Monitoring and Closure Report
Former Marv Bonney Site
Prosser Airport
Prosser, Washington

October 31, 2017

SHANNON & WILSON, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

October 31, 2017

Mr. John Haakenson
Port of Benton
3250 Port of Benton Boulevard
Richland, WA 99354

RE: MONITORING AND CLOSURE REPORT, FORMER MARV BONNEY SITE, PROSSER AIRPORT, PROSSER, WASHINGTON

Dear Mr. Haakenson:

Shannon & Wilson, Inc. has prepared the enclosed report to document the status of the former Marv Bonney Site, address data gaps outlined in the Washington State Department of Ecology's June 10, 2015, letter, and demonstrate the site's readiness for closure.

Thank you for the opportunity to provide these services. Please contact us if you have questions, or would like further explanation of the materials or conclusions presented.

Sincerely,

SHANNON & WILSON, INC.

Donna R. Parkes
Senior Environmental Specialist

DRP:LLA:MJS:SWG/drp

Enc: Monitoring and Closure Report, Former Marv Bonney Site, Prosser Airport, Prosser, Washington

22-1-11228-008-R1-L1/wp/lkn

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EXECUTIVE SUMMARY

Shannon & Wilson, Inc. (Shannon & Wilson) has provided environmental services to the Port of Benton (Port) related to the former Marv Bonney site at the Prosser Airport in Prosser since 2012. The property previously underwent interim remediation to address petroleum, herbicides, and pesticides in soil under a Washington State Department of Ecology (Ecology) Agreed Order dated September 17, 2008. Ecology's "notice of satisfaction" letter dated January 23, 2013, indicated the Port met the substantive requirements of the Agreed Order, but since residual groundwater contamination was present, Ecology recommended that the Port enter the Voluntary Cleanup Program to characterize and address remaining contamination. Shannon & Wilson was contracted to perform groundwater monitoring services as part of the characterization process requested by Ecology.

In a letter dated June 10, 2015, Ecology requested that additional remedial activities be performed. This report describes the actions taken in response to the 2015 letter, and the results of additional investigation and monitoring activities. It also describes a screening levels evaluation, presents cleanup level (CUL) recommendations, and compares sample results to the recommended CULs.

Shannon & Wilson conducted supplemental investigations and site activities to:

- Confirm the adequacy of previous cleanup actions, and determine if arsenic was a component of pesticide impacts.
- Install two downgradient monitoring wells and sample all site wells for contaminants of concern (COCs); four consecutive quarterly monitoring events were conducted.
- Make improvements to MW-4 and MW-6 to reduce potential for standing water over the well monuments to enter the wells.
- Calculate an "area background" arsenic concentration in groundwater in accordance with Washington Administrative Code 173-340-709.
- Evaluate the potential for groundwater to impact surface waters.

FINDINGS AND CONCLUSIONS

The following section describes findings from work undertaken in 2015 and 2016.

Soil

Soil sampling was conducted in March 2016 around and beneath the former excavation/ remediation area to confirm that the contaminated soil had been removed. Soil samples from

two new monitoring well borings were also analyzed. Analyses on selected samples included petroleum constituents, pesticides, herbicides, arsenic, and lead.

Gasoline range total petroleum hydrocarbons (TPH-G); petroleum volatile compounds benzene, ethylbenzene, toluene and xylenes; and herbicides were not detected in any of the soil samples at greater than the laboratory practical quantitation limits (PQLs). Concentrations of detected analytes (pesticides [DDE and DDT] and metals [arsenic and lead]) were significantly less than the applicable Model Toxics Control Act (MTCA) Method A cleanup criteria. In summary, none of the COCs were detected in soil samples at greater than the recommended cleanup levels.

Groundwater movement (Figure 2) is to the south and east. Previous soil sampling conducted in 2008 and records about a former aviation fuel underground storage tank, indicate an area of petroleum-contaminated soil may be present below the hangar building. The 2016 soil exploration investigated areas downgradient from the area where the contaminated soil may be present below the hanger building. Analysis indicated soil contamination has not migrated from beneath the building to the south or east.

Groundwater

Previous monitoring indicated COCs in groundwater included petroleum products (TPH-G and benzene), metals (arsenic and lead), and herbicides. Since 2007, 20 monitoring events have been completed, including the 4 most recent events conducted between December 2015 and October 2016 described in this report.

In our opinion, site remediation has achieved cleanup objectives for petroleum constituents, herbicides, and lead in groundwater. Natural attenuation has also likely contributed to the reduction in petroleum constituents.

The one COC that remains in groundwater above the CUL is arsenic. Shannon & Wilson conducted a statistical analysis to estimate the background arsenic concentration. The calculated concentration is 7.7 micrograms per liter (µg/L), which is higher than the MTCA Method A CUL of 5.0 µg/L.

To test if the compliance well data (MW-2 through MW-9) are statistically less than the area background concentration, the 95 percent upper confidence limit (UCL) was calculated for the compliance wells; compliance well data are considered to be statistically less than background if their UCL is below the area background concentration. The upper confidence bands are greater than the area background for each of the compliance wells evaluated. However, arsenic

concentrations appear to be decreasing exponentially at each of the compliance wells and are approaching the background concentration (Figure 3).

Shannon & Wilson found no evidence from soil investigations conducted at the site that arsenic was introduced from former site operations and activities. In our opinion, arsenic concentrations in groundwater are consistently trending downward, and are approaching the recommended cleanup level of 7.7 µg/L.

RECOMMENDATIONS

Soil

Because inaccessible petroleum-contaminated soil is likely present beneath the hangar building, Shannon & Wilson recommends that the Port prepare an environmental covenant for the parcel with the hangar building. If necessary, a survey should be performed to delineate the site boundaries within the airport property.

The covenant's wording and conditions should comply with Ecology's recommendations for environmental covenants, and a draft copy should be reviewed by Ecology prior to adoption. Once adopted and filed, the covenant and its restrictions would run with the land title and be considered an institutional control.

Sites with institutional controls typically go through a five-year review by Ecology to determine if the controls are still adequate to protect human health and the environment. The Port may elect to conduct a groundwater monitoring event on a five-year interval to document conditions related to petroleum constituents in groundwater.

Groundwater

Arsenic concentrations in groundwater are trending downward and are approaching the recommended cleanup level of 7.7 µg/L. However, because concentrations at some locations exceed the drinking water maximum contaminant level of 10 µg/L, we recommend that the environmental covenant, described above, also include the restriction that groundwater from the site not be used as a drinking water source.

If the Port elects to conduct groundwater monitoring on a five-year interval, we recommend that groundwater samples from site wells be analyzed for arsenic. Results should be reviewed to determine if the downward trend continues, and if compliance wells achieve the arsenic background concentration.

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (cont.)

Page

TABLE OF CONTENTS (cont.)

TABLES

FIGURES

APPENDICES

MONITORING AND CLOSURE REPORT
FORMER MARY BONNEY SITE AT PROSSER AIRPORT
PROSSER, WASHINGTON

1.0 INTRODUCTION AND BACKGROUND INFORMATION

Shannon & Wilson, Inc. (Shannon & Wilson) has provided environmental services to the Port of Benton (Port) since 2012 related to the former Marv Bonney site at the Prosser Airport in Prosser (Washington State Department of Ecology [Ecology] Facility ID number 7474148). Documents prepared by others indicate an aviation fuel underground storage tank (UST) was removed from the site in the early 1990s, and that petroleum-contaminated soil was excavated in 2007 and 2008. Shallow groundwater in the open excavation was treated with an oxygen-release compound (RegenOx^{TM}) prior to the excavation being backfilled. During site remediation, soils contaminated with pesticides and herbicides were also removed. Groundwater monitoring wells were installed at the site, and the Port has been monitoring groundwater since 2007.

The interim remedial actions at the site to address petroleum, herbicides and pesticides in soil were conducted under an Ecology Agreed Order dated September 17, 2008. Ecology's "notice of satisfaction" letter dated January 23, 2013, indicated the Port met the substantive requirements of the Agreed Order, but since residual groundwater contamination was present, Ecology recommended that the Port enter the Voluntary Cleanup Program to characterize and address remaining contamination. Shannon & Wilson was contracted to perform groundwater monitoring services as part of the characterization process requested by Ecology.

2.0 DATA GAPS

In 2015, the Port requested that Ecology provide an opinion as to the adequacy of cleanup actions at the site, taking into consideration the results of long-term monitoring that had been conducted between 2007 and 2015. Ecology reviewed environmental reports and provided an opinion (June 10, 2015, letter) requesting the Port conduct supplemental investigations to:

- Confirm the adequacy of previous cleanup actions, and determine if arsenic was a component of pesticide impacts.
- Install two downgradient monitoring wells and sample all site wells for contaminants of concern (COCs); four consecutive quarterly monitoring events were conducted.
- Make improvements to MW-4 and MW-6 to reduce potential for standing water over the well monuments to enter the wells.

- Calculate an "area background" arsenic concentration in groundwater in accordance with Washington Administrative Code (WAC) 173-340-709.
- Evaluate the potential for groundwater to impact surface waters.

This report describes the investigations and evaluations performed to address the items requested by Ecology.

Ecology's letter also requested a Technical Memo be prepared describing a screening levels evaluation and cleanup level (CUL) recommendations. Rather than preparing a separate document, the Technical Memo topics are addressed in this report. Included are a summary of exposure pathways, a table of screening levels for detected contaminants, and recommendations for CULs. Ecology will establish final CULs. A copy of Ecology's 2015 letter is in Appendix A.

3.0 MONITORING WELL MODIFICATIONS

Shannon & Wilson subcontracted with Haz-Tech Drilling (Haz-Tech) of Meridian, Idaho, to modify two monitoring wells (MW-4 and MW-6) on December 1, 2015. Haz-Tech used a combination of heavy equipment, power tools, and hand tools to remove the existing flush-mount monuments. The monitoring wells remained capped during the monument removal to prevent well contamination. Haz-Tech raised the flush-mount monument at MW-4, approximately 4 inches while the casing remained the same elevation. Haz-Tech raised the flush-mount monument at MW-6, approximately 6 inches and raised the casing approximately 4 inches.

We performed a level rod survey to determine the new monument elevations at MW-4 and MW-6, and the casing elevation at MW-6. We incorporated the new elevations when measuring the groundwater elevations for data collected after December 1, 2015.

4.0 SOIL INVESTIGATIONS

Shannon & Wilson collected soil samples during two field events. The first was in December 2015 during construction of two new monitoring wells installed near the site's south boundary. The second was in March 2016 during a test pit exploration in the vicinity of the hangar building. The soil sampling, observations, and results are described in the following sections.

4.1 Monitoring Well Installations

Shannon & Wilson subcontracted with Haz-Tech to advance two borings (MW-8 and MW-9) on December 1, 2015, using hollow-stem auger methods and a truck-mounted BK-81 drill rig. The auger's approximate dimensions are 3¼-inch inside diameter and 8½-inch outside diameter

(O.D.). Haz-Tech advanced the borings 13 feet below the existing ground surface (bgs). They installed monitoring wells approximately 13 feet bgs with slotted screens extending from 4 to 13 feet bgs. The wells are located south and southeast of the hanger near the airport's south property boundary. Figure 1 shows the new and existing monitoring well locations.

The following summarizes the new well designations, depths, and general locations. Well logs are included in Appendix B.

Well Designation	Well Depth (feet)	Approximate Depth to Groundwater* (feet)	Well Location
MW-8	13	7	Approximately 80 feet south of the hangar.
MW-9	13	7.2	Approximately 90 feet south and 90 feet east of the hangar's southeast corner.

Note:

* Depth to groundwater at time of drilling.

4.2 Soil Sampling from Borings

Shannon & Wilson's representative obtained disturbed soil samples at approximately 2.5-foot intervals to 10 feet bgs using a 2-inch O.D. Standard Penetration Test (SPT) sampler. The SPT resistance, or N-value, is defined as the number of blows required to drive the sampler from 6 to 18 inches below the drill casing. The SPT N-value is reported as the number of blows per 1 foot of penetration. When 50 blows are required to achieve penetration of 6 inches or less, we halt testing and record the number of blows with the corresponding penetration. The SPT N-value provides an indication of the relative density, or consistency, of the soil and is plotted on the boring logs. We conducted SPTs in general accordance with ASTM International Designation: D1586, Test Method for Penetration Test and Split-Barrel Sampling of Soil. Samples were driven with an automatic hammer weighing 140 pounds and free-falling 30 inches. We recorded the blow counts with the corresponding penetration on the boring logs (Appendix B).

Our representative observed and logged the explorations, directed the sampling, performed field screening with a photoionization detector, manually visually classified soil types, transferred samples to laboratory-clean jars, placed the sample containers on ice in a cooler, and logged the samples onto a chain-of-custody form.

We estimated geologic strata boundaries based on our field observations, drill action, and disturbed samples (i.e., SPT drive samples, drill cuttings, exploration spoils and/or grab samples). The subsurface conditions are known only at exploration locations on the dates

explored and should be considered approximate. Actual subsurface conditions may vary between explorations.

Shannon & Wilson collected select soil samples for petroleum hydrocarbon and volatile organic compounds (VOCs) analyses using U.S. Environmental Protection Agency (EPA) sampling method 5035A, including field preservation, to minimize the loss of volatile constituents. Non-disposable sampling equipment was cleaned between each sample collected. Non-disposable drilling equipment was cleaned between each boring location. Soil samples were shipped to OnSite Environmental (OnSite) of Redmond, Washington, for analysis of gasoline range total petroleum hydrocarbons (TPH-G) and benzene, toluene, ethylbenzene and xylenes (BTEX) by Method Northwest Total Petroleum Hydrocarbons-Gasoline range (NWTPH-Gx)/BTEX, pesticides by EPA 8081B, herbicides by EPA 8151A, total metals (arsenic and lead) by EPA 6010C, and moisture content.

4.3 Test Pit Explorations and Soil Sampling

The field exploration program consisted of seven test pits (TP-1 through TP-7) excavated on March 16, 2016. The purpose was to collect and analyze soil samples to evaluate whether or not the previous remediation adequately removed accessible contaminated soil.

Port personnel excavated the test pits using a rubber-tracked, mini-excavator with a 24-inch-wide bucket. They advanced the test pits approximately 3½ to 6 feet bgs. The approximate test pit locations are shown in the Site Plan (Figure 1). Test pit logs are included in Appendix B.

Shannon & Wilson's field representative selected test pit locations around the assumed excavation boundary using a hand-held global positioning system unit. The perimeter of the previous excavation was estimated based on drawings prepared by other consultants that directed the 2007 and 2008 remediation activities. Each excavation began by digging a shallow trench perpendicular to the presumed excavation edge. The trench typically was 8 to 10 feet long, approximately 2 feet deep, and approximately 2 feet wide. We observed the trench excavation and looked for the fill and native soil interface. Depending on the test pit location and the observed conditions, we excavated the test pits to depths that reached native soils, where possible. Soil samples of both fill and native soils were collected for laboratory analysis.

Our representative observed and logged the test pit explorations, directed the sampling, manually visually classified soil types, transferred samples to laboratory-clean jars, placed sample containers on ice in a cooler, and logged the samples onto a chain-of-custody form. Shannon & Wilson collected soil samples for petroleum hydrocarbon and VOC analyses using EPA sampling method 5035A, including field preservation, to minimize the loss of volatile constituents.

Non-disposable sampling equipment was cleaned between each sample collected. Soil samples were shipped to OnSite for analysis of TPH-G and BTEX by Method NWTPH-Gx/BTEX, pesticides by EPA 8081B, herbicides by EPA 8151A, total metals (arsenic and lead) by EPA 6010C, and moisture content.

4.4 Generalized Subsurface Profile

The subsurface profile typically consists of *Silty Sand (SM)* over *Poorly Graded Gravel with Sand and Silt (GP-GM).* Basalt underlies the gravel soils. The basalt elevation appears to be inconsistent across the site. The following sections provide the subsurface profiles encountered in the monitoring well borings and test pit excavations.

4.4.1 Monitoring Well Subsurface Profile

The subsurface soils at monitoring well MW-8 consist of approximately 1 foot of brown, *Silty Sand (SM)* over approximately 5 feet of brown to gray *Poorly Graded Gravel with Sand and Silt (GP-GM).* The boring encountered fractured to highly fractured basalt from approximately 7 to 13 feet bgs. MW-9 encountered approximately 1-foot of brown to gray, *Silty Sand (SM)* over brown to gray, *Poorly Graded Gravel with Sand and Silt (GP-GM).* The boring encountered fractured to highly fractured basalt from approximately 8 to 13 feet bgs. Based on the drill action, the fractured basalt can be classified as very dense, brown to gray, *Poorly Graded Gravel with Sand (GP).* Monitoring well construction logs are included in Appendix B. The logs include information about the subsurface profile, sample depths, depth to groundwater, and the monitoring well construction details.

Monitoring wells MW-8 and MW-9 encountered groundwater at approximately 7.0 and 7.2 feet bgs, respectively. The groundwater depths are included on the boring and well construction logs in Appendix B.

4.4.2 Test Pit Subsurface Profile

The subsurface soils at each test pit consist of native site soils and imported fill placed after contaminated soil was removed around the hangar. The imported fill encountered during the test pit explorations primarily consisted of *Silty Gravel with Sand and Cobbles (GM).* Some thin layers of fill were encountered in test pits TP-3, TP-4, TP-5, and TP-7. Test pits TP-3 and TP-4 encountered approximately 2 to 2¼ feet of *Well-graded Sand (SW)* fill over native, *Silty Gravel with Sand (GM).* Test pits TP-5 and TP-7 encountered approximately 1 foot of *Silty Gravel with Sand and Cobbles (GM)* fill over native, *Silty Gravel with Sand (GM).* Test pit TP-4

encountered some debris (rusted T-post, vinyl strap, concrete pieces less than 4-inch-diameter) in the upper 2.25 feet of fill placed over native soils.

The native soil typically encountered in the test pits consists of *Silty Gravel with Sand (GM)*. Test pits TP-5 and TP-6 encountered approximately 1 foot of *Sandy Silt (ML)*. Test pits TP-3, TP-4, and TP-5 encountered groundwater at approximately 6 feet bgs. Test pits TP-6 and TP-7 encountered basalt at approximately 4¼ and 3½ feet bgs, respectively. Test pit logs are included in Appendix B.

4.5 Soil Sample Analytical Results

Shannon & Wilson submitted four soil samples from the monitoring well explorations for laboratory analysis. Shallow soil samples collected approximately 1 foot bgs were analyzed for pesticides and herbicides. Deeper soil samples collected below the groundwater elevation were analyzed for TPH-G and volatiles by Method NWTPH-Gx/BTEX. All four samples were analyzed for total arsenic and lead.

Fourteen (14) soil samples from the 7 test pit explorations were submitted for laboratory analysis. Four samples were analyzed for petroleum constituents and were collected from the area around the perimeter of the former remediation excavation. This included samples of what appear to be native soils. Five shallow soil samples were analyzed for pesticides and herbicides. All 14 samples were analyzed for total arsenic and lead. Soil sample identification, depth, and analytical results are summarized in Table 1, along with applicable MTCA soil CULs.

TPH-G, BTEX, and herbicides were not detected in any of the soil samples analyzed at greater than the laboratory practical quantitation limits (PQLs).

Pesticides DDE and DDT were detected in one or more soil samples. DDE was detected at concentrations of 0.035 and 0.014 milligrams per kilogram (mg/kg) in samples MW9-S-01 and TP1-S-01, respectively. These concentrations are significantly less than the MTCA Method B risk-based criterion of 2.94 mg/kg. DDT was detected in one soil sample (TP4-S-01) at a concentration of 0.020 mg/kg. This is significantly less than the MTCA Method A CUL of 3 mg/kg.

Arsenic was analyzed in 18 soil samples and was detected in only one sample at greater than the PQL. Arsenic was detected at a concentration of 13 mg/kg in Sample TP3-S-01 collected approximately 2 feet bgs. The detected concentration is less than the MTCA Method A CUL of 20 mg/kg.

Lead was detected in 11 of the 18 soil samples analyzed, with concentrations ranging from 7.4 to 17 mg/kg. The highest concentrations were detected in the two samples from TP-3. Concentrations were 15 and 17 mg/kg in samples collected approximately 2 and 6 feet bgs, respectively. The MTCA Method A CUL for lead for unrestricted land uses is 250 mg/kg.

In summary, none of the COCs were detected in soil samples at greater than the regulatory CULs.

5.0 GROUNDWATER MONITORING

Previous monitoring indicated that COCs in groundwater include petroleum products (TPH-G and benzene), metals (arsenic and lead), and herbicides. Since 2007, 20 monitoring events have been completed, including the 4 most recent events conducted between December 2015 and October 2016 described in this report. Monitoring for pesticides was discontinued at the initial seven site wells in 2013 after six years of analyses indicated that pesticides are not a COC. However, pesticides analysis was included in the testing suite for groundwater samples collected in 2015 and 2016 from the new wells (MW-8 and MW-9).

Shannon & Wilson collected groundwater samples from the nine site monitoring wells during four events on December 17, 2015; March 30, 2016; July 6, 2016; and October 10, 2016. The monitoring events included collecting groundwater samples from the wells for chemical analysis and obtaining groundwater elevation data to estimate the groundwater flow direction.

5.1 Groundwater Elevations and Sampling Methodology

Shannon & Wilson's field services included the following:

- Measuring depth to groundwater in each well prior to sampling using an electronic water level indicator.
- Purging water from the wells and collected groundwater samples in general accordance with EPA low-flow sampling procedures (April 1996).
- Shipping samples to OnSite for laboratory analysis. Analyses and methods included the following:

Parameter	Method
Gasoline range petroleum hydrocarbons plus benzene, toluene, ethylbenzene, and xylenes (BTEX)	NWTPH-Gx/BTEX (EPA 8021B)
Arsenic and lead (total)	EPA 200.8
Chlorinated acid herbicides	EPA 8151A
Organochlorine pesticides (MW-8 and MW-9 only)	EPA 8081B

Notes:
EPA = U.S. Environmental Protection Agency
NWTPH-Gx = Northwest Total Petroleum Hydrocarbons-Gasoline

Groundwater elevation measurements from 2012 through 2016 are summarized in Table 2. The elevations were calculated using data provided by Stratton Surveying & Mapping (including modifications to MW-4 and MW-6 as described in Section 3.0). The water table elevations during the irrigation season are generally 4 to 5 feet higher than during the non-irrigation season.

Based on the recent and previous measurements, the groundwater flow direction is generally toward the southeast or east southeast during the irrigation season (Figure 2). During the non-irrigation (winter) sampling events, the flow direction has been more southerly.

The low-flow purging and sampling process included the following steps: (a) purge water from the well using a bladder or peristaltic pump; (b) pass the purge water through a flow-through cell, periodically measuring pH, temperature, conductivity, dissolved oxygen, oxidation /reduction potential (ORP) or redox, and turbidity; and (c) after measurements stabilize, disconnect the flow-through cell and collect a water sample for laboratory analysis. Samples were collected directly in laboratory-furnished bottles, labeled, logged onto a chain-of-custody form, packed with ice in a cooler, and shipped by overnight delivery to OnSite.

To reduce the potential for cross-contamination, reusable equipment was decontaminated prior to first use and between each well. New, single-use disposable materials were used with the pump at each well. Also to reduce potential for cross-contamination, the sampling sequence started with the upgradient well (MW-1), followed by crossgradient well MW-2, followed by wells where contamination has been previously detected. Shannon & Wilson's field and sample handling procedures were in accordance with standard environmental protocols and the project Sampling and Analysis Plan (Shannon & Wilson, October 24, 2012).

5.2 Field Measurements

Shannon & Wilson's representative measured parameters in the water pumped from the wells during the purging process. The primary objective was to observe when the parameters stabilized prior to collecting a sample for laboratory analyses. However, the parameters may also be useful as an indication of whether biodegradation of petroleum hydrocarbons is occurring.

Water in equilibrium with the atmosphere contains approximately 8 milligrams per liter (mg/L) of dissolved oxygen. Biodegradation of hydrocarbons results in oxygen consumption and, typically, lower dissolved oxygen concentrations.

Specific conductivity, pH, and temperature are measured to evaluate if groundwater conditions are similar between wells, or if significant variations are present. An increase in water temperature and a decrease in pH may suggest active biodegradation and the generation of organic acids.

ORP is a measure of electron activity and indicates the tendency of a solution to gain or lose electrons. In general, under oxidizing (aerobic) conditions the ORP readings are positive, whereas the readings are negative under reducing (anaerobic) conditions.

A summary of the field parameters at the completion of well purging is included in Table 3, along with measurements since September 2012. Comparison of recent measurements among the wells indicates the following:

- Dissolved oxygen in MW-1 and MW-2 is generally higher than the other site wells.
- ORP has been positive at all site wells during the last four monitoring events.

5.3 Groundwater Sample Analytical Results

Table 4 summarizes the laboratory results for the four most recent quarterly samples collected in 2015 and 2016. The laboratory reports are in Appendix C.

5.3.1 Petroleum Constituents

Samples from the nine wells were analyzed for TPH-G and BTEX. Petroleum constituents were not detected in any of the samples at greater than the PQL.

5.3.2 Herbicides

Samples from the nine wells were analyzed for herbicides. Dicamba was detected in one or more samples from MW-3, MW-4, MW-5, MW-6, MW-8, and MW-9 at concentrations ranging from 0.051 µg/L at MW-3 to 0.96 µg/L at MW-4. The MTCA Method B risk-based concentration for Dicamba is 480 µg/L.

2,4-D was detected in one or more samples from all of the monitoring wells. Concentrations ranged from a low of 0.11 µg/L at MW-9 to a high of 0.49 µg/L at MW-8. The MTCA Method B risk-based concentration for 2,4-D is 160 µg/L.

None of the detected concentrations approach or exceed the potential CULs.

5.3.3 Pesticides

As indicated previously, analysis of pesticides at the seven older monitoring wells was discontinued in 2013. However, pesticides were analyzed in the recent quarterly samples collected from the newest wells, MW-8 and MW-9. Pesticides were not detected in any of the samples at greater than the laboratory PQLs.

5.3.4 Metals

Arsenic concentrations ranged from a high of 14 µg/L in a sample from MW-7 (October 10, 2016) to a low of 6.2 µg/L in a sample from MW-8 (March 30, 2016). All detected concentrations exceed the MTCA Method A CUL of 5 µg/L. Lead was not detected in any of the samples.

6.0 COMPARISON TO PAST RESULTS

The Port furnished copies of previous groundwater monitoring data for our review. A list of the reports and data are included in the References section. Tables 5 and 6 include a summary of previous and current laboratory results. Only parameters that were detected in one or more samples are included in the tables.

6.1 Petroleum Constituents

Groundwater samples from MW-5 have, in the past, exceeded MTCA Method A CULs for TPH-G and benzene. The most recent sample with exceedances was collected in January 2011 and had concentrations of 3,000 and 7.7 µg/L for TPH-G and benzene, respectively. The MTCA Method A CULs for TPH-G and benzene are 800 and 5 µg/L, respectively.

In 11 subsequent samples collected in 2011 through 2016, TPH-G and benzene have either been not detected at greater than the laboratory PQL, or were less than the MTCA Method A CULs. The past five consecutive samples collected from MW-5 have not had detectible concentrations of benzene or TPH-G. Samples have been collected during the irrigation (high groundwater elevation) season and the non-irrigation (low groundwater elevation) season.

Benzene has been detected in two samples from MW-7 at greater than the MTCA Method A CUL of 5 µg/L. The sample collected in July 2011 had a concentration of 8.7 µg/L, and the June 2013 sample had a concentration of 6.4 µg/L. In 17 samples collected from MW-7 between 2009 and 2016, the July 2011 and June 2013 samples were the only ones with benzene concentrations that exceeded the MTCA Method A CUL of 5 µg/L. There have been four consecutive quarterly samples from MW-7 in which benzene was not detectible (December 2015 through October 2016).

6.2 Herbicides

As indicated in Section 5.3.2, detected concentrations of Dicamba and 2,4-D in groundwater samples collected in the most recent four quarters are significantly less than potential MTCA Method B formula values.

During previous sampling events, some herbicides were detected at concentrations greater than the MTCA Method B formula values. The compounds and their most recent exceedances (Sample Date column) are summarized as follows:

Herbicide	Well ID	Sample Date	Concentration µg/L	MTCA-B µg/L	Notes
MCPP	MW-3	01-26-2010	95.0	16.0	MCPP not detected in 13 samples collected since January 26, 2010.
	MW-4	10-23-2009	22.0	16.0	The only detection out of 14 samples collected between 2007 and 2016.
MCPA	MW-4	6-26-2013	22	8.0	One of two detections out of 14 samples collected between 2007 and 2016.
	MW-6	6-26-2013	31	8.0	The only detection out of 12 samples collected between 2009 and 2016.
	MW-7	07-07-2011	33	8.0	The only detection out of 17 samples collected between 2009 and 2016.
Pentachloro-phenol	MW-5	07-22-2009	0.24	0.22	The only exceedance out of 17 samples collected between 2009 and 2016.
Dinoseb	MW-4	06-01-2007	220	7.0[a]	The only exceedance out of 14 samples collected between 2007 and 2016. There have been no detections since 2010.

Notes:
[a] Federal maximum contaminant level goal (in the absence of a MTCA Method B value).
ID = identification
µg/L = micrograms per liter
MCPP = mecoprop
MCPA = 2-methyl-4-chlorophenoxyacetic acid
MTCA-B = MTCA Method B risk-based concentrations for groundwater. Establishment of actual MTCA Method B cleanup levels requires considering applicable laws, site-specific information, cross-media impacts, and other factors in addition to formula risk-based calculations.

Pentachlorophenol and Dinoseb exceedances were one-time events that occurred 8 to 10 years ago. Mecoprop (MCPP) exceeded the Method B criterion three times in samples from MW-3, but has not been detectible in the 13 most recent samples. 2-methyl-4-chlorophenoxyacetic acid (MCPA) detections in samples from MW-6 and -7 were one-time events. The most recent MCPA exceedance occurred in samples collected in June 2013 from MW-4 and MW-6. There have been five subsequent samples from those wells in which MCPA has not been detectible.

6.3 Pesticides

None of the detected pesticide concentrations in any of the historical and recent samples collected between 2007 and 2016 exceeded the applicable MTCA Method A CULs or Method B risk-based concentrations. Pesticide analyses were deleted from the testing suite for the older seven monitoring wells in June 2013. Pesticides were analyzed in the four quarterly samples collected from the new wells (MW-8 and MW-9), but there were no detections.

6.4 Metals

Lead concentrations exceeded the MTCA Method A CUL of 15 µg/L in one groundwater sample from MW-3 in April 2008 (25 µg/L). Lead has not exceeded the CUL in samples from any of the other wells collected between 2007 and 2016. Lead was not detected at greater than the PQL in any of the samples from the recent monitoring period (2015 through 2016), nor detected in any samples since June 2013.

Arsenic concentrations have consistently exceeded the MTCA Method A CUL of 5 µg/L in groundwater samples from all of the site wells. A time plot of arsenic results between June 2007 and October 2016 is included as Figure 3.

Arsenic concentrations in the upgradient well (MW-1) have been relatively stable throughout the monitoring period from 2007 through 2016 (Table 6 and Figure 3). This may be indicative of background, areawide arsenic in groundwater. A statistical analysis of the background arsenic concentration based on samples from MW-1 is described in Section 7.0.

The highest detected arsenic concentration during the multi-year monitoring period occurred in a sample collected in August 2010 from MW-3 (100 µg/L). Arsenic concentrations in the four most recent samples from MW-3 ranged from 9.2 to 12 µg/L, which are significantly lower than the peak concentration. Figure 3 also indicates arsenic concentrations in samples from site wells have been generally trending downward and stabilizing since July 2011.

7.0 BACKGROUND ARSENIC CONCENTRATIONS IN GROUNDWATER

7.1 Project Vicinity

Since the early 2000s, Ecology has had an ongoing task force to develop strategies for dealing with "areawide" arsenic and lead contamination in soil. A 2006 technical memorandum available on Ecology's web page focuses on the mobility of arsenic and lead from soil to groundwater (Landau Associates, 2006). The following information is summarized from that reference.

> Arsenic and lead contamination in soil is widespread in historical orchard areas of central and eastern Washington, attributed to the former use of lead arsenate pesticides.
>
> Arsenic adsorption to soil is a complex process that is not completely characterized. However, in shallow oxidized soil conditions, arsenate is the dominant arsenic form. The arsenate adsorption percentage is near 100 percent for most soil types in the acid to neutral (pH 7) range. However, the percent adsorption for arsenate at soil pHs above 7 drops off

significantly. Soils in agricultural areas of central Washington tend to be neutral to moderately alkaline. A Washington State University (WSU) study also found that the addition of phosphate fertilizers significantly increased the movement of arsenic from soil to water.

The memo indicates that Ecology conducted a study of groundwater quality in agricultural areas of Yakima, Franklin, and Whatcom Counties in 1990. The study was inconclusive on whether arsenic concentrations in groundwater were elevated due to natural causes or historical lead arsenate pesticide use.

Based on information in the U.S. Department of Agriculture (USDA) Soil Survey Benton County Area, Washington, predominant soil types near the Prosser Airport are Scooteney and Wamba silt loam. In a typical profile of the Scooteney soil series, pH ranges from 7.2 to 8.2 from the ground surface to 60 inches bgs, increasing with depth. In the Wamba series, soil pH ranges from 7.6 to 8.0. Another soil type that is prevalent in the area is Warden silt loam, with pH of up to 8.4.

The combination of alkaline soils and high groundwater elevations in the Prosser and lower Yakima Valley areas may be conducive to the transfer of arsenic from soil to groundwater. If former orchards have continued in agricultural production, presumably with phosphate fertilizers being used, arsenic movement into groundwater could be further enhanced.

Another reference reviewed for potentially relevant information regarding background arsenic concentrations is U.S. Geological Survey Water-Supply Paper 2354-A titled Surface-Water Quality Assessment of the Yakima River Basin in Washington…, 1987-91 (Fuhrer and others, 1999). The study included analysis of surface water, sediment, and aquatic biota for trace elements, including arsenic. Nearby test stations included the Yakima River at Kiona, Yakima River at Euclid Bridge at river mile 55 near Grandview, and Sulphur Creek Wasteway near Sunnyside. In river miles, the Kiona station is approximately 17.4 miles downriver from the subject site. The Grandview and Sunnyside locations are approximately 7.7 and 13.7 miles upriver, respectively.

The report indicates that concentrations of arsenic in filtered-water samples exceeded a human health screening value in 31 percent of the samples in the study. The largest number of arsenic exceedances was from the lower Yakima Valley. Arsenic concentrations in water samples from the Sulphur Creek Wasteway ranged from 2 to 9 µg/L. The report concluded that other agricultural drains may also be sources of arsenic to the lower Yakima Valley. The report concluded that agricultural lands historically treated with lead arsenate formulations and present-

day applications of phosphate fertilizers may be a source of arsenic to shallow groundwater and to surface water.

7.2 Site-Specific Arsenic Concentrations

7.2.1 Statistical Analysis Methodology

At the request of Ecology, an "area background" arsenic concentration in the groundwater was calculated in accordance with WAC 173-340-709 for the Port, Prosser Airport. An area background as defined in WAC 173-340-200 is "the concentration of a hazardous substance that is consistently present in the environment in the vicinity of a site which is the result of human activities unrelated to releases from that site."

The area background for this site was established in May 2016 using the upgradient well, MW-1, and followed the recommendations defined in WAC 173-340-709, Part 3 (Statistical Analysis). The area background arsenic concentration is used to assess if the downgradient (or compliance) wells are statistically below the background conditions.

The EPA's ProUCL statistical software was used to evaluate the historical data for the compliance wells. The ProUCL input and output fields are included in Appendix D in the form of tables and figures. Appendix D also includes an evaluation of the statistical assumptions.

7.2.2 Area Background

The May 2016 evaluation of the historical data for MW-1 was determined to be appropriate for calculating the area background for arsenic per the statistical guidance from WAC 173-340-709 (3). The analytical data for MW-1 exhibited both normal and lognormal distribution patterns. The statistical analysis guidance from WAC 173-340-709 (3) indicates that, for a normal distribution, the true upper 80th percentile or four times the true 50th percentile (whichever value is lower) should be used as background. For lognormal distributed data, the true upper 90th percentile or four times the true 50th percentile (whichever value is lower) should be used as background. Since the goodness-of-fit calculations indicated a slightly better fit was observed for a normal distribution pattern, the normal distribution was used to establish the area background for arsenic. The true upper 80th percentile of 7.70 µg/L was used as the area background.

7.2.3 Compliance Well Trend Analyses

Ecology requested that the Port assess if the compliance well arsenic data are statistically less than the area background concentration. The historical data for the compliance wells are

presented in table form and as time-series plots in Appendix D, Table D-1 and Figures D-2 through D-8. To test if the compliance-well data are statistically less than the area background concentration, the 95 percent upper confidence limit (UCL) was calculated for the compliance wells; compliance-well data are considered to be statistically less than background if their UCL is below the area background concentration.

The time-series plots for the compliance wells generally display relatively low level detections for arsenic during the initial monitoring event in 2007 followed by a concentration spike in either late 2009 or late 2010. The arsenic concentrations appear to be decreasing exponentially since the concentration spike was observed for each compliance well. MW-8 and MW-9 were installed near the south boundary of the site in late 2015, and only two data points were available in May 2016 for these compliance wells. Due to the small sample size, a UCL cannot be calculated for MW-8 and MW-9 (the Unified Guidance recommends using a minimum of eight data points for this calculation).

The data were evaluated to assess if there was statistically significant evidence of a decreasing trend. The historical data for the compliance wells were modified to remove historical data prior to the 2009/2010 concentration spikes for arsenic in each compliance well. A Mann-Kendall trend analysis for the compliance wells indicated those data exhibit a significant decreasing trend (Appendix D, Table D-3). Since the data display decreasing trends, a direct calculation of the UCL is not appropriate; a 95-percent confidence band around the data set is recommended. The compliance well data are considered to be statistically below the area background concentration if the upper-confidence band is below the area background value. The GOF test for the compliance-wells data exhibited the following distribution patterns (Appendix D, Table D-4):

- MW-3 and MW-7 reasonably follow a lognormal distribution;
- MW-2 approximately follows a lognormal distribution; and
- MW-4, MW-5, and MW-6 do not follow a distribution pattern.

The MW-4, MW-5, and MW-6 data do not appear to exhibit a distribution pattern. However, in order to calculate a confidence band, a lognormal distribution was assumed for these compliance wells. The analytical results were converted to the natural logarithm and this data set was used for calculation of the 95 percent confidence band for each compliance well. The ProUCL output file is presented in Appendix D, Table D-5 and the results are presented graphically against the area background concentration (converted to natural logarithm is 2.04) in Appendix D, Figures D-9 through D-14. The upper confidence bands are greater than the area background for each of the compliance wells evaluated.

Even though the 95 percent UCL has not been achieved, the Mann-Kendall trend test indicates there is statistically significant evidence of a decreasing trend at all of the compliance wells. This can be seen graphically in Figure 3.

7.2.4 Petroleum and Arsenic Correlation

Shannon & Wilson's soil investigation and sampling conducted in 2016 did not indicate that arsenic is a COC in site soils (Section 4.5). A possible explanation of why arsenic is present in groundwater samples from the compliance wells at higher concentrations than the background concentration has to do with the chemistry associated with the breakdown of petroleum hydrocarbons.

A Battelle report titled "Attenuation of Naturally Occurring Arsenic at Petroleum-Impacted Sites" (Brown and others, 2010) describes the principles of arsenic mobility. When petroleum hydrocarbons are released to groundwater, there is a progression from aerobic to anaerobic conditions with an associated reduction in the redox conditions of the groundwater system. The dissolved arsenic concentrations are a function of the site mineralogy, hydrogeology, and redox conditions. One of the report's conclusions is that once hydrocarbons are attenuated, arsenic in groundwater reverts to its pre-existing stable geochemistry. The patterns observed at the subject site indicate this process is occurring. Petroleum constituents have not exceeded MTCA Method A CULs in samples from the site since January 2011, and arsenic concentrations appear to have stabilized to approximately 9 to 14 µg/L (Table 6).

8.0 POTENTIAL FOR GROUNDWATER TO IMPACT SURFACE WATER

Ecology requested that the Port evaluate the potential for groundwater from the site to impact surface water, specifically irrigation ditch waters in the area. We spoke with David Felman of the Sunnyside Valley Irrigation District (SVID). He indicated SVID does not have irrigation lines along Nunn Road south of the site. A subsurface pipeline (lateral) crosses the site, oriented north-south, east of the hangar building. The closest irrigation drain is approximately 1,350 feet east of the subject site. A copy of a drawing from SVID is included in Appendix E. Irrigation laterals are shown in blue and drains are in green. We have marked the site's location on the drawing, for reference.

An open ditch is present along the north side of Nunn Road, ending approximately 640 feet west southwest of the subject site. During field activities on July 6 and October 10, 2016, Shannon & Wilson's representatives checked the water elevations in the ditch with a level and rod. The elevations were back referenced to a known site elevation.

The calculated elevation of the water surface in the ditch was 670.21 feet. The groundwater surface elevation at MW-2 (the site well closest to the ditch) was 668.53 on July 6 and 669.65 on October 10, 2016. Therefore, the surface (ditch) water occurs at a higher elevation than groundwater, indicating groundwater does not have potential to impact surface water in the site vicinity.

9.0 SCREENING AND CLEANUP LEVELS (CULS) EVALUATION AND RECOMMENDATIONS

9.1 Detected Contaminants and Affected Media

Detected contaminants in one or more samples have included:

- ***Soil:*** Chlorinated herbicides, pesticides, TPH-G, BTEX, lead, and arsenic. The maximum detected concentrations in soil samples that may be representative of soil remaining at the site are summarized in Table 7. Petroleum constituents and the herbicide MCPA were detected in soil samples collected (by others) along the north edge of the hangar building.
- ***Groundwater:*** Petroleum products (TPH-G and benzene), metals (arsenic and lead), chlorinated herbicides, and pesticides. Individual compounds, the maximum detected concentrations, and recent detections in groundwater samples are summarized in Table 8.

9.2 Screening Levels

9.2.1 Soil

Proposed screening levels are MTCA Method A for contaminants included in MTCA Table 740-1. For other compounds, the proposed screen level is MTCA Method B. Table 7 summarizes the screening levels and maximum detected concentration in a soil sample that may be present at the site, post remediation. Also included are compounds not detected at greater than laboratory PQLs in soil samples, but that have been detected in one or more groundwater samples.

9.2.2 Groundwater

Proposed screening levels are MTCA Method A for contaminants included in MTCA Table 720-1, with the exception of arsenic. Because there appears to be an areawide arsenic concentration in groundwater that exceeds the MTCA Method A CUL of 5 mg/L, a statistical analysis to establish the background concentration for arsenic was conducted and is proposed for

use as the screening level. As indicated in Section 7.0 and Appendix D, the statistical analysis indicates the background arsenic concentration in groundwater is 7.7 mg/L.

For other compounds, the proposed screen level is MTCA Method B. Table 8 summarizes the screening levels, maximum detected concentration in a groundwater sample, and the most recent and highest detection.

9.3 Contaminants of Concern

9.3.1 Contaminants in Soil

Contaminants detected at greater than the screening levels in one or more soil samples that may be present at limited areas of the site (post-remediation) include the following:

- Petroleum constituents (**BTEX and TPH-G**)

The impacted area is believed to be limited to beneath the existing hangar building.

9.3.2 Contaminants in Groundwater

Contaminants detected at greater than the screening levels in one or more groundwater samples have included the following:

- Petroleum constituents (TPH-G and benzene); metals (arsenic and lead); chlorinated herbicides (MCPP, MCPA, Dinoseb, and Pentachlorophenol); and pesticides (Heptachlor Epoxide). Currently, the only COC that exceeds potential regulatory criterion is **arsenic** in groundwater.

9.4 Migration Pathways

Potential migration pathways for contaminants from soil to other media include soil to groundwater and soil to vapor. Leaching can transport soil particles and dissolved constituents to groundwater, and volatilization of chemicals from soil may transport contaminants from soil to air. Potential direct soil contributions to surface water, stormwater, sediment, and entrainment of soil particles in wind are incomplete because accessible contaminated soil was removed by excavation to depths ranging between 5 and 15 feet bgs. Inaccessible, petroleum-contaminated soil is likely present beneath a hangar building at the site.

Contaminants in groundwater have been monitored in samples from site monitoring wells. Seven wells were constructed in 2007 and 2009, and two additional wells were constructed in December 2015 near the site's downgradient south and southeast property boundary. The

potential for migration of groundwater to surface water was reviewed (Section 8.0), and was not observed to be a complete pathway.

9.5 Potential for Exposure

Direct exposure to contaminated soil or air-borne dust (inhalation, ingestion, and dermal contact) is incomplete. Contaminated soil at and near ground surface and deeper (up to 15 feet bgs) was removed. Soil sampling conducted by Shannon & Wilson in December 2015 confirmed the excavation extents encompassed the contaminated soil zone, and further confirmed that fill material imported to the site is not contaminated. Trenching or other construction excavation is unlikely to encounter contamination. Soil beneath the hangar building may be contaminated, but the building prevents direct exposure to soil.

The site is part of an industrial development (airport and other industrial uses). As such, most of the area is gravel-surfaced, kept free of vegetation, or is mowed regularly. The only identified, remaining contamination is beneath a hangar building. Therefore, the site meets the criterion for a Primary Exclusion under the Terrestrial Ecological Evaluation Process, namely that soil contamination is covered by buildings, paved roads, pavement, or other physical barriers that prevent plants or wildlife from being exposed. Institutional controls may be necessary (such as a restrictive covenant) to assure that the barrier remains in place and is effective in controlling potential exposure.

There is no current or planned groundwater use at or near the site (other than sample collection). Dermal contact with groundwater is minimized by proper sampling procedures, which includes wearing waterproof gloves. Construction workers could be exposed to groundwater, particularly if construction or trenching coincides with high groundwater periods.

No groundwater/surface water interface was identified, so no discharge of potentially contaminated water that could impact aquatic habitats is anticipated.

The potential exists for the hangar building to have vapor intrusion from soil. However, the existing building is used only for storage (is not occupied), and it is not designed for occupancy. Groundwater is no longer contaminated, so groundwater is not a potential source for off-gassing.

9.6 Recommended Cleanup Levels (CULs)

The site has limited COCs (potential TPH-G and BTEX in soil beneath the hangar building and arsenic in groundwater), and the site has undergone routine cleanup. It is not considered to be a complex site, so recommended CULs are MTCA A and B for most constituents. The exception

is arsenic in groundwater, for which the calculated background concentration is 7.7 µg/L. This value is greater than the MTCA A value of 5 µg/L but less than the Washington maximum contaminant level for drinking water of 10 µg/L.

9.7 Compliance with Cleanup Levels (CULs)

9.7.1 Soil

As described in Section 4.0, confirmational soil sampling was conducted in March 2016. In addition, soil samples were collected when two new monitoring wells were installed in December 2015 near the south property boundary. Fourteen soil samples were collected in March 2016 from the margins and base of the formerly excavated area. Analytical testing on selected samples included petroleum constituents, pesticides, herbicides, arsenic, and lead.

TPH-G, BTEX, and herbicides were not detected in any of the soil samples at greater than the PQLs. Concentrations of detected analytes (pesticides DDE and DDT, and metals arsenic and lead) were significantly less than the applicable MTCA Method A cleanup criteria. In summary, none of the COCs were detected in soil samples at greater than the recommended CULs.

Based on soil sampling conducted in 2008 and the location of the former aviation fuel UST, an area of petroleum-contaminated soil may be present below the hangar building. The impacted area is most likely beneath the north, west, and central building areas. The 2016 soil exploration and sampling indicated soil contamination has not migrated from beneath the building to the south or east (Figure 1).

9.7.2 Groundwater

9.7.2.1 Petroleum Constituents

Petroleum constituents have been detected in one or more groundwater samples from MW-3, MW-5, and MW-7 since monitoring began in 2007. Benzene was detected once at a concentration of 1.6 µg/L in a single sample from MW-3 in December 2007. Petroleum constituents, including benzene, have not been detected in 18 subsequent samples from MW-3.

Petroleum constituents either have not been detectable or have not exceeded MTCA Method A CULs in groundwater samples collected during seven monitoring events subsequent to June 2013 at MW-7, or during 11 events subsequent to January 2011 at MW-5. In our opinion, site remediation in combination with natural attenuation has achieved the cleanup objective for petroleum constituents in groundwater.

9.7.2.2 Pesticides

Data from 12 monitoring events conducted between 2007 and 2013 indicated that none of the occasional pesticide detections in groundwater exceeded potential regulatory cleanup criteria (Table 5). Pesticide monitoring in groundwater samples from MW-1 through MW-7 was discontinued after the March 2013 sample set.

Two new monitoring wells (MW-8 and MW-9) were installed near the south property boundary in December 2015. Groundwater samples from the new wells were analyzed for pesticides during four consecutive quarters in 2015 through 2016. Pesticides were not detected in any of the samples at greater than the PQLs.

In our opinion, pesticide concentrations in groundwater are in compliance with CULs at the site.

9.7.2.3 Herbicides

Herbicide detections in groundwater samples have been infrequent and sporadic. Since 2012, the only herbicide that has exceeded the recommended CUL is MCPA, a broad-leaf weed herbicide. It was detected in samples from MW-4 and MW-6 in June 2013 at concentrations of 22 and 31 µg/L, respectively. The MTCA Method B risk-based concentration for groundwater is 8 µg/L. MCPA has not been detected in five subsequent samples from those wells.

After the June 2013 sampling event, Shannon & Wilson reviewed site conditions that might have led to the herbicide detections. Wells MW-4 and MW-6 were thought to be potentially susceptible to surface water runoff impacts because of their shallow screen depths, the tendency for standing water to pond above the wells, and the presence of shallow basalt resulting in perched groundwater conditions. In addition, metal parts on the original well caps at all of the wells had rusted to the point that most could not be tightened. To reduce the potential for herbicides in surface runoff to impact the wells, Shannon & Wilson installed new well caps in November 2014. In addition, the monuments were raised at MW-4 and MW-6, and the top of casing was raised at MW-6 in December 2015 (Section 3.0).

In our opinion, herbicides in groundwater have met the cleanup criteria based on the results of at least four consecutive samples.

9.7.2.4 Arsenic

As described in Section 7.0, Shannon & Wilson conducted a statistical analysis to estimate the background arsenic concentration in groundwater. The calculated concentration, based on concentrations in samples from the upgradient well (MW-1), is 7.7 µg/L, which is higher than the MTCA Method A CUL of 5.0 µg/L.

The other site wells (MW-2 through MW-9) are referred to as compliance wells. To test if the compliance well data are statistically less than the area background concentration, the 95 percent UCL was calculated for the compliance wells; compliance well data are considered to be statistically less than background if their UCL is below the area background concentration. The upper confidence bands are greater than the area background for each of the compliance wells evaluated. However, arsenic concentrations appear to be decreasing exponentially at each of the compliance wells and are approaching the background concentration (Figure 3).

During Shannon & Wilson's site sampling activities in December 2015 and March 2016, we collected 18 soil samples that were analyzed for arsenic. The main objective was to determine if arsenic might have been introduced to the subsurface when the site was formerly used by a pesticide applicator company. Previous site investigations by others had not included any significant soil analysis for arsenic. Arsenic was not detected in 17 of the 18 samples at greater than the PQL. The arsenic concentration in one sample was 13 mg/kg, which is less than the MTCA Method A CUL of 20 mg/kg.

In summary, Shannon & Wilson found no evidence that arsenic was introduced at the site from former operations and activities. In our opinion, the arsenic concentrations in groundwater samples from the site are consistently trending downward, and are approaching the recommended CUL of 7.7 µg/L.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Soil

Because inaccessible petroleum-contaminated soil is likely present beneath the hangar building, Shannon & Wilson recommends that the Port prepare an environmental covenant for the parcel with the hangar building. If necessary, a survey should be performed to delineate the site boundaries within the airport property.

The covenant's wording and conditions should comply with Ecology's recommendations for environmental covenants, and a draft copy should be reviewed by Ecology prior to adoption. Once adopted and filed, the covenant and its restrictions would run with the land title. The covenant would be considered an institutional control.

Sites with institutional controls typically go through a five-year review by Ecology to determine if the controls are still adequate to protect human health and the environment. The Port may elect to conduct a groundwater monitoring event on a five-year interval to document conditions related to petroleum constituents in groundwater.

10.2 Groundwater

Arsenic concentrations in groundwater are trending downward and are approaching the recommended CUL of 7.7 µg/L. However, because concentrations at some locations exceed the drinking water maximum contaminant level of 10 µg/L, we recommend that the environmental covenant, described in Section 10.1 above, also include the restriction that groundwater from the site not be used as a drinking water source.

If the Port elects to conduct groundwater monitoring on a five-year interval, as suggested in Section 10.1, we recommend that groundwater samples from site wells be analyzed for arsenic. Results should be reviewed to determine if the downward trend continues, and if compliance wells achieve the background arsenic concentration.

11.0 CLOSURE

Within the limitations of scope, schedule, and budget, Shannon & Wilson has prepared this report in a professional manner, using that level of skill and care normally exercised for similar projects under similar conditions by reputable and competent environmental consultants currently practicing in this area. We believe that the conclusions stated here are factual, but no guarantee is made or implied.

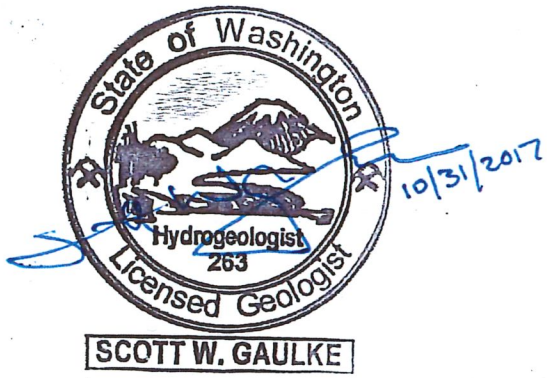
The data presented in this report are based on limited research at the site and should be considered representative at the time of our observations. Shannon & Wilson performed this work within its best judgment to adequately describe site conditions. Changes in the conditions of the site can occur with time from both natural processes and human activities. In addition, changes in governmental codes, regulations, or law may occur. Such changes are beyond our control, and should they occur, our observations and recommendations applicable to this facility may need to be revised wholly or in part.

This report was prepared for the exclusive use of the Port and their representatives. The findings we have presented within this report are based on limited sampling, observation, and testing. The analyses and sampling results can only provide you with our best judgment as to the general environmental characteristics of the property at this time and should not be construed as a definitive conclusion regarding groundwater at this site.

Shannon & Wilson in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson. We have prepared the attached Appendix F, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

SHANNON & WILSON, INC.

Donna R. Parkes
Senior Environmental Specialist



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DRP:MJS:SWG/drp

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS
SOIL SAMPLES FROM MONITORING WELLS AND TEST PITS (results in mg/kg)

Sample ID	Date	Depth (feet bgs)	TPH-G	Benzene	Toluene	Ethylbenzene	Xylenes	Pesticides[1]		Herbicides	Arsenic	Lead
								4,4'-DDE	4,4'-DDT			
MW8-S-01	12-1-15	1.0	NA	NA	NA	NA	NA	<0.012	<0.012	ND	<12	8.7
MW8-S-05	12-1-15	10	<5.2	<0.020	<0.052	<0.052	<0.052	NA	NA	ND	<11	<5.6
MW9-S-01	12-1-15	1.0	NA	NA	NA	NA	NA	0.035	<0.011	ND	<11	9.4
MW9-S-05	12-1-15	10	<6.5	<0.020	<0.065	<0.065	<0.065	NA	NA	NA	<12	<5.9
TP1-S-01	3-9-16	1.8	NA	NA	NA	NA	NA	0.014	<0.012	ND	<12	<5.8
TP1-S-02	3-9-16	6.0	<6.6	<0.020	<0.066	<0.066	<0.066	NA	NA	NA	<12	8.7
TP2-S-01	3-9-16	1.7	NA	NA	NA	NA	NA	NA	NA	NA	<12	7.4
TP2-S-02	3-9-16	4.2	NA	NA	NA	NA	NA	NA	NA	NA	<13	8.9
TP3-S-01	3-9-16	2.0	NA	NA	NA	NA	NA	NA	NA	NA	13	15
TP3-S-02	3-9-16	6.0	<8.0	<0.020	<0.080	<0.080	<0.080	NA	NA	NA	<14	17
TP4-S-01	3-9-16	3.25	NA	NA	NA	NA	NA	<0.012	0.020	ND	<12	<5.8
TP4-S-02	3-9-16	6.0	<4.7	<0.020	<0.047	<0.047	<0.047	NA	NA	NA	<11	<5.7
TP5-S-01	3-9-16	2.0	NA	NA	NA	NA	NA	<0.013	<0.013	ND	<13	12
TP5-S-02	3-9-16	6.0	NA	NA	NA	NA	NA	NA	NA	NA	<12	8.1
TP6-S-01	3-9-16	2.2	NA	NA	NA	NA	NA	<0.012	<0.012	ND	<12	10
TP6-S-02	3-9-16	4.2	NA	NA	NA	NA	NA	NA	NA	NA	<13	<6.4
TP7-S-01	3-9-16	1.8	NA	NA	NA	NA	NA	<0.013	<0.013	ND	<13	9.2
TP7-S-02	3-9-16	3.5	<4.9	<0.020	<0.049	<0.049	<0.049	NA	NA	NA	<11	<5.5
MTCA-A			100	0.03	7	6	9		3		20	250
MTCA-B								2.94				

Notes:

[1] Only those constituents detected at greater than the PQLs are shown; refer to laboratory report for full analyte list.

< = less than

bgs = below the ground surface

ID = identification

MTCA-A = Model Toxics Control Act (MTCA) Method A cleanup level for unrestricted land use.

MTCA-B = MTCA Method B risk-based concentrations for soil. Establishment of actual Method B cleanup levels requires considering applicable laws, site-specific information, cross-media impacts, and other factors in addition to formula risk-based calculations; values are from CLARC May 2014 tables.

NA = not analyzed

ND = No detections at greater than the laboratory practical quantitation limits (PQL) for any of the analytes; refer to laboratory report for analyte list.

TPH-G = gasoline range total petroleum hydrocarbons

TABLE 2
GROUNDWATER LEVEL MEASUREMENTS

	Well Identification								
	MW-1	**MW-2**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**	**MW-9**
Total Depth	14.45	9.07	8.84	6.11	9.22	5.86	14.58	12.68	12.75
Top of Casing Elevation Revised Elevation	672.34	671.08	671.08	671.45	671.21	670.48 671.12	671.55	670.90	671.18
Depth to Water:									
6/20/2012	3.06	1.91	2.20	2.70	2.435	2.015	3.03	-	-
9/27/2012	3.76	2.775	3.10	3.50	3.32	2.65	3.58	-	-
3/11/2013	7.40	6.44	6.42	Dry	6.62	Dry	6.74	-	-
6/26/2013	2.46	1.51	1.7	2.23	2.0	1.6	2.35	-	-
9/16/2013	3.12	2.01	2.22	2.72	2.47	2.05	3.07	-	-
12/15/2013	7.55	6.58	6.47	Dry	6.80	Dry	6.89	-	-
9/25/2014	2.93	1.82	1.95	2.56	2.31	1.90	2.90	-	-
12/17/2015	6.12	5.14	5.15	5.61	5.44	5.33	5.66	5.30	5.79
03/30/2016	7.02	6.03	5.89	--	6.29	6.25	6.45	6.32	3.81
7/6/2016	3.54	2.55	2.65	3.26	2.99	3.10	3.41	2.87	3.50
10/10/2016	2.46	1.43	1.58	2.18	1.96	2.15	2.49	1.92	2.60
Groundwater Elevation:									
6/20/2012	669.28	669.17	668.88	668.75	668.77	668.465	668.52	-	-
9/27/2012	668.58	668.31	667.98	667.95	667.89	667.83	667.97	-	-
3/11/2013	664.94	664.64	664.66	--	664.59	--	664.81	-	-
6/26/2013	669.88	669.57	669.38	669.22	669.21	668.88	669.20	-	-
9/16/2013	669.22	669.07	668.86	668.73	668.74	668.43	668.48	-	-
12/15/2013	664.79	664.50	664.61	--	664.41	--	664.66	-	-
9/25/2014	669.41	669.26	669.13	668.89	668.90	668.58	668.65	-	-
12/17/2015	666.63	665.94	665.93	665.84	665.77	665.79	665.89	665.60	665.39
03/30/2016	665.32	665.05	665.19	--	664.92	664.87	665.10	664.58	664.37
7/6/2016	668.80	668.53	668.43	668.19	668.22	668.02	668.14	668.03	667.68
10/10/2016	669.88	669.65	669.50	669.27	669.35	668.97	669.06	668.98	668.58

Note:
Measurements and elevations are in feet. Modifications to MW-6 on December 1, 2015, resulted in a raised top of casing elevation, which has been accounted for in measurements taken since that date.

TABLE 3
SUMMARY OF FIELD PARAMETERS (GROUNDWATER)

Well ID	Date	DO (mg/L)	ORP (mv)	Conductivity (umhos/cm)	pH	Temperature (ºC)	Turbidity (NTU)	Observations
MW-1	09/26/2012	5.47	71.2	0.586	6.49	18.98	2.40	Slightly turbid, then clear
	03/11/2013	7.31	72.5	0.572	7.27	12.36	13.8	Slightly turbid, then clear
	06/26/2013	8.57	21.4	0.567	6.59	16.80	0.60	Clear
	09/16/2013	7.27	81.8	0.613	7.02	20.48	0.23	Clear
	12/15/2013	7.07	80.2	0.603	7.07	15.35	4.51	Approximately clear
	09/25/2014	6.72	126.0	0.514	6.54	18.79	0.39	Clear
	12/17/2015	7.70	399.0	0.336	7.13	15.27	1.19	Clear
	03/30/2016	7.12	477.0	0.584	7.12	13.61	0.31	Clear
	07/06/2016	6.51	338.3	0.658	6.95	18.85	0.19	Clear
	10/10/2016	4.75	329.4	0.618	6.89	19.04	0.36	Clear
MW-2	09/26/2012	2.47	20.8	0.657	7.23	21.08	2.25	Clear
	03/11/2013	5.91	62.1	0.664	7.35	11.43	7.24	Clear
	06/26/2013	5.50	22.6	0.647	6.79	17.66	8.23	Approximately clear
	09/16/2013	4.38	52.7	0.637	7.26	21.80	1.21	Clear
	12/15/2013	6.15	74.5	0.650	7.28	14.30	3.90	Approximately clear
	09/25/2014	4.51	61.2	0.531	7.35	19.01	11.1	Approximately clear
	12/17/2015	3.18	333.5	0.678	7.44	14.50	0.84	Clear
	03/30/2016	4.36	378.9	0.682	7.13	13.37	2.39	Clear
	07/06/2016	4.12	251.8	0.668	7.26	20.70	0.26	Clear
	10/10/2016	2.77	429.6	0.661	7.24	20.84	5.01	Clear
MW-3	09/26/2012	0.14	-25.0	1.009	7.08	23.60	4.94	Light tea color, clear
	03/11/2013	0.67	81.7	1.804	7.40	11.67	85.3	Light straw color
	06/26/2013	0.35	19.6	0.916	7.00	20.08	12.2	Very light straw color
	09/16/2013	0.18	37.1	0.869	7.34	24.45	4.28	Very light straw color
	12/15/2013	1.31	60.6	1.066	7.13	14.87	12.8	Very light straw color
	09/25/2014	0.27	48.0	0.672	7.50	21.41	4.58	Clear
	12/17/2015	0.38	369.0	1.047	7.42	14.37	4.27	Clear
	03/30/2016	0.57	337.0	1.148	7.14	13.66	0.53	Clear
	07/06/2016	0.37	235.4	0.754	7.20	22.72	0.57	Clear
	10/10/2016	0.39	200.0	0.751	7.28	22.00	1.92	Clear
MW-4	09/26/2012	0.46	9.7	0.850	6.82	22.71	1.75	Clear
	06/26/2013	2.06	20.6	0.729	6.95	19.70	3.43	Clear
	09/16/2013	2.50	69.5	0.728	7.30	25.02	0.37	Clear
	09/25/2014	1.28	42.0	0.618	7.45	22.07	0.85	Clear
	12/17/2015	--	--	--	--	--	--	Partly Clear
	03/30/2016	--	--	--	--	--	--	Insufficient Water
	07/06/2016	3.54	272.7	0.736	7.17	22.06	0.12	Clear
	10/10/2016	2.22	253.4	0.694	7.09	21.12	2.10	Clear
MW-5	09/26/2012	0.62	21.8	0.750	7.17	22.41	4.86	Very slightly turbid
	03/11/2013	2.09	74.8	0.866	7.45	11.80	16.9	Very slightly turbid
	06/26/2013	1.21	21.1	0.718	6.81	18.65	3.10	Approximately clear
	09/16/2013	0.29	7.3	0.695	7.34	23.37	0.99	Clear
	12/15/2013	1.41	76.0	0.877	7.29	14.61	48.0	Slightly turbid
	09/25/2014	0.49	-11.4	0.592	7.33	20.79	0.94	Clear
	12/17/2015	4.62	368.4	0.667	7.36	13.98	0.74	Clear
	03/30/2016	1.89	300.8	0.993	7.22	14.04	0.65	Clear
	07/06/2016	1.55	265.1	0.712	7.19	21.86	0.27	Clear
	10/10/2016	1.41	260.3	0.699	7.18	20.61	2.20	Clear

TABLE 3
SUMMARY OF FIELD PARAMETERS (GROUNDWATER)

Well ID	Date	DO (mg/L)	ORP (mv)	Conductivity (umhos/cm)	pH	Temperature (°C)	Turbidity (NTU)	Observations
MW-6	09/26/2012	1.66	23.2	0.665	6.91	22.47	4.60	Very slightly turbid
	06/26/2013	2.13	20.6	0.726	6.84	19.46	5.16	Very slightly turbid
	09/16/2013	0.65	2.9	0.744	7.11	23.56	1.19	Clear
	09/25/2014	0.40	-0.7	0.638	7.33	21.89	2.67	Clear
	12/17/2015	7.79	378.2	0.573	7.79	11.22	--	Insufficient Water
	03/30/2016	--	--	--	--	--	--	Insufficient Water
	07/06/2016	3.98	260.4	0.703	7.07	22.56	0.96	Clear
	10/10/2016	2.64	293.3	0.685	7.12	18.72	3.69	Clear
MW-7	09/26/2012	0.94	16.3	0.856	7.43	17.86	1.60	Clear
	03/11/2013	1.68	52.0	0.787	6.93	11.64	1.22	Clear
	06/26/2013	0.79	20.0	0.897	6.53	16.17	3.99	Very slightly turbid
	09/16/2013	0.41	-31.5	0.894	7.19	19.43	2.01	Approximately clear
	12/15/2013	0.42	1.4	0.764	7.12	14.63	1.30	Approximately clear
	09/25/2014	0.76	1.4	0.710	7.09	18.96	2.90	Approximately clear
	12/17/2015	0.78	386.1	0.964	7.14	13.99	0.66	Clear
	03/30/2016	2.04	376.7	0.784	7.00	12.72	0.92	Clear
	07/06/2016	0.30	318.7	0.791	7.07	20.29	0.60	Clear
	10/10/2016	1.35	291.0	0.791	7.07	18.01	1.57	Clear
MW-8	12/17/2015	2.05	347.5	0.966	7.35	14.89	--	Clear
	03/30/2016	1.71	357.5	0.817	7.15	13.58	1.47	Clear
	07/06/2016	0.67	249.9	0.714	7.21	22.63	0.56	Clear
	10/10/2016	0.79	429.0	0.943	7.11	21.62	2.75	Clear
MW-9	12/17/2015	6.02	381.5	0.614	7.39	14.47	5.42	Clear
	03/30/2016	4.33	317.6	0.610	7.22	14.61	0.61	Clear
	07/06/2016	3.31	297.5	0.673	7.04	22.25	0.48	Clear
	10/10/2016	3.29	283.0	0.698	7.13	20.53	1.89	Clear

Notes:
°C = degrees Celcius
DO = dissolved oxygen
ID = identification
mg/L = milligrams per liter
mv = millivolts
NTU = nephelometric turbidity units
ORP = oxidation/reduction potential
umhos/cm = micromhos per centimeter

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
QUARTERLY GROUNDWATER SAMPLES COLLECTED 2015 - 2016 (results in µg/L)

Well No. / Sample Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylenes	Herbicides*		Pesticides	Arsenic	Lead
						Dicamba	2,4-D			
MW-1										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.044	<0.044	NA	**8.1**	<1.0
3/30/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.046	<0.046	NA	**7.1**	<1.1
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	0.45	NA	**6.5**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.049	<0.049	NA	**7.6**	<1.1
MW-2										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.047	<0.047	NA	**9.1**	<1.0
3/30/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	<0.047	NA	**9.8**	<1.1
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.046	0.17	NA	**7.5**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.046	<0.046	NA	**7.2**	<1.1
MW-3										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.048	<0.048	NA	**12**	<1.0
3/30/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.046	<0.046	NA	**11**	<1.1
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	0.21	NA	**9.2**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	0.051	0.25	NA	**9.9**	<1.1
MW-4										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	0.96	<0.054	NA	**13**	<1.0
3/30/2016	-	-	-	-	-	-	-	-	-	-
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	0.14	NA	**13**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	<0.047	NA	**12**	<1.1
MW-5										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.048	<0.048	NA	**8.8**	<1.0
3/30/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	<0.047	NA	**8.2**	<1.1
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.048	0.21	NA	**8.4**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	0.18	0.35	NA	**9.7**	<1.1
MW-6										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.047	<0.047	NA	**9.2**	<1.0
3/30/2016	-	-	-	-	-	-	-	-	-	-
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.048	0.25	NA	**11**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	0.071	0.16	NA	**9.7**	<1.1

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
QUARTERLY GROUNDWATER SAMPLES COLLECTED 2015 - 2016 (results in µg/L)

Well No. / Sample Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylenes	Herbicides*		Pesticides	Arsenic	Lead
						Dicamba	2,4-D			
MW-7										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.046	<0.046	NA	**11**	<1.0
3/30/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.046	<0.046	NA	**12**	<1.1
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.050	0.14	NA	**12**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.044	0.19	NA	**14**	<1.1
MW-8										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.044	<0.044	ND	**5.1**	<1.0
3/30/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	<0.047	ND	**6.2**	<1.1
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.045	0.14	ND	**9.4**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	0.17	0.49	ND	**11**	<1.1
MW-9										
12/17/2015	<100	<1.0	<1.0	<1.0	<1.0	<0.049	<0.049	ND	**10**	<1.0
3/30/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.047	<0.047	ND	**9.0**	<1.1
7/6/2016	<100	<1.0	<1.0	<1.0	<1.0	<0.046	0.11	ND	**11**	<1.0
10/10/2016	<100	<1.0	<1.0	<1.0	<1.0	0.21	2.9	ND	**11**	<1.1
MTCA-A	800**	5	1,000	700	1,000				5	15
MTCA-B						480	160			

Notes:
* Only the herbicides detected in one or more samples are shown; refer to laboratory report for a list of analytes.
** 800 µg/L when benzene is present; 1,000 µg/L when benzene is not detectable.
Analytical results in **bold** indicate an exceedance above the applicable MTCA Method A cleanup level.
< = less than
µg/L = micrograms per liter
NA = not analyzed
ND = Not detected at greater than the laboratory practical quantitation limit (PQL); refer to laboratory report for list of analytes.
MTCA-A = Model Toxics Control Act (MTCA) Method A groundwater cleanup levels.
MTCA-B = MTCA Method B risk-based concentrations for groundwater. Establishment of actual MTCA Method B cleanup levels requires considering applicable laws, site-specific information, cross-media impacts, and other factors in addition to formula risk-based calculations. Ecology CLARC values from May 2014 tables.
TPH-G = gasoline range total petroleum hydrocarbons

TABLE 5

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - PETROLEUM CONSTITUENTS AND PESTICIDES in µg/L [a]

Well ID and Sample Date	Petroleum Constituents					Pesticides												
	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-G	Hepta-chlor Epoxide	gamma-Chlor-dane	4,4'-DDE	Endosul-fan I	Dieldrin	Endrin	4,4'-DDD	Endosul-fan II	4,4'-DDT	Endrin Alde-hyde	Methoxy chlor	Endosul-fan Sulfate	Endrin Ketone
MW-1																		
6/1/2007	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
12/11/2007	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
4/14/2008	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
4/21/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
7/22/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
10/23/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
1/26/2010	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
8/20/2010	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
1/28/2011	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
7/7/2011	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
9/26/2012	<1.0	<1.0	<1.0	<1.0	<100	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.019
3/11/2013	<1.0	<1.0	<1.0	<1.0	<100	0.0052	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.019
6/26/2013	<1.0	<2.0	<1.0	<3.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/16/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/15/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/25/2014	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/30/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2																		
6/1/2007	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
12/11/2007	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
4/14/2008	ND	ND	ND	ND	ND		ND	ND	0.013	ND	ND	ND		ND	ND	ND	ND	ND
4/21/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
7/22/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
10/23/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
1/26/2010	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
8/20/2010	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
1/28/2011[b]	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-
7/7/2011	ND	ND	ND	ND	ND		ND	0.0061	ND	ND	ND	ND		ND	ND	ND	0.037	ND
9/26/2012	<1.0	<1.0	<1.0	<1.0	<100	<0.0048	<0.0048	0.0083	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	0.0061	<0.019
3/11/2013	<1.0	<1.0	<1.0	<1.0	<100	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0097	<0.0049	<0.019
6/26/2013	<1.0	<2.0	<1.0	<3.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/16/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/15/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/25/2014	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/30/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA							
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA							

TABLE 5 (Continued)

Well ID and Sample Date	Petroleum Constituents					Pesticides											
	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-G	Hepta-chlor Epoxide	gamma-Chlor-dane	4,4'-DDE	Endosul-fan I	Dieldrin	Endrin	4,4'-DDD	Endosul-fan II	4,4'-DDT	Endrin Alde-hyde	Methoxy chlor	Endosul-fan Sulfate	Endrin Ketone
MW-3																		
6/1/2007	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		0.0043	ND	ND	ND	ND
12/11/2007	1.6	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
4/14/2008	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.12	ND		ND	ND	0.12	0.018	ND
4/21/2009	ND	ND	ND	ND	ND		0.013	0.017	ND	ND	ND	0.01		ND	ND	ND	ND	ND
7/22/2009	ND	ND	ND	ND	ND		ND	0.018	ND	ND	ND	0.01		ND	ND	ND	0.031	ND
10/23/2009	ND	ND	ND	ND	ND		ND	0.056	ND	ND	ND	ND		ND	ND	ND	ND	ND
1/26/2010	ND	ND	ND	ND	ND		ND	0.009	ND	ND	ND	ND		ND	ND	ND	ND	ND
8/20/2010	ND	ND	ND	ND	ND		ND	0.044	ND	ND	ND	0.023		0.009	ND	ND	ND	ND
1/28/2011	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
7/7/2011	ND	ND	ND	ND	ND		0.011	0.021	ND	ND	ND	0.01		ND	ND	ND	0.029	ND
9/26/2012	<1.0	<1.0	<1.0	<1.0	<100	<0.0049	<0.0049	0.017	<0.0049	<0.0049	<0.0049	0.0098	<0.0049	<0.0049	<0.0049	<0.0097	0.039	<0.019
3/11/2013	<1.0	<1.0	<1.0	<1.0	<100	<0.0095	<0.0095	0.023	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	<0.0095	<0.038
6/26/2013	<1.0	<2.0	<1.0	<3.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/16/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/15/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/25/2014	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/30/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4																		
6/1/2007	ND	ND	ND	ND	ND		ND	ND	0.007	ND	ND	ND		ND	ND	ND	ND	ND
12/11/2007	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
4/14/2008	ND	ND	ND	ND	ND		ND	ND	0.013	ND	ND	ND		ND	ND	ND	0.01	ND
4/21/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	0.03	ND	ND
7/22/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
10/23/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
1/26/2010 [b]	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-
8/20/2010	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		0.016	ND	0.067	ND	ND
1/28/2011 [b]	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-
7/7/2011	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	0.026	0.008	ND
9/26/2012	<1.0	<1.0	<1.0	<1.0	<100	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.016	<0.0080	<0.032
6/26/2013	<1.0	<2.0	<1.0	<3.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/16/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/25/2014	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/30/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5 (Continued)

Well ID and Sample Date	Petroleum Constituents					Pesticides												
	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-G	Hepta-chlor Epoxide	gamma-Chlor-dane	4,4'-DDE	Endosul-fan I	Dieldrin	Endrin	4,4'-DDD	Endosul-fan II	4,4'-DDT	Endrin Alde-hyde	Methoxy chlor	Endosul-fan Sulfate	Endrin Ketone
MW-5																		
4/21/2009	3.9	-	12	15.8	**2000**		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
7/22/2009	**5.3**	ND	11.0	11.9	**2900**		ND	ND	ND	ND	ND	ND		ND	0.01	ND	ND	ND
10/23/2009	3.10	ND	8.7	9.10	**1500**		ND	ND	ND	ND	ND	ND		ND	ND	0.04	ND	ND
1/26/2010	**11.0**	ND	27.0	31.6	**5000**		ND	ND	ND	ND	ND	ND		ND	ND	0.04	ND	ND
8/20/2010	ND	ND	ND	ND	150		ND	0.01	ND	ND	ND	ND		ND	ND	0.07	ND	ND
1/28/2011	**7.7**	2.0	12.0	10.4	**3000**		ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
7/7/2011	ND	ND	ND	ND	ND		ND	0.005	ND	ND	ND	ND		ND	ND	0.020	0.014	ND
9/27/2012	<1.0	<1.0	<1.0	<1.0	<100	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	0.013	<0.019
3/11/2013	1.2	<1.0	<1.0	<1.0	300	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.020
6/26/2013	<1.0	<2.0	<1.0	<3.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/16/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/15/2013	3.4	<1.0	<1.0	<1.0	460	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/25/2014	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/30/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-6																		
4/21/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.12	ND		ND	ND	ND	ND	ND
7/22/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.01	ND		ND	ND	ND	ND	ND
10/23/2009	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.01	ND		ND	ND	ND	ND	ND
1/26/2010 [b]	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-
8/20/2010	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.0073	ND		ND	ND	ND	ND	ND
1/28/2011 [b]	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-
7/7/2011	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND		ND	ND	ND	0.0052	ND
9/26/2012	<1.0	<1.0	<1.0	<1.0	<100	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	0.0052	<0.0049	<0.0049	<0.0049	<0.0049	<0.0099	0.0063	<0.02
6/26/2013	<1.0	<2.0	<1.0	<3.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/16/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/25/2014	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/30/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-7																		
4/21/2009	ND	ND	ND	ND	ND		ND	0.013	ND	0.0053	0.07	0.015		0.017	ND	ND	ND	0.03
7/22/2009	ND	ND	ND	ND	ND		ND	0.015	ND	ND	0.02	0.010		0.012	ND	ND	ND	ND
10/23/2009	ND	ND	ND	ND	ND		ND	0.007	ND	ND	0.02	ND		ND	ND	ND	ND	ND
1/26/2010	ND	ND	ND	ND	ND		ND	0.007	ND	ND	0.05	ND		ND	ND	ND	ND	0.05
8/20/2010	2.8	ND	3.4	6.7	110		ND	0.012	ND	ND	ND	0.012		0.010	ND	0.03	0.07	ND
1/28/2011	ND	ND	ND	ND	ND		ND	ND	ND	ND	0.05	ND		0.0049	ND	ND	0.02	0.045
7/7/2011	**8.7**	ND	7.7	ND	120		ND	ND	ND	ND	0.036	ND		ND	ND	ND	0.023	0.021
9/27/2012	2.5	<1.0	<1.0	<1.0	<100	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	0.026	<0.0048	0.012	<0.0048	<0.0048	<0.0095	0.025	0.026
3/11/2013	<1.0	<1.0	<1.0	<1.0	<100	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	0.11	<0.0048	<0.0048	<0.0048	<0.0048	<0.0097	<0.0048	0.10
6/26/2013	**6.4**	<2.0	1.9	<3.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/16/2013	2.3	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/15/2013	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9/25/2014	1.5	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/30/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA						
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	NA	NA	NA	NA	NA	NA	NA						

TABLE 5 (Continued)

Well ID and Sample Date	Petroleum Constituents					Pesticides												
	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-G	Hepta-chlor Epoxide	gamma-Chlor-dane	4,4'-DDE	Endosul-fan I	Dieldrin	Endrin	4,4'-DDD	Endosul-fan II	4,4'-DDT	Endrin Alde-hyde	Methoxy chlor	Endosul-fan Sulfate	Endrin Ketone
MW-8																		
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0099	<0.0050	<0.020
3/30/2016	<1.0	<1.0	<1.0	<1.0	<100	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0050	<0.0049	<0.0099	<0.0049	<0.020
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.019
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.020
MW-9																		
12/17/2015	<1.0	<1.0	<1.0	<1.0	<100	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0050	<0.010	<0.0051	<0.021
3/30/2016	<1.0	<1.0	<1.0	<1.0	<100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.020
7/6/2016	<1.0	<1.0	<1.0	<1.0	<100	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.019
10/10/2016	<1.0	<1.0	<1.0	<1.0	<100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.020
MTCA A	5	1000	700	1000	800[c]									0.3				
MTCA B (carcinogenic)						0.0048	0.25[d]	0.257		0.0055		0.365						
MTCA B (non-carcinogenic)						0.1	8.0[d]		96[e]	0.800	4.8[f]		96[e]		4.8[f]	80	96[e]	4.8[f]

µg/L micrograms per liter
ND not detected at greater than the laboratory practical quantitation limit (PQL); ND is shown for data from other consultants; current data is reported as less than the PQL when not detected.
NA Not analyzed
MTCA Model Toxics Control Act
MTCA A MTCA Method A cleanup levels for groundwater.
MTCA B MTCA Method B risk-based concentrations for groundwater. Establishment of actual MTCA Method B cleanup levels requires considering applicable laws, site-specific information, cross-media impacts, and other factors in addition to formula risk-based calculations. Ecology CLARC values from May 2014 tables.
a Only those constituents detected in one or more samples are included in the table; refer to laboratory reports for a full list of analytes.
b Not sampled due to inadequate groundwater recovery
c 1000 µg/L when benzene is not detected
d total for chlordane isomers is 0.25 µg/L
e total for endosulfan isomers is 96 µg/L
f total for endrin is 4.8 µg/L
NOTES: Concentrations in bold typeface exceed MTCA Method A cleanup levels for groundwater.

TABLE 6

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - HERBICIDES AND METALS in µg/L [a]

Well ID and Sample Date	Herbicides										Metals[b]	
	Dicamba	MCPP	MCPA	Dichlorprop	2,4-D	Pentachloro-phenol	Silvex (2,4,5-TP)	2,4,5-T	2,4-DB	Dinoseb	Arsenic	Lead
MW-1 6/1/2007	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.045	**7**	ND
12/11/2007	ND	ND	ND	ND	ND	ND	ND	ND	0.047	ND	NA	ND
4/14/2008	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
4/21/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7.4**	ND
7/22/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6.1**	ND
10/23/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7.3**	ND
1/26/2010	ND	ND	ND	0.32	ND	ND	ND	ND	ND	ND	**8.2**	ND
8/20/2010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6.4**	ND
1/28/2011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7.5**	ND
7/7/2011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7.7**	1.2
9/26/2012	<0.023	<4.6	<4.6	<0.023	<0.023	<0.023	<0.023	<0.023	<0.047	<0.023	**6.9 (7.0)**	<1.1 (<1.0)
3/11/2013	<0.023	<4.6	<4.6	<0.023	<0.023	<0.0093	<0.023	<0.023	<0.046	<0.023	**6.9**	<1.1
6/26/2013	<0.024	<4.7	<7.1	<0.048	<0.048	<0.0096	<0.048	<0.048	<0.072	<0.048	**5.4**	<1.1
9/16/2013	<0.025	<4.9	<7.3	<0.049	<0.049	<0.0099	<0.050	<0.049	<0.074	<0.049	**6.6**	<1.0
12/15/2013	<0.023	<4.6	<7.0	<0.047	<0.047	<0.0094	<0.047	<0.047	<0.071	<0.047	**7.5**	<1.1
9/25/2014	<0.046	<4.5	<6.8	<0.046	<0.046	<0.0092	<0.046	<0.046	<0.069	<0.046	**8.1**	<1.1
12/17/2015	<0.044	<4.4	<6.6	<0.044	<0.044	<0.0089	<0.045	<0.045	<0.067	<0.044	**8.1**	<1.0
3/30/2016	<0.046	<4.6	<6.9	<0.046	<0.046	<0.0094	<0.047	<0.047	<0.070	<0.047	**7.1**	<1.1
7/6/2016	<0.047	<4.7	<7.1	<0.048	0.45	<0.0096	<0.048	<0.048	<0.072	<0.048	**6.5**	<1.0
10/10/2016	<0.049	<4.9	<7.4	<0.050	<0.049	<0.010	<0.050	<0.050	<0.075	<0.050	**7.6**	<1.1
MW-2 6/1/2007	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.24	**6.8**	ND
12/11/2007	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.5	**NA**	ND
4/14/2008	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.99	**NA**	NA
4/21/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**24**	ND
7/22/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**17**	ND
10/23/2009	ND	ND	ND	ND	0.08	ND	ND	ND	ND	ND	**16**	ND
1/26/2010	ND	ND	ND	0.60	ND	ND	0.16	ND	ND	ND	**16**	ND
8/20/2010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**12**	ND
1/28/2011 [c]	-	-	-	-	-	-	-	-	-	-	**-**	-
7/7/2011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**11**	<1.1
9/26/2012	<0.025	<5.0	<5.0	<0.025	<0.025	<0.025	<0.025	<0.025	<0.050	<0.025	**9.0 (9.1)**	<1.1 (<1.0)
3/11/2013	<0.023	<4.6	<4.6	<0.023	0.049	<0.0093	<0.023	<0.023	<0.046	<0.023	**8.2**	<1.1
6/26/2013	<0.022	<4.4	<6.7	<0.045	<0.045	<0.0090	<0.045	<0.045	<0.068	<0.045	**7.4**	<1.1
9/16/2013	<0.024	<4.8	<7.1	<0.048	<0.048	<0.0097	<0.048	<0.048	<0.072	<0.048	**7.4**	<1.0
12/15/2013	<0.023	<4.5	<6.7	<0.045	<0.045	<0.0091	<0.046	<0.045	<0.068	<0.045	**7.7**	<1.1
9/25/2014	<0.050	<5.0	<7.5	<0.050	<0.050	<0.010	<0.051	<0.051	<0.076	<0.050	**8.4**	<1.1
12/17/2015	<0.047	<4.7	<7.1	<0.048	<0.047	<0.0096	<0.048	<0.048	<0.072	<0.048	**9.1**	<1.0
3/30/2016	<0.047	<4.7	<7.0	<0.047	<0.047	<0.0095	<0.048	<0.048	<0.071	<0.047	**9.8**	<1.1
7/6/2016	<0.046	<4.8	<6.9	<0.046	0.17	<0.0093	<0.047	<0.047	<0.070	<0.046	**7.5**	<1.0
10/10/2016	<0.046	<4.5	<6.8	<0.046	<0.046	<0.0092	<0.046	<0.046	<0.069	<0.046	**7.2**	<1.1

TABLE 6 (Continued)

Well ID and Sample Date	Herbicides										Metals[b]	
	Dicamba	MCPP	MCPA	Dichlorprop	2,4-D	Pentachloro-phenol	Silvex (2,4,5-TP)	2,4,5-T	2,4-DB	Dinoseb	Arsenic	Lead
MW-3 6/1/2007	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47	3.7	ND
12/11/2007	0.67	**24.0**	ND	ND	ND	ND	ND	ND	ND	0.10	NA	ND
4/14/2008	ND	ND	ND	ND	0.05	ND	ND	ND	ND	0.35	NA	NA
4/21/2009	ND	ND	ND	ND	0.19	0.04	ND	ND	ND	ND	**63**	**25**
7/22/2009	ND	ND	ND	ND	ND	0.10	ND	ND	ND	ND	**53**	1.3
10/23/2009	ND	**20.0**	ND	ND	0.18	0.027	ND	ND	ND	ND	**56**	1.7
1/26/2010	ND	**95.0**	ND	1.60	ND	ND	0.70	ND	0.210	ND	**43**	2.8
8/20/2010	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**100**	2.5
1/28/2011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**12**	ND
7/7/2011	ND	ND	ND	ND	0.031	ND	ND	ND	ND	0.032	**57**	1.8
9/26/2012	<0.023	<4.6	<4.6	<0.023	<0.023	<0.023	<0.023	<0.023	<0.046	<0.023	**32 (32)**	1.2 (<1.1)
3/11/2013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**37**	<1.1
6/26/2013	0.62	<4.5	<6.7	<0.045	0.13	<0.0091	<0.045	<0.045	<0.068	<0.045	**28**	1.2
9/16/2013	<0.024	<4.8	<7.2	<0.049	0.065	<0.0098	<0.049	<0.049	<0.073	<0.049	**23**	<1.0
12/15/2013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**32**	<1.1
9/25/2014	<0.045	<4.5	<6.7	<0.045	<0.045	<0.0091	<0.046	<0.046	<0.068	<0.045	**20**	<1.1
12/17/2015	<0.048	<4.7	<7.1	<0.048	<0.048	<0.0096	<0.048	<0.048	<0.072	<0.048	**12**	<1.0
3/30/2016	<0.046	<4.5	<6.8	<0.046	<0.046	<0.0092	<0.046	<0.046	<0.069	<0.046	**11**	<1.1
7/6/2016	<0.047	<4.7	<7.1	<0.048	0.21	<0.0096	<0.048	<0.048	<0.072	<0.048	**9.2**	<1.0
10/10/2016	0.051	<4.7	<7.0	<0.047	0.25	<0.0095	<0.047	<0.047	<0.071	<0.047	**9.9**	<1.1
MW-4 6/1/2007	ND	ND	ND	ND	ND	ND	ND	ND	ND	**220**	**5**	ND
12/11/2007	39	ND	**8.0**	ND	ND	ND	ND	ND	ND	0.52	**NA**	ND
4/14/2008	1.9	ND	ND	ND	0.11	ND	ND	ND	ND	0.12	**NA**	NA
4/21/2009	ND	ND	ND	ND	ND	0.06	0.03	ND	ND	ND	**14**	1.5
7/22/2009	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND	**12**	ND
10/23/2009	ND	**22.0**	ND	ND	0.13	0.021	ND	ND	ND	ND	**18**	3.5
1/26/2010[c]	-	-	-	-	-	-	-	-	-	-	-	-
8/20/2010	ND	ND	ND	0.14	ND	0.025	ND	ND	ND	0.049	**55**	1.3
1/28/2011[c]	-	-	-	-	-	-	-	-	-	-	-	-
7/7/2011	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	**37**	12
9/26/2012[d]	-	-	-	-	-	-	-	-	-	-	**17 (17)**	<1.1 (<1.0)
6/26/2013	1.6	<4.6	**22**	<0.047	0.053	<0.0094	<0.047	<0.047	<0.071	<0.047	**15**	<1.1
9/16/2013	<0.024	<4.9	<7.3	<0.049	0.049	<0.0099	<0.049	<0.049	<0.074	<0.049	**16**	<1.0
9/25/2014	<0.051	<5.0	<7.6	<0.051	<0.051	<0.010	<0.051	<0.051	<0.077	<0.051	**15**	<1.1
12/17/2015	0.96	<5.3	<8.0	<0.054	<0.054	<0.011	<0.054	<0.054	<0.081	<0.054	**13**	<1.0
3/30/2016	-	-	-	-	-	-	-	-	-	-	-	-
7/6/2016	<0.047	<4.7	<7.1	<0.048	0.14	<0.0096	<0.048	<0.048	<0.072	<0.048	**13**	<1.0
10/10/2016	<0.047	<4.6	<7.0	<0.047	<0.047	<0.0094	<0.047	<0.047	<0.071	<0.047	**12**	<1.1

TABLE 6 (Continued)

Well ID and Sample Date	Herbicides										Metals[b]	
	Dicamba	MCPP	MCPA	Dichlorprop	2,4-D	Pentachloro-phenol	Silvex (2,4,5-TP)	2,4,5-T	2,4-DB	Dinoseb	Arsenic	Lead
MW-5												
4/21/2009	ND	ND	ND	ND	0.07	0.09	ND	ND	ND	ND	**22**	2
7/22/2009	ND	ND	ND	ND	ND	**0.24**	ND	ND	ND	ND	**25**	1.9
10/23/2009	ND	ND	ND	ND	0.04	ND	ND	ND	ND	0.02	**94**	5
1/26/2010	ND	ND	ND	0.47	0.04	ND	0.23	ND	ND	0.02	**15**	5.7
8/20/2010	ND	ND	ND	ND	ND	ND	0.13	ND	0.25	ND	**48**	2.5
1/28/2011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**16**	1.6
7/7/2011	ND	ND	ND	ND	ND	0.011	ND	ND	ND	ND	**19**	<1.1
9/27/2012	<0.023	<4.5	<4.5	<0.023	<0.023	<0.023	<0.023	<0.023	<0.045	<0.023	**12 (12)**	<1.1 (<1.0)
3/11/2013	<0.023	<4.6	<4.6	<0.023	0.056	<0.0094	<0.024	<0.023	<0.047	<0.023	**9.3**	<1.1
6/26/2013	1.8	<4.5	<6.7	<0.045	<0.045	<0.0091	<0.046	<0.046	<0.068	<0.045	**12**	<1.1
9/16/2013	<0.024	<4.7	<7.1	<0.048	0.056	<0.0096	<0.048	<0.048	<0.072	<0.048	**9.7**	<1.0
12/15/2013	<0.025	<4.9	<7.4	<0.050	<0.049	<0.010	<0.050	<0.050	<0.075	<0.050	**11**	<1.1
9/25/2014	<0.055	<5.5	<8.2	<0.055	<0.055	<0.011	<0.056	<0.056	<0.083	<0.055	**9.9**	<1.1
12/17/2015	<0.048	<4.8	<7.2	<0.048	<0.048	<0.0097	<0.049	<0.049	<0.073	<0.048	**8.8**	<1.0
3/30/2016	<0.047	<4.7	<7.0	<0.047	<0.047	<0.0095	<0.048	<0.048	<0.071	<0.047	**8.2**	<1.1
7/6/2016	<0.048	<4.8	<7.2	<0.049	0.21	<0.0098	<0.049	<0.049	<0.073	<0.049	**8.4**	<1.0
10/10/2016	0.18	<4.7	<7.1	<0.048	0.35	<0.0096	<0.048	<0.048	<0.072	<0.048	**9.7**	<1.1
MW-6												
4/21/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**20**	2.2
7/22/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**13**	ND
10/23/2009	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	**14**	ND
1/26/2010 [c]	-	-	-	-	-	-	-	-	-	-	**-**	-
8/20/2010	ND	15.0	ND	0.39	ND	ND	0.15	ND	0.42	ND	**55**	ND
1/28/2011 [c]	-	-	-	-	-	-	-	-	-	-	**-**	-
7/7/2011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**51**	<1.1
9/26/2012	<0.023	<4.6	<4.6	<0.023	<0.023	<0.023	<0.023	<0.023	<0.046	<0.023	**13 (13)**	<1.1 (<1.0)
6/26/2013	1.4	<4.5	**31**	<0.046	<0.045	<0.0092	<0.046	<0.046	<0.069	<0.046	**15**	<1.1
9/16/2013	<0.023	<4.6	<6.9	<0.047	<0.046	<0.0094	<0.047	<0.047	<0.070	<0.047	**15**	<1.0
9/25/2014	<0.052	<5.1	<7.7	<0.052	<0.052	<0.010	<0.052	<0.052	<0.078	<0.052	**15**	<1.1
12/17/2015	<0.047	<4.7	<7.1	<0.048	<0.047	<0.0096	<0.048	<0.048	<0.072	<0.048	**9.2**	<1.0
3/30/2016	-	-	-	-	-	-	-	-	-	-	-	-
7/6/2016	<0.048	<4.7	<7.1	<0.048	0.25	<0.0096	<0.048	<0.048	<0.072	<0.048	**11**	<1.0
10/10/2016	0.071	<4.5	<6.8	<0.046	0.16	<0.0092	<0.046	<0.046	<0.069	<0.046	**9.7**	<1.1
MW-7												
4/21/2009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**9.7**	ND
7/22/2009	ND	ND	ND	ND	ND	0.041	ND	ND	ND	ND	**26**	ND
10/23/2009	ND	ND	ND	ND	ND	0.071	ND	ND	ND	ND	**62**	4.9
1/26/2010	ND	ND	ND	0.59	ND	0.071	0.230	ND	ND	ND	**21**	ND
8/20/2010	ND	ND	ND	0.96	ND	ND	0.210	ND	0.24	ND	**63**	3.7
1/28/2011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**27**	ND
7/7/2011	ND	ND	**33**	ND	0.049	0.011	ND	0.18	ND	ND	**39**	1.9
9/27/2012	<0.022	<4.4	<4.4	<0.022	<0.022	<0.023	<0.023	<0.023	<0.045	<0.022	**28 (27)**	<1.1 (<1.0)
3/11/2013	<0.023	<4.5	<4.5	<0.023	<0.023	<0.0092	<0.023	<0.023	<0.046	<0.023	**6.6**	<1.1
6/26/2013	3.7	<4.5	<6.7	<0.045	2.0	<0.0091	<0.045	<0.045	<0.068	<0.045	**22**	2.4
9/16/2013	0.16	<4.8	<7.2	<0.049	0.062	<0.0098	<0.049	<0.049	<0.073	<0.049	**25**	<1.0
12/15/2013	<0.023	<4.6	<6.9	<0.046	<0.046	<0.0093	<0.047	<0.047	<0.070	<0.046	**19**	<1.1
9/25/2014	<0.048	<4.8	<7.2	<0.048	<0.048	<0.0097	<0.049	<0.048	<0.073	<0.048	**19**	<1.1
12/17/2015	<0.046	<4.6	<6.9	<0.046	<0.046	<0.0093	<0.047	<0.046	<0.070	<0.046	**11**	<1.0
3/30/2016	<0.046	<4.6	<6.9	<0.047	<0.046	<0.0094	<0.047	<0.047	<0.070	<0.047	**12**	<1.1
7/6/2016	<0.050	<5.0	<7.5	<0.051	0.14	<0.010	<0.051	<0.051	<0.076	<0.051	**12**	<1.0
10/10/2016	<0.044	<4.4	<6.6	<0.045	0.19	<0.0090	<0.045	<0.045	<0.067	<0.045	**14**	<1.1

TABLE 6 (Continued)

Well ID and Sample Date	Herbicides										Metals[b]	
	Dicamba	MCPP	MCPA	Dichlorprop	2,4-D	Pentachloro-phenol	Silvex (2,4,5-TP)	2,4,5-T	2,4-DB	Dinoseb	Arsenic	Lead
MW-8												
12/17/2015	<0.044	<4.4	<6.6	<0.044	<0.044	<0.0089	<0.045	<0.045	<0.067	<0.044	**5.1**	<1.0
3/30/2016	<0.047	<4.7	<7.0	<0.047	<0.047	<0.0095	<0.048	<0.047	<0.071	<0.047	**6.2**	<1.1
7/6/2016	<0.045	<4.5	<6.7	<0.045	0.14	<0.0091	<0.046	<0.046	<0.068	<0.045	**9.4**	<1.0
10/10/2016	0.17	<4.5	<6.7	<0.045	0.49	<0.0091	<0.045	<0.045	<0.068	<0.045	**11**	<1.1
MW-9												
12/17/2015	<0.049	<4.9	<7.4	<0.050	<0.049	<0.010	<0.050	<0.050	<0.075	<0.050	**10**	<1.0
3/30/2016	<0.047	<4.7	<7.1	<0.048	<0.047	<0.0096	<0.048	<0.048	<0.072	<0.048	**9.0**	<1.1
7/6/2016	<0.046	<4.5	<6.8	<0.046	0.11	<0.0092	<0.046	<0.046	<0.069	<0.046	**11**	<1.0
10/10/2016	0.21	<4.4	<6.7	<0.045	2.9	<0.0090	<0.045	<0.045	<0.068	<0.045	**11**	<1.1
MTCA A											5	15
MTCA B (carcinogenic)						0.22						
MTCA B (non-carcinogenic)	480	16	8.0		160	80	128	160	128	16		

µg/L	micrograms per liter
ND	not detected at greater than the laboratory practical quantitation limit (PQL); ND is shown for data from other consultants; current data is reported as less than the PQL when not detected.
NA	not analyzed
MTCA	Model Toxics Control Act
MTCA A	MTCA Method A cleanup levels for groundwater.
MTCA B	MTCA Method B risk-based concentrations for groundwater. Establishment of actual MTCA Method B cleanup levels requires considering applicable laws, site-specific information, cross-media impacts, and other factors in addition to formula risk-based calculations. Ecology CLARC values from May 2014 tables.
a	Only those constituents detected in one or more samples are included in the table; refer to laboratory reports for a full list of analytes.
b	Total metals (except dissolved metals for samples collected in September 2012 reported in parentheses).
c	Not sampled due to inadequate groundwater recovery
d	Not enough sample volume available to analyze herbicides
e	Federal maximum contaminant level goal (MCLG)may apply when there are no Washington State MTCA values.

NOTES: Concentrations shown in bold typeface exceed MTCA Method A cleanup levels for groundwater or Method B formula values.

TABLE 7
PROPOSED SCREENING LEVELS FOR SOIL, mg/kg

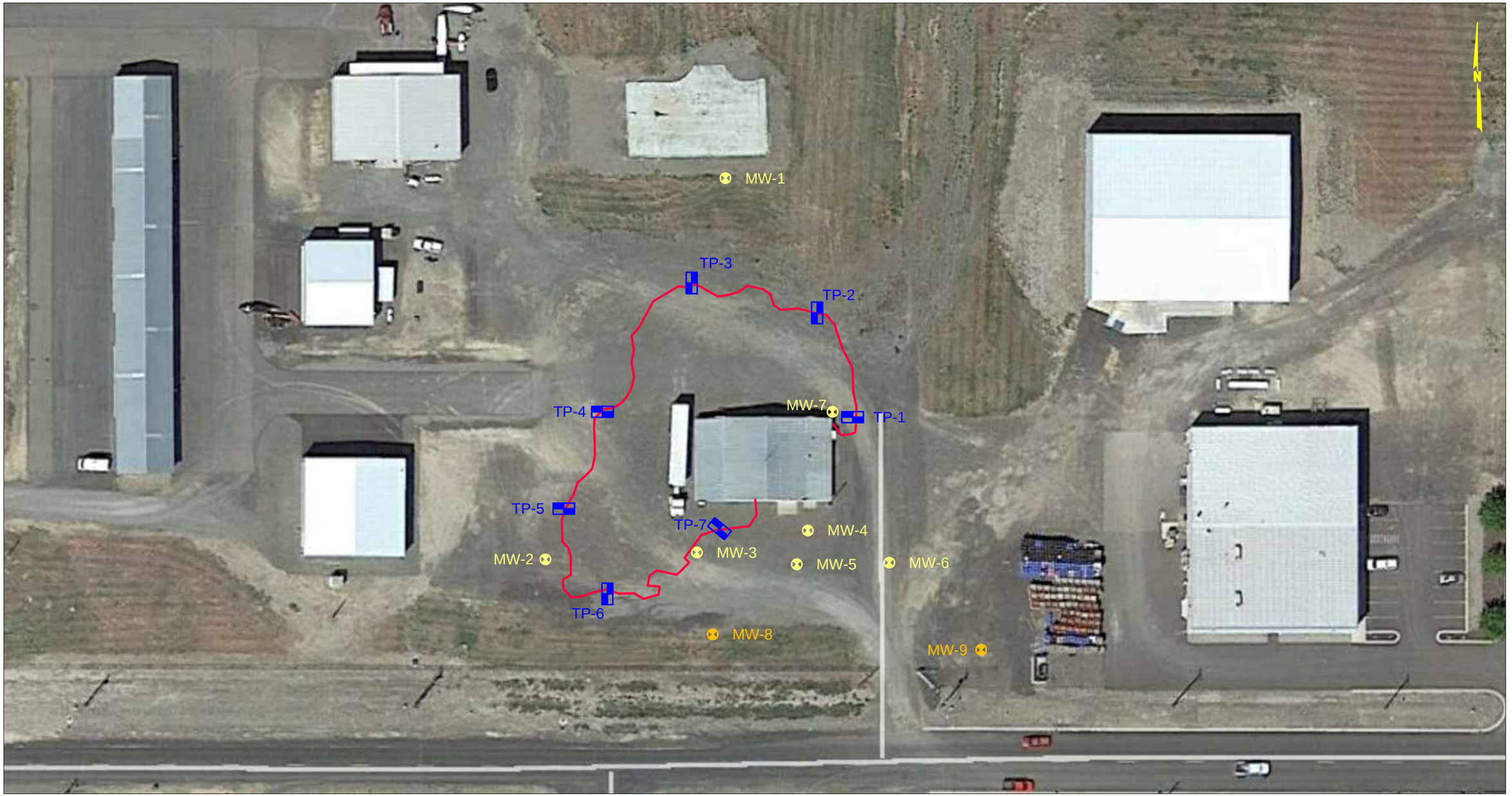
Parameter	MTCA A	MTCA B	Maximum Detected	Sample ID and Date
Herbicides				
MCPP		80.0	9.6	(DP-Base-NE-6'; 3/13/08)
MCPA		40.0	<530*	(T-1; 3/28/07)
2,4-D		800	<0.53	(T-1; 3/28/07)
2,4,5-T		800	<5.4	(T-1; 3/28/07)
2,4-DB		640	<5.4	(T-1; 3/28/07)
Dinoseb		80.0	<5.4	(T-1; 3/28/07)
Dalapon		2,400	<26	(T-1; 3/28/07)
Pesticides				
4,4'-DDE		0.45	0.035	(MW9-S-01; 12/1/15)
4,4'-DDD		0.34	0.013	(T-1; 3/28/07)
4,4'-DDT	3		0.075	(C-4; 3/28/07)
Aldrin		0.0025	<0.0066	(DP-Base-SE-7'; 3/13/08)
Petroleum constituents				
Benzene	0.03		**130**	(PEX-2-3'; 2/29/08)
Toluene	7		**73**	(PEX-2-3'; 2/29/08)
Ethylbenzene	6		**13**	(PEX-2-3'; 2/29/08)
Xylenes	9		**139**	(PEX-2-3'; 2/29/08)
TPH-G	30[a]		**2,100**	
Metals				
Arsenic	20		13	(TP3-S-01; 3/9/16)
Lead	250		17	(TP3-S-02; 3/9/16)

Notes:
[a] = 100 mg/kg without benzene and the total of ethyl benzene, toluene, and xylene are less than 1 percent of the gasoline mixture.
* MCPA was not detected in eight soil samples collected from MW-8 and MW-9 and 2016 test pits at greater than the laboratory practical quantitation limits ranging from 1.0 to 1.2 mg/kg, which is less than the screening level.
Constituents in bold typeface have been detected at greater than the proposed screening level.
< = less than
ID = identification
MCPP = mecoprop
MCPA = 2-methyl-4-chlorophenoxyacetic acid
MTCA A = Model Toxics Control Act (MTCA) Method A cleanup levels for unrestricted land uses.
MTCA B = Method B risk-based concentrations for soil (most stringent value listed) from CLARC August 2015 tables.
TPH-G = gasoline range total petroleum hydrocarbons.

TABLE 8
PROPOSED SCREENING LEVELS FOR GROUNDWATER, µg/L

Parameter	MTCA A	MTCA B	Maximum Detected (Well and Date)	Most Recent Detection (Well and Date)
Herbicides				
Dicamba		480	39 (MW4 12/11/07)	0.21 (MW9 10/10/16)
MCPP		16.0	**95** (MW3 1/26/10)	15 (MW6 8/20/10)
MCPA		8.00	**33** (MW7 7/7/11)	**31** (MW6 6/26/13)
Dichlorprop			1.6 (MW3 1/26/10)	0.96 (MW7 8/20/10)
2,4-D		160	2.9 (MW9 10/10/16)	2.9 (MW9 10/10/16)
Pentachlorophenol		0.22	**0.24** (MW5 7/22/09)	0.011 (MW5 7/7/11)
2,4,5-TP (Silvex)		128	0.7 (MW3 1/26/10)	0.21 (MW7 8/20/10)
2,4,5-T		160	0.18 (MW7 7/7/11)	0.18 (MW7 7/7/11)
2,4-DB		128	0.42 (MW6 8/20/10)	0.42 (MW6 8/20/10)
Dinoseb		16	**220** (MW4 6/1/07)	0.032 (MW3 7/7/11)
Pesticides				
Heptachlor Epoxide		0.0048	**0.0052** (MW1 3/11/13)	**0.0052** (MW1 3/11/13)
gamma-Chlordane		0.25[b]	0.013 (MW3 4/21/09)	0.011 (MW3 7/7/11)
4,4'-DDE		0.26	0.056 (MW3 10/23/09)	0.023 (MW3 3/11/13)
Endosulfan I		96.0[c]	0.013 (MW2&4 4/14/08)	0.013 (MW2&4 4/14/08)
Dieldrin		0.0055	0.0053 (MW7 4/21/09)	0.0053 (MW7 4/21/09)
Endrin		4.8[d]	0.12 (MW 6 4/21/09)	0.11 (MW7 3/11/13)
4,4'-DDD		0.36	0.023 (MW3 8/20/10)	0.01 (MW3 7/7/11)
Endosulfan II		96.0[c]	0.012 (MW7 9/27/12)	0.012 (MW7 9/27/12)
4,4'-DDT	0.3		0.017 (MW7 4/21/09)	0.0049 (MW7 1/28/11)
Endrin Aldehyde		4.8[d]	0.01 (MW5 7/22/09)	0.01 (MW5 7/22/09)
Methoxychlor		80.0	0.12 (MW3 4/14/08)	0.026 (MW4 7/7/11)
Endosulfan Sulfate		96.0[c]	0.07 (MW7 8/20/10)	0.039 (MW3 9/26/12)
Endrin Ketone		4.8[d]	0.1 (MW7 3/11/13)	0.1 (MW7 3/11/13)
Petroleum constituents				
Benzene	5		**11.0** (MW5 1/26/10)	1.5 (MW7 9/25/14)
Toluene	1,000		2.0 (MW5 1/28/11)	2.0 (MW5 1/28/11)
Ethylbenzene	700		27.0 (MW5 1/26/10)	1.9 (MW7 6/26/13)
Xylenes	1,000		31.6 (MW5 1/26/10)	10.4 (MW5 1/28/11)
TPH-G	800[a]		**5000** (MW5 1/26/10)	460 (MW5 12/15/13)
Metals				
Arsenic	5 (7.7)		**100** (MW3 8/20/10)	**14** (MW7 10/10/16)
Lead	15		**25** (MW3 4/21/09)	2.4 (MW7 6/26/13)

Notes:
[a] 1,000 micrograms per liter (µg/L) when benzene is not detected.
[b] Total for chlordane isomers.
[c] Total for endosulfan isomers is 96.0 µg/L.
[d] Total for endrin is 4.8 µg/L.
Constituents in bold typeface have been detected at greater than the proposed screening level.
MCPP = mecoprop
MCPA = 2-methyl-4-chlorophenoxyacetic acid
MTCA A = Model Toxics Control Act (MTCA) Method A cleanup levels for groundwater.
MTCA B = MTCA Method B risk-based concentrations for groundwater (most stringent value listed) from CLARC July 2015 tables.
TPH-G = gasoline range total petroleum hydrocarbons



NOTE

Map adapted from site plan provided by client and aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth™ Mapping Service.

Approximate Scale in Feet

0 200 400

LEGEND

- MW-1 Monitoring Well Designation and Approximate Location (existing)
- MW-8 Monitoring Well Designation and Approximate Location (new)
- TP-1 Test Pit Designation and Approximate Location
- Approximate Excavation Area

Port of Benton Prosser Airport
Former Aircraft Applicators Site
Prosser, Washington

SITE PLAN

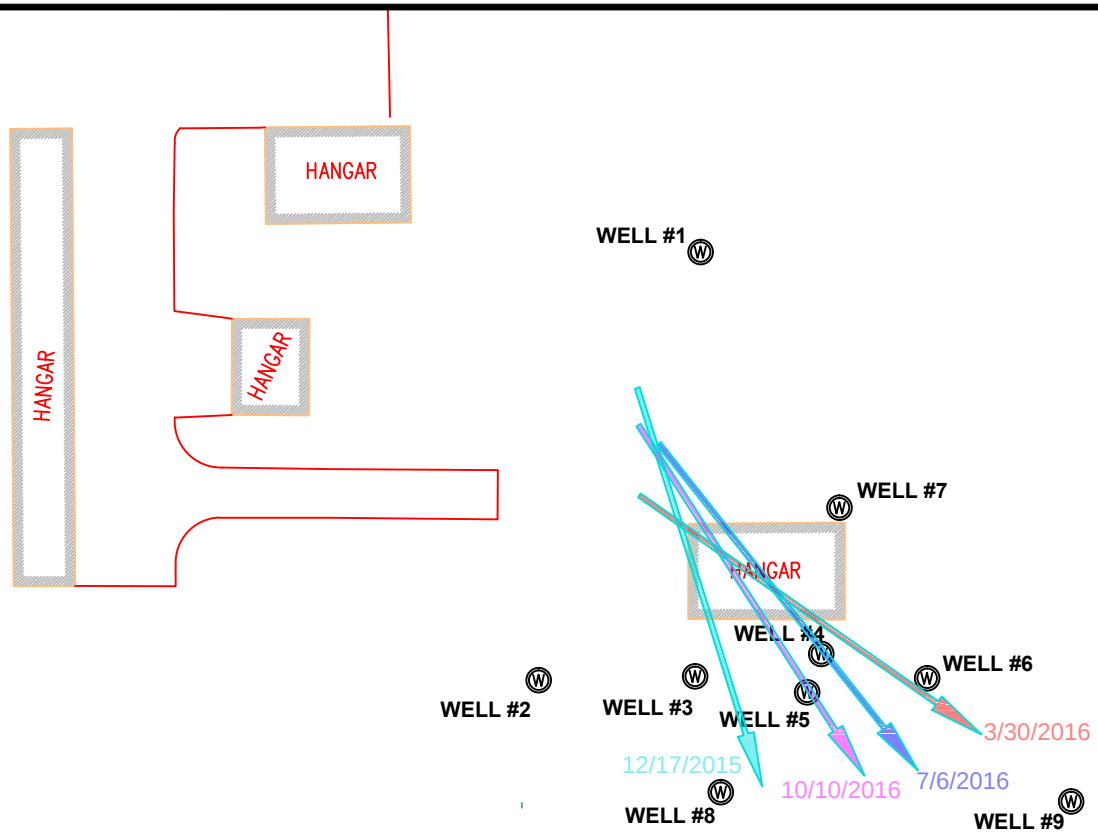
October 2017 22-1-11288-008

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 1

Filename: I:\ER\22-1 PAS\11200s\11228 Port of Benton Prosser API\008 2017 Environ\Deliverables\Figures\Figure 3\22-1-11228-005_Fig X_Site Plan_2016.dwg Date: 10-19-2017 Login: Ladd Anderson

Filename: I:\EF\22-1 PAS\11200s\11228 Port of Benton Prosser AP\008 2017 Environ\Deliverables\Figures\Flow Direction Figure 2\22-1-11228-005 Fig 2.dwg Date: 10-19-2017 Login: ###



LEGEND

- Approximate Flow Direction 12/17/2015
- Approximate Flow Direction 3/30/2016
- Approximate Flow Direction 7/6/2016
- Approximate Flow Direction 10/10/2016

0 100 200

Scale in Feet

NOTE

Figure adapted from an electronic file provided by Stratton Surveying and Mapping, PC, received 6-20-2012.

Port of Benton - Prosser Airport
Former Marv Bonney Remediation Site
Prosser, Washington

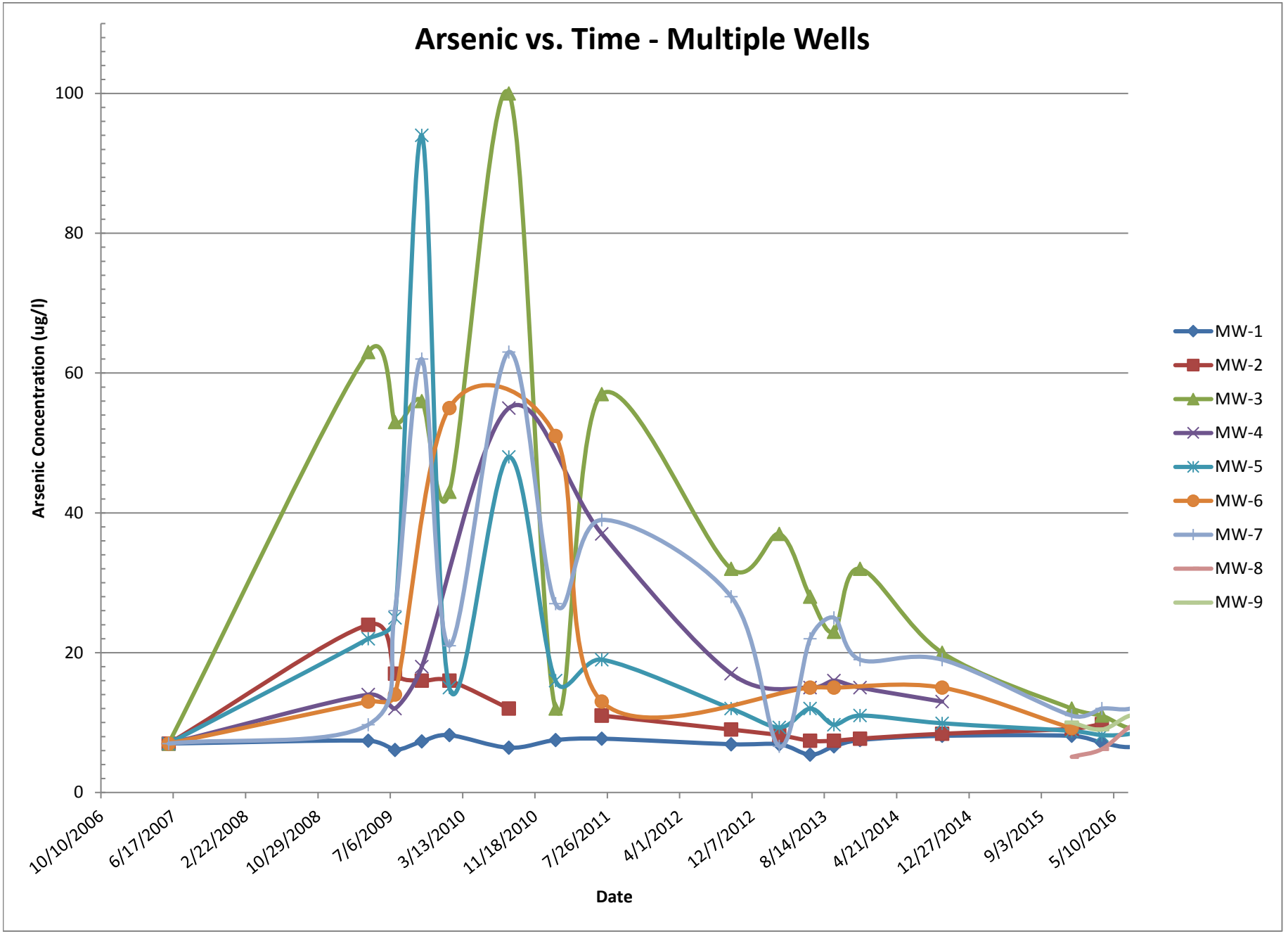
GROUNDWATER FLOW DIRECTION

October 2017 22-1-11228-008

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2

FIG. 2



22-1-11228-008

Prosser Airport Former Marv Bonney Remediation Site
Prosser, Washington

FIG. 3
Arsenic in Samples from Multiple Wells

APPENDIX A

WASHINGTON STATE DEPARTMENT OF ECOLOGY
JUNE 10, 2015, LETTER

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

June 10, 2015

John Haakenson
Director of Airport Operations
Port of Benton
3520 Port of Benton Blvd.
Richland, WA 99354

Donna Parkes
Sr. Environmental Specialist
Shannon & Wilson, Inc.
2705 Saint Andrews Loop, Suite A
Pasco, WA 99301

Re: Further Action at the following Site:

- **Site Name:** Prosser Airport Applicators
- **Site Address:** 221 Nunn Rd, Prosser, WA 99350, Benton County
- **Facility/Site No.:** 7474148
- **Cleanup ID No.:** 2188
- **VCP Project No.:** CE0416

Dear Mr. Haakenson and Ms. Parkes:

On March 19, 2015, you requested an opinion from the Washington State Department of Ecology (Ecology) on the adequacy of the interim action for the Prosser Airport Applicators facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided in this letter.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Petroleum into the soil and groundwater.
- Pesticides/herbicides into the soil and groundwater.

Enclosure A includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. September 17, 2008. Agreed Order DE6070. Ecology and Port of Benton.
2. April 28, 2010. Updated Final Interim Action Report for Ecology Agreed Order DE 6070, Prosser Aircraft Applicators Site (FS # 7474148). The EMPIRICAL Company.
3. January 23, 2013. Notice of Satisfaction, Agreed Order DE 6070. Ecology.
4. August 13, 2013. Site Hazard Assessment. Ecology.
5. November 21, 2014. Groundwater Monitoring Results, September 2014, Former Marv Bonney Site, Prosser Airport, Prosser, Washington. Shannon& Wilson, Inc.
6. CRO Central Files – file folder for site.

Those documents are kept at the Central Regional Office of Ecology (CRO) for review by appointment only. You can make an appointment by calling the CRO Central Files resource contact at (509) 575-2027.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that, based on the interim action implemented, **further remedial action** will likely be necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Petroleum, pesticide and herbicide contamination is present in both soil and groundwater at the site originating from a pesticide spray operation that operated from 1961 to 2007. An interim action was conducted in 2006 to 2008, which included impacted soil excavation and disposal and application of chemical oxidants. Due to access limitations, contaminated soils were left in place beneath the hangar. Investigations from 2006 to 2014 indicate that groundwater is trending towards clean (below screening levels), with the exception of arsenic. The irrigation ditch located on site is assumed to be an incomplete pathway for surface water contamination. The site meets criteria for an exclusion from terrestrial ecological evaluation. Adequate data is available to determine cleanup levels; however, data gaps include inadequate soil confirmation sampling and groundwater contaminant plume delineation, as well as evaluation of the surface water pathway.

Ecology has determined your characterization of the Site and implementation of an interim action are insufficient to meet MTCA cleanup goals until **additional sampling is performed**. The Site is described above and in **Enclosure A.**

Ecology's determination is based on the following assumptions:

- The interim action has removed or treated all accessible impacted soils to below acceptable cleanup levels;
- Surface water is not impacted;
- The petroleum, pesticide and herbicide plume has cleaned up to below acceptable cleanup levels and
- The arsenic groundwater plume does not extend beyond the property boundary.

2. Data Gaps and Recommended Actions.

Adequate data has been provided to design and implement the interim action; however, post-cleanup confirmational monitoring is needed. Based on a review of all site information to date, the following steps are recommended:

- Technical Memo regarding screening levels evaluation and cleanup level (CUL) recommendations
  - Provide summary of exposure pathways.
  - Compile a table of screening levels for all contaminants detected on site.
  - Make recommendations for cleanup levels for further discussion with Ecology.
  - Ecology will establish CULs.
- Supplemental Investigation

- Soil
  - Perform soil confirmation sampling focusing on edges of excavation (area 7) and within to characterize fill (if imported fill data does not exist). Include all Site contaminants of concern (COCs) in soil analysis. The sampling and analysis protocol must ensure that lab reporting levels are less than screening/cleanup levels.
  - Soil beneath the hangar does not necessarily need sampling. Pre-cleanup concentrations of nearby soil samples can be assumed representative of maximum expected concentrations under the building.
  - Confirm that arsenic was not part of the pesticide impacts through soil confirmation sampling.
  - Assumption: soil cleanup is adequate.
- Groundwater
  - Install 2 or more additional monitoring wells downgradient (S & SE) to delineate the groundwater plume. Continue groundwater monitoring for all Site COCs (except those proven to be consistently non-detect or below cleanup levels) to achieve 4 consecutive quarters of clean groundwater.
  - Determine whether improvements are needed to MW-4 and MW-6. These wells are located in depressed areas, are sometimes found in standing water and are speculated to be influenced by contaminants related to stormwater ponding (ex. MCPA). Caps on all site wells were replaced in 2014.
  - Assuming arsenic is not a man-made source contaminant from site activities, explore an "area background" groundwater arsenic concentration calculation per WAC 173-340-709. Area Background requires $n \geq 20$ samples. To date, there are 16 sampling events at MW-1. MW-1 arsenic concentrations are elevated (5.4 to 8.2 ug/L).
  - Assumption: groundwater impacts do not extend beyond property boundary.
- Surface water
  - Evaluate potential impacts of the groundwater plume on irrigation ditch waters based on plume delineation and groundwater and surface water elevations. For example, during each groundwater sampling event note the presence or absence of ditch water and, if present, measure the ditch water surface elevation for comparison to groundwater elevations.
  - Assumption: The groundwater to surface water pathway is not a complete exposure pathway.

- Path forward to No Further Action (NFA) determination - Provided all assumptions above are verified to be correct through additional investigation or evaluation, this site would likely be eligible for an NFA determination with the following:
    - Soil and groundwater environmental covenant on soil impacts beneath the hangar and the groundwater plume.
    - Groundwater conditional point of compliance (CPOC) (ex. at the plume edge or downgradient property boundary) may be acceptable for groundwater.

3. Establishment of cleanup standards.

The interim action did not adequately evaluate screening levels. Therefore, prior to the supplemental investigation, Ecology recommends that a technical memorandum be prepared to include a summary of exposure pathways, compilation of screening levels for each COC and complete pathway, and recommendations for cleanup levels.

Soil: The soil screening level compilation should include screening levels for all contaminants of concern detected on site and all complete pathways. The point of compliance for soils is all soils throughout the site. However, Ecology acknowledges that contamination is likely to remain underneath the hangar building due to access limitations.

Groundwater: Groundwater screening level compilation should include screening levels for all contaminants of concern detected on site and all complete pathways. Acceptable options for a groundwater point of compliance (POC) specific to this site include all groundwater throughout the site or a conditional point of compliance at the downgradient property boundary. Technical rationale will need to be presented in order to justify use of a CPOC.

Surface water: This pathway has been assumed to be incomplete. Provided this assumption is verified, no evaluation of surface water criteria is necessary.

4. Selection of cleanup action.

Ecology has determined the cleanup action you proposed for the Site meets the substantive requirements of MTCA.

An interim action was conducted in 2006 to 2008, which included impacted soil excavation and disposal and application of chemical oxidants. Due to access limitations, contaminated soils were left in place beneath the hangar. This interim action was selected because it had the potential to achieve MTCA cleanup goals outlined in WAC 173-340-360(2) by permanently removing or breaking down contamination in source soils.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you proposed will be substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. Opinion is limited to proposed cleanup.

This letter does not provide an opinion on whether further remedial action will actually be necessary at the Site upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the VCP.

4. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). As you conduct your cleanup, please do not hesitate to request additional services. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at (509) 454.7833 or e-mail at lkla461@ecy.wa.gov.

Sincerely,

Laura Klasner

Laura Klasner, P.E.
CRO Toxics Cleanup Program

LMK: je

Enc: A – Description and Diagrams of the Site

cc: Dolores Mitchell, Ecology-HQ

Enclosure A

Description and Diagrams of the Site

Site Description & History

Property Description & Historical/Current Uses
This site is situated within the larger Prosser Airport boundaries. The site delineated boundaries fall within a single property parcel. An airport hangar, built in the early 1960s, is located on the property and is currently used for storage. The property surrounding the hangar building is surfaced in gravel.

The property has been owned by the Port of Benton from 1961 to present day. Property use prior to 1961 is unknown. From 1961 to 1998, the subject property was leased to multiple pesticide sprayers for storage mixing, and loading of pesticides onto aircraft and the refueling, maintenance and washing thereof. Mr. Marvin Bonny of Aircraft Applicators, Inc. is the most recent of these pesticide businesses and operated from 1969 to 1998. From 1999 to present, the subject property has been used for storage.

Releases of both aviation fuel and pesticides were discovered during investigation and interim action activities conducted in 2006 through 2008.

Surrounding Area Description, Zoning, Nearby Wells, Future Use
The site is surrounded by airport property. The site and surrounding properties to the east, west and north are within city limits. To the south is an irrigation ditch, Nunn Road, and a residential urban growth area. City water is supplied to the site property and surrounding properties. No wells are known to be on or in the immediate vicinity of the site property. Future use of the site property is not expected to change.

Site Hydrogeology, COCs, Impacted Media & Exposure Pathways:
SOIL: The lithology of the site consists of a thin fill layer; overlaying coarse deposits of sands, gravels, cobbles and boulders within a silt matrix; overlaying undulating weathered basalt (3-14' to unknown depth). Area well logs indicate the basalt layer may extend to approximately 50 ft bgs and may be underlain by clay. It is unknown whether the basalt layer is fractured. Site COCs include: Petroleum (GRO, BTEX), chlorinated herbicides (dinoseb), organochlorine pesticides (DDD, DDE, DDT, Dieldrin, Heptochlor epoxide, Lindane) and Metals (As, Cr). Soil delineation is adequate for implementing interim action, but inadequate for post-interim action confirmation sampling. Pathways of concern include leaching to groundwater and ingestion & dermal contact for construction workers. **Data Gaps**: Confirmational sampling needed at edges of excavation. Fill not sampled. Some reporting limits were too high. Unknown if arsenic is from pesticide use or from residual contamination causing downgradient changes in redox to mobilize arsenic in groundwater, although the ladder scenario is more likely based on timelines. An unknown extent of contamination is likely remaining in soil beneath hangar. CULs finalization.

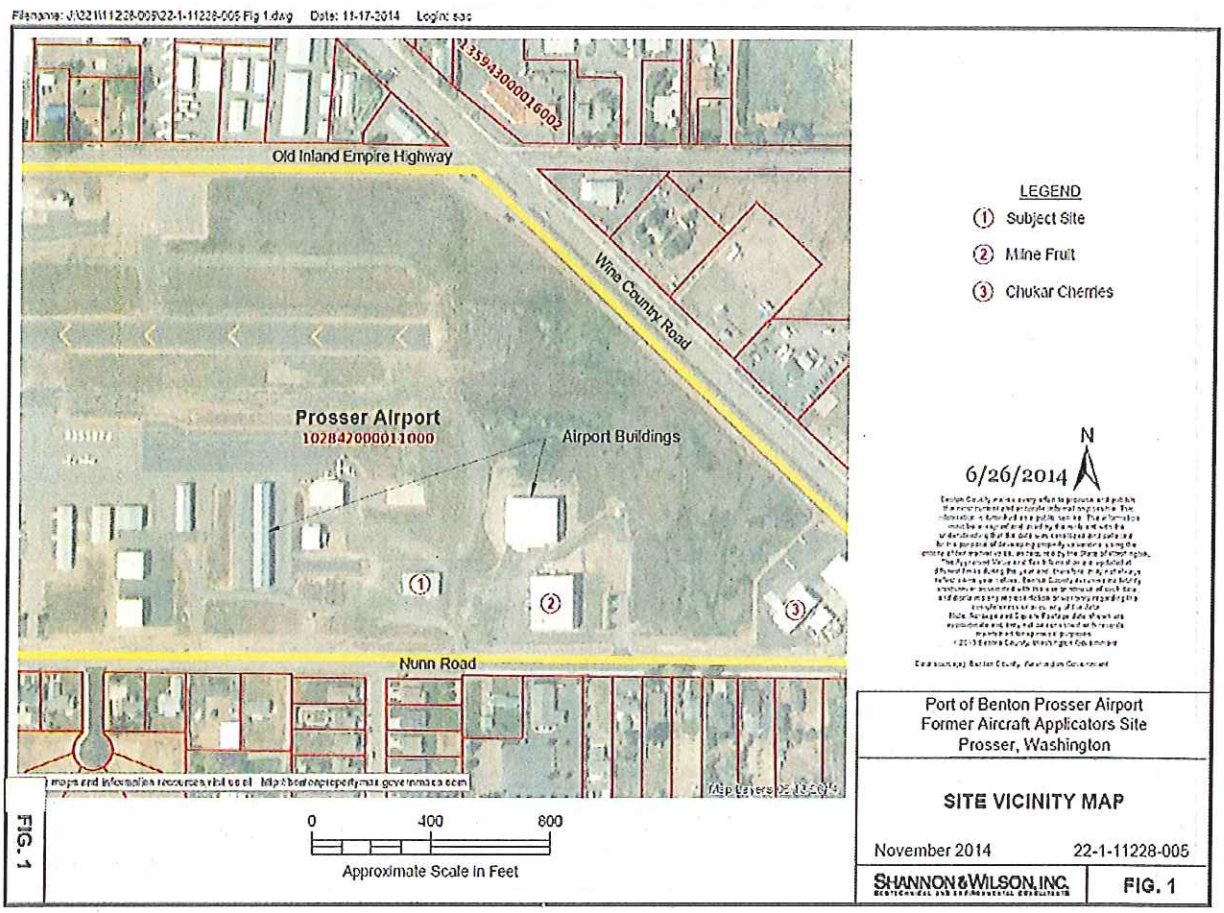
GROUNDWATER: At the site perched shallow groundwater was encountered at 2 to 10 ft bgs, on top of the weathered basalt and seasonally affected by a nearby irrigation ditch. This shallow, perched groundwater has been impacted by site activities. Groundwater levels and flow direction are significantly impacted by irrigation. An open, unlined irrigation ditch runs E-W along the

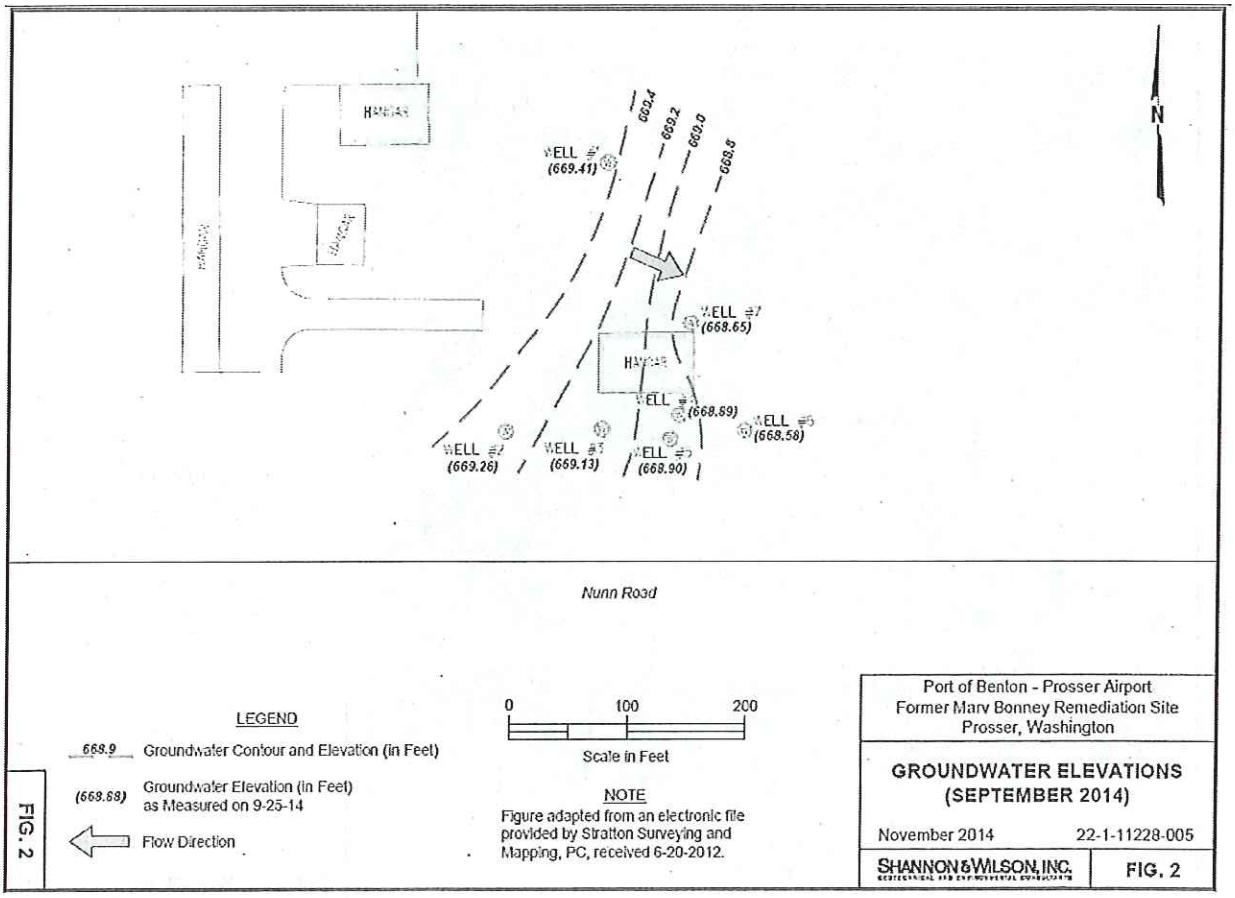
downgradient, southern property boundary. During the irrigation season, the groundwater table is higher and groundwater flow is toward the southeast. During the non-irrigation season, the groundwater table is lower and groundwater flow is toward the south. Site COCs include: Petroleum (GRO, Benzene), chlorinated herbicides (MCPP, MCPA, PCP, Dinoseb) and Metals (As, Pb). The petroleum and chlorinated pesticides and herbicides groundwater plume is fairly well delineated, but no downgradient sentinel wells are available. The arsenic plume is not well delineated. Regarding pathways of concern, the highest beneficial use is drinking water (although drinking water use is unlikely because of shallow and perched conditions). Potential for surface water impacts exist, although are unlikely. **Data Gaps:** MW-4 and MW-6 are located in depressed areas, are sometimes found in standing water and are speculated to be repeatedly influenced by contaminants related to stormwater ponding (ex. MCPA). Downgradient (S & SE) plume delineation. Source of arsenic to groundwater. CULs finalization.

SURFACE WATER: An open, unlined irrigation ditch runs along east-west along Nunn Road at the southern property boundary and is used seasonally. It is unlikely that groundwater contamination impacts surface water. It is likely the ditch surface water recharges the aquifer rather than the groundwater contributing to the ditch surface water flow. During irrigation season the vertical component of flow is assumed to be a losing situation, with downward flow of ditch surface water to groundwater. During non-irrigation the ditch is dry or disconnected from groundwater. This ditch has not been sampled. **Data Gaps:** A discussion and evaluation of risk should be included in a supplemental investigation. In addition, see recommendations for ditch water elevation measurements during groundwater monitoring events.

INDOOR AIR: Unlikely a complete pathway based on current groundwater concentrations and property use. No further investigation is required.

TEE: Meets exclusion criteria. No further evaluation is required.


Filename: J:\22\11228-005\22-1-11228-005 Fig 1.dwg Date: 11-17-2014 Login: sac
1359430000016002
Old Inland Empire Highway
Wine Country Road
Prosser Airport
102842000011000
Airport Buildings
Nunn Road
LEGEND
(1) Subject Site
(2) Milne Fruit
(3) Chukar Cherries
N
6/26/2014
0
400
800
Approximate Scale in Feet
Port of Benton Prosser Airport
Former Aircraft Applicators Site
Prosser, Washington
SITE VICINITY MAP
November 2014
22-1-11228-005
SHANNON & WILSON, INC.
FIG. 1
FIG. 1


N
669.4
669.2
669.0
668.8
WELL #1 (669.41)
WELL #7 (668.65)
WELL #6 (668.89)
WELL #5 (668.58)
WELL #2 (669.26)
WELL #3 (669.13)
WELL #4 (668.90)
Nunn Road
LEGEND
668.9 Groundwater Contour and Elevation (in Feet)
(668.88) Groundwater Elevation (in Feet) as Measured on 9-25-14
Flow Direction
0 100 200
Scale in Feet
NOTE
Figure adapted from an electronic file provided by Stratton Surveying and Mapping, PC, received 6-20-2012.
Port of Benton - Prosser Airport
Former Mary Bonney Remediation Site
Prosser, Washington
GROUNDWATER ELEVATIONS (SEPTEMBER 2014)
November 2014
22-1-11228-005
SHANNON & WILSON, INC.
FIG. 2
FIG. 2

APPENDIX B

BORING, WELL CONSTRUCTION, AND TEST PIT LOGS

Shannon & Wilson, Inc. (S&W), uses a soil identification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following pages. Soil descriptions are based on visual-manual procedures (ASTM D2488) and laboratory testing procedures (ASTM D2487), if performed.

S&W INORGANIC SOIL CONSTITUENT DEFINITIONS

CONSTITUENT[2]	FINE-GRAINED SOILS (50% or more fines)[1]	COARSE-GRAINED SOILS (less than 50% fines)[1]
Major	***Silt, Lean Clay, Elastic Silt,*** or ***Fat Clay***[3]	***Sand*** or ***Gravel***[4]
Modifying (Secondary) Precedes major constituent	30% or more coarse-grained: ***Sandy*** or ***Gravelly***[4]	More than 12% fine-grained: ***Silty*** or ***Clayey***[3]
Minor Follows major constituent	15% to 30% coarse-grained: ***with Sand*** or ***with Gravel***[4]	5% to 12% fine-grained: ***with Silt*** or ***with Clay***[3]
	30% or more total coarse-grained *and* lesser coarse-grained constituent is 15% or more: ***with Sand*** or ***with Gravel***[5]	15% or more of a second coarse-grained constituent: ***with Sand*** or ***with Gravel***[5]

[1]All percentages are by weight of total specimen passing a 3-inch sieve.
[2]The order of terms is: *Modifying Major with Minor*.
[3]Determined based on behavior.
[4]Determined based on which constituent comprises a larger percentage.
[5]Whichever is the lesser constituent.

MOISTURE CONTENT TERMS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

STANDARD PENETRATION TEST (SPT) SPECIFICATIONS

Hammer:	140 pounds with a 30-inch free fall. Rope on 6- to 10-inch-diam. cathead 2-1/4 rope turns, > 100 rpm NOTE: If automatic hammers are used, blow counts shown on boring logs should be adjusted to account for efficiency of hammer.
Sampler:	10 to 30 inches long Shoe I.D. = 1.375 inches Barrel I.D. = 1.5 inches Barrel O.D. = 2 inches
N-Value:	Sum blow counts for second and third 6-inch increments. Refusal: 50 blows for 6 inches or less; 10 blows for 0 inches.

NOTE: Penetration resistances (N-values) shown on boring logs are as recorded in the field and have not been corrected for hammer efficiency, overburden, or other factors.

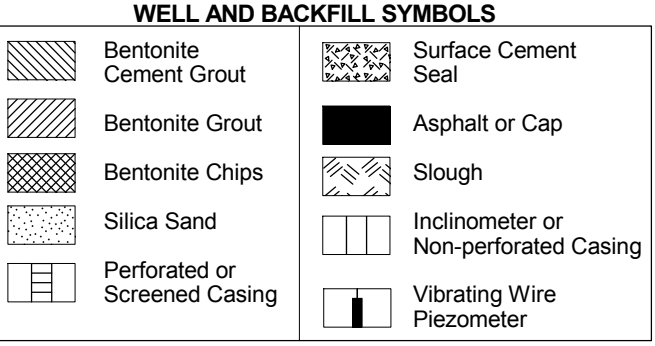
PARTICLE SIZE DEFINITIONS

DESCRIPTION	SIEVE NUMBER AND/OR APPROXIMATE SIZE
FINES	< #200 (0.075 mm = 0.003 in.)
SAND	
Fine	#200 to #40 (0.075 to 0.4 mm; 0.003 to 0.02 in.)
Medium	#40 to #10 (0.4 to 2 mm; 0.02 to 0.08 in.)
Coarse	#10 to #4 (2 to 4.75 mm; 0.08 to 0.187 in.)
GRAVEL	
Fine	#4 to 3/4 in. (4.75 to 19 mm; 0.187 to 0.75 in.)
Coarse	3/4 to 3 in. (19 to 76 mm)
COBBLES	3 to 12 in. (76 to 305 mm)
BOULDERS	> 12 in. (305 mm)

RELATIVE DENSITY / CONSISTENCY

COHESIONLESS SOILS		COHESIVE SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
< 4	Very loose	< 2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
> 50	Very dense	15 - 30	Very stiff
		> 30	Hard

WELL AND BACKFILL SYMBOLS



PERCENTAGES TERMS [1, 2]

Trace	< 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

[1]Gravel, sand, and fines estimated by mass. Other constituents, such as organics, cobbles, and boulders, estimated by volume.

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Port of Benton
Prosser Airport
Prosser, Washington

SOIL DESCRIPTION AND LOG KEY

October 2017 22-1-11228-008

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. B-1
Sheet 1 of 3

SOIL_CLASS_KEY_PG1 22-1-11228-006.GPJ SHAN_WIL.GDT 1/3/17

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)
(Modified From USACE Tech Memo 3-357, ASTM D2487, and ASTM D2488)

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL		TYPICAL IDENTIFICATIONS
COARSE-GRAINED SOILS *(more than 50% retained on No. 200 sieve)*	Gravels *(more than 50% of coarse fraction retained on No. 4 sieve)*	Gravel *(less than 5% fines)*	GW		Well-Graded Gravel; Well-Graded Gravel with Sand
			GP		Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Silty or Clayey Gravel *(more than 12% fines)*	GM		Silty Gravel; Silty Gravel with Sand
			GC		Clayey Gravel; Clayey Gravel with Sand
	Sands *(50% or more of coarse fraction passes the No. 4 sieve)*	Sand *(less than 5% fines)*	SW		Well-Graded Sand; Well-Graded Sand with Gravel
			SP		Poorly Graded Sand; Poorly Graded Sand with Gravel
		Silty or Clayey Sand *(more than 12% fines)*	SM		Silty Sand; Silty Sand with Gravel
			SC		Clayey Sand; Clayey Sand with Gravel
FINE-GRAINED SOILS *(50% or more passes the No. 200 sieve)*	Silts and Clays *(liquid limit less than 50)*	Inorganic	ML		Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
			CL		Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
		Organic	OL		Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
	Silts and Clays *(liquid limit 50 or more)*	Inorganic	MH		Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
			CH		Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
		Organic	OH		Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
HIGHLY-ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT		Peat or other highly organic soils (see ASTM D4427)

NOTE: No. 4 size = 4.75 mm = 0.187 in.; No. 200 size = 0.075 mm = 0.003 in.

NOTES

1. Dual symbols *(symbols separated by a hyphen, i.e., SP-SM, Sand with Silt)* are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart. Graphics shown on the logs for these soil types are a combination of the two graphic symbols (e.g., SP and SM).

2. Borderline symbols *(symbols separated by a slash, i.e., CL/ML, Lean Clay to Silt; SP-SM/SM, Sand with Silt to Silty Sand)* indicate that the soil properties are close to the defining boundary between two groups.

Port of Benton
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Prosser, Washington

SOIL DESCRIPTION AND LOG KEY

October 2017 22-1-11228-008

SHANNON & WILSON, INC.
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FIG. B-1
Sheet 2 of 3

SOIL_CLASS_KEY_PG2 22-1-11228-006.GPJ SHAN_WIL.GDT 1/3/17

GRADATION TERMS

Poorly Graded	Narrow range of grain sizes present or, within the range of grain sizes present, one or more sizes are missing (Gap Graded). Meets criteria in ASTM D2487, if tested.
Well-Graded	Full range and even distribution of grain sizes present. Meets criteria in ASTM D2487, if tested.

CEMENTATION TERMS[1]

Weak	Crumbles or breaks with handling or slight finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

PLASTICITY[2]

DESCRIPTION	VISUAL-MANUAL CRITERIA	APPROX. PLASITICITY INDEX RANGE
Nonplastic	A 1/8-in. thread cannot be rolled at any water content.	< 4
Low	A thread can barely be rolled and a lump cannot be formed when drier than the plastic limit.	4 to 10
Medium	A thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. A lump crumbles when drier than the plastic limit.	10 to 20
High	It takes considerable time rolling and kneading to reach the plastic limit. A thread can be rerolled several times after reaching the plastic limit. A lump can be formed without crumbling when drier than the plastic limit.	> 20

ADDITIONAL TERMS

Mottled	Irregular patches of different colors.
Bioturbated	Soil disturbance or mixing by plants or animals.
Diamict	Nonsorted sediment; sand and gravel in silt and/or clay matrix.
Cuttings	Material brought to surface by drilling.
Slough	Material that caved from sides of borehole.
Sheared	Disturbed texture, mix of strengths.

PARTICLE ANGULARITY AND SHAPE TERMS[1]

Angular	Sharp edges and unpolished planar surfaces.
Subangular	Similar to angular, but with rounded edges.
Subrounded	Nearly planar sides with well-rounded edges.
Rounded	Smoothly curved sides with no edges.
Flat	Width/thickness ratio > 3.
Elongated	Length/width ratio > 3.

ACRONYMS AND ABBREVIATIONS

ATD	At Time of Drilling
Diam.	Diameter
Elev.	Elevation
ft.	Feet
FeO	Iron Oxide
gal.	Gallons
Horiz.	Horizontal
HSA	Hollow Stem Auger
I.D.	Inside Diameter
in.	Inches
lbs.	Pounds
MgO	Magnesium Oxide
mm	Millimeter
MnO	Manganese Oxide
NA	Not Applicable or Not Available
NP	Nonplastic
O.D.	Outside Diameter
OW	Observation Well
pcf	Pounds per Cubic Foot
PID	Photo-Ionization Detector
PMT	Pressuremeter Test
ppm	Parts per Million
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
rpm	Rotations per Minute
SPT	Standard Penetration Test
USCS	Unified Soil Classification System
q_u	Unconfined Compressive Strength
VWP	Vibrating Wire Piezometer
Vert.	Vertical
WOH	Weight of Hammer
WOR	Weight of Rods
Wt.	Weight

STRUCTURE TERMS[1]

Interbedded	Alternating layers of varying material or color with layers at least 1/4-inch thick; singular: bed.
Laminated	Alternating layers of varying material or color with layers less than 1/4-inch thick; singular: lamination.
Fissured	Breaks along definite planes or fractures with little resistance.
Slickensided	Fracture planes appear polished or glossy; sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps that resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
Homogeneous	Same color and appearance throughout.

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[2]Adapted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

Port of Benton
Prosser Airport
Prosser, Washington

SOIL DESCRIPTION AND LOG KEY

October 2017 22-1-11228-008

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. B-1
Sheet 3 of 3

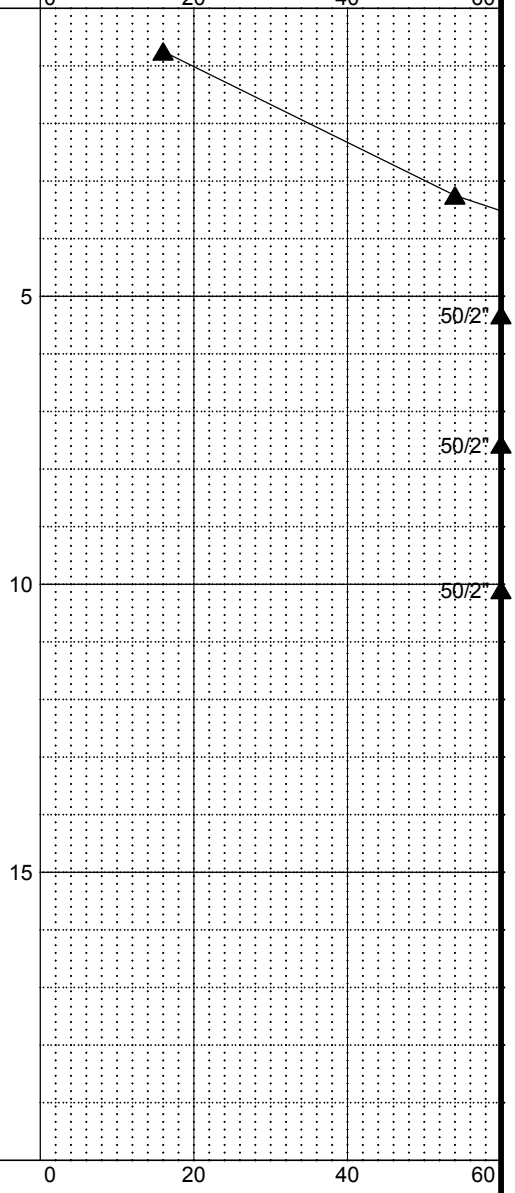
SOIL_CLASS_KEY_PG3 22-1-11228-006.GPJ SHAN_WIL.GDT 1/3/17

Total Depth:	*13 ft.*	Latitude:		Drilling Method:	*Hollow Stem Auger*	Hole Diam.:	*8 in.*
Top Elevation:	*~*	Longitude:		Drilling Company:	*HazTech*	Rod Diam.:	*NWJ (2 5/8")*
Vert. Datum:		Station:		Drill Rig Equipment:	*BK81*	Hammer Type:	*Automatic*
Horiz. Datum:		Offset:		Other Comments:			

SOIL DESCRIPTION *Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between material types, and the transition may be gradual.*	Depth, ft.	Symbol	PID, ppm	Samples	Screen Design	Depth, ft.
Gravel surface (1.25-inch minus crushed rock), some organics (grass, weeds).	0.5		0	S-01		
Medium dense, brown, *Silty Sand (SM)*; moist; fine sand; nonplastic fines.	2.0					
Medium dense to dense, brown/gray, *Poorly Graded Gravel with Sand and Silt (GP-GM)*; moist; subangular to angular gravel, 1- to 4-inch diameter; fine sand; nonplastic fines.			0	S-02		
			0	S-03		
Fractured Basalt - drills like: Very dense, gray/brown, *Poorly Graded Gravel with Sand (GP)*; wet; Angular gravel, 1- to 6-inch diameter; fine to coarse sand; nonplastic fines.	7.0		0	S-04	During Drilling ▽	
			0	S-05		
BOTTOM OF BORING COMPLETED 12/1/2015	13.0					

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: *140 lbs / 30 inches*



LEGEND

* Sample Not Recovered

2.0" O.D. Split Spoon Sample

▽ Ground Water Level ATD

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Port of Benton
Prosser Airport
Prosser, Washington

LOG OF BORING MW-8

January 2017 22-1-11228-008

SHANNON & WILSON, INC.
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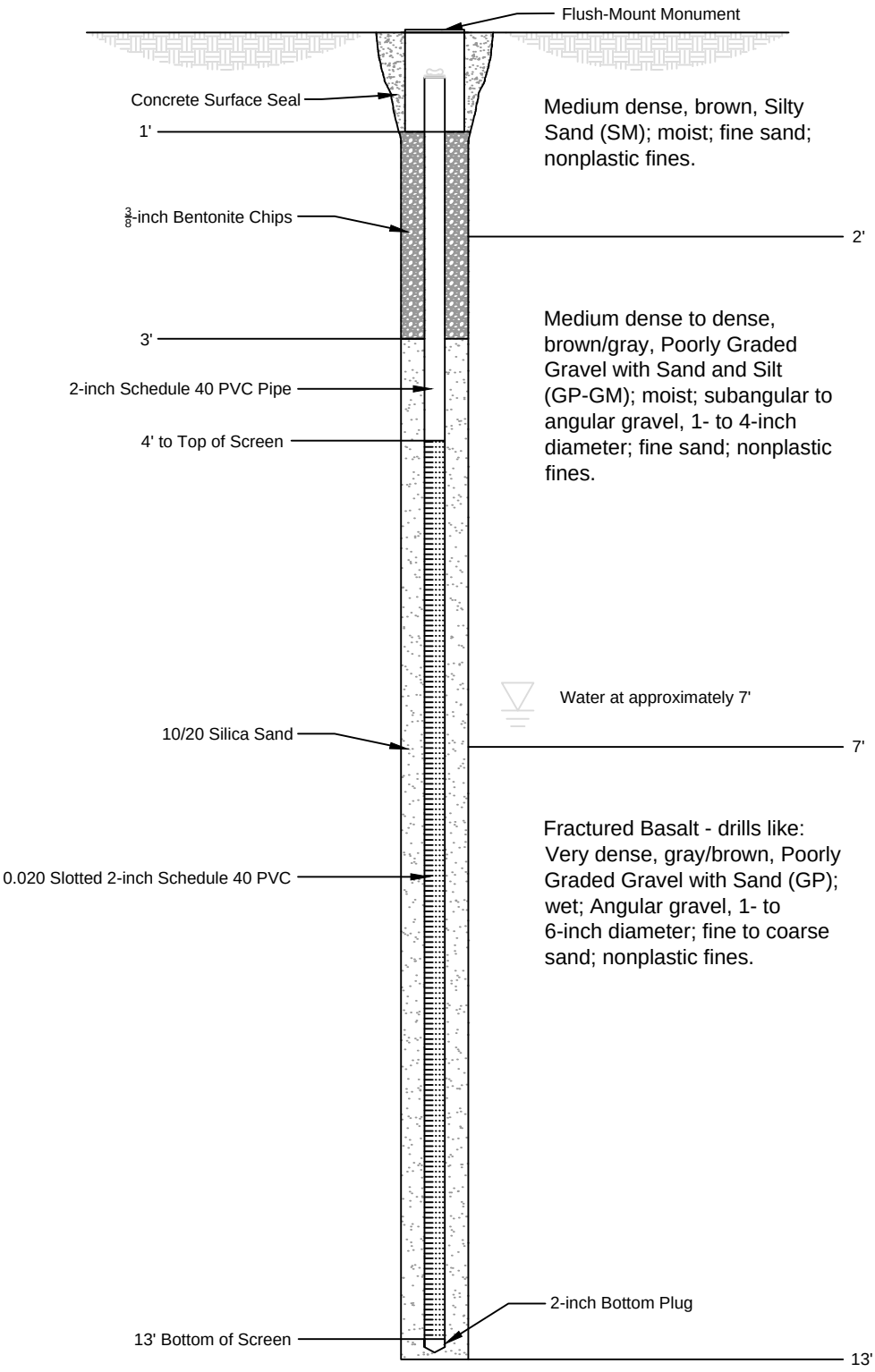
FIG. B-2

REV 3 - Approved for Submittal

MASTER_LOG_E 22-1-11228-006.GPJ SHAN_WIL.GDT 1/3/17 *Log: LLA* *Rev:* *Typ: JWT*



Note

DRAWING IS NOT TO SCALE.

Port of Benton
Prosser Airport
Prosser Washington

MW-8 MONITORING WELL CONSTRUCTION

October 2017 22-1-11228-008

SHANNON & WILSON, INC.
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FIG. B-2a

Total Depth:	*13 ft.*	Latitude:		Drilling Method:	*Hollow Stem Auger*	Hole Diam.:	*8 in.*
Top Elevation:	*~*	Longitude:		Drilling Company:	*HazTech*	Rod Diam.:	*NWJ (2 5/8")*
Vert. Datum:		Station:		Drill Rig Equipment:	*BK81*	Hammer Type:	*Automatic*
Horiz. Datum:		Offset:		Other Comments:			

SOIL DESCRIPTION	Depth, ft.
Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines represent the approximate boundaries between material types, and the transition may be gradual.	
Gravel surface (1.25-inch minus crushed rock).	0.3
Medium dense, brown/gray, *Silty Sand (SM)*; moist; fine sand; nonplastic fines.	1.0
Medium dense to dense, brown/gray, *Poorly Graded Gravel with Sand and Silt (GP-GM)*; moist; subround to subangular gravel, 1- to 3-inch diameter; fine sand; nonplastic fines.	
Fractured Basalt - drills like: Very dense, gray/brown, *Poorly Graded Gravel with Sand (GP)*; wet; Angular gravel, 1- to 4-inch diameter; fine to coarse sand; nonplastic fines.	8.0
BOTTOM OF BORING COMPLETED 12/1/2015	13.0

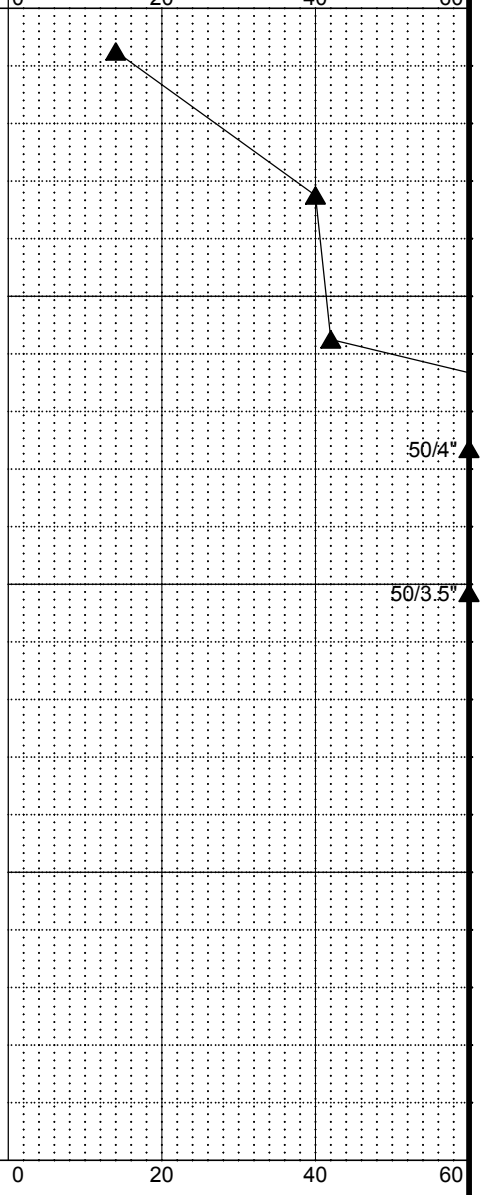
Symbol | PID, ppm | Samples | Screen Design | Depth, ft.

Sample	PID, ppm
S-01	0
S-02	0
S-03	0
S-04	0
S-05	0

During Drilling ▽

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: *140 lbs / 30 inches*



LEGEND

* Sample Not Recovered

I 2.0" O.D. Split Spoon Sample

▽ Ground Water Level ATD

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Port of Benton
Prosser Airport
Prosser, Washington

LOG OF BORING MW-9

January 2017 22-1-11228-008

SHANNON & WILSON, INC.
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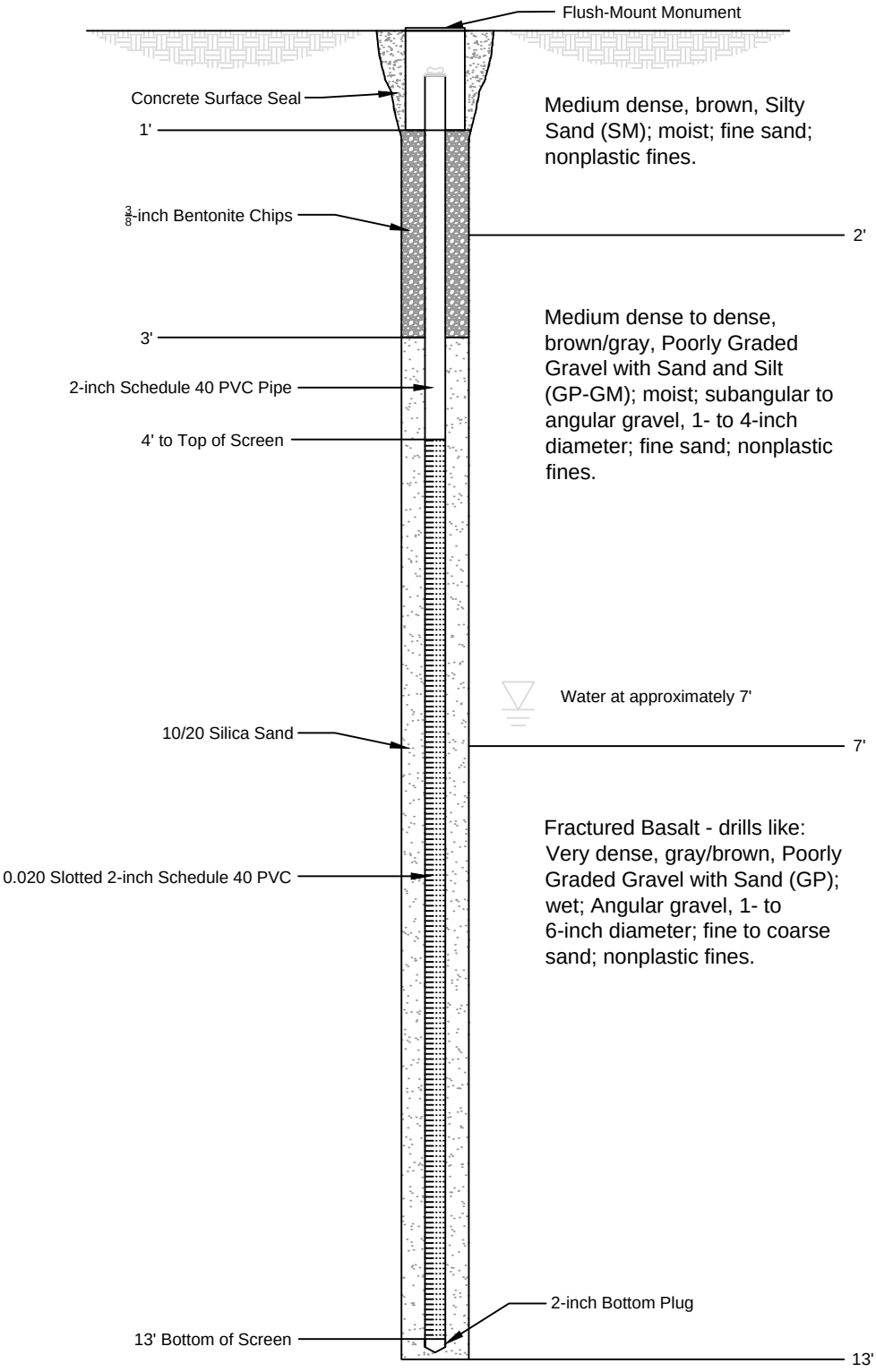
FIG. B-3

REV 3 - Approved for Submittal

MASTER_LOG_E 22-1-11228-006.GPJ SHAN_WIL.GDT 1/3/17 Log: LLA Rev: Typ: JWT



Note

DRAWING IS NOT TO SCALE.

Port of Benton
Prosser Airport
Prosser Washington

MW-8 MONITORING WELL CONSTRUCTION

October 2017 22-1-11228-008

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. B-3a

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NO: 22-1-11228-008 DATE: 3/16/2016 LOCATION: Prosser, Washington

PROJECT: Port of Benton, Prosser Airport LAT./LONG.: 46.211840 -119.784361

LOG OF Test Pit TP-1

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM 399	Samples	Depth, Ft.
Surface=Gravel Driveway ($1\frac{1}{4}$-inch-Minus)				
① 0-2' (in west part of Test Pit) Medium dense, brown, *Sandy Silt / Silty Sandy with Gravel and Cobbles (ML/SM)*; moist; Subrounded to subangular, gravels and cobbles, 1- to 10-inch diameter; fine to medium sand; nonplastic to low-plasticity fines; trace debris (asphaltic pipe, wire) in the upper 18 inches. Approximate 18-inch O.D. concrete pipe at approximately 2 feet bgs. (Fill)			E	0
② 0-6' (in east part of Test Pit) Medium dense, brown, *Silty Gravel with Sand (GM);* moist; subrounded to rounded gravel, 1- to 3-inch diameter; fine to medium sand; nonplastic fines. (Native)				2
				4
	▽		E	6
Test Pit Terminated at ±6 feet. Groundwater Encountered at ±6 feet.				8
				10
				12

Sketch of North Pit Side Surface Elevation:

Horizontal Distance in Feet

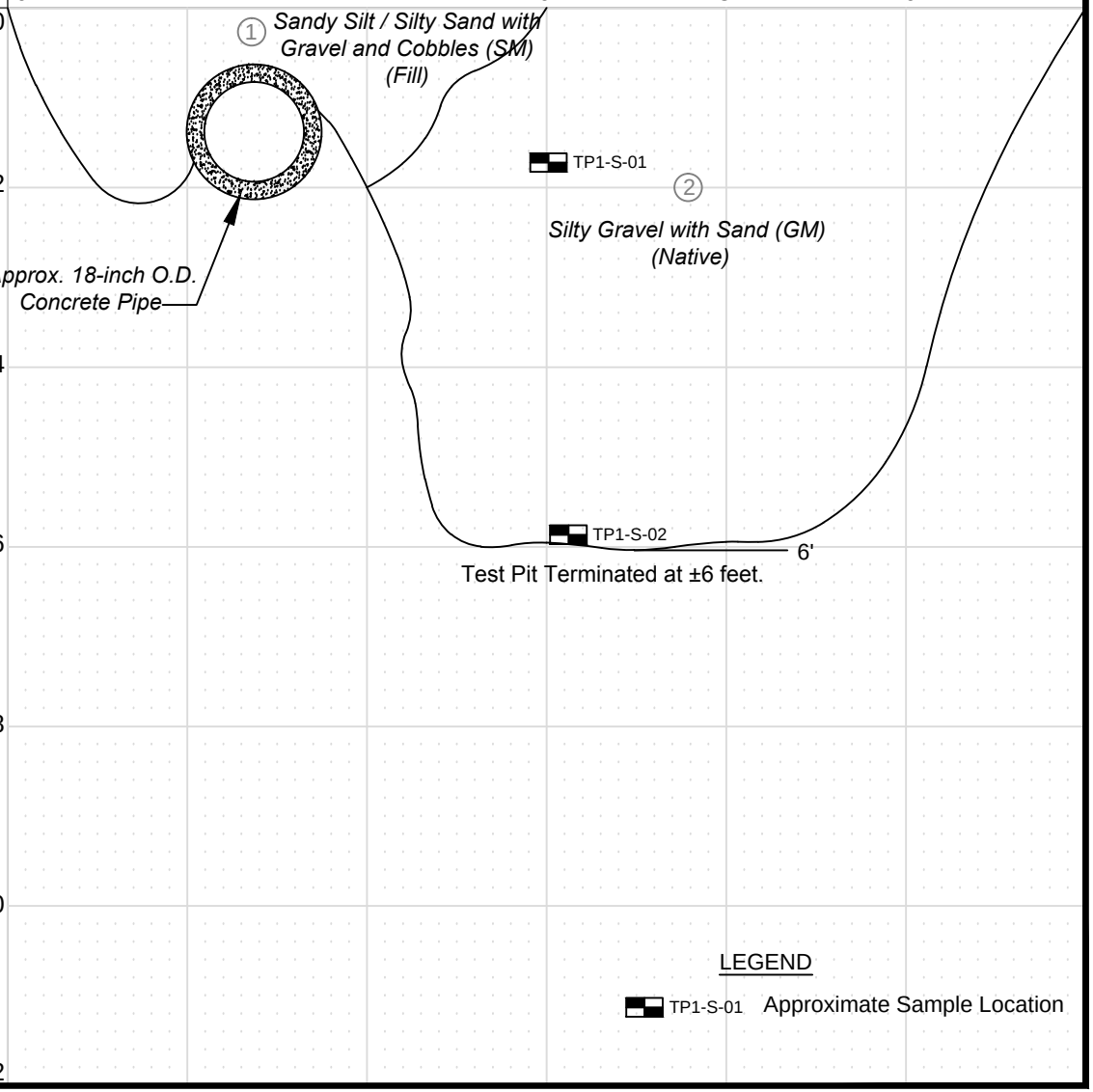


FIG. B-4

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NO: 22-1-11228-008 DATE: 3/16/2016 LOCATION: Prosser, Washington

PROJECT: Port of Benton, Prosser Airport LAT./LONG.: 46.212019 -119.784459

LOG OF Test Pit TP-2

SOIL DESCRIPTION Surface=Gravel Driveway (1¼-inch-Minus)	Ground Water	Blow Counts ASTM 399	Samples	Depth, Ft.
① 0-1.7' (in north part of Test Pit) Loose, brown, *Sandy Silt (ML)*, moist; fine sand; nonplastic fines. (Native)				0
② 1.7-2' (in north part of Test Pit) Medium dense, brown, *Silty Gravel with Sand (GM)*; moist; subrounded to rounded gravel, 1-3-inch diameter; fine to medium sand; nonplastic fines. (Native)			E	2
③ 0-4' (in south part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM);* moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticity fines. (Fill)			E	4
Test Pit Terminated at ±4.5 feet. No Groundwater Encountered.				6
				8
				10
				12

Sketch of West Pit Side

Surface Elevation:

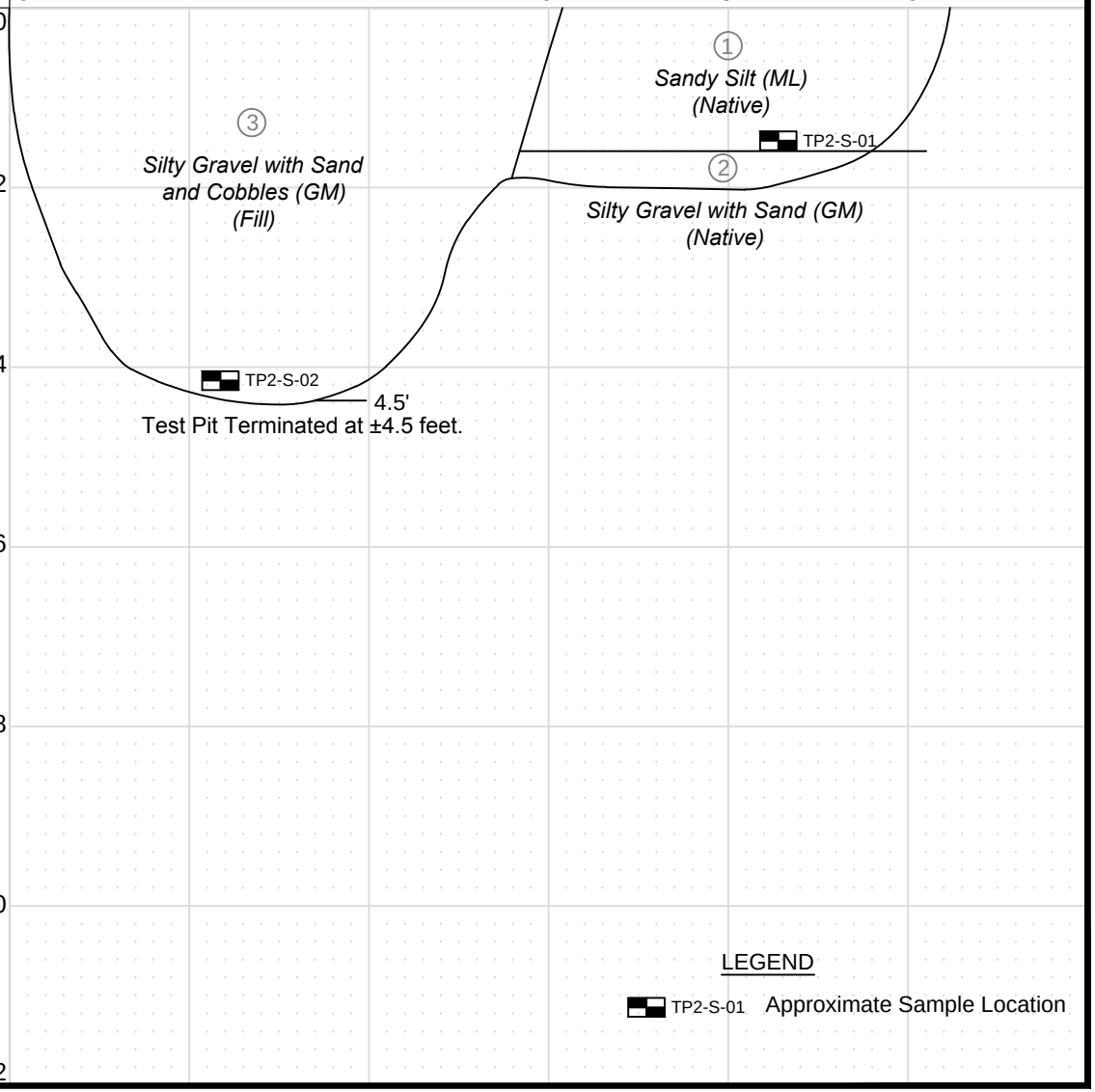


FIG. B-5

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NO: 22-1-11228-008 DATE: 3/16/2016 LOCATION: Prosser, Washington

PROJECT: Port of Benton, Prosser Airport LAT./LONG.: 46.212067 -119.784751

LOG OF Test Pit TP-3

SOIL DESCRIPTION Surface=Gravel Driveway (1¼-inch-Minus)	Ground Water	Blow Counts ASTM 399	Samples	Depth, Ft.
① 0-2' (in south part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM)*, moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticitiy fines. (Fill)			E	0
② 0-2' (in north part of Test Pit) Loose to medium dense, gray, *Well Graded Sand (GM)*; moist; subangular to angular sand. (Fill)				2
③ 2-6' (in north part of Test Pit) Medium dense, brown/gray, *Silty Gravel with Sand (GM);* moist; subrounded to rounded gravel, 1- to 3-inch diameter; fine to medium sand; nonplastic fines. (Native) *Wet at approximately 6-feet	▽		E	4 6
Test Pit Terminated at ±6 feet. Groundwater Encountered at ±6 feet.				8 10 12

Sketch of West Pit Side

Surface Elevation:

Horizontal Distance in Feet

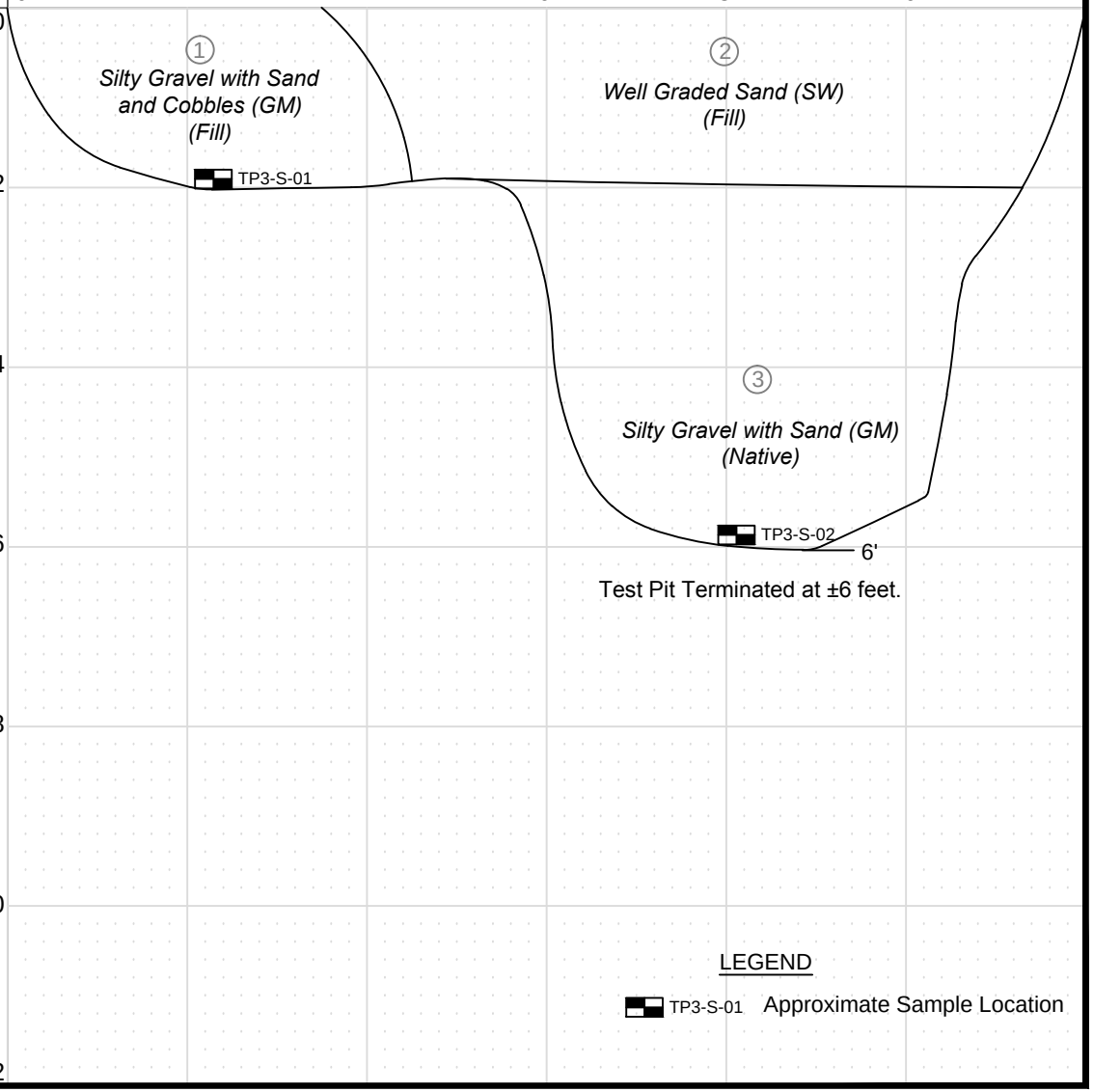


FIG. B-6

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NO: 22-1-11228-008 DATE: 3/16/2016 LOCATION: Prosser, Washington

PROJECT: Port of Benton, Prosser Airport LAT./LONG.: 46.211894 -119.784931

LOG OF Test Pit TP-4

SOIL DESCRIPTION Surface=Gravel Driveway (1¼-inch-Minus)	Ground Water	Blow Counts ASTM 399	Samples	Depth, Ft.
① 0-2.25' (in northwest part of Test Pit) Loose to medium dense, gray, *Well Graded Sand (GM)*; moist; subangular to angular sand; debris (Rusted T-post, Vinyl straps, concrete pieces) in the upper approximate 2 feet. (Fill)			E	0
② 2.25-3.25' (in northwest part of Test Pit) Medium dense, brown, S*ilty Gravel with Sand (GM)*; moist; subrounded to rounded gravel, 1-3-inch diameter; fine to medium sand; nonplastic fines. (Native)				2
③ 3.25-6' (in southeast part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM);* moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticity fines. (Fill) *Wet at approximately 6-feet	▽		E	4
Test Pit Terminated at ±6 feet. No Groundwater Encountered ±6 feet.				6
				8
				10
				12

Sketch of Southwest Pit Side Surface Elevation:

Horizontal Distance in Feet

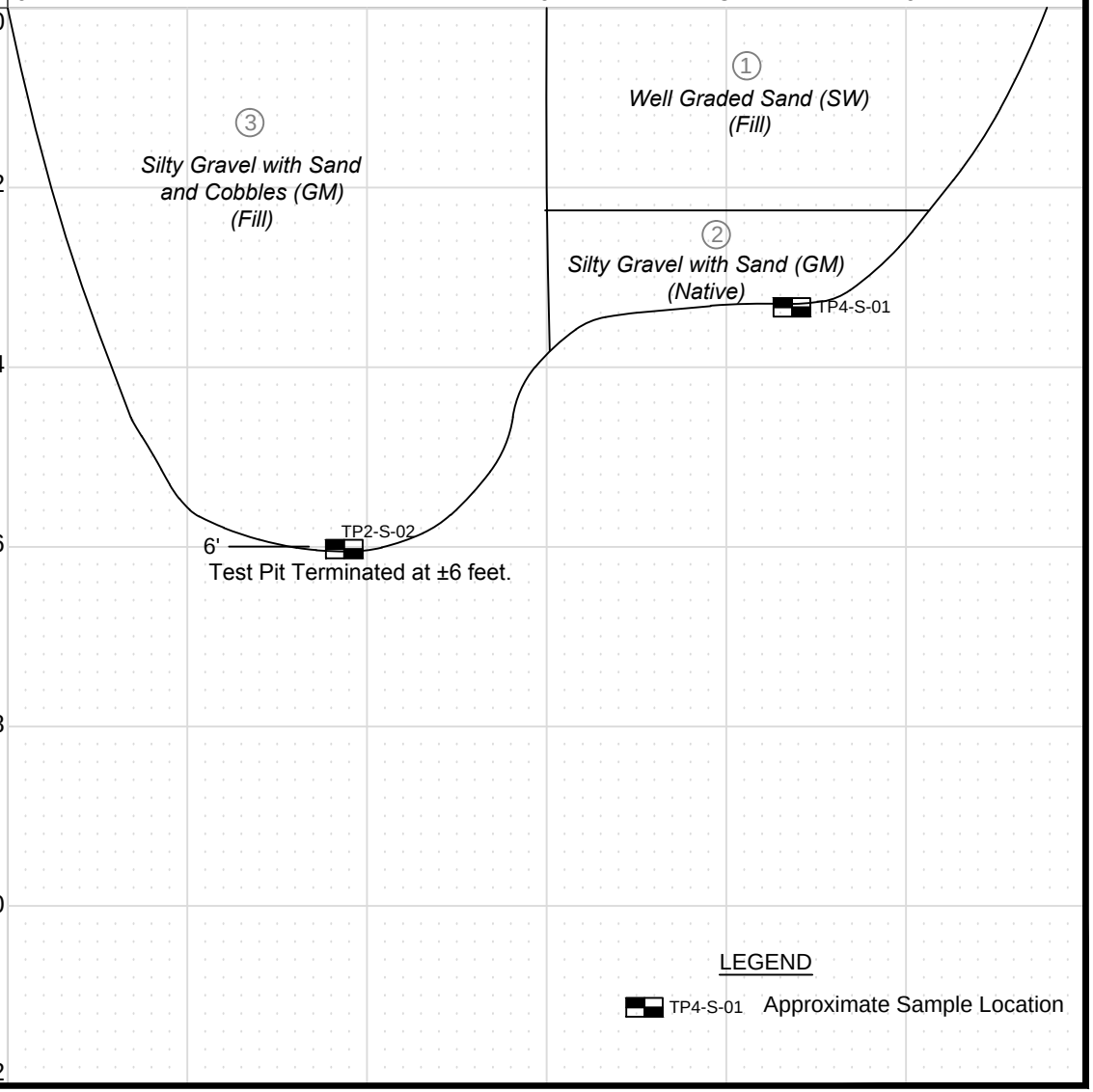


FIG. B-7

Filename: I:\EF\22-1 PAS\11200s\11228 Port of Benton Prosser AP\22-1-11228-007 2016 services\Test Pits\Test Pit logs\22-1-11228-007_Fig.A-2 through A-7_Test Pit Logs_REV0.dwg Date: 10/18/2017 Login:LLA

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NO: 22-1-11228-008 DATE: 3/16/2016 LOCATION: Prosser, Washington

PROJECT: Port of Benton, Prosser Airport LAT./LONG.: 46.211719 -119.785059

LOG OF Test Pit TP-5

SOIL DESCRIPTION Surface=Gravel Driveway (1¼-inch-Minus)	Ground Water	Blow Counts ASTM 399	Samples	Depth, Ft.
① 0-2' (in east part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM)*, moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticitiy fines. (Fill)			E	0
② 0-1' (in west part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM)*, moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticitiy fines. (Fill)				2
③ 1-3' (in west part of Test Pit) Loose, brown, *Sandy Silt (ML)*, moist; fine sand; nonplastic fines. (Native)				4
④ 3-6' (in west part of Test Pit) Medium dense, brown/gray, *Silty Gravel with Sand (GM);* moist; subrounded to rounded gravel, 1- to 3-inch diameter; fine to medium sand; nonplastic fines. (Native) *Wet at approximately 6-feet	▽		E	6
Test Pit Terminated at ±6 feet. Groundwater Encountered at ±6 feet.				8
				10
				12

Sketch of South Pit Side Surface Elevation:

Horizontal Distance in Feet

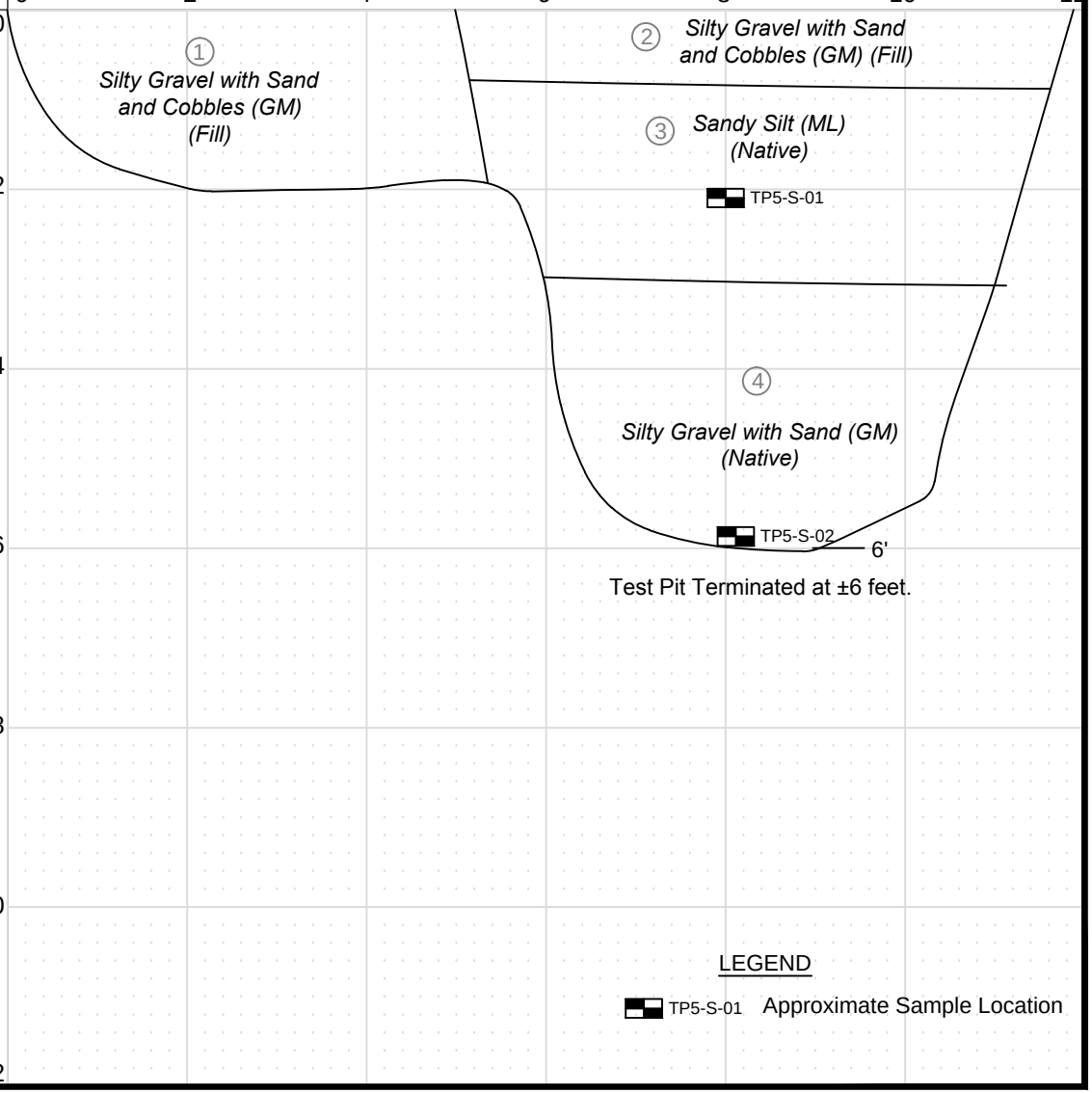


FIG. B-8

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NO: 22-1-11228-008 DATE: 3/16/2016 LOCATION: Prosser, Washington

PROJECT: Port of Benton, Prosser Airport LAT./LONG.: 46.211548 -119.784930

LOG OF Test Pit TP-6

SOIL DESCRIPTION Surface=Gravel Driveway (1¼-inch-Minus)	Ground Water	Blow Counts ASTM 399	Samples	Depth, Ft.
① 0-1.0' (in south part of Test Pit) Loose, brown, *Sandy Silt (ML)*, moist; fine sand; nonplastic fines. (Native)				0
② 1.0-2.25' (in south part of Test Pit) Medium dense, brown, *Silty Gravel with Sand (GM)*; moist; subrounded to rounded gravel, 1-3-inch diameter; fine to medium sand; nonplastic fines. (Native)			E	2
③ 0-4.25' (in north part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM);* moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticity fines. (Fill)			E	4
Test Pit Refusal at ±4.25 feet (Basalt) No Groundwater Encountered.				6
				8
				10
				12

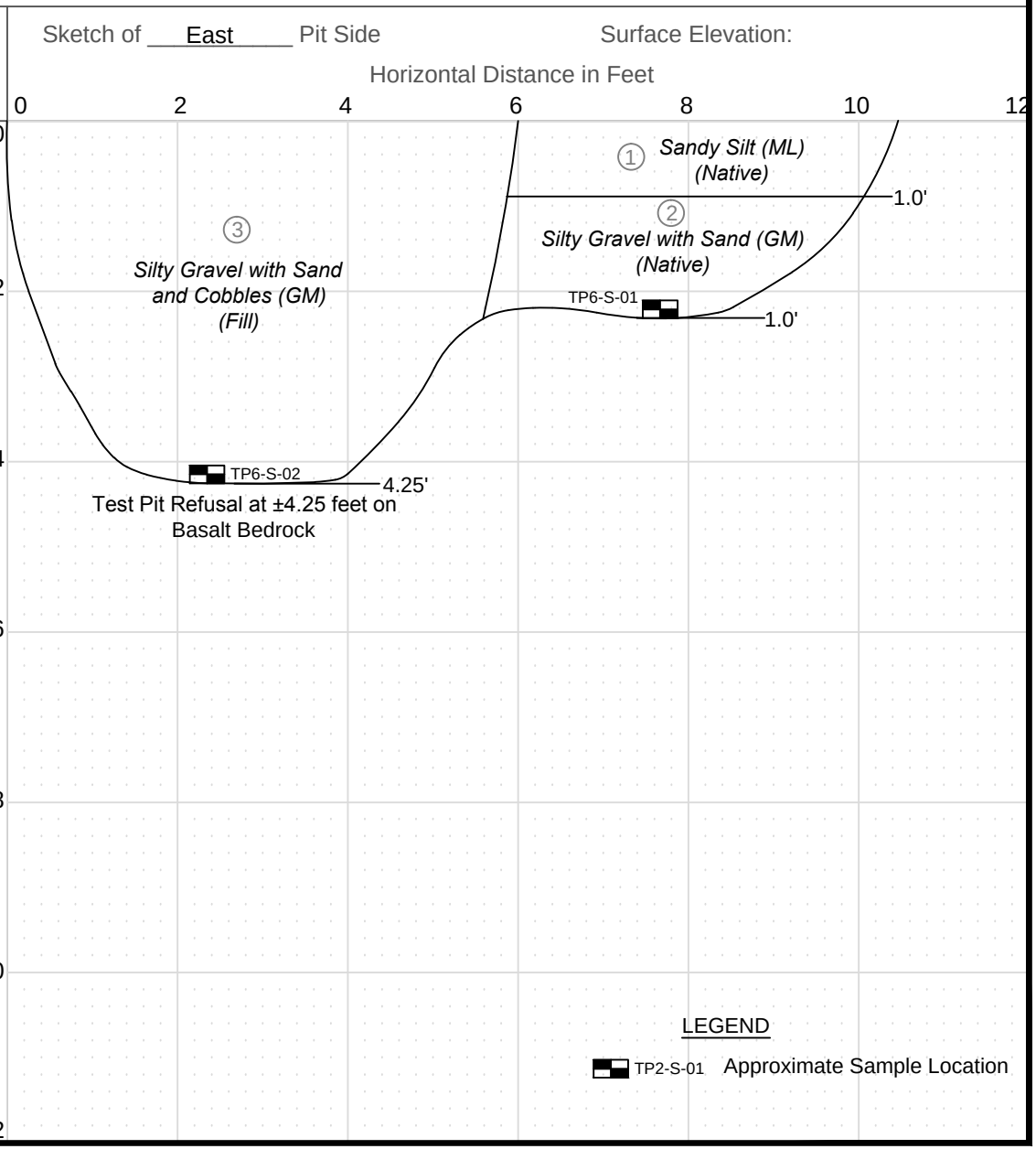


FIG. B-9

Filename: I:\EF\22-1 PAS\11200s\11228 Port of Benton Prosser AP\22-1-11228-007 2016 services\Test Pits\Test Pit logs\22-1-11228-007_Fig.A-2 through A-7_Test Pit Logs_REV0.dwg Date: 10/18/2017 Login:LLA

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NO: 22-1-11228-008 DATE: 3/16/2016 LOCATION: Prosser, Washington

PROJECT: Port of Benton, Prosser Airport LAT./LONG.: 46.211655 -119.784727

LOG OF Test Pit TP-7

SOIL DESCRIPTION Surface=Gravel Driveway (1¼-inch-Minus)	Ground Water	Blow Counts ASTM 399	Samples	Depth, Ft.
① 0-2' (in west part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM)*, moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticitiy fines. (Fill)			E	0
② 0-1' (in East part of Test Pit) Medium dense, brown, *Silty Gravel with Sand and Cobbles (GM)*, moist; subrounded to subangular gravel and cobbles, 1- to 8-inch diameter; fine to medium sand; nonplastic to low plasticitiy fines. (Fill)				2
③ 1-3.5' (in East part of Test Pit) Medium dense, brown/gray, *Silty Gravel with Sand (GM);* moist; subrounded to rounded gravel, 1- to 3-inch diameter; fine to medium sand; nonplastic fines. (Native)	▽		E	4
Test Pit Refusal at ±3.5 feet (Basalt) No Groundwater Encountered.				6
				8
				10
				12

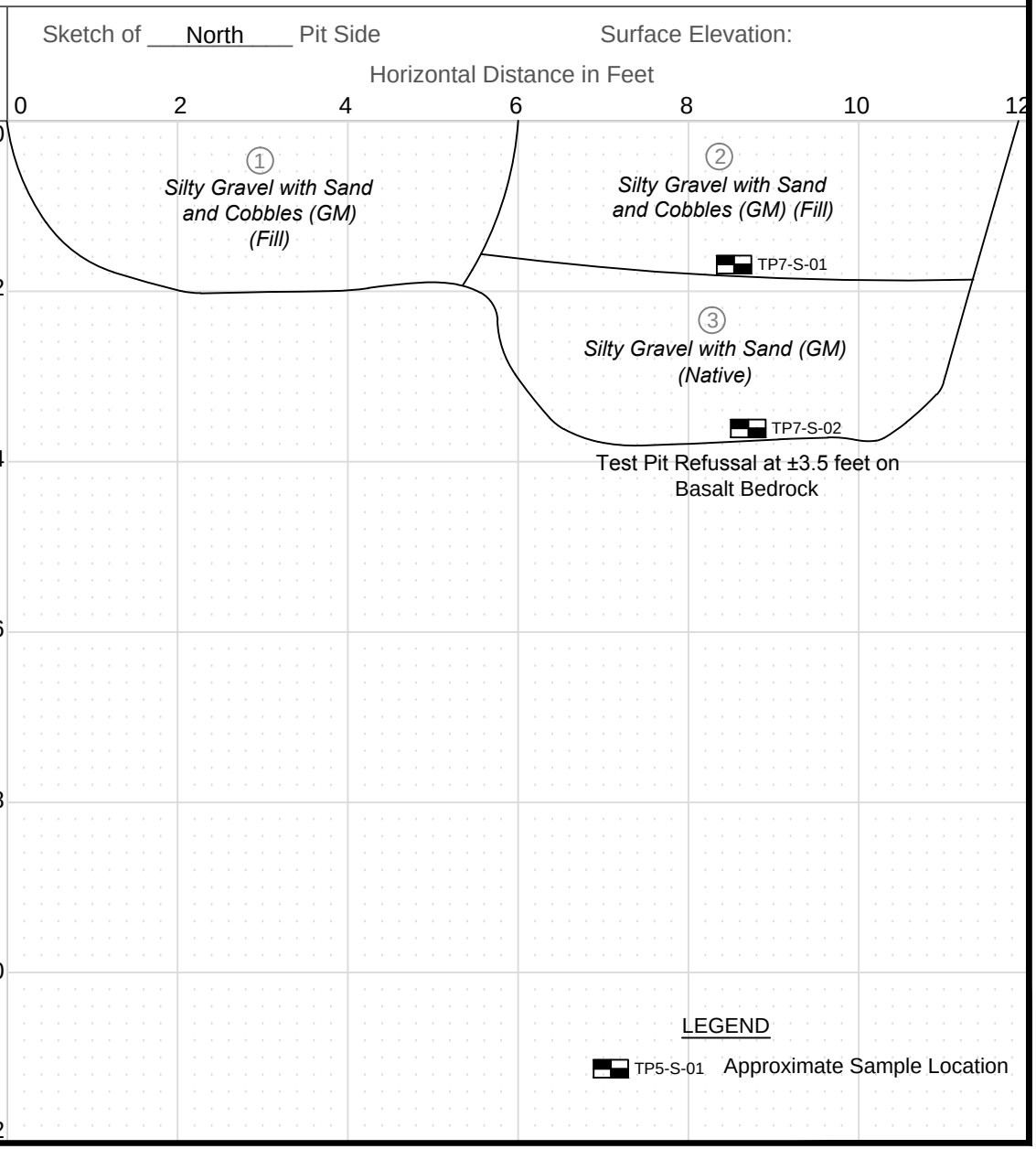


FIG. B-10

APPENDIX C

LABORATORY REPORTS

SOIL ANALYSES

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 11, 2015

Donna Parkes
Shannon & Wilson, Inc.
2705 Saint Andrews Loop, Suite A
Pasco, WA 99301

Re: Analytical Data for Project 22-1-11228-006
Laboratory Reference No. 1512-031

Dear Donna:

Enclosed are the analytical results and associated quality control data for samples submitted on December 3, 2015.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

Case Narrative

Samples were collected on December 1, 2015 and received by the laboratory on December 3, 2015. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA method 5035A, samples were received by the laboratory in pre-weighed 40 ml VOA vials preserved with either Methanol or Sodium Bisulfate.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW8-S-05**					
Laboratory ID:	12-031-02					
Benzene	**ND**	0.020	EPA 8021B	12-3-15	12-3-15	
Toluene	**ND**	0.052	EPA 8021B	12-3-15	12-3-15	
Ethyl Benzene	**ND**	0.052	EPA 8021B	12-3-15	12-3-15	
m,p-Xylene	**ND**	0.052	EPA 8021B	12-3-15	12-3-15	
o-Xylene	**ND**	0.052	EPA 8021B	12-3-15	12-3-15	
Gasoline	**ND**	5.2	NWTPH-Gx	12-3-15	12-3-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*68-129*				
Client ID:	**MW9-S-05**					
Laboratory ID:	12-031-04					
Benzene	**ND**	0.020	EPA 8021B	12-3-15	12-3-15	
Toluene	**ND**	0.065	EPA 8021B	12-3-15	12-3-15	
Ethyl Benzene	**ND**	0.065	EPA 8021B	12-3-15	12-3-15	
m,p-Xylene	**ND**	0.065	EPA 8021B	12-3-15	12-3-15	
o-Xylene	**ND**	0.065	EPA 8021B	12-3-15	12-3-15	
Gasoline	**ND**	6.5	NWTPH-Gx	12-3-15	12-3-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*93*	*68-129*				

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1203S1					
Benzene	**ND**	0.020	EPA 8021B	12-3-15	12-3-15	
Toluene	**ND**	0.050	EPA 8021B	12-3-15	12-3-15	
Ethyl Benzene	**ND**	0.050	EPA 8021B	12-3-15	12-3-15	
m,p-Xylene	**ND**	0.050	EPA 8021B	12-3-15	12-3-15	
o-Xylene	**ND**	0.050	EPA 8021B	12-3-15	12-3-15	
Gasoline	**ND**	5.0	NWTPH-Gx	12-3-15	12-3-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*68-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-030-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*100*	*99*	*68-129*			
SPIKE BLANKS											
Laboratory ID:	SB1203S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.929**	**0.982**	1.00	1.00		**93**	**98**	76-124	6	17	
Toluene	**0.893**	**0.940**	1.00	1.00		**89**	**94**	78-124	5	16	
Ethyl Benzene	**0.875**	**0.927**	1.00	1.00		**88**	**93**	77-123	6	17	
m,p-Xylene	**0.896**	**0.946**	1.00	1.00		**90**	**95**	78-124	5	17	
o-Xylene	**0.893**	**0.942**	1.00	1.00		**89**	**94**	76-123	5	18	
Surrogate:											
Fluorobenzene						*87*	*90*	*68-129*			

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW8-S-01**					
Laboratory ID:	12-031-01					
alpha-BHC	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
gamma-BHC	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
beta-BHC	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
delta-BHC	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
Heptachlor	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
Aldrin	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
Heptachlor Epoxide	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
gamma-Chlordane	**ND**	12	EPA 8081B	12-10-15	12-10-15	
alpha-Chlordane	**ND**	12	EPA 8081B	12-10-15	12-10-15	
4,4'-DDE	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Endosulfan I	**ND**	5.9	EPA 8081B	12-10-15	12-10-15	
Dieldrin	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Endrin	**ND**	12	EPA 8081B	12-10-15	12-10-15	
4,4'-DDD	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Endosulfan II	**ND**	12	EPA 8081B	12-10-15	12-10-15	
4,4'-DDT	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Endrin Aldehyde	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Methoxychlor	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Endosulfan Sulfate	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Endrin Ketone	**ND**	12	EPA 8081B	12-10-15	12-10-15	
Toxaphene	**ND**	59	EPA 8081B	12-10-15	12-10-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*77*	*53-107*				
DCB	*98*	*59-121*				

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-S-01**					
Laboratory ID:	12-031-03					
alpha-BHC	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
gamma-BHC	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
beta-BHC	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
delta-BHC	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
Heptachlor	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
Aldrin	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
Heptachlor Epoxide	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
gamma-Chlordane	**ND**	11	EPA 8081B	12-10-15	12-10-15	
alpha-Chlordane	**ND**	11	EPA 8081B	12-10-15	12-10-15	
4,4'-DDE	**35**	11	EPA 8081B	12-10-15	12-10-15	
Endosulfan I	**ND**	5.5	EPA 8081B	12-10-15	12-10-15	
Dieldrin	**ND**	11	EPA 8081B	12-10-15	12-10-15	
Endrin	**ND**	11	EPA 8081B	12-10-15	12-10-15	
4,4'-DDD	**ND**	11	EPA 8081B	12-10-15	12-10-15	
Endosulfan II	**ND**	11	EPA 8081B	12-10-15	12-10-15	
4,4'-DDT	**ND**	11	EPA 8081B	12-10-15	12-10-15	
Endrin Aldehyde	**ND**	11	EPA 8081B	12-10-15	12-10-15	
Methoxychlor	**ND**	11	EPA 8081B	12-10-15	12-10-15	
Endosulfan Sulfate	**ND**	11	EPA 8081B	12-10-15	12-10-15	
Endrin Ketone	**ND**	11	EPA 8081B	12-10-15	12-10-15	
Toxaphene	**ND**	55	EPA 8081B	12-10-15	12-10-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*77*	*53-107*				
DCB	*96*	*59-121*				

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

ORGANOCHLORINE PESTICIDES EPA 8081B QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1210S2					
alpha-BHC	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
gamma-BHC	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
beta-BHC	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
delta-BHC	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
Heptachlor	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
Aldrin	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
Heptachlor Epoxide	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
gamma-Chlordane	**ND**	10	EPA 8081B	12-10-15	12-10-15	
alpha-Chlordane	**ND**	10	EPA 8081B	12-10-15	12-10-15	
4,4'-DDE	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Endosulfan I	**ND**	5.0	EPA 8081B	12-10-15	12-10-15	
Dieldrin	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Endrin	**ND**	10	EPA 8081B	12-10-15	12-10-15	
4,4'-DDD	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Endosulfan II	**ND**	10	EPA 8081B	12-10-15	12-10-15	
4,4'-DDT	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Endrin Aldehyde	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Methoxychlor	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Endosulfan Sulfate	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Endrin Ketone	**ND**	10	EPA 8081B	12-10-15	12-10-15	
Toxaphene	**ND**	50	EPA 8081B	12-10-15	12-10-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*92*	*53-107*				
DCB	*114*	*59-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	12-045-07										
	MS	MSD	MS	MSD		MS	MSD				
gamma-BHC	**42.0**	**40.9**	50.0	50.0	ND	**84**	**82**	41-116	3	12	
Heptachlor	**37.7**	**38.3**	50.0	50.0	ND	**75**	**77**	41-115	2	13	
Aldrin	**39.1**	**39.0**	50.0	50.0	ND	**78**	**78**	44-118	0	15	
Dieldrin	**89.0**	**88.1**	125	125	ND	**71**	**70**	38-121	1	13	
Endrin	**92.6**	**91.5**	125	125	ND	**74**	**73**	46-118	1	15	
4,4'-DDT	**89.1**	**91.8**	125	125	ND	**71**	**73**	34-117	3	21	
Surrogate:											
TCMX						*75*	*74*	*53-107*			
DCB						*92*	*90*	*59-121*			

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW8-S-01**					
Laboratory ID:	12-031-01					
Dalapon	**ND**	270	EPA 8151A	12-7-15	12-8-15	
Dicamba	**ND**	11	EPA 8151A	12-7-15	12-8-15	
MCPP	**ND**	1100	EPA 8151A	12-7-15	12-8-15	
MCPA	**ND**	1100	EPA 8151A	12-7-15	12-8-15	
Dichlorprop	**ND**	84	EPA 8151A	12-7-15	12-8-15	
2,4-D	**ND**	11	EPA 8151A	12-7-15	12-8-15	
Pentachlorophenol	**ND**	5.6	EPA 8151A	12-7-15	12-8-15	
2,4,5-TP (Silvex)	**ND**	11	EPA 8151A	12-7-15	12-8-15	
2,4,5-T	**ND**	11	EPA 8151A	12-7-15	12-8-15	
2,4-DB	**ND**	11	EPA 8151A	12-7-15	12-8-15	
Dinoseb	**ND**	11	EPA 8151A	12-7-15	12-8-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*44*	*28-98*				
Client ID:	**MW8-S-05**					
Laboratory ID:	12-031-02					
Dalapon	**ND**	260	EPA 8151A	12-7-15	12-8-15	
Dicamba	**ND**	11	EPA 8151A	12-7-15	12-8-15	
MCPP	**ND**	1000	EPA 8151A	12-7-15	12-8-15	
MCPA	**ND**	1000	EPA 8151A	12-7-15	12-8-15	
Dichlorprop	**ND**	79	EPA 8151A	12-7-15	12-8-15	
2,4-D	**ND**	11	EPA 8151A	12-7-15	12-8-15	
Pentachlorophenol	**ND**	5.3	EPA 8151A	12-7-15	12-8-15	
2,4,5-TP (Silvex)	**ND**	11	EPA 8151A	12-7-15	12-8-15	
2,4,5-T	**ND**	11	EPA 8151A	12-7-15	12-8-15	
2,4-DB	**ND**	11	EPA 8151A	12-7-15	12-8-15	
Dinoseb	**ND**	11	EPA 8151A	12-7-15	12-8-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*36*	*28-98*				

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-S-01**					
Laboratory ID:	12-031-03					
Dalapon	**ND**	250	EPA 8151A	12-7-15	12-8-15	
Dicamba	**ND**	10	EPA 8151A	12-7-15	12-8-15	
MCPP	**ND**	1000	EPA 8151A	12-7-15	12-8-15	
MCPA	**ND**	1000	EPA 8151A	12-7-15	12-8-15	
Dichlorprop	**ND**	77	EPA 8151A	12-7-15	12-8-15	
2,4-D	**ND**	10	EPA 8151A	12-7-15	12-8-15	
Pentachlorophenol	**ND**	5.2	EPA 8151A	12-7-15	12-8-15	
2,4,5-TP (Silvex)	**ND**	10	EPA 8151A	12-7-15	12-8-15	
2,4,5-T	**ND**	10	EPA 8151A	12-7-15	12-8-15	
2,4-DB	**ND**	10	EPA 8151A	12-7-15	12-8-15	
Dinoseb	**ND**	10	EPA 8151A	12-7-15	12-8-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*42*	*28-98*				

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1207S1					
Dalapon	**ND**	230	EPA 8151A	12-7-15	12-7-15	
Dicamba	**ND**	9.4	EPA 8151A	12-7-15	12-7-15	
MCPP	**ND**	940	EPA 8151A	12-7-15	12-7-15	
MCPA	**ND**	940	EPA 8151A	12-7-15	12-7-15	
Dichlorprop	**ND**	71	EPA 8151A	12-7-15	12-7-15	
2,4-D	**ND**	9.4	EPA 8151A	12-7-15	12-7-15	
Pentachlorophenol	**ND**	4.8	EPA 8151A	12-7-15	12-7-15	
2,4,5-TP (Silvex)	**ND**	9.5	EPA 8151A	12-7-15	12-7-15	
2,4,5-T	**ND**	9.5	EPA 8151A	12-7-15	12-7-15	
2,4-DB	**ND**	9.5	EPA 8151A	12-7-15	12-7-15	
Dinoseb	**ND**	9.5	EPA 8151A	12-7-15	12-7-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*66*	*28-98*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1207S1										
	SB	SBD	SB	SBD		SB	SBD				
Dicamba	**72.4**	**72.5**	100	100	N/A	**72**	**73**	54-92	0	17	
2,4-D	**79.1**	**77.4**	100	100	N/A	**79**	**77**	33-86	2	19	
Pentachlorophenol	**8.41**	**8.17**	10.0	10.0	N/A	**84**	**82**	57-106	3	18	
2,4,5-T	**78.8**	**79.0**	100	100	N/A	**79**	**79**	39-98	0	21	
2,4-DB	**75.6**	**77.7**	100	100	N/A	**76**	**78**	43-94	3	16	
Surrogate:											
DCAA						*86*	*80*	*28-98*			

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

TOTAL METALS
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-031-01					
Client ID:	**MW8-S-01**					
Arsenic	**ND**	12	6010C	12-8-15	12-8-15	
Lead	**8.7**	5.9	6010C	12-8-15	12-8-15	
Lab ID:	12-031-02					
Client ID:	**MW8-S-05**					
Arsenic	**ND**	11	6010C	12-8-15	12-8-15	
Lead	**ND**	5.6	6010C	12-8-15	12-8-15	
Lab ID:	12-031-03					
Client ID:	**MW9-S-01**					
Arsenic	**ND**	11	6010C	12-8-15	12-8-15	
Lead	**9.4**	5.5	6010C	12-8-15	12-8-15	
Lab ID:	12-031-04					
Client ID:	**MW9-S-05**					
Arsenic	**ND**	12	6010C	12-8-15	12-8-15	
Lead	**ND**	5.9	6010C	12-8-15	12-8-15	

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

TOTAL METALS
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-8-15
Date Analyzed:	12-8-15
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1208SM1

Analyte	Method	Result	PQL
Arsenic	6010C	**ND**	10
Lead	6010C	**ND**	5.0

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

TOTAL METALS
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 12-8-15
Date Analyzed: 12-8-15

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 12-031-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Lead	**7.35**	**7.50**	2	5.0	

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

TOTAL METALS
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 12-8-15
Date Analyzed: 12-8-15

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 12-031-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**97.8**	98	**95.9**	96	2	
Lead	250	**244**	95	**243**	94	0	

Date of Report: December 11, 2015
Samples Submitted: December 3, 2015
Laboratory Reference: 1512-031
Project: 22-1-11228-006

% MOISTURE

Date Analyzed: 12-3-15

Client ID	Lab ID	% Moisture
MW8-S-01	12-031-01	15
MW8-S-05	12-031-02	11
MW9-S-01	12-031-03	8
MW9-S-05	12-031-04	16

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Shannon & Wilson, Inc.
Project Number: 22-1-11228-006
Project Name: Port of Benton - Prosser Airport
Project Manager: Donna Parkes
Sampled by: LLA

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 12-031

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals/ MTCA Metals (circle one) Lead, Arsenic	TCLP Metals	HEM (oil and grease) 1664A	[illegible]	% Moisture
1	MW8-S-01	12-1-15	0847	Soil	1										X		X	X				X
2	MW8-S-05	12-1-15	0935	Soil	3		X										X	X				↓
3	MW9-S-01	12-1-15	1222	Soil	1										X		X	X				
4	MW9-S-05	12-1-15	1303	Soil	3		X										[illegible]	X				↓

	Signature	Company	Date	Time
Relinquished				
Received	[signature]	OSE	12/3/15	1200
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☒ _____

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 22, 2016

Donna Parkes
Shannon & Wilson, Inc.
2705 Saint Andrews Loop, Suite A
Pasco, WA 99301

Re: Analytical Data for Project 22-1-11228-007
Laboratory Reference No. 1603-113

Dear Donna:

Enclosed are the analytical results and associated quality control data for samples submitted on March 11, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

Case Narrative

Samples were collected on March 9, 2016 and received by the laboratory on March 11, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX Analysis

Per EPA method 5035A, samples were received by the laboratory in pre-weighed 40 ml VOA vials preserved with either Methanol or Sodium Bisulfate.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP1-S-02**					
Laboratory ID:	03-113-02					
Benzene	**ND**	0.020	EPA 8021B	3-11-16	3-11-16	
Toluene	**ND**	0.066	EPA 8021B	3-11-16	3-11-16	
Ethyl Benzene	**ND**	0.066	EPA 8021B	3-11-16	3-11-16	
m,p-Xylene	**ND**	0.066	EPA 8021B	3-11-16	3-11-16	
o-Xylene	**ND**	0.066	EPA 8021B	3-11-16	3-11-16	
Gasoline	**ND**	6.6	NWTPH-Gx	3-11-16	3-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*114*	*68-129*				
Client ID:	**TP3-S-02**					
Laboratory ID:	03-113-06					
Benzene	**ND**	0.020	EPA 8021B	3-11-16	3-11-16	
Toluene	**ND**	0.080	EPA 8021B	3-11-16	3-11-16	
Ethyl Benzene	**ND**	0.080	EPA 8021B	3-11-16	3-11-16	
m,p-Xylene	**ND**	0.080	EPA 8021B	3-11-16	3-11-16	
o-Xylene	**ND**	0.080	EPA 8021B	3-11-16	3-11-16	
Gasoline	**ND**	8.0	NWTPH-Gx	3-11-16	3-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*113*	*68-129*				
Client ID:	**TP4-S-02**					
Laboratory ID:	03-113-08					
Benzene	**ND**	0.020	EPA 8021B	3-11-16	3-11-16	
Toluene	**ND**	0.047	EPA 8021B	3-11-16	3-11-16	
Ethyl Benzene	**ND**	0.047	EPA 8021B	3-11-16	3-11-16	
m,p-Xylene	**ND**	0.047	EPA 8021B	3-11-16	3-11-16	
o-Xylene	**ND**	0.047	EPA 8021B	3-11-16	3-11-16	
Gasoline	**ND**	4.7	NWTPH-Gx	3-11-16	3-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*117*	*68-129*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP7-S-02**					
Laboratory ID:	03-113-14					
Benzene	**ND**	0.020	EPA 8021B	3-11-16	3-11-16	
Toluene	**ND**	0.049	EPA 8021B	3-11-16	3-11-16	
Ethyl Benzene	**ND**	0.049	EPA 8021B	3-11-16	3-11-16	
m,p-Xylene	**ND**	0.049	EPA 8021B	3-11-16	3-11-16	
o-Xylene	**ND**	0.049	EPA 8021B	3-11-16	3-11-16	
Gasoline	**ND**	4.9	NWTPH-Gx	3-11-16	3-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*115*	*68-129*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0311S2					
Benzene	**ND**	0.020	EPA 8021B	3-11-16	3-11-16	
Toluene	**ND**	0.050	EPA 8021B	3-11-16	3-11-16	
Ethyl Benzene	**ND**	0.050	EPA 8021B	3-11-16	3-11-16	
m,p-Xylene	**ND**	0.050	EPA 8021B	3-11-16	3-11-16	
o-Xylene	**ND**	0.050	EPA 8021B	3-11-16	3-11-16	
Gasoline	**ND**	5.0	NWTPH-Gx	3-11-16	3-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*68-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-113-14										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*115*	*118*	*68-129*			
SPIKE BLANKS											
Laboratory ID:	SB0311S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.985**	**1.07**	1.00	1.00		**99**	**107**	76-124	8	17	
Toluene	**0.958**	**1.06**	1.00	1.00		**96**	**106**	78-124	10	16	
Ethyl Benzene	**0.985**	**1.07**	1.00	1.00		**99**	**107**	77-123	8	17	
m,p-Xylene	**1.02**	**1.09**	1.00	1.00		**102**	**109**	78-124	7	17	
o-Xylene	**0.983**	**1.07**	1.00	1.00		**98**	**107**	76-123	8	18	
Surrogate:											
Fluorobenzene						*93*	*101*	*68-129*			

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP1-S-01**					
Laboratory ID:	03-113-01					
alpha-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
gamma-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
beta-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
delta-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Heptachlor	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Aldrin	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Heptachlor Epoxide	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
gamma-Chlordane	**ND**	12	EPA 8081B	3-21-16	3-22-16	
alpha-Chlordane	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDE	**14**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan I	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Dieldrin	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDD	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan II	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDT	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin Aldehyde	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Methoxychlor	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan Sulfate	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin Ketone	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Toxaphene	**ND**	58	EPA 8081B	3-21-16	3-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*70*	*53-107*				
DCB	*78*	*59-121*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP4-S-01**					
Laboratory ID:	03-113-07					
alpha-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
gamma-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
beta-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
delta-BHC	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Heptachlor	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Aldrin	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Heptachlor Epoxide	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
gamma-Chlordane	**ND**	12	EPA 8081B	3-21-16	3-22-16	
alpha-Chlordane	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDE	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan I	**ND**	5.8	EPA 8081B	3-21-16	3-22-16	
Dieldrin	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDD	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan II	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDT	**20**	12	EPA 8081B	3-21-16	3-22-16	
Endrin Aldehyde	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Methoxychlor	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan Sulfate	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin Ketone	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Toxaphene	**ND**	58	EPA 8081B	3-21-16	3-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*68*	*53-107*				
DCB	*75*	*59-121*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP5-S-01**					
Laboratory ID:	03-113-09					
alpha-BHC	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
gamma-BHC	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
beta-BHC	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
delta-BHC	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
Heptachlor	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
Aldrin	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
Heptachlor Epoxide	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
gamma-Chlordane	**ND**	13	EPA 8081B	3-21-16	3-22-16	
alpha-Chlordane	**ND**	13	EPA 8081B	3-21-16	3-22-16	
4,4'-DDE	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endosulfan I	**ND**	6.6	EPA 8081B	3-21-16	3-22-16	
Dieldrin	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endrin	**ND**	13	EPA 8081B	3-21-16	3-22-16	
4,4'-DDD	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endosulfan II	**ND**	13	EPA 8081B	3-21-16	3-22-16	
4,4'-DDT	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endrin Aldehyde	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Methoxychlor	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endosulfan Sulfate	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endrin Ketone	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Toxaphene	**ND**	66	EPA 8081B	3-21-16	3-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*74*	*53-107*				
DCB	*82*	*59-121*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP6-S-01**					
Laboratory ID:	03-113-11					
alpha-BHC	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
gamma-BHC	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
beta-BHC	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
delta-BHC	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
Heptachlor	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
Aldrin	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
Heptachlor Epoxide	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
gamma-Chlordane	**ND**	12	EPA 8081B	3-21-16	3-22-16	
alpha-Chlordane	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDE	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan I	**ND**	6.0	EPA 8081B	3-21-16	3-22-16	
Dieldrin	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDD	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan II	**ND**	12	EPA 8081B	3-21-16	3-22-16	
4,4'-DDT	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin Aldehyde	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Methoxychlor	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endosulfan Sulfate	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Endrin Ketone	**ND**	12	EPA 8081B	3-21-16	3-22-16	
Toxaphene	**ND**	60	EPA 8081B	3-21-16	3-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*81*	*53-107*				
DCB	*87*	*59-121*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP7-S-01**					
Laboratory ID:	03-113-13					
alpha-BHC	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
gamma-BHC	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
beta-BHC	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
delta-BHC	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
Heptachlor	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
Aldrin	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
Heptachlor Epoxide	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
gamma-Chlordane	**ND**	13	EPA 8081B	3-21-16	3-22-16	
alpha-Chlordane	**ND**	13	EPA 8081B	3-21-16	3-22-16	
4,4'-DDE	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endosulfan I	**ND**	6.7	EPA 8081B	3-21-16	3-22-16	
Dieldrin	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endrin	**ND**	13	EPA 8081B	3-21-16	3-22-16	
4,4'-DDD	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endosulfan II	**ND**	13	EPA 8081B	3-21-16	3-22-16	
4,4'-DDT	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endrin Aldehyde	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Methoxychlor	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endosulfan Sulfate	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Endrin Ketone	**ND**	13	EPA 8081B	3-21-16	3-22-16	
Toxaphene	**ND**	67	EPA 8081B	3-21-16	3-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*59*	*53-107*				
DCB	*66*	*59-121*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0321S1					
alpha-BHC	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
gamma-BHC	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
beta-BHC	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
delta-BHC	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
Heptachlor	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
Aldrin	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
Heptachlor Epoxide	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
gamma-Chlordane	**ND**	10	EPA 8081B	3-21-16	3-22-16	
alpha-Chlordane	**ND**	10	EPA 8081B	3-21-16	3-22-16	
4,4'-DDE	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Endosulfan I	**ND**	5.0	EPA 8081B	3-21-16	3-22-16	
Dieldrin	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Endrin	**ND**	10	EPA 8081B	3-21-16	3-22-16	
4,4'-DDD	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Endosulfan II	**ND**	10	EPA 8081B	3-21-16	3-22-16	
4,4'-DDT	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Endrin Aldehyde	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Methoxychlor	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Endosulfan Sulfate	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Endrin Ketone	**ND**	10	EPA 8081B	3-21-16	3-22-16	
Toxaphene	**ND**	50	EPA 8081B	3-21-16	3-22-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*82*	*53-107*				
DCB	*86*	*59-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	03-113-01										
	MS	MSD	MS	MSD		MS	MSD				
gamma-BHC	**36.6**	**35.3**	50.0	50.0	ND	**73**	**71**	41-116	4	12	
Heptachlor	**27.1**	**24.6**	50.0	50.0	ND	**54**	**49**	41-115	10	13	
Aldrin	**35.6**	**34.2**	50.0	50.0	ND	**71**	**68**	44-118	4	15	
Dieldrin	**81.2**	**77.2**	125	125	ND	**65**	**62**	38-121	5	13	
Endrin	**105**	**102**	125	125	ND	**84**	**81**	46-118	3	15	
4,4'-DDT	**106**	**97.6**	125	125	ND	**85**	**78**	34-117	8	21	
Surrogate:											
TCMX						*73*	*73*	*53-107*			
DCB						*80*	*77*	*59-121*			

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP1-S-01**					
Laboratory ID:	03-113-01					
Dalapon	**ND**	260	EPA 8151A	3-18-16	3-21-16	
Dicamba	**ND**	11	EPA 8151A	3-18-16	3-21-16	
MCPP	**ND**	1100	EPA 8151A	3-18-16	3-21-16	
MCPA	**ND**	1100	EPA 8151A	3-18-16	3-21-16	
Dichlorprop	**ND**	82	EPA 8151A	3-18-16	3-21-16	
2,4-D	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Pentachlorophenol	**ND**	5.5	EPA 8151A	3-18-16	3-21-16	
2,4,5-TP (Silvex)	**ND**	11	EPA 8151A	3-18-16	3-21-16	
2,4,5-T	**ND**	11	EPA 8151A	3-18-16	3-21-16	
2,4-DB	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Dinoseb	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*77*	*28-98*				
Client ID:	**TP4-S-01**					
Laboratory ID:	03-113-07					
Dalapon	**ND**	270	EPA 8151A	3-18-16	3-21-16	
Dicamba	**ND**	11	EPA 8151A	3-18-16	3-21-16	
MCPP	**ND**	1100	EPA 8151A	3-18-16	3-21-16	
MCPA	**ND**	1100	EPA 8151A	3-18-16	3-21-16	
Dichlorprop	**ND**	82	EPA 8151A	3-18-16	3-21-16	
2,4-D	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Pentachlorophenol	**ND**	5.5	EPA 8151A	3-18-16	3-21-16	
2,4,5-TP (Silvex)	**ND**	11	EPA 8151A	3-18-16	3-21-16	
2,4,5-T	**ND**	11	EPA 8151A	3-18-16	3-21-16	
2,4-DB	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Dinoseb	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*75*	*28-98*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP5-S-01**					
Laboratory ID:	03-113-09					
Dalapon	**ND**	300	EPA 8151A	3-18-16	3-21-16	
Dicamba	**ND**	12	EPA 8151A	3-18-16	3-21-16	
MCPP	**ND**	1200	EPA 8151A	3-18-16	3-21-16	
MCPA	**ND**	1200	EPA 8151A	3-18-16	3-21-16	
Dichlorprop	**ND**	93	EPA 8151A	3-18-16	3-21-16	
2,4-D	**ND**	12	EPA 8151A	3-18-16	3-21-16	
Pentachlorophenol	**ND**	6.2	EPA 8151A	3-18-16	3-21-16	
2,4,5-TP (Silvex)	**ND**	12	EPA 8151A	3-18-16	3-21-16	
2,4,5-T	**ND**	12	EPA 8151A	3-18-16	3-21-16	
2,4-DB	**ND**	12	EPA 8151A	3-18-16	3-21-16	
Dinoseb	**ND**	12	EPA 8151A	3-18-16	3-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*78*	*28-98*				
Client ID:	**TP6-S-01**					
Laboratory ID:	03-113-11					
Dalapon	**ND**	270	EPA 8151A	3-18-16	3-21-16	
Dicamba	**ND**	11	EPA 8151A	3-18-16	3-21-16	
MCPP	**ND**	1100	EPA 8151A	3-18-16	3-21-16	
MCPA	**ND**	1100	EPA 8151A	3-18-16	3-21-16	
Dichlorprop	**ND**	85	EPA 8151A	3-18-16	3-21-16	
2,4-D	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Pentachlorophenol	**ND**	5.7	EPA 8151A	3-18-16	3-21-16	
2,4,5-TP (Silvex)	**ND**	11	EPA 8151A	3-18-16	3-21-16	
2,4,5-T	**ND**	11	EPA 8151A	3-18-16	3-21-16	
2,4-DB	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Dinoseb	**ND**	11	EPA 8151A	3-18-16	3-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*70*	*28-98*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP7-S-01**					
Laboratory ID:	03-113-13					
Dalapon	**ND**	310	EPA 8151A	3-18-16	3-21-16	
Dicamba	**ND**	13	EPA 8151A	3-18-16	3-21-16	
MCPP	**ND**	1200	EPA 8151A	3-18-16	3-21-16	
MCPA	**ND**	1200	EPA 8151A	3-18-16	3-21-16	
Dichlorprop	**ND**	94	EPA 8151A	3-18-16	3-21-16	
2,4-D	**ND**	13	EPA 8151A	3-18-16	3-21-16	
Pentachlorophenol	**ND**	6.3	EPA 8151A	3-18-16	3-21-16	
2,4,5-TP (Silvex)	**ND**	13	EPA 8151A	3-18-16	3-21-16	
2,4,5-T	**ND**	13	EPA 8151A	3-18-16	3-21-16	
2,4-DB	**ND**	13	EPA 8151A	3-18-16	3-21-16	
Dinoseb	**ND**	13	EPA 8151A	3-18-16	3-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*48*	*28-98*				

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0318S1					
Dalapon	**ND**	230	EPA 8151A	3-18-16	3-21-16	
Dicamba	**ND**	9.4	EPA 8151A	3-18-16	3-21-16	
MCPP	**ND**	940	EPA 8151A	3-18-16	3-21-16	
MCPA	**ND**	940	EPA 8151A	3-18-16	3-21-16	
Dichlorprop	**ND**	71	EPA 8151A	3-18-16	3-21-16	
2,4-D	**ND**	9.4	EPA 8151A	3-18-16	3-21-16	
Pentachlorophenol	**ND**	4.8	EPA 8151A	3-18-16	3-21-16	
2,4,5-TP (Silvex)	**ND**	9.5	EPA 8151A	3-18-16	3-21-16	
2,4,5-T	**ND**	9.5	EPA 8151A	3-18-16	3-21-16	
2,4-DB	**ND**	9.5	EPA 8151A	3-18-16	3-21-16	
Dinoseb	**ND**	9.5	EPA 8151A	3-18-16	3-21-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*86*	*28-98*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0318S1										
	SB	SBD	SB	SBD		SB	SBD				
Dicamba	**84.7**	**81.8**	100	100	N/A	**85**	**82**	54-92	3	17	
2,4-D	**87.7**	**91.8**	100	100	N/A	**88**	**92**	33-86	5	19	
Pentachlorophenol	**8.21**	**8.68**	10.0	10.0	N/A	**82**	**87**	57-106	6	18	
2,4,5-T	**85.4**	**83.0**	100	100	N/A	**85**	**83**	39-98	3	21	
2,4-DB	**83.2**	**93.2**	100	100	N/A	**83**	**93**	43-94	11	16	
Surrogate:											
DCAA						*94*	*97*	*28-98*			

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

TOTAL METALS
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-113-01					
Client ID:	**TP1-S-01**					
Arsenic	**ND**	12	6010C	3-15-16	3-15-16	
Lead	**ND**	5.8	6010C	3-15-16	3-15-16	
Lab ID:	03-113-02					
Client ID:	**TP1-S-02**					
Arsenic	**ND**	12	6010C	3-15-16	3-15-16	
Lead	**8.7**	6.2	6010C	3-15-16	3-15-16	
Lab ID:	03-113-03					
Client ID:	**TP2-S-01**					
Arsenic	**ND**	12	6010C	3-15-16	3-15-16	
Lead	**7.4**	5.8	6010C	3-15-16	3-15-16	
Lab ID:	03-113-04					
Client ID:	**TP2-S-02**					
Arsenic	**ND**	13	6010C	3-15-16	3-15-16	
Lead	**8.9**	6.5	6010C	3-15-16	3-15-16	
Lab ID:	03-113-05					
Client ID:	**TP3-S-01**					
Arsenic	**13**	11	6010C	3-15-16	3-16-16	
Lead	**15**	5.7	6010C	3-15-16	3-16-16	
Lab ID:	03-113-06					
Client ID:	**TP3-S-02**					
Arsenic	**ND**	14	6010C	3-15-16	3-16-16	
Lead	**17**	6.8	6010C	3-15-16	3-16-16	

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

TOTAL METALS
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-113-07					
Client ID:	**TP4-S-01**					
Arsenic	**ND**	12	6010C	3-15-16	3-16-16	
Lead	**ND**	5.8	6010C	3-15-16	3-16-16	
Lab ID:	03-113-08					
Client ID:	**TP4-S-02**					
Arsenic	**ND**	11	6010C	3-15-16	3-16-16	
Lead	**ND**	5.7	6010C	3-15-16	3-16-16	
Lab ID:	03-113-09					
Client ID:	**TP5-S-01**					
Arsenic	**ND**	13	6010C	3-15-16	3-16-16	
Lead	**12**	6.6	6010C	3-15-16	3-16-16	
Lab ID:	03-113-10					
Client ID:	**TP5-S-02**					
Arsenic	**ND**	12	6010C	3-15-16	3-16-16	
Lead	**8.1**	6.0	6010C	3-15-16	3-16-16	
Lab ID:	03-113-11					
Client ID:	**TP6-S-01**					
Arsenic	**ND**	12	6010C	3-15-16	3-16-16	
Lead	**10**	6.0	6010C	3-15-16	3-16-16	
Lab ID:	03-113-12					
Client ID:	**TP6-S-02**					
Arsenic	**ND**	13	6010C	3-15-16	3-16-16	
Lead	**ND**	6.4	6010C	3-15-16	3-16-16	

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

TOTAL METALS
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	03-113-13					
Client ID:	**TP7-S-01**					
Arsenic	**ND**	13	6010C	3-15-16	3-16-16	
Lead	**9.2**	6.7	6010C	3-15-16	3-16-16	
Lab ID:	03-113-14					
Client ID:	**TP7-S-02**					
Arsenic	**ND**	11	6010C	3-15-16	3-16-16	
Lead	**ND**	5.5	6010C	3-15-16	3-16-16	

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

TOTAL METALS
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-15-16
Date Analyzed: 3-15-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0315SM1

Analyte	Method	Result	PQL
Arsenic	6010C	**ND**	10
Lead	6010C	**ND**	5.0

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

TOTAL METALS
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 3-15-16
Date Analyzed: 3-15-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 03-113-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Lead	**6.35**	**7.10**	11	5.0	

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

TOTAL METALS
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 3-15-16
Date Analyzed: 3-15-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 03-113-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**94.2**	94	**95.1**	95	1	
Lead	250	**232**	90	**231**	90	1	

Date of Report: March 22, 2016
Samples Submitted: March 11, 2016
Laboratory Reference: 1603-113
Project: 22-1-11228-007

% MOISTURE

Date Analyzed: 3-11&15-16

Client ID	Lab ID	% Moisture
TP1-S-01	03-113-01	13
TP1-S-02	03-113-02	19
TP2-S-01	03-113-03	14
TP2-S-02	03-113-04	23
TP3-S-01	03-113-05	13
TP3-S-02	03-113-06	27
TP4-S-01	03-113-07	14
TP4-S-02	03-113-08	12
TP5-S-01	03-113-09	24
TP5-S-02	03-113-10	17
TP6-S-01	03-113-11	16
TP6-S-02	03-113-12	22
TP7-S-01	03-113-13	25
TP7-S-02	03-113-14	10

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
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Company: Shannon & Wilson, Inc (Pasco)
Project Number: 22-1-11228-007
Project Name: Port of Benton, Prosser Airport
Project Manager: Donna Parkes
Sampled by: LA

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 03-113

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Lead, Arsenic					% Moisture
1	TP1-S-01	3/9/16	0840	Soil	2										X		X					+					X
2	TP1-S-02		0855		2		X															X					X
3	TP2-S-01		0925		1																	X					X
4	TP2-S-02		0935		1																	X					X
5	TP3-S-01		1010		1																	X					X
6	TP3-S-02		1020		2		X															X					X
7	TP4-S-01		1045		2										X		X					X					X
8	TP4-S-02		1102		2		X															X					X
9	TP5-S-01		1207		2										X		X					X					X
10	TP5-S-02		1218		1																	X					X

	Signature	Company	Date	Time
Relinquished		Shannon & Wilson, Inc.	3/10/16	1304
Received		OSE	3/11/16	1110
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) X _____

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Shannon & Wilson, Inc. (Pasco)
Project Number: 22-1-11228-007
Project Name: Port of Benton, Prosser Airport
Project Manager: Donna Parkes
Sampled by: LLA

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 03-113

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Lead, Arsenic					% Moisture
11	TP6-S-01	3/9/16	1245	Soil	2										X		X					X					X
12	TP6-S-02	"	1253	"	1																	X					X
13	TP7-S-01	"	1324	"	2										X		X					X					X
14	TP7-S-02	"	1335	"	2		X															X					X

	Signature	Company	Date	Time
Relinquished		Shannon & Wilson, Inc	3/10/16	1304
Received			3/11/16	1110
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☒ _____

GROUNDWATER ANALYSES

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 30, 2015

Donna Parkes
Shannon & Wilson, Inc.
2705 Saint Andrews Loop, Suite A
Pasco, WA 99301

Re: Analytical Data for Project 22-1-11228-006
Laboratory Reference No. 1512-226

Dear Donna:

Enclosed are the analytical results and associated quality control data for samples submitted on December 19, 2015.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

Case Narrative

Samples were collected on December 17, 2015 and received by the laboratory on December 19, 2015. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Chlorinated Acid Herbicides EPA 8151A Analysis

Due to insufficient sample, a spike blank and spike blank duplicate was extracted. The RPD for 2,4-D (15%) was slightly above the quality control limit of 14%. Because all other quality control values were within control limits, no further action was performed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-07**					
Laboratory ID:	12-226-01					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-111*				
Client ID:	**MW2-W-07**					
Laboratory ID:	12-226-02					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*71-111*				
Client ID:	**MW3-W-07**					
Laboratory ID:	12-226-03					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-W-07**					
Laboratory ID:	12-226-04					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*90*	*71-111*				
Client ID:	**MW5-W-07**					
Laboratory ID:	12-226-05					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-111*				
Client ID:	**MW6-W-07**					
Laboratory ID:	12-226-06					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-W-07**					
Laboratory ID:	12-226-07					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*89*	*71-111*				
Client ID:	**MW8-W-07**					
Laboratory ID:	12-226-08					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-111*				
Client ID:	**MW9-W-07**					
Laboratory ID:	12-226-09					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*71-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1222W1					
Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Toluene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Ethyl Benzene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
o-Xylene	**ND**	1.0	EPA 8021B	12-22-15	12-22-15	
Gasoline	**ND**	100	NWTPH-Gx	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-111*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-231-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*89*	*88*	*71-111*			
MATRIX SPIKES											
Laboratory ID:	12-231-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**50.3**	**47.5**	50.0	50.0	ND	**101**	**95**	83-123	6	15	
Toluene	**47.8**	**44.7**	50.0	50.0	ND	**96**	**89**	83-124	7	16	
Ethyl Benzene	**45.7**	**43.0**	50.0	50.0	ND	**91**	**86**	82-123	6	15	
m,p-Xylene	**46.6**	**43.1**	50.0	50.0	ND	**93**	**86**	81-125	8	17	
o-Xylene	**45.3**	**42.2**	50.0	50.0	ND	**91**	**84**	82-123	7	15	
Surrogate:											
Fluorobenzene						*93*	*94*	*71-111*			

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW8-W-07**					
Laboratory ID:	12-226-08					
alpha-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
gamma-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
beta-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
delta-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Heptachlor	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Aldrin	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
gamma-Chlordane	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
alpha-Chlordane	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
4,4'-DDE	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Endosulfan I	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Dieldrin	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Endrin	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
4,4'-DDD	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Endosulfan II	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
4,4'-DDT	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Endrin Aldehyde	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Methoxychlor	**ND**	0.0099	EPA 8081B	12-22-15	12-23-15	
Endosulfan Sulfate	**ND**	0.0050	EPA 8081B	12-22-15	12-23-15	
Endrin Ketone	**ND**	0.020	EPA 8081B	12-22-15	12-23-15	
Toxaphene	**ND**	0.050	EPA 8081B	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*67*	*34-101*				
DCB	*106*	*25-127*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-07**					
Laboratory ID:	12-226-09					
alpha-BHC	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
gamma-BHC	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
beta-BHC	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
delta-BHC	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Heptachlor	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Aldrin	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Heptachlor Epoxide	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
gamma-Chlordane	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
alpha-Chlordane	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
4,4'-DDE	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Endosulfan I	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Dieldrin	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Endrin	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
4,4'-DDD	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Endosulfan II	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
4,4'-DDT	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Endrin Aldehyde	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Methoxychlor	**ND**	0.010	EPA 8081B	12-22-15	12-23-15	
Endosulfan Sulfate	**ND**	0.0051	EPA 8081B	12-22-15	12-23-15	
Endrin Ketone	**ND**	0.021	EPA 8081B	12-22-15	12-23-15	
Toxaphene	**ND**	0.051	EPA 8081B	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*77*	*34-101*				
DCB	*100*	*25-127*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

ORGANOCHLORINE PESTICIDES EPA 8081B QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1222W1					
alpha-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
gamma-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
beta-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
delta-BHC	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Heptachlor	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Aldrin	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
gamma-Chlordane	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
alpha-Chlordane	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
4,4'-DDE	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Endosulfan I	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Dieldrin	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Endrin	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
4,4'-DDD	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Endosulfan II	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
4,4'-DDT	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Endrin Aldehyde	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Methoxychlor	**ND**	0.010	EPA 8081B	12-22-15	12-22-15	
Endosulfan Sulfate	**ND**	0.0050	EPA 8081B	12-22-15	12-22-15	
Endrin Ketone	**ND**	0.020	EPA 8081B	12-22-15	12-22-15	
Toxaphene	**ND**	0.050	EPA 8081B	12-22-15	12-22-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*79*	*34-101*				
DCB	*102*	*25-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1222W1										
	SB	SBD	SB	SBD		SB	SBD				
gamma-BHC	**0.0366**	**0.0371**	0.0500	0.0500	N/A	**73**	**74**	51-113	1	15	
Heptachlor	**0.0315**	**0.0326**	0.0500	0.0500	N/A	**63**	**65**	61-95	3	15	
Aldrin	**0.0308**	**0.0313**	0.0500	0.0500	N/A	**62**	**63**	62-103	2	15	
Dieldrin	**0.0908**	**0.0942**	0.125	0.125	N/A	**73**	**75**	63-106	4	15	
Endrin	**0.0966**	**0.101**	0.125	0.125	N/A	**77**	**80**	64-110	4	15	
4,4'-DDT	**0.107**	**0.110**	0.125	0.125	N/A	**85**	**88**	63-105	3	15	
Surrogate:											
TCMX						*78*	*78*	*34-101*			
DCB						*99*	*104*	*25-127*			

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-07**					
Laboratory ID:	12-226-01					
Dalapon	**ND**	0.43	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.4	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	6.6	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0089	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.045	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.045	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.067	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*59*	*30-111*				
Client ID:	**MW2-W-07**					
Laboratory ID:	12-226-02					
Dalapon	**ND**	0.46	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.7	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	7.1	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.072	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*56*	*30-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-W-07**					
Laboratory ID:	12-226-03					
Dalapon	**ND**	0.47	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.7	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	7.1	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.072	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*49*	*30-111*				
Client ID:	**MW4-W-07**					
Laboratory ID:	12-226-04					
Dalapon	**ND**	0.52	EPA 8151A	12-22-15	12-23-15	
Dicamba	**0.96**	0.054	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	5.3	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	8.0	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.054	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.054	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.011	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.054	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.054	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.081	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.054	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*50*	*30-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW5-W-07**					
Laboratory ID:	12-226-05					
Dalapon	**ND**	0.47	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.8	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	7.2	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0097	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.049	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.049	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.073	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*45*	*30-111*				
Client ID:	**MW6-W-07**					
Laboratory ID:	12-226-06					
Dalapon	**ND**	0.46	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.7	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	7.1	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.072	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*53*	*30-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-W-07**					
Laboratory ID:	12-226-07					
Dalapon	**ND**	0.45	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.046	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.6	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	6.9	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.046	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.046	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0093	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.046	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.070	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.046	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*37*	*30-111*				
Client ID:	**MW8-W-07**					
Laboratory ID:	12-226-08					
Dalapon	**ND**	0.43	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.4	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	6.6	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0089	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.045	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.045	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.067	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.044	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*46*	*30-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-07**					
Laboratory ID:	12-226-09					
Dalapon	**ND**	0.48	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.049	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.9	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	7.4	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.050	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.049	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.010	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.050	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.050	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.075	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.050	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*41*	*30-111*				

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

CHLORINATED ACID HERBICIDES EPA 8151A QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1222W2					
Dalapon	**ND**	0.46	EPA 8151A	12-22-15	12-23-15	
Dicamba	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
MCPP	**ND**	4.7	EPA 8151A	12-22-15	12-23-15	
MCPA	**ND**	7.0	EPA 8151A	12-22-15	12-23-15	
Dichlorprop	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
2,4-D	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	12-22-15	12-23-15	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	12-22-15	12-23-15	
2,4,5-T	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
2,4-DB	**ND**	0.071	EPA 8151A	12-22-15	12-23-15	
Dinoseb	**ND**	0.047	EPA 8151A	12-22-15	12-23-15	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*52*	*30-111*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1222W2										
	SB	SBD	SB	SBD		SB	SBD				
Dicamba	**0.593**	**0.627**	1.00	1.00	N/A	**59**	**63**	37-89	6	15	
2,4-D	**0.435**	**0.505**	1.00	1.00	N/A	**44**	**51**	30-79	15	14	L
Pentachlorophenol	**0.0831**	**0.0852**	0.100	0.100	N/A	**83**	**85**	34-118	2	19	
2,4,5-T	**0.515**	**0.539**	1.00	1.00	N/A	**52**	**54**	36-89	5	12	
2,4-DB	**0.401**	**0.469**	1.00	1.00	N/A	**40**	**47**	32-86	16	16	
Surrogate:											
DCAA						*59*	*64*	*30-111*			

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-226-01					
Client ID:	**MW1-W-07**					
Arsenic	**8.1**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	
Lab ID:	12-226-02					
Client ID:	**MW2-W-07**					
Arsenic	**9.1**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	
Lab ID:	12-226-03					
Client ID:	**MW3-W-07**					
Arsenic	**12**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	
Lab ID:	12-226-04					
Client ID:	**MW4-W-07**					
Arsenic	**13**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	
Lab ID:	12-226-05					
Client ID:	**MW5-W-07**					
Arsenic	**8.8**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	
Lab ID:	12-226-06					
Client ID:	**MW6-W-07**					
Arsenic	**9.2**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	12-226-07					
Client ID:	**MW7-W-07**					
Arsenic	**11**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	
Lab ID:	12-226-08					
Client ID:	**MW8-W-07**					
Arsenic	**5.1**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	
Lab ID:	12-226-09					
Client ID:	**MW9-W-07**					
Arsenic	**10**	3.0	200.8	12-28-15	12-28-15	
Lead	**ND**	1.0	200.8	12-28-15	12-28-15	

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-28-15
Date Analyzed:	12-28-15
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1228WH2

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Lead	200.8	**ND**	1.0

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-28-15
Date Analyzed: 12-28-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-215-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**5.59**	**5.12**	9	3.0	
Lead	**2.53**	**2.49**	2	1.0	

Date of Report: December 30, 2015
Samples Submitted: December 19, 2015
Laboratory Reference: 1512-226
Project: 22-1-11228-006

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-28-15
Date Analyzed: 12-28-15

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-215-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**124**	118	**128**	123	4	
Lead	100	**116**	113	**116**	113	0	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
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Company: Shannon & Wilson, Pasco
Project Number: 22-1-11228-006
Project Name: Part of Benton / Prosser Airport
Project Manager: D. Parkes
Sampled by: L. Anderson

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 12-226

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total As, Pb					% Moisture
1	MW1-W-07	12/17/15	0851	Water	6		X										X					X					
2	MW2-W-07		1236		6		X										X					X					
3	MW3-W-07		1142		6		X										X					X					
4	MW4-W-07*		1049		5		X										X					X					
5	MW5-W-07		1016		6		X										X					X					
6	MW6-W-07		1405		6		X										X					X					
7	MW7-W-07		0937		6		X										X					X					
8	MW8-W-07		1448		7		X								X		X					X					
9	MW9-W-07	↓	1536	↓	7		X								X		X					X					

	Signature	Company	Date	Time
Relinquished		Shannon & Wilson	12/18/15	1037
Received			12/18/15	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
*1 Amber Jar Collected, Well water exhausted before any other amber Jars. Some Cloudy water prior to well running dry

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐
Electronic Data Deliverables (EDDs) ☐ _____

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 11, 2016

Donna Parkes
Shannon & Wilson, Inc.
2705 Saint Andrews Loop, Suite A
Pasco, WA 99301

Re: Analytical Data for Project 22-1-11228-007
Laboratory Reference No. 1604-001

Dear Donna:

Enclosed are the analytical results and associated quality control data for samples submitted on April 1, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

Case Narrative

Samples were collected on March 30, 2016 and received by the laboratory on April 1, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-08**					
Laboratory ID:	04-001-01					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-111*				
Client ID:	**MW2-W-08**					
Laboratory ID:	04-001-02					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-111*				
Client ID:	**MW3-W-08**					
Laboratory ID:	04-001-03					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-111*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW5-W-08**					
Laboratory ID:	04-001-04					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-111*				
Client ID:	**MW7-W-08**					
Laboratory ID:	04-001-05					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-111*				
Client ID:	**MW8-W-08**					
Laboratory ID:	04-001-06					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-111*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-08**					
Laboratory ID:	04-001-07					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-111*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404W1					
Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Toluene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-16	4-4-16	
Gasoline	**ND**	100	NWTPH-Gx	4-4-16	4-4-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*71-111*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-266-07										
	ORIG	DUP									
Benzene	**7.96**	**7.61**	NA	NA		NA		NA	4	30	
Toluene	**1.67**	**1.95**	NA	NA		NA		NA	15	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**1.32**	**1.44**	NA	NA		NA		NA	9	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**193**	**162**	NA	NA		NA		NA	17	30	
Surrogate:											
Fluorobenzene						*99*	*101*	*71-111*			
SPIKE BLANKS											
Laboratory ID:	SB0404W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**54.2**	**55.2**	50.0	50.0		**108**	**110**	83-119	2	13	
Toluene	**54.1**	**54.9**	50.0	50.0		**108**	**110**	83-120	1	13	
Ethyl Benzene	**53.4**	**54.7**	50.0	50.0		**107**	**109**	82-120	2	12	
m,p-Xylene	**53.7**	**54.8**	50.0	50.0		**107**	**110**	80-122	2	13	
o-Xylene	**53.3**	**54.6**	50.0	50.0		**107**	**109**	80-120	2	10	
Surrogate:											
Fluorobenzene						*97*	*97*	*71-111*			

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW8-W-08**					
Laboratory ID:	04-001-06					
alpha-BHC	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
gamma-BHC	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
beta-BHC	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
delta-BHC	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Heptachlor	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Aldrin	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Heptachlor Epoxide	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
gamma-Chlordane	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
alpha-Chlordane	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
4,4'-DDE	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Endosulfan I	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Dieldrin	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Endrin	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
4,4'-DDD	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Endosulfan II	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
4,4'-DDT	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Endrin Aldehyde	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Methoxychlor	**ND**	0.0099	EPA 8081B	4-5-16	4-5-16	
Endosulfan Sulfate	**ND**	0.0049	EPA 8081B	4-5-16	4-5-16	
Endrin Ketone	**ND**	0.020	EPA 8081B	4-5-16	4-5-16	
Toxaphene	**ND**	0.049	EPA 8081B	4-5-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*74*	*34-101*				
DCB	*74*	*25-127*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-08**					
Laboratory ID:	04-001-07					
alpha-BHC	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
gamma-BHC	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
beta-BHC	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
delta-BHC	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Heptachlor	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Aldrin	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Heptachlor Epoxide	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
gamma-Chlordane	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
alpha-Chlordane	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
4,4'-DDE	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Endosulfan I	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Dieldrin	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Endrin	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
4,4'-DDD	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Endosulfan II	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
4,4'-DDT	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Endrin Aldehyde	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Methoxychlor	**ND**	0.010	EPA 8081B	4-5-16	4-5-16	
Endosulfan Sulfate	**ND**	0.0051	EPA 8081B	4-5-16	4-5-16	
Endrin Ketone	**ND**	0.020	EPA 8081B	4-5-16	4-5-16	
Toxaphene	**ND**	0.051	EPA 8081B	4-5-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*85*	*34-101*				
DCB	*81*	*25-127*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0405W1					
alpha-BHC	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
gamma-BHC	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
beta-BHC	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
delta-BHC	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Heptachlor	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Aldrin	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
gamma-Chlordane	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
alpha-Chlordane	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
4,4'-DDE	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Endosulfan I	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Dieldrin	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Endrin	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
4,4'-DDD	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Endosulfan II	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
4,4'-DDT	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Endrin Aldehyde	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Methoxychlor	**ND**	0.010	EPA 8081B	4-5-16	4-5-16	
Endosulfan Sulfate	**ND**	0.0050	EPA 8081B	4-5-16	4-5-16	
Endrin Ketone	**ND**	0.020	EPA 8081B	4-5-16	4-5-16	
Toxaphene	**ND**	0.050	EPA 8081B	4-5-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*62*	*34-101*				
DCB	*81*	*25-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0405W1										
	SB	SBD	SB	SBD		SB	SBD				
gamma-BHC	**0.0342**	**0.0330**	0.0500	0.0500	N/A	**68**	**66**	51-113	4	15	
Heptachlor	**0.0392**	**0.0390**	0.0500	0.0500	N/A	**78**	**78**	61-95	1	15	
Aldrin	**0.0318**	**0.0309**	0.0500	0.0500	N/A	**64**	**62**	62-103	3	15	
Dieldrin	**0.101**	**0.0999**	0.125	0.125	N/A	**81**	**80**	63-106	1	15	
Endrin	**0.109**	**0.107**	0.125	0.125	N/A	**87**	**85**	64-110	2	15	
4,4'-DDT	**0.0989**	**0.0981**	0.125	0.125	N/A	**79**	**78**	63-105	1	15	
Surrogate:											
TCMX						*76*	*75*	*34-101*			
DCB						*85*	*74*	*25-127*			

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-08**					
Laboratory ID:	04-001-01					
Dalapon	**ND**	0.45	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.6	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	6.9	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0094	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.070	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*69*	*30-111*				
Client ID:	**MW2-W-08**					
Laboratory ID:	04-001-02					
Dalapon	**ND**	0.46	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.7	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	7.0	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.071	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*79*	*30-111*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-W-08**					
Laboratory ID:	04-001-03					
Dalapon	**ND**	0.45	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.5	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	6.8	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0092	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.069	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*81*	*30-111*				
Client ID:	**MW5-W-08**					
Laboratory ID:	04-001-04					
Dalapon	**ND**	0.46	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.7	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	7.0	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.071	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*80*	*30-111*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-W-08**					
Laboratory ID:	04-001-05					
Dalapon	**ND**	0.45	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.6	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	6.9	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.046	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0094	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.070	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*70*	*30-111*				
Client ID:	**MW8-W-08**					
Laboratory ID:	04-001-06					
Dalapon	**ND**	0.46	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.7	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	7.0	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.071	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*60*	*30-111*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-08**					
Laboratory ID:	04-001-07					
Dalapon	**ND**	0.46	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.7	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	7.1	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.072	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*77*	*30-111*				

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404W1					
Dalapon	**ND**	0.46	EPA 8151A	4-4-16	4-5-16	
Dicamba	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
MCPP	**ND**	4.7	EPA 8151A	4-4-16	4-5-16	
MCPA	**ND**	7.0	EPA 8151A	4-4-16	4-5-16	
Dichlorprop	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-D	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	4-4-16	4-5-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	4-4-16	4-5-16	
2,4,5-T	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
2,4-DB	**ND**	0.071	EPA 8151A	4-4-16	4-5-16	
Dinoseb	**ND**	0.047	EPA 8151A	4-4-16	4-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*86*	*30-111*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0404W1										
	SB	SBD	SB	SBD		SB	SBD				
Dicamba	**0.524**	**0.549**	1.00	1.00	N/A	**52**	**55**	37-89	5	15	
2,4-D	**0.687**	**0.741**	1.00	1.00	N/A	**69**	**74**	30-79	8	14	
Pentachlorophenol	**0.0787**	**0.0799**	0.100	0.100	N/A	**79**	**80**	34-118	2	19	
2,4,5-T	**0.658**	**0.744**	1.00	1.00	N/A	**66**	**74**	36-89	12	12	
2,4-DB	**0.755**	**0.801**	1.00	1.00	N/A	**76**	**80**	32-86	6	16	
Surrogate:											
DCAA						*90*	*94*	*30-111*			

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-001-01					
Client ID:	**MW1-W-08**					
Arsenic	**7.1**	3.3	200.8	4-7-16	4-7-16	
Lead	**ND**	1.1	200.8	4-7-16	4-7-16	
Lab ID:	04-001-02					
Client ID:	**MW2-W-08**					
Arsenic	**9.8**	3.3	200.8	4-7-16	4-7-16	
Lead	**ND**	1.1	200.8	4-7-16	4-7-16	
Lab ID:	04-001-03					
Client ID:	**MW3-W-08**					
Arsenic	**11**	3.3	200.8	4-7-16	4-7-16	
Lead	**ND**	1.1	200.8	4-7-16	4-7-16	
Lab ID:	04-001-04					
Client ID:	**MW5-W-08**					
Arsenic	**8.2**	3.3	200.8	4-7-16	4-7-16	
Lead	**ND**	1.1	200.8	4-7-16	4-7-16	
Lab ID:	04-001-05					
Client ID:	**MW7-W-08**					
Arsenic	**12**	3.3	200.8	4-7-16	4-7-16	
Lead	**ND**	1.1	200.8	4-7-16	4-7-16	
Lab ID:	04-001-06					
Client ID:	**MW8-W-08**					
Arsenic	**6.2**	3.3	200.8	4-7-16	4-7-16	
Lead	**ND**	1.1	200.8	4-7-16	4-7-16	

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-001-07					
Client ID:	**MW9-W-08**					
Arsenic	**9.0**	3.3	200.8	4-7-16	4-7-16	
Lead	**ND**	1.1	200.8	4-7-16	4-7-16	

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-7-16
Date Analyzed:	4-7-16
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0407WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Lead	200.8	**ND**	1.1

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 4-7-16
Date Analyzed: 4-7-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-001-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**9.82**	**8.99**	9	3.3	
Lead	**ND**	**ND**	NA	1.1	

Date of Report: April 11, 2016
Samples Submitted: April 1, 2016
Laboratory Reference: 1604-001
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 4-7-16
Date Analyzed: 4-7-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-001-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	222	**247**	107	**260**	113	5	
Lead	222	**217**	98	**228**	103	5	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Shannon & Wilson, Inc. (Pasco)
Project Number: 22-1-11228-007
Project Name: Port of Benton, Prosser Airport
Project Manager: D. Parkes
Sampled by: L. Anderson

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 04-001

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	As, Pb (Total)	% Moisture
1	MW1-W-08	3/30/16	0820	Water	6		X										X					X	
2	MW2-W-08	"	1030	"	6		"										"					"	
3	MW3-W-08	"	1128	"	6		"										"					"	
4	MW5-W-08	"	1225	"	6		"										"					"	
5	MW7-W-08	"	0912	"	6		"										"					"	
6	MW8-W-08	"	1515	"	7		"								X		"					"	
7	MW9-W-08	"	1418	"	7		"								X		"					"	

	Signature	Company	Date	Time
Relinquished		Shannon & Wilson, Inc.	3/31/16	1240
Received		OSE	4/1/16	1030
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

2 Coolers

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☒ _____

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 20, 2016

Donna Parkes
Shannon & Wilson, Inc.
2705 Saint Andrews Loop, Suite A
Pasco, WA 99301

Re: Analytical Data for Project 22-1-11228-007
Laboratory Reference No. 1607-058

Dear Donna:

Enclosed are the analytical results and associated quality control data for samples submitted on July 8, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

Case Narrative

Samples were collected on July 6, 2016 and received by the laboratory on July 8, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Chlorinated Acid Herbicides EPA 8151A Analysis

Due to insufficient sample, a spike blank and spike blank duplicate were extracted. The % Recoveries for 2,4-DB in the SB/SBD pair were above the quality control limits of 32-86%. Because the samples were non-detect for 2,4-DB and the analytical system was showing a high bias for this analyte, no further action was deemed necessary.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-09**					
Laboratory ID:	07-058-01					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-111*				
Client ID:	**MW2-W-09**					
Laboratory ID:	07-058-02					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-111*				
Client ID:	**MW3-W-09**					
Laboratory ID:	07-058-03					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-W-09**					
Laboratory ID:	07-058-04					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-111*				
Client ID:	**MW5.-W-09**					
Laboratory ID:	07-058-05					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-111*				
Client ID:	**MW6-W-09**					
Laboratory ID:	07-058-06					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-W-09**					
Laboratory ID:	07-058-07					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-111*				
Client ID:	**MW8-W-09**					
Laboratory ID:	07-058-08					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-111*				
Client ID:	**MW9-W-09**					
Laboratory ID:	07-058-09					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*86*	*71-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0712W2					
Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Toluene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
o-Xylene	**ND**	1.0	EPA 8021B	7-12-16	7-12-16	
Gasoline	**ND**	100	NWTPH-Gx	7-12-16	7-12-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-111*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-058-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*88*	*86*	*71-111*			
SPIKE BLANKS											
Laboratory ID:	SB0712W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**52.2**	**50.6**	50.0	50.0		**104**	**101**	83-119	3	13	
Toluene	**52.6**	**50.2**	50.0	50.0		**105**	**100**	83-120	5	13	
Ethyl Benzene	**52.3**	**50.2**	50.0	50.0		**105**	**100**	82-120	4	12	
m,p-Xylene	**52.6**	**50.2**	50.0	50.0		**105**	**100**	80-122	5	13	
o-Xylene	**52.1**	**50.4**	50.0	50.0		**104**	**101**	80-120	3	10	
Surrogate:											
Fluorobenzene						*89*	*87*	*71-111*			

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW8-W-09**					
Laboratory ID:	07-058-08					
alpha-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
gamma-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
beta-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
delta-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Heptachlor	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Aldrin	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Heptachlor Epoxide	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
gamma-Chlordane	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
alpha-Chlordane	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
4,4'-DDE	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endosulfan I	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Dieldrin	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endrin	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
4,4'-DDD	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endosulfan II	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
4,4'-DDT	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endrin Aldehyde	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Methoxychlor	**ND**	0.0096	EPA 8081B	7-11-16	7-11-16	
Endosulfan Sulfate	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endrin Ketone	**ND**	0.019	EPA 8081B	7-11-16	7-11-16	
Toxaphene	**ND**	0.048	EPA 8081B	7-11-16	7-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*73*	*34-101*				
DCB	*75*	*25-127*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-09**					
Laboratory ID:	07-058-09					
alpha-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
gamma-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
beta-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
delta-BHC	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Heptachlor	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Aldrin	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Heptachlor Epoxide	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
gamma-Chlordane	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
alpha-Chlordane	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
4,4'-DDE	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endosulfan I	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Dieldrin	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endrin	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
4,4'-DDD	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endosulfan II	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
4,4'-DDT	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endrin Aldehyde	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Methoxychlor	**ND**	0.0096	EPA 8081B	7-11-16	7-11-16	
Endosulfan Sulfate	**ND**	0.0048	EPA 8081B	7-11-16	7-11-16	
Endrin Ketone	**ND**	0.019	EPA 8081B	7-11-16	7-11-16	
Toxaphene	**ND**	0.048	EPA 8081B	7-11-16	7-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*74*	*34-101*				
DCB	*79*	*25-127*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0711W1					
alpha-BHC	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
gamma-BHC	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
beta-BHC	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
delta-BHC	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Heptachlor	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Aldrin	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
gamma-Chlordane	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
alpha-Chlordane	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
4,4'-DDE	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Endosulfan I	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Dieldrin	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Endrin	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
4,4'-DDD	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Endosulfan II	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
4,4'-DDT	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Endrin Aldehyde	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Methoxychlor	**ND**	0.010	EPA 8081B	7-11-16	7-11-16	
Endosulfan Sulfate	**ND**	0.0050	EPA 8081B	7-11-16	7-11-16	
Endrin Ketone	**ND**	0.020	EPA 8081B	7-11-16	7-11-16	
Toxaphene	**ND**	0.050	EPA 8081B	7-11-16	7-11-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*71*	*34-101*				
DCB	*92*	*25-127*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0711W1										
	SB	SBD	SB	SBD		SB	SBD				
gamma-BHC	**0.0362**	**0.0360**	0.0500	0.0500	N/A	**72**	**72**	51-113	1	15	
Heptachlor	**0.0335**	**0.0343**	0.0500	0.0500	N/A	**67**	**69**	61-95	2	15	
Aldrin	**0.0304**	**0.0318**	0.0500	0.0500	N/A	**61**	**64**	62-103	5	15	
Dieldrin	**0.0927**	**0.0943**	0.125	0.125	N/A	**74**	**75**	63-106	2	15	
Endrin	**0.105**	**0.107**	0.125	0.125	N/A	**84**	**86**	64-110	2	15	
4,4'-DDT	**0.0935**	**0.0942**	0.125	0.125	N/A	**75**	**75**	63-105	1	15	
Surrogate:											
TCMX						*68*	*73*	*34-101*			
DCB						*87*	*88*	*25-127*			

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-09**					
Laboratory ID:	07-058-01					
Dalapon	**ND**	0.46	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.7	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	7.1	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.45**	0.047	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.072	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*76*	*30-111*				
Client ID:	**MW2-W-09**					
Laboratory ID:	07-058-02					
Dalapon	**ND**	0.45	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.6	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	6.9	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.17**	0.046	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0093	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.070	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*79*	*30-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-W-09**					
Laboratory ID:	07-058-03					
Dalapon	**ND**	0.46	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.7	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	7.1	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.21**	0.047	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.072	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*86*	*30-111*				
Client ID:	**MW4-W-09**					
Laboratory ID:	07-058-04					
Dalapon	**ND**	0.46	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.7	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	7.1	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.14**	0.047	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.072	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*80*	*30-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW5-W-09**					
Laboratory ID:	07-058-05					
Dalapon	**ND**	0.47	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.8	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	7.2	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.049	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.21**	0.048	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0098	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.049	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.049	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.073	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.049	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*80*	*30-111*				
Client ID:	**MW6-W-09**					
Laboratory ID:	07-058-06					
Dalapon	**ND**	0.46	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.7	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	7.1	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.25**	0.048	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.072	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*78*	*30-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-W-09**					
Laboratory ID:	07-058-07					
Dalapon	**ND**	0.49	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.050	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	5.0	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	7.5	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.051	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.14**	0.050	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.010	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.051	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.051	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.076	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.051	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*62*	*30-111*				
Client ID:	**MW8-W-09**					
Laboratory ID:	07-058-08					
Dalapon	**ND**	0.44	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.045	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.5	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	6.7	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.045	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.14**	0.045	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0091	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.068	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.045	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*55*	*30-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-09**					
Laboratory ID:	07-058-09					
Dalapon	**ND**	0.44	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.5	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	6.8	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
2,4-D	**0.11**	0.046	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0092	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.069	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.046	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*73*	*30-111*				

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0711W2					
Dalapon	**ND**	0.46	EPA 8151A	7-11-16	7-16-16	
Dicamba	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
MCPP	**ND**	4.7	EPA 8151A	7-11-16	7-16-16	
MCPA	**ND**	7.0	EPA 8151A	7-11-16	7-16-16	
Dichlorprop	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
2,4-D	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	7-11-16	7-16-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	7-11-16	7-16-16	
2,4,5-T	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
2,4-DB	**ND**	0.071	EPA 8151A	7-11-16	7-16-16	
Dinoseb	**ND**	0.047	EPA 8151A	7-11-16	7-16-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*67*	*30-111*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0711W2										
	SB	SBD	SB	SBD		SB	SBD				
Dicamba	**0.418**	**0.402**	1.00	1.00	N/A	**42**	**40**	37-89	4	15	
2,4-D	**0.542**	**0.526**	1.00	1.00	N/A	**54**	**53**	30-79	3	14	
Pentachlorophenol	**0.0818**	**0.0918**	0.100	0.100	N/A	**82**	**92**	34-118	12	19	
2,4,5-T	**0.504**	**0.511**	1.00	1.00	N/A	**50**	**51**	36-89	1	12	
2,4-DB	**0.913**	**0.994**	1.00	1.00	N/A	**91**	**99**	32-86	8	16	I,I
Surrogate:											
DCAA						*74*	*82*	*30-111*			

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-058-01					
Client ID:	**MW1-W-09**					
Arsenic	**6.5**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	
Lab ID:	07-058-02					
Client ID:	**MW2-W-09**					
Arsenic	**7.5**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	
Lab ID:	07-058-03					
Client ID:	**MW3-W-09**					
Arsenic	**9.2**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	
Lab ID:	07-058-04					
Client ID:	**MW4-W-09**					
Arsenic	**13**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	
Lab ID:	07-058-05					
Client ID:	**MW5-W-09**					
Arsenic	**8.4**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	
Lab ID:	07-058-06					
Client ID:	**MW6-W-09**					
Arsenic	**11**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-058-07					
Client ID:	**MW7-W-09**					
Arsenic	**12**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	
Lab ID:	07-058-08					
Client ID:	**MW8-W-09**					
Arsenic	**9.4**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	
Lab ID:	07-058-09					
Client ID:	**MW9-W-09**					
Arsenic	**11**	3.0	200.8	7-12-16	7-12-16	
Lead	**ND**	1.0	200.8	7-12-16	7-12-16	

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 7-12-16
Date Analyzed: 7-12-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0712WH1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Lead	200.8	**ND**	1.0

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 7-6&12-16
Date Analyzed: 7-6&12-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: 07-017-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	3.0	
Lead	**ND**	**ND**	NA	1.0	

Date of Report: July 20, 2016
Samples Submitted: July 8, 2016
Laboratory Reference: 1607-058
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 7-12-16
Date Analyzed: 7-12-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: 07-017-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**99.5**	100	**99.2**	99	0	
Lead	100	**90.5**	90	**92.0**	92	2	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Shannon & Wilson, Inc. (Pasco)
Project Number: 22-1-11228-007
Project Name: Port of Benton, Prosser Airport
Project Manager: D. Parkes
Sampled by: L. Anderson

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 07-058

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	As, Pb. (Total)	% Moisture
1	MW1-W-09	7/6/16	0700	Water	6		X										X					X	
2	MW2-W-09		1230		6																		
3	MW3-W-09		1140		6																		
4	MW4-W-09		1016		6																		
5	MW5-W-09		1100		6																		
6	MW6-W-09		0932		6																		
7	MW7-W-09		0745		6																		
8	MW8-W-09		1314		7										X								
9	MW9-W-09		0832		7										X								
#																							

	Signature	Company	Date	Time
Relinquished		Shannon & Wilson	7/7/16	0900
Received		CORE	7/8/16	1030
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
- Direct Bill Port of Benton

* 3 Coolers Shipped

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐
Electronic Data Deliverables (EDDs) X _____

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 21, 2016

Donna Parkes
Shannon & Wilson, Inc.
2705 Saint Andrews Loop, Suite A
Pasco, WA 99301

Re: Analytical Data for Project 22-1-11228-007
Laboratory Reference No. 1610-118

Dear Donna:

Enclosed are the analytical results and associated quality control data for samples submitted on October 12, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

Case Narrative

Samples were collected on October 10, 2016 and received by the laboratory on October 12, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-10**					
Laboratory ID:	10-118-01					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*83*	*71-111*				
Client ID:	**MW2-W-10**					
Laboratory ID:	10-118-02					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*71-111*				
Client ID:	**MW3-W-10**					
Laboratory ID:	10-118-03					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*71-111*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-W-10**					
Laboratory ID:	10-118-04					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-111*				
Client ID:	**MW5-W-10**					
Laboratory ID:	10-118-05					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-111*				
Client ID:	**MW6-W-10**					
Laboratory ID:	10-118-06					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*71-111*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-W-10**					
Laboratory ID:	10-118-07					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*71-111*				
Client ID:	**MW8-W-10**					
Laboratory ID:	10-118-08					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-111*				
Client ID:	**MW9-W-10**					
Laboratory ID:	10-118-09					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*71-111*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1013W1					
Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Toluene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-13-16	10-13-16	
Gasoline	**ND**	100	NWTPH-Gx	10-13-16	10-13-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-111*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-118-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*83*	*95*	*71-111*			
MATRIX SPIKES											
Laboratory ID:	10-118-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**44.3**	**45.2**	50.0	50.0	ND	**89**	**90**	83-123	2	15	
Toluene	**44.4**	**45.1**	50.0	50.0	ND	**89**	**90**	83-124	2	16	
Ethyl Benzene	**45.4**	**45.9**	50.0	50.0	ND	**91**	**92**	82-123	1	15	
m,p-Xylene	**43.5**	**43.6**	50.0	50.0	ND	**87**	**87**	81-125	0	17	
o-Xylene	**44.8**	**45.2**	50.0	50.0	ND	**90**	**90**	82-123	1	15	
Surrogate:											
Fluorobenzene						*90*	*93*	*71-111*			

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW8-W-10**					
Laboratory ID:	10-118-08					
alpha-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
gamma-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
beta-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
delta-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Heptachlor	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Aldrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
gamma-Chlordane	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
alpha-Chlordane	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDE	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endosulfan I	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Dieldrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDD	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endosulfan II	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDT	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin Aldehyde	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Methoxychlor	**ND**	0.010	EPA 8081B	10-14-16	10-14-16	
Endosulfan Sulfate	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin Ketone	**ND**	0.020	EPA 8081B	10-14-16	10-14-16	
Toxaphene	**ND**	0.050	EPA 8081B	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*74*	*41-98*				
DCB	*80*	*42-128*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-10**					
Laboratory ID:	10-118-09					
alpha-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
gamma-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
beta-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
delta-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Heptachlor	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Aldrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
gamma-Chlordane	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
alpha-Chlordane	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDE	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endosulfan I	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Dieldrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDD	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endosulfan II	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDT	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin Aldehyde	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Methoxychlor	**ND**	0.010	EPA 8081B	10-14-16	10-14-16	
Endosulfan Sulfate	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin Ketone	**ND**	0.020	EPA 8081B	10-14-16	10-14-16	
Toxaphene	**ND**	0.050	EPA 8081B	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*71*	*41-98*				
DCB	*82*	*42-128*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

ORGANOCHLORINE PESTICIDES EPA 8081B QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1014W1					
alpha-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
gamma-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
beta-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
delta-BHC	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Heptachlor	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Aldrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Heptachlor Epoxide	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
gamma-Chlordane	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
alpha-Chlordane	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDE	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endosulfan I	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Dieldrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDD	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endosulfan II	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
4,4'-DDT	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin Aldehyde	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Methoxychlor	**ND**	0.010	EPA 8081B	10-14-16	10-14-16	
Endosulfan Sulfate	**ND**	0.0050	EPA 8081B	10-14-16	10-14-16	
Endrin Ketone	**ND**	0.020	EPA 8081B	10-14-16	10-14-16	
Toxaphene	**ND**	0.050	EPA 8081B	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
TCMX	*73*	*41-98*				
DCB	*95*	*42-128*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1014W1										
	SB	SBD	SB	SBD		SB	SBD				
gamma-BHC	**0.0309**	**0.0311**	0.0500	0.0500	N/A	**62**	**62**	33-107	1	15	
Heptachlor	**0.0337**	**0.0328**	0.0500	0.0500	N/A	**67**	**66**	32-109	3	15	
Aldrin	**0.0431**	**0.0425**	0.0500	0.0500	N/A	**86**	**85**	30-114	1	15	
Dieldrin	**0.118**	**0.119**	0.125	0.125	N/A	**94**	**95**	63-100	1	15	
Endrin	**0.129**	**0.127**	0.125	0.125	N/A	**103**	**101**	66-105	2	15	
4,4'-DDT	**0.0976**	**0.0990**	0.125	0.125	N/A	**78**	**79**	55-112	1	15	
Surrogate:											
TCMX						*82*	*81*	*41-98*			
DCB						*97*	*99*	*42-128*			

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-W-10**					
Laboratory ID:	10-118-01					
Dalapon	**ND**	0.48	EPA 8151A	10-13-16	10-14-16	
Dicamba	**ND**	0.049	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.9	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	7.4	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.050	EPA 8151A	10-13-16	10-14-16	
2,4-D	**ND**	0.049	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.010	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.050	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.050	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.075	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.050	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*69*	*30-132*				
Client ID:	**MW2-W-10**					
Laboratory ID:	10-118-02					
Dalapon	**ND**	0.45	EPA 8151A	10-13-16	10-14-16	
Dicamba	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.5	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	6.8	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
2,4-D	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0092	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.069	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*65*	*30-132*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-W-10**					
Laboratory ID:	10-118-03					
Dalapon	**ND**	0.46	EPA 8151A	10-13-16	10-14-16	
Dicamba	**0.051**	0.047	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.7	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	7.0	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4-D	**0.25**	0.047	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.071	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*65*	*30-132*				
Client ID:	**MW4-W-10**					
Laboratory ID:	10-118-04					
Dalapon	**ND**	0.46	EPA 8151A	10-13-16	10-14-16	
Dicamba	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.6	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	7.0	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4-D	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0094	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.071	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*67*	*30-132*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW5-W-10**					
Laboratory ID:	10-118-05					
Dalapon	**ND**	0.46	EPA 8151A	10-13-16	10-14-16	
Dicamba	**0.18**	0.047	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.7	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	7.1	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.048	EPA 8151A	10-13-16	10-14-16	
2,4-D	**0.35**	0.047	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0096	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.048	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.072	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.048	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*59*	*30-132*				
Client ID:	**MW6-W-10**					
Laboratory ID:	10-118-06					
Dalapon	**ND**	0.45	EPA 8151A	10-13-16	10-14-16	
Dicamba	**0.071**	0.046	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.5	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	6.8	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
2,4-D	**0.16**	0.046	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0092	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.069	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.046	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*71*	*30-132*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-W-10**					
Laboratory ID:	10-118-07					
Dalapon	**ND**	0.43	EPA 8151A	10-13-16	10-14-16	
Dicamba	**ND**	0.044	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.4	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	6.6	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4-D	**0.19**	0.044	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0090	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.067	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*68*	*30-132*				
Client ID:	**MW8-W-10**					
Laboratory ID:	10-118-08					
Dalapon	**ND**	0.44	EPA 8151A	10-13-16	10-14-16	
Dicamba	**0.17**	0.045	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.5	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	6.7	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4-D	**0.49**	0.045	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0091	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.068	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*65*	*30-132*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW9-W-10**					
Laboratory ID:	10-118-09					
Dalapon	**ND**	0.44	EPA 8151A	10-13-16	10-14-16	
Dicamba	**0.21**	0.045	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.4	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	6.7	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4-D	**2.9**	0.045	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0090	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.068	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.045	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*64*	*30-132*				

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

CHLORINATED ACID HERBICIDES EPA 8151A QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1013W1					
Dalapon	**ND**	0.46	EPA 8151A	10-13-16	10-14-16	
Dicamba	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
MCPP	**ND**	4.7	EPA 8151A	10-13-16	10-14-16	
MCPA	**ND**	7.0	EPA 8151A	10-13-16	10-14-16	
Dichlorprop	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4-D	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	10-13-16	10-14-16	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	10-13-16	10-14-16	
2,4,5-T	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
2,4-DB	**ND**	0.071	EPA 8151A	10-13-16	10-14-16	
Dinoseb	**ND**	0.047	EPA 8151A	10-13-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*64*	*30-132*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1013W1										
	SB	SBD	SB	SBD		SB	SBD				
Dicamba	**0.739**	**0.674**	1.00	1.00	N/A	**74**	**67**	30-133	9	19	
2,4-D	**0.984**	**0.833**	1.00	1.00	N/A	**98**	**83**	25-97	17	23	
Pentachlorophenol	**0.0847**	**0.0745**	0.100	0.100	N/A	**85**	**74**	38-115	13	21	
2,4,5-T	**0.829**	**0.743**	1.00	1.00	N/A	**83**	**74**	33-96	11	16	
2,4-DB	**0.884**	**0.842**	1.00	1.00	N/A	**88**	**84**	31-98	5	13	
Surrogate:											
DCAA						*70*	*67*	*30-132*			

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-118-01					
Client ID:	**MW1-W-10**					
Arsenic	**7.6**	3.3	200.8	10-18-16	10-18-16	
Lead	**ND**	1.1	200.8	10-18-16	10-18-16	
Lab ID:	10-118-02					
Client ID:	**MW2-W-10**					
Arsenic	**7.2**	3.3	200.8	10-18-16	10-18-16	
Lead	**ND**	1.1	200.8	10-18-16	10-18-16	
Lab ID:	10-118-03					
Client ID:	**MW3-W-10**					
Arsenic	**9.9**	3.3	200.8	10-18-16	10-18-16	
Lead	**ND**	1.1	200.8	10-18-16	10-18-16	
Lab ID:	10-118-04					
Client ID:	**MW4-W-10**					
Arsenic	**12**	3.3	200.8	10-18-16	10-19-16	
Lead	**ND**	1.1	200.8	10-18-16	10-19-16	
Lab ID:	10-118-05					
Client ID:	**MW5-W-10**					
Arsenic	**9.7**	3.3	200.8	10-18-16	10-19-16	
Lead	**ND**	1.1	200.8	10-18-16	10-19-16	
Lab ID:	10-118-06					
Client ID:	**MW6-W-10**					
Arsenic	**9.7**	3.3	200.8	10-18-16	10-19-16	
Lead	**ND**	1.1	200.8	10-18-16	10-19-16	

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-118-07					
Client ID:	**MW7-W-10**					
Arsenic	**14**	3.3	200.8	10-18-16	10-19-16	
Lead	**ND**	1.1	200.8	10-18-16	10-19-16	
Lab ID:	10-118-08					
Client ID:	**MW8-W-10**					
Arsenic	**11**	3.3	200.8	10-18-16	10-18-16	
Lead	**ND**	1.1	200.8	10-18-16	10-18-16	
Lab ID:	10-118-09					
Client ID:	**MW9-W-10**					
Arsenic	**11**	3.3	200.8	10-18-16	10-18-16	
Lead	**ND**	1.1	200.8	10-18-16	10-18-16	

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 10-18-16
Date Analyzed: 10-18-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1018WM1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.3
Lead	200.8	**ND**	1.1

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 10-18-16
Date Analyzed: 10-18-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: 10-118-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**7.59**	**6.85**	10	3.3	
Lead	**ND**	**ND**	NA	1.1	

Date of Report: October 21, 2016
Samples Submitted: October 12, 2016
Laboratory Reference: 1610-118
Project: 22-1-11228-007

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 10-18-16
Date Analyzed: 10-18-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: 10-118-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	222	**235**	102	**235**	102	0	
Lead	222	**203**	91	**205**	92	1	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Shannon & Wilson, Inc. (Pasco)
Project Number: 22-1-11228-007
Project Name: Port of Benton, Prosser Airport
Project Manager: D. Parkes
Sampled by: L. Anderson

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 10-118

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	As, Pb, (Total)				% Moisture
1	MW1-W-10	10/10/16	0740	Water	6		X											X					X				
2	MW2-W-10	↓	1432	↓	6		↓											↓					↓				
3	MW3-W-10		1341		6																						
4	MW4-W-10		1052		6																						
5	MW5-W-10		1132		6																						
6	MW6-W-10		0913		6																						
7	MW7-W-10		0823		6																						
8	MW8-W-10		1522		7											X											
9	MW9-W-10	↓	1001	↓	7		↓									↓		↓					↓				

	Signature	Company	Date	Time
Relinquished		Shannon & Wilson	10/11/2016	1132
Received		OSE	10/12/16	1050
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Direct Bill Port of Benton

3 Coolers shipped

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

APPENDIX D

STATISTICAL ANALYSIS – ARSENIC BACKGROUND CONCENTRATIONS IN GROUNDWATER

STATISTICAL ANALYSIS METHODOLOGY

As recommended in the EPA's 2009 *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance* (*Unified Guidance*), the underlying assumptions for any statistical approach should be periodically evaluated. The evaluation should be performed to ensure that the appropriate data set and statistical approach is applied to assess whether the groundwater quality is affected by activities at a given site. The underlying assumptions outlined in the *Unified Guidance* are listed below:

1. Background and compliance well data must not exhibit spatial variation for interwell comparisons (**Spatial Stationarity**).
2. The background and future sample data need to be from similar populations (**Temporal Stationarity**).
3. A minimum of 8 background data points are available for parametric calculations; more are required for non-parametric calculations (**Size of the Background Data Set**).
4. Background data used to establish limits do not include statistical outliers (**Outliers**).
5. Sample data should not show evidence of trends (**Trend Analysis**).
6. The background data follow a normal distribution or can be normalized for parametric calculations (**Distribution of Data**).

EVALUATION OF STATISTICAL ASSUMPTIONS

Shannon & Wilson performed an evaluation prior to calculation of the area background arsenic concentration. The evaluation included a review of the historical data from MW-1 for temporal stationarity, size of the data set, assessment of outliers, trend analysis, and distribution of the data set.

Spatial Stationarity

Spatial variability is a key underlying assumption that determines if an interwell comparison is an appropriate statistical method. At this site, data from one well (MW-1) was used for the analysis, so spatial variability was not performed.

Temporal Stationarity

The background data should be collected in such a manner to promote consistency. The data set should also be evaluated for seasonal trends. There was not initial evidence of seasonal variability and further investigation may not be necessary. The time series plot for the historical data from MW-1 is presented in Figure D-1.

Size of Background Data Set

WAC 173-340-709 recommends that the background data set for establishing an interwell comparison should be include a minimum of ten data points for parametric limits. Additional data points are recommended to establish a non-parametric limit. The current sample set consists of sixteen data points that are uncensored (detected results), and the data set is sufficient to satisfy WAC 173-340-709. The historical data set was formatted to be imported into the EPA's ProUCL statistical software. The input file used for statistical analyses is presented in Table D-1. The data set being used should be evaluated for outliers and trends to assess if the background data set is appropriate for establishing the limits. See below for these assessments.

Outliers

The Dixon's outlier test was utilized to identify statistical outliers for the data set being used for background. Professional judgment will be made to determine if the statistical outlier should be removed from the data set or retained for statistical analysis. Professional judgment should be based on information from field sampling sheets that may note any abnormalities, systematic outliers in other analytes/parameters for a given well, systematic outliers in other analytes/ parameters in all wells, laboratory QC failures that may bias the data, and any additional information that may support keeping or removing the outlier.

The ProUCL output file for the Dixon's outlier test is provided in Table D-2. Outlier's are only considered for removal if the outlier is identified at a 1-percent significance level. There were no outliers identified for this data set.

Trend Analysis

A trend assessment of the selected data set was performed using the Mann-Kendall trend analysis. The Mann-Kendall trend analysis is a non-parametric assessment of the data set that provides insight to the possibility of an increasing or decreasing trend. The ProUCL output files for the Mann-Kendall trend analyses are presented in Table D-3. There was not statistical evidence of a trend for the historical arsenic data set from the upgradient well MW-1.

Data Distribution

The data is checked for distribution patterns (normal, lognormal, etc.) to determine which distribution pattern is most appropriate. The data set was evaluated for a goodness-of-fit (GOF) using the Shapiro Wilks Test, and the output files are presented in Table D-4. When evaluating the GOF, the value closest to 1.00 is considered to be the better fit. The normally distributed

data set has a slightly better GOF value than the lognormal data. The upper percentiles are presented in Table D-5.

Using the statistical analysis guidance from WAC 173-340-709 (3), for a normal distribution, the true upper 80th percentile or four times the true 50th percentile (whichever value is lower) should be used as background. For lognormal distributed data, the true upper 90th percentile or four times the true 50th percentile (whichever value is lower) should be used as background. The limits for each distribution set are summarized below.

SUMMARY OF THE STATISTICAL LIMITS FOR ARSENIC IN MW-1

Normal Distribution		Lognormal Distribution	
GOF	0.958	GOF	0.937
Correlation Coefficient R	0.98	Correlation Coefficient R	0.967
True Upper 80th Percentile (µg/L)	7.70	True Upper 90th Percentile (µg/L)	8.10
True 50th Percentile (µg/L)	7.20	True 50th Percentile (µg/L)	7.20
True 50th Percentile x 4 (µg/L)	28.8	True 50th Percentile x 4 (µg/L)	28.8

The values were obtained from the ProUCL output files in Tables 4 and 5.

TABLE D-1
DATA SET FOR STATISTICAL ANALYSIS

Location	Date	Time (years)	Arsenic	D_Arsenic	LNArsenic	D_LnArsenic
MW-2	4/21/2009	0.00	24.0	1	3.2	1
MW-2	7/22/2009	0.26	17.0	1	2.8	1
MW-2	10/23/2009	0.52	16.0	1	2.8	1
MW-2	1/26/2010	0.79	16.0	1	2.8	1
MW-2	8/20/2010	1.36	12.0	1	2.5	1
MW-2	7/7/2011	2.27	11.0	1	2.4	1
MW-2	9/26/2012	3.52	9.0	1	2.2	1
MW-2	3/11/2013	3.99	8.2	1	2.1	1
MW-2	6/26/2013	4.29	7.4	1	2.0	1
MW-2	9/16/2013	4.52	7.4	1	2.0	1
MW-2	12/15/2013	4.77	7.7	1	2.0	1
MW-2	9/25/2014	5.57	8.4	1	2.1	1
MW-2	12/17/2015	6.82	9.1	1	2.2	1
MW-2	3/30/2016	7.12	9.8	1	2.3	1
MW-2	7/16/2016	7.42	7.5	1	2.0	1
MW-2	10/10/2016	7.66	7.2	1	2.0	1
MW-3	8/20/2010	1.36	100.0	1	4.6	1
MW-3	1/28/2011	1.82	12.0	1	2.5	1
MW-3	7/7/2011	2.27	57.0	1	4.0	1
MW-3	9/26/2012	3.52	32.0	1	3.5	1
MW-3	3/11/2013	3.99	37.0	1	3.6	1
MW-3	6/26/2013	4.29	28.0	1	3.3	1
MW-3	9/16/2013	4.52	23.0	1	3.1	1
MW-3	12/15/2013	4.77	32.0	1	3.5	1
MW-3	9/25/2014	5.57	20.0	1	3.0	1
MW-3	12/17/2015	6.82	12.0	1	2.5	1
MW-3	3/30/2016	7.12	11.0	1	2.4	1
MW-3	7/16/2016	7.42	9.2	1	2.2	1
MW-3	10/10/2016	7.66	9.9	1	2.3	1
MW-4	8/20/2010	1.36	55.0	1	4.0	1
MW-4	7/7/2011	2.27	37.0	1	3.6	1
MW-4	9/26/2012	3.52	17.0	1	2.8	1
MW-4	6/26/2013	4.29	15.0	1	2.7	1
MW-4	9/16/2013	4.52	16.0	1	2.8	1
MW-4	9/25/2014	5.57	15.0	1	2.7	1
MW-4	12/17/2015	6.82	13.0	1	2.6	1
MW-4	7/16/2016	7.42	13.0	1	2.6	1
MW-4	10/10/2016	7.66	12.0	1	2.5	1
MW-5	10/23/2009	0.52	94.0	1	4.5	1
MW-5	1/26/2010	0.79	15.0	1	2.7	1
MW-5	8/20/2010	1.36	48.0	1	3.9	1
MW-5	1/28/2011	1.82	16.0	1	2.8	1
MW-5	7/7/2011	2.27	19.0	1	2.9	1
MW-5	9/27/2012	3.52	12.0	1	2.5	1
MW-5	3/11/2013	3.99	9.3	1	2.2	1

TABLE D-1

DATA SET FOR STATISTICAL ANALYSIS

Location	Date	Time (years)	Arsenic	D_Arsenic	LNArsenic	D_LnArsenic
MW-5	6/26/2013	4.29	12.0	1	2.5	1
MW-5	9/16/2013	4.52	9.7	1	2.3	1
MW-5	12/15/2013	4.77	11.0	1	2.4	1
MW-5	9/25/2014	5.57	9.9	1	2.3	1
MW-5	12/17/2015	6.82	8.8	1	2.2	1
MW-5	3/30/2016	7.12	8.2	1	2.1	1
MW-5	7/16/2016	7.42	8.4	1	2.1	1
MW-5	10/10/2016	7.66	9.7	1	2.3	1
MW-6	8/20/2010	1.36	55.0	1	4.0	1
MW-6	7/7/2011	2.27	51.0	1	3.9	1
MW-6	9/26/2012	3.52	13.0	1	2.6	1
MW-6	6/26/2013	4.29	15.0	1	2.7	1
MW-6	9/16/2013	4.52	15.0	1	2.7	1
MW-6	9/25/2014	5.57	15.0	1	2.7	1
MW-6	12/17/2015	6.82	9.2	1	2.2	1
MW-6	7/16/2016	7.42	11.0	1	2.4	1
MW-6	10/10/2016	7.66	9.7	1	2.3	1
MW-7	8/20/2010	1.36	63.0	1	4.1	1
MW-7	1/28/2011	1.82	27.0	1	3.3	1
MW-7	7/7/2011	2.27	39.0	1	3.7	1
MW-7	9/27/2012	3.52	28.0	1	3.3	1
MW-7	3/11/2013	3.99	6.6	1	1.9	1
MW-7	6/26/2013	4.29	22.0	1	3.1	1
MW-7	9/16/2013	4.52	25.0	1	3.2	1
MW-7	12/15/2013	4.77	19.0	1	2.9	1
MW-7	9/25/2014	5.57	19.0	1	2.9	1
MW-7	12/17/2015	6.82	11.0	1	2.4	1
MW-7	3/30/2016	7.12	12.0	1	2.5	1
MW-7	7/16/2016	7.42	12.0	1	2.5	1
MW-7	10/10/2016	7.66	14.0	1	2.6	1

TABLE D-2

ProUCL OUTPUT FILE - DIXON'S OUTLIER TEST
PORT OF BENTON, PROSSER AIRPORT

Outlier Tests for Selected Uncensored Variables	
User Selected Options	
Date/Time of Computation	5/16/2016 10:14:27 AM
From File	Copy of Arsenic Background 2.xls
Full Precision	OFF
Dixon's Outlier Test for Arsenic	
Number of Observations = 16	
10% critical value: 0.454	
5% critical value: 0.507	
1% critical value: 0.595	
1. Observation Value 8.2 is a Potential Outlier (Upper Tail)?	
Test Statistic: 0.056	
For 10% significance level, 8.2 is not an outlier.	
For 5% significance level, 8.2 is not an outlier.	
For 1% significance level, 8.2 is not an outlier.	
2. Observation Value 5.4 is a Potential Outlier (Lower Tail)?	
Test Statistic: 0.370	
For 10% significance level, 5.4 is not an outlier.	
For 5% significance level, 5.4 is not an outlier.	
For 1% significance level, 5.4 is not an outlier.	

TABLE D-3

	Mann-Kendall Trend Test Analysis
User Selected Options	
Date/Time of Computation	11/7/2016 10:14:43 AM
From File	Table 2 - ProUCL Input File - Complianc Wells - Modified.xls
Full Precision	ON
Confidence Coefficient	0.9500000
Level of Significance	0.0500000

Arsenic-mw-2	
General Statistics	
Number of Events Reported (m)	16.000000
Number of Missing Events	0
Number or Reported Events Used	16
Number Values Reported (n)	16
Minimum	7.2000000
Maximum	24.000000
Mean	11.106250
Geometric Mean	10.350565
Median	9.0500000
Standard Deviation	4.7816969
Mann-Kendall Test	
Test Value (S)	-76.00000
Tabulated p-value	0
Standard Deviation of S	22.166040
Standardized Value of S	-3.383554
Approximate p-value	3.5777E-4
Statistically significant evidence of a decreasing	
trend at the specified level of significance.	

TABLE D-3

Arsenic-mw-3	
General Statistics	
Number of Events Reported (m)	13.000000
Number of Missing Events	0
Number or Reported Events Used	13
Number Values Reported (n)	13
Minimum	9.2000000
Maximum	100.00000
Mean	29.469231
Geometric Mean	22.600244
Median	23.000000
Standard Deviation	25.299848
Mann-Kendall Test	
Test Value (S)	-54.00000
Tabulated p-value	0
Standard Deviation of S	16.329932
Standardized Value of S	-3.245574
Approximate p-value	5.8607E-4
Statistically significant evidence of a decreasing	
trend at the specified level of significance.	
Arsenic-mw-4	
General Statistics	
Number of Events Reported (m)	9.0000000
Number of Missing Events	0
Number or Reported Events Used	9
Number Values Reported (n)	9
Minimum	12.000000
Maximum	55.000000
Mean	21.444444
Geometric Mean	18.489771
Median	15.000000
Standard Deviation	14.714883
Mann-Kendall Test	
Test Value (S)	-32.00000
Tabulated p-value	0
Standard Deviation of S	9.4868330
Standardized Value of S	-3.267687
Approximate p-value	5.4215E-4
Statistically significant evidence of a decreasing	
trend at the specified level of significance.	

TABLE D-3

Arsenic-mw-5	
General Statistics	
Number of Events Reported (m)	15.000000
Number of Missing Events	0
Number or Reported Events Used	15
Number Values Reported (n)	15
Minimum	8.2000000
Maximum	94.000000
Mean	19.400000
Geometric Mean	14.089268
Median	11.000000
Standard Deviation	22.887177
Mann-Kendall Test	
Test Value (S)	-73.00000
Tabulated p-value	0
Standard Deviation of S	20.157712
Standardized Value of S	-3.571834
Approximate p-value	1.7725E-4
Statistically significant evidence of a decreasing	
trend at the specified level of significance.	
Arsenic-mw-6	
General Statistics	
Number of Events Reported (m)	9.0000000
Number of Missing Events	0
Number or Reported Events Used	9
Number Values Reported (n)	9
Minimum	9.2000000
Maximum	55.000000
Mean	21.544444
Geometric Mean	17.035100
Median	15.000000
Standard Deviation	18.000910
Mann-Kendall Test	
Test Value (S)	-23.00000
Tabulated p-value	0.0120000
Standard Deviation of S	9.3985815
Standardized Value of S	-2.340779
Approximate p-value	0.0096218
Statistically significant evidence of a decreasing	
trend at the specified level of significance.	

TABLE D-3

Arsenic-mw-7							
General Statistics							
Number of Events Reported (m)	13.000000						
Number of Missing Events	0						
Number or Reported Events Used	13						
Number Values Reported (n)	13						
Minimum	6.6000000						
Maximum	63.000000						
Mean	22.892308						
Geometric Mean	19.368418						
Median	19.000000						
Standard Deviation	14.915901						
Mann-Kendall Test							
Test Value (S)	-44.00000						
Tabulated p-value	0.0030000						
Standard Deviation of S	16.329932						
Standardized Value of S	-2.633201						
Approximate p-value	0.0042292						
Statistically significant evidence of a decreasing							
trend at the specified level of significance.							

TABLE D-4

	A	B	C	D	E	F	G	H	I	J	K
1	**Goodness-of-Fit Test Statistics**			**for Uncensored Full Data Sets without Non-Detects**							
2	**User Selected Options**										
3	Date/Time of Computation			11/7/2016 10:15:57 AM							
4	From File			Table 2 - ProUCL Input File - Complianc Wells - Modified.xls							
5	Full Precision			ON							
6	Confidence Coefficient			0.95							
7											
8	**Arsenic (mw-2)**										
9											
10	**Raw Statistics**										
11	Number of Valid Observations					16.000000					
12	Number of Distinct Observations					14.000000					
13	Minimum					7.2000000					
14	Maximum					24.000000					
15	Mean of Raw Data					11.106250					
16	Standard Deviation of Raw Data					4.7816969					
17	Khat					7.2581580					
18	Theta hat					1.5301747					
19	Kstar					5.9389200					
20	Theta star					1.8700791					
21	Mean of Log Transformed Data					2.3370411					
22	Standard Deviation of Log Transformed Data					0.3691115					
23											
24	**Normal GOF Test Results**										
25											
26	Correlation Coefficient R					0.8869653					
27	Shapiro Wilk Test Statistic					0.7896975					
28	Shapiro Wilk Critical (0.0500000) Value					0.8870000					
29	Approximate Shapiro Wilk P Value					0.0016103					
30	Lilliefors Test Statistic					0.2326415					
31	Lilliefors Critical (0.0500000) Value					0.2215000					
32	**Data not Normal at (0.0500000) Significance Level**										
33											
34	**Lognormal GOF Test Results**										
35											
36	Correlation Coefficient R					0.9323825					
37	Shapiro Wilk Test Statistic					0.8613509					
38	Shapiro Wilk Critical (0.0500000) Value					0.8870000					
39	Approximate Shapiro Wilk P Value					0.0224874					
40	Lilliefors Test Statistic					0.1989012					
41	Lilliefors Critical (0.0500000) Value					0.2215000					
42	**Data appear Approximate_Lognormal at (0.0500000) Significance Level**										
43											

TABLE D-4

	A	F
44	**Arsenic (mw-3)**	
45		
46	**Raw Statistics**	
47	Number of Valid Observations	13.000000
48	Number of Distinct Observations	11.000000
49	Minimum	9.2000000
50	Maximum	100.00000
51	Mean of Raw Data	29.469231
52	Standard Deviation of Raw Data	25.299848
53	Khat	2.0349773
54	Theta hat	14.481356
55	Kstar	1.6166492
56	Theta star	18.228587
57	Mean of Log Transformed Data	3.1179607
58	Standard Deviation of Log Transformed Data	0.7315928
59		
60	**Normal GOF Test Results**	
61		
62	Correlation Coefficient R	0.8666139
63	Shapiro Wilk Test Statistic	0.7646026
64	Shapiro Wilk Critical (0.0500000) Value	0.8660000
65	Approximate Shapiro Wilk P Value	0.0017586
66	Lilliefors Test Statistic	0.2293906
67	Lilliefors Critical (0.0500000) Value	0.2457322
68	**Data appear Approximate Normal at (0.0500000) Significance Level**	
69		
70	**Lognormal GOF Test Results**	
71		
72	Correlation Coefficient R	0.9697215
73	Shapiro Wilk Test Statistic	0.9319967
74	Shapiro Wilk Critical (0.0500000) Value	0.8660000
75	Approximate Shapiro Wilk P Value	0.3994985
76	Lilliefors Test Statistic	0.1911809
77	Lilliefors Critical (0.0500000) Value	0.2457322
78	**Data appear Lognormal at (0.0500000) Significance Level**	
79		

TABLE D-4

	A	F
80	**Arsenic (mw-4)**	
81		
82	**Raw Statistics**	
83	Number of Valid Observations	9.0000000
84	Number of Distinct Observations	7.0000000
85	Minimum	12.000000
86	Maximum	55.000000
87	Mean of Raw Data	21.444444
88	Standard Deviation of Raw Data	14.714883
89	Khat	3.5307052
90	Theta hat	6.0737000
91	Kstar	2.4278776
92	Theta star	8.8325889
93	Mean of Log Transformed Data	2.9172177
94	Standard Deviation of Log Transformed Data	0.5267977
95		
96	**Normal GOF Test Results**	
97		
98	Correlation Coefficient R	0.8094826
99	Shapiro Wilk Test Statistic	0.6669230
100	Shapiro Wilk Critical (0.0500000) Value	0.8290000
101	Approximate Shapiro Wilk P Value	6.0235E-4
102	Lilliefors Test Statistic	0.3964660
103	Lilliefors Critical (0.0500000) Value	0.2953333
104	**Data not Normal at (0.0500000) Significance Level**	
105		
106	**Lognormal GOF Test Results**	
107		
108	Correlation Coefficient R	0.8673050
109	Shapiro Wilk Test Statistic	0.7551842
110	Shapiro Wilk Critical (0.0500000) Value	0.8290000
111	Approximate Shapiro Wilk P Value	0.0063935
112	Lilliefors Test Statistic	0.3411254
113	Lilliefors Critical (0.0500000) Value	0.2953333
114	**Data not Lognormal at (0.0500000) Significance Level**	
115		

TABLE D-4

	A	F
116	**Arsenic (mw-5)**	
117		
118	**Raw Statistics**	
119	Number of Valid Observations	15.000000
120	Number of Distinct Observations	13.000000
121	Minimum	8.2000000
122	Maximum	94.000000
123	Mean of Raw Data	19.400000
124	Standard Deviation of Raw Data	22.887177
125	Khat	1.7109072
126	Theta hat	11.339014
127	Kstar	1.4131702
128	Theta star	13.728000
129	Mean of Log Transformed Data	2.6454134
130	Standard Deviation of Log Transformed Data	0.6909911
131		
132	**Normal GOF Test Results**	
133		
134	Correlation Coefficient R	0.7085567
135	Shapiro Wilk Test Statistic	0.5257310
136	Shapiro Wilk Critical (0.0500000) Value	0.8810000
137	Approximate Shapiro Wilk P Value	1.3798E-6
138	Lilliefors Test Statistic	0.3736386
139	Lilliefors Critical (0.0500000) Value	0.2287642
140	**Data not Normal at (0.0500000) Significance Level**	
141		
142	**Lognormal GOF Test Results**	
143		
144	Correlation Coefficient R	0.8502926
145	Shapiro Wilk Test Statistic	0.7322156
146	Shapiro Wilk Critical (0.0500000) Value	0.8810000
147	Approximate Shapiro Wilk P Value	3.6330E-4
148	Lilliefors Test Statistic	0.2585083
149	Lilliefors Critical (0.0500000) Value	0.2287642
150	**Data not Lognormal at (0.0500000) Significance Level**	
151		

TABLE D-4

	A	F
152	**Arsenic (mw-6)**	
153		
154	**Raw Statistics**	
155	Number of Valid Observations	9.0000000
156	Number of Distinct Observations	7.0000000
157	Minimum	9.2000000
158	Maximum	55.000000
159	Mean of Raw Data	21.544444
160	Standard Deviation of Raw Data	18.000910
161	Khat	2.2818445
162	Theta hat	9.4416793
163	Kstar	1.5953038
164	Theta star	13.504917
165	Mean of Log Transformed Data	2.8352759
166	Standard Deviation of Log Transformed Data	0.6694924
167		
168	**Normal GOF Test Results**	
169		
170	Correlation Coefficient R	0.8144301
171	Shapiro Wilk Test Statistic	0.6594135
172	Shapiro Wilk Critical (0.0500000) Value	0.8290000
173	Approximate Shapiro Wilk P Value	6.7959E-4
174	Lilliefors Test Statistic	0.4196852
175	Lilliefors Critical (0.0500000) Value	0.2953333
176	**Data not Normal at (0.0500000) Significance Level**	
177		
178	**Lognormal GOF Test Results**	
179		
180	Correlation Coefficient R	0.8848495
181	Shapiro Wilk Test Statistic	0.7741384
182	Shapiro Wilk Critical (0.0500000) Value	0.8290000
183	Approximate Shapiro Wilk P Value	0.0130993
184	Lilliefors Test Statistic	0.3531362
185	Lilliefors Critical (0.0500000) Value	0.2953333
186	**Data not Lognormal at (0.0500000) Significance Level**	
187		

TABLE D-4

	A	F
188	**Arsenic (mw-7)**	
189		
190	**Raw Statistics**	
191	Number of Valid Observations	13.000000
192	Number of Distinct Observations	11.000000
193	Minimum	6.6000000
194	Maximum	63.000000
195	Mean of Raw Data	22.892308
196	Standard Deviation of Raw Data	14.915901
197	Khat	3.1480326
198	Theta hat	7.2719410
199	Kstar	2.4728456
200	Theta star	9.2574755
201	Mean of Log Transformed Data	2.9636438
202	Standard Deviation of Log Transformed Data	0.5952732
203		
204	**Normal GOF Test Results**	
205		
206	Correlation Coefficient R	0.9073811
207	Shapiro Wilk Test Statistic	0.8388844
208	Shapiro Wilk Critical (0.0500000) Value	0.8660000
209	Approximate Shapiro Wilk P Value	0.0153102
210	Lilliefors Test Statistic	0.2121665
211	Lilliefors Critical (0.0500000) Value	0.2457322
212	**Data appear Approximate Normal at (0.0500000) Significance Level**	
213		
214	**Lognormal GOF Test Results**	
215		
216	Correlation Coefficient R	0.9877619
217	Shapiro Wilk Test Statistic	0.9828012
218	Shapiro Wilk Critical (0.0500000) Value	0.8660000
219	Approximate Shapiro Wilk P Value	0.9530785
220	Lilliefors Test Statistic	0.1140641
221	Lilliefors Critical (0.0500000) Value	0.2457322
222	**Data appear Lognormal at (0.0500000) Significance Level**	

TABLE D-5

			Ordinary Least Squares Linear Regression Output Sheet						
User Selected Options									
Date/Time of Computation			11/7/2016 11:16:17 AM						
From File			004) Table 2 - ProUCL Input File - Complianc Wells - Modified.xls						
Full Precision			ON						
Display Limits			True						
Confidence Level for Intervals			0.95						
Display Regresion Diagnostics			True						
Display Regresion Tables			True						
Y vs X Plots			Not Selected						
Dependendant Variable (Y-Data)				LNArsenic_mw-2					
Number Reported (Y values)				16					
Independent Variable (x-data)				Time (years					
Number Reported (x-values)				16					
Regression Estimates and Inference Table									
Paramater	Estimates	Std. Error	T-values	p-values					
intercept	2.771	0.0943	29.4	5.514E-14					
e (years)_m	-0.114	0.0205	-5.58	6.7856E-5					
OLS ANOVA Table									
Source of Variation			**SS**	**DOF**	**MS**	**F-Value**	**P-Value**		
Regression			1.4097368	1.0000000	1.4097368	31.134112	0.0001		
Error			0.6339129	14.000000	0.0452795				
Total			2.0436497	15.000000					
R Square				0.6898133					
Adjusted R Square				0.6676571					
Sqrt(MSE) = Scale				0.2127898					

TABLE D-5

Regression Table										
Obs	Y Vector	Yhat	Residuals	Res/Scale						
1	3.178	2.771	0.407	1.912						
2	2.833	2.742	0.0915	0.43						
3	2.773	2.712	0.0606	0.285						
4	2.773	2.682	0.0911	0.428						
5	2.485	2.616	-0.131	-0.614						
6	2.398	2.513	-0.115	-0.539						
7	2.197	2.369	-0.172	-0.809						
8	2.104	2.316	-0.212	-0.997						
9	2.001	2.282	-0.28	-1.318						
10	2.001	2.256	-0.254	-1.194						
11	2.041	2.227	-0.186	-0.872						
12	2.128	2.136	-0.00757	-0.0356						
13	2.208	1.992	0.216	1.015						
14	2.282	1.959	0.323	1.52						
15	2.015	1.924	0.0906	0.426						
16	1.974	1.897	0.0773	0.363						
Summary Table for Prediction and Confidence Limits										
Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LPL	UPL	LCL	UCL	Residuals
1	0	3.178	2.771	0.0943	0.233	-3.172	8.715	2.569	2.973	0.407
2	0.258	2.833	2.742	0.0899	0.231	-3.139	8.622	2.549	2.935	0.0915
3	0.519	2.773	2.712	0.0857	0.229	-3.105	8.529	2.528	2.896	0.0606
4	0.786	2.773	2.682	0.0815	0.228	-3.07	8.433	2.507	2.856	0.0911
5	1.364	2.485	2.616	0.0729	0.225	-2.994	8.225	2.459	2.772	-0.131
6	2.265	2.398	2.513	0.0618	0.222	-2.876	7.902	2.38	2.645	-0.115
7	3.52	2.197	2.369	0.0535	0.219	-2.712	7.451	2.255	2.484	-0.172
8	3.986	2.104	2.316	0.0533	0.219	-2.652	7.284	2.202	2.431	-0.212
9	4.286	2.001	2.282	0.0541	0.22	-2.612	7.176	2.166	2.398	-0.28
10	4.517	2.001	2.256	0.0552	0.22	-2.582	7.094	2.137	2.374	-0.254
11	4.769	2.041	2.227	0.0567	0.22	-2.549	7.003	2.105	2.349	-0.186
12	5.566	2.128	2.136	0.0643	0.222	-2.445	6.717	1.998	2.274	-0.00757
13	6.824	2.208	1.992	0.0815	0.228	-2.281	6.265	1.817	2.167	0.216
14	7.116	2.282	1.959	0.0862	0.23	-2.243	6.16	1.774	2.144	0.323
15	7.419	2.015	1.924	0.0911	0.231	-2.203	6.052	1.729	2.12	0.0906
16	7.661	1.974	1.897	0.0952	0.233	-2.171	5.965	1.693	2.101	0.0773

TABLE D-5

Dependendant Variable (Y-Data)			LNArsenic_mw-3						
Number Reported (Y values)			13						
Independent Variable (x-data)			Time (years						
Number Reported (x-values)			13						
Regression Estimates and Inference Table									
Paramater	Estimates	Std. Error	T-values	p-values					
intercept	4.346	0.343	12.68	6.6046E-8					
e (years)_m	-0.261	0.0668	-3.908	0.00244					
OLS ANOVA Table									
Source of Variation		**SS**	**DOF**	**MS**	**F-Value**	**P-Value**			
Regression		3.7332431	1.0000000	3.7332431	15.268929	0.0024			
Error		2.6894927	11.000000	0.2444993					
Total		6.4227358	12.000000						
R Square			0.5812543						
Adjusted R Square			0.5431866						
Sqrt(MSE) = Scale			0.4944687						

TABLE D-5

Regression Table										
Obs	Y Vector	Yhat	Residuals	Res/Scale						
1	4.605	3.989	0.616	1.246						
2	2.485	3.871	-1.386	-2.804						
3	4.043	3.754	0.289	0.585						
4	3.466	3.426	0.0394	0.0798						
5	3.611	3.305	0.306	0.619						
6	3.332	3.226	0.106	0.214						
7	3.135	3.166	-0.0306	-0.0618						
8	3.466	3.1	0.366	0.739						
9	2.996	2.892	0.104	0.21						
10	2.485	2.563	-0.0786	-0.159						
11	2.398	2.487	-0.0893	-0.181						
12	2.219	2.408	-0.189	-0.382						
13	2.293	2.345	-0.0525	-0.106						
Summary Table for Prediction and Confidence Limits										
Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LPL	UPL	LCL	UCL	Residuals
1	1.364	4.605	3.989	0.262	0.559	-4.791	12.77	3.413	4.565	0.616
2	1.816	2.485	3.871	0.237	0.548	-4.649	12.39	3.351	4.392	-1.386
3	2.265	4.043	3.754	0.213	0.538	-4.508	12.02	3.286	4.222	0.289
4	3.52	3.466	3.426	0.158	0.519	-4.115	10.97	3.078	3.775	0.0394
5	3.986	3.611	3.305	0.145	0.515	-3.969	10.58	2.985	3.624	0.306
6	4.286	3.332	3.226	0.14	0.514	-3.875	10.33	2.918	3.534	0.106
7	4.517	3.135	3.166	0.138	0.513	-3.802	10.13	2.863	3.469	-0.0306
8	4.769	3.466	3.1	0.137	0.513	-3.723	9.923	2.798	3.402	0.366
9	5.566	2.996	2.892	0.149	0.516	-3.473	9.257	2.564	3.219	0.104
10	6.824	2.485	2.563	0.197	0.532	-3.079	8.206	2.129	2.998	-0.0786
11	7.116	2.398	2.487	0.212	0.538	-2.987	7.962	2.021	2.953	-0.0893
12	7.419	2.219	2.408	0.228	0.544	-2.892	7.708	1.907	2.909	-0.189
13	7.661	2.293	2.345	0.241	0.55	-2.816	7.506	1.815	2.875	-0.0525

TABLE D-5

Dependendant Variable (Y-Data)			LNArsenic_mw-4						
Number Reported (Y values)			9						
Independent Variable (x-data)			Time (years						
Number Reported (x-values)			9						
Regression Estimates and Inference Table									
Paramater	Estimates	Std. Error	T-values	p-values					
intercept	3.918	0.223	17.54	4.8202E-7					
e (years)_m	-0.207	0.0424	-4.888	0.00178					
OLS ANOVA Table									
Source of Variation			**SS**	**DOF**	**MS**	**F-Value**	**P-Value**		
Regression			1.7170041	1.0000000	1.7170041	23.888853	0.0018		
Error			0.5031229	7.0000000	0.0718747				
Total			2.2201269	8.0000000					
R Square				0.7733810					
Adjusted R Square				0.7410069					
Sqrt(MSE) = Scale				0.2680946					

TABLE D-5

Regression Table										
Obs	Y Vector	Yhat	Residuals	Res/Scale						
1	4.007	3.635	0.373	1.39						
2	3.611	3.448	0.163	0.608						
3	2.833	3.188	-0.355	-1.322						
4	2.708	3.029	-0.321	-1.197						
5	2.773	2.981	-0.209	-0.778						
6	2.708	2.763	-0.0554	-0.207						
7	2.565	2.503	0.0623	0.232						
8	2.565	2.379	0.186	0.693						
9	2.485	2.329	0.156	0.581						
Summary Table for Prediction and Confidence Limits										
Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LPL	UPL	LCL	UCL	Residuals
1	1.364	4.007	3.635	0.172	0.318	-4.96	12.23	3.228	4.041	0.373
2	2.265	3.611	3.448	0.141	0.303	-4.705	11.6	3.115	3.78	0.163
3	3.52	2.833	3.188	0.105	0.288	-4.35	10.73	2.939	3.436	-0.355
4	4.286	2.708	3.029	0.0922	0.284	-4.133	10.19	2.811	3.247	-0.321
5	4.517	2.773	2.981	0.0903	0.283	-4.068	10.03	2.768	3.195	-0.209
6	5.566	2.708	2.763	0.0947	0.284	-3.771	9.298	2.539	2.987	-0.0554
7	6.824	2.565	2.503	0.123	0.295	-3.415	8.42	2.211	2.794	0.0623
8	7.419	2.565	2.379	0.142	0.303	-3.247	8.005	2.044	2.715	0.186
9	7.661	2.485	2.329	0.15	0.307	-3.178	7.837	1.975	2.684	0.156

TABLE D-5

Dependendant Variable (Y-Data)			LNArsenic_mw-5						
Number Reported (Y values)			15						
Independent Variable (x-data)			Time (years						
Number Reported (x-values)			15						
Regression Estimates and Inference Table									
Paramater	Estimates	Std. Error	T-values	p-values					
intercept	3.54	0.245	14.45	2.1869E-9					
e (years)_m	-0.215	0.0512	-4.196	0.00105					
OLS ANOVA Table									
Source of Variation		**SS**	**DOF**	**MS**	**F-Value**	**P-Value**			
Regression		3.8455546	1.0000000	3.8455546	17.609048	0.0010			
Error		2.8390070	13.000000	0.2183852					
Total		6.6845616	14.000000						
R Square			0.5752890						
Adjusted R Square			0.5426189						
Sqrt(MSE) = Scale			0.4673170						

TABLE D-5

Regression Table										
Obs	Y Vector	Yhat	Residuals	Res/Scale						
1	4.543	3.428	1.115	2.386						
2	2.708	3.371	-0.663	-1.419						
3	3.871	3.247	0.624	1.336						
4	2.773	3.15	-0.377	-0.807						
5	2.944	3.053	-0.109	-0.232						
6	2.485	2.783	-0.298	-0.637						
7	2.23	2.683	-0.453	-0.969						
8	2.485	2.618	-0.134	-0.286						
9	2.272	2.569	-0.297	-0.635						
10	2.398	2.515	-0.117	-0.25						
11	2.293	2.343	-0.0507	-0.109						
12	2.175	2.073	0.102	0.218						
13	2.104	2.01	0.094	0.201						
14	2.128	1.945	0.183	0.392						
15	2.272	1.893	0.379	0.811						
Summary Table for Prediction and Confidence Limits										
Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LPL	UPL	LCL	UCL	Residuals
1	0.519	4.543	3.428	0.222	0.517	-3.978	10.84	2.948	3.909	1.115
2	0.786	2.708	3.371	0.211	0.513	-3.912	10.65	2.916	3.827	-0.663
3	1.364	3.871	3.247	0.187	0.503	-3.768	10.26	2.842	3.652	0.624
4	1.816	2.773	3.15	0.17	0.497	-3.655	9.954	2.782	3.518	-0.377
5	2.265	2.944	3.053	0.155	0.492	-3.543	9.649	2.718	3.388	-0.109
6	3.523	2.485	2.783	0.125	0.484	-3.229	8.794	2.513	3.053	-0.298
7	3.986	2.23	2.683	0.121	0.483	-3.113	8.48	2.422	2.944	-0.453
8	4.286	2.485	2.618	0.121	0.483	-3.038	8.275	2.357	2.88	-0.134
9	4.517	2.272	2.569	0.122	0.483	-2.981	8.119	2.305	2.833	-0.297
10	4.769	2.398	2.515	0.125	0.484	-2.918	7.947	2.245	2.784	-0.117
11	5.566	2.293	2.343	0.141	0.488	-2.719	7.406	2.04	2.647	-0.0507
12	6.824	2.175	2.073	0.182	0.502	-2.405	6.551	1.679	2.466	0.102
13	7.116	2.104	2.01	0.194	0.506	-2.332	6.353	1.592	2.428	0.094
14	7.419	2.128	1.945	0.206	0.511	-2.257	6.147	1.5	2.39	0.183
15	7.661	2.272	1.893	0.216	0.515	-2.197	5.983	1.426	2.36	0.379

TABLE D-5

Dependendant Variable (Y-Data)			LNArsenic_mw-6						
Number Reported (Y values)			9						
Independent Variable (x-data)			Time (years						
Number Reported (x-values)			9						
Regression Estimates and Inference Table									
Paramater	Estimates	Std. Error	T-values	p-values					
intercept	4.099	0.29	14.15	2.0857E-6					
e (years)_m	-0.262	0.055	-4.762	0.00206					
OLS ANOVA Table									
Source of Variation			**SS**	**DOF**	**MS**	**F-Value**	**P-Value**		
Regression			2.7398376	1.0000000	2.7398376	22.672125	0.0021		
Error			0.8459226	7.0000000	0.1208461				
Total			3.5857601	8.0000000					
R Square			0.7640884						
Adjusted R Square			0.7303867						
Sqrt(MSE) = Scale			0.3476292						

TABLE D-5

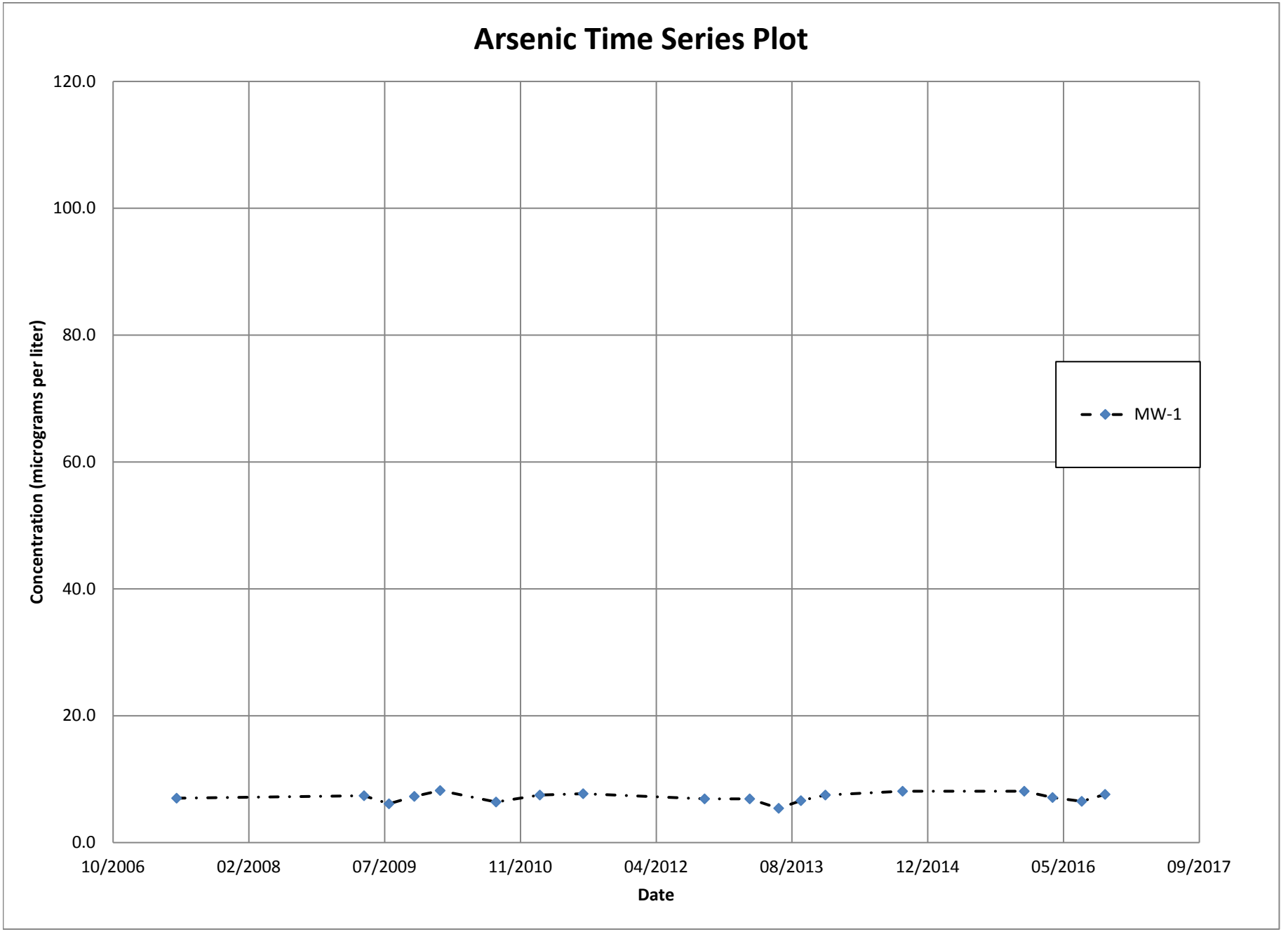
Regression Table										
Obs	Y Vector	Yhat	Residuals	Res/Scale						
1	4.007	3.742	0.266	0.764						
2	3.932	3.506	0.426	1.226						
3	2.565	3.177	-0.612	-1.761						
4	2.708	2.976	-0.268	-0.772						
5	2.708	2.916	-0.208	-0.598						
6	2.708	2.641	0.0671	0.193						
7	2.219	2.312	-0.0924	-0.266						
8	2.398	2.156	0.242	0.697						
9	2.272	2.092	0.18	0.517						
Summary Table for Prediction and Confidence Limits										
Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LPL	UPL	LCL	UCL	Residuals
1	1.364	4.007	3.742	0.223	0.413	-5.106	12.59	3.215	4.269	0.266
2	2.265	3.932	3.506	0.182	0.393	-4.784	11.8	3.075	3.937	0.426
3	3.52	2.565	3.177	0.136	0.373	-4.335	10.69	2.855	3.499	-0.612
4	4.286	2.708	2.976	0.12	0.368	-4.062	10.01	2.693	3.259	-0.268
5	4.517	2.708	2.916	0.117	0.367	-3.979	9.811	2.639	3.193	-0.208
6	5.566	2.708	2.641	0.123	0.369	-3.604	8.886	2.351	2.931	0.0671
7	6.824	2.219	2.312	0.16	0.383	-3.154	7.778	1.934	2.689	-0.0924
8	7.419	2.398	2.156	0.184	0.393	-2.942	7.253	1.721	2.59	0.242
9	7.661	2.272	2.092	0.194	0.398	-2.855	7.04	1.633	2.552	0.18

TABLE D-5

Dependendant Variable (Y-Data)			LNArsenic_mw-7						
Number Reported (Y values)			13						
Independent Variable (x-data)			Time (years						
Number Reported (x-values)			13						
Regression Estimates and Inference Table									
Paramater	Estimates	Std. Error	T-values	p-values					
intercept	3.908	0.299	13.09	4.7521E-8					
e (years)_m	-0.201	0.0582	-3.451	0.00541					
OLS ANOVA Table									
Source of Variation		**SS**	**DOF**	**MS**	**F-Value**	**P-Value**			
Regression		2.2107973	1.0000000	2.2107973	11.912759	0.0054			
Error		2.0414054	11.000000	0.1855823					
Total		4.2522027	12.000000						
R Square			0.5199181						
Adjusted R Square			0.4762743						
Sqrt(MSE) = Scale			0.4307927						

TABLE D-5

Regression Table										
Obs	Y Vector	Yhat	Residuals	Res/Scale						
1	4.143	3.634	0.509	1.181						
2	3.296	3.543	-0.248	-0.575						
3	3.664	3.453	0.21	0.488						
4	3.332	3.2	0.132	0.306						
5	1.887	3.107	-1.22	-2.833						
6	3.091	3.047	0.0441	0.102						
7	3.219	3.001	0.218	0.506						
8	2.944	2.95	-0.00549	-0.0127						
9	2.944	2.79	0.155	0.359						
10	2.398	2.537	-0.139	-0.323						
11	2.485	2.478	0.00661	0.0154						
12	2.485	2.417	0.0675	0.157						
13	2.639	2.369	0.27	0.627						
Summary Table for Prediction and Confidence Limits										
Obs	X Vector	Y Vector	Yhat	s(Yhat)	s(pred)	LPL	UPL	LCL	UCL	Residuals
1	1.364	4.143	3.634	0.228	0.487	-4.365	11.63	3.132	4.136	0.509
2	1.816	3.296	3.543	0.206	0.478	-4.256	11.34	3.09	3.997	-0.248
3	2.265	3.664	3.453	0.185	0.469	-4.147	11.05	3.045	3.861	0.21
4	3.523	3.332	3.2	0.138	0.452	-3.844	10.24	2.897	3.504	0.132
5	3.986	1.887	3.107	0.127	0.449	-3.732	9.947	2.829	3.386	-1.22
6	4.286	3.091	3.047	0.122	0.448	-3.659	9.753	2.779	3.315	0.0441
7	4.517	3.219	3.001	0.12	0.447	-3.604	9.605	2.737	3.265	0.218
8	4.769	2.944	2.95	0.12	0.447	-3.543	9.443	2.687	3.213	-0.00549
9	5.566	2.944	2.79	0.13	0.45	-3.35	8.93	2.504	3.075	0.155
10	6.824	2.398	2.537	0.172	0.464	-3.047	8.121	2.159	2.915	-0.139
11	7.116	2.485	2.478	0.185	0.469	-2.976	7.933	2.072	2.884	0.00661
12	7.419	2.485	2.417	0.198	0.474	-2.903	7.738	1.981	2.854	0.0675
13	7.661	2.639	2.369	0.21	0.479	-2.845	7.583	1.907	2.83	0.27



22-1-11228-008

Figure D-1

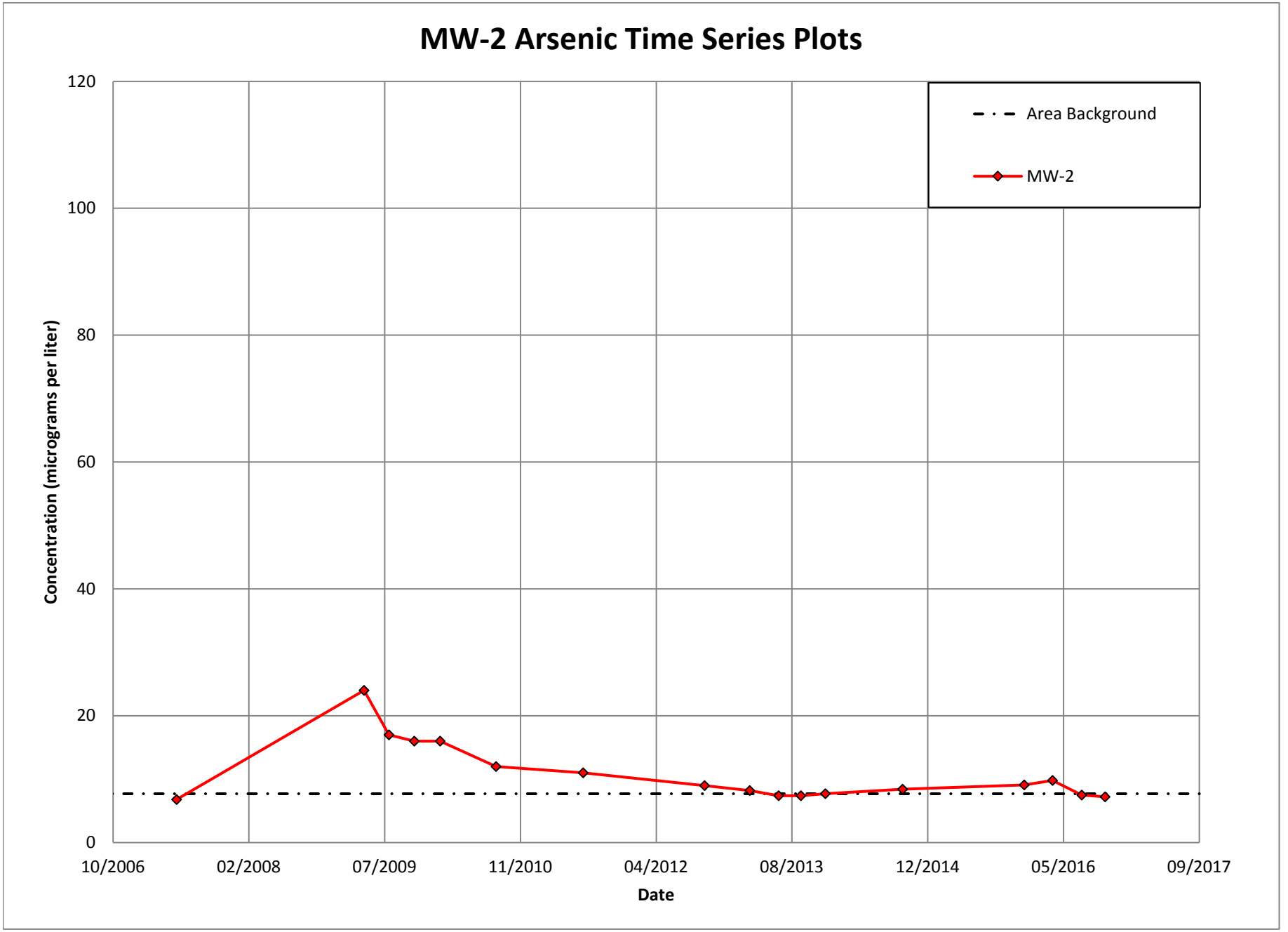


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FIGURE D-2

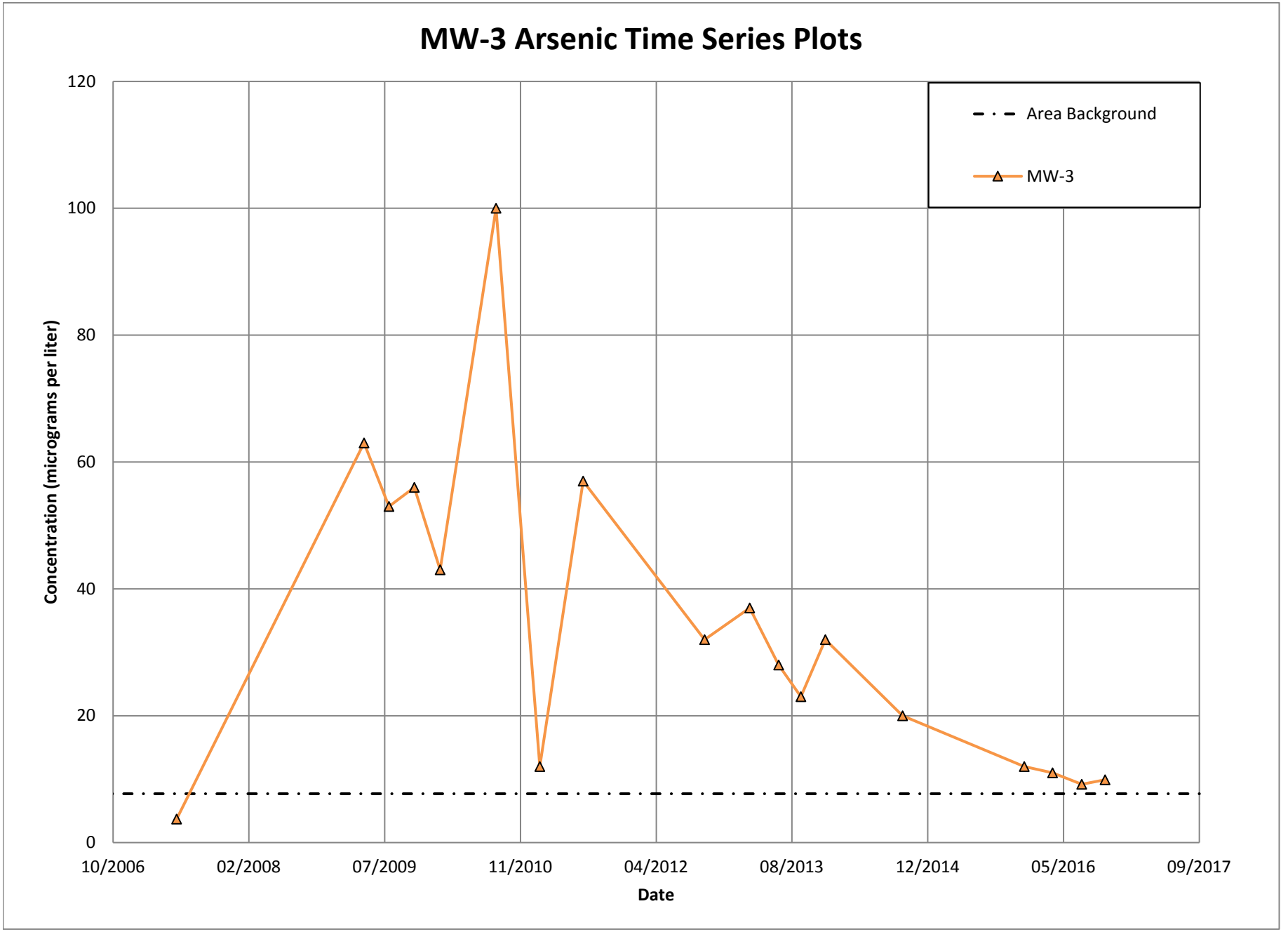

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FIGURE D-3

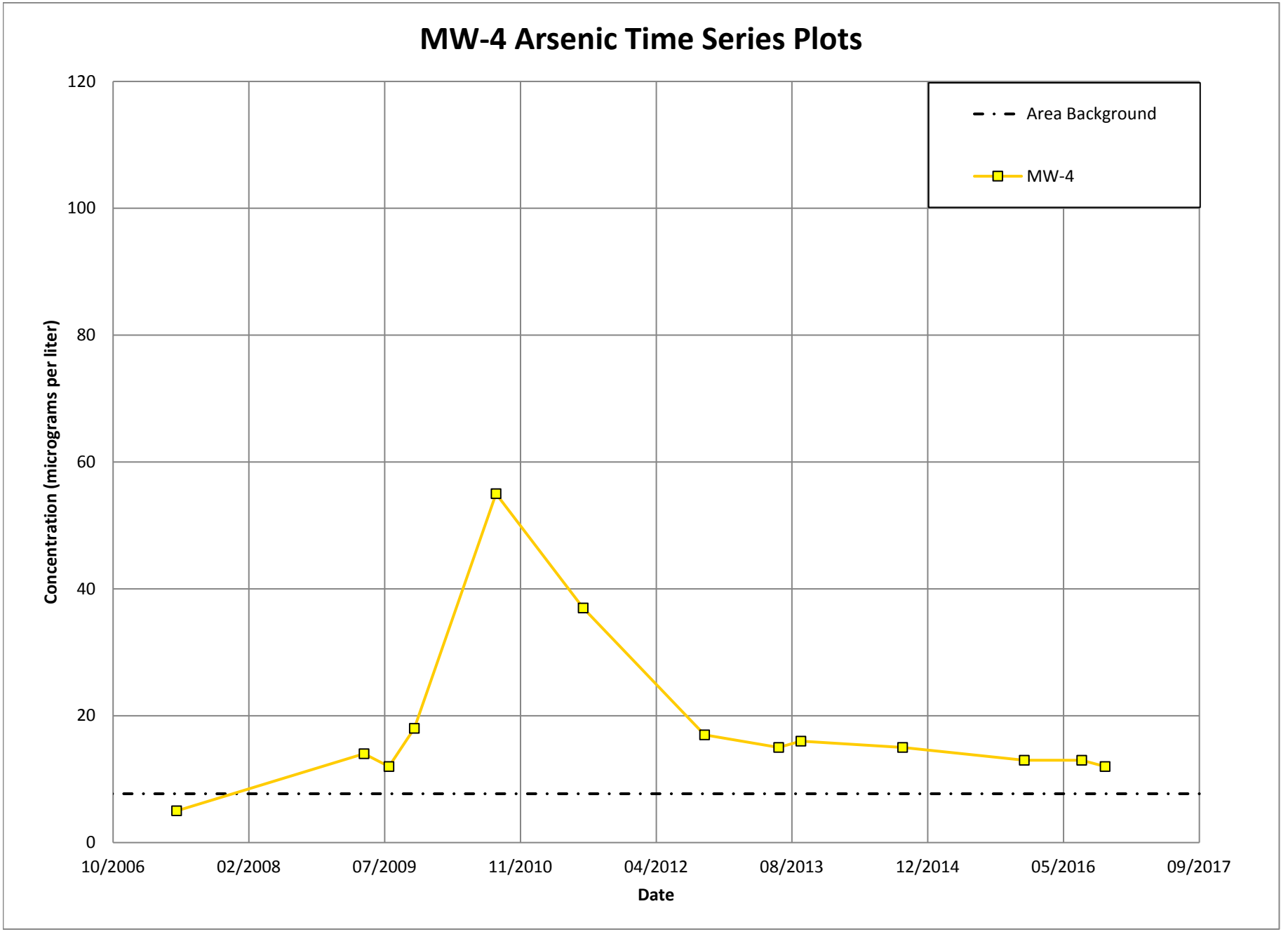

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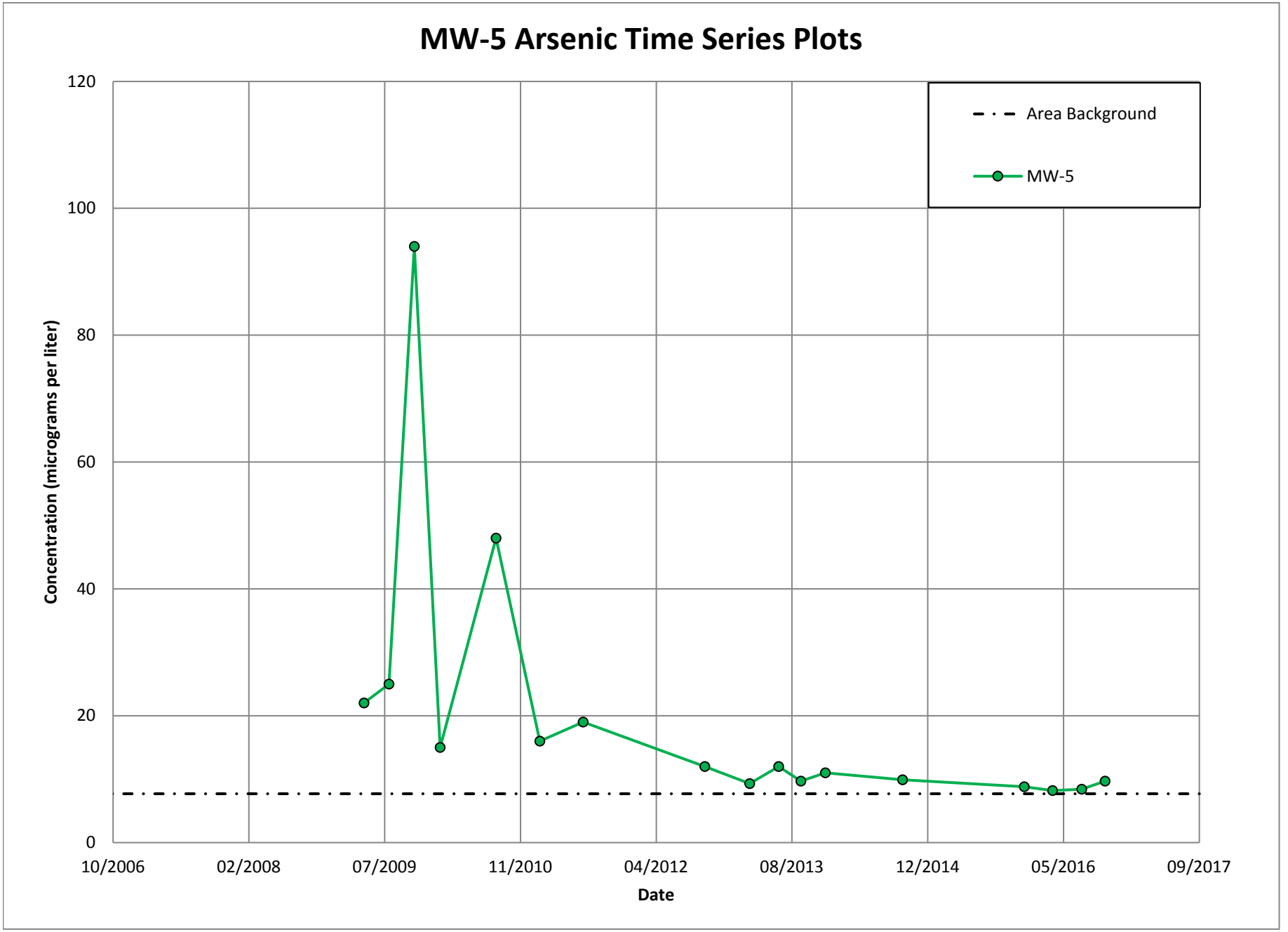
FIGURE D-4



22-1-11228-008

FIGURE D-5

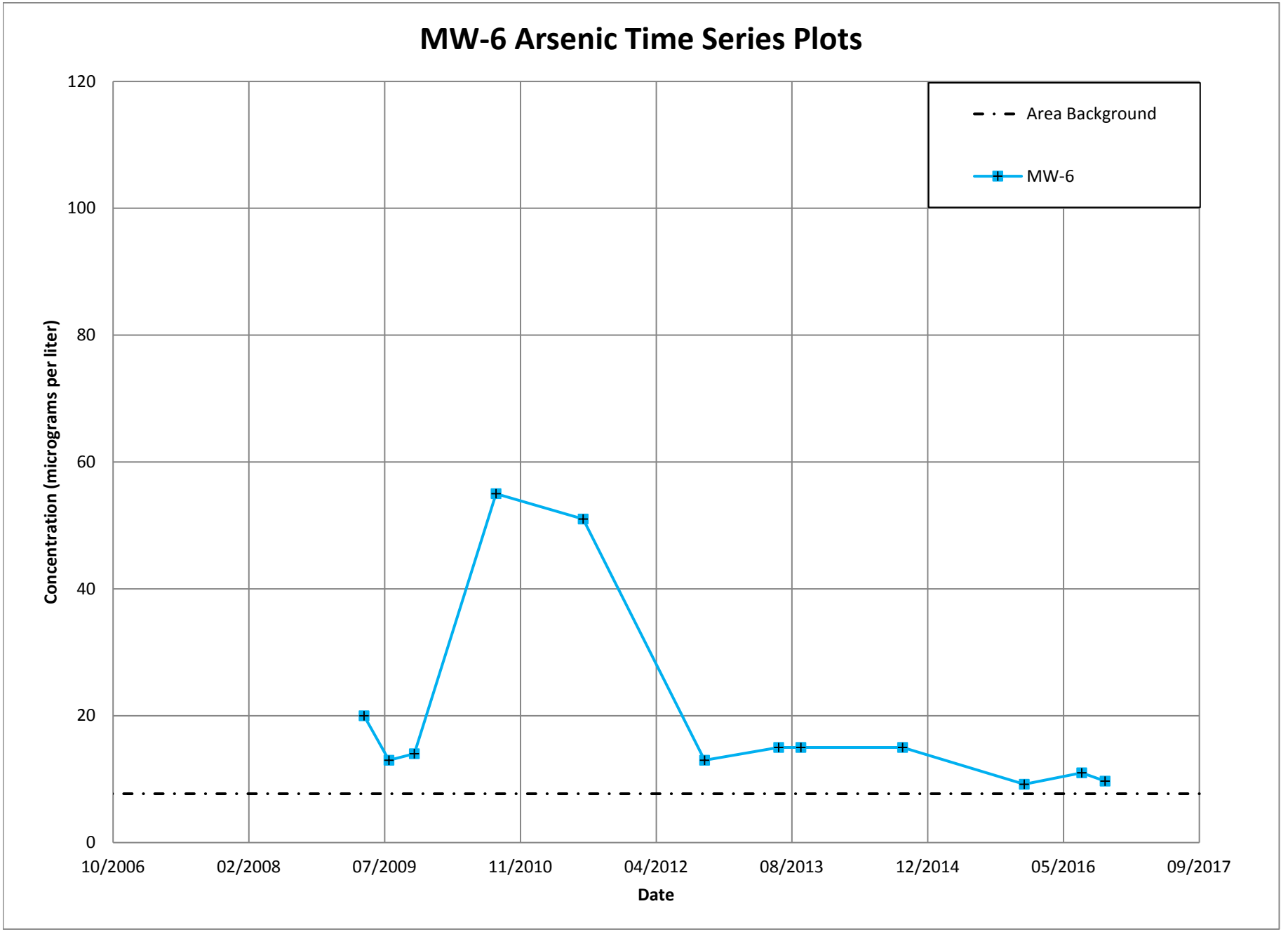


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FIGURE D-6

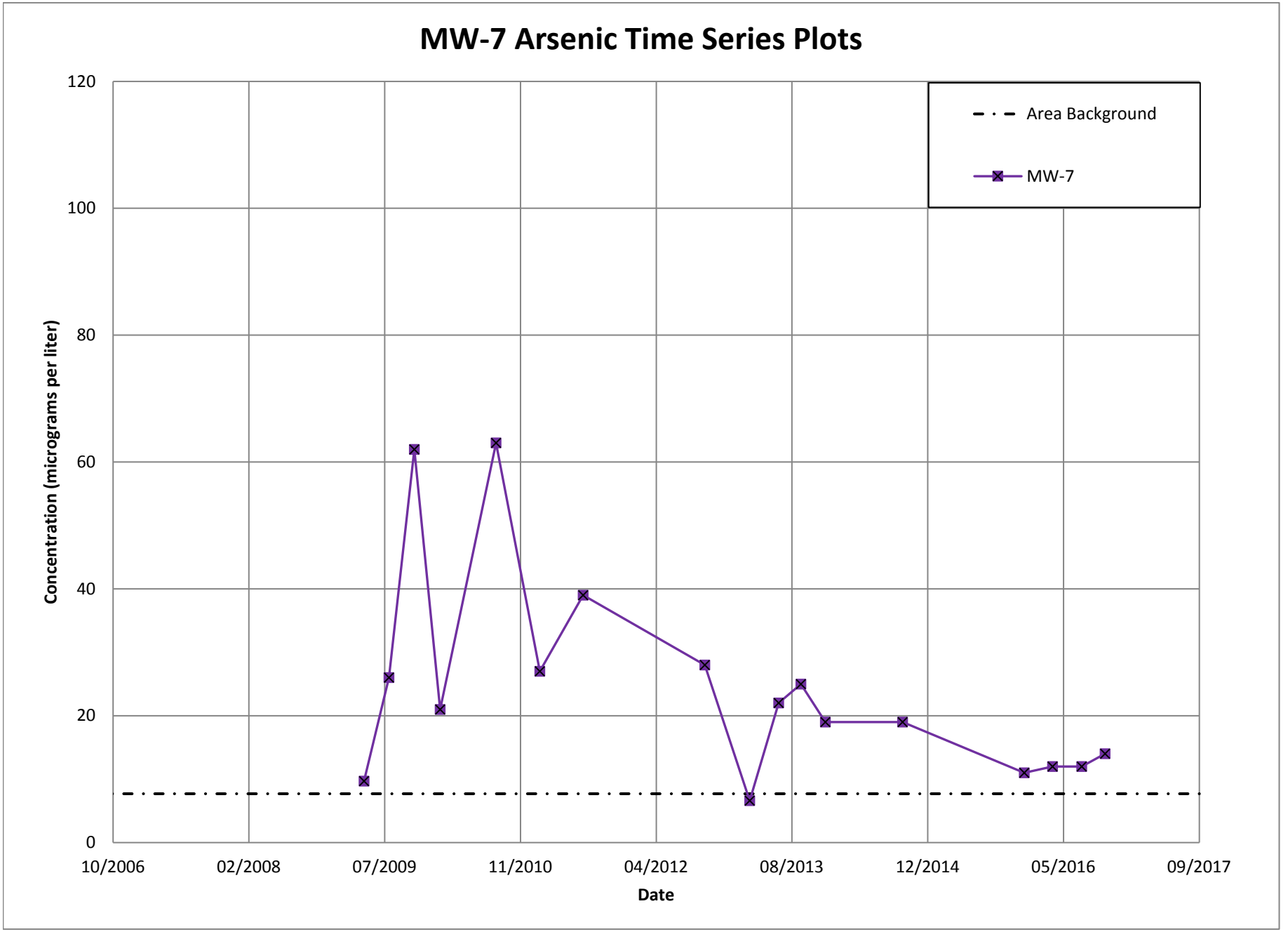

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FIGURE D-7

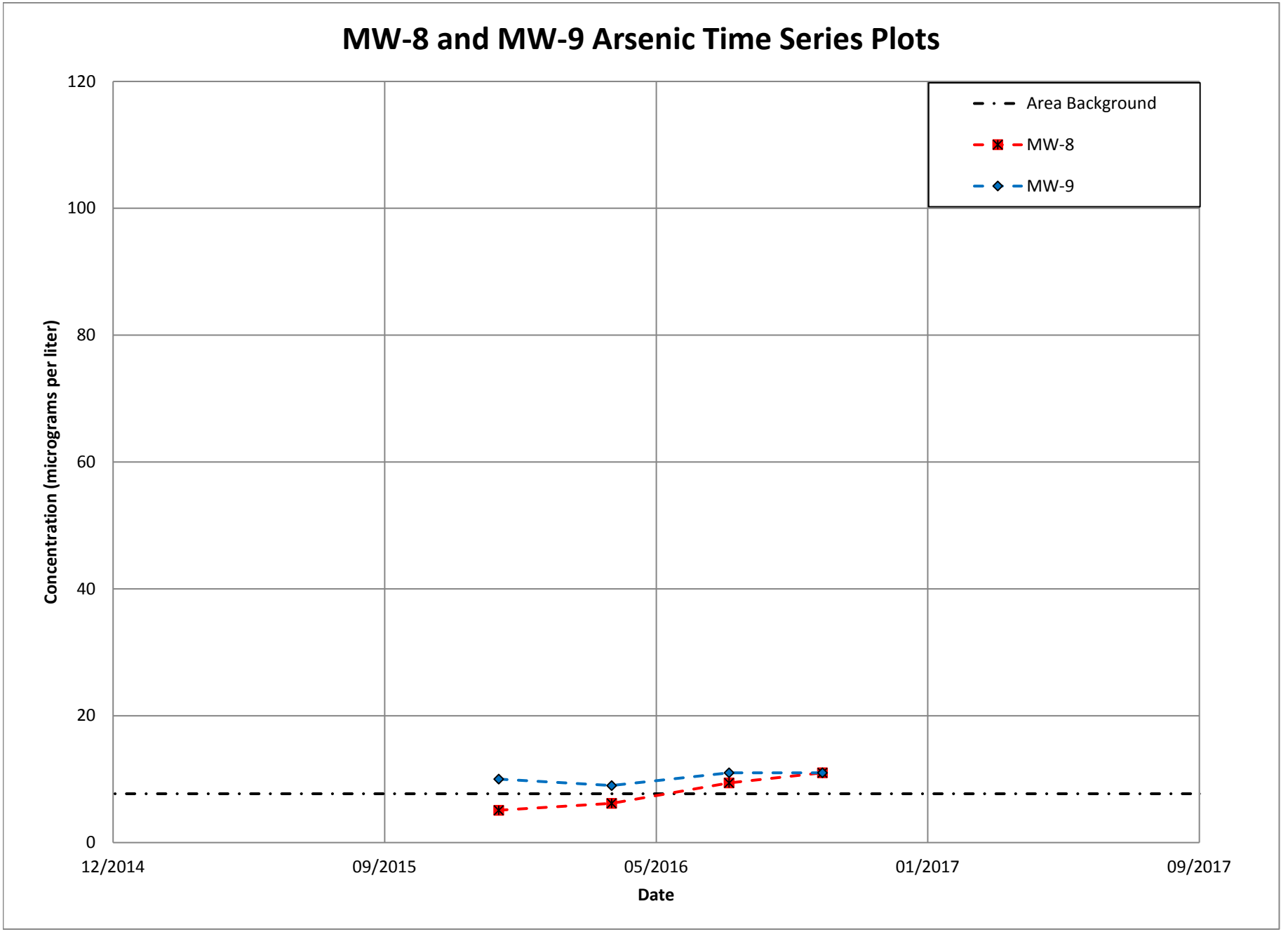

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FIGURE D-8

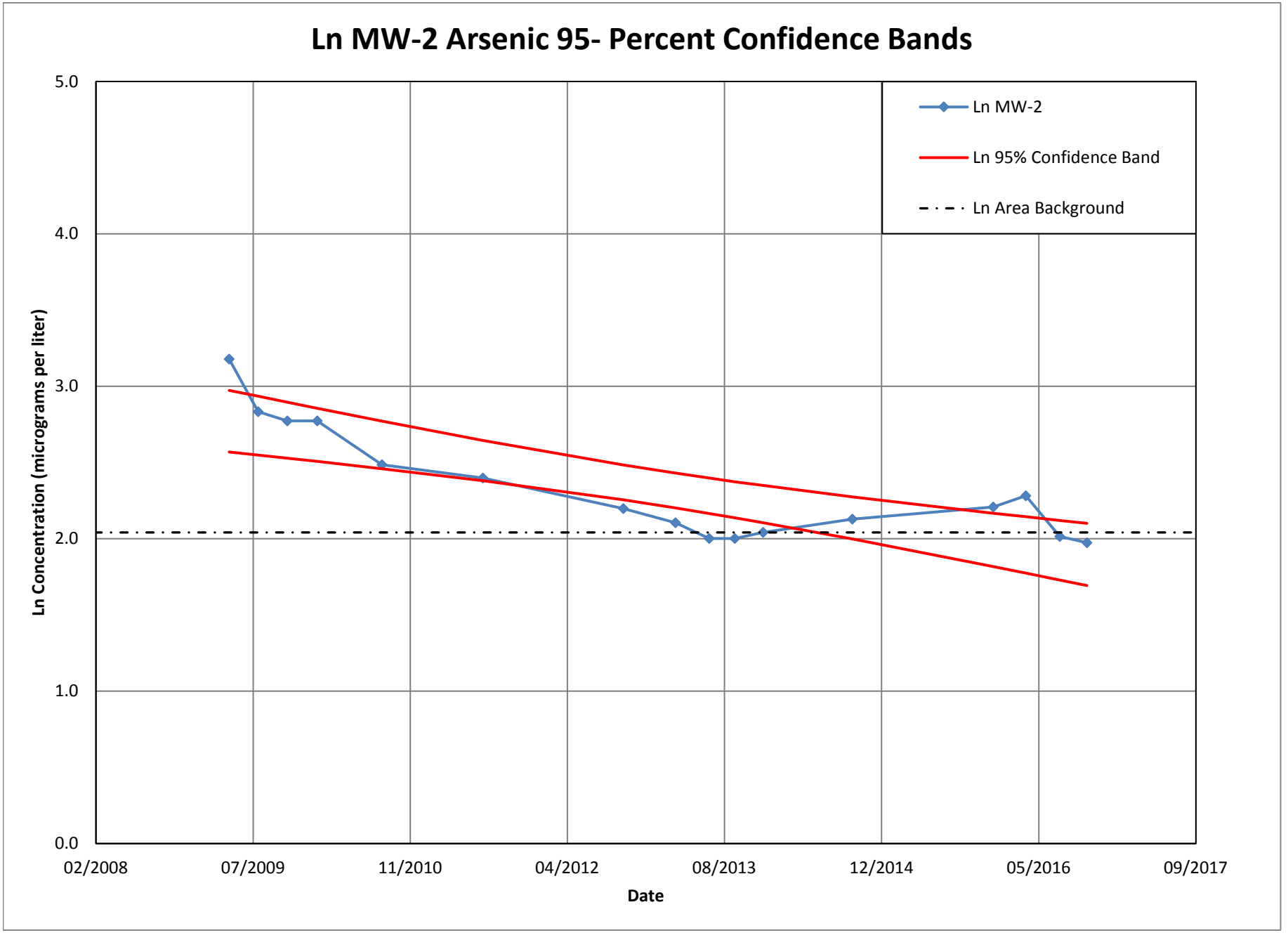

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FIGURE D-9

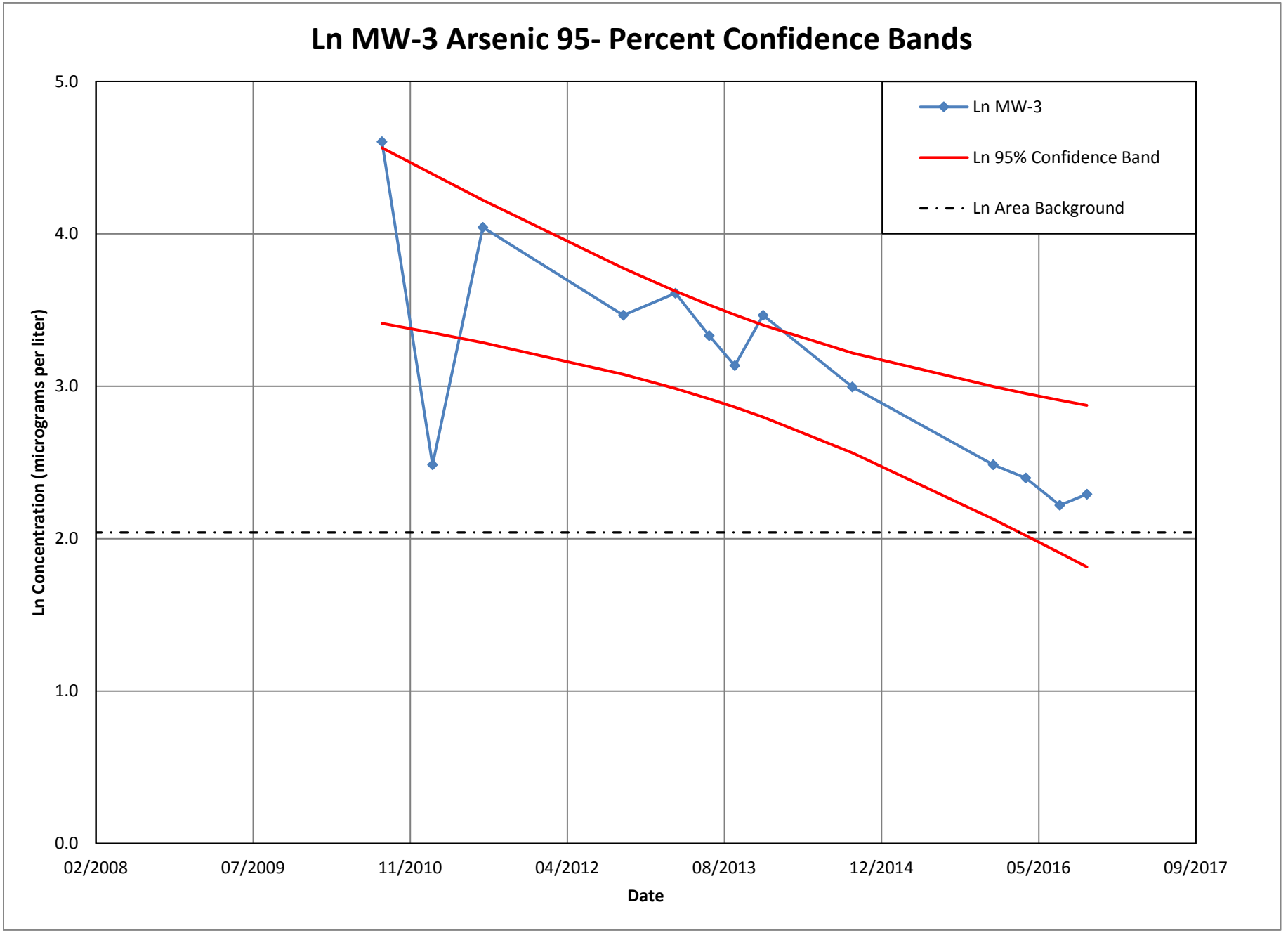

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FIGURE D-10

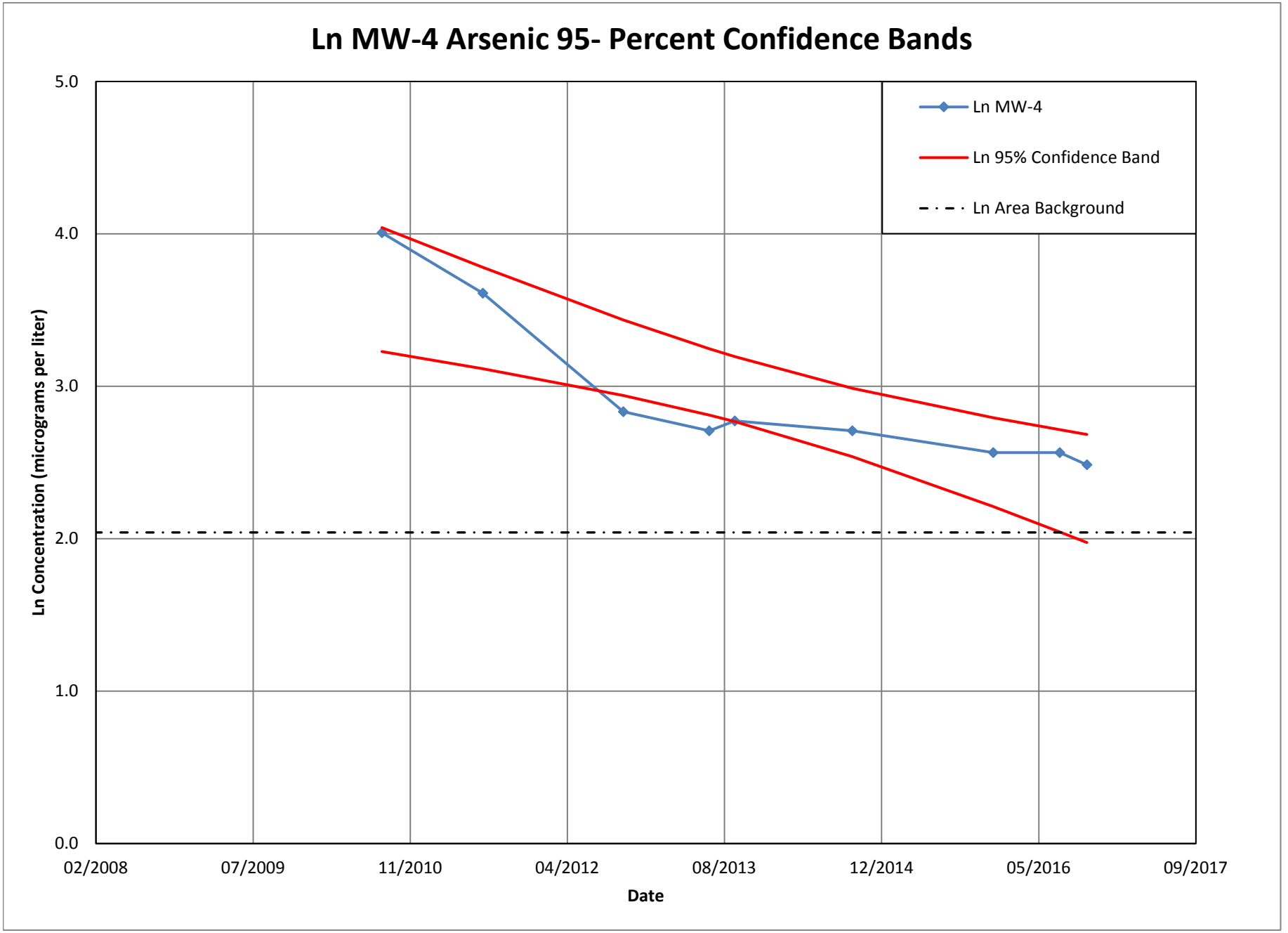

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FIGURE D-11

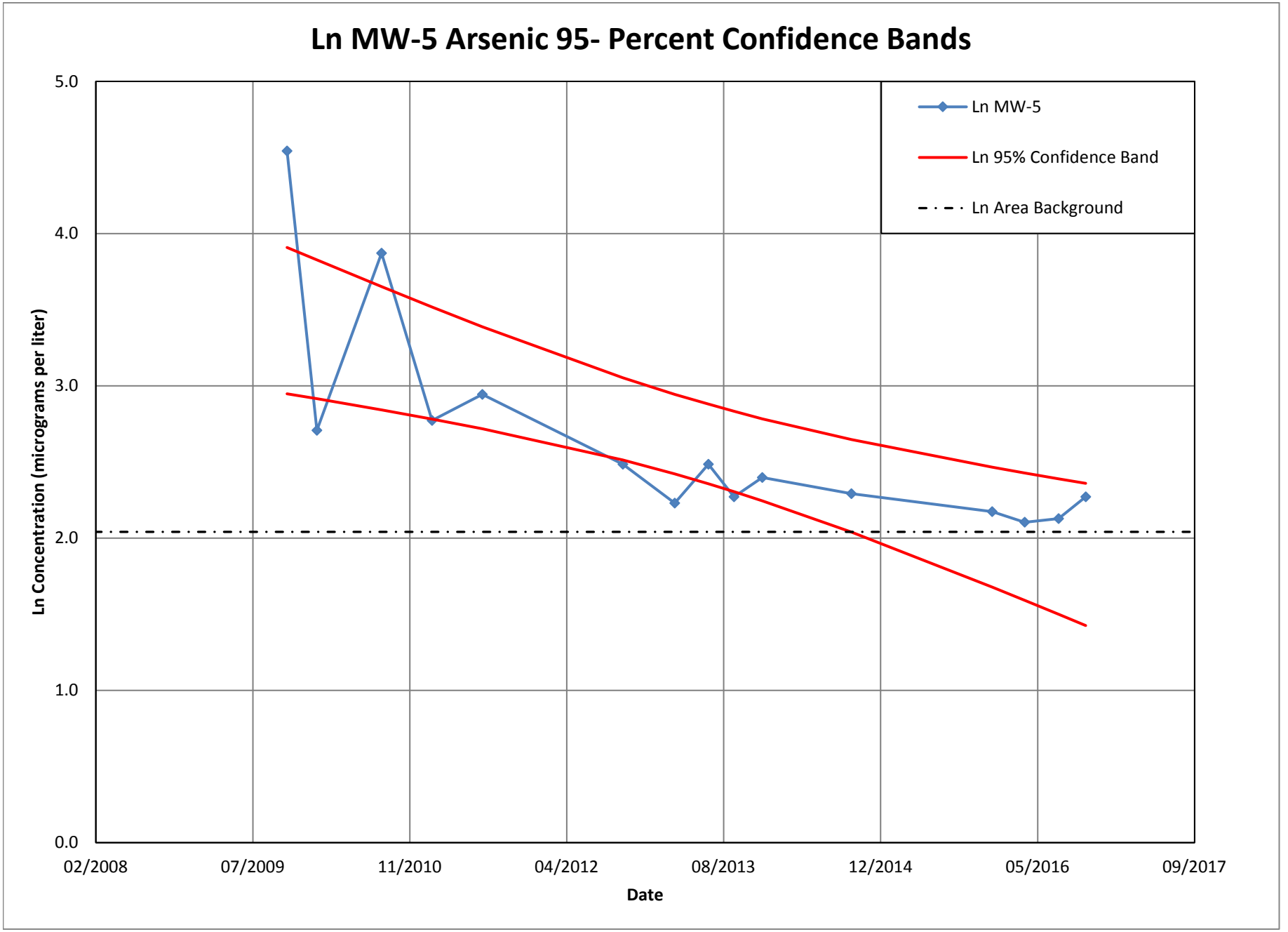

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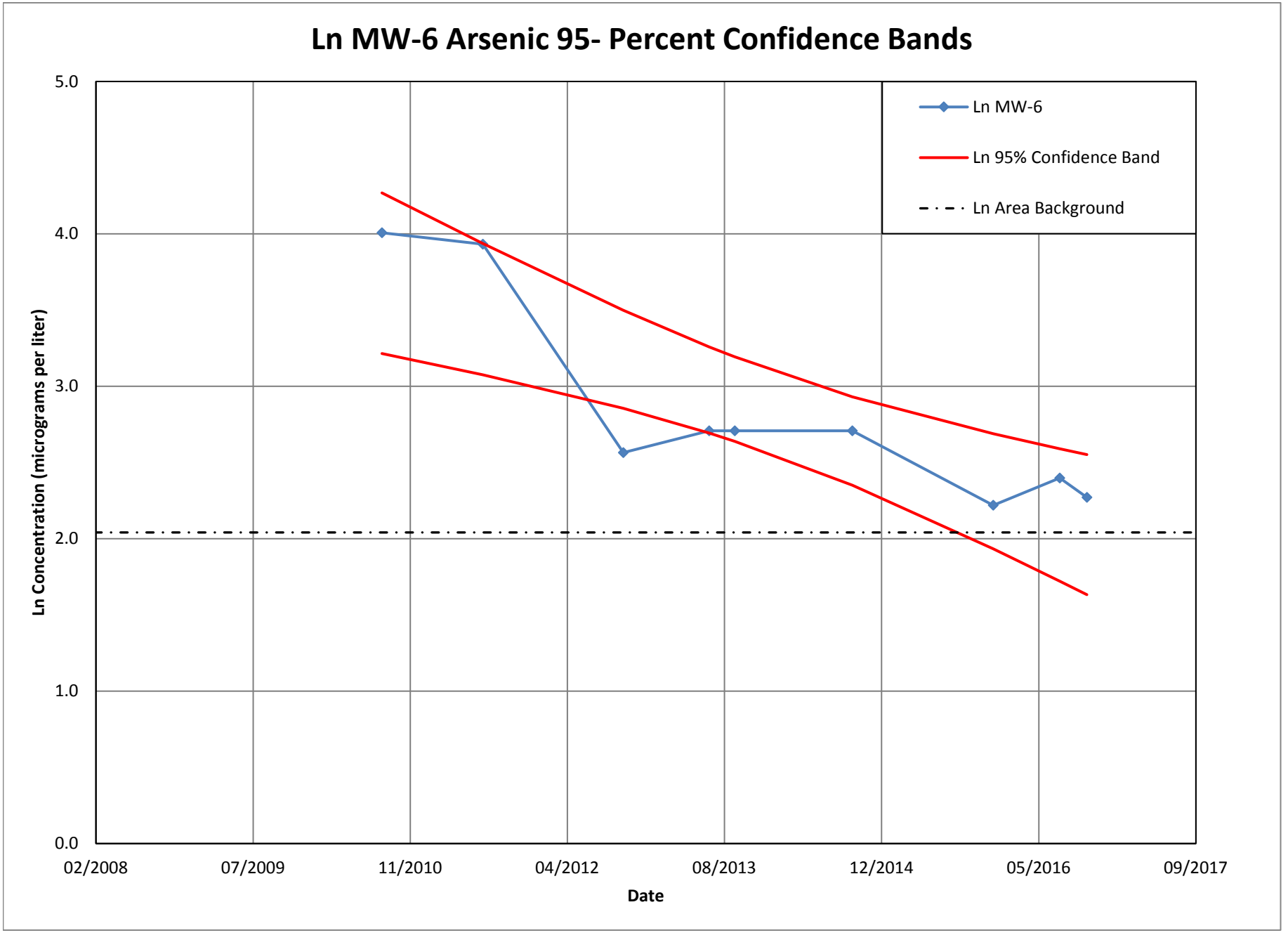
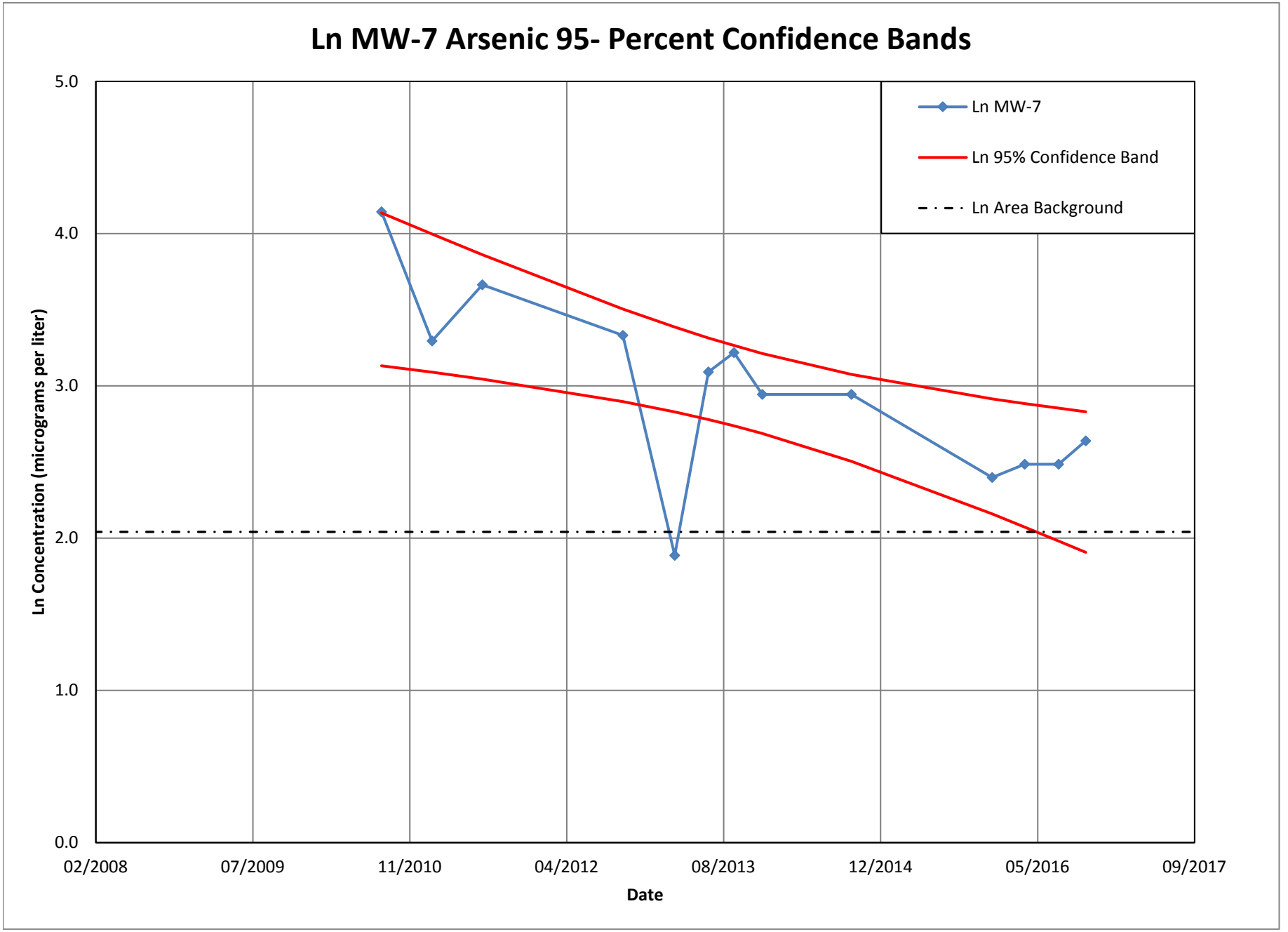
FIGURE D-12



22-1-11228-008

FIGURE D-13



22-1-11228-008

FIGURE D-14

APPENDIX E

SUNNYSIDE VALLEY IRRIGATION DISTRICT MAP


Albro
Old Inland Empire
Gap
Wine Country
C
B
Wamba
PR0.37C
27+47
25
PRO.37CB
51.87E
PROSSER
SITE
Gas
PRO.27CB
North River

APPENDIX F

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 22-1-11228-008

Date: October 31, 2017
To: Port of Benton
Re: Former Marv Bonney Site, Prosser Airport
Prosser, WA

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland