Groundwater Monitoring Results
September 2014
Former Marv Bonny Site
Prosser Airport
Prosser, Washington

November 21, 2014

SHANNON & WILSON, INC.

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November 21, 2014

Port of Benton
3100 George Washington Way, #A
Richland, Washington 99354

Attn: Mr. John Haakenson

RE: GROUNDWATER MONITORING RESULTS, SEPTEMBER 2014, FORMER MARV BONNEY SITE, PROSSER AIRPORT, PROSSER, WASHINGTON

The attached report provides the results of a groundwater sampling event conducted at the former Marv Bonney site at the Prosser Airport. The services were performed to evaluate the groundwater status.

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.

Respectfully submitted,

SHANNON & WILSON, INC.

Donna R. Parkes
Principal Environmental Specialist

DRP:SWG/drp

Enclosure: Groundwater Monitoring Report, September 2014

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EXECUTIVE SUMMARY

September 2014 Groundwater Monitoring

Shannon & Wilson, Inc. collected groundwater samples in September 2014 from the seven monitoring wells at the former Marv Bonney site at the Prosser Airport on behalf of the owner, Port of Benton. The property previously underwent remediation, and groundwater monitoring is being conducted to monitor and document the effectiveness of remediation.

Monitoring events conducted during winter (non-irrigation season) and summer (irrigation season) indicate that groundwater elevations are generally 4 to 5 feet higher during the irrigation season. Groundwater flow direction also tends to vary between high and low water conditions. Measurement data indicate that during the irrigation season, flow direction is toward the southeast or east southeast, and shifts to a more southerly direction in the non-irrigation season. The current monitoring event occurred during a high groundwater elevation period.

Groundwater samples were analyzed for petroleum products (gasoline range total petroleum hydrocarbons [TPH] and benzene, toluene, ethylbenzene and xylenes [BTEX]), herbicides, and metals (arsenic and lead). Findings were as follows:

- Benzene was detected in the sample from MW-7 at a concentration of 1.5 micrograms per liter (µg/L), which is less than the Model Toxics Control Act (MTCA) Method A cleanup level of 5.0 µg/L. Other petroleum constituents were not detected in any of the samples at greater than the laboratory practical quantitation limits (PQL).

- Herbicides were not detected in samples at greater than the PQL.

- Arsenic concentrations ranged from a high of 20 µg/L in the sample from MW-3 to a low of 8.1 µg/L in the sample from MW-1. All detected concentrations exceed the MTCA Method A cleanup level of 5 µg/L.

Findings, Conclusions and Recommendations

During the past three monitoring events, petroleum constituents in groundwater samples have been either not detectable or less than MTCA Method A cleanup levels. The monitoring events represent both high and low groundwater conditions.

Herbicide detections in groundwater samples, historically, have been infrequent and sporadic. Since 2012, the only herbicide that has exceeded potential cleanup criteria 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 two subsequent samples.

Several site-specific conditions indicate that herbicides in surface runoff may be a source of herbicides detected in groundwater samples. Such conditions include shallow screen depths, the tendency for standing water to pond above MW-4 and MW-6, the presence of shallow basalt resulting in perched groundwater conditions, and possibly faulty well caps. To address this last condition, we installed new well caps on November 10th to reduce the potential for surface water to enter well casings from the top.

Review of historical arsenic results indicates that concentrations in groundwater samples from site wells have been generally trending downward and stabilizing since July 2011. A literature review indicates that there is area-wide arsenic contamination in some eastern and central Washington area soils, notably from former orchard operations. Conditions may be present in the Prosser and lower Yakima Valley areas that are conducive to the transfer of arsenic from soil to groundwater. Such conditions include the prevalence of alkaline soils, shallow groundwater, and potential use of phosphate fertilizers on former orchard lands. In our opinion, arsenic detected in groundwater samples from the subject site may be present due to area-wide, background arsenic in groundwater.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

GROUNDWATER MONITORING, SEPTEMBER 2014
FORMER MARV BONNEY SITE AT PROSSER AIRPORT
PROSSER, WASHINGTON

1.0 INTRODUCTION AND BACKGROUND INFORMATION

The Port of Benton (Port) contracted with Shannon & Wilson, Inc. to collect groundwater samples from monitoring wells at the former Marv Bonney site at the Prosser Airport. The site is identified as Department of Ecology's (Ecology) Facility ID number 7474148. The property previously underwent interim remediation under an Ecology Agreed Order. Figure 1 includes a vicinity sketch showing the site's location in Prosser and a site plan showing monitoring well locations.

Documents prepared by others indicate that 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. Previous groundwater monitoring has indicated that constituents of concern include petroleum products (gasoline range total petroleum hydrocarbons [TPH] and benzene), metals (arsenic and lead), and herbicides.

Shannon & Wilson prepared a Sampling and Analysis Plan (SAP) describing the objectives, methodology and processes to be used to conduct groundwater quality performance monitoring. Initially, semi-annual monitoring was conducted until it appeared that the site has or can achieve cleanup levels. Following the March 2013 sampling event, the Port consulted with Ecology and revised the monitoring frequency to quarterly. The objective is to document groundwater quality in compliance with Model Toxics Control Act (MTCA) requirements, and to work toward a determination of no further action (NFA) required.

2.0 GROUNDWATER SAMPLING

The September 2014 monitoring event included collecting groundwater samples from the seven site wells for chemical analysis and obtaining groundwater elevation data to estimate the groundwater flow direction. Shannon & Wilson's representative collected samples on September 25, 2014.

2.1 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 Environmental (OnSite) of Redmond, Washington for laboratory analysis. Analyses and test methods included the following:

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

Groundwater elevation measurements from 2012 through 2014 are summarized in Table 1. The elevations were calculated using data provided by Stratton Surveying & Mapping. The water table elevations during the irrigation season are generally 4 to 5 feet higher than during the non-irrigation season.

Based on the current 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: 1) Purge water from the well using a stainless steel bladder pump; 2) 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 3) 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 (tubing and bladder) 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 SAP (S&W, SAP September 7, 2012; Rev01 October 24, 2012).

2.2 Field Measurements

As indicated in the sampling procedures description, 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, so that a sample could then be collected 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 2, along with measurements since September 2012. Comparison of September 2014 measurements among the wells indicates the following:

- Dissolved oxygen in MW-1 and MW-2 was higher than the other site wells.
- Specific conductivity did not vary considerably between locations.
- ORP was lowest at MW-5.

These findings are similar to measurements and observations made during the sampling events conducted since September 2012.

3.0 RESULTS OF LABORATORY ANALYSES

Table 3 summarizes the laboratory results for samples collected September 25, 2014. The laboratory report is in Appendix A.

3.1 Petroleum Constituents

Samples from the seven wells were analyzed for gasoline range TPH (TPH-G) and BTEX. Benzene was detected in the sample from MW-7 at concentrations of 1.5 µg/L, which is less than the MTCA Method A cleanup level of 5.0 µg/L.

3.2 Herbicides

Samples from the seven wells were analyzed for herbicides. Herbicides were not detected in any of the samples at greater than the laboratory practical quantitation limit (PQL).

3.3 Metals

Arsenic concentrations ranged from a high of 20 µg/L in the sample from MW-3 to a low of 8.1 µg/L in the sample from MW-1. All detected concentrations exceed the MTCA Method A cleanup level of 5 µg/L. Lead was not detected in any of the samples.

4.0 COMPARISON TO PAST CONDITIONS

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 4 and 5 include a summary of previous and current laboratory results. Only parameters that were detected in one or more samples are included in the tables.

4.1 Petroleum Constituents

Samples from MW-5 have, in the past, exceeded MTCA Method A cleanup levels 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 cleanup levels for TPH-G and benzene are 800 and 5 µg/L, respectively.

In seven subsequent samples collected in 2011 through 2014, TPH-G and benzene have either been not detected at greater than the laboratory PQL, or were less than the MTCA Method A cleanup levels. Five of the samples were collected during the irrigation (high groundwater elevation) season and two were collected during the non-irrigation (low groundwater elevation) season.

Shannon & Wilson prepared a time plot of TPH-G concentrations in samples from MW-5 (Figure 3). The plot also shows groundwater elevations at the time of sampling. Historically, concentrations have been the highest during the non-irrigation season (January 2010 and January 2011 samples). However, the March and December 2013 samples were collected during the non-irrigation season, and concentrations of TPH-G and benzene were significantly less than the peak concentrations detected in 2010 and 2011.

Benzene has been detected in two samples from MW-7 at greater than the MTCA Method A cleanup level 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 thirteen samples collected from MW-7

between 2009 and 2014, the July 2011 and June 2013 samples were the only ones with a benzene concentration that exceeded the MTCA Method A cleanup level.

4.2 Herbicides

As indicated in Section 3.0, herbicides were not detected in any of the September 2014 samples.

During previous sampling events, some herbicides have been detected at concentrations that exceed 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 7 samples collected since 01-26-2010.
	MW-4	10-23-2009	22.0	16.0	The only detection out of 11 samples collected between 2007 and 2014.
MCPA	MW-4	6-26-2013	22	8.0	One of two detections out of 11 samples collected between 2007 and 2014.
	MW-6	6-26-2013	31	8.0	The only detection out of 9 samples collected between 2009 and 2014.
	MW-7	07-07-2011	33	8.0	The only detection out of 13 samples collected between 2009 and 2014.
Pentachloro-phenol	MW-5	07-22-2009	0.24	0.22	The only detection out of 13 samples collected between 2009 and 2014.
Dinoseb	MW-4	06-01-2007	220	7.0[a]	The only one of 11 samples that exceeded the criterion

µg/L micrograms per liter

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.

[a] Federal maximum contaminant level goal (in the absence of a MTCA Method B value)

Pentachlorophenol and Dinoseb exceedances were one-time events that occurred 5 to 7 years ago. MCPP has exceeded the Method B criterion three times in samples from MW-3, but has been below the PQL in the seven most recent samples. MCPA detections in samples from MW-6 and -7 were one-time events. MCPA has been detected twice in samples from MW-4 collected over a 7-year period.

Information regarding MCPA from the Extension Toxicology Network (EXTOXNET) indicates that MCPA and its formulations are rapidly degraded by soil microorganisms. It has low persistence and a half-life of 5 to 6 days in most soils. MCPA readily leaches from soil. In water, it is relatively stable to light breakdown, but can be rapidly broken down by microorganisms. Under test conditions, the half-life varied from approximately 2 to 5 weeks (EXTOXNET, 1996).

As indicated in the table above, the most recent herbicide (MCPA) exceedance occurred in samples collected in June 2013 from MW-4 and MW-6. Another anomalous finding from that sampling event was that Dicamba and 2,4-D were detected at very low concentrations in some samples. Dicamba was detected in samples from MW-3, -4, -5, -6, and -7 at concentrations ranging from 0.62 to 3.7 µg/L. The MTCA Method B risk-based screening criterion for Dicamba is 480 µg/L. The herbicide 2,4-D was detected in samples from MW-3, -4 and -7 at concentrations ranging from 0.053 to 2.0 µg/L, all of which are significantly less than the MTCA Method B criterion of 160 µg/L.

Our research indicates that MCPA has been used in formulation with many other compounds, including 2,4-D and Dicamba. Examples of commercial products containing MCPA include Agritox, Tigrex, Weed'N'Feed, and Weed-B-Gon. The Weed-B-Gon® label indicates that the primary active ingredient is MCPA, with a lower percentage of dimethylamine salt of Dicamba.

At the time we prepared our report regarding the June 2013 monitoring event, Port staff reviewed the herbicide products that had recently been used at the airport. Weed-B-Gon® or other products containing MCPA were not known to have been used. However, the possibility of other nearby uses, such as along the roadway, might have resulted in drift onto the Port's property.

4.3 Pesticides

None of the detected pesticide concentrations in any of the historical and recent samples collected between 2007 and 2013 exceeded the applicable MTCA Method A cleanup levels or Method B risk-based concentrations. Pesticide analyses were deleted from the testing suite in June 2013.

4.4 Metals

Lead concentrations exceeded the MTCA Method A cleanup level of 15 µg/L in one sample from MW-3 in April 2008 (25 µg/L). No other lead detections in samples from the other wells have exceeded the cleanup level. Lead was not detected in any of the samples from the current monitoring period.

Arsenic concentrations have consistently exceeded the MTCA Method A cleanup level of 5 µg/L in groundwater samples from all of the site wells. A time plot of arsenic results between April 2009 and September 2014 is included as Figure 4.

Arsenic concentrations in the upgradient well (MW-1) have been relatively stable throughout the monitoring period from 2007 through 2014 (Table 5 and Figure 4). Concentrations at that location have ranged from 5.4 to 8.2 µg/L in 14 samples. This may be indicative of background, area-wide arsenic in groundwater.

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 20 to 32 µg/L, which are significantly lower than the peak concentration. Figure 4 also indicates that arsenic concentrations in samples from site wells have been generally trending downward and stabilizing since July 2011.

5.0 AREA-WIDE ARSENIC CONTAMINATION

Since the early 2000s, Ecology has had an on-going task force to develop strategies for dealing with "area-wide" 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 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 below the ground surface, 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 USGS Water-Supply Paper 2354-A titled Surface-Water Quality Assessment of the Yakima River Basin in Washington…, 1987-91 (Fuhrer, 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.

6.0 FINDINGS AND CONCLUSIONS

6.1 Pesticides

Data from twelve monitoring events conducted between 2007 and 2013 indicates that none of the occasional pesticide detections in groundwater have exceeded potential regulatory cleanup criteria (Table 4). Pesticides are no longer being analyzed in groundwater samples.

6.2 Herbicides

Results from the September 2014 sampling event indicate that herbicides were not detected in groundwater samples (Table 5).

Historically, MCPA detections in samples from MW-6 and MW-7 were one-time events, and MCPA has been detected twice in samples from MW-4 collected over a 7-year period. The most recent detections at MW-4 and MW-6 were in June 2013. MCPA is a broad-leaf weed herbicide, currently classified as a restricted use pesticide in the United States.

As indicated in Section 4.2, another anomalous finding from the June 2013 sampling event was that Dicamba and 2,4-D were detected at very low concentrations in some of the samples. The concentrations of both herbicides were significantly less than the MTCA Method B risk-based screening criteria.

There are a number of factors pointing to the possibility that infrequent and sporadic herbicide detections in groundwater samples may be resulting from storm (surface) water influences rather than a subsurface source, summarized as follows:

- MCPA, a short-life herbicide, is used in formulations with other compounds including Dicamba and 2,4-D in several popular herbicides.
- Just prior to the June 2013 sampling event, there was evidence that there had been recent standing (storm) water over the MW-4 and MW-6 locations.
- The top of MW-6's well screen is two feet below ground surface with one foot of surface seal above. The shallow well screen increases the potential for infiltration water to short-circuit into groundwater.
- Metal parts of the original casing caps are rusted or broken, which prevents some of the caps from being tightened.
- MW-4 and MW-6 are the shallowest site wells, and they typically go dry in the winter. The limited zone of groundwater over basalt bedrock during the irrigation season may behave like a "perched" water zone so that groundwater samples may not be representative of more generalized groundwater quality.

Regarding the issue of casing cap condition, the Port authorized Shannon & Wilson to replace the caps to reduce the potential for surface water to enter the well casings from the top. New caps were installed on November 10, 2014.

6.3 Petroleum Constituents

The results of the September 2014 sampling event and comparison to past results indicate that the concentrations of petroleum constituents have decreased in groundwater samples from MW-5 (Table 4, Figure 3). TPH-G and benzene concentrations are currently less than MTCA Method A cleanup levels at all monitoring points.

Our review of field parameters measured at the wells (Table 2) indicates that bacterial activity may be occurring at MW-3 through MW-7 locations. These wells are located close to the hangar (Figures 1 and 2). The conclusion is based primarily on dissolved oxygen levels, which are significantly less than saturation at those locations.

Bacteria that break down petroleum products use oxygen in the metabolic process, and reduce dissolved oxygen in the water. When dissolved oxygen is no longer readily available, anaerobic bacteria may be active and strip oxygen from dissolved chemical compounds. The anaerobic breakdown process proceeds more slowly than the aerobic process, and may also induce changes in groundwater chemistry.

6.4 Arsenic

When comparing the results from each monitoring event, the sample from MW-3 typically has had the highest arsenic concentration relative to the other wells (Figure 4). MW-5 is located approximately 60 feet east southeast of MW-3, and is in an apparently downgradient position relative to MW-3 during high groundwater conditions. Over the past three years, the arsenic concentrations in samples from MW-3 have been approximately two to four times higher than the corresponding MW-5 sample concentrations. This indicates that arsenic has not been readily mobilizing from the MW-3 location or moving downgradient at high concentrations.

Results from the past six monitoring events (2012 through 2014) have shown a declining and stabilizing trend in arsenic concentrations in groundwater samples from all of the monitoring wells (Figure 4). These results may be indicative that arsenic concentrations are mirroring background concentrations.

Information from a literature review indicates that there is area-wide arsenic contamination in some eastern and central Washington area soils, notably from former orchard operations. Conditions may be present in the Prosser and lower Yakima Valley areas that are conducive to the transfer of arsenic from soil to groundwater as discussed in Section 5.0. In our opinion, arsenic detected in groundwater samples from the subject site may be present due to area-wide, background arsenic in groundwater.

6.5 Petroleum and Arsenic Correlation

A Battelle report titled *Attenuation of Naturally Occurring Arsenic at Petroleum-Impacted Sites* (Brown, 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 that this process is occurring.

When comparing Figures 3 and 4, an apparent correlation is that arsenic concentrations have historically been inversely proportional to TPH-G and benzene concentrations at MW-5 (i.e. when TPH-G and benzene were at their highest in January 2010 and 2011, arsenic concentrations were lower). To make this inverse correlation easier to see, we have plotted TPH-G and arsenic concentrations in samples from MW-5 on Figure 5. The effect is pronounced in the period from 2009 to 2011 when higher petroleum constituent concentrations were present. Petroleum

constituents have not exceeded MTCA Method A cleanup levels in samples from MW-5 since January 2011, and arsenic concentrations appear to have stabilized to approximately 9 to 12 µg/L.

7.0 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.

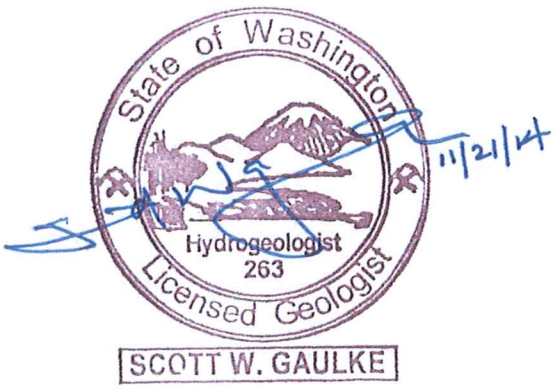
The data presented in this report are based on limited research at the site and should be considered representative at the time of our observations. Shannon & Wilson performed this work within its best judgment to adequately describe site conditions. Changes in the conditions of the site can occur with 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 of Benton 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 S&W. We have prepared the attached "Important Information about Your Environmental Report," to assist you and others in understanding the use and limitations of our reports.

SHANNON & WILSON, INC.

Donna R. Parkes
Principal Environmental Specialist



Scott W. Gaulke, LHG, PE
Vice President

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TABLE 1

GROUNDWATER LEVEL MEASUREMENTS

	Well Identification						
	MW-1	**MW-2**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-7**
Total Depth	14.45	9.07	8.84	6.11	9.22	5.86	14.58
Top of Casing Elevation	672.34	671.08	671.08	671.45	671.21	670.48	671.55
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
Groundwater Elevation:							
6/20/2012	669.28	669.17	668.88	668.75	668.775	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

Measurements and elevations are in feet.

TABLE 2
SUMMARY OF FIELD PARAMETERS

Well Number	Date Measured	DO (mg/L)	ORP (mv)	Conductivity (umhos/cm)	pH	Temperature (°C)	Turbidity (NTU)	Observations
MW-1	9/26/2012	5.47	71.2	0.586	6.49	18.98	2.40	Slightly turbid, then clear
	3/11/2013	7.31	72.5	0.572	7.27	12.36	13.8	Slightly turbid, then almost clear
	6/26/2013	8.57	21.4	0.567	6.59	16.80	0.60	Clear
	9/16/2013	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
	9/25/2014	6.72	126.0	0.514	6.54	18.79	0.39	Clear
MW-2	9/26/2012	2.47	20.8	0.657	7.23	21.08	2.25	Clear
	3/11/2013	5.91	62.1	0.664	7.35	11.43	7.24	Clear
	6/26/2013	5.50	22.6	0.647	6.79	17.66	8.23	Approximately clear
	9/16/2013	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
	9/25/2014	4.51	61.2	0.531	7.35	19.01	11.1	Approximately clear
MW-3	9/26/2012	0.14	-25.0	1.009	7.08	23.60	4.94	Light tea color, clear
	3/11/2013	0.67	81.7	1.804	7.40	11.67	85.3	Light straw color
	6/26/2013	0.35	19.6	0.916	7.00	20.08	12.2	Very light straw color
	9/16/2013	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
	9/25/2014	0.27	48.0	0.672	7.50	21.41	4.58	Clear
MW-4	9/26/2012	0.46	9.7	0.850	6.82	22.71	1.75	Clear
	6/26/2013	2.06	20.6	0.729	6.95	19.70	3.43	Clear
	9/16/2013	2.50	69.5	0.728	7.30	25.02	0.37	Clear
	9/25/2014	1.28	42.0	0.618	7.45	22.07	0.85	Clear
MW-5	9/27/2012	0.62	21.8	0.750	7.17	22.41	4.86	Very slightly turbid
	3/11/2013	2.09	74.8	0.866	7.45	11.80	16.9	Very slightly turbid
	6/26/2013	1.21	21.1	0.718	6.81	18.65	3.10	Approximately clear
	9/16/2013	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
	9/25/2014	0.49	-11.4	0.592	7.33	20.79	0.94	Clear
MW-6	9/26/2012	1.66	23.2	0.665	6.91	22.47	4.60	Very slightly turbid
	6/26/2013	2.13	20.6	0.726	6.84	19.46	5.16	Very slightly turbid
	9/16/2013	0.65	2.9	0.744	7.11	23.56	1.19	Clear
	9/25/2014	0.40	-0.7	0.638	7.33	21.89	2.67	Clear
MW-7	9/27/2012	0.94	16.3	0.856	7.43	17.86	1.60	Clear
	3/11/2013	1.68	52.0	0.787	6.93	11.64	1.22	Clear
	6/26/2013	0.79	20.0	0.897	6.53	16.17	3.99	Very slightly turbid
	9/16/2013	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
	9/25/2014	0.76	1.4	0.710	7.09	18.96	2.90	Approximately clear

DO	Dissolved oxygen	mv	millivolts
mg/L	milligrams per liter	umhos/cm	micromhos per centimeter
ORP	Oxidation/reduction potential	NTU	Nephelometric turbidity units

TABLE 3

SUMMARY OF ANALYTICAL RESULTS
SAMPLES COLLECTED SEPTEMBER 25, 2014 (results in µg/L)

Parameter	Well Identification							MTCA-A
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	
TPH-G	<100	<100	<100	<100	<100	<100	<100	800*
Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	5
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1000
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	700
Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1000
Herbicides**	ND	ND	ND	ND	ND	ND	ND	
Metals								
Arsenic, total	**8.1**	**8.4**	**20**	**15**	**9.9**	**15**	**19**	5
Lead, total	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	15

µg/L micrograms per liter
TPH-G Gasoline range total petroleum hydrocarbons
ND Not detected at greater than the laboratory practical quantitation limit (PQL)
MTCA-A Model Toxics Control Act (MTCA) Method A groundwater cleanup levels

Analytical results in **bold** indicate an exceedance above the applicable MTCA Method A cleanup level.
* 800 µg/L when benzene is present; 1000 µg/L when benzene is not detectable.
** Herbicides were not detected in the samples analyzed; refer to laboratory report for a list of analytes.

TABLE 4

SUMMARY OF 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
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
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	NA

TABLE 4 (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-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
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
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
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

TABLE 4 (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
MTCA A	5	1000	700	1000	800[c]									0.3				
MTCA B (carcinogenic)						0.0048	0.25[d]	0.26		0.0055		0.36						
MTCA B (non-carcinogenic)						0.1	8.00[d]		[e]	0.800	4.8		[e]		See Endrin	80.0	[e]	See Endrin

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 database searched 3/22/2013 for current values.
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
e	total for endosulfan isomers is 96.0 µg/L

NOTES: Concentrations in bold typeface exceed MTCA Method A cleanup levels for groundwater.

TABLE 5

SUMMARY OF 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
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
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**	**25.0**
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**	<1.1
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

TABLE 5 (Continued)

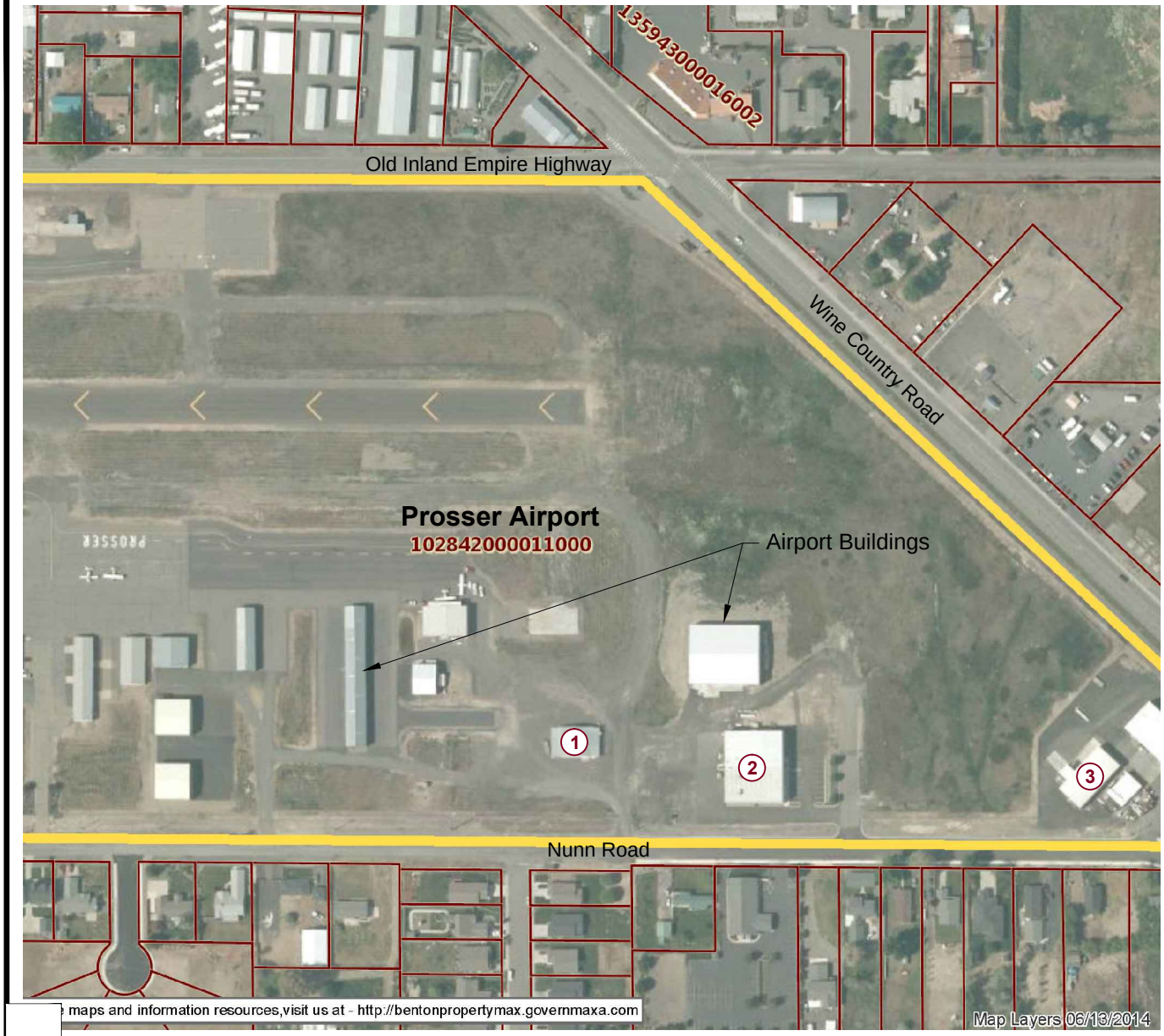
Well ID and Sample Date	Herbicides										Metals[b]	
	Dicamba	MCPP	MCPA	Dichlorprop	2,4-D	Pentachloro-phenol	Silvex (2,4,5-TP)	2,4,5-T	2,4-DB	Dinoseb	Arsenic	Lead
MW-4 6/1/2007	ND	ND	ND	ND	ND	ND	ND	ND	ND	**220**	**5**	ND
12/11/2007	39	ND	**8.0**	ND	ND	ND	ND	ND	ND	0.52	**NA**	ND
4/14/2008	1.9	ND	ND	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
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
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
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

TABLE 5 (Continued)

MTCA A											5	15
MTCA B (carcinogenic)						0.22						
MTCA B (non-carcinogenic)	480	16.0	8.00		160	80			130			
Federal MCLG							50			7		

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 database searched 3/22/2013 for current values.
MCLG	Maximum contaminant level goal (U.S. EPA)
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.

Filename: J:\221\11228-005\22-1-11228-005 Fig 1.dwg Date: 11-17-2014 Login: sac



0 400 800

Approximate Scale in Feet

LEGEND

1. Subject Site
2. Milne Fruit
3. Chukar Cherries

N

6/26/2014

Benton County makes every effort to produce and publish the most current and accurate information possible. This information is furnished as a public service. The information must be accepted and used by the recipient with the understanding that the data was developed and collected for the purpose of developing property valuations, using the criteria of fair market value, as required by the State of Washington. The Appraised Value and Tax Information are updated at different times during the year and, therefore, may not always reflect same year values. Benton County assumes no liability whatsoever associated with the use or misuse of such data, and disclaims any representation or warranty regarding the completeness or accuracy of the data.
Note: Acreage and Square Footage data shown are approximate and may not be consistent with records maintained for appraisal purposes.

Data source(s): Benton County, Washington Government.

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

SITE VICINITY MAP

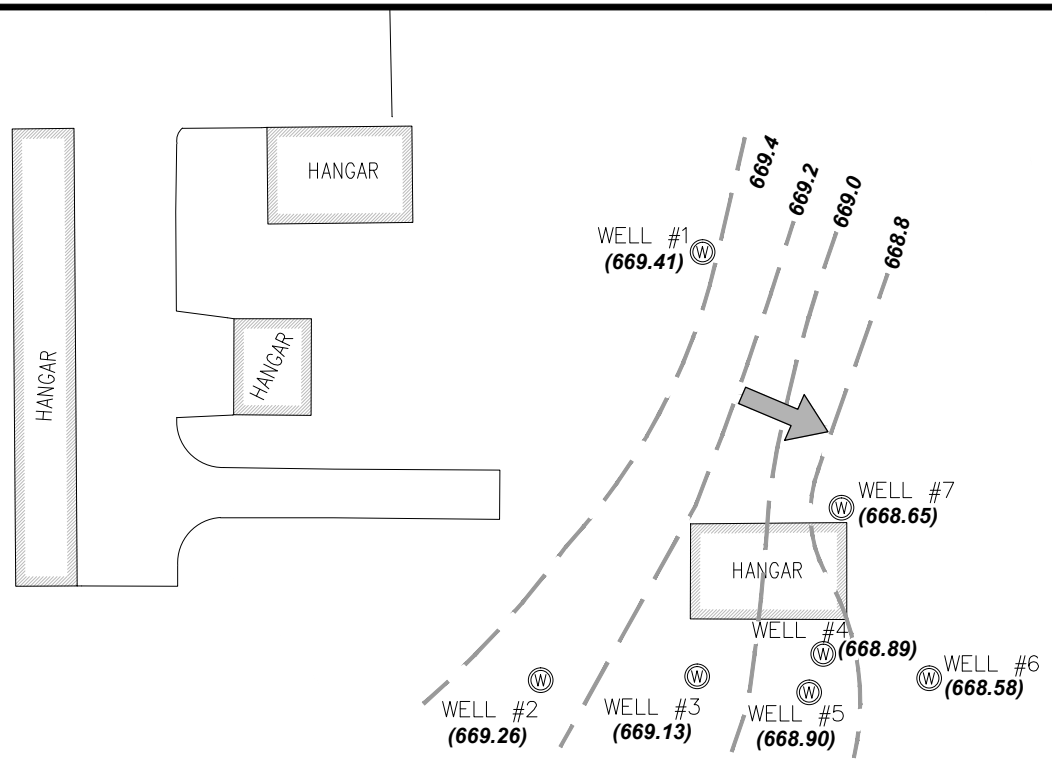
November 2014 22-1-11228-005

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

FIG. 1

Filename: J:\221\11228-005\22-1-11228-005 Fig 2.dwg Date: 11-17-2014 Login: sac



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 Marv Bonney Remediation Site
Prosser, Washington

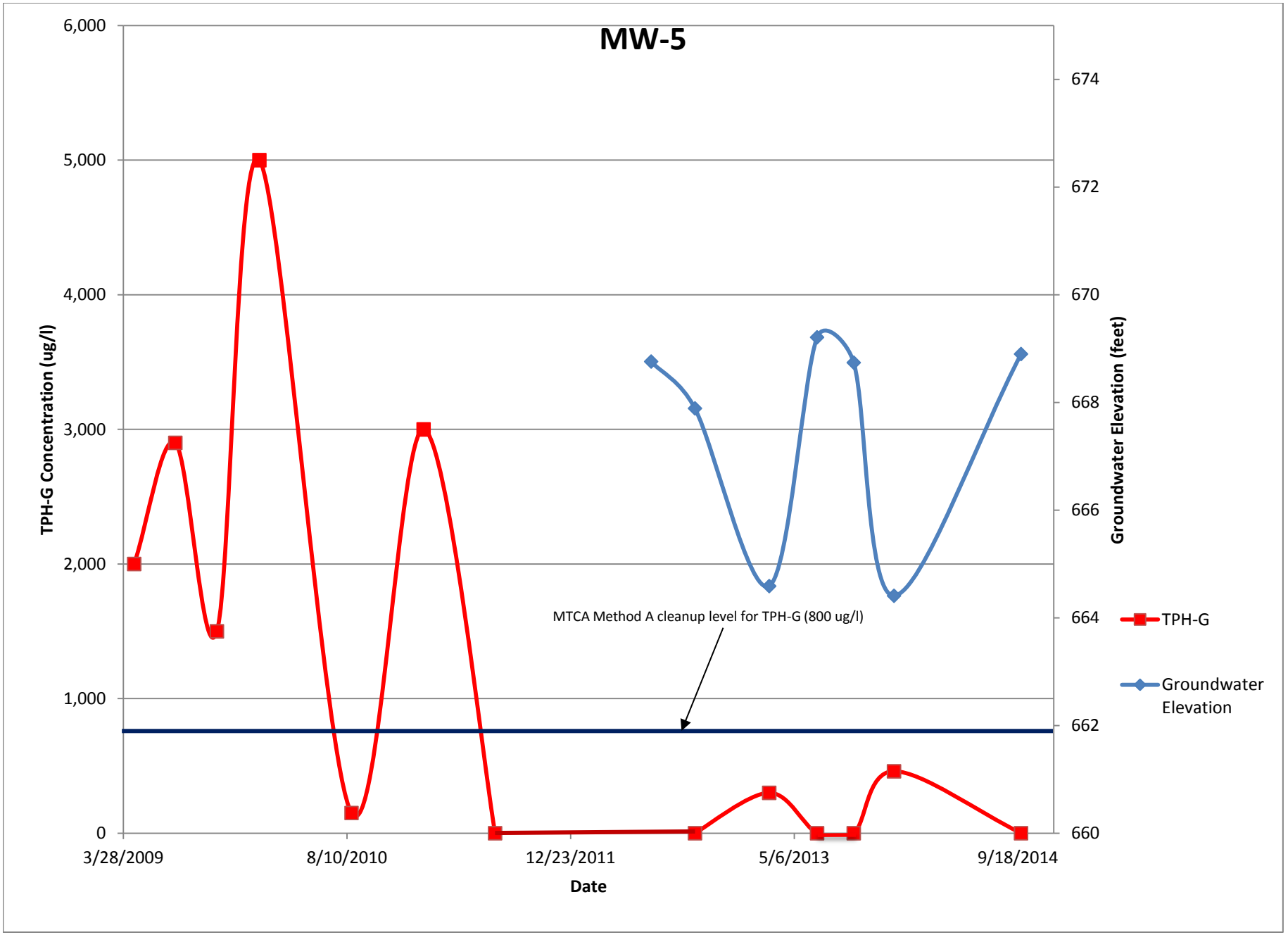
GROUNDWATER ELEVATIONS (SEPTEMBER 2014)

November 2014 22-1-11228-005

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2

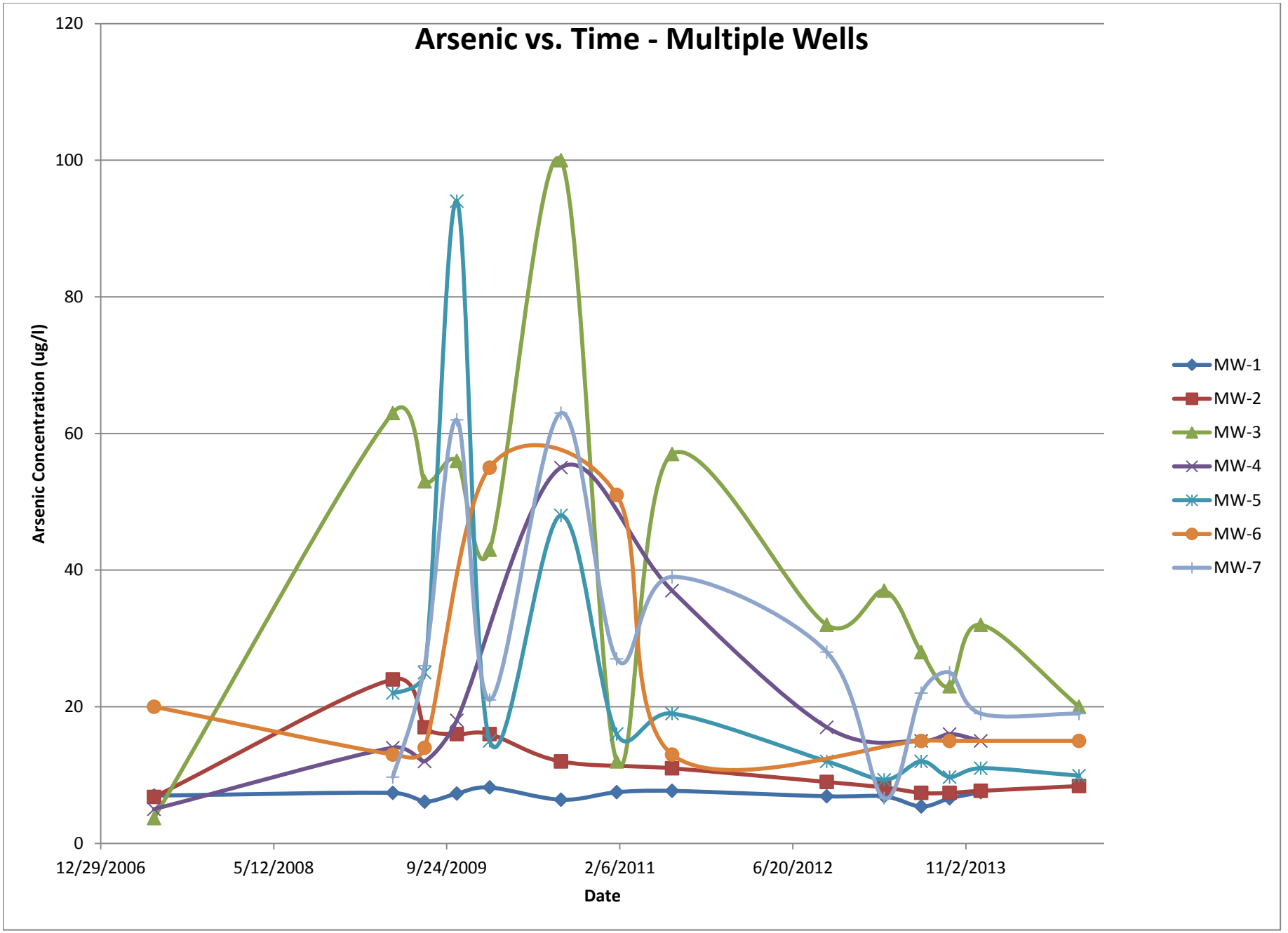
FIG. 2



November 2014
22-1-11228-005

Prosser Airport Former Marv Bonney Remediation Site
Prosser, Washington

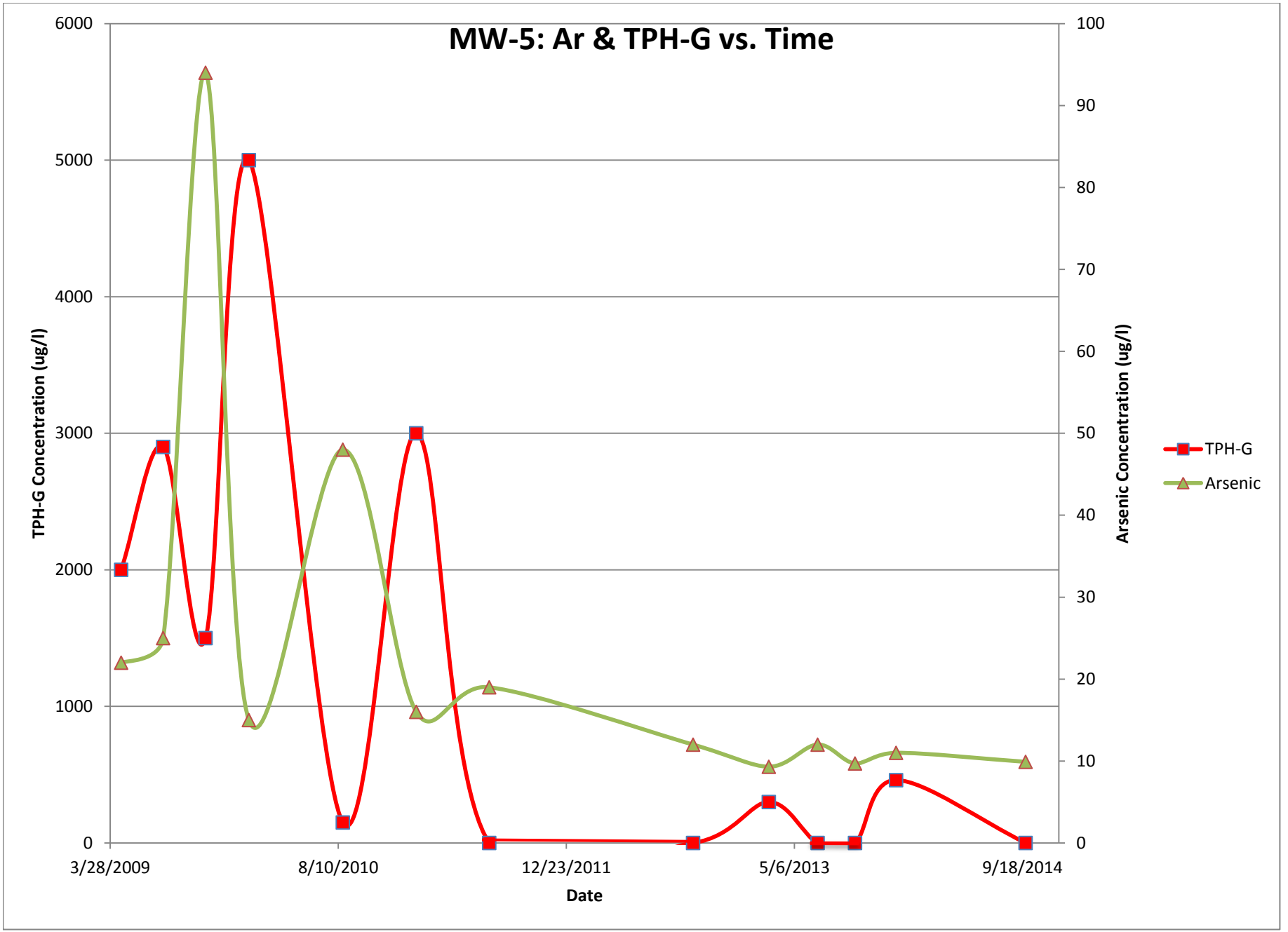
FIG. 3
TPH-G in Samples from MW-5



November 2014
22-1-11228-005

Prosser Airport Former Marv Bonney Remediation Site
Prosser, Washington

FIG. 4
Arsenic in Samples from Multiple Wells



November 2014
22-1-11228-005

Prosser Airport Former Marv Bonney Remediation Site
Prosser, Washington

FIG. 5
TPH-G and Arsenic in Samples from MW-5

APPENDIX A

LABORATORY REPORT

OnSite Environmental Inc.

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

October 6, 2014

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

Re: Analytical Data for Project 22-1-11228-005
Laboratory Reference No. 1409-276

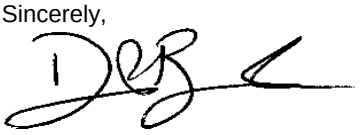
Dear Donna:

Enclosed are the analytical results and associated quality control data for samples submitted on September 26, 2014.

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 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

Case Narrative

Samples were collected on September 25, 2014 and received by the laboratory on September 26, 2014. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-06**					
Laboratory ID:	09-276-01					
Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-112*				
Client ID:	**MW2-06**					
Laboratory ID:	09-276-02					
Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-112*				
Client ID:	**MW3-06**					
Laboratory ID:	09-276-03					
Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-112*				

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW4-06**					
Laboratory ID:	09-276-04					
Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*85*	*71-112*				
Client ID:	**MW5-06**					
Laboratory ID:	09-276-05					
Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-112*				
Client ID:	**MW6-06**					
Laboratory ID:	09-276-06					
Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*87*	*71-112*				

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-06**					
Laboratory ID:	09-276-07					
Benzene	**1.5**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*71-112*				

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0929W2					
Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Toluene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Ethyl Benzene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
m,p-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
o-Xylene	**ND**	1.0	EPA 8021B	9-29-14	9-29-14	
Gasoline	**ND**	100	NWTPH-Gx	9-29-14	9-29-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*71-112*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-272-36										
	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*	*90*	*71-112*			
MATRIX SPIKES											
Laboratory ID:	09-272-36										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**56.5**	**57.5**	50.0	50.0	ND	**113**	**115**	78-120	2	12	
Toluene	**55.6**	**56.3**	50.0	50.0	ND	**111**	**113**	80-121	1	12	
Ethyl Benzene	**53.9**	**54.4**	50.0	50.0	ND	**108**	**109**	81-120	1	13	
m,p-Xylene	**53.4**	**53.6**	50.0	50.0	ND	**107**	**107**	81-119	0	13	
o-Xylene	**53.2**	**52.5**	50.0	50.0	ND	**106**	**105**	79-117	1	13	
Surrogate:											
Fluorobenzene						*95*	*99*	*71-112*			

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW1-06**					
Laboratory ID:	09-276-01					
Dalapon	**ND**	0.45	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	4.5	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	6.8	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.0092	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.069	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*46*	*30-96*				
Client ID:	**MW2-06**					
Laboratory ID:	09-276-02					
Dalapon	**ND**	0.49	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.050	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	5.0	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	7.5	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.050	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.050	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.010	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.076	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.050	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*56*	*30-96*				

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW3-06**					
Laboratory ID:	09-276-03					
Dalapon	**ND**	0.44	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.045	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	4.5	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	6.7	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.045	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.045	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.0091	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.046	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.068	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.045	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*47*	*30-96*				
Client ID:	**MW4-06**					
Laboratory ID:	09-276-04					
Dalapon	**ND**	0.50	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	5.0	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	7.6	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.010	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.077	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.051	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*57*	*30-96*				

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW5-06**					
Laboratory ID:	09-276-05					
Dalapon	**ND**	0.54	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.055	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	5.5	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	8.2	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.055	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.055	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.011	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.056	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.056	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.083	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.055	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*45*	*30-96*				
Client ID:	**MW6-06**					
Laboratory ID:	09-276-06					
Dalapon	**ND**	0.50	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.052	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	5.1	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	7.7	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.052	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.052	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.010	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.052	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.052	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.078	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.052	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*38*	*30-96*				

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

CHLORINATED ACID HERBICIDES EPA 8151A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW7-06**					
Laboratory ID:	09-276-07					
Dalapon	**ND**	0.47	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.048	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	4.8	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	7.2	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.048	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.048	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.0097	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.049	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.048	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.073	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.048	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*32*	*30-96*				

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

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:	MB1002W2					
Dalapon	**ND**	0.46	EPA 8151A	10-2-14	10-2-14	
Dicamba	**ND**	0.047	EPA 8151A	10-2-14	10-2-14	
MCPP	**ND**	4.7	EPA 8151A	10-2-14	10-2-14	
MCPA	**ND**	7.0	EPA 8151A	10-2-14	10-2-14	
Dichlorprop	**ND**	0.047	EPA 8151A	10-2-14	10-2-14	
2,4-D	**ND**	0.047	EPA 8151A	10-2-14	10-2-14	
Pentachlorophenol	**ND**	0.0095	EPA 8151A	10-2-14	10-2-14	
2,4,5-TP (Silvex)	**ND**	0.048	EPA 8151A	10-2-14	10-2-14	
2,4,5-T	**ND**	0.047	EPA 8151A	10-2-14	10-2-14	
2,4-DB	**ND**	0.071	EPA 8151A	10-2-14	10-2-14	
Dinoseb	**ND**	0.047	EPA 8151A	10-2-14	10-2-14	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCAA	*49*	*30-96*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1002W2										
	SB	SBD	SB	SBD		SB	SBD				
Dicamba	**0.631**	**0.615**	1.00	1.00	N/A	**63**	**61**	33-91	3	14	
2,4-D	**0.514**	**0.527**	1.00	1.00	N/A	**51**	**53**	35-75	2	17	
Pentachlorophenol	**0.0686**	**0.0697**	0.100	0.100	N/A	**69**	**70**	44-101	2	21	
2,4,5-T	**0.617**	**0.634**	1.00	1.00	N/A	**62**	**63**	40-88	3	13	
2,4-DB	**0.586**	**0.698**	1.00	1.00	N/A	**59**	**70**	22-99	17	18	
Surrogate:											
DCAA						*58*	*58*	*30-96*			

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-276-01					
Client ID:	**MW1-06**					
Arsenic	**8.1**	3.3	200.8	10-2-14	10-2-14	
Lead	**ND**	1.1	200.8	10-2-14	10-2-14	
Lab ID:	09-276-02					
Client ID:	**MW2-06**					
Arsenic	**8.4**	3.3	200.8	10-2-14	10-2-14	
Lead	**ND**	1.1	200.8	10-2-14	10-2-14	
Lab ID:	09-276-03					
Client ID:	**MW3-06**					
Arsenic	**20**	3.3	200.8	10-2-14	10-2-14	
Lead	**ND**	1.1	200.8	10-2-14	10-2-14	
Lab ID:	09-276-04					
Client ID:	**MW4-06**					
Arsenic	**15**	3.3	200.8	10-2-14	10-2-14	
Lead	**ND**	1.1	200.8	10-2-14	10-2-14	
Lab ID:	09-276-05					
Client ID:	**MW5-06**					
Arsenic	**9.9**	3.3	200.8	10-2-14	10-2-14	
Lead	**ND**	1.1	200.8	10-2-14	10-2-14	
Lab ID:	09-276-06					
Client ID:	**MW6-06**					
Arsenic	**15**	3.3	200.8	10-2-14	10-2-14	
Lead	**ND**	1.1	200.8	10-2-14	10-2-14	

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Laboratory Reference: 1409-276
Project: 22-1-11228-005

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-276-07					
Client ID:	**MW7-06**					
Arsenic	**19**	3.3	200.8	10-2-14	10-2-14	
Lead	**ND**	1.1	200.8	10-2-14	10-2-14	

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-2-14
Date Analyzed:	10-2-14
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1002WM1

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

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 10-2-14
Date Analyzed: 10-2-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-148-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**6.27**	**6.07**	3	3.3	
Lead	**ND**	**ND**	NA	1.1	

Date of Report: October 6, 2014
Samples Submitted: September 26, 2014
Laboratory Reference: 1409-276
Project: 22-1-11228-005

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 10-2-14
Date Analyzed: 10-2-14

Matrix: Water
Units: ug/L (ppb)

Lab ID: 09-148-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	111	**130**	112	**129**	111	1	
Lead	111	**120**	108	**121**	109	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

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

Laboratory Number: 09-276

Company: Shannon+Wilson, Pasco
Project Number: 22-1-11228-005
Project Name: Port of Benton / Prosser Airport
Project Manager: D. Parkes
Sampled by: D. Parkes

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

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	MW1-06	9/25/14	7:12	water	6		X										X					X					
2	MW2-06		8:05		6		X										X					X					
3	MW3-06		9:35		6		X										X					X					
4	MW4-06		10:40		6		X										X					X					
5	MW5-06		12:35		6		X										X					X					
6	MW6-06		11:35		6		X										X					X					
7	MW7-06		1:35		6		X										X					X					

	Signature	Company	Date	Time
Relinquished	[signature]	Shannon+Wilson	9/25/14	3:30
Received	[signature]	Onsite Env	9/26/14	1000
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions
Packaged in 2 coolers.

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Standard ☐ Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☐ _____

APPENDIX B

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL REPORT

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 22-1-11228-005

Date: November 21, 2014
To: Port of Benton
Former Marv Bonny Site, 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