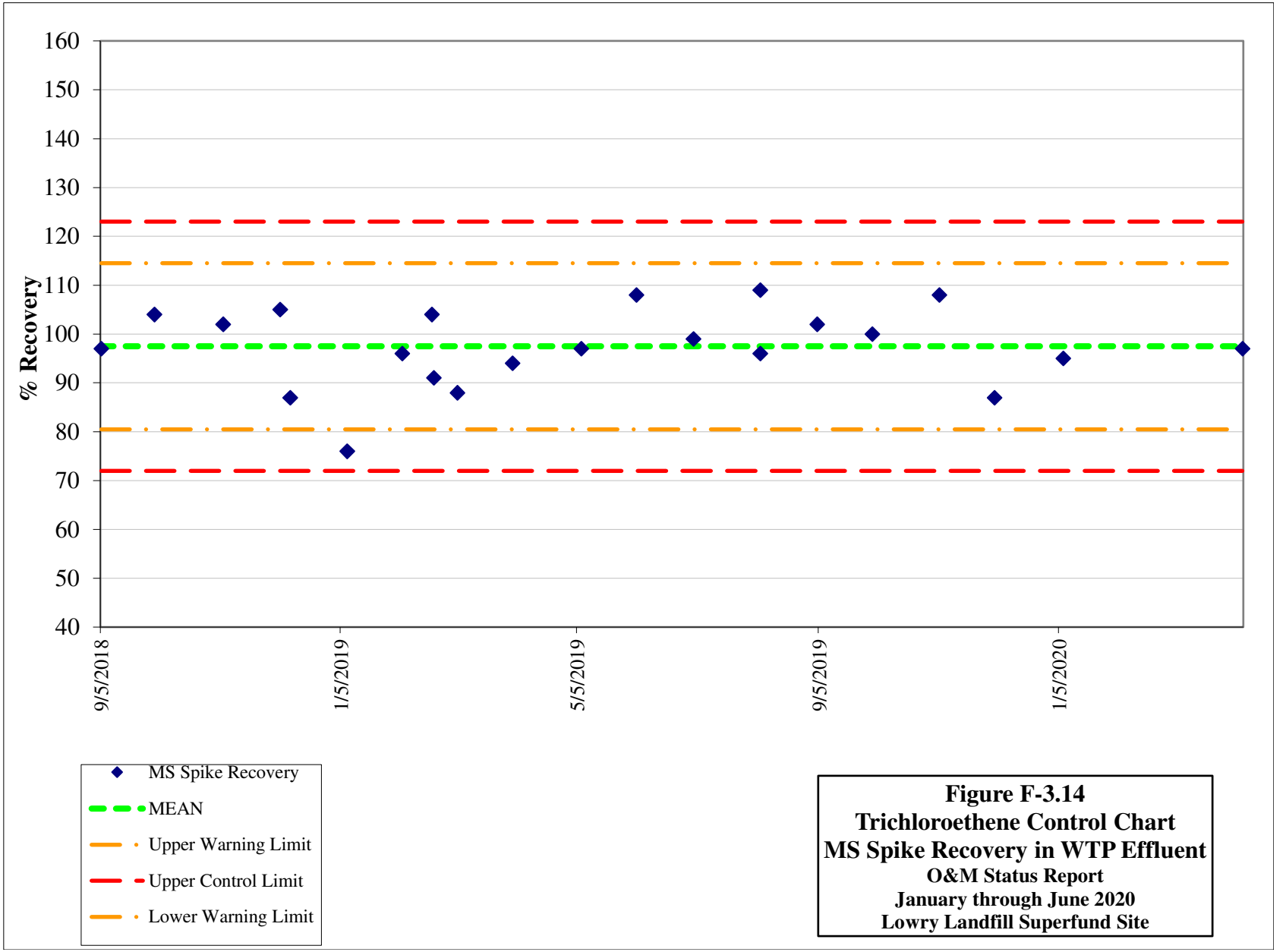

Figure F-3.14
Trichloroethene Control Chart
MS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

WTP

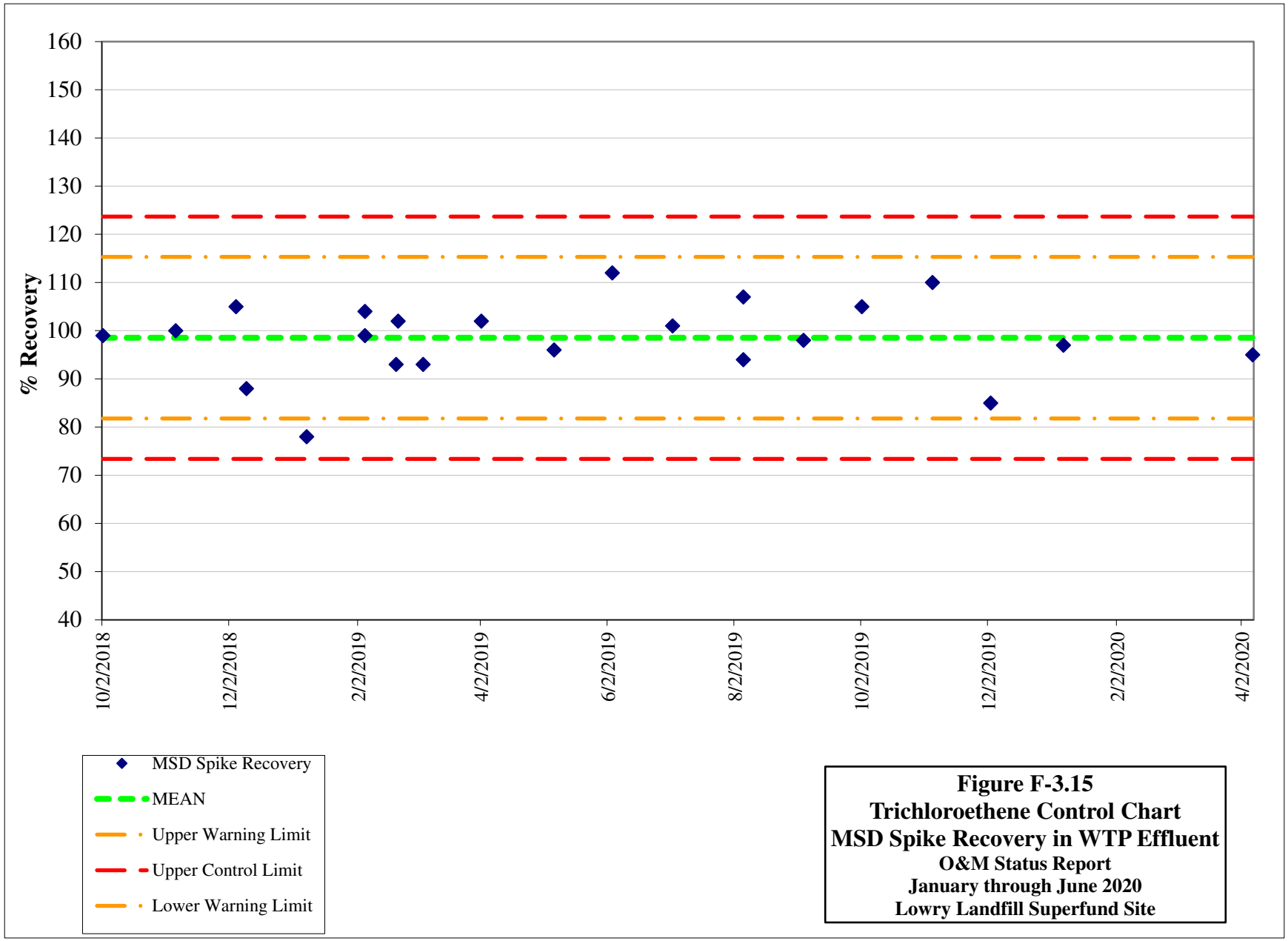

Figure F-3.15
Trichloroethene Control Chart
MSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

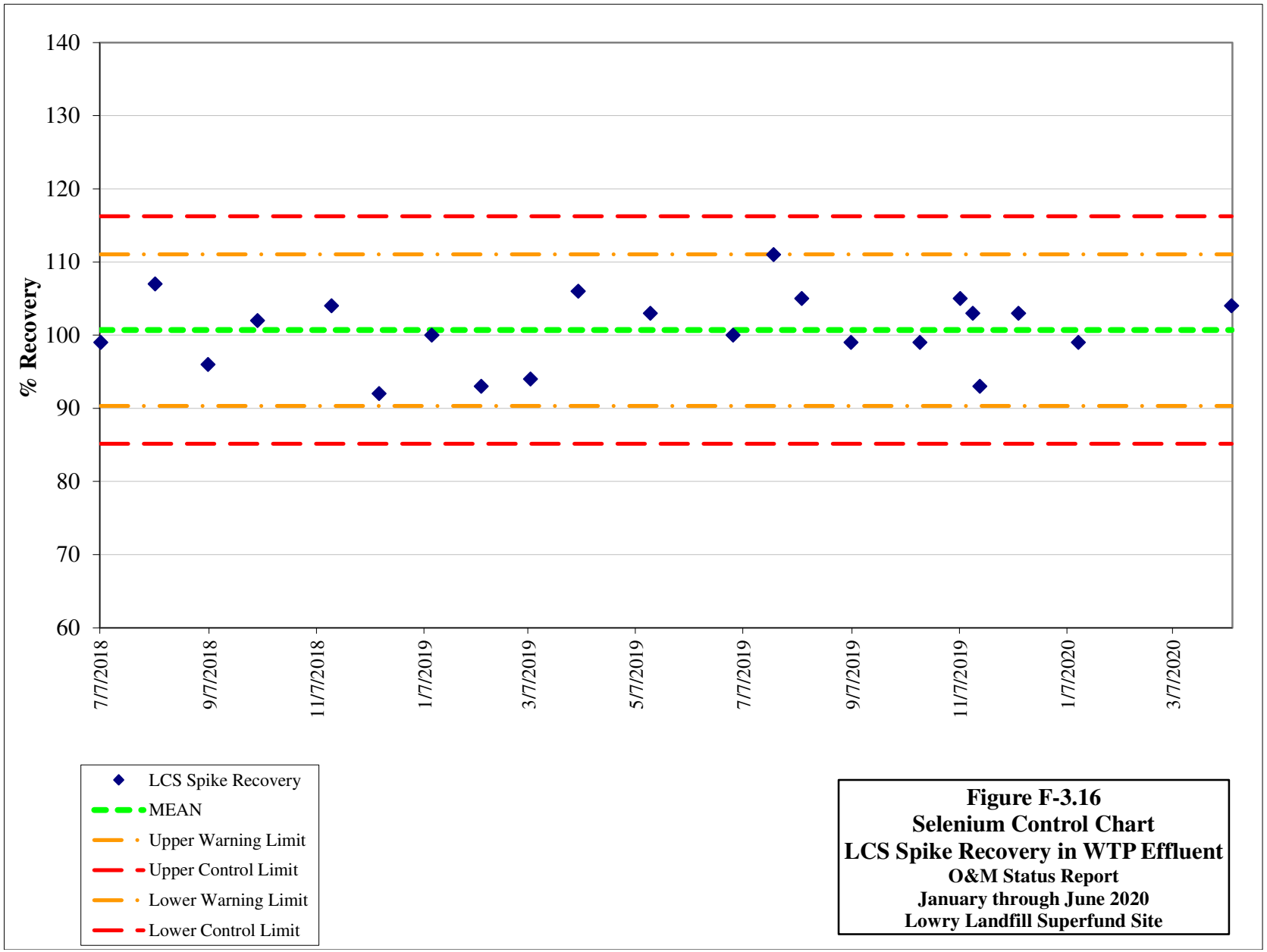

Figure F-3.16
Selenium Control Chart
LCS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

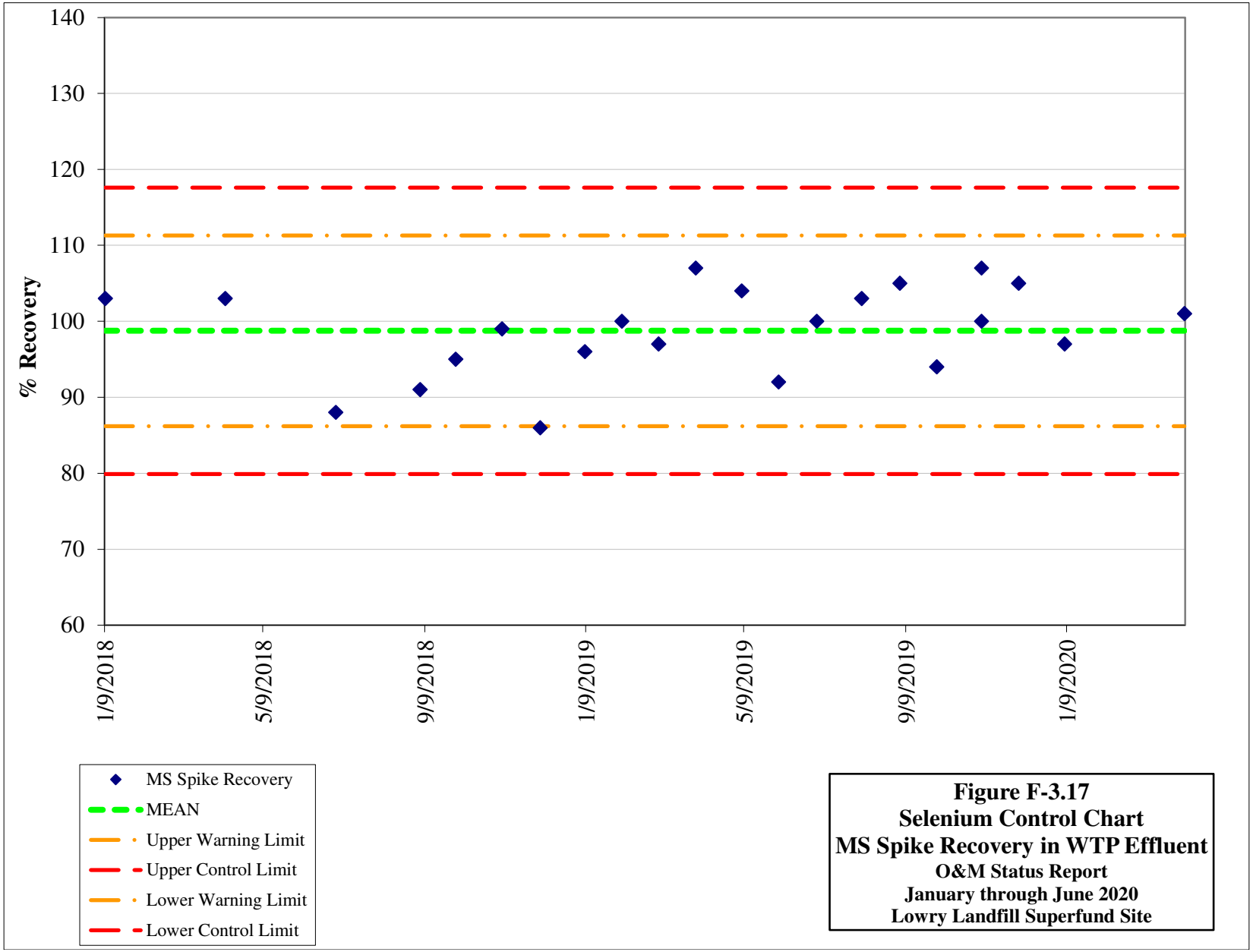

Figure F-3.17
Selenium Control Chart
MS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

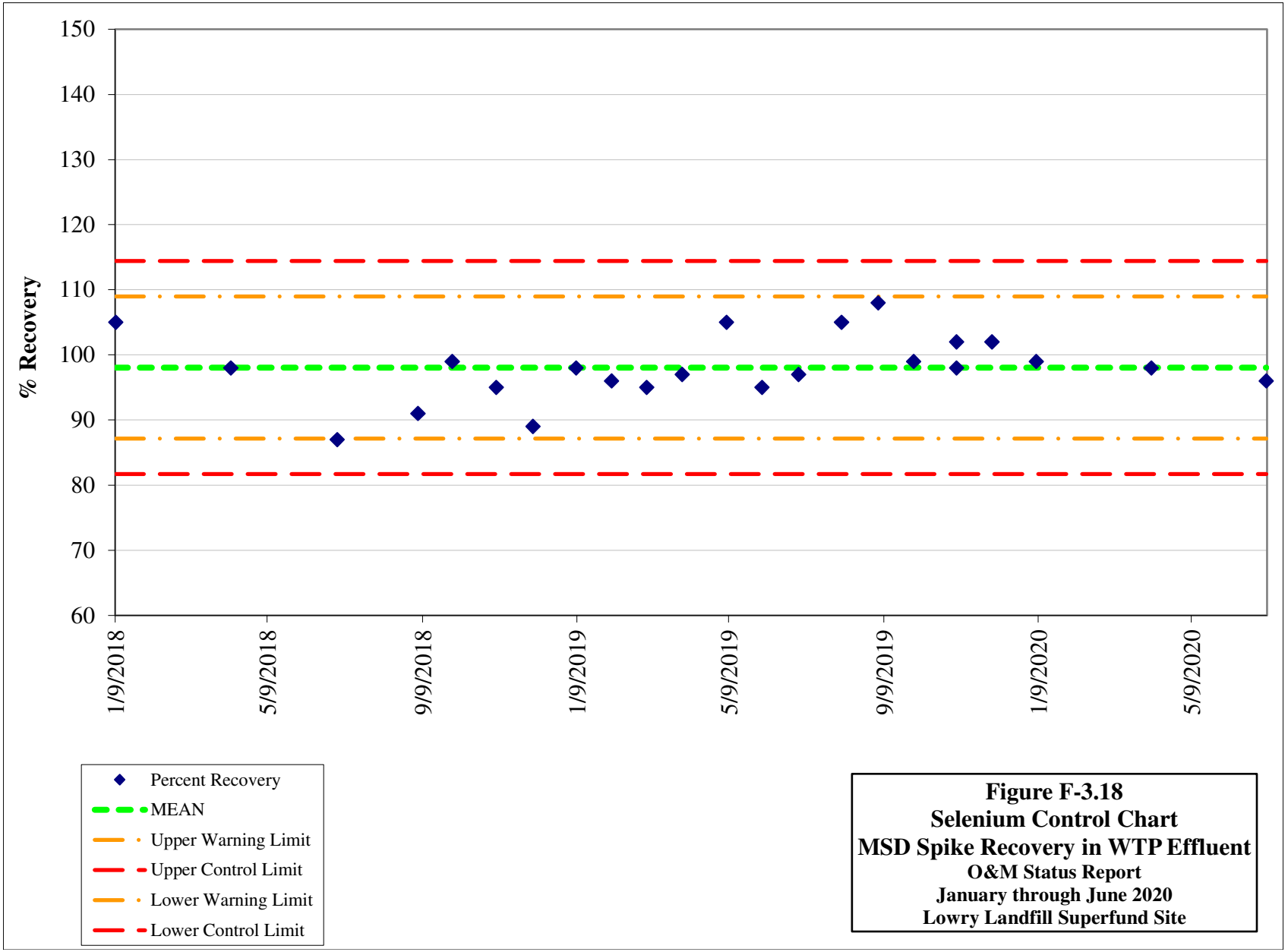

Figure F-3.18
Selenium Control Chart
MSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

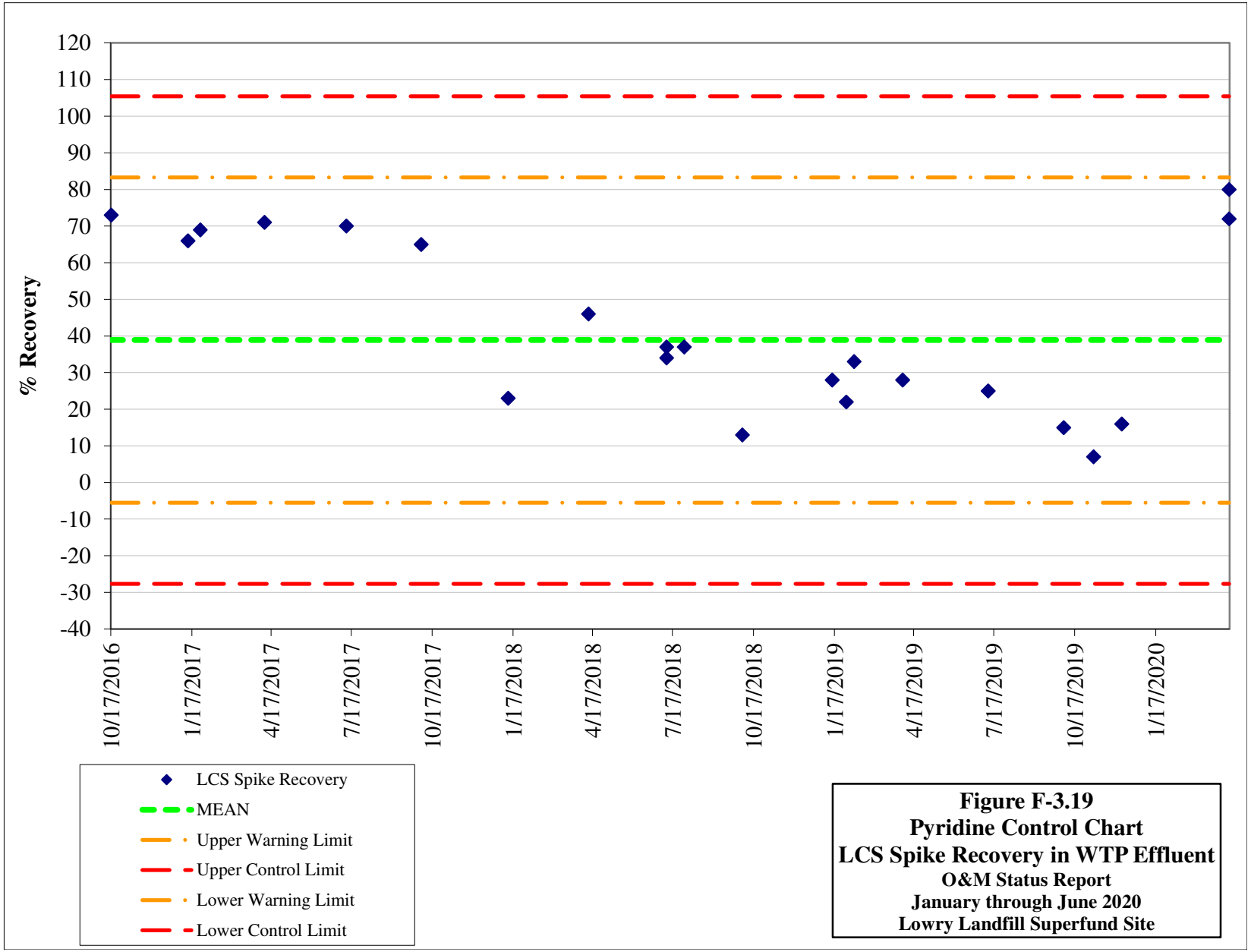

Figure F-3.19
Pyridine Control Chart
LCS Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

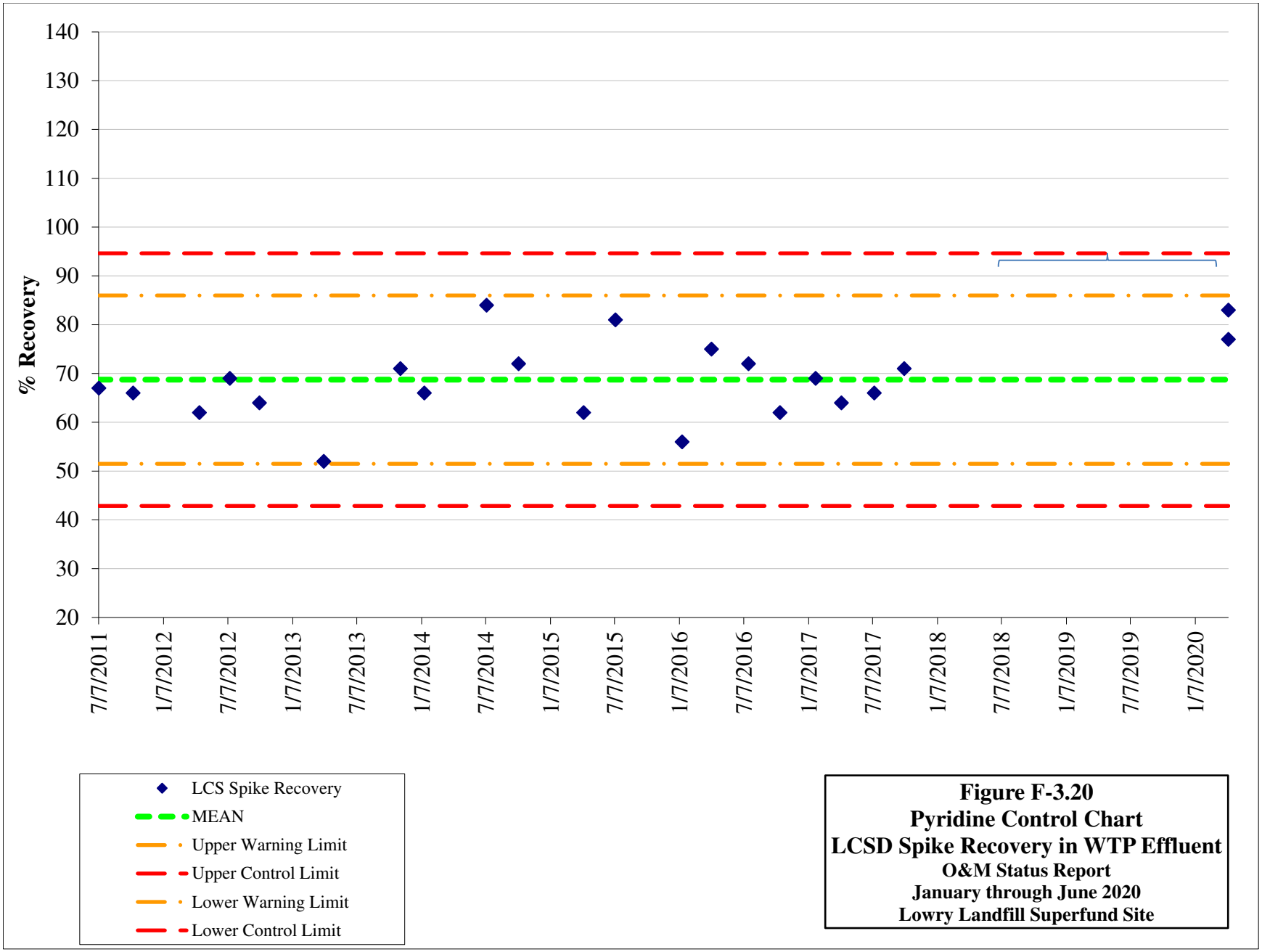

Figure F-3.20
Pyridine Control Chart
LCSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

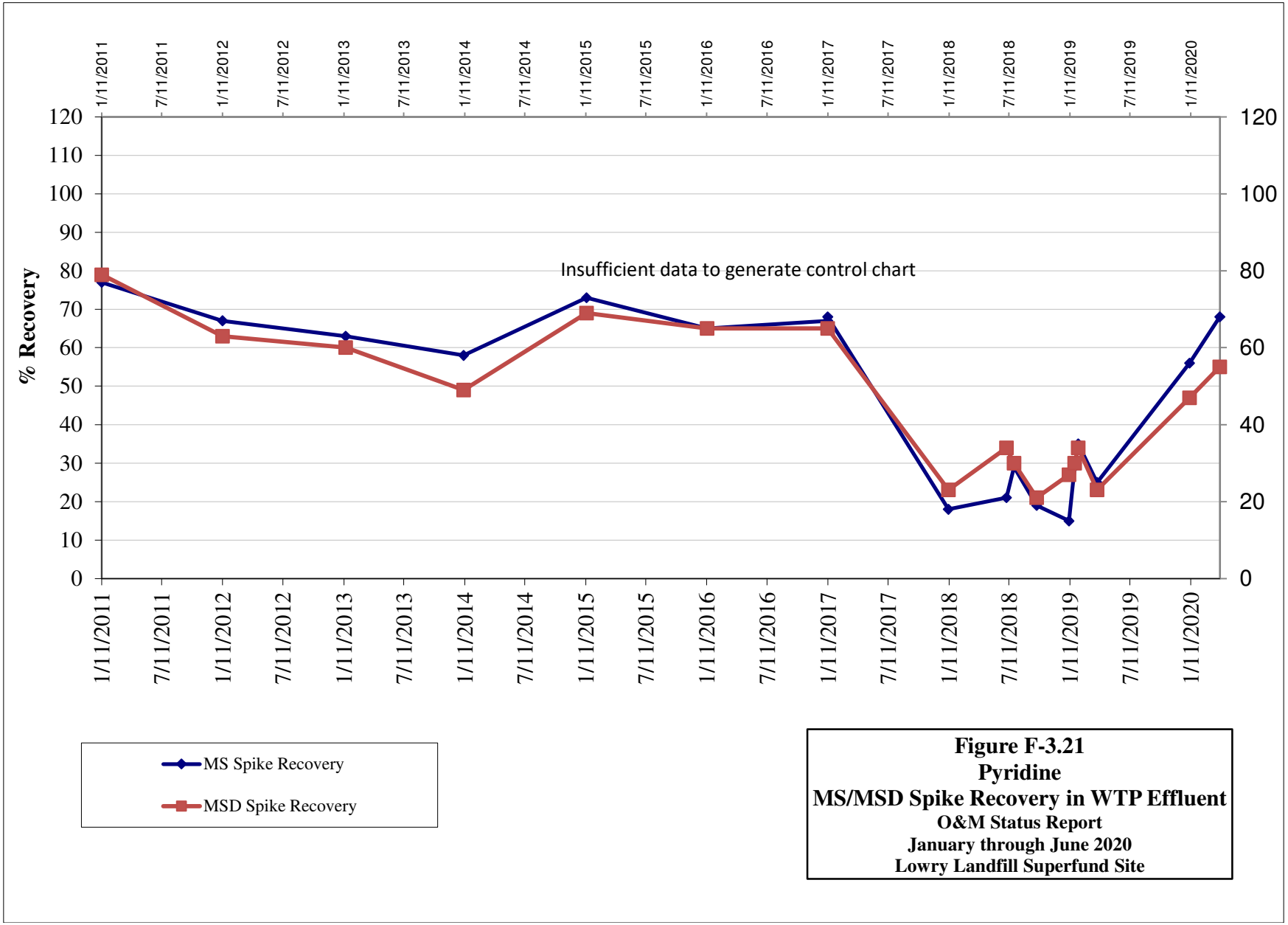

Figure F-3.21
Pyridine
MS/MSD Spike Recovery in WTP Effluent
O&M Status Report
January through June 2020
Lowry Landfill Superfund Site

APPENDIX G

ELECTRONIC DATABASE
FOR
SITEWIDE GROUNDWATER ANALYTICAL DATA,
GROUNDWATER LEVELS,
WATER TREATMENT PLANT (OLD PLANT),
WATER TREATMENT PLANT (NEW PLANT),
WELL INDEX,
SURFACE WATER,
FLARE GAS, GAS-TO-ENERGY PLANT, TCLP,
AND LANDFILL GAS

The database is presented as a separate file on this DVD