

Revised 2014 Annual Report Groundwater Monitoring and Interim Action Performance Monitoring

Pasco Landfill NPL Site Pasco, Washington

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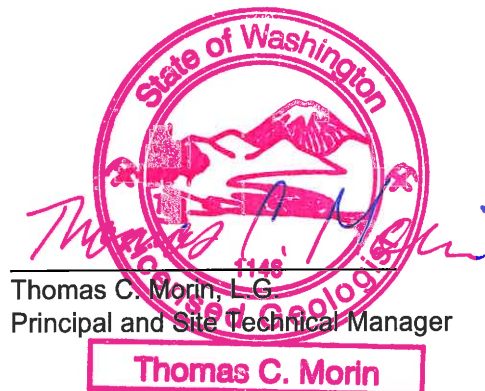


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Attachment G – Electronic Data Deliverable (available on compact disc)

1.0 INTRODUCTION

On behalf of the Industrial Waste Area Generators Group III (IWAG), Environmental Partners, Inc. (EPI) has prepared this 2014 Annual Report for Groundwater Monitoring and Interim Action Performance Monitoring (2014 Annual Report) for the Pasco Landfill NPL site (Site) in Pasco, Washington.

This report is being submitted to the Washington State Department of Ecology (Ecology) in support of the ongoing obligations of the potentially liable persons (PLPs) under Agreed Order No. DE 9240 (Agreed Order). This report does not present data, interpretation or findings related to work conducted under Enforcement Order DE 10651.

This 2014 Annual Report summarizes the results of the groundwater monitoring and interim action performance monitoring activities conducted in 2014 and discusses the effectiveness of the various interim actions implemented at the Site.

This 2014 Annual Report contains the following enclosures:

- Attachment A contains the *Data Validation Report Pasco Sanitary Landfill Groundwater Monitoring October 2014 Sampling*, by Pyron Environmental, Inc., dated February 20, 2015.
- Attachment B contains laboratory data for waste characterization sampling, hazardous waste manifests for condensate generated, treated, and disposed of during 2014, and non-hazardous purge water disposal documentation.
- Attachment C contains monthly inspection checklists for the Industrial Waste Area landfill covers, detention/evaporation basins, and perimeter fencing for Zones A, C/D, and E.
- Attachment D contains the *Technical Memorandum - Cover Settlement Evaluation Update*, by SCS, dated September 13, 2013
- Attachment E contains maps illustrating differential settlement analysis for the Zone A cover prepared by Triad Associates.
- Attachment F contains the *2014 - East Pasco Plume Area- Well Location Survey* prepared by the City of Pasco and the *Annual Institutional Controls Report* for 2014 prepared by the Franklin County Planning and Building Department.
- Attachment G contains an electronic data deliverable, on compact disk, with Site data generated during the fourth quarter 2014 sampling event. The file PLF-Report-4Q14.xlsx contains multiple worksheets, containing fourth quarter 2014 water level data, well stabilization parameters, and laboratory results from volatile organic compound (VOCs), semi-volatile organic compound (SVOCs), herbicide, chromium, natural attenuation, and landfill parameter analysis.

1.1 Site Location

The general location of the Site and the Pasco Sanitary Landfill (PSL) property is depicted on Figure 1. The PSL property is located approximately 1.5 miles northeast of the City of Pasco, in the southwest quarter of Section 15, the northeast quarter of Section 21, and the northwest quarter of Section 22, Township 9 North, Range 30 East, Willamette Meridian, located in Franklin County, Washington. The

PSL property is located on Dietrich Road near the intersection of Pasco-Kahlotus Road and U.S. Highway 12.

The PSL property occupies an area of more than 250 acres consisting of rolling hills surrounded by irrigated cropland. The former municipal solid waste landfill (MSW Landfill), Balefill/Inert Waste Area, Industrial Waste Area (IWA), and the New Waste, Inc. (NWI) landfill are located within the PSL property. Figure 2 shows the locations of each waste area on the PSL property. Reporting requirements detailed in the Agreed Order for the MSW Landfill and Balefill/Inert Waste Areas are addressed in a separate report by the Landfill Group (LFG). The NWI landfill is a modern and fully lined solid waste landfill located to the north of the MSW Landfill that opened on May 31, 1993 and closed in 2002. The NWI landfill is not considered further in this report.

The formal definition of the Site is presented in the Agreed Order. The Site boundary, as defined in the Agreed Order and illustrated in Exhibit A of the Order encompass the following areas: the NWI Landfill, MSW Landfill, Balefill/Inert Waste Area, IWA, and the Groundwater Protection Area (GPA).

1.2 Background

The operational history and cleanup history of the Site has been documented extensively in numerous prior reports including the *Draft Focused Feasibility Study – Pasco Landfill National Priorities List Site*, dated September 3, 2014. The reviewer is directed to that report for the most current and complete description of the Site background.

The following documents were submitted to Ecology during 2014 as required by the Agreed Order:

- Task 1, Subtask A:
 - *Addendum No. 1 Volume 1 – As-Built Report for SVE System Upgrades*, dated February 20, 2014, and approved by Ecology February 20, 2014;
 - *Technical Memorandum – Condensate Leak at SVE Condensate Tank at the Landfill Flare*, dated August 11, 2014, and approved by Ecology September 15, 2014; and
 - *Technical Memorandum – Work Plan for SVE System Piping Rerouting*, dated December 18, 2014. Revised Work Plan submitted February 23, 2015 and approved by Ecology March 5, 2015.
- Task 1, Subtask E:
 - *Revised Site-Wide Groundwater Performance and Protection Monitoring Operations and Maintenance Manual (Groundwater O&M Manual)*, dated May 9, 2014 and approved by Ecology July 28, 2014; and
 - Additional revisions to the *Revised Groundwater O&M Manual* were submitted on October 10, 2014.
- Quarterly and Annual Reporting under Task 1, Subtasks A, C, E, and F:
 - *2013 Annual Report Groundwater Monitoring and Interim Action Performance Monitoring*, dated May 15, 2014, and approved by Ecology July 16, 2014;

- *First Quarter 2014 Groundwater Monitoring and Interim Action Performance Monitoring Report*, dated June 16, 2014, and approved by Ecology July 16, 2014;
 - *Second Quarter 2014 Groundwater Monitoring and Interim Action Performance Monitoring Report*, dated September 15, 2014; and
 - *Third Quarter 2014 Groundwater Monitoring and Interim Action Performance Monitoring Report*, dated December 15, 2014.
- Task 1, Subtask G:
 - Twelve (12) Monthly Status Reports were submitted to Ecology during 2014. A memorandum was submitted during the first full week of each month summarizing activities and publications delivered to Ecology during the preceding month.
 - Task 3: *Draft Focused Feasibility Study – Pasco Landfill National Priorities List Site*, dated September 3, 2014.

1.3 Balefill Area Combustion

An area of apparent subsurface combustion was discovered in late November 2013 in the Balefill Area adjacent to the Zone A landfill perimeter fence. The Balefill Area combustion is being managed by Ecology under Enforcement Order No. DE 10651 to the PLP group and reporting of that work is provided under separate cover to Ecology. Discussion of the Balefill Area Combustion is beyond the scope of this report. For the reviewer's ease, reporting specific to the Balefill Area Combustion is summarized in the bibliography to this report.

2.0 OBJECTIVES

The objectives of groundwater monitoring and interim action performance monitoring at the Pasco Landfill NPL Site are to evaluate groundwater quality and document the operation, maintenance, and performance of ongoing interim actions. This 2014 Annual Report presents and evaluates data collected during 2014 under the Agreed Order and reports on operations and maintenance activities completed in relation to the soil vapor extraction (SVE) system operating beneath and within the Zone A landfill, landfill covers on waste Zones A, C/D, and E, and Institutional Controls at the Site.

The specific objectives of the groundwater monitoring and interim action performance monitoring conducted in 2014 include:

- Assessment of groundwater quality relative to the May 14, 2013 draft cleanup levels (dCULs);
- Evaluation of trends in groundwater quality;
- Evaluation of the performance and effectiveness of the SVE system; and
- Evaluation of subsidence on the Zone A cap.

2.1 Contaminants of Potential Concern

Contaminants of Potential Concern (COPCs) were defined in the Site *Risk Assessment/Cleanup Level Analysis* Report (PSC 1998) based upon the occurrence and quantification of compounds detected in groundwater during the Site investigation.

The COPCs were defined as follows:

- Soil – acetone.
- Groundwater – acetone, benzene, hexavalent chromium, 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), 1,1,2-trichloroethane (1,1,2-TCA), trichloroethene (TCE), and vinyl chloride (VC).

2.2 Draft Cleanup Levels

On May 14, 2013, Ecology presented updated dCULs for the Site. During the April 11, 2014 monthly meeting with the IWAG, Ecology agreed to allow the use of these updated dCULs for evaluation of groundwater monitoring results. The 2013 dCULs will be used in all discussions and comparison of detected concentrations relative to cleanup levels and will be referred to as the “dCULs” in this report.

The following table summarizes the 2013 dCULs:

**dCULs for Groundwater
 in micrograms/Liter (µg/L)
 Pasco Landfill NPL Site**

Compound	2013 dCUL
Benzene *	0.5
1,2-Dichloroethane *	0.38
1,1-Dichloroethene **	0.057
cis-1,2-Dichloroethene	16
Methylene Chloride *	5.0
Tetrachloroethene *	0.69
Toluene	615
1,1,1-Trichloroethane	200
Trichloroethene *	2.5
Vinyl Chloride *	0.090
Total Chromium	100

* = Known or suspected carcinogenic compound

** = No longer contributes additional cancer risk for the calculation of groundwater CULs at the Site

3.0 GROUNDWATER MONITORING

3.1 Methodology

3.1.1 Groundwater Monitoring Wells

Groundwater monitoring at the Site was conducted in accordance with schedules and field sampling methods presented in:

- The *Operations and Maintenance Manual – SVE, NoVOCs, and Ground Water Monitoring* (2007 O&M Manual), prepared by EPI, dated January 31, 2007, and revised February 23, 2007 and May 25, 2007;
- *Addendum No. 1 – Operations and Maintenance Manual – SVE, NoVOCs, and Ground Water Monitoring* (O&M Addendum No. 1), prepared by EPI, dated January 8, 2008 and revised May 22, 2008;
- *Technical Memorandum – Pasco Landfill: Proposed Modifications to the Existing Interim Actions Quarterly Ground Water Monitoring Program*, prepared by the Pasco IWAG III Technical Committee, and dated April 23, 2012;
- *Memorandum – Pasco Landfill: Enhanced Groundwater Monitoring Modification*, prepared by the Pasco IWAG Technical Committee, dated August 11, 2011 and revised February 1, 2012;
- *Pasco Landfill - Method Detection Limits and Reporting Limits - Revised February 1, 2012*;
- *Pasco Landfill: Recommendations on Sampling and Analysis Frequency at Selected Monitoring Wells*, prepared by the Pasco IWAG III Technical Committee, dated April 11, 2013;
- *Technical Memorandum – Proposal to Discontinue Enhanced Ground Water Monitoring for Zone A of the Industrial Waste Area*, dated June 4, 2013 and approved by Ecology June 20, 2013;
- *Technical Memorandum – Proposal to Decommission Monitoring Well MW-33S*, dated June 19, 2013 and approved by Ecology June 27, 2013; and
- The *Revised Site-Wide Groundwater Performance and Protection Monitoring Operations and Maintenance Manual – Pasco Landfill Site (Groundwater O&M Manual)*, prepared by EPI, dated May 9, 2014, with October 10, 2014 Revisions.

As part of the quarterly groundwater monitoring activities, groundwater levels were measured to the nearest 0.01-foot in wells throughout the Site during January, April, July and October 2014. Figure 3 illustrates the location of each well in the groundwater monitoring well network. Groundwater levels were not measured in the residential wells because those wells were not constructed in a manner that allows such measurements.

Quarterly groundwater samples were collected during all four quarters. Semi-annual groundwater samples were collected in April and October. Table 1 summarizes the wells sampled and the specific chemical analyses requested for each quarterly and semi-annual sampling event.

Well MW-46S is located on Washington Department of Transportation (WSDOT) property. WSDOT granted access to the property and sampling was performed during the second and third quarters of 2014. During October 2014 the IWAG and Ecology discussed a proposal to suspend sampling of

MW-46S due to a lack of detected concentrations both historically and in the two most recent samples. Ecology instead requested that MW-46S be added to the Site semi-annual monitoring program and that the Site's *Groundwater O&M Manual* be updated to include sampling of MW-46S. On October 10, 2014 the IWAG revised the *Groundwater O&M Manual* as requested.

Selective ion monitoring (SIM) has been used during VOC and SVOC laboratory analysis of groundwater samples in order to attain detection limits less than the dCULs for each compound analyzed. All laboratory data from groundwater samples collected at the Site during 2014 have been submitted to a third-party data validator for evaluation. Attachment A contains the data validation report for the fourth quarter sample analysis. Data validation reports for the first through third quarters were submitted with those quarterly reports.

3.1.2 Residential Wells

The target sampling frequency for residential wells in the Groundwater Protection Area (GPA) is presented in the *Groundwater O&M Manual*. At a minimum, all functional and safely accessible residential wells are sampled on a semi-annual basis during the second and fourth quarters. If any compound is detected in a residential well at a concentration that exceeds a dCUL, that well is moved to a quarterly sampling schedule. If all analytical results in a well are below the dCULs in four consecutive quarterly samples the well is moved back to a semi-annual sampling schedule.

At the start of 2014, none of the analytical data from the most recent four consecutive samples for any residential well contained a COC at concentration above a dCUL for the Site. Therefore, all residential wells were sampled semi-annually.

No VOCs were detected in any second quarter sample from any residential well, therefore all of the wells remained on the semi-annual sampling schedule and were sampled again during the fourth quarter.

The actual number of wells sampled during each semi-annual event in 2014 was dependent upon a number of factors including whether permission was granted by the property owner, the well was safely accessible, and the equipment or piping were functional. The IWAG does not control or maintain the residential wells and is not responsible for their upkeep or performance.

It is noted that the Montalvo well was not accessible in 2014 due to a dispute between the property owner and the tenant. The tenant has refused to allow access to the well house. During the 2014 Annual Well survey the property owner provided information on the well, but no access to the well was possible.

Groundwater samples were collected from eight residential wells in the second quarter and seven in the fourth quarter. Samples collected from the residential wells were analyzed for VOCs by EPA Method 8260 and 8260-SIM. Table 1 summarizes residential well sampling and analysis.

3.2 Findings

3.2.1 Groundwater Elevation Data

Both horizontal and vertical hydraulic gradients within the monitoring well network were evaluated during 2014.

3.2.1.1 Horizontal Hydraulic Gradients

Groundwater elevation contours were developed using the site-wide groundwater elevation measurements from January, April, July, and October 2014. A summary of the groundwater elevation data for each quarterly groundwater monitoring event is presented in Table 2. Site-wide groundwater elevation contours for shallow wells are presented in Figures 4 through 7.

The piezometric contours indicate that the groundwater flow direction beneath Zone A and across the PSL property was consistently southwesterly throughout 2014. As measured between wells MW-52S in Zone A and MW-11S approximately 1,109 feet southwest at the downgradient property boundary, the hydraulic gradient averaged less than 0.002 feet/feet (ft/ft) during 2014.

The direction of groundwater flow shifts to a more southerly orientation downgradient of the property boundary and is best indicated by the historical orientation of the dissolved-phase contaminant plume. The orientation of the dissolved-phase plume is nearly due south while the orientation of the hydraulic gradient is about 30 degrees west of south. This difference between the axis of the dissolved-phase plume and the hydraulic gradient has been documented in prior quarterly and annual reports. The hydraulic gradient south of the property boundary is less steep than on the property. As measured between wells MW-11S at the property boundary and MW-43S, approximately 8,025 feet south of the property boundary along East A Street, the off-property hydraulic gradient averaged less than 0.001 ft/ft during 2014.

Hydraulic gradients measured in the shallow aquifer in 2014 were consistent throughout the year and were consistent with findings for prior years. The hydraulic gradient direction and slope at the Site is highly stable and is not expected to change in the future.

Groundwater elevation contours for the intermediate depth wells are presented in Figures 8 and 9. The direction of the groundwater gradient for the intermediate portion of the aquifer was consistent with the shallow portion of the aquifer throughout 2014. The hydraulic gradient for the intermediate portion of the aquifer on the PSL property, as measured between MW-47I and MW-11I (approximately 845 feet), averaged less than 0.002 ft/ft during 2014. As with the shallow portion of the aquifer, the gradient for the intermediate portion of the aquifer is less steep downgradient of the property and, as measured between MW-11I and MW54I (approximately 11,107 feet), averaged less than 0.001 ft/ft during 2014.

As with the shallow aquifer, the hydraulic gradients in the intermediate portion of the aquifer throughout 2014 were consistent throughout the year and were consistent with findings for prior years. The hydraulic gradient direction for the intermediate portion of the aquifer is highly stable and is likewise not expected to change in the future.

3.2.1.2 Vertical Hydraulic Gradients

Groupings of shallow, intermediate and deep wells allow for the calculation of vertical hydraulic gradients throughout the full thickness of the aquifer. The gradients are calculated using groundwater elevations and the elevations of the centers of the intermediate and deep well screens. Due to the accuracy of the water level meter and survey instruments, the vertical gradients have been rounded to the nearest thousandth of a foot. Negative values reflect an upward vertical gradient. Tables 3 through 6 summarize calculated vertical hydraulic gradients on the landfill property. Tables 7 through 10 summarize calculated off-property vertical hydraulic gradients at the Site.

Vertical hydraulic gradients have been calculated for six three-well groupings screened at the shallow, intermediate, and deep portions of the aquifer near Zone A (#2R/I/D, MW-12S/I/D, MW-47S/I/D, MW-48S/I/D, MW-49S/I/D and NVM-01/I/D).

During 2014 the vertical hydraulic gradients for the six well groupings near Zone A ranged from 0.042 ft/ft to 0.005 ft/ft. The average vertical gradients in these well groupings since the date of installation (i.e., July 2008) through October 2014 ranged from -0.005 to 0.004 ft/ft. The data for 2014 are consistent with historical observations.

Four off-property well pairs are screened at the shallow, and intermediate portions of the aquifer, and are located along the inferred longitudinal axis of the dissolved-phase plume (MW-11S/I, MW-29S/I, MW-38S/I, and MW-43S/I).

During 2014 the vertical gradients for the downgradient off-property well pairs ranged from -0.007 ft/ft in to 0.004 ft/ft. The vertical gradients for the four well pairs since the date of installation (i.e., April 2011) through October 2014 ranged from -0.006 to 0.004 ft/ft. As with the on-property wells, the vertical gradient data for 2014 are consistent with historical gradients.

The vertical gradient data indicate that only very small vertical gradients exist at the Site and that these vertical gradients are unlikely to have a significant effect on the vertical migration of dissolved-phase compounds.

3.2.2 Groundwater Quality

Well stabilization parameters collected during well purging are summarized in Table 11. Laboratory analytical results from groundwater monitoring during 2014 are summarized in Tables 12 through 18. The data are evaluated by well groupings in Section 3.2.2.2 and by distribution of dissolved-phase contaminants in Section 3.2.2.3. Overall concentration trends for 2014 will also be discussed in relation to SVE System Performance in Section 4.4. The evaluation of groundwater quality at the Site is focused on compounds that were detected at concentrations exceeding a dCUL or conditions that are otherwise noteworthy.

3.2.2.1 Well Stabilization Parameters

Well stabilization parameters are collected to evaluate steady-state conditions in each well prior to sampling. pH, conductivity, dissolved oxygen (DO), and turbidity are the primary parameters used to evaluate steady-state conditions prior to sample collection. During well purging, temperature and oxidation-reduction potential (ORP) are also stabilized and recorded. Well stabilization data are presented in Table 11.

3.2.2.2 Evaluation by Well Grouping

This section presents a discussion of the analytical results for the following groups of wells:

- MSW Landfill Wells
- Performance Monitoring Wells
 - Zone A
 - Zone B
 - Zones C/D
 - Zone E
- Sentinel Wells
- Property Boundary Wells
- Downgradient Monitoring Wells
- Upgradient Wells
- Residential Wells

These well groupings are as presented in the *Groundwater O&M Manual*. The following discussions are focused on the COPCs in each of those groupings for which a concentration exceeded a dCUL during 2014. Well locations are shown on Figure 3.

3.2.2.2.1 MSW Landfill Wells

The groundwater monitoring network for the MSW Landfill consists of wells 4R, MW-16S, and MW-17SR. Table 1 summarizes the wells sampled and analyses requested for each. Samples for VOC analysis were collected from wells 4R, MW-16S, and MW-17SR during all four quarters of 2014. VOC data for the MSW landfill wells are summarized in Table 12.

Landfill parameter samples were collected from wells 4R, MW-16S, and MW-17SR during the second and fourth quarters. The landfill parameters analyzed include nitrate, ammonia, sulfate, total dissolved solids, total alkalinity, bicarbonate, carbonate, hydroxide, chloride, total organic carbon, calcium, total iron, magnesium, manganese, potassium, and sodium. Landfill parameter data are summarized in Table 17.

Evaluation of MSW Landfill well data is provided in the 2014 Annual Report for the MSW Landfill as prepared by the LFG.

3.2.2.2 Performance Monitoring Wells

Performance monitoring wells most directly monitor the effectiveness of the interim remedial measures and track changes in contaminant concentrations and distribution over time. They are located either directly under a waste zone or on the downgradient boundary of a zone. The performance monitoring wells are grouped into wells monitoring groundwater quality at Zone A, Zone B, Zones C/D, and Zone E. The wells associated with each Zone are discussed below.

3.2.2.2.1 Zone A Wells

The groundwater monitoring network for Zone A consists of nine wells. Wells EE-2, MW-13S, MW-47S, MW-50S, MW52S, MW-53S, and NVM-01 are completed in the shallow portion of the aquifer, and wells MW-47I and NVM-01I are completed in the intermediate portion of the aquifer. Both intermediate wells are paired with a shallow well. Table 1 summarizes the wells and analyses requested for each Zone A well.

VOC analyses were performed on samples from six wells (MW-13S, MW-47S, MW-50S, MW52S, MW-53S, and NVM-01) on a quarterly basis during 2014. VOC analyses were performed on samples from three additional wells (EE-2, MW-47I, and NVM-01I) on a semi-annual basis during the second and fourth quarters.

Groundwater monitoring wells MW-52S and MW-53S are considered source zone wells as they are completed immediately beneath the Zone A wastes. During 2014, 33 different VOCs were detected in samples from MW-52S. Of those 33 compounds, only PCE, TCE, 1,1-DCE, 1,2-DCA, benzene, and toluene were detected at concentrations exceeding a dCUL. Some or all of these compounds were detected in each of the four quarters at a concentration exceeding a dCUL.

Eleven (11) different VOCs were detected in samples from MW-53S. Of the 11 VOCs detected in MW-53S, only the first quarter concentrations of TCE and 1,2-DCA exceeded a dCUL. No VOCs exceeded a dCUL in either the second, third or fourth quarters at MW-53S.

The VOCs detected in these source zone wells in 2014 are an increase over what was observed in 2013. This increase in both concentration and prevalence, particularly at MW-52S, is a direct result of changes in SVE operation related to the Balefill Area combustion. During the initial discovery of the apparent combustion, the shallow SVE wells VEW-06S and VEW-07S, and intermediate SVE wells VEW-07S, and VEW-07I were shut down. The intermediate depth well, VEW-06I was already operating at a very low flow due to temperature concerns. The VEW-06 wells are the closest to MW-52S and remained off throughout 2014. Wells VEW-07S and VEW-07I were brought back into operation in February 2014. VEW-07S and VEW-07I were subsequently shutdown in November 2014 due to low methane collection at the MSW landfill.

VOC concentrations present in MW-52S increased through the second quarter and then decreased somewhat during the third and fourth quarters. This decrease may be related to a change in operational flow rates for the deep zone wells. That change may have resulted in some increased contaminant mass capture but also may have resulted in downward migration of COPCs and VOCs.

This can be seen in the 1,1-DCE concentrations for the third and fourth quarters and other aromatic VOCs in the fourth quarter (see Table 12).

Elevated COC concentrations in MW-53S exceeded dCULs in January 2014 following shutdown of VEW-07S and VEW-07I in December 2013. However, with the restart of these extraction wells in February 2014, COC concentrations declined to well below the dCULs.

These observations indicate that the SVE system and how it is operated have a strong effect on groundwater quality, contaminant capture and migration and that the overreliance on deep zone SVE well operation may not be a viable long-term strategy for groundwater protection. These data strongly suggest that shallow and intermediate depth SVE well operation are integral to mass capture and groundwater quality protection.

No other VOCs were detected at a concentration exceeding a dCUL in any of the other Zone A performance monitoring wells at any point in 2014. No compounds were detected in any sample from a Zone A well in the intermediate portion of the aquifer during 2014. Table 12 summarizes VOC data for the Zone A wells.

SVOC analyses were performed on samples from two Zone A wells (MW-52S and MW-53S) during the second and fourth quarters. Eight SVOCs were detected in samples from MW-52S and four SVOCs were detected in samples from MW-53S during 2014. SVOC data are summarized in Table 13. Concentrations of all detected SVOCs were below the Model Toxics Control Act (MTCA) groundwater Method B cleanup levels listed in the on-line Ecology maintained Cleanup Levels and Risk Calculation (CLARC) data tables.

SVOC concentrations followed a similar trend as VOCs in groundwater compared to 2013, which may also be related to SVE operation.

Herbicide analyses were performed on samples from two Zone A wells (MW-52S and MW-53S) during the second and fourth quarters. As reported by the laboratory, because the LCS/LCSD %R values were generally less than the lower control limits during analysis, all second quarter samples were re-extracted 9 days past the hold time and reanalyzed. The initial analysis of the second quarter samples was completed within required holding times. No herbicides were detected in either analysis of the second quarter samples.

During the fourth quarter analysis, pentachlorophenol (PCP) was detected in both samples as well as the method blank at concentrations ranging from 0.15 to 0.18 µg/L. The PCP detections were given a "UJ" qualifier during third party data validation. No other herbicides were detected in samples analyzed during 2014. Herbicide data are summarized in Table 14.

Total and hexavalent chromium analysis was performed on the MW-13S sample during all four quarters of 2014. No hexavalent chromium was detected. Total chromium was detected at concentrations below the dCUL. Chromium data are summarized in Table 15.

Natural attenuation data for Zone A well samples MW-47S and MW-50S are summarized in Table 16.

3.2.2.2.2 Zone B Wells

The groundwater monitoring network for Zone B consisted of MW-26SR during 2014. Well MW-26SR was sampled for VOCs, SVOCs and herbicides during all four quarters. Table 1 summarizes the wells and analyses requested for the Zone B well.

No VOCs or herbicides were detected in any samples from MW-26SR during 2014. During SVOC analysis, naphthalene was detected in the third and fourth quarter samples from MW-26SR at concentrations of 0.039 and 0.042 µg/L respectively. The MTCA Method B cleanup level for naphthalenes in groundwater is 160 µg/L. VOC, SVOC, and herbicide data are summarized in Tables 12, 13, and 14 respectively.

3.2.2.2.3 Zone C/D Wells

The groundwater monitoring network for Zone C/D consists of well MW-55S. Well MW-55S was sampled for VOCs, and total and hexavalent chromium during all four quarters of 2014. Table 1 summarizes the wells and analyses requested for the Zone C/D well.

TCE, vinyl chloride, benzene, toluene, and chloromethane were detected in MW-55S samples only during third and fourth quarters of 2014. A benzene concentration of 120 µg/L, exceeding the dCUL of 0.5 µg/L, was detected in the fourth quarter. No other VOC concentrations were detected in exceedance of a dCUL during 2014. No hexavalent chromium was detected. Total chromium was detected at concentrations that did not exceed the dCUL. VOC and chromium data are summarized in Tables 12 and 15 respectively.

Ongoing quarterly monitoring of well MW-55S will help to establish whether the benzene concentration at MW-55S in the fourth quarter was an anomalous result.

3.2.2.2.4 Zone E Wells

The groundwater monitoring network for Zone E consists of well MW-27SR. Well MW-27SR was sampled for VOCs, and total and hexavalent chromium during all four quarters of 2014. Table 1 summarizes the wells and analyses requested for the Zone E well.

No VOCs were detected in any sample from MW-27SR during 2014. No hexavalent chromium was detected. Total chromium was detected in the third and fourth quarter samples at concentrations that did not exceed the dCUL. VOC, and total and hexavalent chromium data are summarized in Tables 12 and 15 respectively.

3.2.2.3 Sentinel Wells

Sentinel wells are located between a waste zone and the property boundary or a potential conditional point of compliance. In conjunction with the performance monitoring wells, the sentinel wells provide a means of tracking spatial and temporal changes in contaminant concentrations with distance from source areas and estimating concentration attenuation with distance from the source area.

The sentinel well monitoring network consists of seven shallow wells (2R, MW-12S, MW-15S, MW-18S, MW-19S, MW-23S, and MW-49S) and three intermediate wells (2I, MW-12ID and MW-49I). During 2014, samples from the sentinel wells were analyzed for VOCs, total and hexavalent chromium, and natural attenuation parameters. Table 1 summarizes the wells and analyses requested for each sentinel well.

All seven shallow wells were analyzed for VOCs on a quarterly basis. The three intermediate wells were analyzed for VOCs on a semi-annual basis in the second and fourth quarters. VOC data are summarized in Table 12.

Wells MW-12S and MW-19S were sampled for total and hexavalent chromium during all four quarters. Total and hexavalent chromium data are summarized in Table 15.

Wells 2R, MW-12S, and MW-49S were sampled for natural attenuation parameters on a semi-annual basis during the second and fourth quarters of 2014. Natural attenuation data are summarized in Table 16.

Shallow wells MW-15S and MW-23S are considered sentinel wells for the MSW Landfill Area. No VOCs were detected at a concentration above a dCUL in 2014 in these wells. The data for these wells are discussed in the 2014 Annual Report for the MSW Landfill as prepared by the LFG.

Shallow wells 2R, MW-12S, and MW-49S and intermediate depth wells 2I, MW-12ID, and MW-49I are sentinel wells for Zone A. As noted above, samples from the shallow wells were analyzed for VOCs during all four quarters and samples from the intermediate wells were analyzed for VOCs on a semi-annual basis during the second and fourth quarters. Additionally, samples from MW-12S were analyzed for total and hexavalent chromium during all four quarters. Samples from 2R, MW-12S, and MW-49S were analyzed for natural attenuation parameters semi-annually during the second and fourth quarters.

The third quarter sample from MW-12S contained a concentration of TCE exceeding the dCUL but the concentration was again below the dCUL in the fourth quarter. No other VOC was detected in a sentinel well at a concentration exceeding a dCUL in 2014. No hexavalent chromium was detected in any of the sentinel well samples. Total chromium was detected in the first, third and fourth quarter samples at concentrations well below the dCUL.

The shallow well MW-18S is a sentinel well for Zones C/D. Samples from MW-18S were analyzed for VOCs during all four quarters of 2014. No VOCs were detected in samples from MW-18S during 2014.

The shallow well MW-19S is a sentinel well for Zone E. Samples were analyzed for VOCs, and total and hexavalent chromium during all four quarters. No VOCs were detected at concentrations above the dCULs. No hexavalent chromium was detected. Total chromium was detected in all four quarterly samples at concentrations well below the dCUL.

3.2.2.2.4 Property Boundary Wells

The property boundary groundwater monitoring network consists of five shallow wells (MW-10S, MW-11S, MW-22S, MW-24S, and MW-51S) and one intermediate depth well (MW-11I). Samples from the shallow wells were analyzed for VOCs on a quarterly basis and the sample from the intermediate depth well was analyzed for VOCs on a semi-annual basis in the second and fourth quarters. Additionally, samples from MW-22S, a MSW Landfill well, were analyzed for total and hexavalent chromium on a quarterly basis and for landfill parameters on a semi-annual basis during the second and fourth quarters. Table 1 summarizes the wells and analyses requested for the Property Boundary Wells.

Well MW-22S is located hydraulically downgradient of the MSW landfill. No VOCs were detected at a concentration above a dCUL in 2014. No hexavalent chromium was detected. Total chromium was detected in all four quarterly samples at concentrations below the dCUL. The monitoring data for that well will be discussed in the 2014 Annual Report for the MSW Landfill as prepared by the LFG. VOC and total and hexavalent chromium data are summarized in Tables 12 and 15, respectively. Landfill parameter data are summarized in Table 17.

TCE was the only compound detected at property boundary wells MW-10S, MW-11S, MW-11I, MW-24S, and MW-51S. None of the detected concentrations exceeded a dCUL. VOC data are summarized in Table 12.

TCE was detected only in the third and fourth quarters in the shallow wells downgradient of Zone A (MW-10S, MW-11S, and MW-51S) and in the fourth quarter in the intermediate depth well downgradient of Zone A (MW-11I). This observation may correlate with SVE system operation. While groundwater quality at the property boundary continues to comply with dCULs, the data for the sentinel wells suggest the possibility that the current mode of SVE operation, with higher flow rates at deep SVE wells and lower, or no flow rates at shallow and intermediate wells, may not be fully protective of groundwater quality.

3.2.2.2.5 Downgradient Monitoring Wells

The off-property downgradient monitoring well network consists of 12 shallow wells (MW-29S, MW-31S, MW-34S, MW-37S, MW-38S, MW-40S, MW-41SR, MW-42S, MW-43S, MW-44S, MW-45S, and MW-46S) and four intermediate depth wells (MW-29I, MW-38I, MW-43I, and MW-54I). All downgradient off-property wells are analyzed for VOCs during 2014. The shallow depth wells are sampled on a quarterly basis, except for MW-44S and MW-45S, which are sampled on a semi-annual basis. Access to MW-46S was granted from WSDOT and quarterly sampling for VOCs was restarted during the second quarter of 2014. Of the intermediate depth wells, MW-43I and MW-54I are sampled on a quarterly basis, while MW-29I and MW-38I are sampled on a semi-annual basis. With the exception of MW-54I, each intermediate depth well is paired with an adjacent shallow depth well. Table 1 summarizes the wells and analyses requested for the off-property downgradient wells.

No VOCs were detected at a concentration exceeding a dCUL in the downgradient wells. VOC data are summarized in Table 12.

3.2.2.2.6 Upgradient Wells

The upgradient monitoring well network consists of four shallow wells (NW-1, MW-20S, and MW-25SR). Table 1 summarizes the wells and analyses requested for the upgradient wells.

NW-1 is upgradient of the MSW Landfill. Sampling of NW-1 is performed and reported as part of the new waste landfill monitoring program. The data from samples from these wells are also discussed in the 2014 Annual Report for the MSW Landfill as prepared by the LFG.

Well MW-20S is upgradient of Zones A, C/D, and E. Well MW-20S was sampled for total and hexavalent chromium during the first and third quarters, and natural attenuation and landfill parameters during the second and fourth quarters. No hexavalent chromium was detected. Total chromium was detected in both samples at concentrations well below the dCUL.

MW-25SR is located upgradient of Zone B. MW-25SR was sampled for VOCs, natural attenuation and landfill parameters during the second and fourth quarters. No VOCs were detected in samples collected from MW-25SR during 2014.

VOC, chromium, natural attenuation and landfill parameter data from samples collected at upgradient wells MW-20S, MW-25SR are summarized in Tables 12, 15, 16 and 17, respectively.

3.2.2.2.7 Residential Wells

As outlined in the methodology section for residential wells, at the start of 2014, all residential wells in the GPA were scheduled for semi-annual VOC sampling and analysis. Table 1 summarizes which residential wells were sampled each quarter. Not all residential wells are available for sampling according to schedule due to various issues including property access, safety considerations, discontinued electrical power, and pump and/or piping issues. The IWAG is not responsible for the upkeep of these privately owned wells. VOCs detected in samples collected from the residential wells are summarized in Tables 12 and 18.

During 2014, TCE was the only VOC detected at any concentration and only in fourth quarter samples from the Salinas and West residential wells. The detected concentrations were both 0.12 µg/L and were well below the dCUL of 2.5 µg/L.

No concentrations of VOCs detected in residential well samples exceeded a dCUL during 2014. Based on these 2014 VOC data, all residential wells will remain a semi-annual monitoring schedule until at least April 2015.

3.2.2.3 Contaminant Distribution

This section discusses the dissolved-phase distribution of the compounds for which dCULs have been established for the Site and for which observed concentrations exceeded a dCUL during 2014. PCE, TCE, 1,1-DCE, 1,2-DCA, benzene, and toluene were detected at concentrations above a dCUL in at least one sample during 2014. Concentrations exceeding a dCUL were only measured in samples from

shallow wells. Isoconcentration maps have been prepared for each compound that was detected in two or more wells during a quarterly sampling event and where one of the detected concentrations exceeded a dCUL. Maps were not prepared if a dCUL was exceeded in only one well and not detected in any other locations.

None of the samples collected from intermediate depth wells during 2014 contained a VOC at a concentration exceeding a dCUL.

Figures 10 through 13 illustrate the distribution of dissolved-phase PCE in the shallow aquifer during 2014, relative to the dCUL of 0.69 µg/L. These figures illustrate that the extent of PCE concentrations exceeding the dCUL in the shallow portion of the aquifer is limited to within the property boundary and in the near proximity of MW-52S. PCE concentrations exceeded the dCUL in well MW-52S during all four quarters. PCE also exceeded the dCUL in MSW Landfill well 4R, but only in the first quarter. In all other wells and during all other sampling events, PCE concentrations were below the dCUL.

Well 4R is located immediately adjacent to the downgradient side of the MSW landfill. Well 4R is considered a performance monitoring well for the MSW Landfill Area. Further evaluation of MSW Landfill well data is provided in the 2014 Annual Report for the MSW Landfill as prepared by the LFG.

Figures 14 through 17 illustrate the distribution of dissolved-phase TCE in the shallow aquifer during 2014, relative to the dCUL of 2.5 µg/L. These figures illustrate that the extent of TCE concentrations exceeding the dCUL in the shallow portion of the aquifer is limited to within the property boundary. TCE concentrations exceeded the dCUL in MW-52S during all four quarters, MW-53S during the first quarter, and in MW-12S during the third quarter. In all other wells and for all other sampling events, TCE concentrations were below the dCUL.

Wells MW-52S and MW-53S are considered source zone wells for Zone A and MW-12S is considered a sentinel well for Zone A as it is located downgradient of Zone A. As discussed above, the TCE concentrations and the distribution of those concentrations in 2014 are likely associated with SVE system operation and changes in operation. While decreases in shallow and intermediate well operation and increases in deep SVE operations do not appear to have resulted in exceedences of a dCUL at the property boundary, those changes in operation do appear to have allowed for an increase in the extent of detectable concentrations of TCE in groundwater compared to 2013.

Figures 18 and 19 illustrate the distribution of dissolved-phase 1,1-DCE in the shallow aquifer during third and fourth quarters of 2014, relative to the dCUL of 0.057 µg/L. These figures illustrate that the extent of 1,1-DCE concentrations exceeding the dCUL in the shallow portion of the aquifer is limited to within Zone A and within the property boundary. 1,1-DCE concentrations exceeded the dCUL in well MW-52S during the third and fourth quarters. In all other wells and for all other sampling events, detected 1,1-DCE concentrations were below the dCUL.

Figures 20 through 22 illustrate the distribution of dissolved-phase 1,2-DCA in the shallow aquifer during the first, third, and fourth quarters of 2014, relative to the dCUL of 0.38 µg/L. These figures illustrate that the extent of 1,2-DCA concentrations exceeding the dCUL in the shallow portion of the aquifer is limited to within Zone A and within the property boundary. 1,2-DCA concentrations exceeded

the dCUL in well MW-52S during all four quarters and in MW-53S during the first quarter. In all other wells and for all other sampling events, 1,2-DCA concentrations were below the dCUL.

Figure 23 illustrates the distribution of dissolved-phase benzene in the shallow aquifer during the fourth quarter of 2014, relative to the dCUL of 0.5 µg/L. This figure illustrates that the extent of benzene concentrations exceeding the dCUL in the shallow portion of the aquifer is limited to within the property boundary. Benzene concentrations exceeded the dCUL in well MW-52S during the second and fourth quarters and in MW-55S during the fourth quarter. In all other wells and for all other sampling events, detected benzene concentrations were below the dCUL.

Figures 24 through 26 illustrate the distribution of dissolved-phase toluene in the shallow aquifer during the first, second, and third quarters of 2014, relative to the dCUL of 615 µg/L. These figures illustrate that the extent of toluene concentrations exceeding the dCUL in the shallow portion of the aquifer is limited to within Zone A and within the property boundary. Toluene concentrations exceeded the dCUL in well MW-52S during the first, second and third quarters. In all other wells and for all other sampling events, detected toluene concentrations were below the dCUL.

Methylene chloride was detected in only one well (MW-52S) during only the second quarter of 2014. The detection exceeded the dCUL of 5 µg/L. The extent of methylene chloride concentrations exceeding the dCUL in the shallow portion of the aquifer is limited to one well within the property boundary and within Zone A. No methylene chloride was detected in any other well during 2014.

No other compounds were detected at a concentration exceeding its respective dCUL in 2014.

3.2.2.4 Natural Attenuation and Landfill Parameters

Samples from wells 2R, MW-12S, MW-20S, MW-25SR, MW-47S, MW-49S, and MW-50S were analyzed for natural attenuation parameters during the second and fourth quarters of 2014. Table 1 summarizes the wells and analyses for natural attenuation monitoring. Analyses included alkalinity, ammonia, chloride, chemical oxygen demand (COD), nitrate, nitrite, sulfate, total dissolved solids (TDS), total organic carbon (TOC), ferrous iron, manganese, and methane, ethane and ethane (MEE). Natural attenuation parameter data are summarized in Table 16.

Due to the generally low concentrations observed, an evaluation of natural attenuation parameters provides limited information regarding biochemical degradation processes occurring in groundwater beneath the Site. No detailed evaluation or scoring of natural attenuation mechanisms has been performed.

Samples from wells 4R, MW-16S, MW-17SR, MW-20S, MW-22S, and MW-25SR were analyzed for landfill parameters during the second and fourth quarters of 2014. Table 1 summarizes the wells and analyses for landfill parameter monitoring. The analysis includes alkalinity, ammonia, chloride, nitrate, nitrite, sulfate, total dissolved solids (TDS), total organic carbon (TOC), calcium, total iron, magnesium, manganese, potassium, and sodium. Landfill parameter data are summarized in Table 17. Landfill parameter data will be discussed in the 2014 Annual Report for the MSW Landfill prepared by the LFG.

4.0 SVE SYSTEM PERFORMANCE MONITORING

4.1 Methodology

As part of Interim Actions at the Site, a SVE system installed at Zone A of the IWA has operated since May 1997. During March 2012, the system was upgraded to include six soil vapor extraction (SVE) wells (VEW-06S, VEW-06I, VEW-06D, VEW-07S, VEW-07I and VEW-07D) installed within the Zone A landfill. Effluent from the SVE system is piped from the SVE equipment compound near Zone A through a conveyance line to the MSW Landfill flare immediately north of the MSW landfill. The SVE offgas is treated via thermal oxidation at the landfill gas flare.

Monitoring of SVE system performance is performed using inactive vapor extraction wells (VEWs), vapor monitoring wells (VMWs) VMW-50S, VMW-51I, and VMW-51D, and vapor monitoring points (VMPs) VMP-01 through VMP-16S. Figure 27 illustrates the locations of active and inactive vapor extraction wells, vapor monitoring wells and vacuum monitoring points at the Zone A landfill.

Operation and monitoring of the SVE system during 2014 was conducted in accordance with the following Ecology approved documents:

- *Proposed Flowrates for Upgraded Zone A SVE System and Communications Protocol*, dated December 4, 2012;
- *As-Built and Testing Reports with Operations and Maintenance Manual (SVE System O&M Manual)*, dated February 25, 2013;
- *Memorandum – Pasco Landfill: Work Plan for Protection of Zone A in the Presence of Potential Combustion with the Balefill Area*, dated January 6, 2014; and
- *Addendum No. 1 – Volume 1 – As-Built Report for SVE System Upgrades*, dated February 20, 2014.

Several Ecology approved changes including the requirement for sample collection at the SVE system skid (SV-BC) and monthly rather than bi-weekly sampling at SV-FS have been made since the *SVE System O&M Manual* was finalized and approved. A new SVE System O&M Manual will be prepared after the installation of a new regenerative thermal oxidizer (RTO) is installed by the IWAG for SVE system offgas treatment.

On December 2, 2013, as a precautionary measure in response to emergent settlement and potential subsurface combustion in the Balefill Area along the northeastern portion of the Zone A fence, the shallow and intermediate depth vapor extraction wells (VEW-06S, VEW-06I, VEW-07S, and VEW-07I) were shut off from December 2013 to mid-February 2014. VEW-07S and VEW-07I were brought back into operation in February 2014 and remained in operation until early November 2014 when low methane capture at the MSW Landfill required that these wells be shut down. The deep extraction wells, VEW-06D and VEW-07D remained in operation.

On February 18, 2014, the SVE system was returned to full operation using all six vapor extraction wells. On March 5, 2014, at the request of Ecology, vapor extraction wells VEW-06S and VEW-06I were again shut off. Wells VEW-06D, VEW-07S, VEW-07I, and VEW-07D remained active with no

change in operating flow or vacuum until November 2014 when low methane collection at the MSW Landfill required reduction in SVE flow rates and VEW-07S and VEW-07I were shut down.

Results of the second quarter 2014 groundwater monitoring indicated that the concentrations of several VOCs had increased at groundwater monitoring wells MW-52S and MW-53S. With Ecology's approval, on May 9, 2014, the airflow rates at VEW-06D and VEW-07D were each increased to approximately 225 standard cubic feet per minute (scfm) to address concerns regarding groundwater quality beneath Zone A.

On November 24, 2014, in response to decreased methane collection at the MSW Landfill and frequent flare shutdown due to low methane, wells VEW-07S and VEW-07I were shut off. Airflow to wells VEW-06D and VEW-07D was adjusted to approximately 200 scfm each for a total flow of approximately 400 scfm for the entire SVE system. As requested by the LFG, periodic adjustments were made to well head flows at VEW-06D and VEW-07D for a total airflow of approximately 400 to 450 scfm.

As discussed above, the SVE system operational changes in 2014 appear to have been reflected in groundwater quality primarily in the source zone (i.e., MW-52S and 53S) but also in the numbers of detections in downgradient sentinel and property boundary wells. Those data continue to support a conclusion that shallow and intermediate well operation is a significant component of mass capture and groundwater quality protection. Absent shallow well extraction, even with high deep well flow rates, changes in groundwater quality were observed.

During 2014, routine SVE performance monitoring included both field observation and measurement, and laboratory analysis of the SVE system and effluent air stream. SVE system operational parameters were measured and recorded on a weekly basis at each active wellhead, at the SVE equipment compound, and at the flare end of the SVE effluent conveyance line. Parameters recorded included wellhead and skid vacuum and airflow, dilution airflow, wellhead temperature, carbon dioxide (CO₂), oxygen (O₂), total VOCs, and lower explosive limit (LEL). Field measurements were conducted using a photoionization detector (PID) to monitor total VOCs, and a GEM 2000 Landfill Gas Analyzer to monitor carbon dioxide, oxygen and LEL.

Measurement of vacuums at vapor monitoring probes VMP-01 through VMP-10 was performed on a weekly basis during 2014 in order to confirm that the SVE system continued to maintain a negative pressure beneath the geomembrane. Vacuum measurements were also collected at VMW-50S, VMW-51I, VMW-51D, VEW-04 and VEW-05 during the same periods to assess the vacuum radius of influence of the SVE system.

During June 2014, 11 additional VMPs were installed in and near Zone A. Four VMPs (VMP-11S, VMP-11D, VMP-12S, VMP-12D) were installed through the Zone A cover along the northeastern edge. Seven additional VMPs (VMP-13S, VMP-13D, VMP-14S, VMP-14D, VMP-15S, VMP-15D, and VMP-16S) were installed along the base of the northeastern slope of the Zone A cover. All eleven new VMPs were added to the weekly vacuum monitoring program.

Vapor samples were collected at each active extraction well on a monthly basis. Additional samples were collected on a weekly basis for four weeks following any substantive change in system flow rates.

Vapor samples were collected at the flare end (SV-FS) of the conveyance line on a bi-weekly basis. Samples were submitted for laboratory analysis of VOCs using a modified EPA Method 8260. The laboratory data, along with flow rates measured during performance monitoring, were used to calculate VOC removal rates.

4.2 SVE System Performance

During 2014, operational parameters were recorded at each of the six active extraction wells (VEW-06S/I/D and VEW-07S/I/D), VMW-51I, and VMW-50S. The parameters recorded for each well are presented in Table 19.

In addition to the vacuum measurements included in Table 19, vacuums at vapor monitoring probes VMP-01 through VMP-10, VMW-51D, VEW-04 and VEW-05 were measured on a weekly basis throughout 2014. VMPs 11 through 16 were installed in June and added to the weekly monitoring program. Vacuum measurements for these locations are presented in Table 20.

Vapor samples were collected from active SVE wells and at the flare end of the conveyance piping (SV-FS) throughout 2014. Analytical data from vapor sampling during 2014 are presented in Table 21.

Table 21 includes a total of all detected VOC concentrations and an approximate flow rate at the sample location at the time of collection. A contaminant mass removal rate is calculated for each sample using the total VOC concentration and the measured flow rate. Figure 28 illustrates the average daily contaminant mass removal rates from the active SVE wells and for the combined flow from March 14, 2012 through December 29, 2014. Gaps in the graphed data series represent periods when wells were not operated.

Between January 8, 2014 and December 29, 2014, the contaminant mass removal rates for individual wells ranged from 7 pounds per day (lbs/day) at VEW-06S on February 18, to 587 lbs/day at VEW-07I on February 24. The sum of contaminant mass removal rates ranged from 62 lbs/day on December 3 to 814 lbs/day on February 24. The SVE system recovered an estimated 93,304 lbs of VOCs during 2014, with an average combined SVE mass removal rate of 262 lbs/day. The ability of the SVE system to recover contaminant mass was limited throughout much of 2014 by reductions in flow. Those reductions in air flow were in response to the Balefill Area combustion and the limitations in methane at the LFG flare.

It is estimated that the Zone A SVE system has recovered a total of approximately 927,524 pounds of VOCs between May 1997 and December 29, 2014. The cumulative mass removal is illustrated in Figure 29. The dark blue circles on the figure represent the dates listed on the figure when significant changes were made to the active wells used for vapor extraction.

In general order of abundance, the top ten compounds observed in the SVE offgas are; toluene, methyl ethyl ketone (MEK), total xylenes, ethanol, methyl isobutyl ketone (MIBK), acetone, TCE, ethylbenzene, methylene chloride, and PCE. Table 22 summarizes the percentage of each of these compounds in each sample collected during 2014. Those ten compounds constitute 93.3 to 99.7 percent of the total VOCs detected in each sample from an active SVE well.

The SVE system, as currently configured, is limited in its ability to capture and treat VOCs from Zone A by a number of factors. The biggest factors limiting the SVE system operation during 2014 were contingency measures taken with respect to the Balefill Area combustion and, toward the end of 2014, the limited functional capacity of the MSW flare due to a dwindling methane supply. The pending installation of the RTO will eliminate limitations imposed on the system by methane supply.

Limitations on system operation due to perceived effects on the Balefill Area combustion may be alleviated through implementation of Task 3 of the Enforcement Order or through other efforts. Maximizing the effectiveness of the SVE system in 2015 and beyond will be a key component of the IWAG's operation of that system. Maximizing SVE operation provides the greatest available protection of groundwater quality and serves to shorten the restoration timeframe for the Site.

4.3 SVE System Repair Reporting

SVE system shutdowns occur both as planned shutdowns for routine system maintenance and as unplanned shutdowns. MSW flare shutdowns result in automatic shutdown of the SVE system to prevent potential atmospheric discharges of untreated vapors.

Intermittent shutdowns of the SVE system occurred during 2014. Details of each shutdown that occurred between January 1, 2014 and September 30, 2014 were included in the first, second, and third quarter reports. Shutdowns that occurred during the fourth quarter of 2014 are summarized in Table 23.

As noted in the 2013 Annual Report, the flexible hose at each SVE system wellhead was replaced on January 6, 2014 with new hose material with a higher compatibility rating for compounds detected in the SVE vapor effluent. Specifications for the new hose material were included in *Addendum No. 1 to Volume 1: As-Built Report for SVE System Upgrades* (EPI 2014). That addendum was submitted to and accepted by Ecology on February 20, 2014.

4.4 Groundwater Quality Trends

Data presented in quarterly and annual reports, including Phase I AIA studies reported in the 2008 and 2009 Annual Reports, illustrate that soil gas conditions and groundwater quality appear to be linked at the Site, and contaminant transport through the vadose zone to the water table is likely the primary mechanism for contaminant migration from the Zone A wastes to groundwater. The operation of the upgraded SVE system throughout 2013, with contaminant mass removal rates averaging approximately 467 lbs/day resulted in significant improvements in groundwater quality and consistent compliance with dCULs throughout Zone A by the third and fourth quarters. That finding demonstrated the effectiveness of the SVE system for mass removal and groundwater protection when operated as originally intended and designed. This strong link between SVE operation and groundwater quality was further demonstrated in 2014.

On December 3, 2013, operation of the shallow and intermediate SVE wells were shut down and airflow and vacuum in the deep wells was increased only slightly. Analytical data from the first quarterly groundwater monitoring event in January 2014 indicated a marked increase in both the number of detected compounds and an increase in concentrations detected in the Zone A source zone wells, MW-52S and MW-53. Figures 30 and 31 summarize vacuum and airflow measurements for the SVE system. Table 24 summarizes historical groundwater data for Zone A source zone wells MW-52S and MW-53S, and Zone A sentinel wells MW-47S, MW-50S, NVM-01, and MW-12S.

In mid-February, VEW-07S and VEW-07I were returned to service and the airflows in VEW-06D and VEW-07D were decreased slightly. Analytical data from the second quarter groundwater monitoring performed during the week of April 21, 2014 showed continued increases in VOC concentrations. In mid-May, airflow in VEW-06D and VEW-07D was doubled. Analytical data from the third quarter groundwater monitoring performed during the week of July 21, 2014 showed some decrease in VOC concentrations but not a restoration of groundwater quality to 2013 levels. While concentrations of some compounds decreased, the abundance of detectable VOCs in the source zone increased through the fourth quarter. This may be reflective of the downward pressure gradient created by the increased use of deep wells without the counterbalance of shallow and intermediate wells.

Figures 10 through 26 illustrate the trends in PCE, TCE, 1,1-DCE, 1,2-DCA, benzene, and toluene concentrations throughout the Site during 2014. These figures illustrate that while the number and concentrations of VOCs detected within Zone A wells increased significantly in 2014 in comparison to 2013, Site-wide VOC detections overall remained below dCULs.

Figures 32 through 37 illustrate concentration trends for the six Zone A wells (MW-52S, MW-53S, MW-47S, MW-50S, NVM-01, and MW-12S), which were monitored on a quarterly basis during 2014. Each figure charts the concentrations of the five most abundant chlorinated compounds (PCE, TCE, cis-1,2-DCE, 1,2-DCA, and 1,1-DCE) with Site specific dCULs. Compounds that were not detected in a sample are charted as 0.0 ug/L.

Data throughout 2014 demonstrate that groundwater quality continues to comply with dCULs at the property boundary downgradient of Zone A and throughout the portion of the dissolved-phase plume downgradient of the Site.

The correlation of apparent trends in groundwater quality with SVE operation will continue to be evaluated throughout 2015.

5.0 WASTE HANDLING

5.1 SVE System Waste Storage, Characterization, and Management

SVE system condensate is generated at two locations during system operation: at the SVE system equipment compound and at the MSW Landfill flare end of the SVE condensate conveyance line. Condensate collected at both locations is stored in polyethylene tanks prior to disposal off-site. Sampling and characterization of condensate is performed annually and as necessary to confirm the composition of the condensate and its consistency with the previously established waste profile. Condensate may also be sampled if there is a substantial change in SVE system operation (e.g., well flow rates, well in operation, changes in the rate of condensate collection). Annual condensate sampling was performed during the first quarter of 2014. Table 25 summarizes SVE condensate volumes disposed of or treated off-Site during 2014. Attachment B contains analytical data used for characterization and hazardous waste manifests for SVE system condensate disposed of or treated off-Site during 2014.

During 2014, a total of 50,151 gallons of SVE condensate and LNAPL were generated at the SVE equipment skid and in the conveyance line to the MSW Landfill flare. The IWAG managed SVE condensate and investigation-derived waste (IDW) for the Site during 2014. All SVE condensate generated at the Site during 2014 was designated as hazardous waste and transported to Burlington Environmental, LLC in Kent, Washington.

5.1 Groundwater Monitoring Waste Storage, Characterization, and Management

Purge and decontamination water generated during routine sampling was stored, sampled and characterized prior to disposal off-Site. Polyethylene tanks were used for storage of liquid wastes produced during routine monitoring. Each tank was sampled and characterized before off-site disposal or treatment.

During 2014, 525 gallons of IDW water from purging of wells before sampling and decontamination was disposed of off-site. This water was determined to be non-hazardous and was transported to the City of Pasco Publicly-Owned Treatment Works for treatment and disposal. Table 25 summarizes volumes of purge water and decontamination waste disposed of or treated off-Site during 2014. Attachment B contains analytical data used for characterization of groundwater monitoring wastewater disposed of or treated off-Site during 2014.

6.0 LANDFILL CAP PERFORMANCE MONITORING

Monitoring of the Zone A, C/D, and E landfill caps during 2014 was conducted in accordance with the following Ecology approved document:

- *Operations and Maintenance Manual for Industrial Waste Area Caps – Zones A, C/D, and E – Pasco Landfill Site Pasco, Washington, dated November 21, 2013.*

Monthly visual inspections are performed to monitor performance of the Zone A, C/D, and E landfill covers, detention and evaporation basins, and perimeter fencing. Each monthly inspection is recorded on an inspection checklist. Monthly inspection checklists for Zones A, C/D, and E for the fourth quarter of 2014 are available in Attachment C.

Cover inspections include assessment of man-made, animal-made and natural disturbances including vehicle traffic, burrowing, erosion, vegetation and settlement. The Zone A cover inspection also involves inspection of sumps and SVE piping. Sumps were installed in the areas of greatest settlement to manage water accumulation. SVE piping on the Zone A cover is monitored for settlement associated changes that may affect the flow of air or condensate within the pipes. Disturbances under evaluation or requiring repairs are noted on the checklist.

Detention and evaporation basins on each landfill cover are checked for disturbances including damage to the liner, staff gauge, or anchor trench along with levels of accumulated water, sediment or vegetation. Perimeter fencing for each landfill is inspected for disturbances such as damage from vehicles, burrowing under the fenceline, vegetation accumulation, and fence posts leaning.

6.1 Zone A Landfill

The Zone A Landfill Cover, Detention/Evaporation Basin, and Fence Inspection Checklists for 2014 are presented in Attachment C. Settlement on the surface of the Zone A cover and removal of a portion of the perimeter fencing occurred during 2014 and are addressed below. No conditions requiring maintenance or repair of the Zone A basins were observed during 2014.

6.1.1 Zone A Settlement

Settlement of the Zone A landfill cap has been monitored since May 2008. During 2008, in response to areas of measured subsidence on the Zone A cap, survey benchmarks were installed and periodic surveying to quantify settlement began. In 2010, additional settlement benchmarks were installed.

During 2011, as part of the Phase II AIA activities, maintenance was performed on the Zone A cap to improve surface drainage and assess potential accumulation of precipitation in the subsidence areas. On December 15, 2011, in support of as-built documentation for the Zone A cap and SVE system upgrades, a ground-based 3D “point cloud” Light Detection and Ranging (LIDAR) survey was made of the full surface of the Zone A cap. As part of the cap maintenance, settlement markers within the construction area were destroyed and replacement settlement markers were installed.

In January 2013, an aerial survey of the Site was flown for the purpose of establishing a topographic survey for the entire Site. New areas of differential settlement and associated cracks in the surface of the uppermost soil cover on the Zone A cap were noted during the first quarter of 2013. These new areas of settlement and surface cracks were inspected by SCS Engineers and settlement related survey data were evaluated against yield point and break point values for the Zone A cover materials. The results of this evaluation is summarized in the *Technical Memorandum – Cover Settlement Evaluation Update – Zone A Drum Disposal Area – Pasco Sanitary Landfill Site*, dated September 13, 2013. The Memo is presented as Attachment D. It was determined that the settlement rates observed were within the range of expected rates for landfill caps and that the settlement did not place an unacceptable strain on the landfill membrane, geosynthetic clay liner or geotextile materials. Additional survey markers were installed on the Zone A cover to monitor these areas.

During April and June 2013, additional LIDAR surveys were performed in combination with a standard level survey of the settlement markers. The LIDAR surveys were capable of identifying elevation changes over the entire surface of the cap and allowed monitoring of emergent settlement rather than only settlement in the immediate area of survey markers. In consultation with Ecology the standard level surveys were discontinued and periodic LIDAR surveying was implemented.

Since April 2013, settlement of the Zone A cap has been monitored using LIDAR surveys. LIDAR surveys are evaluated relative to the baseline LIDAR survey of December 15, 2011 which was performed as a component of the Phase II AIA cap repairs. LIDAR surveys are performed by Triad Associates (Triad) of Kirkland, Washington.

During 2014, LIDAR surveys of the Zone A landfill cap were performed during all four quarters. A differential analysis is performed between each quarter's LIDAR survey data, the previous quarter's survey data, and the 2011 baseline to assess changes in the Zone A cap surface and identify areas of potential emergent settlement. The first, second and third quarter reports contain the differential surface maps for the first three quarterly surveys. Attachment E contains the differential surface maps showing elevation changes between the October 2014 and the July 2014, April 2013, and December 2011 surveys.

There are no indications that either wind or water erosion or deposition have affected the differential settlement analysis. There are no erosional or depositional features at the edges of, or within, the settlement areas such as furrows in the sides of the depressions or sand covering vegetation or debris in the depressions. To provide a means of evaluating potential wind or water-related deposition in the future, the sumps in the two largest depressions have been marked at the current ground level to allow monitoring for changes in ground surface at the sumps.

Each differential surface map shows the surface of Zone A color-coded to indicate areas of positive or negative changes in elevation between the dates of comparison. Portions of the maps that are colored blue or green indicate areas of increasing elevation. Areas of increasing elevation include portions of the landfill where additional soil cover or gravel was added, vegetative growth occurred, or adjustments in piping or equipment related to the SVE system were made.

Portions of the maps that are colored green, yellow or red indicate areas of settlement. Elevation changes for six points where the greatest settlement has occurred since December 2011 are indicated on each map.

The two areas with the greatest elevation change appear red on the differential surface map for 10/20/14 and 12/15/11. Figure 38 presents a graphical representation of the settlement rates and total settlement for the two areas with the largest settlement on Zone A. Based on this evaluation, settlement in these two areas has decreased and appears to be approaching a very low and asymptotic rate. Total strain on the HDPE cap remains below the threshold value of 10 percent before permanent deformation of the cap material occurs and well below the strain necessary to tear the HDPE. (See Attachment D).

Physical inspection of the cap and qualitative, visual assessment of settlement indicates that while initial settlement was localized in the two areas noted above, more recent settlement appears to be over broader areas with less differential settlement. It is likely that broad based settlement will occur as the SVE system removes mass from Zone A. Such settlement has the effect of lessening the total strain on the HDPE membrane.

The IWAG will continue to perform quarterly subsidence monitoring of the Zone A cap and evaluate settlement rates and total strain on the HDPE membrane.

6.1.2 Zone A Fencing

In order to facilitate fire extinguishment activities in the Balefill Area, a portion of the Zone A perimeter fencing was removed during 2014. The open portion of the Zone A fenceline is located along the northeastern side of Zone A. A locked gate limits access to this area. All fencing along Dietrich Road and along the boundary with the BDI transfer station to the south is in good condition.

Additional Zone A fencing may be removed in 2015 to support the ongoing Balefill Area combustion investigation and extinguishment. The need for additional fencing will be evaluated in the future and reviewed with Ecology.

6.2 Zone B

The condition of the Zone B cover, basins, and fencing, including inspection and maintenance activities performed during 2014, is reported to Ecology by Bayer Crop Science (BCS) under separate cover.

6.1 Zones C/D, and E

The Zone C/D and Zone E Landfill Cover, Detention/Evaporation Basin, and Fence Inspection Checklists for 2014 are presented in Attachment C. No conditions requiring maintenance or repair were observed on the Zone C/D or E caps, basins, or fencing in 2014.

7.0 INSTITUTIONAL CONTROLS

Institutional controls for the Site are presented in:

- *Pasco Landfill Site Updated Institutional Controls Plan – Revision 1*, dated October 7, 2013.

Institutional controls at the Site include Zone A, B, C/D, and E perimeter fencing and informational signage posted around the site. As discussed above, perimeter fencing is inspected on a monthly basis. Informational signage is monitored during the monthly inspections as well as during operations and maintenance activities.

Other institutional controls at the Site include City of Pasco Ordinance No. 3469 and Municipal Code Section 16.06.040 and Franklin County Ordinance No. 2-99 and Code Chapter 17.56 both prohibiting installation of new drinking water wells within the GPA. As part of the control measures, the City of Pasco and Franklin County monitor and control building and development permits within the GPA.

On December 4, 2014, representatives of the City of Pasco, Benton/Franklin County Health Department and EPI as representatives of the IWAG performed the annual survey of the GPA including inspection of each known residential well. This annual well survey is a component of the institutional controls. The Franklin County *Annual Institutional Controls Report for 2014* and the City of Pasco *2014 – East Pasco Plume Area – Well Location Survey* are included in Attachment F.

8.0 SUMMARY

The following summarizes the primary findings and conclusions from the groundwater monitoring and the interim action operations and maintenance in 2014:

- Groundwater quality at the downgradient property boundary and locations downgradient of the property boundary continued to comply with the dCULs throughout 2014.
- Groundwater quality beneath Zone A and in the Zone A sentinel wells is strongly correlated to SVE operation. Concentrations of some COCs increased during 2014 in apparent response to decreased SVE system flows related to the Balefill Area combustion. While groundwater quality continues to comply with dCULs at the property boundary and beyond, the effects of reduced SVE system flows in the shallow and intermediate extraction wells is apparent both in the concentrations and numbers of VOCs present in groundwater beneath Zone A.
- The current monitoring network is adequate to assess and evaluate ongoing groundwater quality at the Site.
- The upgraded SVE system continued to extract significant quantities of contaminants from soil at the Site. Mass removal rates from the SVE system averaged around 262 lbs/day during 2014 with an estimated total of over 93,000 lbs of VOCs removed from Zone A during 2014. This total is only slightly more than half of the 173,000 lbs of VOC mass removed by the SVE system in 2013.
- In consultation with Ecology, operation of the SVE wells was adjusted as a precautionary measure in response to the apparent Balefill Area combustion. SVE operation was also adjusted based on requests by the LFG for reduced flow in response to decreases in methane capture at the MSW. The installation of an RTO in 2015 will eliminate the limitation on SVE operation due to methane recovery and will allow SVE treatment independent of MSW conditions. The resolution of the Balefill Area combustion may also facilitate increased SVE system flow rates by eliminating concerns regarding the potential effects of SVE on the apparent subsurface combustion.
- Settlement of the Zone A cover continued during 2014. That settlement does not currently pose a threat to the integrity of the Zone A HDPE membrane.

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Tables

WELL	Q1				Q2						Q3				Q4					
	VOCs with SIM	SVOCs with SIM	Herbicides	Total and Hexavalent Chromium	VOCs with SIM	SVOCs with SIM	Herbicides	Total and Hexavalent Chromium	Natural Attenuation Parameters	Landfill Parameters	VOCs with SIM	SVOCs with SIM	Herbicides	Total and Hexavalent Chromium	VOCs with SIM	SVOCs with SIM	Herbicides	Total and Hexavalent Chromium	Natural Attenuation Parameters	Landfill Parameters
Performance Monitoring Wells - Municipal Solid Waste Landfill																				
#4R	X	-	-	-	X	-	-	-	-	X	X	-	-	-	X	-	-	-	-	X
MW-16S	X	-	-	-	X	-	-	-	-	X	X	-	-	-	X	-	-	-	-	X
MW-17SR	X	-	-	-	X	-	-	-	-	X	X	-	-	-	X	-	-	-	-	X
Performance Monitoring Wells - Zone A																				
EE-2	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-13S	X	-	-	X	X	-	X	-	-	X	-	-	X	X	-	-	-	X	-	-
MW-47S	X	-	-	-	X	-	-	-	X	X	-	-	-	X	-	-	-	-	X	-
MW-47I	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-50S	X	-	-	-	X	-	-	-	X	X	-	-	-	X	-	-	-	-	X	-
MW-52S	X	-	-	-	X	X	X	-	-	X	-	-	-	X	X	X	X	-	-	-
MW-53S	X	-	-	-	X	X	X	-	-	X	-	-	-	X	X	X	-	-	-	-
NVM-01	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
NVM-01I	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Performance Monitoring Wells - Zone B																				
MW-26SR	X	X	X	-	X	X	X	-	-	X	X	X	X	X	X	X	-	-	-	-
Performance Monitoring Wells - Zone C/D																				
MW-55S	X	-	-	X	X	-	X	-	-	X	-	-	X	X	-	-	-	X	-	-
Performance Monitoring Wells - Zone E																				
MW-27SR	X	-	-	X	X	-	X	-	-	X	-	-	X	X	-	-	-	X	-	-
Sentinel Wells																				
MW-23S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-15S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-18S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-19S	X	-	-	X	X	-	X	-	-	X	-	-	X	X	-	-	X	-	-	-
#2R	X	-	-	-	X	-	-	-	X	X	-	-	-	X	-	-	-	-	X	-
2I	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-12S	X	-	-	X	X	-	X	X	-	X	-	-	X	X	-	-	-	X	X	-
MW-12ID	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-49S	X	-	-	-	X	-	-	-	X	X	-	-	-	X	-	-	-	-	X	-
MW-49I	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Property Boundary Wells																				
MW-22S	X	-	-	X	X	-	X	-	X	X	-	-	X	X	-	-	-	X	-	X
MW-24S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-10S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-11S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-11I	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-51S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
Downgradient Wells																				
MW-29S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-29I	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-31S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-34S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-37S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-38S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-38I	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-40S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-41SR	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-42S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-43S	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-43I	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-44S	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-45S	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
MW-46S	-	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
MW-54I	X	-	-	-	X	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-
Upgradient Wells																				
MW-20S	-	-	-	X	-	-	-	-	X	X	-	-	-	X	-	-	-	-	X	X
MW-25SR	-	-	-	-	X	-	-	-	X	X	-	-	-	X	-	-	-	-	X	X
Residential/Domestic Wells																				
Bradley	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Bonnie	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Hand	-	-	-	-	X	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Hommel	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Lopez	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Montalvo	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Norvell	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Norvell2	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Rada	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Rindt	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Salinas	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
West	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Yenney1	-	-	-	-	•	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-
Yenney2	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Yenney3	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Waste Characterization Samples																				
FLARE	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SVE SKID	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PURGE	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

• = Residential well either not functional or not accessible

VOC = Volatile Organic Compound

SVOC = Semi-Volatile Organic Compound

SIM = Selective Ion Measurement (SIM) analysis

Herbicides = Chlorophenoxy and nitrophenol herbicides

Natural Attenuation Parameters = Analysis for nitrate/nitrite, ammonia, sulfate, ferrous iron, manganese, Chemical Oxygen Demand,

Total Dissolved Solids, total alkalinity / bicarbonate, chloride and Total Organic Carbon.

Landfill Parameters = Analysis for nitrate, ammonia, sulfate, Total Dissolved Solids, total alkalinity / bicarbonate, chloride, Total Organic Carbon, calcium, total iron, magnesium, manganese, potassium, sodium

TABLE 2
Groundwater Elevation Data
(in feet)
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2014 - 12/31/2014

Page: 1 of 2

WELL ID	Q1	Q2	Q3	Q4	RANGE
#9	358.72	359.77	357.78	356.49	3.28
1R	352.53	353.07	351.77	350.91	2.16
2D	352.76	353.46	352.00	351.21	2.25
2I	352.85	353.44	352.10	351.21	2.23
2R	352.71	353.33	351.98	350.99	2.34
4R	357.95	358.99	356.98	356.75	2.24
8R	356.84	357.79	355.99	354.80	2.99
EE-2	353.28	353.89	352.55	351.58	2.31
EE-6R	357.28	358.16	356.37	355.16	3.00
MW-10S	351.96	352.52	351.27	350.42	2.10
MW-11I	351.78	352.34	351.13	350.29	2.05
MW-11S	351.78	352.34	351.09	350.28	2.06
MW-12D	352.85	353.44	353.09	351.21	2.23
MW-12ID	352.87	353.46	352.12	351.20	2.26
MW-12S	352.84	353.42	351.11	351.17	2.31
MW-13S	353.16	353.80	352.41	351.50	2.30
MW-14S	354.57	355.20	353.73	352.72	2.48
MW-15S	353.55	354.25	352.75	351.77	2.48
MW-16S	359.50	360.69	358.53	357.22	3.47
MW-17SR	355.31	356.14	354.42	353.33	2.81
MW-18S	355.66	356.47	354.87	353.77	2.70
MW-19S	357.78	358.65	356.79	355.59	3.06
MW-20S	360.37	361.47	359.27	358.34	3.13
MW-22S	353.65	354.36	352.80	352.65	1.71
MW-23S	357.03	357.99	356.05	354.90	3.09
MW-24S	352.61	353.26	351.88	351.01	2.25
MW-25SR	358.61	359.40	357.52	356.30	3.10
MW-26SR	357.67	358.32	356.61	355.49	2.80
MW-27SR	358.47	359.46	357.49	356.24	3.22
MW-28S	363.60	364.90	362.33	360.89	4.01
MW-29I	350.56	351.02	349.98	349.19	1.83
MW-29S	350.44	350.92	349.88	349.09	1.83
MW-30S	349.88	350.32	349.35	350.51	0.63
MW-31S	350.19	350.68	349.76	347.05	3.63
MW-32S	350.11	350.51	349.47	348.77	1.74
MW-34S	349.19	349.67	348.77	347.99	1.68
MW-36S	348.49	349.04	348.21	347.39	1.65

TABLE 2
Groundwater Elevation Data
(in feet)
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2014 - 12/31/2014

Page: 2 of 2

WELL ID	Q1	Q2	Q3	Q4	RANGE
MW-37S	348.44	348.90	348.13	347.35	1.55
MW-38I	348.23	348.65	347.90	347.17	1.48
MW-38S	347.23	348.70	347.92	347.19	1.51
MW-40S	347.84	348.30	347.62	346.83	1.47
MW-41SR	348.00	348.44	347.71	346.98	1.46
MW-42S	347.47	347.93	347.25	346.52	1.41
MW-43I	347.55	348.00	347.24	346.60	1.40
MW-43S	347.64	348.09	347.32	346.68	1.41
MW-44S	347.58	348.02	347.25	346.60	1.42
MW-45S	347.99	348.45	347.71	346.97	1.48
MW-46S	NM	349.94	NM	348.33	1.61
MW-47D	353.11	353.73	352.36	351.41	2.32
MW-47I	353.09	353.70	352.33	351.46	2.24
MW-47S	353.08	353.70	352.33	351.41	2.29
MW-48D	353.32	353.92	352.54	351.59	2.33
MW-48I	353.11	353.73	352.35	351.41	2.32
MW-48S	353.10	353.70	352.35	351.40	2.30
MW-49D	352.66	353.28	351.93	351.04	2.24
MW-49I	352.43	353.02	351.74	350.83	2.19
MW-49S	352.45	353.54	351.79	350.87	2.67
MW-50S	353.34	353.95	352.69	351.68	2.27
MW-51S	352.03	352.61	351.38	350.50	2.11
MW-52S	353.76	354.52	353.19	352.13	2.39
MW-53S	352.84	354.04	352.64	351.60	2.44
MW-54I	346.44	346.91	346.27	345.67	1.24
MW-55S	357.35	358.21	356.46	356.09	2.12
NVM-01	353.04	353.65	352.29	351.39	2.26
NVM-01D	353.03	353.64	352.26	351.35	2.29
NVM-01I	353.04	353.66	352.30	351.34	2.32
NVM-02	353.01	353.64	352.28	351.34	2.30
NVM-03	352.97	353.59	352.23	351.32	2.27
NVM-04	352.77	353.38	352.06	351.15	2.23
NW-1	NM	372.27	NM	367.06	5.21
NW-2	NM	368.07	NM	363.54	4.53
NW-3	NM	365.73	NM	361.56	4.17
NW-4	NM	367.88	NM	363.38	4.50
NW-5	367.44	369.00	365.95	364.33	4.67

NM = Water level not measured.

Vertical Datum is based on NAVD 1988

TABLE 3
Evaluation of First Quarter 2014 Vertical Gradients
Zone A Well Clusters
2014 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Intermediate to Deep Vertical Piezometric Gradient (in feet/foot)	Deep Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Shallow to Deep Vertical Piezometric Gradient (in feet/foot)
January 2014										
2R	352.71	-0.006	2I	327.50	352.85	0.003	2D	297.50	352.76	-0.001
MW-12S	352.84	-0.001	MW-12ID	326.80	352.87	0.001	MW-12D	293.00	352.85	<±0.001
MW-47S	353.08	<±0.001	MW-47I	326.70	353.09	-0.001	MW-47D	293.40	353.11	-0.001
MW-48S	353.1	<±0.001	MW-48I	327.90	353.11	-0.006	MW-48D	293.30	353.32	-0.004
MW-49S	352.45	0.001	MW-49I	328.90	352.43	-0.008	MW-49D	299.50	352.66	-0.004
NVM-01	353.04	<±0.001	NVM-01I	324.10	353.04	<±0.001	NVM-01D	296.40	353.03	<±0.001
Average of Water Elevations and Vertical Hydraulic Gradients - July 2008 Through January 2014										
2R	352.74	-0.004	2I	327.50	352.85	0.001	2D	297.50	352.77	-0.001
MW-12S	352.85	-0.001	MW-12ID	326.80	352.88	<±0.001	MW-12D	293.00	352.88	<±0.001
MW-47S	353.13	<±0.001	MW-47I	326.70	353.13	<±0.001	MW-47D	293.40	353.15	<±0.001
MW-48S	353.19	0.001	MW-48I	327.90	353.16	-0.004	MW-48D	293.30	353.38	-0.003
MW-49S	352.47	0.002	MW-49I	328.90	352.43	-0.005	MW-49D	299.50	352.67	-0.004
NVM-01	353.19	0.004	NVM-01I	324.10	353.07	<±0.001	NVM-01D	296.40	353.06	0.002

Downward gradients follow gravity and are shown as positive numbers. Upward gradients go against gravity and are shown as negative (-) numbers. Example: If a shallow well has a lower water elevation than the cluster's intermediate well, the gradient from the shallow well to the intermediate well will be a negative number.

TABLE 4
Evaluation of Second Quarter 2014 Vertical Gradients
Zone A Well Clusters
2014 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Intermediate to Deep Vertical Piezometric Gradient (in feet/foot)	Deep Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Shallow to Deep Vertical Piezometric Gradient (in feet/foot)
April 2014										
2R	353.33	-0.004	2I	327.50	353.44	-0.001	2D	297.50	353.46	-0.002
MW-12S	353.42	-0.002	MW-12ID	326.80	353.46	0.001	MW-12D	293.00	353.44	<±0.001
MW-47S	353.70	0.000	MW-47I	326.70	353.70	-0.001	MW-47D	293.40	353.73	<±0.001
MW-48S	353.7	-0.001	MW-48I	327.90	353.73	-0.005	MW-48D	293.30	353.92	-0.004
MW-49S	353.54	0.021	MW-49I	328.90	353.02	-0.009	MW-49D	299.50	353.28	0.005
NVM-01	353.65	<±0.001	NVM-01I	324.10	353.66	0.001	NVM-01D	296.40	353.64	<±0.001
Average of Water Elevations and Vertical Hydraulic Gradients - July 2008 Through April 2014										
2R	352.76	-0.004	2I	327.50	352.87	0.001	2D	297.50	352.80	-0.001
MW-12S	352.87	-0.001	MW-12ID	326.80	352.91	<±0.001	MW-12D	293.00	352.90	<±0.001
MW-47S	353.16	<±0.001	MW-47I	326.70	353.15	<±0.001	MW-47D	293.40	353.18	<±0.001
MW-48S	353.21	0.001	MW-48I	327.90	353.19	-0.004	MW-48D	293.30	353.40	-0.003
MW-49S	352.52	0.003	MW-49I	328.90	352.45	-0.005	MW-49D	299.50	352.70	-0.003
NVM-01	353.21	0.004	NVM-01I	324.10	353.09	<±0.001	NVM-01D	296.40	353.09	0.002

Downward gradients follow gravity and are shown as positive numbers. Upward gradients go against gravity and are shown as negative (-) numbers. Example: If a shallow well has a lower water elevation than the cluster's intermediate well, the gradient from the shallow well to the intermediate well will be a negative number.

TABLE 5
Evaluation of Third Quarter 2014 Vertical Gradients
Zone A Well Clusters
2014 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Intermediate to Deep Vertical Piezometric Gradient (in feet/foot)	Deep Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Shallow to Deep Vertical Piezometric Gradient (in feet/foot)
July 2014										
2R	351.98	-0.005	2I	327.50	352.10	0.003	2D	297.50	352	<±0.001
MW-12S	351.11	-0.042	MW-12ID	326.80	352.12	-0.029	MW-12D	293.00	353.09	-0.034
MW-47S	352.33	<±0.001	MW-47I	326.70	352.33	-0.001	MW-47D	293.40	352.36	-0.001
MW-48S	352.35	<±0.001	MW-48I	327.90	352.35	-0.005	MW-48D	293.30	352.54	-0.003
MW-49S	351.79	0.002	MW-49I	328.90	351.74	-0.006	MW-49D	299.50	351.93	-0.003
NVM-01	352.29	<±0.001	NVM-01I	324.10	352.30	0.001	NVM-01D	296.40	352.26	0.001
Average of Water Elevations and Vertical Hydraulic Gradients - July 2008 Through July 2014										
2R	352.73	-0.004	2I	327.50	352.84	0.001	2D	297.50	352.77	-0.001
MW-12S	352.80	-0.003	MW-12ID	326.80	352.88	<±0.001	MW-12D	293.00	352.91	-0.002
MW-47S	353.12	<±0.001	MW-47I	326.70	353.12	<±0.001	MW-47D	293.40	353.14	<±0.001
MW-48S	353.17	0.001	MW-48I	327.90	353.15	-0.004	MW-48D	293.30	353.37	-0.003
MW-49S	352.49	0.003	MW-49I	328.90	352.42	-0.005	MW-49D	299.50	352.67	-0.003
NVM-01	353.17	0.004	NVM-01I	324.10	353.06	<±0.001	NVM-01D	296.40	353.05	0.002

Downward gradients follow gravity and are shown as positive numbers. Upward gradients go against gravity and are shown as negative (-) numbers. Example: If a shallow well has a lower water elevation than the cluster's intermediate well, the gradient from the shallow well to the intermediate well will be a negative number.

TABLE 6
Evaluation of Fourth Quarter 2014 Vertical Gradients
Zone A Well Clusters
2014 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Intermediate to Deep Vertical Piezometric Gradient (in feet/foot)	Deep Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Shallow to Deep Vertical Piezometric Gradient (in feet/foot)
October 2014										
2R	350.99	-0.009	2I	327.50	351.21	<±0.001	2D	297.50	351.21	-0.004
MW-12S	351.17	-0.001	MW-12ID	326.80	351.20	<±0.001	MW-12D	293.00	351.21	-0.001
MW-47S	351.41	-0.002	MW-47I	326.70	351.46	0.002	MW-47D	293.40	351.41	<±0.001
MW-48S	351.4	<±0.001	MW-48I	327.90	351.41	-0.005	MW-48D	293.30	351.59	-0.003
MW-49S	350.87	0.002	MW-49I	328.90	350.83	-0.007	MW-49D	299.50	351.04	-0.003
NVM-01	351.39	0.002	NVM-01I	324.10	351.34	<±0.001	NVM-01D	296.40	351.35	0.001
Average of Water Elevations and Vertical Hydraulic Gradients - July 2008 Through October 2014										
2R	352.66	-0.005	2I	327.50	352.78	0.001	2D	297.50	352.71	-0.001
MW-12S	352.74	-0.003	MW-12ID	326.80	352.81	<±0.001	MW-12D	293.00	352.84	-0.002
MW-47S	353.06	<±0.001	MW-47I	326.70	353.06	<±0.001	MW-47D	293.40	353.08	<±0.001
MW-48S	353.11	0.001	MW-48I	327.90	353.09	-0.004	MW-48D	293.30	353.30	-0.003
MW-49S	352.42	0.003	MW-49I	328.90	352.36	-0.005	MW-49D	299.50	352.60	-0.003
NVM-01	353.10	0.004	NVM-01I	324.10	352.99	<±0.001	NVM-01D	296.40	352.99	0.002

Downward gradients follow gravity and are shown as positive numbers. Upward gradients go against gravity and are shown as negative (-) numbers. Example: If a shallow well has a lower water elevation than the cluster's intermediate well, the gradient from the shallow well to the intermediate well will be a negative number.

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)
January 2014					
MW-11S	351.78	<±0.001	MW-11I	328.94	351.78
MW-29S	350.44	-0.007	MW-29I	331.39	350.56
MW-38S	347.23	-0.071	MW-38I	333.17	348.23
MW-43S	347.64	0.004	MW-43I	327.22	347.55
Average Water Elevations and Vertical Hydraulic Gradients - April 2011 to January 2014					
MW-11S	351.80	-0.008	MW-11I	328.94	351.97
MW-29S	350.58	-0.006	MW-29I	331.39	350.69
MW-38S	348.30	-0.004	MW-38I	333.17	348.35
MW-43S	347.78	0.004	MW-43I	327.22	347.70

Notes:

Downward gradients are shown as positive numbers. Upward gradients are shown as negative (-) numbers. The intermediate wells were installed in March 2011.

Elevations for MW-29S/I are based on the June 2012 survey measurements.



TABLE 8
Evaluation of Vertical Gradients
Off-Property Well Pairs
Second Quarter 2014
2014 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)
April 2014					
MW-11S	352.34	<±0.001	MW-11I	328.94	352.34
MW-29S	350.92	-0.005	MW-29I	331.39	351.02
MW-38S	348.70	0.003	MW-38I	333.17	348.65
MW-43S	348.09	0.004	MW-43I	327.22	348.00
Average Water Elevations and Vertical Hydraulic Gradients - April 2011 to April 2014					
MW-11S	351.84	-0.007	MW-11I	328.94	352.00
MW-29S	350.61	-0.006	MW-29I	331.39	350.72
MW-38S	348.33	-0.003	MW-38I	333.17	348.38
MW-43S	347.80	0.004	MW-43I	327.22	347.72

Notes:

Downward gradients are shown as positive numbers. Upward gradients are shown as negative (-) numbers. The intermediate wells were installed in March 2011.

Elevations for MW-29S/I are based on the June 2012 survey measurements.



TABLE 9
Evaluation of Vertical Gradients
Off-Property Well Pairs
Third Quarter 2014
2014 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)
July 2014					
MW-11S	351.09	-0.002	MW-11I	328.94	351.13
MW-29S	349.88	-0.006	MW-29I	331.39	349.98
MW-38S	347.92	0.001	MW-38I	333.17	347.90
MW-43S	347.32	0.004	MW-43I	327.22	347.24
Average Water Elevations and Vertical Hydraulic Gradients - April 2011 to July 2014					
MW-11S	351.78	-0.007	MW-11I	328.94	351.94
MW-29S	350.55	-0.006	MW-29I	331.39	350.66
MW-38S	348.30	-0.003	MW-38I	333.17	348.34
MW-43S	347.77	0.004	MW-43I	327.22	347.69

Notes:

Downward gradients are shown as positive numbers. Upward gradients are shown as negative (-) numbers. The intermediate wells were installed in March 2011.

Elevations for MW-29S/I are based on the June 2012 survey measurements.



TABLE 10
Evaluation of Vertical Gradients
Off-Property Well Pairs
Fourth Quarter 2014
2014 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)
October 2014					
MW-11S	350.28	0.000	MW-11I	328.94	350.29
MW-29S	349.09	-0.006	MW-29I	331.39	349.19
MW-38S	347.19	0.001	MW-38I	333.17	347.17
MW-43S	346.68	0.004	MW-43I	327.22	346.60
Average Water Elevations and Vertical Hydraulic Gradients - April 2011 to October 2014					
MW-11S	351.68	-0.006	MW-11I	328.94	351.83
MW-29S	350.46	-0.006	MW-29I	331.39	350.57
MW-38S	348.23	-0.002	MW-38I	333.17	348.26
MW-43S	347.69	0.004	MW-43I	327.22	347.62

Notes:

Downward gradients are shown as positive numbers. Upward gradients are shown as negative (-) numbers. The intermediate wells were installed in March 2011.

Elevations for MW-29S/I are based on the June 2012 survey measurements.

SITE	DATE	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	pH	Specific Conductivity (mS/m)	Temperature (Degrees Celcius)	Turbidity (NTU)
2R	1/24/14	3.63	33	7.75	55.5	17.07	0.05
	4/22/14	3.20	17	7.84	55.5	17.98	0.00
	7/23/14	4.84	0	7.81	55.9	18.87	0.00
	10/22/14	4.55	74	8.30	56.1	18.71	0.00
2I	4/22/14	4.21	64	7.74	55.2	15.95	0.00
	10/21/14	11.39	58	8.32	52.7	17.80	0.00
4R	1/23/14	2.34	85	7.50	64.6	16.52	0.00
	4/23/14	2.32	70	7.38	66.7	17.11	0.00
	7/23/14	4.52	64	7.29	65.8	18.62	0.00
	10/22/14	2.24	165	7.82	63.2	16.35	0.00
EE-2	4/23/14	3.85	40	7.91	55.2	17.20	0.00
	10/22/14	5.30	115	8.27	54.6	16.71	0.00
MW-10S	1/23/14	3.09	10	7.99	55.0	17.07	0.37
	4/22/14	4.78	26	7.85	55.7	15.79	0.14
	7/22/14	3.10	-18	7.81	58.1	20.54	0.00
	10/21/14	6.73	9	8.41	53.8	17.81	0.00
MW-11S	1/23/14	3.04	32	7.89	56.1	16.91	0.27
	4/22/14	4.66	37	7.74	56.4	15.68	0.84
	7/22/14	2.81	-3	7.72	58.7	21.21	0.00
	10/21/14	6.04	21	8.29	54.7	17.70	0.01
MW-11I	4/22/14	4.87	69	7.80	54.8	15.57	0.00
	10/21/14	6.52	57	8.33	53.4	17.30	0.00
MW-12S	1/22/14	2.29	55	7.75	55.9	17.85	0.00
	4/23/14	1.37	40	7.62	61.7	18.27	0.00
	7/21/14	4.14	79	7.01	65.8	21.40	0.00
	10/22/14	3.39	83	8.19	59.2	19.30	0.00
MW-12ID	4/23/14	5.29	108	7.67	55.1	17.13	0.00
	10/21/14	7.07	110	8.10	52.6	17.78	0.00
MW-13S	1/22/14	3.52	35	7.84	54.7	17.55	0.00
	4/22/14	3.30	22	7.77	57.7	17.98	0.00
	7/21/14	5.33	24	7.72	58.4	20.61	0.00
	10/22/14	5.39	63	8.26	57.2	18.59	0.00
MW-15S	1/23/14	3.05	64	7.53	63.9	17.04	0.25
	4/22/14	5.45	85	7.22	63.5	16.79	0.00
	7/23/14	5.58	64	6.81	67.3	21.64	0.00
	10/22/14	10.90	120	7.49	65.6	17.76	0.00
MW-16S	1/23/14	2.89	24	7.51	59.6	16.09	0.00
	4/22/14	0.68	4	7.33	60.8	17.57	0.02
	7/23/14	3.33	1	7.31	60.2	18.80	0.00
	10/21/14	6.66	-23	8.10	61.4	18.71	0.17
MW-17SR	1/23/14	3.62	43	7.89	53.9	16.51	0.00
	4/23/14	3.61	24	7.86	54.8	16.83	0.00
	7/23/14	6.45	24	7.65	54.9	17.70	0.00
	10/21/14	9.98	33	8.47	53.4	17.78	0.00
MW-18S	1/23/14	4.12	43	7.89	54.1	16.75	0.00
	4/23/14	3.75	21	7.89	55.5	17.51	0.00
	7/23/14	5.39	24	7.83	55.8	18.87	0.00
	10/22/14	10.65	95	8.04	55.0	17.52	0.00
MW-19S	1/22/14	4.39	67	7.62	62.9	16.88	0.04
	4/22/14	3.90	-74	7.52	67.7	17.46	0.22
	7/21/14	4.25	27	7.62	66.9	22.21	0.00
	10/21/14	8.76	21	8.22	59.8	18.21	0.00
MW-20S	1/22/14	4.15	57	7.99	53.4	16.94	0.00
	4/22/14	3.97	14	7.93	55.7	17.39	0.24
	7/21/14	4.61	22	7.90	56.5	21.79	0.00
	10/21/14	8.77	42	8.54	53.5	18.47	0.00
MW-22S	1/22/14	3.60	55	7.86	54.2	16.54	0.32
	4/23/14	3.12	49	7.79	56.4	17.26	0.00
	7/21/14	3.64	50	7.82	57.5	22.33	0.04
	10/22/14	4.59	183	8.20	54.2	17.52	3.22
MW-23S	1/23/14	3.32	80	7.80	52.6	16.03	0.01
	4/23/14	2.85	67	7.72	53.7	16.88	0.00
	7/23/14	5.20	54	7.60	61.4	17.88	0.00
	10/22/14	4.05	121	7.95	57.1	17.01	0.00

SITE	DATE	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	pH	Specific Conductivity (mS/m)	Temperature (Degrees Celcius)	Turbidity (NTU)
MW-24S	1/24/14	4.27	69	7.44	62.5	16.87	0.00
	4/22/14	5.49	71	7.55	61.5	16.37	0.00
	7/22/14	2.94	23	7.65	66.0	21.09	0.00
	10/22/14	5.07	102	8.03	60.3	16.87	0.00
MW-25SR	4/22/14	4.30	-5	7.94	54.1	17.58	0.67
	10/21/14	9.74	9	8.53	53.1	18.20	0.45
MW-26SR	1/23/14	5.36	44	7.85	53.3	15.31	0.00
	4/22/14	3.82	-10	7.87	54.1	18.01	0.25
	7/22/14	4.67	15	7.46	56.0	20.67	0.00
	10/21/14	10.07	14	8.55	54.6	17.87	0.40
MW-27SR	1/22/14	4.33	66	7.89	53.4	16.91	0.06
	4/22/14	3.66	39	7.80	55.3	17.26	0.00
	7/21/14	5.30	43	7.78	57.0	19.40	0.00
	10/21/14	9.42	56	8.46	54.2	18.92	0.00
MW-29S	1/23/14	3.38	40	7.91	58.8	16.97	0.33
	4/23/14	3.45	27	7.81	59.3	18.27	0.00
	7/22/14	3.16	8	7.74	60.7	21.39	0.20
	10/22/14	5.17	77	8.22	57.7	17.41	0.12
MW-29I	4/23/14	3.44	40	7.85	57.0	17.87	0.00
	10/22/14	4.91	96	8.28	56.7	17.46	0.00
MW-31S	1/23/14	3.19	27	7.84	57.2	17.13	0.85
	4/23/14	3.29	17	7.73	58.5	17.82	0.18
	7/22/14	3.28	0	7.67	59.9	20.02	0.32
	10/22/14	5.11	58	8.14	58.3	16.93	0.67
MW-34S	1/23/14	3.70	58	7.83	57.0	16.54	0.08
	4/23/14	4.76	42	7.67	58.3	17.35	0.00
	7/22/14	3.59	28	7.65	60.1	19.41	0.00
	10/23/14	5.61	141	7.48	55.9	17.95	0.00
MW-37S	1/23/14	3.51	37	7.85	57.5	17.19	0.00
	4/23/14	5.05	26	7.66	58.4	17.56	0.00
	7/22/14	3.60	8	7.67	59.1	19.95	0.00
	10/23/14	5.90	103	7.44	55.4	18.29	0.00
MW-38S	1/22/14	5.31	57	7.99	48.4	17.42	0.15
	4/24/14	6.22	48	7.94	52.4	17.98	0.00
	7/22/14	4.48	25	7.84	54.0	19.40	0.00
	10/23/14	4.43	116	7.72	55.5	18.35	0.00
MW-38I	4/24/14	4.71	35	7.90	57.6	17.84	0.00
	10/23/14	5.64	118	7.75	50.3	18.07	0.00
MW-40S	1/22/14	5.15	48	7.86	57.1	17.50	0.00
	4/23/14	4.69	-2	7.79	59.5	17.75	0.03
	7/22/14	3.91	32	7.75	60.1	18.75	0.00
	10/23/14	5.46	152	7.58	56.1	18.18	0.00
MW-41SR	1/22/14	5.49	45	7.93	48.5	17.44	2.04
	4/24/14	6.22	41	7.85	51.0	18.00	0.46
	7/22/14	3.89	15	7.78	53.0	19.53	0.55
	10/23/14	5.08	106	7.72	50.6	17.85	1.74
MW-42S	1/22/14	5.75	49	7.83	56.3	17.35	0.04
	4/23/14	4.89	24	7.78	60.1	17.96	0.01
	7/22/14	4.31	4	7.70	61.8	19.55	0.00
	10/23/14	5.54	116	7.61	55.9	18.57	0.00
MW-43S	1/22/14	5.28	55	7.82	57.9	17.51	0.00
	4/23/14	3.80	19	7.82	59.1	18.14	0.00
	7/22/14	3.76	13	7.67	64.0	20.21	0.00
	10/23/14	4.44	74	7.66	55.7	17.93	0.00
MW-43I	1/22/14	5.51	66	7.81	56.0	17.37	0.18
	4/23/14	3.78	32	7.83	58.1	17.84	0.00
	7/22/14	3.81	10	7.70	58.4	18.97	0.00
	10/23/14	4.62	124	7.66	54.9	18.18	0.00
MW-44S	4/23/14	3.93	20	7.74	63.6	18.17	0.00
	10/23/14	4.66	113	7.59	60.5	18.72	0.00
MW-45S	4/24/14	5.52	69	7.57	61.9	18.19	0.00
	10/23/14	4.33	119	7.59	59.5	18.00	0.00

SITE	DATE	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	pH	Specific Conductivity (mS/m)	Temperature (Degrees Celcius)	Turbidity (NTU)
MW-46S	4/24/14	3.88	40	7.73	60.8	17.58	0.00
	7/22/14	3.26	19	7.67	61.4	19.28	0.00
	10/23/14	5.95	132	7.20	55.6	18.00	0.00
MW-47S	1/23/14	0.00	-160	7.59	66.4	17.99	1.55
	4/23/14	0.00	-185	7.50	69.4	19.38	2.83
	7/23/14	0.00	-180	7.48	70.7	21.09	2.10
	10/22/14	0.00	-170	7.98	66.1	20.16	2.08
MW-47I	4/22/14	4.30	72	7.81	54.7	15.93	0.21
	10/21/14	11.80	61	8.38	52.9	17.39	0.00
MW-49S	1/24/14	0.28	25	7.36	62.7	17.17	0.00
	4/23/14	0.00	22	7.48	65.8	17.73	0.00
	7/23/14	0.03	11	7.41	69.4	19.27	0.00
	10/22/14	0.00	34	7.85	63.7	18.27	0.00
MW-49I	4/22/14	5.32	85	7.76	54.3	15.93	0.00
	10/22/14	4.75	124	8.29	54.8	17.33	0.00
MW-50S	1/23/14	0.00	-28	7.57	76.1	18.60	0.06
	4/23/14	0.00	-18	7.47	83.2	20.10	0.00
	7/23/14	0.00	-24	7.47	86.5	22.67	0.00
	10/22/14	0.00	-1	7.96	76.6	20.68	0.00
MW-51S	1/24/14	4.06	46	7.72	55.0	16.66	0.09
	4/22/14	5.12	52	7.79	54.6	15.71	0.00
	7/22/14	2.93	3	7.78	56.4	21.17	0.00
	10/21/14	6.84	16	8.28	52.9	17.38	0.00
MW-52S	1/23/14	2.14	-88	7.85	66.3	21.26	1.68
	4/22/14	0.99	-7	7.32	72.2	20.25	0.55
	7/23/14	0.87	-187	7.75	66.0	26.60	1.99
	10/21/14	5.42	13	8.22	68.6	23.96	0.39
MW-53S	1/23/14	1.72	21	7.71	66.1	21.50	0.70
	4/22/14	2.51	54	7.49	75.7	19.20	0.04
	7/23/14	3.15	26	7.63	68.4	24.76	0.00
	10/21/14	8.09	54	8.26	63.5	23.18	0.00
MW-54I	1/22/14	6.09	119	7.67	59.4	16.52	0.10
	4/23/14	4.05	47	7.80	60.8	16.92	0.00
	7/22/14	4.52	48	7.60	60.0	17.63	0.00
	10/23/14	4.73	171	7.64	57.2	17.17	0.00
MW-55S	1/22/14	3.88	32	7.87	53.3	16.84	0.00
	4/22/14	3.55	13	7.84	55.8	17.46	0.08
	7/21/14	4.60	3	7.79	57.7	20.36	0.00
	10/22/14	4.65	135	8.19	54.4	17.81	5.75
NVM-01	1/23/14	0.33	28	7.69	62.1	18.14	0.48
	4/22/14	0.97	69	7.56	61.4	16.62	0.00
	7/22/14	0.78	-1	7.55	67.8	22.76	0.00
	10/21/14	5.77	16	8.13	60.8	19.47	0.00
NVM-01I	4/22/14	4.41	64	7.87	54.4	15.70	0.00
	10/21/14	10.64	47	8.45	52.6	17.70	0.00
BRADLEY	4/24/14	2.67	173	7.69	64.4	16.64	0.00
	10/23/14	2.86	226	7.50	61.4	16.47	0.00
HAND	4/24/14	1.77	80	7.80	59.5	16.68	0.00
LOPEZ	4/24/14	0.26	-141	7.83	59.1	17.19	6.46
	10/23/14	0.23	-99	7.65	57.1	17.63	1.03
RADA	4/24/14	3.28	138	7.76	61.6	16.07	0.00
	10/23/14	3.99	216	7.55	59.2	16.05	0.00
SALINAS	4/24/14	3.46	67	7.83	55.4	16.51	0.00
	10/23/14	3.51	130	7.62	52.4	16.26	0.00
WEST	4/24/14	3.93	28	8.14	53.2	15.97	13.10
	10/23/14	0.00	176	7.49	44.8	15.93	6.40
YENNEY2	4/24/14	3.61	78	7.86	57.9	16.01	0.85
	10/23/14	4.13	130	7.61	55.5	15.93	0.00
YENNEY3	4/24/14	4.76	5	7.96	55.6	15.83	0.87
	10/23/14	4.06	88	7.70	52.5	15.79	0.50

TABLE 12
 Volatile Organic Compounds in Groundwater
 Detected Compounds Only (in ug/L)
 2014 Annual Report
 Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2014

Well Group	WELL	DATE	Chloroethenes					Chloroethanes				Chloromethanes			Aromatics						
			Tetra chloro ethene	Trichloro ethene	1,1-Dichloro ethene	cis-1,2-Dichloro ethene	Vinyl chloride	1,1,1-Trichloro ethane	1,1,2-Trichloro ethane	1,1-Dichloro ethane	1,2-Dichloro ethane	Chloro form	Chloro methane	Methylene chloride	1,2-Dichloro benzene	Chloro benzene	Benzene	Ethyl benzene	1,2,4-Trimethyl benzene	1,3,5-Trimethyl benzene	n-Propyl benzene
2013 Draft Clean-up Levels (µg/L)			0.69	2.5	0.057	16	0.090	200	-	-	0.38	-	-	5	-	-	0.5	-	-	-	-
Residential Wells	Bradley	4/24/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 U	< 2 U	< 0.77 U	< 2 U	< 0.02 U	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
		10/23/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 UJ	< 2 U	< 0.77 U	< 2 U	< 0.02 UJ	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
	Hand	4/24/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 U	< 2 U	< 0.77 U	< 2 U	< 0.02 U	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
		10/23/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 UJ	< 2 U	< 0.77 U	< 2 U	< 0.02 UJ	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
	Rada	4/24/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 U	< 2 U	< 0.77 U	< 2 U	< 0.02 U	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
		10/23/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 UJ	< 2 U	< 0.77 U	< 2 U	< 0.02 UJ	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
	Salinas	4/24/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 U	< 2 U	< 0.77 U	< 2 U	< 0.02 U	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
		10/23/14	< 0.2 U	0.12	< 0.02 U	< 2 U	< 0.032 UJ	< 2 U	< 0.77 U	< 2 U	< 0.02 UJ	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
	WEST	4/24/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 U	< 2 U	< 0.77 U	< 2 U	< 0.02 U	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
		10/23/14	< 0.2 U	0.12	< 0.02 U	< 2 U	< 0.032 UJ	< 2 U	< 0.77 U	< 2 U	< 0.02 UJ	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
	Yenney2	4/24/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 U	< 2 U	< 0.77 U	< 2 U	< 0.02 U	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
		10/23/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 UJ	< 2 U	< 0.77 U	< 2 U	< 0.02 UJ	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
	Yenney3	4/24/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 U	< 2 U	< 0.77 U	< 2 U	< 0.02 U	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U
		10/23/14	< 0.2 U	< 0.053 U	< 0.02 U	< 2 U	< 0.032 UJ	< 2 U	< 0.77 U	< 2 U	< 0.02 UJ	< 2 U	< 2 U	< 5 U	< 2 U	< 2 U	< 0.028 U	< 2 U	< 2 U	< 2 U	< 2 U

TABLE 12
 Volatile Organic Compounds in Groundwater
 Detected Compounds Only (in ug/L)
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 Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2014

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Well Group	WELL	DATE	Aromatics										Ketones			Alcohols				
			Isopropyl benzene (Cumene)	n-Butyl benzene	tert-Butyl benzene	Napththalene	Styrene	Toluene	2-Chloro toluene	4-Chloro toluene	p-Isopropyl toluene	m,p-Xylene	o-Xylene	Methyl isobutyl ketone	2-Butanone	Acetone	2-Hexanone	Ethanol	Tertiary butyl alcohol	
2013 Draft Clean-up Levels (ug/L)			-	-	-	-	-	615	-	-	-	-	-	-	-	-	-	-	-	
Municipal Solid Waste (MSW) Landfill Wells	4R	1/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		4/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		7/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	MW-16S	1/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		4/22/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		7/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/21/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	MW-17SR	1/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		4/23/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		7/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/21/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
Zone A Wells	EE-2	4/23/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U	
		10/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	MW-13S	1/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		4/22/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		7/21/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	MW-47S	1/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		4/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		7/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	MW-47I	4/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/21/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	MW-50S	1/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		4/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		7/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	MW-52S	1/23/14	9.5	< 2 U	< 2 U	< 2 U	< 1.5 U	1,000	< 2 U	< 2 U	< 2 U	800	270	< 1,000 U	1,400	< 2,500 U	20	< 710 U	79	
		4/22/14	71	11	< 2 U	12	< 1.5 U	11,000	< 2 U	< 2 U	12	4,600	1,300	2,400	200	< 2,500 U	< 100 U	< 710 U	< 13 U	
		7/23/14	7.8	< 2 U	< 2 U	24	< 1.5 U	640	< 2 U	< 2 U	< 2 U	520	220	830	3,700	6,900	48	6,400	340	
		10/21/14	8.6	2.4	26	24	17	390	19	5.7	2.1	550	230	< 1,000 U	390	< 2,500 U	37	< 710 U	24	
MW-53S	1/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	34	< 2 U	< 2 U	< 2 U	6.3	5.3	270	360	790	< 10 U	< 710 U	< 13 U		
	4/22/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	5.3	< 2 U	< 2 U	< 2 U	4.5	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
	7/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	9.6	< 2 U	< 2 U	< 2 U	7	3.4	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
	10/21/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	16	< 2 U	< 2 U	< 2 U	9	3.1	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
NVM-01	1/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
	4/22/14	< 2 UJ	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 UJ	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
	7/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
	10/21/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
NVM-01I	4/22/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		
	10/21/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U		

TABLE 12
 Volatile Organic Compounds in Groundwater
 Detected Compounds Only (in ug/L)
 2014 Annual Report
 Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2014

Well Group	WELL	DATE	Aromatics										Ketones				Alcohols		
			Isopropyl benzene (Cumene)	n-Butyl benzene	tert-Butyl benzene	Naphthalene	Styrene	Toluene	2-Chloro toluene	4-Chloro toluene	p-Isopropyl toluene	m,p-Xylene	o-Xylene	Methyl isobutyl ketone	2-Butanone	Acetone	2-Hexanone	Ethanol	Tertiary butyl alcohol
2013 Draft Clean-up Levels (µg/L)			-	-	-	-	-	615	-	-	-	-	-	-	-	-	-	-	-
Residential Wells	Bradley	4/24/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	Hand	4/24/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	Lopez	4/24/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	Rada	4/24/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	Salinas	4/24/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	WEST	4/24/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	Yenney2	4/24/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
	Yenney3	4/24/14	< 2 U	< 2 U	< 2 U	< 2 UJ	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U
		10/23/14	< 2 U	< 2 U	< 2 U	< 2 U	< 1.5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 2 U	< 10 U	< 10 U	< 25 U	< 10 U	< 710 U	< 13 U

TABLE 13
Semi-Volatile Organic Compounds in Groundwater
(in ug/L)
2014 Annual Report
Pasco Landfill, Pasco, WA

SAMPLED: 1/1 - 12/31/2014

SEMI-VOLATILE ORGANIC COMPOUND	Q1	Q2		Q3	Q4			
	MW-26SR	MW-26SR	MW-52S	MW-53S	MW-26SR	MW-26SR	MW-52S	MW-53S
1-Methylnaphthalene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	0.51	0.14
1,2-Dichlorobenzene	< 2 U	< 2 U	5.6	< 2 U	< 2 U	< 2 U	3.7	< 2 U
1,2,4-Trichlorobenzene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
1,3-Dichlorobenzene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
1,4-Dichlorobenzene	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U
2-Chloronaphthalene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Chlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Methylnaphthalene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	0.98	0.26
2-Nitroaniline	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Nitrophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,3,4,6-Tetrachlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4-Dichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4-Dimethylphenol	< 2 U	< 2 U	2.7	< 2 U	< 2 U	< 2 U	12	< 2 U
2,4-Dinitrophenol	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2,4-Dinitrotoluene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4,5-Trichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4,6-Trichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,6-Dichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,6-Dinitrotoluene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
3,3'-Dichlorobenzidine	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	--	--	--
4-Bromophenyl phenyl ether	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4-Chloro-3-Methylphenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4-Chloroaniline	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4-Chlorophenyl-Phenylether	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4-Nitroaniline	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U
4-Nitrophenol	< 4.5 U	< 4.5 U	< 4.5 U	< 4.5 U	< 4.5 U	< 4.5 U	< 4.5 U	< 4.5 U
4,6-Dinitro-2-Methylphenol	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U
Acenaphthene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	0.075
Acenaphthylene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Aniline	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Anthracene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Azobenzene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benz_a_anthracene	< 0.02 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzo(a)pyrene	< 0.029 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzo(b)fluoranthene	< 0.03 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzo(ghi)perylene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzo(k)fluoranthene	< 0.021 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

TABLE 13
Semi-Volatile Organic Compounds in Groundwater
(in ug/L)
2014 Annual Report
Pasco Landfill, Pasco, WA

SAMPLED: 1/1 - 12/31/2014

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SEMI-VOLATILE ORGANIC COMPOUND	Q1	Q2			Q3	Q4		
	MW-26SR	MW-26SR	MW-52S	MW-53S	MW-26SR	MW-26SR	MW-52S	MW-53S
Benzoic Acid	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzyl Alcohol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Bis(2-Chloroethoxy)Methane	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Bis(2-Chloroethyl)Ether	< 0.04 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Bis(2-chloroisopropyl) ether	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Bis(2-Ethylhexyl) Phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Butyl benzyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Carbazole	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Chrysene	< 0.02 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Di-n-octyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Dibenzo(a,h)anthracene	< 0.02 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Dibenzofuran	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Dibutyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Diethyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Dimethyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Fluoranthene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Fluorene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Hexachlorobenzene	< 0.05 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Hexachlorobutadiene	< 0.56 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Hexachlorocyclopentadiene	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Hexachloroethane	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Indeno(1,2,3-cd)pyrene	< 0.02 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Isophorone	< 2 U	< 2 U	3.9	< 2 U	< 2 U	< 2 U	24	< 2 U
m-Nitroaniline	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
m,p-Cresol (2:1 ratio)	< 2 U	< 2 U	4.8	< 2 U	< 2 U	< 2 U	3.3	< 2 U
N-Nitrosodi-n-propylamine	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-Nitrosodimethylamine	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
N-Nitrosodiphenylamine	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Naphthalene	< 2 U	< 2 U	11	< 2 U	0.039	0.042	20	1.5
Nitrobenzene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Cresol	< 2 U	< 2 U	6.5	< 2 U	< 2 U	< 2 U	3.6	< 2 U
Pentachlorophenol	< 0.5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Phenanthrene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Phenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

TABLE 14
Chlorinated Herbicides in Groundwater
(in ug/L)
2014 Annual Report
Pasco Landfill, Pasco, WA

SAMPLED: 1/1 to 12/31/2014

HERBICIDE	Q1	Q2			Q3	Q4		
	MW-26SR	MW-26SR	MW-52S	MW-53S	MW-26SR	MW-26SR	MW-52S	MW-53S
2,4,5-T	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
2,4-D	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
2,4-DB	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
4-Nitrophenol	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.08 U	< 0.08 U	< 0.08 UJ
Dicamba	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
Dichlorprop	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
Dinoseb	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ
MCPA	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
Mecoprop	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
Pentachlorophenol	< 0.04 U	0.08 UJ	0.08 UJ	0.08 UJ	< 0.08 UJ	0.16 U	0.18 U	0.15 UJ
Silvex	< 0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U

PERIOD: 1/1 - 12/31/2014

WELL	Total Chromium				Hexavalent Chromium			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
MW-12S	2	< 2 U	3 J	< 0.59 UJ	< 10 U	< 10 U	< 10 U	< 10 U
MW-13S	3.7	< 2 U	3.4 J	12	< 10 U	< 10 U	< 10 U	< 10 U
MW-19S	3.9	34	5.2 J	2.8	< 10 U	< 10 U	< 10 U	< 10 U
MW-20S	< 2 U	--	2.1 J	--	< 10 U	--	< 10 U	--
MW-22S	4.5	5.5 J	1.5 J	27 J	< 10 U	< 10 U	< 10 U	< 10 U
MW-27SR	< 2 U	< 2 U	1.7 J	4.5	< 10 U	< 10 U	< 10 U	< 10 U
MW-55S	4.9	3.5	5 J	0.84	< 10 U	< 10 U	< 10 U	< 10 U

Note:

The 2013 draft cleanup level for chromium III is 100 µg/L.

TABLE 16
Natural Attenuation Parameters in Groundwater
(in mg/L)
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2014

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WELL	Quarter	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	Sulfate	Ferrous Iron	Manganese	Chemical Oxygen Demand	Total Dissolved Solids	Ethene	Ethane	Methane	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Chloride	Total Organic Carbon
2R	Q2	11.0	< 0.043 U	< 0.05 U	64	< 0.2 UJ	< 0.0036 U	< 5 U	380	< 0.01 U	< 0.01 U	< 0.01 U	190	190	< 15 U	< 15 U	24	1.3
	Q4	11.0	< 0.042 U	< 0.05 U	71	0 UJ	< 0.0036 UJ	< 5 U	370	< 0.01 U	< 0.01 U	< 0.01 U	200	200	< 9 U	< 9 U	26	1.2
MW-12S	Q2	8.4	< 0.043 U	< 0.05 U	80	< 0.2 UJ	< 0.0036 U	< 5 U	400	< 0.01 U	< 0.01 U	< 0.01 U	210	210	< 15 U	< 15 U	30	1.4
	Q4	8.6	< 0.042 U	< 0.05 U	83	0 UJ	< 0.0036 UJ	< 5 U	420	< 0.01 U	< 0.01 U	< 0.01 U	220	220	< 9 U	< 9 U	29	1.2
MW-20S	Q2	11.0	< 0.043 U	< 0.05 U	64	< 0.2 UJ	< 0.01 U	< 5 U	380	< 0.01 U	< 0.01 U	< 0.01 U	190	190	< 15 U	< 15 U	23	0.7
	Q4	11.0	< 0.042 U	< 0.05 U	69	0 UJ	< 0.001 U	< 5 U	380	< 0.01 U	< 0.01 U	< 0.01 U	200	200	< 9 U	< 9 U	24	1.2
MW-25SR	Q2	11.0	< 0.043 U	< 0.05 U	77	< 0.2 UJ	< 0.01 U	< 5 U	380	< 0.01 U	< 0.01 U	< 0.01 U	190	190	< 15 U	< 15 U	22	1.1
	Q4	12.0	< 0.042 U	< 0.05 U	74	0 UJ	0.0099	< 5 U	360	< 0.01 U	< 0.01 U	< 0.01 U	200	200	< 9 U	< 9 U	25	1.2
MW-47S	Q2	1.0	0.058	< 0.05 U	< 2.6 U	1.8 J	0.970	6.00	450	< 0.01 U	< 0.01 U	< 0.01 U	210	210	< 15 U	< 15 U	48	1.4
	Q4	0.8	0.130	0.068	120	1.5 J	0.880	< 5 U	540	< 0.01 U	< 0.01 U	< 0.01 U	210	210	< 9 U	< 9 U	40	1.2
MW-49S	Q2	6.4	< 0.043 U	< 0.05 U	97	< 0.2 UJ	0.12	< 5 U	450	< 0.01 U	< 0.01 U	< 0.01 U	230	230	< 15 U	< 15 U	35	1.4
	Q4	5.2	0.058	< 0.05 U	11	0 UJ	0.430	< 5 U	430	< 0.01 U	< 0.01 U	< 0.01 U	230	230	< 9 U	< 9 U	47	1.3
MW-50S	Q2	11.0	1.1	< 0.05 U	89	--	2.20	7.60	510	< 0.01 U	< 0.01 U	< 0.01 U	250	250	< 15 U	< 15 U	66	1.6
	Q4	8.0	0.490	< 0.05 U	100	0 UJ	2.00	< 5 U	480	< 0.01 U	< 0.01 U	< 0.01 U	250	250	< 9 U	< 9 U	44	1.3

TABLE 17
Landfill Parameters in Groundwater
(in mg/L)
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2014

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WELL	Quarter	Nitrate (as N)	Ammonia (as N)	Sulfate	Total Dissolved Solids	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Chloride	Total Organic Carbon	Calcium	Total Iron	Magnesium	Manganese	Potassium	Sodium
4R	Q2	9.5	< 0.05 U	79	460	270	270	< 15 U	< 15 U	26	1.2	86	< 0.02 U	26	< 0.01 U	10	34
	Q4	9.5	< 0.05 U	76	460	270	270	< 9 U	< 9 U	29	1.2	87	0.025	24	0.44 J	7.4	36
MW-16S	Q2	7.8	< 0.05 U	67	430	250	250	< 15 U	< 15 U	22	1.4	78	0.2	24	0.029	7.1	33
	Q4	11.0	< 0.05 U	93	460	260	260	< 9 U	< 9 U	32	1.3	79	2.6	24	0.39	7.4	34
MW-17SR	Q2	12.0	< 0.05 U	75	390	190	190	< 15 U	< 15 U	23	1.3	63	< 0.02 U	23	< 0.01 U	6.8	32
	Q4	12.0	< 0.05 U	73	360	200	200	< 9 U	< 9 U	26	1.2	61	< 0.02 U	23	< 0.001 U	6.6	32
MW-20S	Q2	11.0	< 0.05 U	64	380	190	190	< 15 U	< 15 U	23	0.7	62	< 0.02 U	23	< 0.01 U	6.9	32
	Q4	11.0	< 0.05 U	69	380	200	200	< 9 U	< 9 U	24	1.2	60	< 0.02 U	24	< 0.001 U	7	32
MW-22S	Q2	12.0	< 0.05 U	73	380	200	200	< 15 U	< 15 U	23	1.2	64	0.042	24	< 0.01 U	7.8	35
	Q4	14.0	< 0.05 U	86	420	210	210	< 9 U	< 9 U	29	1.1	64	0.3	23	0.0029	7.5	33
MW-25S	Q2	11.0	< 0.05 U	77	380	190	190	< 15 U	< 15 U	22	1.1	63	0.085	22	< 0.01 U	8.6	34
	Q4	12.0	< 0.05 U	74	360	200	200	< 9 U	< 9 U	25	1.2	60	0.34	23	0.0099	7.8	33

Well	Second Quarter 2014	Fourth Quarter 2014
Bradley	ND	ND
Hand	ND	ND
Lopez	ND	ND
Rada	ND	ND
Salinas	ND	0.12 µg/L of TCE
West	ND	0.12 µg/L of TCE
Yenney2	ND	ND
Yenney3	ND	ND

Notes:

VOCs = Volatile organic compounds

Samples were analyzed using EPA Methods 8260 and 8260SIM

ND = VOCs were not detected above the reporting limit.

µg/L = micrograms per liter

TCE = Trichloroethene

The draft groundwater cleanup level for TCE at this Site is 2.5 µg/L.

Table 19
SVE System Operational Parameters
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 01/01/2014 - 12/31/2014

Well	Date	Well Head Vacuum (in. H ₂ O)	Skid Vacuum (in. H ₂ O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VEW-06S	1/6/14	-0.1	--	0	0	0	116	8.7	7.4	2,379	--	4
	1/16/14	-0.7	--	0	0	0	118	9.8	7.7	2,310	--	10
	1/20/14	0.0	--	0	0	0	116	9.1	7.6	3,596	--	7
	1/29/14	0.0	--	0	0	0	115	10.3	4.6	907	--	6
	2/4/14	-0.2	--	0	0	0	114	9.2	7.4	799	--	4
	2/11/14	-0.1	--	0	0	0	115	9.0	6.3	1,167	--	1
	2/18/14	-53	--	--	95	0	110	8.7	7.7	1,545	--	8
	2/24/14	-57	--	--	76	0	107	5.1	14.3	2,967	--	9
	3/3/14	-51	--	--	82	0	108	5.4	14.4	3,910	--	8
	3/10/14	-1.3	--	--	0	0	112	4.1	15.4	540	--	4
	3/17/14	-1.4	--	--	0	0	112	3.5	16.5	365	--	2
	3/24/14	-0.9	--	--	0	0	112	2.9	16.3	254	--	5
	3/31/14	-1.1	--	--	0	0	111	2.7	17.8	285	--	3
	4/7/14	-0.9	--	--	0	0	111	2.2	17.0	221	--	1
	4/14/14	-0.9	--	--	0	0	108	1.3	18.5	226	--	0
	4/21/14	-0.8	--	--	0	0	109	1.5	18.9	191	--	3
	4/28/14	-1.3	--	--	0	0	109	2.4	17.4	241	--	4
	5/5/14	-1.1	--	--	0	0	108	2.2	17.6	155	--	5
	5/13/14	-1.1	--	--	0	0	109	1.6	18.5	194	--	4
	5/19/14	-1.2	--	--	0	0	108	1.3	18.8	197	--	4
	5/27/14	-1.0	--	--	0	0	108	1.1	18.6	151	--	3
	6/2/14	-1.0	--	--	0	0	108	1.5	18.5	158	--	0
	6/6/14	-0.9	--	--	0	0	108	1.5	18.0	86	--	3
	6/9/14	-1.2	--	--	0	0	108	1.6	18.4	76	--	0
	6/16/14	-1.2	--	--	0	0	107	1.4	18.7	136	--	3
	6/23/14	-1.1	--	--	0	0	108	0.9	18.1	46	--	3
	6/30/14	-1.1	--	--	0	0	108	1.3	18.1	105	--	2
	7/7/14	-1.1	--	--	0	0	108	1.3	18.4	72	--	0
	7/15/14	-1.0	--	--	0	0	109	1.5	16.9	104	--	1
	7/21/14	-1.4	--	--	0	0	108	1.7	18.6	119	--	4
	7/28/14	-1.2	--	--	0	0	109	1.8	18.0	133	--	3
	8/4/14	-1.2	--	--	0	0	108	1.7	18.0	196	--	3
	8/11/14	-1.1	--	--	0	0	108	1.6	18.2	168	--	4
	8/18/14	-1.0	--	--	0	0	109	1.7	17.8	146	--	3
	8/25/14	-1.1	--	--	0	0	109	2.1	17.3	128	--	4
	9/2/14	-1.0	--	--	0	0	111	1.7	17.8	97	--	2
	9/8/14	-1.1	--	--	0	0	109	1.8	17.8	121	--	2
	9/15/14	-1.0	--	--	0	0	109	2.1	17.8	130	--	7
	9/22/14	-1.0	--	--	0	0	109	1.5	18.0	232	--	1
	9/29/14	-1.1	--	--	0	0	109	1.8	17.2	352	--	7
10/6/14	-1.5	--	--	0	0	110	0.9	17.7	172	--	3	
10/14/14	-1.0	--	--	0	0	107	1.2	19.0	156	--	4	
10/20/14	-1.0	--	--	0	0	108	1.3	18.2	127	--	5	
10/27/14	-2.4	--	--	0	0	109	2.1	17.1	573	--	2	
11/3/14	-1.2	--	--	0	0	108	3.1	17.5	145	--	5	
11/10/14	-1.0	--	--	0	0	108	2.1	18.5	190	--	4	
11/17/14	-0.2	--	--	0	0	108	4.8	14.2	164	--	2	
11/24/14	-0.4	--	--	0	0	108	5.0	12.4	265	--	5	
12/3/14	-0.1	--	--	0	0	105	6.3	10.7	1,281	--	4	
12/8/14	-0.2	--	--	0	0	105	5.8	11.5	419	--	7	
12/15/14	-0.1	--	--	0	0	104	6.1	11.3	288	--	4	
12/22/14	-0.2	--	--	0	0	105	6.1	11.3	278	--	5	
12/29/14	-0.6	--	--	0	0	100	6.0	11.3	159	--	3	

Table 19
SVE System Operational Parameters
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Well	Date	Well Head Vacuum (in. H ₂ O)	Skid Vacuum (in. H ₂ O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO ₂ (%)	Well Head O ₂ (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VEW-06I	1/6/14	-0.4	--	0	0	0	133	15.5	0.0	9,614	--	85
	1/16/14	-0.3	--	0	0	0	139	16.1	1.8	5,240	--	82
	1/20/14	-1.1	--	0	0	0	138	13.4	1.5	5,000	--	84
	1/29/14	-0.3	--	0	0	0	138	13.5	0.5	3,075	--	91
	2/4/14	-1.6	--	0	0	0	136	13.1	0.7	4,571	--	100
	2/11/14	-1.3	--	0	0	0	137	12.0	0.5	5,000	--	100
	2/18/14	-3.1	--	--	5	0	127	13.5	0.4	5,000	--	100
	2/24/14	-3.0	--	--	5	0	121	13.2	3.9	4,211	--	80
	3/3/14	-2.7	--	--	5	0	122	13.7	4.0	9,999	--	34
	3/10/14	-1.1	--	--	0	0	138	12.7	4.2	3,519	--	39
	3/17/14	-1.1	--	--	0	0	139	12.5	4.7	3,741	--	42
	3/24/14	-0.6	--	--	0	0	139	12.0	4.7	3,084	--	23
	3/31/14	-0.7	--	--	0	0	139	11.9	4.6	3,658	--	24
	4/7/14	-0.6	--	--	0	0	140	10.8	5.1	2,141	--	21
	4/14/14	-0.6	--	--	0	0	136	11.9	4.3	2,583	--	21
	4/21/14	-0.6	--	--	0	0	141	11.2	6.9	3,927	--	12
	4/28/14	-1.0	--	--	0	0	140	12.0	5.1	3,585	--	21
	5/5/14	-0.9	--	--	0	0	141	12.1	4.9	3,978	--	15
	5/13/14	-1.0	--	--	0	0	140	10.8	6.1	3,126	--	16
	5/19/14	-1.1	--	--	0	0	138	9.5	7.5	2,548	--	14
	5/27/14	-0.8	--	--	0	0	133	10.0	7.0	1,763	--	14
	6/2/14	-0.9	--	--	0	0	138	10.0	7.1	1,994	--	14
	6/6/14	-0.7	--	--	0	0	136	9.8	6.6	1,223	--	15
	6/9/14	-0.9	--	--	0	0	141	10.9	5.8	1,941	--	20
	6/16/14	-0.9	--	--	0	0	136	8.5	9.5	1,320	--	9
	6/23/14	-0.8	--	--	0	0	142	7.5	9.2	1,103	--	10
	6/30/14	-0.9	--	--	0	0	142	12.6	5.7	1,182	--	14
	7/7/14	-0.9	--	--	0	0	144	10.4	6.7	1,245	--	13
	7/15/14	-0.8	--	--	0	0	144	9.5	6.8	1,293	--	13
	7/21/14	-1.1	--	--	0	0	140	11.4	7.1	1,114	--	11
	7/28/14	-1.0	--	--	0	0	142	10.4	7.0	1,826	--	11
	8/4/14	-0.9	--	--	0	0	143	10.5	6.6	1,732	--	12
	8/11/14	-0.8	--	--	0	0	141	10.4	7.8	1,316	--	10
	8/18/14	-0.7	--	--	0	0	141	10.2	7.3	1,151	--	11
	8/25/14	-4.5	--	--	10	0	141	10.1	7.1	1,432	--	12
	9/2/14	-0.7	--	--	0	0	142	12.2	5.7	1,395	--	11
	9/8/14	-0.8	--	--	0	0	141	11.7	6.2	1,217	--	11
	9/15/14	-0.3	--	--	0	0	141	12.4	7.1	981	--	11
	9/22/14	-0.8	--	--	0	0	143	13.0	6.3	951	--	12
	9/29/14	-0.7	--	--	0	0	141	12.6	4.9	452	--	11
10/6/14	-0.7	--	--	0	0	141	9.9	7.1	807	--	10	
10/14/14	-0.9	--	--	0	0	140	13.3	5.4	1,045	--	13	
10/20/14	-0.7	--	--	0	0	136	12.7	5.5	853	--	8	
10/27/14	-1.1	--	--	0	0	141	15.0	5.4	1,581	--	15	
11/3/14	-0.9	--	--	0	0	135	13.1	5.9	1,014	--	11	
11/10/14	-0.8	--	--	0	0	134	13.1	5.6	842	--	10	
11/17/14	-0.1	--	--	0	0	130	25.1	0.0	1,118	--	6	
11/24/14	-0.1	--	--	0	0	132	17.2	2.4	1,324	--	9	
12/3/14	-0.1	--	--	0	0	130	20.2	1.5	1,089	--	10	
12/8/14	-0.3	--	--	0	0	132	17.4	1.6	1,749	--	10	
12/15/14	-0.3	--	--	0	0	135	19.3	0.9	1,838	--	13	
12/22/14	-0.3	--	--	0	0	135	16.2	2.3	1,872	--	14	
12/29/14	-0.7	--	--	0	0	134	17.3	2.3	2,032	--	17	

Table 19
SVE System Operational Parameters
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PERIOD: 01/01/2014 - 12/31/2014

Well	Date	Well Head Vacuum (in. H ₂ O)	Skid Vacuum (in. H ₂ O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VEW-06D	1/6/14	-8.6	-51	125	125	0	101	6.4	13.3	4,640	5	12
	1/16/14	-8.3	-46	121	121	0	100	7.0	13.0	1,514	5	9
	1/20/14	-7.4	-53	124	124	0	100	4.0	16.5	5,000	7	3
	1/29/14	-7.2	-48	116	116	0	100	6.7	12.9	1,931	12	11
	2/4/14	-8.7	-53	124	124	0	96	5.7	14.6	1,208	11	7
	2/11/14	-9.2	-50	121	121	0	96	6.4	13.2	5,000	15	12
	2/18/14	-7.2	--	--	97	0	97	6.7	12.6	5,000	--	14
	2/24/14	-8.8	--	--	101	0	98	6.6	13.7	3,130	--	11
	3/3/14	-7.2	--	--	99	0	96	5.6	14.7	4,609	--	6
	3/10/14	-9.5	--	--	108	0	97	4.9	15.1	2,021	--	6
	3/17/14	-9.5	--	--	108	0	97	6.3	13.3	2,771	--	13
	3/24/14	-8.2	--	--	101	0	102	6.2	13.0	2,104	--	11
	3/31/14	-8.3	--	--	101	0	100	6.1	13.3	2,814	--	14
	4/7/14	-7.7	--	--	103	0	105	5.7	13.0	1,906	--	11
	4/14/14	-7.3	--	--	101	0	104	5.0	14.1	2,605	--	9
	4/21/14	-8.0	--	--	94	0	102	6.0	13.7	3,169	--	12
	4/28/14	-10	--	--	108	0	101	5.9	13.6	2,672	--	14
	5/5/14	-9.2	--	--	108	0	102	5.8	13.7	3,119	--	14
	5/13/14	-21.5	-31	223	223	0	99	5.8	13.6	2,896	19	13
	5/19/14	-21.5	-32	222	222	0	98	5.7	13.7	3,092	15	14
	5/27/14	-20.4	-30	226	226	0	100	5.4	13.8	2,174	15	12
	6/2/14	-20.7	-30	225	225	0	100	5.5	13.9	2,292	17	16
	6/6/14	-20.5	-30	226	226	0	100	5.3	13.5	1,475	15	14
	6/9/14	-21.1	-31	226	226	0	98	4.0	15.9	1,709	17	11
	6/16/14	-21.1	-31	228	228	0	98	5.8	13.7	2,016	15	14
	6/23/14	-20.5	-31	223	223	0	101	5.1	13.3	1,176	15	13
	6/30/14	-20.1	-31	229	229	0	100	6.6	13.2	1,354	7	12
	7/7/14	-20.8	-30	226	226	0	100	7.1	13.6	1,306	7	14
	7/15/14	-20.7	-31	224	224	0	100	5.7	12.6	1,182	4	17
	7/21/14	-21.9	-31	225	225	0	98	6.7	13.7	1,516	0	17
	7/28/14	-21.4	-31	225	225	0	101	6.4	14.0	2,246	2	14
	8/4/14	-21.5	-31	220	220	0	98	5.8	13.7	2,303	0	15
	8/11/14	-20.6	-31	224	224	0	100	6.3	13.6	2,227	0	13
	8/18/14	-20.6	-31	222	222	0	99	7.1	13.3	1,358	0	14
	8/25/14	-21.4	-31	220	220	0	98	6.0	13.4	1,843	0	17
	9/2/14	-20.4	-30	224	224	0	97	7.0	13.4	1,549	0	14
	9/8/14	-21.3	-31	220	220	0	96	5.4	14.6	1,585	0	11
	9/15/14	-21.4	-31	225	225	0	95	7.4	13.8	1,544	0	12
	9/22/14	-20.3	-28	224	224	0	97	11.4	13.2	1,608	0	12
	9/29/14	-20.6	-28	226	226	0	98	9.3	13.1	862	0	15
10/6/14	-20.6	-28	225	225	0	98	5.3	14.4	1,231	0	11	
10/14/14	-21.8	-29	223	223	0	95	7.5	15.5	1,780	0	9	
10/20/14	-20.7	-30	222	222	0	95	6.2	15.1	1,465	0	10	
10/27/14	-21.3	-30	223	223	0	95	9.6	13.8	1,401	0	9	
11/3/14	-22.5	-32	227	227	0	95	19.9	13.7	1,412	0	11	
11/10/14	-22.0	-31	227	227	0	95	10.1	13.6	1,539	0	11	
11/17/14	-18.9	-33	254	254	0	95	7.1	15.9	1,482	0	3	
11/24/14	-18.8	-28	199	199	0	96	7.5	13.6	1,790	0	13	
12/3/14	-18.9	-28	209	209	0	96	8.2	13.1	679	0	9	
12/8/14	-19.9	-28	214	214	0	96	9.0	12.8	1,811	0	13	
12/15/14	-21.4	-32	227	227	0	95	9.2	13.2	1,740	0	11	
12/22/14	-22.5	-33	228	228	0	95	8.6	13.4	1,802	0	12	
12/29/14	-24.0	-34	234	234	0	96	11.5	13.4	1,750	0	13	

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Well	Date	Well Head Vacuum (in. H ₂ O)	Skid Vacuum (in. H ₂ O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VEW-07S	1/6/14	0.0	--	0	0	0	118	8.1	8.7	1,567	--	10
	1/16/14	-0.2	--	0	0	0	119	7.2	10.1	4,833	--	7
	1/20/14	0.0	--	0	0	0	115	5.8	13.3	1,647	--	8
	1/29/14	-0.1	--	0	0	0	114	11.2	4.7	994	--	13
	2/4/14	-0.3	--	0	0	0	112	5.8	14.0	1,870	--	8
	2/11/14	-0.3	--	0	0	0	112	4.8	13.2	846	--	10
	2/18/14	-29.0	--	--	97	0	108	10.1	4.4	5,000	--	17
	2/24/14	-31.0	--	--	98	0	108	10.6	5.4	4,920	--	16
	3/3/14	-34.0	--	--	102	0	108	4.8	14.5	9,127	--	15
	3/10/14	-34.4	--	--	104	0	108	4.5	13.9	3,459	--	18
	3/17/14	-34.4	--	--	105	0	111	4.8	13.9	4,455	--	18
	3/24/14	-34.0	--	--	108	0	111	4.4	13.8	3,608	--	5
	3/31/14	-33.8	--	--	116	0	112	4.5	14.0	2,157	--	15
	4/7/14	-34.2	--	--	109	0	113	4.0	13.8	3,367	--	18
	4/14/14	-33.6	--	--	104	0	114	2.6	16.1	4,055	--	12
	4/21/14	-34.1	--	--	101	0	110	3.8	15.4	4,931	--	16
	4/28/14	-34.3	--	--	98	0	115	4.6	14.3	1,837	--	16
	5/5/14	-36.5	--	--	110	0	115	4.6	14.2	4,422	--	19
	5/13/14	-30.3	--	--	99	0	115	4.5	13.6	3,914	--	17
	5/19/14	-31.3	--	--	101	0	115	4.4	14.5	3,455	--	21
	5/27/14	-26.3	--	--	87	0	117	4.2	14.0	3,527	--	22
	6/2/14	-29.0	--	--	92	0	118	4.3	14.2	4,023	--	22
	6/6/14	-29.3	--	--	90	0	118	4.1	13.7	1,927	--	20
	6/9/14	-30.2	--	--	91	0	116	4.3	14.1	2,720	--	21
	6/16/14	-31.2	--	--	91	0	108	4.1	14.7	2,937	--	17
	6/23/14	-29.7	--	--	90	0	120	3.8	13.6	1,481	--	23
	6/30/14	-30.9	--	--	93	0	119	4.6	13.9	1,733	--	23
	7/7/14	-31.0	--	--	95	0	121	4.8	13.7	1,877	--	31
	7/15/14	-30.8	--	--	95	0	122	4.0	13.1	1,608	--	29
	7/21/14	-31.9	--	--	95	0	122	5.1	14.0	2,051	--	25
	7/28/14	-31.8	--	--	92	0	124	4.7	13.7	4,020	--	25
	8/4/14	-31.9	--	--	92	0	124	4.5	13.6	4,824	--	23
	8/11/14	-32.1	--	--	94	0	124	5.0	13.6	4,919	--	28
	8/18/14	-32.0	--	--	94	0	125	4.8	13.1	2,972	--	21
	8/25/14	-29.2	--	--	94	0	124	4.5	13.2	3,171	--	21
	9/2/14	-29.7	--	--	94	0	124	5.0	13.3	1,391	--	17
	9/8/14	-29.7	--	--	90	0	124	4.7	13.7	3,985	--	21
	9/15/14	-29.9	--	--	90	0	122	5.8	13.9	2,347	--	15
	9/22/14	-29.4	--	--	90	0	123	6.2	13.4	2,253	--	14
	9/29/14	-28.2	--	--	90	0	124	5.2	13.2	1,306	--	21
10/6/14	-28.9	--	--	90	0	122	3.2	14.5	1,919	--	17	
10/14/14	-29.9	--	--	90	0	123	4.9	15.0	3,619	--	16	
10/20/14	-29.8	--	--	90	0	123	5.7	13.3	2,044	--	15	
10/27/14	-30.5	--	--	90	0	123	5.4	14.0	1,970	--	19	
11/3/14	-30.4	--	--	90	0	122	6.1	13.9	2,215	--	15	
11/10/14	-30.1	--	--	90	0	122	5.9	13.7	1,935	--	13	
11/17/14	0.0	--	--	0	0	100	5.7	12.9	1,215	--	3	
11/24/14	-0.1	--	--	0	0	100	1.4	18.4	440	--	2	
12/3/14	0.0	--	--	0	0	107	10.1	6.5	512	--	3	
12/8/14	0.0	--	--	0	0	92	5.1	15.3	1,566	--	10	
12/15/14	-0.2	--	--	0	0	106	3.4	15.8	645	--	6	
12/22/14	-0.3	--	--	0	0	108	2.2	16.9	441	--	5	
12/29/14	-0.3	--	--	0	0	110	5.1	16.9	323	--	4	

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Well	Date	Well Head Vacuum (in. H ₂ O)	Skid Vacuum (in. H ₂ O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VEW-071	1/6/14	0.0	--	0	0	0	134	10.1	5.4	5,950	--	54
	1/16/14	-0.2	--	0	0	0	133	11.4	4.9	4,429	--	45
	1/20/14	-0.6	--	0	0	0	130	9.7	6.9	5,000	--	33
	1/29/14	-0.3	--	0	0	0	132	14.6	1.1	5,000	--	73
	2/4/14	-0.5	--	0	0	0	132	10.7	3.9	5,000	--	89
	2/11/14	-0.4	--	0	0	0	132	11.6	2.4	5,000	--	100
	2/18/14	-37.9	-56	126	18	108	135	9.3	0.9	5,000	29	100
	2/24/14	-37.1	-54	128	21	107	132	5.1	14.2	3,832	25	100
	3/3/14	-33.1	-50	128	18	110	130	10.9	5.2	2,775	2	100
	3/10/14	-58.2	-75	124	17	107	132	8.5	7.1	1,718	3	100
	3/17/14	-31.8	-55	127	19	108	132	9.7	5.4	1,965	11	100
	3/24/14	-33.4	-52	124	17	107	136	8.8	6.1	1,896	9	100
	3/31/14	-35.8	-52	125	22	103	137	8.9	6.1	4,416	5	100
	4/7/14	-40.2	-57	126	23	103	138	8.0	6.7	1,458	3	100
	4/14/14	-37.8	-67	121	17	104	138	5.0	11.6	2,222	0	100
	4/21/14	-39.6	-52	125	22	103	139	7.5	9.1	1,888	0	100
	4/28/14	-42.7	-59	121	20	101	138	8.8	7.0	4,416	0	100
	5/5/14	-44.7	-58	124	25	99	138	8.6	7.0	1,816	3	100
	5/13/14	-29.1	--	--	20	40	139	8.6	6.4	1,649	--	100
	5/19/14	-29.6	--	--	20	39	139	8.4	7.4	1,710	--	100
	5/27/14	-24.7	--	--	20	39	140	8.6	6.3	1,420	--	100
	6/2/14	-23.5	--	--	20	39	140	8.5	6.4	3,784	--	100
	6/6/14	-15.4	--	--	20	39	137	9.3	4.7	1,814	--	100
	6/9/14	-16.3	--	--	20	39	140	8.3	6.6	4,140	--	100
	6/16/14	-16.7	--	--	20	40	140	9.0	6.3	4,023	--	100
	6/23/14	-15.6	--	--	20	39	144	8.0	5.8	2,846	--	100
	6/30/14	-6.2	--	--	20	39	138	14.1	3.4	1,790	--	100
	7/7/14	-6.1	--	--	20	39	135	12.0	3.8	9,999	--	100
	7/15/14	-5.4	--	--	20	36	139	10.4	3.2	4,488	--	100
	7/21/14	-5.8	--	--	20	36	134	14.0	3.1	4,859	--	100
	7/28/14	-5.2	--	--	20	36	136	12.0	3.4	9,999	--	100
	8/4/14	-4.4	--	--	20	35	130	12.2	2.6	9,999	--	100
	8/11/14	-4.4	--	--	21	36	128	14.3	3.0	9,999	--	100
	8/18/14	-5.1	--	--	20	36	133	13.0	2.8	7,311	--	100
	8/25/14	-4.9	--	--	20	36	132	11.3	3.5	9,999	--	100
	9/2/14	-5.3	--	--	20	36	130	13.8	2.7	9,999	--	100
	9/8/14	-4.9	--	--	21	39	128	12.4	3.6	9,999	--	100
	9/15/14	-4.4	--	--	20	40	130	18.5	3.4	6,614	--	100
	9/22/14	-4.8	--	--	20	39	133	21.9	3.6	9,999	--	100
	9/29/14	-4.7	--	--	21	39	128	15.2	3.2	1,488	--	100
10/6/14	-4.2	--	--	20	39	135	11.7	6.2	9,999	--	100	
10/14/14	-4.8	--	--	21	40	125	16.2	14.5	9,999	--	100	
10/20/14	-4.6	--	--	21	40	124	17.2	2.9	9,999	--	100	
10/27/14	-4.4	--	--	21	40	120	15.0	2.5	9,999	--	100	
11/3/14	-4.5	--	--	21	40	110	18.7	2.8	9,999	--	100	
11/10/14	-4.7	--	--	21	40	108	17.7	2.9	4,505	--	100	
11/17/14	-0.2	--	--	0	0	102	22.4	2.4	4,110	--	40	
11/24/14	-0.1	--	--	0	0	62	8.1	10.0	2,710	--	13	
12/3/14	-0.3	--	--	0	0	132	19.4	0.0	894	--	45	
12/8/14	-0.4	--	--	0	0	138	16.6	0.9	2,842	--	67	
12/15/14	-0.4	--	--	0	0	137	14.8	1.1	2,508	--	51	
12/22/14	0.0	--	--	0	0	135	10.6	3.1	2,783	--	45	
12/29/14	-0.8	--	--	0	0	134	13.7	3.1	1,997	--	54	

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VEW-07D	1/6/14	-8.7	-53	117	117	0	98	2.6	17.6	3,760	12	10
	1/16/14	-6.9	-50	117	117	0	97	2.6	17.8	1,812	9	7
	1/20/14	-10.1	-54	124	124	0	96	2.4	18.1	3,725	8	5
	1/29/14	-9.3	-50	107	107	0	95	2.8	17.4	1,896	15	15
	2/4/14	-11.7	-54	116	116	0	92	2.5	18.2	5,000	10	7
	2/11/14	-11.1	-52	117	117	0	97	2.6	17.6	3,408	12	10
	2/18/14	-8.5	--	--	97	0	95	2.8	17.3	5,000	--	16
	2/24/14	-9.8	--	--	99	0	95	2.6	18.1	3,072	--	9
	3/3/14	-7.5	--	--	97	0	96	2.4	18.1	3,567	--	9
	3/10/14	-9.5	--	--	99	0	97	2.1	17.8	1,903	--	8
	3/17/14	-10.8	--	--	99	0	96	2.3	18.2	2,158	--	11
	3/24/14	-8.9	--	--	98	0	95	2.1	17.7	1,810	--	10
	3/31/14	-8.5	--	--	96	0	99	2.1	18.0	2,247	--	7
	4/7/14	-8.8	--	--	96	0	100	1.8	17.5	1,748	--	9
	4/14/14	-8.3	--	--	98	0	102	1.8	17.6	2,109	--	7
	4/21/14	-10.9	--	--	112	0	99	2.1	18.3	2,779	--	8
	4/28/14	-11.3	--	--	112	0	98	2.2	18.3	2,332	--	9
	5/5/14	-10.8	--	--	108	0	98	2.1	18.3	2,225	--	9
	5/13/14	-22.6	-32	226	226	0	97	1.9	17.9	1,987	13	8
	5/19/14	-23.2	-32	228	228	0	95	1.9	18.5	1,757	8	11
	5/27/14	-21.8	-30	228	228	0	95	1.8	18.0	1,862	10	9
	6/2/14	-21.6	-29	230	230	0	96	1.7	18.4	1,772	13	10
	6/6/14	-21.9	-28	229	229	0	97	1.6	17.9	1,138	13	9
	6/9/14	-22.6	-29	232	232	0	94	1.6	18.5	1,458	12	8
	6/16/14	-22.9	-29	226	226	0	95	1.7	18.6	1,619	11	14
	6/23/14	-21.7	-32	227	227	0	98	1.4	17.4	860	11	12
	6/30/14	-22.6	-27	232	232	0	96	1.7	17.8	970	6	11
	7/7/14	-22.9	-29	233	233	0	97	1.6	18.0	1,003	5	12
	7/15/14	-22.6	-29	232	232	0	98	1.4	17.0	791	2	10
	7/21/14	-23.8	-30	229	229	0	95	1.7	18.7	240	0	10
	7/28/14	-23.1	-28	230	230	0	96	1.6	18.3	1,501	0	8
	8/4/14	-23.4	-29	232	232	0	95	1.5	18.2	1,661	0	9
	8/11/14	-23.4	-29	229	229	0	95	1.6	18.2	1,597	0	10
	8/18/14	-22.6	-28	231	231	0	95	1.6	17.8	1,269	0	10
	8/25/14	-22.3	-25	233	233	0	96	1.5	17.7	1,274	0	11
	9/2/14	-21.6	-28	227	227	0	95	1.6	17.8	1,494	0	9
	9/8/14	-22.3	-28	230	230	0	94	1.5	18.2	1,417	0	11
	9/15/14	-22.9	-30	229	229	0	91	1.6	18.4	1,275	0	10
	9/22/14	-22.3	-28	229	229	0	94	1.4	17.9	1,250	0	10
	9/29/14	-22.2	-27	229	229	0	98	1.4	17.7	755	0	11
10/6/14	-22.0	-30	228	228	0	95	0.8	17.5	891	0	8	
10/14/14	-23.3	-28	230	230	0	92	1.4	18.6	1,584	0	11	
10/20/14	-23.3	-29	228	228	0	95	1.7	18.0	1,181	0	7	
10/27/14	-23.6	-29	219	219	0	94	1.8	18.0	1,265	0	8	
11/3/14	-23.9	-33	231	231	0	92	1.8	18.2	1,271	0	9	
11/10/14	-23.4	-32	234	234	0	92	1.9	18.3	1,288	0	7	
11/17/14	-19.4	-36	228	228	0	95	2.6	17.4	1,218	0	5	
11/24/14	-19.8	-29	208	208	0	92	2.1	18.0	1,571	0	3	
12/3/14	-20.2	-25	220	220	0	91	2.6	17.1	643	0	6	
12/8/14	-21.3	-29	210	210	0	93	2.2	17.8	1,575	0	7	
12/15/14	-23.4	-32	229	229	0	92	2.3	17.7	1,451	0	4	
12/22/14	-24.8	-33	228	228	0	92	1.9	17.6	1,512	0	7	
12/29/14	-25.8	-34	229	229	0	88	2.3	17.6	1,701	0	8	

Table 19
SVE System Operational Parameters
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 01/01/2014 - 12/31/2014

Well	Date	Well Head Vacuum (in. H ₂ O)	Skid Vacuum (in. H ₂ O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VMW-511	1/6/14	0.0	-45	--	--	--	111	21.6	0.0	1,070	--	10
	1/16/14	-0.1	-46	--	--	--	110	22.6	0.0	1,242	--	9
	1/20/14	-0.4	-46	--	--	--	106	15.5	3.0	1,503	--	7
	1/29/14	0.1	-41	--	--	--	106	22.0	0.0	753	--	11
	2/4/14	-0.6	-40	--	--	--	102	21.4	1.2	407	--	9
	2/11/14	-0.3	-44	--	--	--	106	20.6	0.0	1,173	--	9
	2/18/14	-0.5	--	--	--	--	114	21.5	0.0	1,141	--	12
	2/24/14	-1.5	--	--	--	--	107	20.9	0.0	892	--	11
	3/3/14	-0.9	--	--	--	--	105	20.3	0.0	1,057	--	9
	3/7/14	-1.2	--	--	--	--	--	--	--	--	--	--
	3/10/14	-1.2	--	--	--	--	108	19.6	0.0	827	--	10
	3/17/14	-1.3	--	--	--	--	104	19.7	0.0	890	--	10
	3/24/14	-0.7	--	--	--	--	108	19.1	0.0	819	--	7
	3/31/14	-0.7	--	--	--	--	108	18.8	0.0	875	--	8
	4/7/14	-0.6	--	--	--	--	110	17.2	0.3	807	--	5
	4/14/14	-0.4	--	--	--	--	110	18.0	0.2	885	--	6
	4/21/14	-0.8	--	--	--	--	101	3.3	13.2	267	--	2
	4/28/14	-1.3	--	--	--	--	108	17.5	0.0	617	--	5
	5/5/14	-1.0	--	--	--	--	107	18.1	0.2	728	--	5
	5/13/14	-1.4	--	--	--	--	90	18.2	0.0	664	--	5
	5/19/14	-1.3	--	--	--	--	89	18.3	0.0	711	--	6
	5/27/14	-1.0	--	--	--	--	92	18.2	0.1	488	--	3
	6/2/14	-1.2	--	--	--	--	98	18.3	0.2	515	--	6
	6/6/14	-1.0	--	--	--	--	98	17.3	0.5	368	--	3
	6/9/14	-1.3	--	--	--	--	90	15.3	3.1	422	--	4
	6/16/14	-1.3	--	--	--	--	93	14.8	4.0	404	--	3
	6/23/14	-1.1	--	--	--	--	100	16.5	1.0	301	--	4
	6/30/14	-1.1	--	--	--	--	98	16.6	0.4	219	--	2
	7/7/14	-1.1	--	--	--	--	101	17.6	0.4	411	--	3
	7/15/14	-1.2	--	--	--	--	101	15.1	2.4	254	--	0
	7/21/14	-1.5	--	--	--	--	99	18.3	0.3	303	--	4
	7/28/14	-1.1	--	--	--	--	100	18.3	0.4	289	--	4
	8/4/14	-1.2	--	--	--	--	101	17.9	0.4	329	--	4
	8/11/14	-1.1	--	--	--	--	98	18.2	0.4	415	--	3
	8/18/14	-1.1	--	--	--	--	101	18.3	0.5	257	--	4
	8/25/14	-1.0	--	--	--	--	98	18.4	0.2	210	--	6
	9/2/14	-0.9	--	--	--	--	99	18.3	0.2	258	--	4
	9/8/14	-1.0	--	--	--	--	97	16.9	1.8	317	--	6
	9/15/14	-1.1	--	--	--	--	97	18.4	1.0	237	--	5
	9/22/14	-1.0	--	--	--	--	98	19.0	0.4	342	--	5
9/29/14	-0.9	--	--	--	--	103	16.6	2.2	135	--	6	
10/6/14	-0.7	--	--	--	--	102	9.1	9.0	184	--	3	
10/14/14	-1.2	--	--	--	--	92	11.3	8.4	279	--	2	
10/20/14	-1.1	--	--	--	--	100	8.9	10.4	356	--	2	
10/27/14	-1.0	--	--	--	--	82	2.0	15.2	18	--	1	
11/3/14	-1.0	--	--	--	--	89	4.3	11.6	52	--	1	
11/10/14	-1.0	--	--	--	--	83	19.0	0.0	162	--	1	
11/17/14	-0.4	--	--	--	--	63	22.3	0.0	159	--	5	
11/24/14	-0.2	--	--	--	--	72	21.5	0.0	225	--	4	
12/3/14	-0.1	--	--	--	--	64	22.7	0.0	40	--	9	
12/8/14	-0.4	--	--	--	--	75	22.2	0.0	211	--	6	
12/15/14	-0.3	--	--	--	--	80	22.3	0.0	204	--	5	
12/22/14	-0.8	--	--	--	--	84	20.3	0.0	226	--	4	
12/29/14	-1.0	--	--	--	--	67	22.0	0.0	239	--	5	

Table 19
SVE System Operational Parameters
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 01/01/2014 - 12/31/2014

Well	Date	Well Head Vacuum (in. H ₂ O)	Skid Vacuum (in. H ₂ O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VMW-50S	1/6/14	0.5	-43	--	--	--	70	12.8	7.9	38	--	0
	1/16/14	-0.2	-43	--	--	--	70	13.9	7.6	62	--	0
	1/20/14	-1.2	-45	--	--	--	68	12.6	9.4	97	--	0
	1/29/14	0.1	-41	--	--	--	106	22.0	0.0	753	--	11
	2/4/14	-1.8	-46	--	--	--	65	13.0	9.3	73	--	0
	2/11/14	-0.9	-45	--	--	--	70	12.8	7.8	123	--	0
	2/18/14	--	--	--	--	--	--	--	--	--	--	--
	2/24/14	--	--	--	--	--	--	--	--	--	--	--
	3/3/14	-0.6	--	--	--	--	68	11.8	9.7	118	--	0
	3/7/14	-1.7	--	--	--	--	--	--	--	--	--	--
	3/10/14	-1.3	--	--	--	--	72	12.9	7.8	178	--	0
	3/17/14	-2.2	--	--	--	--	74	12.9	8.1	183	--	0
	3/24/14	-0.4	--	--	--	--	76	13.0	8.4	240	--	0
	3/31/14	-0.5	--	--	--	--	76	12.5	7.7	172	--	0
	4/7/14	-0.2	--	--	--	--	84	11.6	7.6	182	--	0
	4/14/14	0.2	--	--	--	--	82	5.3	14.8	165	--	0
	4/21/14	-0.5	--	--	--	--	74	7.5	13.0	130	--	0
	4/28/14	-2.1	--	--	--	--	78	12.5	7.7	71	--	0
	5/5/14	-1.3	--	--	--	--	82	12.2	7.8	66	--	0
	5/13/14	-2.3	--	--	--	--	72	11.1	8.8	94	--	0
	5/19/14	-2.5	--	--	--	--	75	11.3	8.8	85	--	0
	5/27/14	-1.6	--	--	--	--	82	6.5	12.7	84	--	0
	6/2/14	-2.0	--	--	--	--	80	12.2	8.1	86	--	0
	6/6/14	-1.9	--	--	--	--	84	9.6	9.8	111	--	0
	6/9/14	-2.2	--	--	--	--	84	9.0	11.3	32	--	0
	6/16/14	-2.2	--	--	--	--	78	11.2	8.7	40	--	0
	6/23/14	-1.7	--	--	--	--	95	10.1	8.7	62	--	0
	6/30/14	-2.0	--	--	--	--	86	6.3	12.3	24	--	0
	7/7/14	-2.3	--	--	--	--	90	8.8	10.6	52	--	0
	7/15/14	-2.3	--	--	--	--	93	10.0	9.6	22	--	0
	7/21/14	-2.7	--	--	--	--	85	10.4	9.7	11	--	0
	7/28/14	-2.1	--	--	--	--	91	10.1	9.7	30	--	0
	8/4/14	-2.2	--	--	--	--	90	10.3	9.2	36	--	0
	8/11/14	-2.2	--	--	--	--	102	11.8	8.3	20	--	0
	8/18/14	-1.9	--	--	--	--	90	11.2	8.7	26	--	0
	8/25/14	-2.1	--	--	--	--	88	11.1	8.8	24	--	0
	9/2/14	-1.3	--	--	--	--	87	11.6	8.2	31	--	0
	9/8/14	-1.8	--	--	--	--	82	9.8	10.4	23	--	0
	9/15/14	-1.9	--	--	--	--	77	9.2	11.1	26	--	0
	9/22/14	-1.8	--	--	--	--	85	10.2	9.6	78	--	0
9/29/14	-1.3	--	--	--	--	88	6.9	11.8	28	--	0	
10/6/14	-1.0	--	--	--	--	92	6.8	12.0	8	--	0	
10/14/14	-2.3	--	--	--	--	75	6.0	14.4	14	--	0	
10/20/14	-1.9	--	--	--	--	75	7.3	13.1	54	--	0	
10/27/14	-1.7	--	--	--	--	68	10.6	10.1	5	--	0	
11/3/14	-2.0	--	--	--	--	74	13.3	7.9	19	--	0	
11/10/14	-1.8	--	--	--	--	70	10.7	10.2	12	--	0	
11/17/14	-0.8	--	--	--	--	65	14.9	6.9	17	--	0	
11/24/14	-0.7	--	--	--	--	62	11.8	8.0	16	--	0	
12/3/14	-0.7	--	--	--	--	56	14.0	6.6	21	--	0	
12/8/14	-0.9	--	--	--	--	65	13.4	7.2	8	--	0	
12/15/14	-1.1	--	--	--	--	60	14.4	6.8	6	--	0	
12/22/14	-3.0	--	--	--	--	68	5.9	14.0	19	--	0	
12/29/14	-3.1	--	--	--	--	55	6.7	14.5	0	--	0	

Table 20
 Vacuum Monitoring
 (in inches of H2O)
 2014 Annual Report
 Pasco Landfill, Pasco, WA

Date	VEW-04	VEW-05	VMW-51D	VMP-01	VMP-02	VMP-03	VMP-04	VMP-05	VMP-06	VMP-07	VMP-08	VMP-09	VMP-10
1/6/14	0.5	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1/16/14	-0.1	-0.3	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1/20/14	-1.4	-1.8	-2.0	-0.2	-0.2	-0.2	-0.4	-0.2	-0.2	0.0	-0.2	-0.2	-0.2
1/29/14	0.9	0.6	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0
2/4/14	-1.7	-2.1	-2.3	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3	-0.1	-0.2	-0.2	-0.3
2/11/14	-0.6	-1.0	-1.2	-0.1	0.0	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0
2/18/14	-1.1	-1.5	-1.7	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0.0	-0.2	-0.1	-0.1
2/24/14	-1.1	-1.5	-1.7	-1.1	-1.6	-1.6	-4.9	-7.8	-1.6	-0.6	-1.4	-1.0	-0.8
3/3/14	-0.4	-0.9	-1.0	-1.1	-1.5	-1.7	-4.9	-8.4	-1.6	-0.5	-1.4	-1.1	-1.8
3/7/14	-1.6	-2.0	-2.1	-0.6	-0.9	-0.4	-1.4	-7.7	-1.4	-0.2	-0.8	-0.9	-0.7
3/10/14	-1.2	-1.4	-1.7	-0.6	-1.1	-0.5	-1.5	-8.1	-1.5	-0.4	-0.9	-1.0	-0.9
3/17/14	-2.2	-2.5	-2.7	-0.8	-1.2	-0.6	-1.6	-8.1	-1.6	-0.3	-0.9	-1.1	-0.9
3/24/14	-0.2	-0.6	-0.8	-0.5	-0.7	-0.3	-1.1	-7.5	-1.2	-0.2	-0.7	-0.8	-0.7
3/31/14	-0.3	-0.7	-0.8	-0.4	-0.7	-0.4	-1.1	-7.4	-1.2	-0.2	-0.7	-0.7	-0.6
4/7/14	0.0	-0.4	-0.5	-0.4	-0.7	-0.3	-1.1	-7.4	-1.1	-0.2	-0.6	-0.7	-0.6
4/14/14	0.5	0.1	0.1	-0.3	-0.6	-0.2	-0.9	-7.3	-1.0	-0.1	-0.5	-0.6	-0.4
4/21/14	-0.3	-0.7	-0.9	-0.5	-0.9	-0.4	-1.3	-7.5	-1.2	-0.2	-0.8	-0.8	-0.7
4/28/14	-2.0	-2.3	-2.6	-0.8	-1.1	-0.5	-1.4	-7.7	-1.5	-0.4	-0.9	-1.0	-0.9
5/5/14	-1.1	-1.5	-1.6	-0.6	-0.9	-0.4	-1.3	-8.0	-1.3	-0.3	-0.8	-0.9	-0.7
5/13/14	-1.9	-2.6	-3.2	-0.6	-1.0	-0.5	-1.4	-7.0	-1.3	-0.3	-0.8	-1.0	-0.8
5/19/14	-2.0	-2.9	-3.2	-0.6	-0.9	-0.5	-1.3	-7.0	-1.2	-0.4	-0.8	-0.9	-0.7
5/27/14	-1.3	-2.0	-2.3	-0.5	-0.7	-0.5	-1.1	-5.9	-1.1	-0.3	-0.7	-0.7	-0.6
6/2/14	-1.7	-2.5	-2.9	-0.7	-0.8	-0.5	-1.2	-6.5	-1.1	-0.3	-0.8	-0.9	-0.7
6/6/14	-1.6	-2.2	-2.8	-0.6	-0.8	-0.4	-1.1	-6.4	-1.1	-0.3	-0.7	-0.8	-0.7
6/9/14	-1.9	-2.5	-3.0	-0.6	-0.9	-0.5	-1.2	-6.6	-1.2	-0.3	-0.8	-0.8	-0.8
6/16/14	-2.0	-2.6	-3.2	-0.6	-1.0	-0.5	-1.2	-6.9	-1.3	-0.3	-0.8	-0.9	-0.8
6/23/14	-1.4	-2.1	-2.5	-0.6	-0.8	-0.4	-1.2	-6.5	-1.1	-0.3	-0.7	-0.8	-0.6
6/30/14	-1.7	-2.3	-3.3	-0.6	-0.9	-0.4	-1.2	-6.7	-1.1	-0.3	-0.8	-0.8	-0.7
7/7/14	-1.9	-2.7	-3.1	-0.6	-0.8	-0.4	-1.2	-6.8	-1.2	-0.3	-0.8	-0.9	-0.7
7/15/14	-2.1	-2.6	-3.1	-0.6	-0.9	-0.4	-1.3	-6.8	-1.2	-0.3	-0.7	-0.8	-0.7
7/21/14	-2.5	-2.6	-3.6	-0.8	-1.0	-0.6	-1.5	-7.1	-1.3	-0.3	-0.9	-0.9	-0.8
7/28/14	-1.8	-2.5	-2.8	-0.7	-0.7	-0.4	-1.2	-6.7	-1.1	-0.3	-0.8	-0.8	-0.7
8/4/14	-1.9	-2.5	-2.9	-0.6	-0.9	-0.5	-1.3	-6.8	-1.2	-0.3	-0.8	-0.9	-0.7
8/11/14	-1.7	-2.4	-2.8	-0.6	-0.8	-0.5	-1.2	-6.7	-1.1	-0.2	-0.8	-0.8	-0.7
8/18/14	-1.6	-2.2	-2.7	-0.6	-0.8	-0.5	-1.2	-6.5	-1.1	-0.3	-0.8	-0.8	-0.7
8/25/14	-1.6	-2.4	-2.7	-0.5	-0.7	-0.4	-1.1	-6.1	-1.0	-0.2	-0.6	-0.7	-0.6
9/2/14	-1.0	-1.5	-2.0	-0.3	-0.7	-0.4	-1.1	-6.1	-1.0	-0.2	-0.6	-0.7	-0.6
9/8/14	-1.5	-2.2	-2.5	-0.5	-0.8	-0.4	-1.1	-6.2	-1.1	-0.2	-0.7	-0.7	-0.6
9/15/14	-1.6	-2.4	-2.8	-0.6	-0.7	-0.5	-1.1	-6.2	-1.1	-0.3	-0.8	-0.8	-0.7
9/22/14	-1.4	-2.1	-2.5	-0.5	-0.7	-0.4	-1.1	-6.1	-1.0	-0.3	-0.7	-0.8	-0.6
9/29/14	-1.1	-1.7	-2.2	-0.5	-0.7	-0.4	-1.1	-5.9	-1.0	-0.3	-0.7	-0.7	-0.6
10/6/14	-0.6	-1.3	-1.7	-0.3	-0.6	-0.3	-0.9	-5.7	-0.8	-0.2	-0.5	-0.6	-0.5
10/14/14	-2.0	-2.6	-3.0	-0.6	-0.9	-0.5	-1.2	-6.2	-1.2	-0.3	-0.8	-0.8	-0.8
10/20/14	-1.6	-2.2	-2.7	-0.6	-0.8	-0.5	-1.3	-6.2	-1.1	-0.4	-0.8	-0.9	-0.7
10/27/14	-1.2	-2.0	-2.4	-0.4	-0.7	-0.4	-1.1	-6.6	-1.0	-0.2	-0.7	-0.8	-0.7
11/3/14	-1.7	-2.4	-2.8	-0.5	-0.8	-0.4	-1.2	-6.2	-1.1	-0.3	-0.7	-0.8	-0.7
11/10/14	-1.3	-2.2	-2.6	-0.5	-0.8	-0.3	-1.1	-6.0	-1.1	-0.2	-0.7	-0.7	-0.6
11/17/14	-0.5	-1.2	-1.6	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0
11/24/14	-0.3	-0.9	-1.2	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0
12/3/14	-0.5	-1.0	-1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/8/14	-0.6	-1.3	-1.7	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.1
12/15/14	-0.6	-1.3	-1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/22/14	-2.4	-3.3	-3.5	-0.2	-0.2	-0.1	-0.2	-0.2	-0.3	0.0	-0.2	-0.2	-0.2
12/29/14	-2.6	-3.5	-3.6	-0.4	-0.2	-0.2	-0.5	-0.3	-0.4	0.0	-0.3	-0.2	-0.3

Table 20
 Vacuum Monitoring
 (in inches of H2O)
 2014 Annual Report
 Pasco Landfill, Pasco, WA

Date	VMP-11S	VMP-11D	VMP-12S	VMP-12D	VMP-13S	VMP-13D	VMP-14S	VMP-14D	VMP-15S	VMP-15D	VMP-16S
1/6/14	--	--	--	--	--	--	--	--	--	--	--
1/16/14	--	--	--	--	--	--	--	--	--	--	--
1/20/14	--	--	--	--	--	--	--	--	--	--	--
1/29/14	--	--	--	--	--	--	--	--	--	--	--
2/4/14	--	--	--	--	--	--	--	--	--	--	--
2/11/14	--	--	--	--	--	--	--	--	--	--	--
2/18/14	--	--	--	--	--	--	--	--	--	--	--
2/24/14	--	--	--	--	--	--	--	--	--	--	--
3/3/14	--	--	--	--	--	--	--	--	--	--	--
3/7/14	--	--	--	--	--	--	--	--	--	--	--
3/10/14	--	--	--	--	--	--	--	--	--	--	--
3/17/14	--	--	--	--	--	--	--	--	--	--	--
3/24/14	--	--	--	--	--	--	--	--	--	--	--
3/31/14	--	--	--	--	--	--	--	--	--	--	--
4/7/14	--	--	--	--	--	--	--	--	--	--	--
4/14/14	--	--	--	--	--	--	--	--	--	--	--
4/21/14	--	--	--	--	--	--	--	--	--	--	--
4/28/14	--	--	--	--	--	--	--	--	--	--	--
5/5/14	--	--	--	--	--	--	--	--	--	--	--
5/13/14	--	--	--	--	--	--	--	--	--	--	--
5/19/14	--	--	--	--	--	--	--	--	--	--	--
5/27/14	--	--	--	--	--	--	--	--	--	--	--
6/2/14	--	--	--	--	--	--	--	--	--	--	--
6/6/14	--	--	--	--	--	--	--	--	--	--	--
6/9/14	--	--	--	--	--	--	--	--	--	--	--
6/16/14	-0.5	-0.5	-0.2	-0.4	--	--	-0.2	-0.4	-0.1	-0.3	0.0
6/23/14	-0.3	-0.4	-0.2	-0.3	-0.1	-0.3	-0.2	-0.4	-0.1	-0.3	0.0
6/30/14	-0.4	-0.4	-0.3	-0.4	-0.1	-0.3	-0.2	-0.4	-0.1	-0.3	0.0
7/7/14	-0.4	-0.5	-0.3	-0.4	-0.2	-0.4	-0.2	-0.5	-0.2	-0.4	-0.1
7/15/14	-0.3	-0.4	-0.2	-0.3	-0.2	-0.3	-0.2	-0.4	-0.1	-0.3	-0.1
7/21/14	-0.5	-0.6	-0.3	-0.5	-0.3	-0.5	-0.3	-0.5	-0.2	-0.5	-0.1
7/28/14	-0.4	-0.5	-0.2	-0.4	-0.2	-0.4	-0.2	-0.5	-0.1	-0.3	0.0
8/4/14	-0.4	-0.5	-0.2	-0.4	-0.3	-0.4	-0.2	-0.4	-0.2	-0.4	-0.1
8/11/14	-0.4	-0.5	-0.3	-0.4	-0.4	-0.2	-0.3	-0.5	-0.2	-0.4	-0.1
8/18/14	-0.4	-0.4	-0.2	-0.3	-0.2	-0.3	-0.2	-0.4	-0.1	-0.3	-0.1
8/25/14	-0.2	-0.3	-0.2	-0.3	-0.2	-0.3	-0.2	-0.3	-0.1	-0.3	0.0
9/2/14	-0.2	-0.2	-0.1	-0.2	-0.1	-0.2	-0.1	-0.2	0.0	-0.1	0.0
9/8/14	-0.3	-0.3	-0.2	-0.3	-0.1	-0.2	-0.1	-0.4	-0.1	-0.3	-0.1
9/15/14	-0.4	-0.4	-0.2	-0.4	-0.1	-0.2	-0.2	-0.3	-0.1	-0.3	-0.1
9/22/14	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3	-0.2	-0.4	-0.1	-0.3	0.0
9/29/14	-0.2	-0.3	-0.1	-0.2	-0.1	-0.2	-0.1	-0.3	0.0	-0.2	0.0
10/6/14	-0.1	-0.2	-0.1	-0.1	0.0	-0.1	-0.1	-0.2	0.0	-0.1	-0.1
10/14/14	-0.4	-0.5	-0.3	-0.3	-0.2	-0.4	-0.2	-0.5	-0.2	-0.4	-0.2
10/20/14	-0.3	-0.3	-0.1	-0.3	-0.1	-0.3	-0.2	-0.3	-0.1	-0.3	0.0
10/27/14	-0.4	-0.4	-0.2	-0.3	-0.2	-0.3	-0.1	-0.4	-0.1	-0.2	0.0
11/3/14	-0.3	-0.3	-0.2	-0.3	-0.1	-0.2	-0.2	-0.4	-0.1	-0.3	-0.1
11/10/14	-0.3	-0.4	-0.2	-0.3	-0.1	-0.3	-0.2	-0.4	-0.1	-0.3	-0.1
11/17/14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11/24/14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/3/14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/8/14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/15/14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/22/14	-0.1	-0.2	0.0	-0.2	-0.1	-0.2	-0.1	-0.2	-0.2	-0.1	0.0
12/29/14	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3	-0.2	-0.5	-0.1	-0.6	0.0

Table 21
SVE System Analytical Data and Removal Rates
Detected Compounds Only (in ug/L)
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 01/01/2014 - 12/31/2014

Table with columns for Sample Location, Date, and various chemical compounds (Bromo methane, 2-Chloro toluene, etc.) along with Total VOCs, Flow rate, and Removal Rate.

Table 22
 Percentages of VOCs Detected
 2014 Annual Report
 Pasco Landfill, Pasco, WA

PERIOD: 01/01/2014 - 12/31/2014

Sample Location	Date	Toluene	2-butanone (MEK)	Total Xylenes	Ethanol	4-Methyl-2-pentanone (MIBK)	Acetone	Trichloro ethene	Ethyl benzene	Methylene chloride	Tetra chloro ethene	Percent of 10 Most Abundant Compounds
SV-FS	1/8/14	27.2	16.3	11.0	17.2	5.7	10.9	4.4	2.9	1.4	0.4	97.5
	1/20/14	38.2	8.4	17.3	3.7	5.5	5.4	6.0	4.6	4.2	1.0	94.3
	2/4/14	50.9	10.6	12.5	1.6	4.6	7.4	4.4	3.1	2.4	0.3	98.0
	2/18/14	54.2	12.2	7.2	2.8	4.3	12.2	2.4	1.8	1.7	0.1	98.7
	3/3/14	45.7	15.2	7.9	9.3	7.6	5.3	3.5	2.1	1.1	0.3	98.3
	3/17/14	48.3	11.5	7.7	11.2	8.0	3.9	3.9	2.1	1.2	0.4	98.0
	3/31/14	48.3	12.9	9.2	5.9	8.0	6.3	3.2	2.5	1.5	0.4	98.1
	4/14/14	36.4	13.4	9.6	6.4	5.8	17.5	3.4	2.3	2.2	0.5	97.5
	4/28/14	30.3	17.0	11.7	11.4	8.9	6.1	4.2	3.2	3.8	0.5	97.0
	5/5/14	31.4	13.7	8.7	5.6	6.7	11.2	2.7	3.1	13.9	0.2	97.3
	5/13/14	52.0	10.5	5.9	5.3	6.1	10.3	2.6	2.0	3.5	0.2	98.4
	5/19/14	30.6	17.0	11.5	8.6	6.9	14.2	3.4	2.9	1.9	0.4	97.4
	5/27/14	24.3	17.0	18.1	9.3	7.3	9.5	3.7	4.9	2.1	0.5	96.5
	6/9/14	24.4	18.3	12.2	12.6	7.5	12.6	3.5	3.1	1.3	0.6	96.2
	6/23/14	33.2	11.8	9.2	10.0	10.0	12.3	3.8	2.6	1.8	0.4	95.0
	7/7/14	28.8	17.5	8.4	10.5	6.0	17.8	3.4	4.2	1.3	0.2	98.1
	7/21/14	31.1	19.6	4.0	10.1	10.1	19.6	1.8	1.1	0.6	0.1	98.2
	8/4/14	29.8	14.9	12.5	11.4	10.0	10.6	3.5	3.3	1.3	0.3	97.7
	8/18/14	24.8	20.9	9.6	7.8	9.9	14.7	4.2	3.9	1.2	0.4	97.3
	9/2/14	28.0	18.4	11.0	7.2	7.9	17.3	3.5	3.5	1.0	0.2	98.1
	9/15/14	25.7	20.2	11.3	10.4	11.3	10.1	4.0	4.0	ND	0.4	97.2
	9/29/14	25.9	13.7	11.8	6.1	6.6	23.3	4.2	2.8	1.2	0.3	96.0
	10/14/14	26.1	14.0	14.3	11.0	7.3	14.6	3.7	3.7	1.2	0.6	96.5
	10/27/14	30.6	16.7	12.2	8.3	8.6	11.1	4.2	3.9	0.7	0.4	96.8
11/10/14	30.8	16.2	13.7	6.4	7.8	12.3	4.2	4.2	0.8	0.4	97.0	
11/24/14	7.2	10.0	2.6	61.3	6.1	10.0	0.9	0.7	0.3	0.2	99.4	
12/3/14	43.1	7.9	15.3	5.4	4.7	7.2	6.1	5.0	1.1	0.8	96.7	
12/8/14	41.1	7.1	15.9	7.1	4.6	8.0	5.5	4.2	1.7	1.0	96.1	
12/15/14	44.5	8.9	12.2	7.1	4.7	8.6	5.9	3.9	1.2	0.4	97.5	
12/29/14	40.4	8.4	17.6	7.8	4.6	7.2	4.9	4.6	1.0	0.6	97.1	
VEW-06S	2/18/14	21.6	15.9	13.4	5.2	6.7	15.9	5.0	3.2	7.3	0.8	95.3
	2/24/14	40.4	7.1	19.5	5.1	8.1	3.2	5.1	4.4	2.6	0.5	95.9
	3/3/14	37.9	12.3	15.2	6.6	12.1	3.8	4.0	3.6	1.3	0.3	97.0
	9/2/14	32.5	5.1	29.4	ND	6.4	ND	7.4	6.8	ND	2.5	90.0
VEW-06I	2/18/14	42.0	19.9	3.7	7.4	4.6	14.3	1.8	1.0	3.2	0.1	98.0
	2/24/14	39.5	19.0	9.0	12.5	7.5	5.5	1.8	2.3	1.0	0.2	98.3
	3/3/14	38.6	20.6	8.4	15.1	6.5	4.5	1.8	2.2	0.8	0.2	98.5
	9/2/14	20.4	10.6	16.7	21.0	6.4	12.2	1.5	3.3	0.9	0.3	93.3
VEW-06D	1/6/14	39.5	9.9	9.7	19.7	4.4	6.4	3.5	2.6	1.3	0.6	97.5
	2/4/14	42.7	9.4	17.9	2.3	6.3	4.5	5.4	5.2	2.1	0.8	96.5
	2/18/14	46.2	11.6	6.9	2.8	4.3	14.2	3.0	2.5	7.1	0.2	98.8
	2/24/14	29.9	25.9	11.0	4.0	10.0	8.2	3.2	2.8	2.8	0.5	98.2
	3/3/14	25.8	27.8	9.2	5.0	10.9	11.3	3.6	2.4	2.2	0.3	98.4
	3/10/14	28.9	23.1	13.3	4.4	7.9	9.4	4.0	3.9	2.1	0.6	97.8
	3/17/14	36.6	16.2	12.1	5.4	10.3	6.2	4.3	3.4	2.4	0.6	97.5
	3/24/14	31.3	20.2	12.5	7.1	9.4	6.8	3.1	4.0	2.3	0.4	97.3
	3/31/14	37.3	14.2	11.8	2.8	9.2	9.5	4.1	4.7	3.4	0.5	97.6
	4/7/14	22.7	28.4	8.2	6.4	9.3	12.9	3.4	2.4	3.1	0.2	96.9
	5/5/14	32.5	15.4	9.2	2.5	8.0	18.9	3.0	4.1	3.8	0.3	97.6
	5/13/14	32.3	16.4	8.7	5.0	8.2	16.4	3.7	3.0	3.5	0.3	97.4
	5/19/14	31.6	17.7	10.3	4.4	7.4	16.4	3.8	3.6	2.1	0.5	97.8
	5/27/14	26.7	18.4	15.7	5.3	7.5	10.9	4.3	4.5	3.2	0.8	97.3
	6/23/14	30.8	17.7	9.0	6.4	10.5	15.1	3.6	2.1	2.4	0.4	98.0
	7/7/14	25.8	20.4	6.3	5.9	7.7	25.8	2.8	1.8	1.9	0.3	98.5
	8/4/14	28.3	16.4	11.1	7.3	10.2	14.4	4.5	3.4	1.6	0.5	97.7
	9/2/14	32.0	17.4	11.0	5.0	7.8	16.4	3.8	3.0	1.1	0.5	98.2
	9/29/14	25.2	16.1	7.3	5.0	7.4	29.1	4.1	2.7	1.0	0.5	98.3
	10/27/14	27.7	17.2	11.9	9.1	8.0	15.0	3.3	2.8	0.8	0.8	96.7
11/24/14	11.9	9.6	4.2	51.4	8.5	10.2	1.4	1.2	0.3	0.3	99.0	
12/3/14	47.8	13.6	3.3	ND	6.5	14.2	8.9	1.7	1.8	0.6	98.4	
12/8/14	36.7	13.8	13.0	3.7	5.6	14.5	4.3	3.9	0.9	0.8	97.2	
12/15/14	48.7	6.8	13.6	5.1	4.4	6.6	5.8	4.1	1.2	0.9	97.4	
12/29/14	57.1	5.1	14.6	5.3	3.2	4.5	3.7	3.8	0.5	0.5	98.4	

ND = Not detected above reporting limit

Table 22
 Percentages of VOCs Detected
 2014 Annual Report
 Pasco Landfill, Pasco, WA

PERIOD: 01/01/2014 - 12/31/2014

Sample Location	Date	Toluene	2-butanone (MEK)	Total Xylenes	Ethanol	4-Methyl-2-pentanone (MIBK)	Acetone	Trichloro ethene	Ethyl benzene	Methylene chloride	Tetra chloro ethene	Percent of 10 Most Abundant Compounds
VEW-07S	2/18/14	65.3	6.0	11.5	1.1	3.5	3.2	2.3	2.3	2.0	0.1	97.3
	2/24/14	54.7	11.4	11.0	3.2	8.5	3.3	2.8	3.0	0.7	0.1	98.7
	3/3/14	35.8	12.8	13.8	9.0	11.3	5.7	3.1	3.7	1.7	0.2	97.1
	3/10/14	42.3	13.8	14.5	6.1	8.6	4.7	2.4	3.6	0.7	0.3	97.2
	3/17/14	57.9	8.5	8.9	5.7	8.0	2.7	2.9	2.4	0.8	0.1	97.9
	3/24/14	42.9	11.5	13.9	9.9	8.6	3.7	2.4	3.7	0.6	0.3	97.4
	3/31/14	50.0	10.1	13.5	3.4	8.7	4.7	2.6	3.5	1.2	0.1	97.8
	4/7/14	21.7	23.5	9.4	14.5	12.3	6.3	2.5	2.4	4.5	0.1	97.3
	5/5/14	48.9	5.7	11.6	3.3	4.7	5.7	1.0	2.6	14.0	0.1	97.4
	5/13/14	55.6	7.1	9.4	5.1	5.4	5.7	1.7	1.9	5.6	0.1	97.5
	5/19/14	49.5	10.0	11.7	6.3	5.7	6.9	2.0	3.1	2.1	0.2	97.4
	5/27/14	47.5	8.1	14.4	8.2	4.9	3.6	1.6	3.8	1.5	0.2	93.9
	6/23/14	47.4	8.3	12.4	8.0	8.1	5.3	2.8	3.1	0.7	0.1	96.2
	7/7/14	45.7	12.3	8.9	9.8	7.5	10.5	1.2	1.7	0.3	0.1	98.1
8/4/14	41.5	10.4	15.0	9.4	9.4	4.6	2.8	3.7	0.7	0.1	97.6	
9/2/14	52.8	10.6	9.2	6.5	8.0	5.9	1.7	2.4	0.6	0.1	97.7	
9/29/14	45.0	10.1	10.0	7.4	6.7	12.1	3.0	3.0	0.7	0.2	98.2	
10/27/14	25.5	14.9	14.2	15.1	11.3	6.2	2.7	3.6	0.8	0.3	94.7	
VEW-07I	2/18/14	53.7	12.8	13.1	1.9	5.4	5.8	2.6	3.5	0.6	0.1	99.6
	2/24/14	64.4	21.6	1.3	2.1	4.8	2.0	2.8	0.4	0.3	0.1	99.7
	3/3/14	65.6	6.6	11.4	3.9	5.5	1.7	3.5	0.9	0.3	0.3	99.6
	3/10/14	49.8	17.5	11.7	5.0	5.8	3.0	4.8	0.9	0.6	0.3	99.3
	3/17/14	74.8	5.0	2.2	9.4	2.6	1.3	2.5	0.7	0.6	0.2	99.3
	3/24/14	63.9	10.2	2.3	9.4	5.3	2.6	4.3	0.6	0.6	0.2	99.4
	3/31/14	69.4	9.4	2.5	4.2	4.9	3.1	4.2	0.7	0.8	0.2	99.4
	4/7/14	50.5	24.3	5.2	6.2	4.9	2.6	2.3	1.3	2.2	0.1	99.4
	5/5/14	71.8	6.7	2.1	1.9	3.2	4.0	0.9	0.7	8.2	0.1	99.6
	5/13/14	66.6	8.4	2.5	3.4	5.0	4.8	4.4	0.8	3.5	0.1	99.5
	5/19/14	67.9	10.2	2.7	4.0	3.4	5.2	4.2	0.8	0.8	0.2	99.5
	5/27/14	59.6	8.2	11.1	5.3	3.8	2.9	3.9	3.6	0.7	0.2	99.4
	6/23/14	61.6	8.0	1.9	3.4	14.2	3.6	5.7	0.5	0.3	0.1	99.4
	7/7/14	74.5	6.5	4.0	3.5	3.4	4.2	2.5	0.7	0.2	0.1	99.7
8/4/14	58.7	8.5	11.7	5.3	7.8	2.4	3.7	0.9	0.4	0.2	99.5	
9/2/14	72.3	5.9	6.4	3.6	4.3	2.9	1.8	2.0	0.3	0.1	99.7	
9/29/14	66.7	8.9	2.0	4.4	4.1	8.5	3.4	0.7	0.5	0.2	99.4	
10/27/14	43.4	12.7	13.7	7.2	8.7	3.0	4.7	5.0	0.5	0.4	99.2	
VEW-07D	1/6/14	26.1	13.6	15.9	13.6	6.4	9.8	4.3	4.1	1.4	0.5	95.6
	2/4/14	45.7	8.7	19.9	1.1	4.6	5.9	4.3	5.0	1.3	0.3	96.8
	2/18/14	32.2	14.1	10.7	4.5	6.2	20.1	3.7	3.0	2.7	0.2	97.5
	2/24/14	27.2	23.5	17.4	4.9	9.5	6.4	2.5	4.0	1.5	0.3	97.1
	3/3/14	28.8	19.2	16.5	5.8	9.6	6.2	5.1	4.5	1.2	0.3	97.2
	3/10/14	24.6	18.2	18.5	7.9	7.1	9.6	3.7	4.7	0.8	0.5	95.7
	3/17/14	33.8	12.9	17.5	6.8	9.8	5.8	3.7	4.0	1.1	0.4	95.9
	3/24/14	28.1	14.6	18.3	8.6	9.4	5.6	4.9	5.2	0.9	0.4	96.0
	3/31/14	29.8	13.7	20.6	3.0	11.3	8.9	4.5	4.5	1.0	0.2	97.5
	4/7/14	21.3	24.9	13.4	7.6	10.0	11.6	3.5	3.5	1.7	0.2	97.7
	5/5/14	29.1	14.6	15.4	3.7	11.1	12.8	2.5	6.0	0.4	0.3	95.8
	5/13/14	29.9	11.1	11.5	6.3	10.8	16.0	4.9	5.2	0.5	0.2	96.3
	5/19/14	28.0	17.2	13.9	5.4	9.1	16.2	3.1	4.1	0.3	0.2	97.6
	5/27/14	25.0	15.0	20.7	8.7	7.3	8.3	3.3	5.3	0.9	0.4	95.0
	6/23/14	30.2	14.3	12.0	6.8	9.8	11.7	3.9	4.9	1.1	0.3	95.0
	7/7/14	24.6	17.2	8.7	7.4	6.7	23.5	3.4	5.3	0.9	0.2	98.0
	8/4/14	27.3	14.5	14.4	10.8	11.6	11.2	3.7	3.9	0.6	0.2	98.4
	9/2/14	27.6	17.6	13.2	5.0	8.8	17.3	3.5	3.8	0.8	0.2	97.9
	9/29/14	24.0	15.7	9.9	4.7	7.0	25.7	5.0	4.3	1.2	0.4	98.0
10/27/14	31.7	13.9	15.8	7.3	11.4	6.0	4.4	4.8	0.6	0.4	96.4	
11/24/14	6.0	9.5	2.9	65.7	5.7	7.2	0.8	0.8	0.3	0.2	99.0	
12/3/14	59.5	ND	6.3	3.3	6.0	8.5	8.5	2.6	1.9	0.5	97.1	
12/8/14	39.0	7.8	19.7	5.3	4.9	6.2	4.5	4.9	1.5	0.7	94.6	
12/15/14	43.8	6.7	16.2	5.1	4.7	7.1	5.7	5.1	1.6	0.6	96.6	
12/29/14	39.1	7.8	21.5	7.0	4.7	5.9	4.2	5.3	1.0	0.4	96.9	

ND = Not detected above reporting limit

Table 23
Summary of Fourth Quarter 2014 SVE System Shutdowns and Restarts
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2014

Page 1 of 2

Date	Time	Details
11/10/14	0957 hrs	Manually shut down the flare for blower maintenance. SVE system shut down (Regen and 07I blowers - wells 07D, 06D, 07S, and 07I)
	1035 hrs	Flare on, SVE blowers remained off
	1110 hrs	Flare at 1,600°F, SVE blowers remained off
	1112 hrs	SVE system on (Regen and 07I blowers - wells 07D, 06D, 07S, and 07I) Flare remained on.
	1910 hrs	Flare shutdown for low methane and thermocouple failure. SVE system shut down (Regen and 07I blowers - wells 07D, 06D, 07S, and 07I)
11/11/14	1051 hrs	Flare on, SVE blowers remained off.
	1104 hrs	Flare temp at 1,600°F. SVE blowers remained off.
	1230 hrs	SVE blowers on, (Regen and 07I blowers - wells 07D, 06D, 07S, and 07I) Flare unable to reach 1,700°F.
	1400 hrs	Shut down 07I blower to reduce the air flow rate to the flare. Flare and Regen blower remained on (wells 06D and 07D).
	2306 hrs	Flare and SVE system shutdown (Regen blower - wells 06D and 07D) due to a failure at the flare.
11/12/14	2047 hrs	Flare on. SVE system remained off.
	2053 hrs	Flare at 1,600°F. SVE system remained off.
	2100 hrs	SVE system on (Regen blower - wells 06D and 07D). Flare remained on.
	2238 hrs	Flare and SVE system shutdown (Regen blower - wells 06D and 07D). Due to failure at the flare.
11/13/14	1300 hrs	Flare on and over 1,600°F. SVE remained off.
	1320 hrs	SVE system on (Regen and 07I blowers - wells 06D, 07D, 07S, and 07I). Flare remained on.
	1417 hrs	07I blower shutdown manually. Flare and Regen blower (wells 06D and 07D) remained on.
	1604 hrs	Flare and SVE system shutdown due to blower VFD failure at the flare.
11/14/14	0807 hrs	Flare on. SVE system remained off.
	0820 hrs	Flare at 1,600°F. SVE system remained off.
	0830 hrs	SVE system on (Regen blower - wells 06D and 07D). Flare remained on.
11/16/14	0652 hrs	Flare and SVE (Regen blower) shutdown from high condensate level in one of the SVE moisture separators. The other SVE blowers remained off.
11/17/14	1024 hrs	Flare on. SVE remained off.
	1030 hrs	Flare at 1,600°F. SVE remained off
	1120 hrs	SVE on (Regen blower). Flare remained on and other SVE blowers remained off.
	1845 hrs	Flare and SVE shutdown.
	1845 hrs	Flare and SVE (Regen blower - wells 06D and 07D) shutdown for flare blower failure.
11/18/14	0950 hrs	Flare on. SVE remained off.
	0954 hrs	Flare at 1,600°F. SVE remained off.
	0959 hrs	SVE on (Regen blower - wells 06D and 07D). Flare remained on. Other SVE blowers remained off.
	1338 hrs	Manually shutdown flare and SVE system (Regen blower - wells 06D and 07D) for maintenance on a Flare blower.
	1419 hrs	Flare on. SVE remained off.
	1424 hrs	Flare at 1,600°F. SVE remained off.
1430 hrs	SVE on (Regen blower - wells 06D and 07D). Flare remained on. Other SVE blowers remained off.	

Table 23
Summary of Fourth Quarter 2014 SVE System Shutdowns and Restarts
2014 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2014

Date	Time	Details
11/29/14	1255 hrs	Flare and SVE (Regen blower - wells 06D and 07D) shutdown for low temperature at the flare.
	1415 hrs	Flare on. SVE remained off
	1421 hrs	Flare at 1,600°F. SVE remained off.
	1428 hrs	SVE on (Regen blower - wells 06D and 07D). Flare remained on.
	1506 hrs	Flare and SVE (Regen blower - wells 06D and 07D) shutdown flare would not stay lit.
12/1/14	0742 hrs	Flare on, SVE remained off.
	0750 hrs	Flare at 1,600°F. SVE remained off.
	0800 hrs	Regen blower failed to start. Flare remained on.
	1046 hrs	07I Blower on (well 07S only at ~100 cfm)
	1320 hrs	07I Blower shutdown manually.
	1340 hrs	Regen blower on (wells 06D and 07D at ~200 cfm each). Flare remained on.
12/2/14	0653 hrs	Flare and SVE shutdown due to low methane at the flare.
	1140 hrs	Flare on. SVE remained off.
	1145 hrs	Flare at 1,600°F. SVE remained off.
	1151 hrs	SVE Regen blower on (wells 06D and 07D). Flare remained on.
	1343 hrs	Flare and SVE shutdown. Flare would not stay lit.
12/3/14	0906 hrs	Flare on. SVE remained off.
	0913 hrs	Flare at 1,600°F. SVE remained off.
	0917 hrs	SVE on (Regen blower - wells 06D and 07D). Flare remained on.
12/4/14	1719 hrs	Flare and SVE systems shutdown
12/5/14	1247 hrs	Flare on. SVE remained off.
	1255 hrs	Flare at 1,600°F. SVE remained off.
	1258 hrs	SVE on (Regen blower - wells 06D and 07D). Flare remained on
12/6/14	1054 hrs	SVE and Flare shutdown for power failure .
	1542 hrs	Flare on. SVE remained off.
	1551 hrs	Flare at 1,600°F. SVE remained off.
	1555 hrs	SVE on (Regen blower - wells 06D and 07D). Flare remained on.
12/9/14	0034 hrs	Flare and SVE shutdown for high temp at the flare
	0824 hrs	Flare on. SVE remained off.
	0830 hrs	Flare at 1,600°F. SVE remained off.
	0834 hrs	SVE on (Regen blower - wells 06D and 07D). Flare remained on. SVE system returned to approx. 450 cfm.
12/31/14	1333 hrs	SVE and Flare shutdown due to high condensate level in the SVE oil/water separator.
	1615 hrs	Flare on. SVE remained off.
	1645 hrs	Flare at 1,600°F. SVE remained off.
	1650 hrs	SVE on (wells 06D and 07D). Flare remained on.

Waste	Shipment Volume (gallons)	Disposal or Treatment Facility	Disposal Date	Designation	SVE Equipment Skid Volume (gallons)	Conveyance Line at MSW Flare Volume (gallons)
SVE Condensate	3,965	Burlington Environmental, Kent, WA	1/31/2014	DW D035, D040	2,707	1,258
SVE Condensate	4,793	Burlington Environmental, Kent, WA	3/5/2014	DW D035, D040	3,305	1,488
SVE Condensate	5,096	Burlington Environmental, Kent, WA	3/27/2014	DW D035, D040	2,592	2,504
SVE Condensate	5,007	Burlington Environmental, Kent, WA	4/23/2014	DW D035, D040	2,541	2,466
SVE Condensate	4,918	Burlington Environmental, Kent, WA	5/22/2014	DW D035, D040	1,753	3,165
SVE Condensate	4,751	Burlington Environmental, Kent, WA	6/17/2014	DW D035, D040	2,061	2,690
SVE Condensate	4,200	Burlington Environmental, Kent, WA	7/15/2014	DW D035, D040	1,669	2,531
SVE Condensate	4,775	Burlington Environmental, Kent, WA	8/27/2014	DW D035, D040	1,720	3,055
LNAPL	208	Burlington Environmental, Kent, WA	9/3/2014	DW D001, D027, D035, D039, and D040	208	--
SVE Condensate	4,735	Burlington Environmental, Kent, WA	10/16/2014	DW D035, D040	1,281	3,454
SVE Condensate	4,767	Burlington Environmental, Kent, WA	11/4/2014	DW D035, D040	3,373	1,394
SVE Condensate	2,936	Burlington Environmental, Kent, WA	11/24/2014	DW D035, D040	1,984	952
	50,151				25,194	24,957
Purge water	525	City of Pasco WWTP	8/27/2014	non-regulated	--	--

Total waste disposed of during the Third Quarter of 2014:

50,151 Gallons of hazardous waste were disposed of at Burlington Environmental in Kent, Washington.

25,194 Gallons were from the SVE equipment skid including 208 gallons of LNAPL.

24,957 Gallons were from the SVE conveyance line.

525 Gallons of non-regulated waste were disposed of at the City of Pasco WWTP.

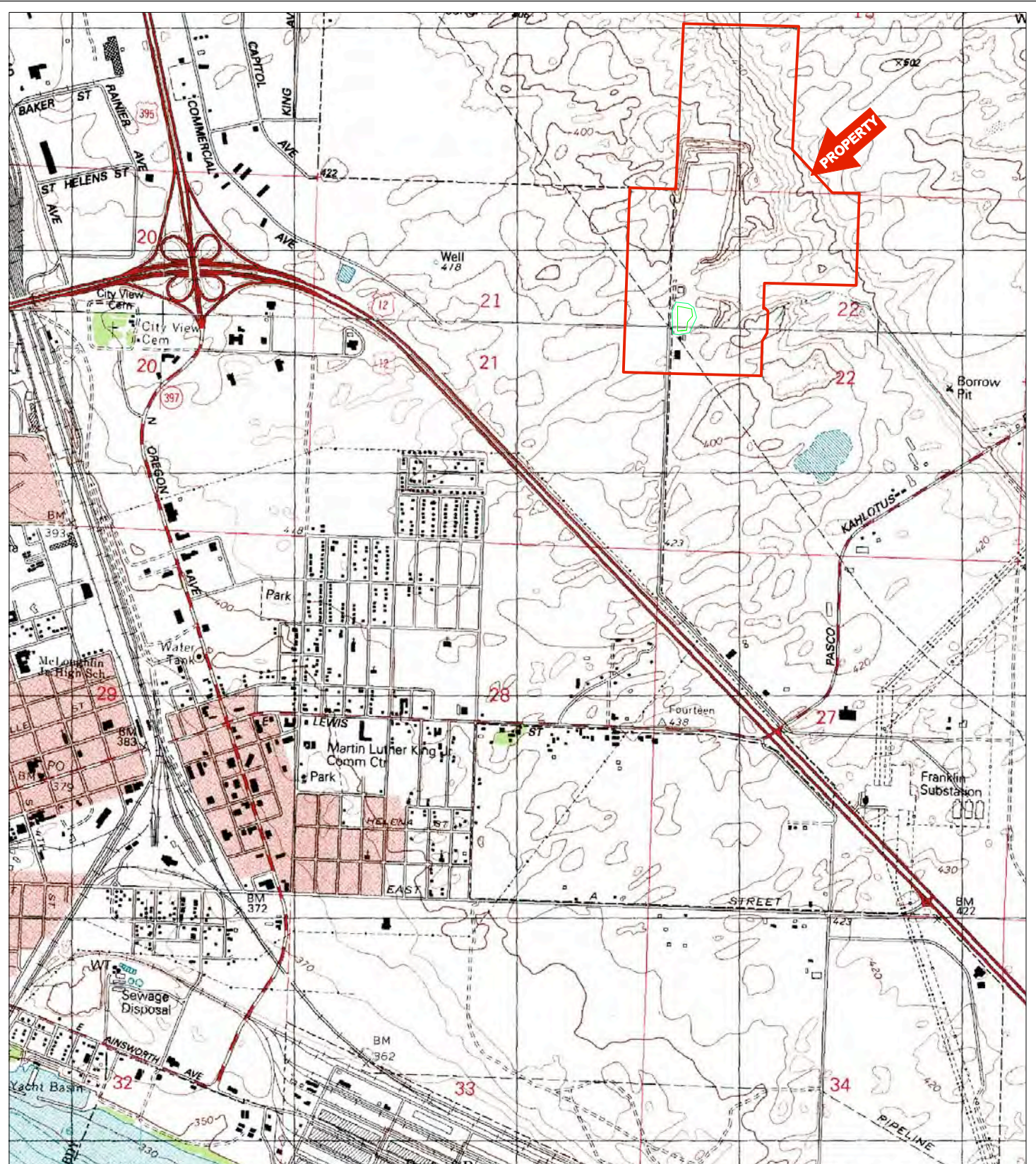
DW = Dangerous Waste

LNAPL = Light Non-Aqueous Phase Liquid

SVE = Soil Vapor Extraction

WWTP = Wastewater Treatment Plant

Figures



KEY:

SOURCE: USGS 7.5 MINUTE QUADRANGLE
(TOPOGRAPHIC)



GLADE, WASHINGTON - 1992
PASCO, WASHINGTON - 1992

SCALE = 1:24,000

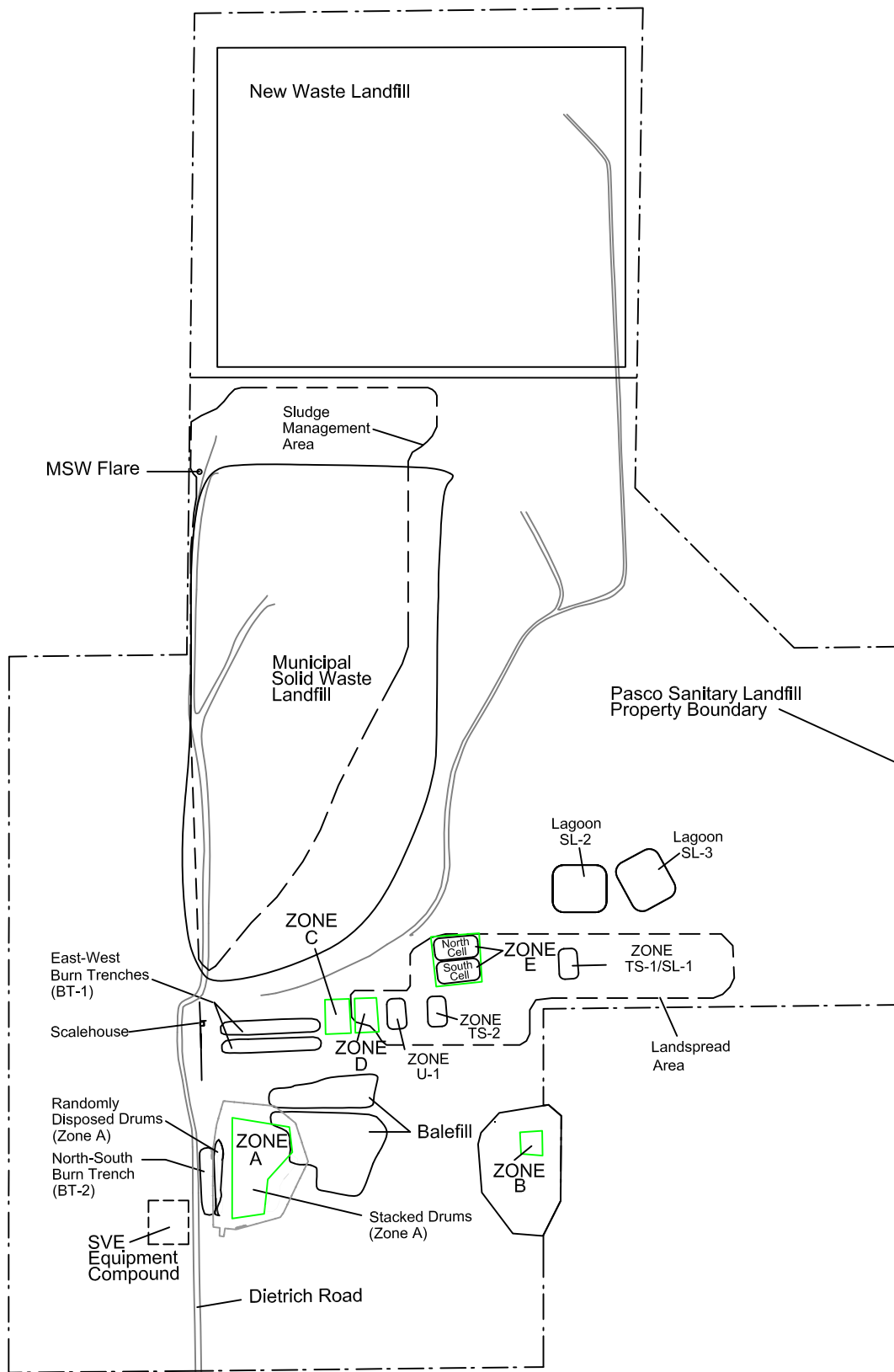


**ENVIRONMENTAL
PARTNERS INC**

1180 NW Maple Street, Suite 310
Issaquah, Washington 98027

SITE LOCATION MAP

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE 1	DRAWN BY MMH	REVIEWED BY MMH	DATE 02/22/15



KEY:



BASEMAP SOURCE: PHASE I
REMEDIAL INVESTIGATION REPORT
(BURLINGTON, 1993)



**ENVIRONMENTAL
PARTNERS INC**

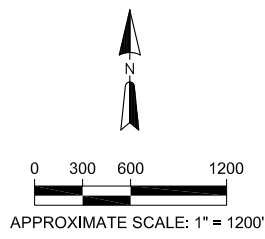
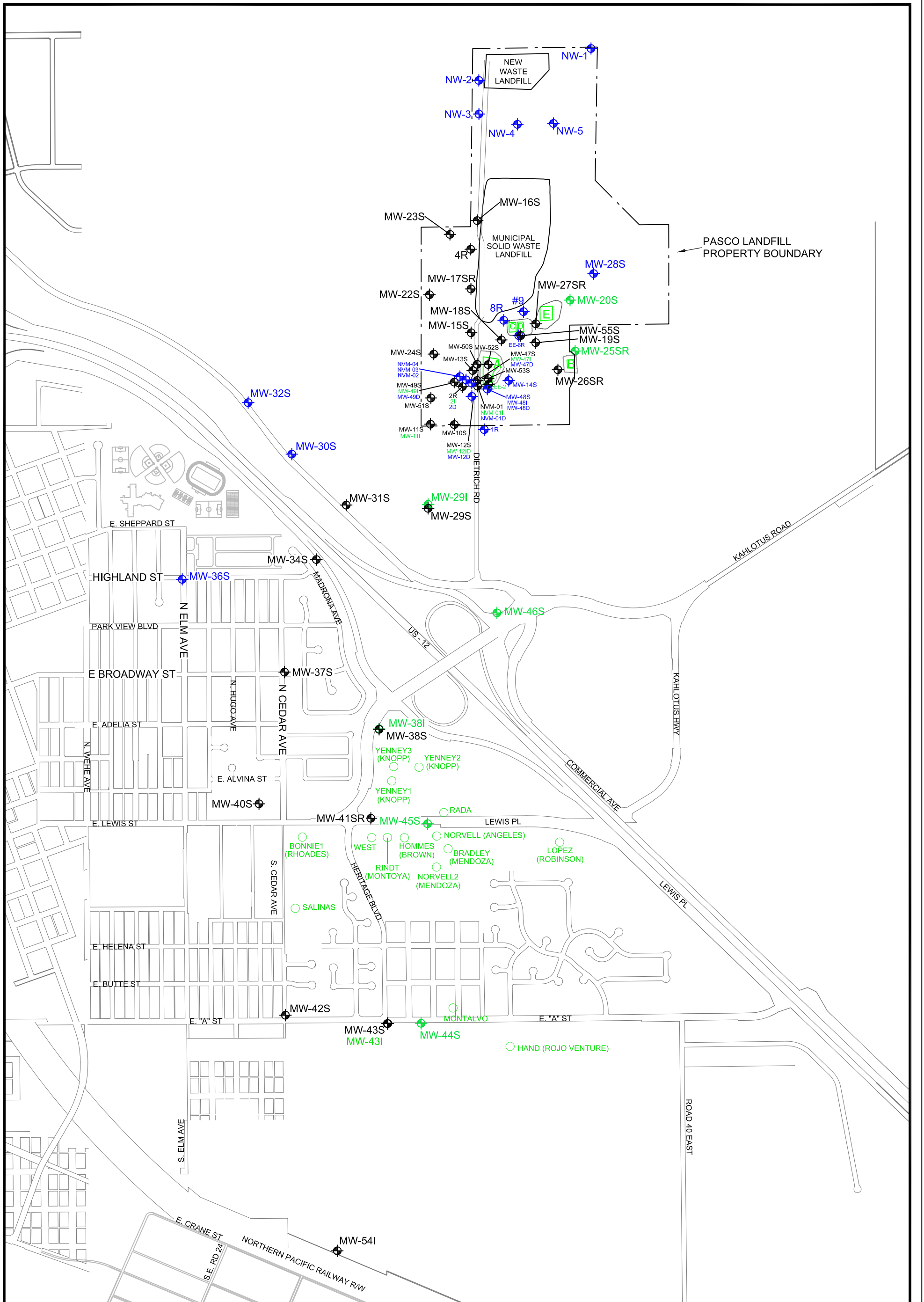
1180 NW Maple Street, Suite 310
Issaquah, Washington 98027

PASCO LANDFILL NPL SITE
PROPERTY

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
2	MMH	TCM	02/22/2015



SCALE: 1" = 600'

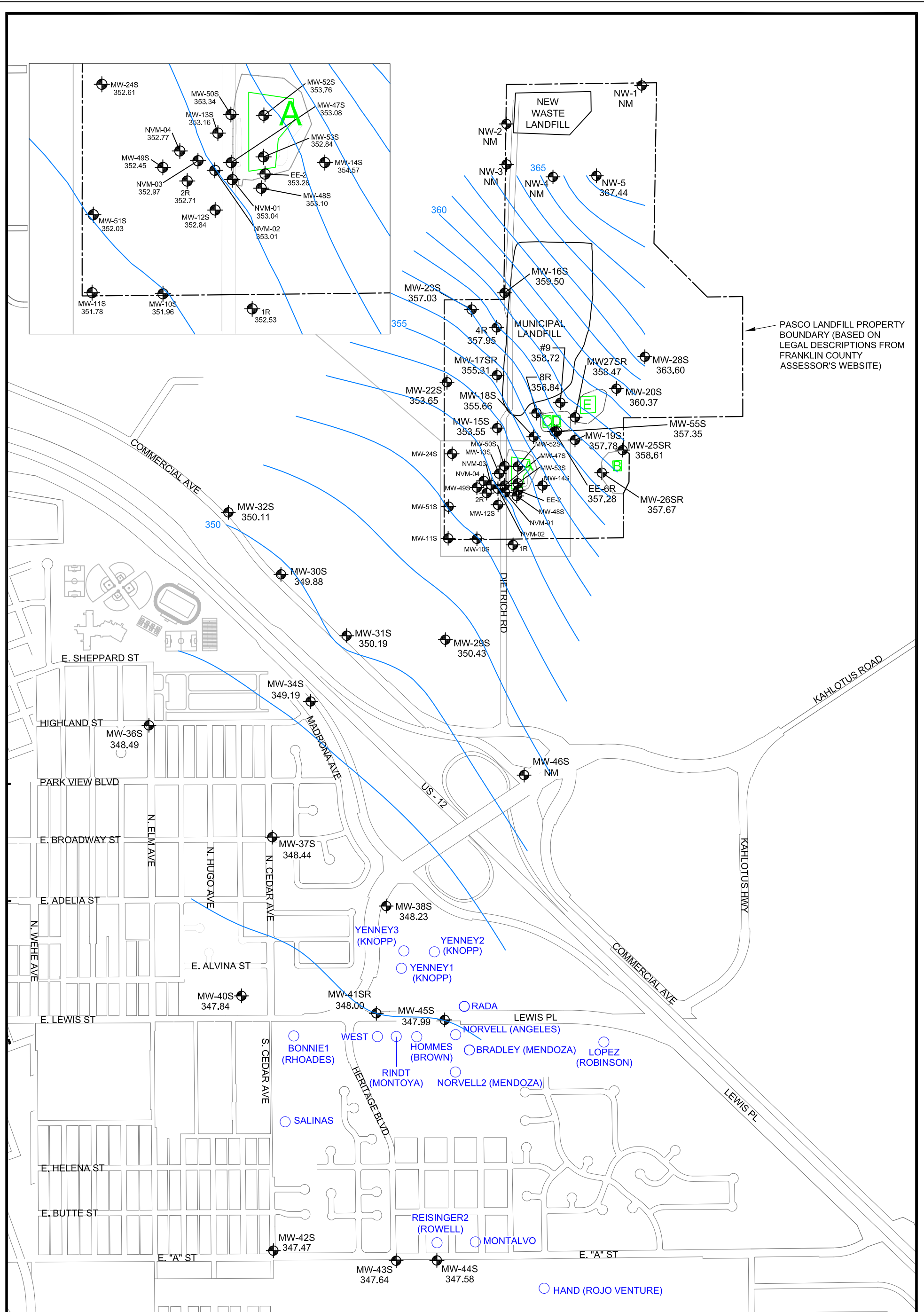


- MW-12S QUARTERLY PROTECTION MONITORING WELL (January, April, July and October)
- MW-12D SEMI-ANNUAL PROTECTION MONITORING WELL (April and October)
- MW-12D WATER ELEVATION MONITORING WELL

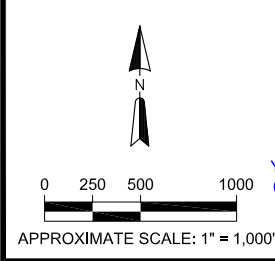
epl ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

PASCO LANDFILL NPL SITE MONITORING WELL NETWORK

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
3	MMH	MMH	02/22/2015



PASCO LANDFILL PROPERTY BOUNDARY (BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)

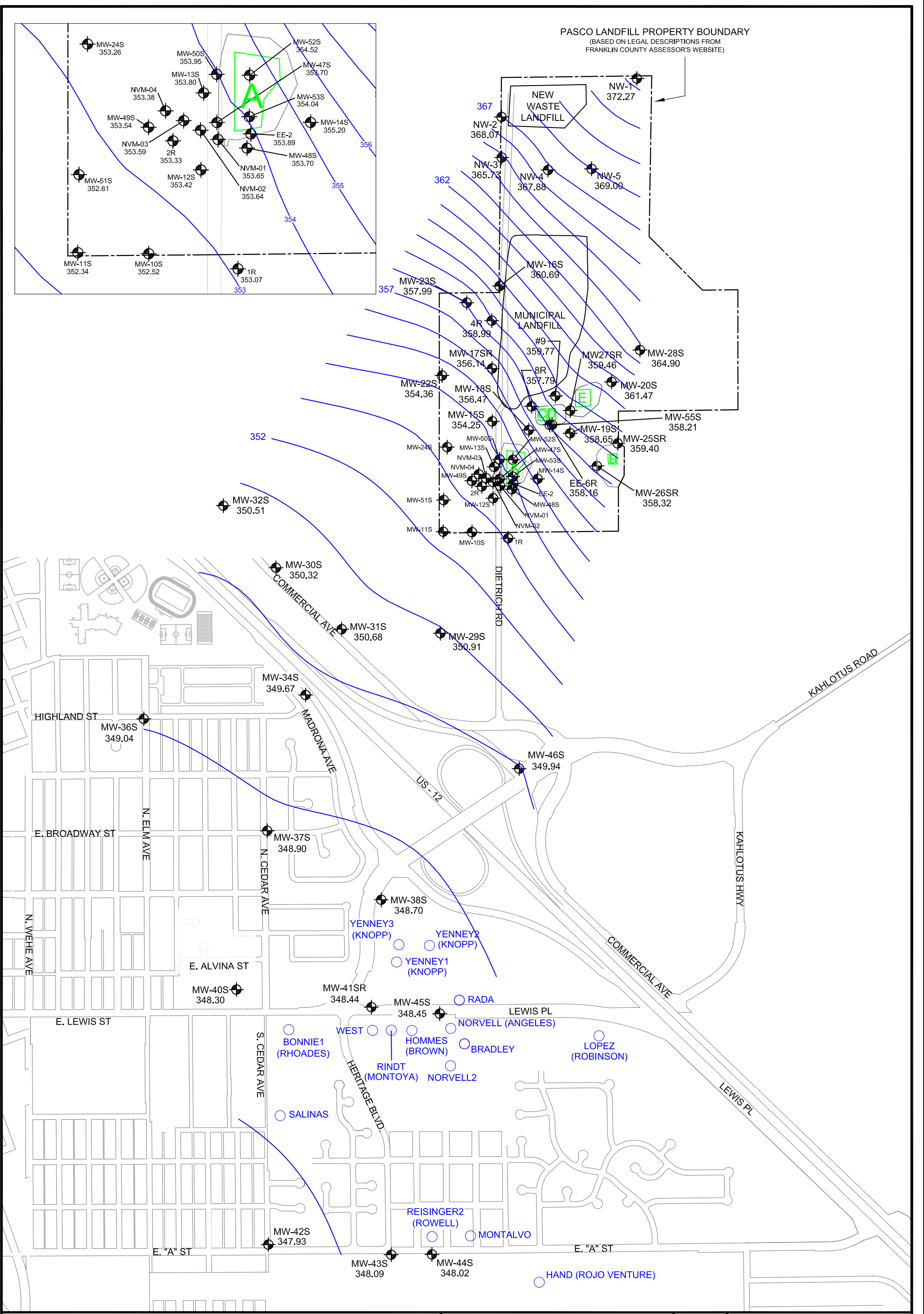


- MW-42S 347.47 SHALLOW AQUIFER MONITORING WELL WITH WATER ELEVATION IN FEET, NAVD88. NM = NOT MEASURED
- WATER ELEVATION CONTOUR
- YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)
- WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS

ept ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

SHALLOW GROUNDWATER ELEVATIONS
 JANUARY 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
4	VPB	MMH	02/17/15



MW-42S 347.93 SHALLOW AQUIFER MONITORING WELL WITH WATER ELEVATION IN FEET, NAVD88. NM = NOT MEASURED

WATER ELEVATION CONTOUR

YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)

WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS

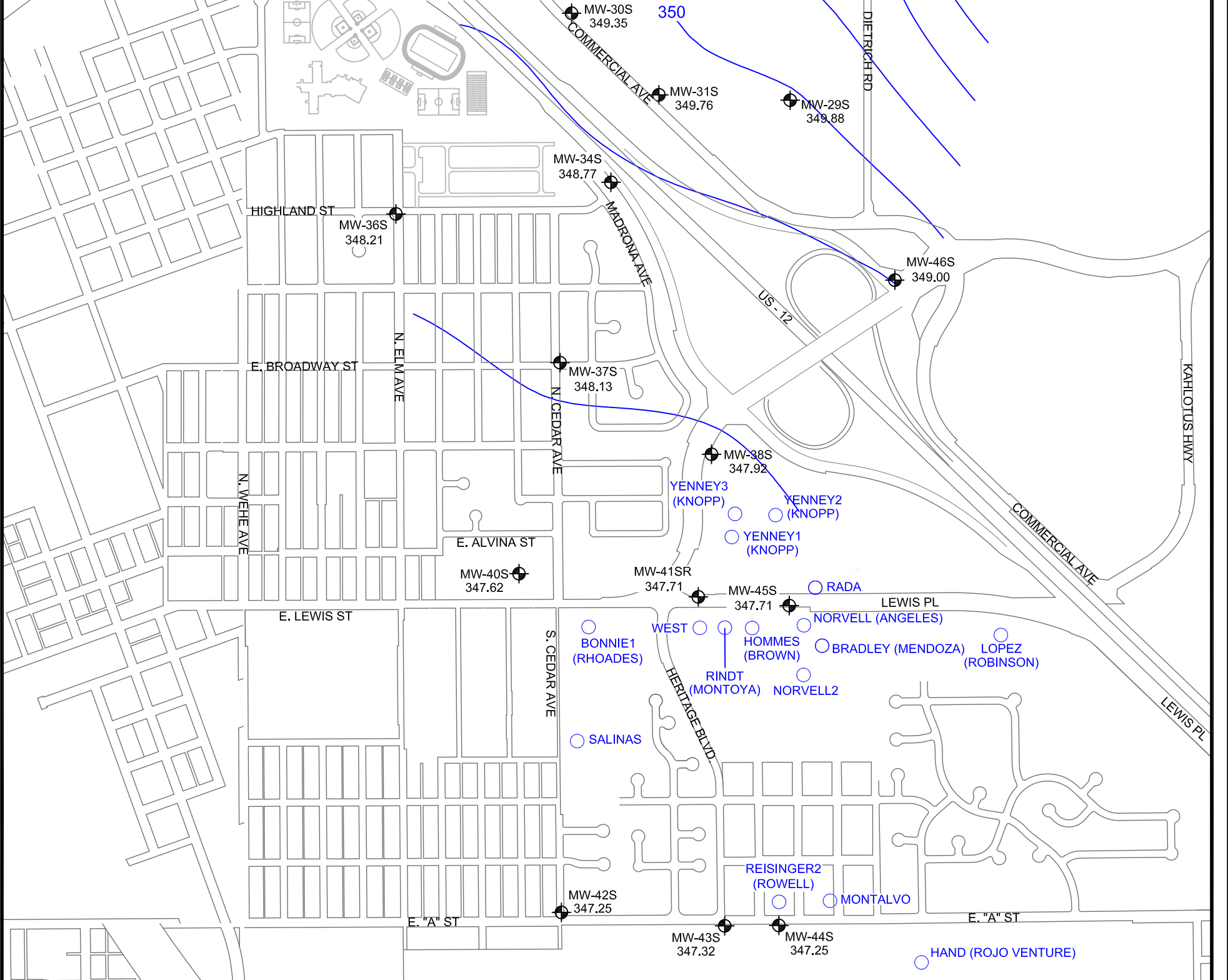
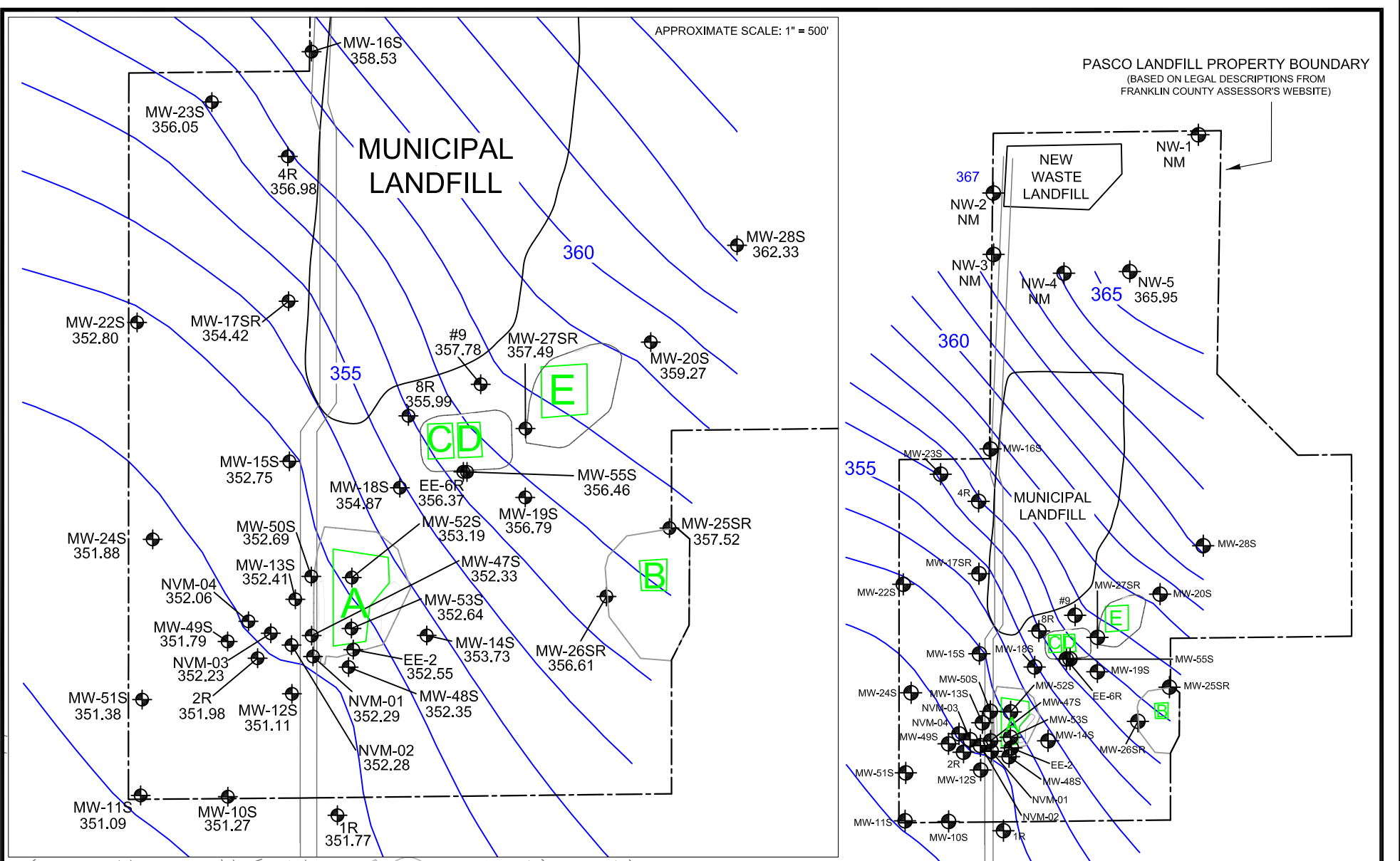
0 250 500 1000

APPROXIMATE SCALE: 1" = 1,000'

ept ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

SHALLOW GROUNDWATER ELEVATIONS
 APRIL 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
5	VPB	MMH	03/05/15



MW-42S 347.25 SHALLOW AQUIFER MONITORING WELL WITH WATER ELEVATION IN FEET, NAVD88. NM = NOT MEASURED

 WATER ELEVATION CONTOUR

 RESIDENTIAL WELL (WITH PROPERTY OWNER)

 WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS

0 250 500 1000

 APPROXIMATE SCALE: 1" = 1,000'

ENVIRONMENTAL PARTNERS INC

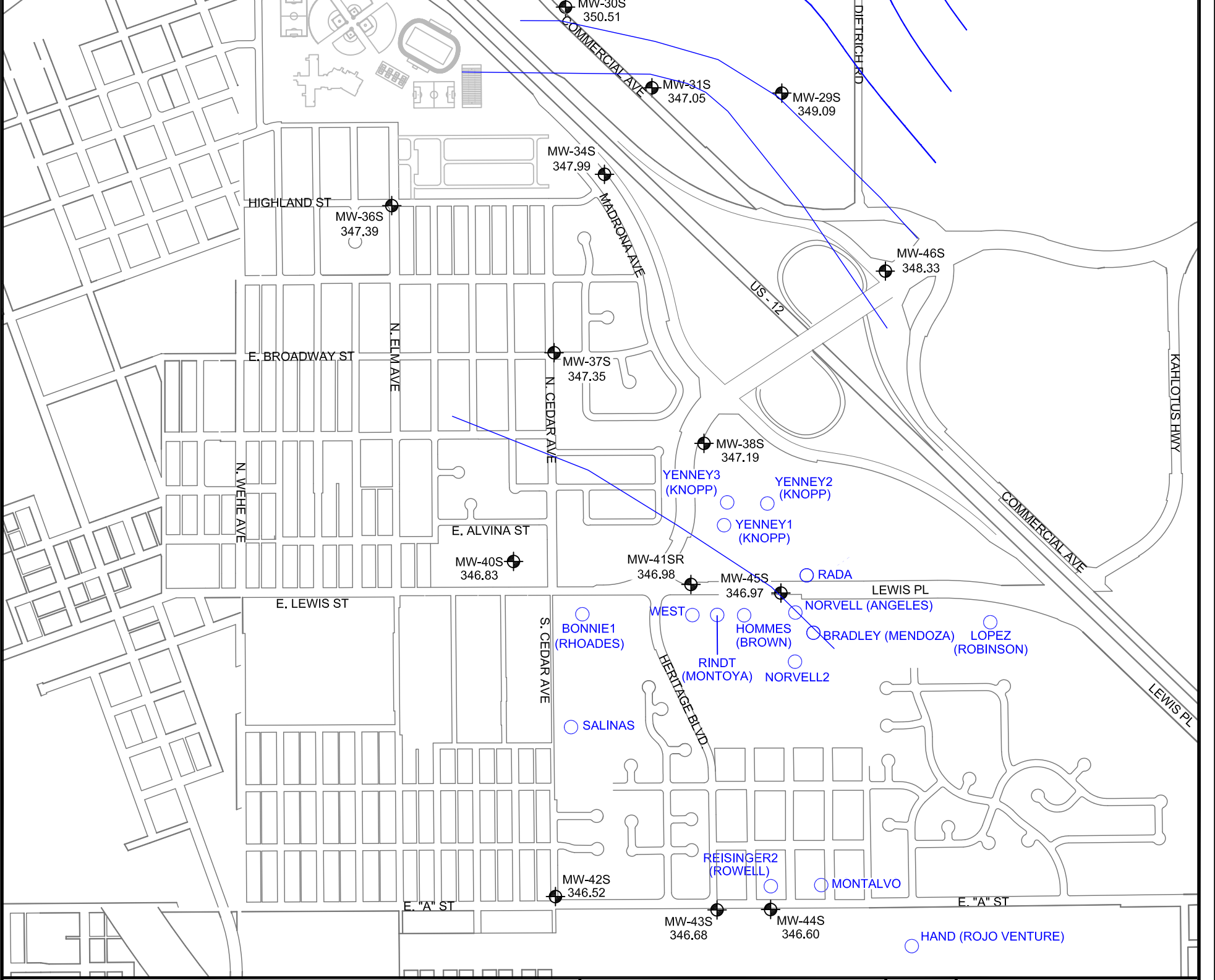
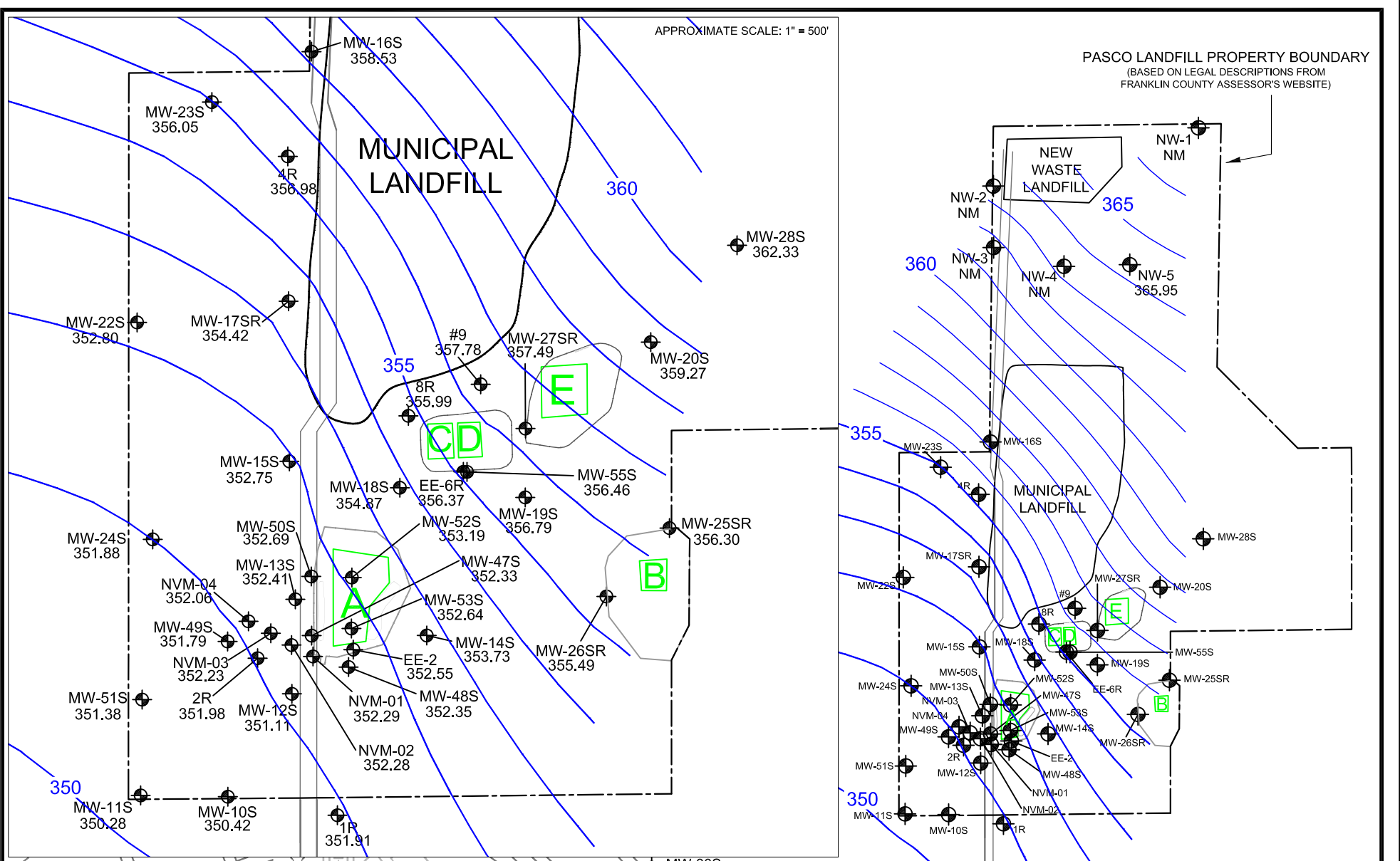
 1180 NW Maple Street, Suite 310

 Issaquah, Washington 98027

SHALLOW GROUNDWATER ELEVATIONS

 JULY 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
6	VPB	MMH	02/17/15



APPROXIMATE SCALE: 1" = 1,000'

MW-42S 347.25 SHALLOW AQUIFER MONITORING WELL WITH WATER ELEVATION IN FEET, NAVD88. NM = NOT MEASURED

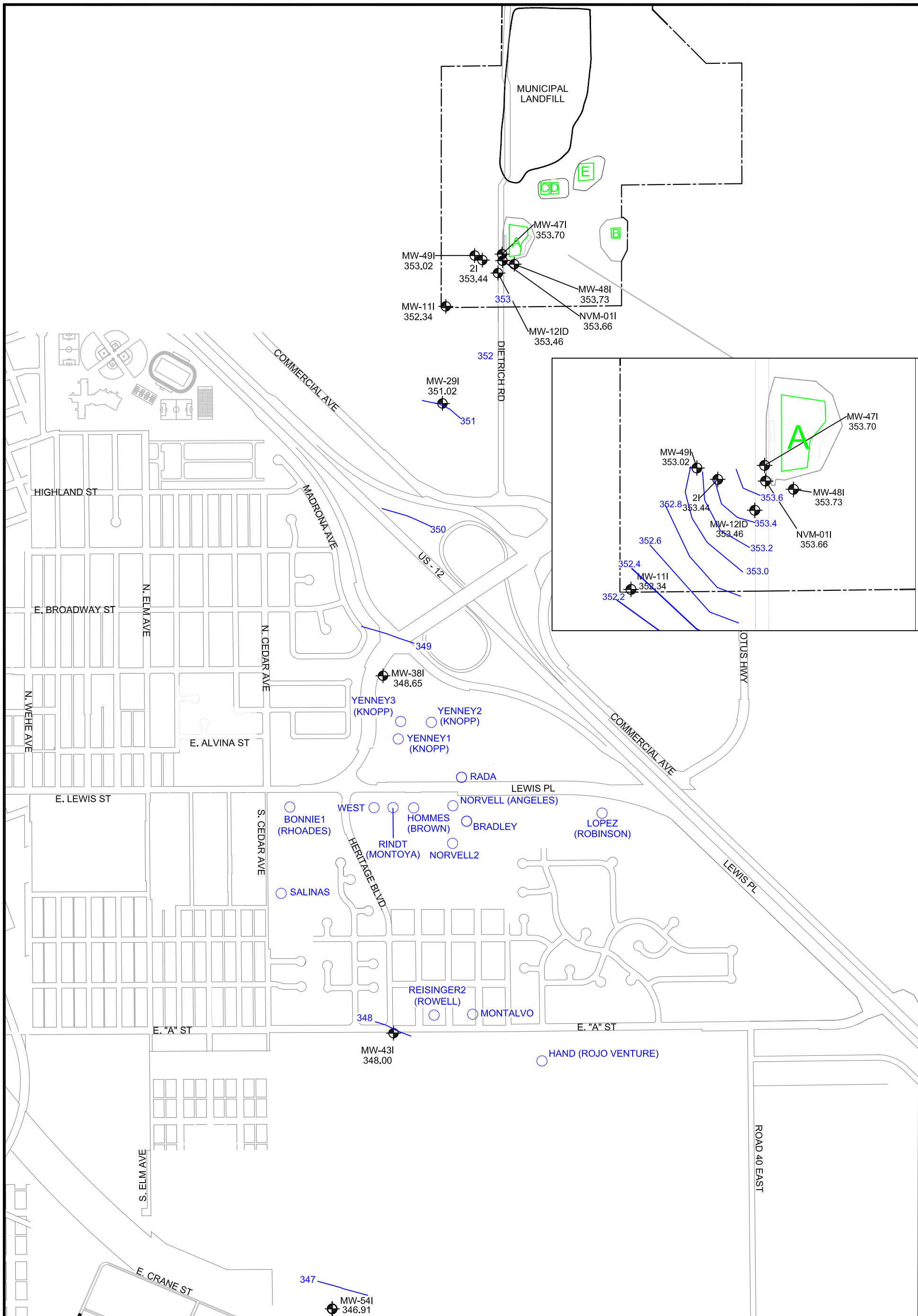
WATER ELEVATION CONTOUR, WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS.

YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER) WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS

ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

SHALLOW GROUNDWATER ELEVATIONS
 OCTOBER 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
7	VPB	MMH	03/05/2015



MW-54I 346.64 INTERMEDIATE AQUIFER MONITORING WELL WITH WATER ELEVATION IN FEET, NAVD88. NM = NOT MEASURED

 WATER ELEVATION CONTOUR. WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS.

 YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)

 WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS

0 250 500 1000

 APPROXIMATE SCALE: 1" = 1,000'

ENVIRONMENTAL PARTNERS INC

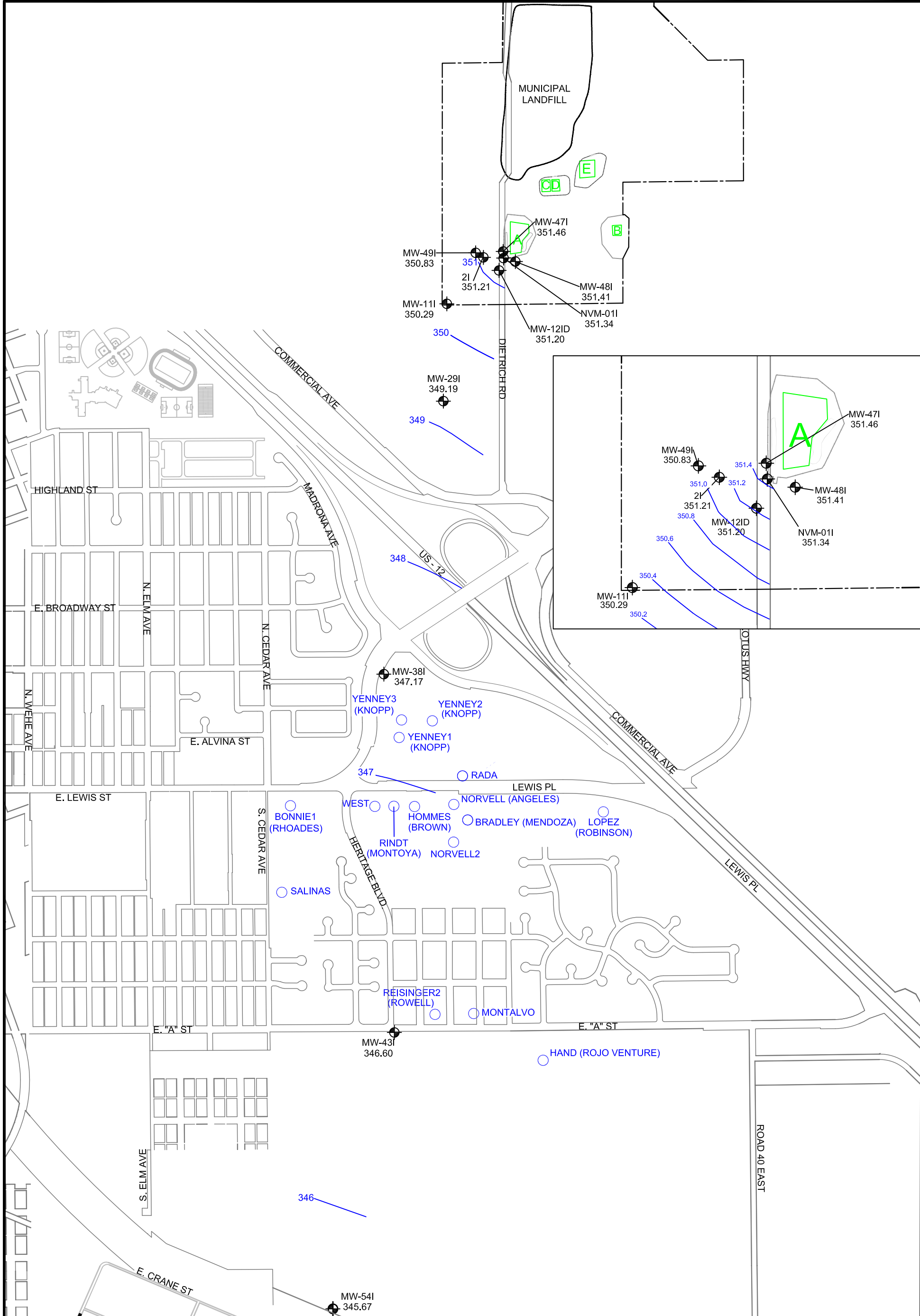
 1180 NW Maple Street, Suite 310

 Issaquah, Washington 98027

INTERMEDIATE GROUNDWATER ELEVATIONS

 APRIL 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
8	VPB	MMH	03/05/15



MW-541 345.67 INTERMEDIATE AQUIFER MONITORING WELL WITH WATER ELEVATION IN FEET, NAVD88. NM = NOT MEASURED

WATER ELEVATION CONTOUR. WATER LEVELS NOT MEASURED IN RESIDENTIAL WELLS.

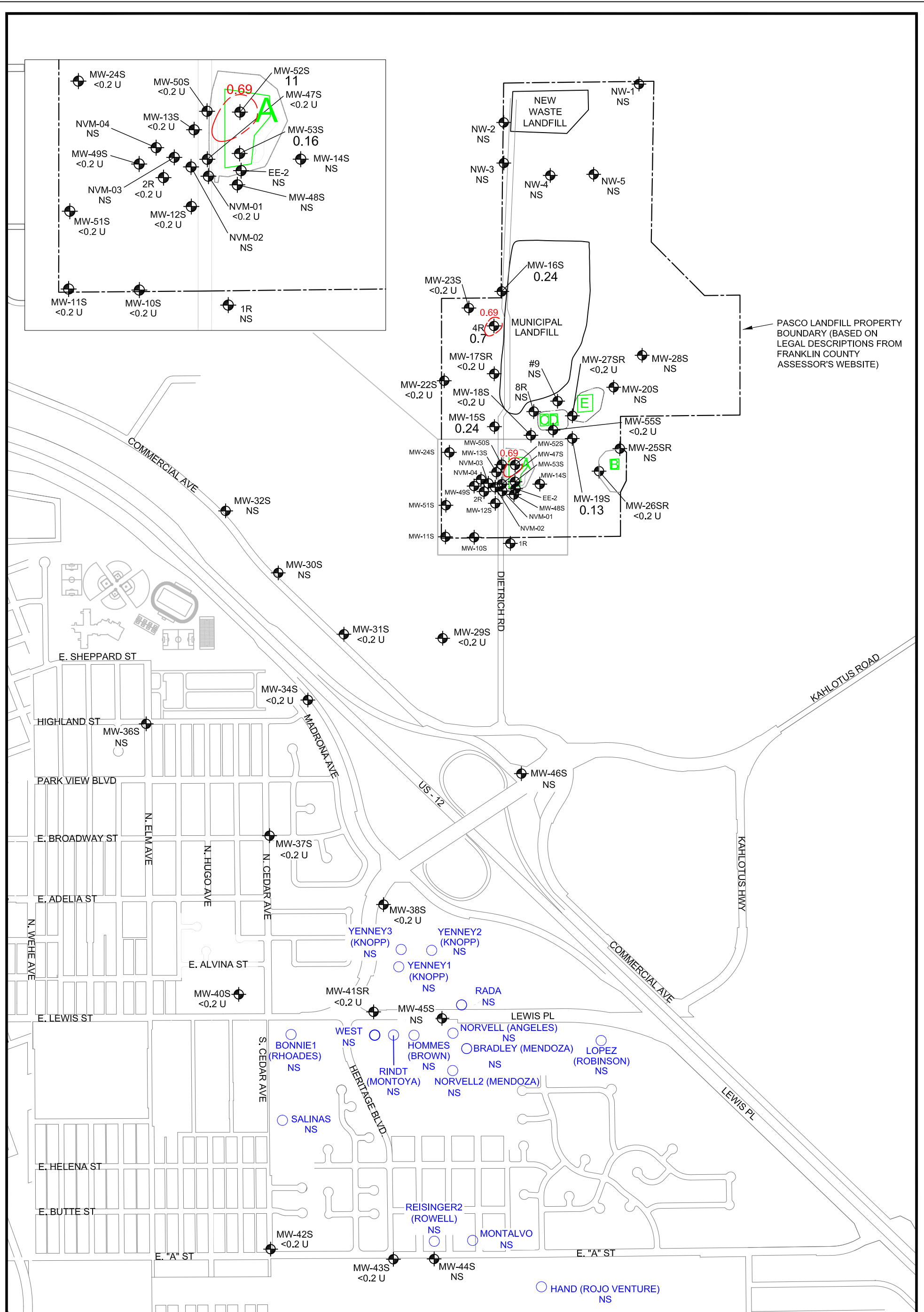
YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)

APPROXIMATE SCALE: 1" = 1,000'

ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

INTERMEDIATE GROUNDWATER ELEVATIONS
 OCTOBER 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
9	VPB	MMH	03/05/15



PASCO LANDFILL PROPERTY BOUNDARY (BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)

MW-47S 0.08
 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER (µg/L)

TETRACHLOROETHENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

RESIDENTIAL WELL (WITH PROPERTY OWNER)

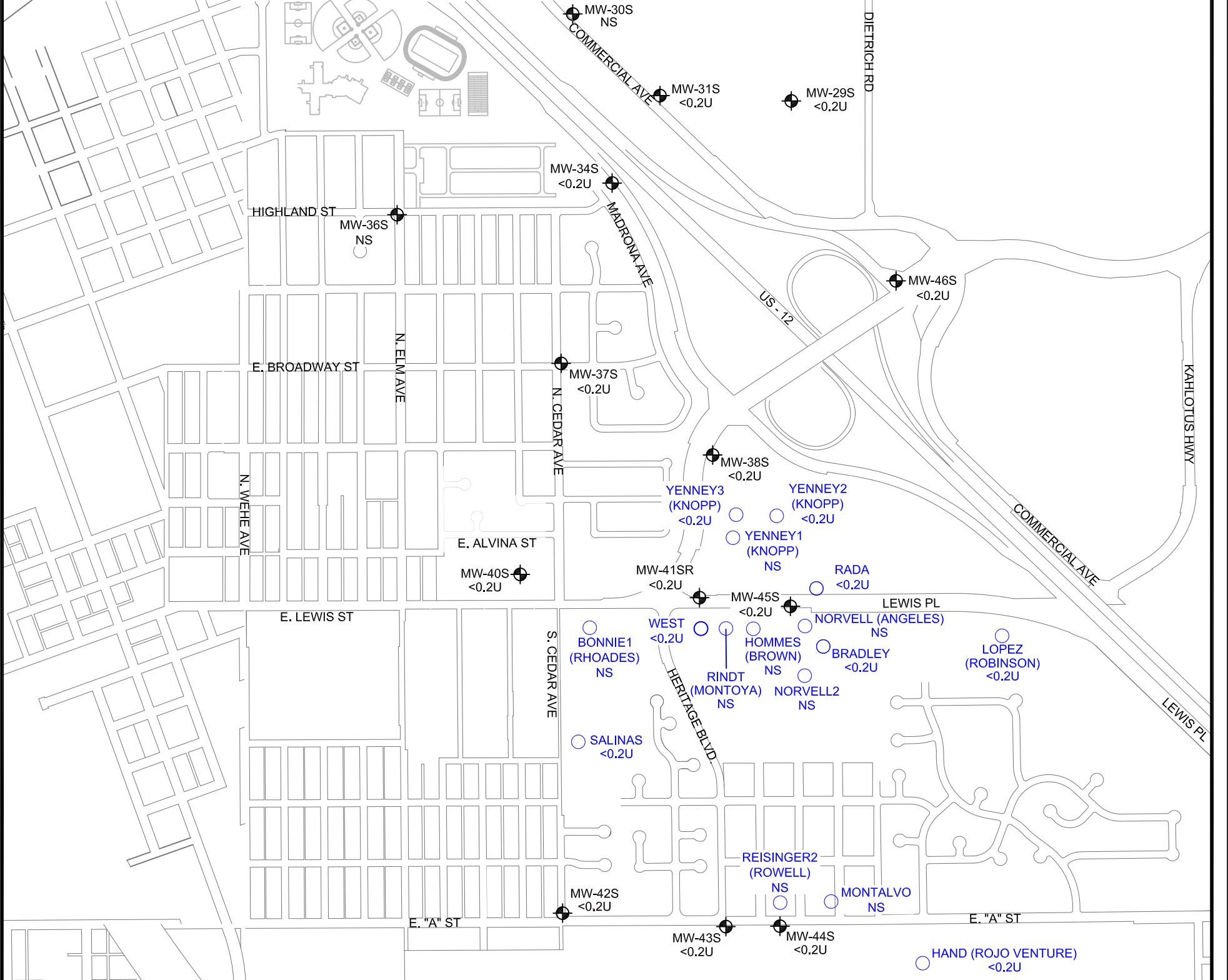
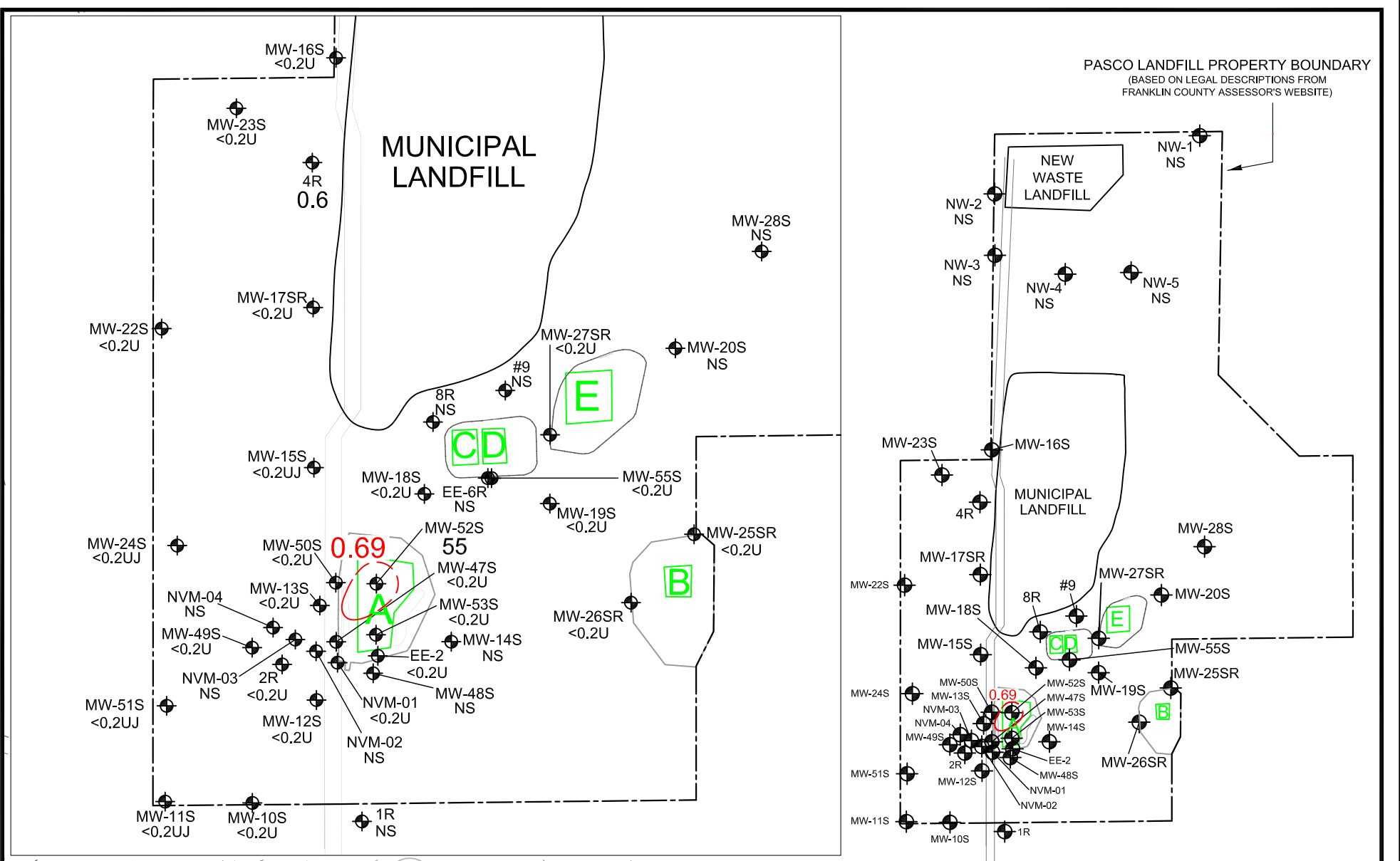
APPROXIMATE SCALE: 1" = 1,000'

TETRACHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 0.69 µg/L
 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED

ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

ISOCONCENTRATION MAP OF TETRACHLOROETHENE IN SHALLOW GROUNDWATER JANUARY 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
10	VPB	MMH	03/05/15



MW-52S 55

 SHALLOW MONITORING WELL

 CONCENTRATION IN GROUNDWATER (µg/L)

 TETRACHLOROETHENE CONCENTRATION CONTOUR

 DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

 RESIDENTIAL WELL (WITH PROPERTY OWNER)

 TETRACHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 0.69 µg/L

 <##>U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT

 NS = NOT SAMPLED

0 250 500 1000

 APPROXIMATE SCALE: 1" = 1,000'

ENVIRONMENTAL PARTNERS INC

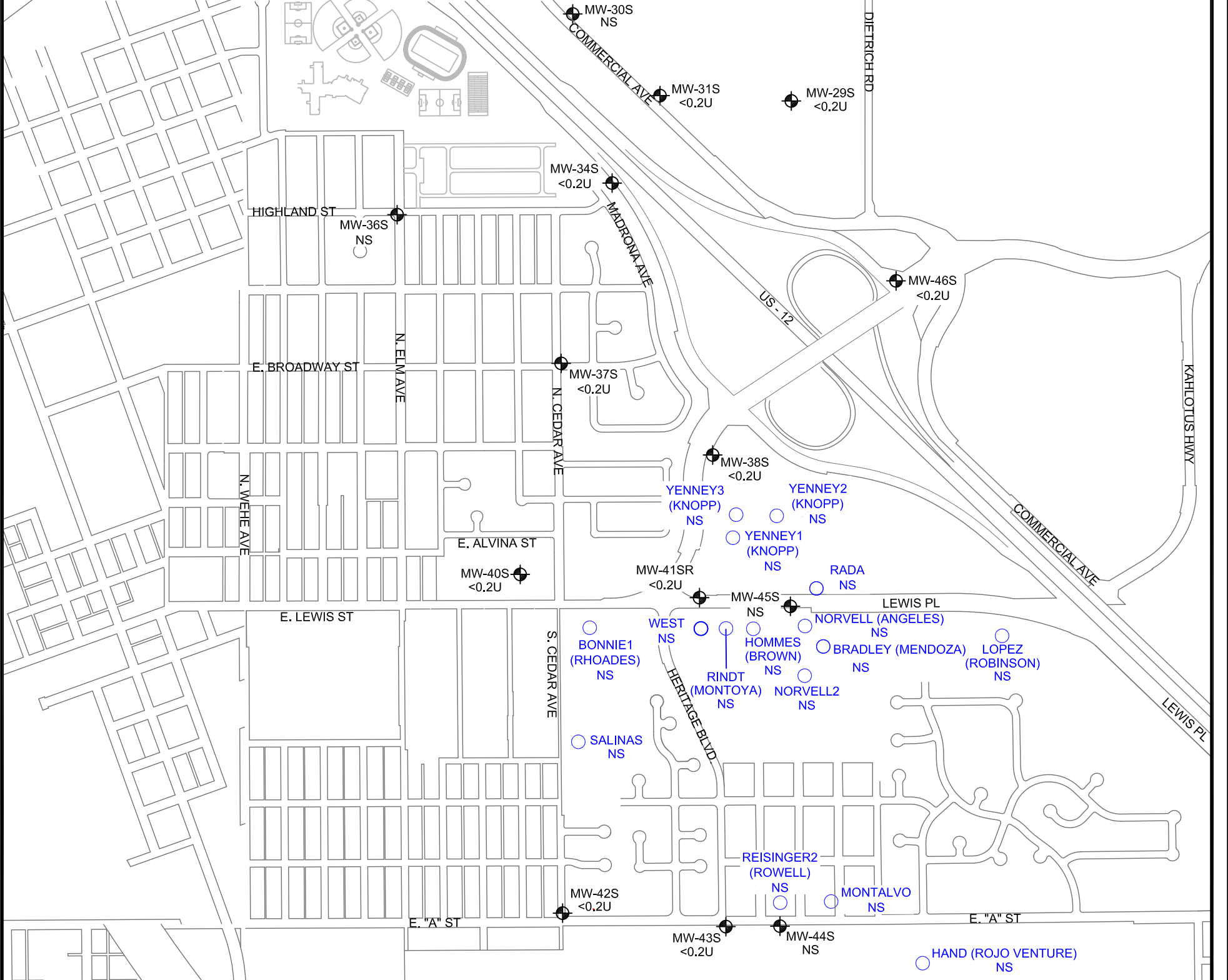
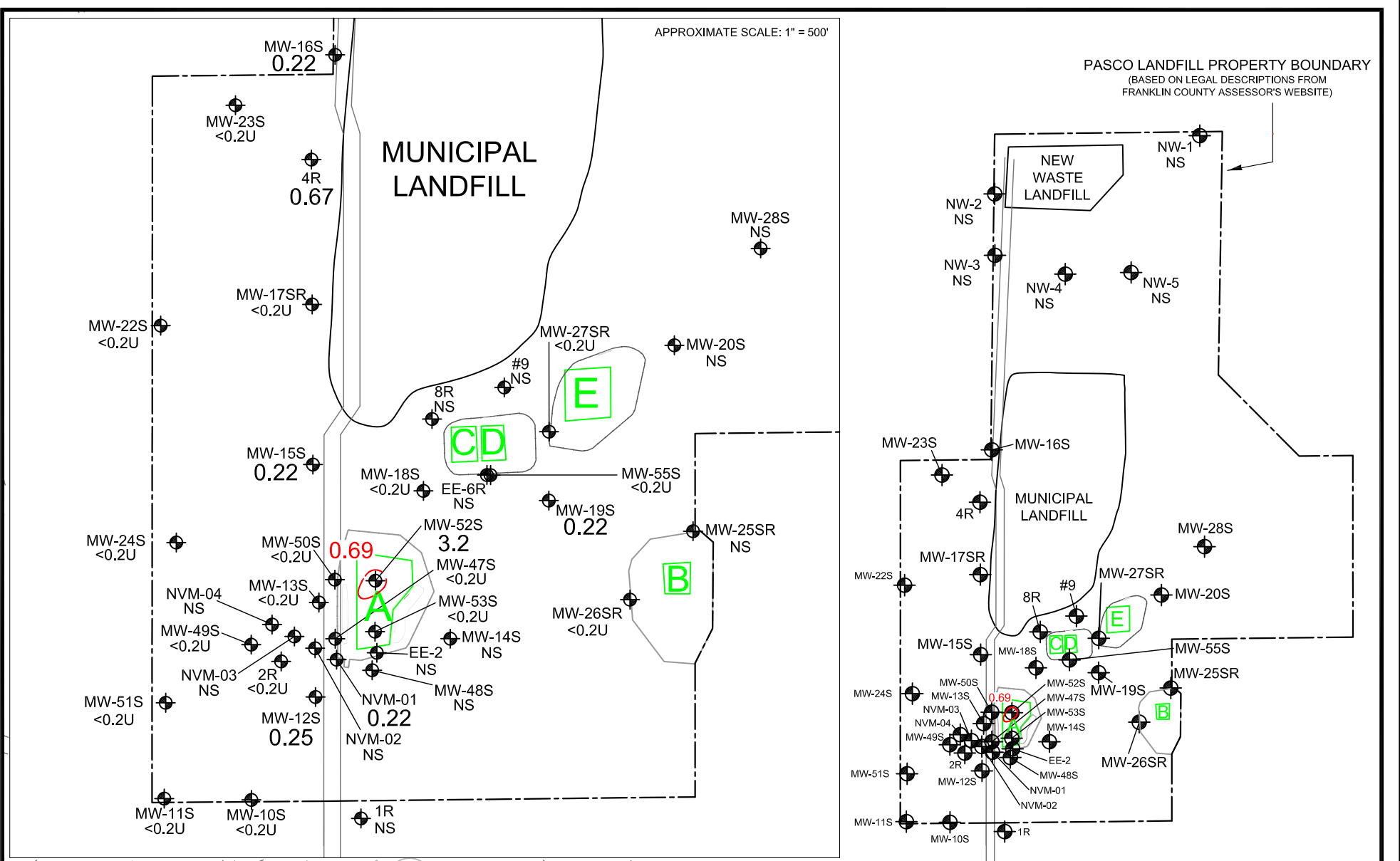
 1180 NW Maple Street, Suite 310

 Issaquah, Washington 98027

ISOCONCENTRATION MAP OF TETRACHLOROETHENE IN SHALLOW GROUNDWATER

 APRIL 2014

PROJECT	03914.2
PREPARED FOR	IWAG GROUP III PASCO LANDFILL
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON
FIGURE	11
DRAWN BY	VPB
REVIEWED BY	MMH
DATE	02/17/15



MW-52S 55

 SHALLOW MONITORING WELL

 CONCENTRATION IN GROUNDWATER (µg/L)

 TETRACHLOROETHENE CONCENTRATION CONTOUR

 DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

 RESIDENTIAL WELL (WITH PROPERTY OWNER)

 TETRACHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 0.69 µg/L

 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT

 NS = NOT SAMPLED

0 250 500 1000

 APPROXIMATE SCALE: 1" = 1,000'

ENVIRONMENTAL PARTNERS INC

 1180 NW Maple Street, Suite 310

 Issaquah, Washington 98027

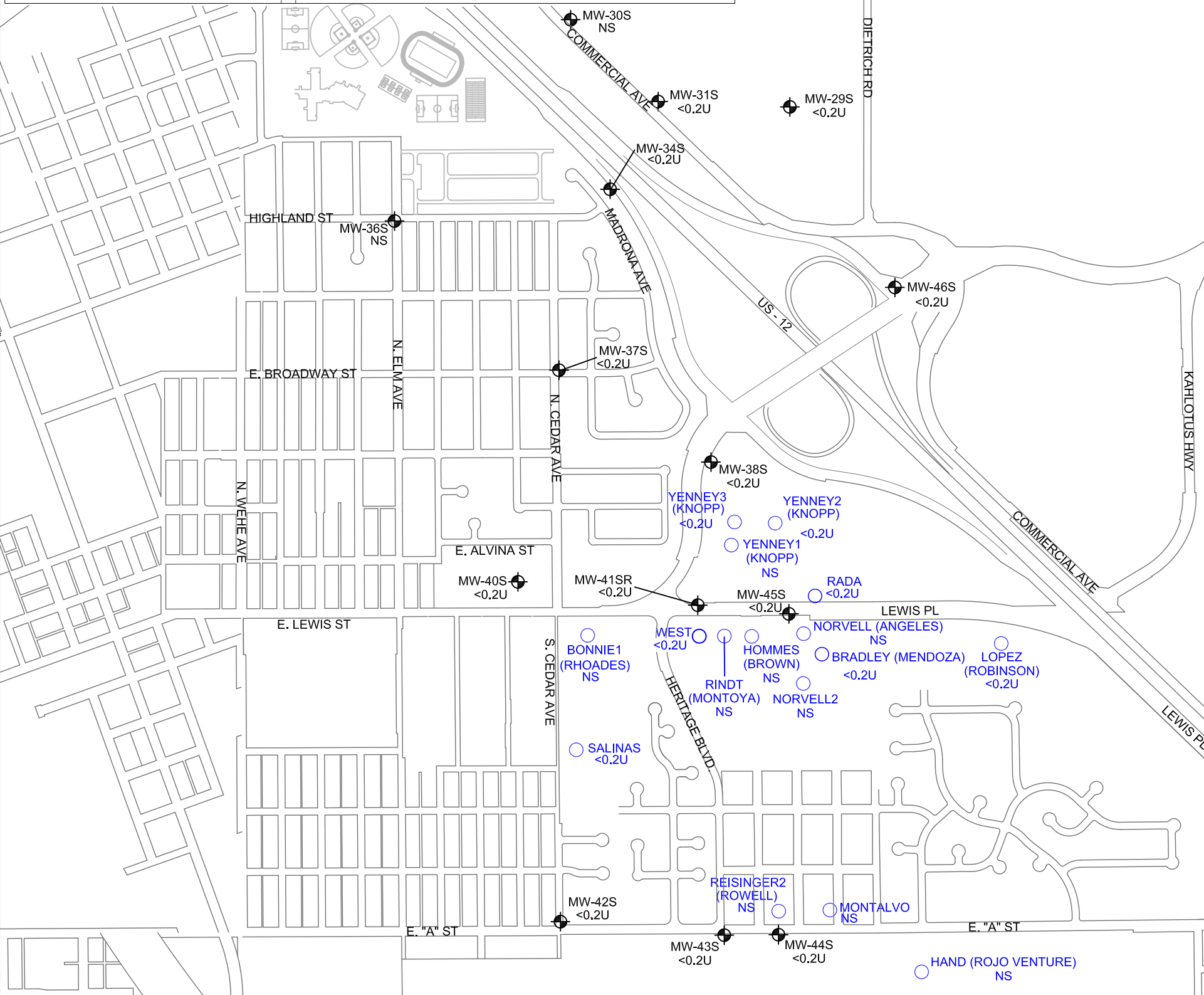
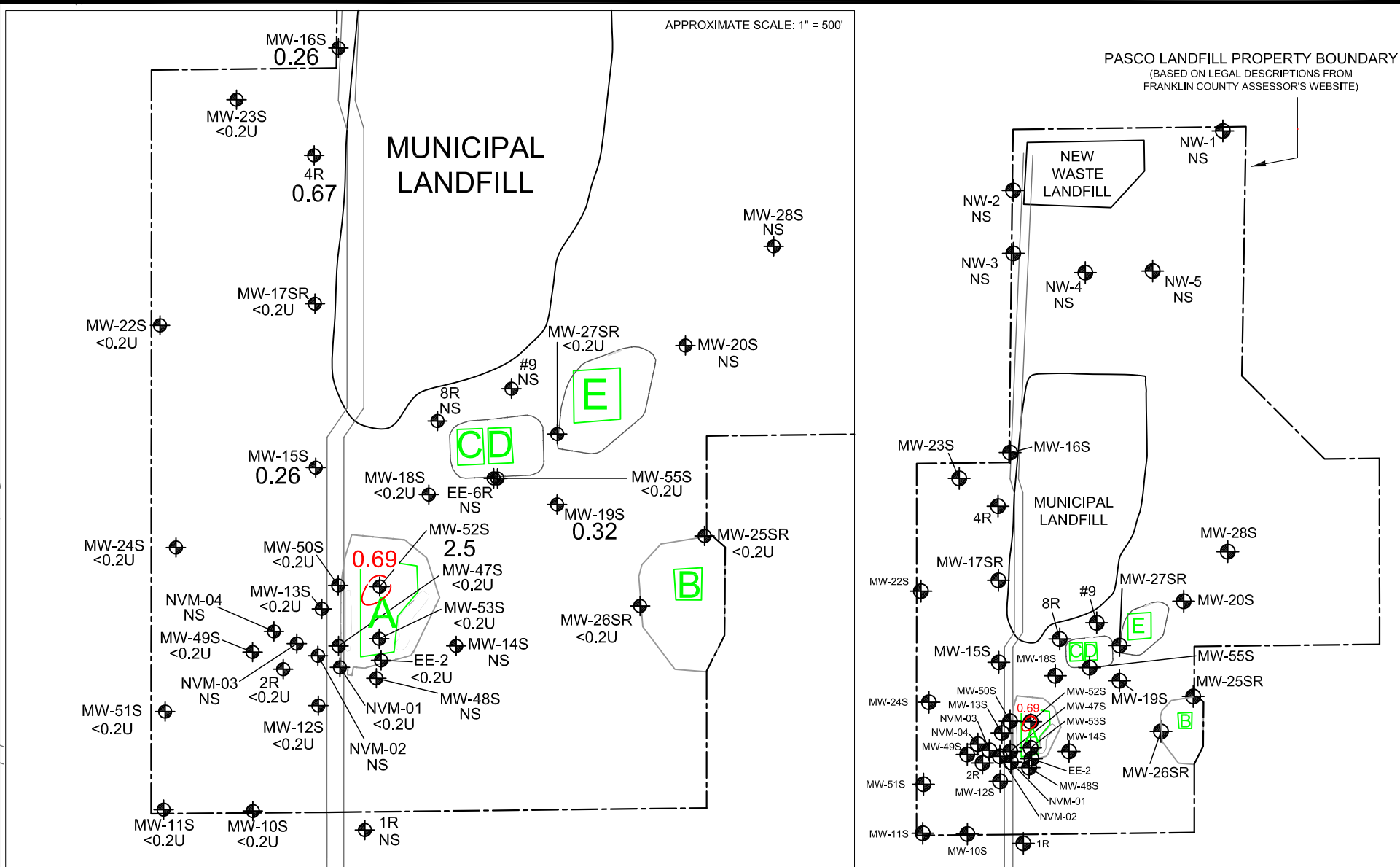
ISOCONCENTRATION MAP OF TETRACHLOROETHENE IN SHALLOW GROUNDWATER

 JULY 2014

PROJECT	03914.2						
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE						
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON						
FIGURE 12	<table border="1"> <tr> <td>DRAWN BY</td> <td>VPB</td> <td>REVIEWED BY</td> <td>MMH</td> <td>DATE</td> <td>02/17/15</td> </tr> </table>	DRAWN BY	VPB	REVIEWED BY	MMH	DATE	02/17/15
DRAWN BY	VPB	REVIEWED BY	MMH	DATE	02/17/15		

APPROXIMATE SCALE: 1" = 500'

PASCO LANDFILL PROPERTY BOUNDARY
(BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)



MW-52S 55

SHALLOW MONITORING WELL
CONCENTRATION IN GROUNDWATER ($\mu\text{g/L}$)

TETRACHLOROETHENE CONCENTRATION CONTOUR
DASHED WHERE INFERRED, QUERRIED WHERE UNCERTAIN

YENNEY1 (KNOPP)

RESIDENTIAL WELL (WITH PROPERTY OWNER)

TETRACHLOROETHENE 2013 DRAFT CLEANUP LEVEL = $0.69 \mu\text{g/L}$

<##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
NS = NOT SAMPLED

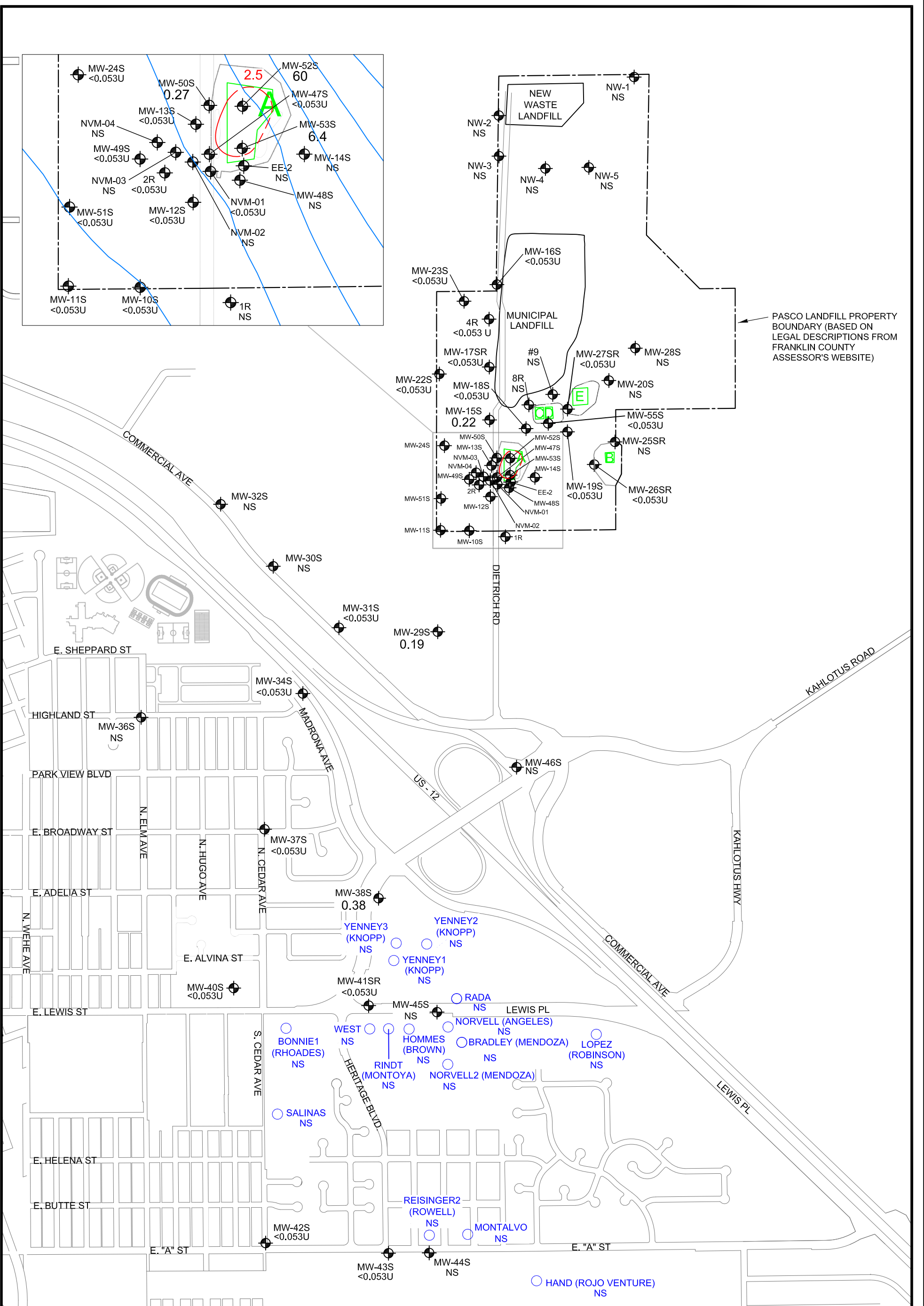
0 250 500 1000

APPROXIMATE SCALE: 1" = 1,000'

ept ENVIRONMENTAL PARTNERS INC
1180 NW Maple Street, Suite 310
Issaquah, Washington 98027

ISOCONCENTRATION MAP OF TETRACHLOROETHENE IN SHALLOW GROUNDWATER OCTOBER 2014

PROJECT	03914.2
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON
FIGURE 13	DRAWN BY VPB REVIEWED BY MMH DATE 03/05/15



PASCO LANDFILL PROPERTY BOUNDARY (BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)

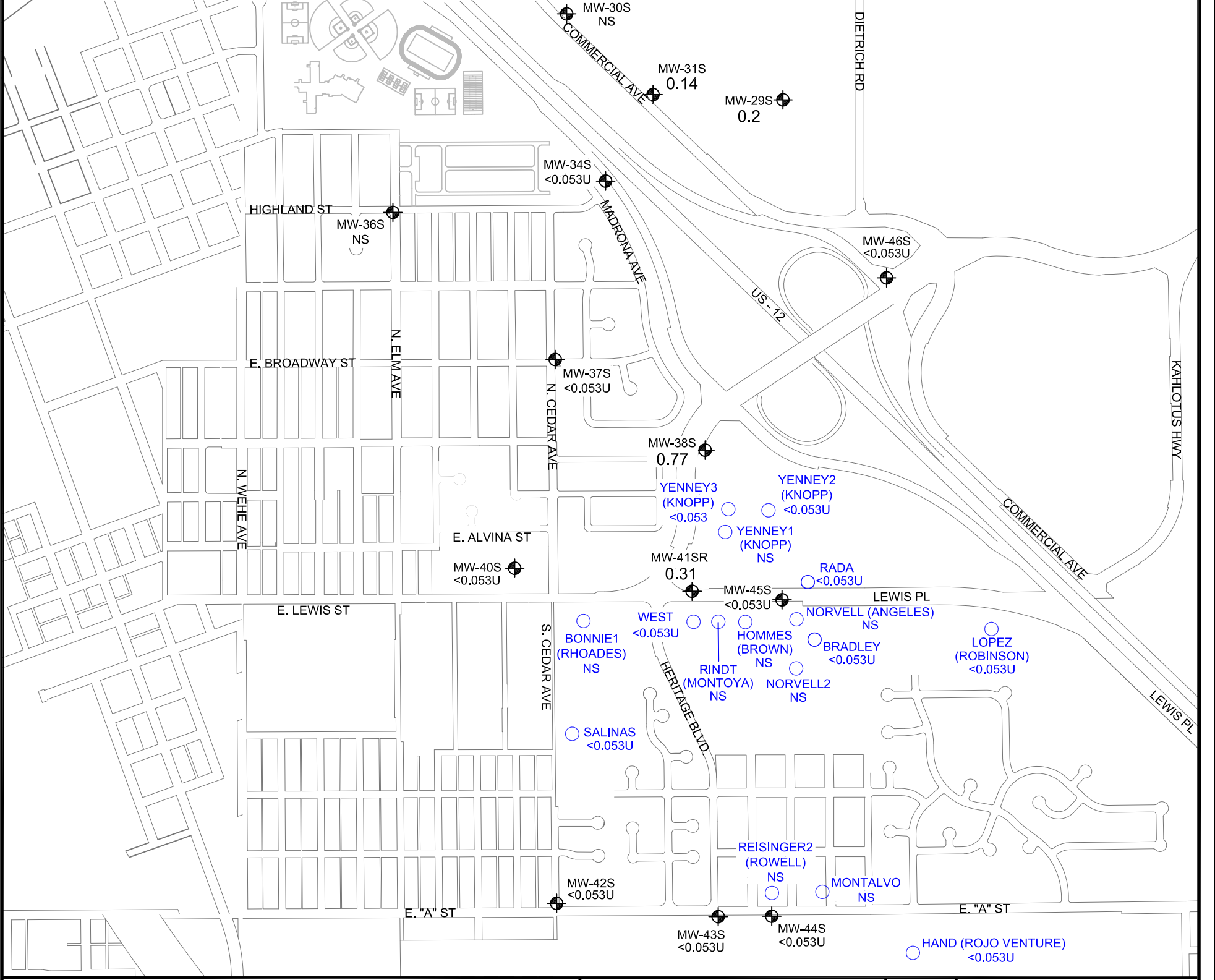
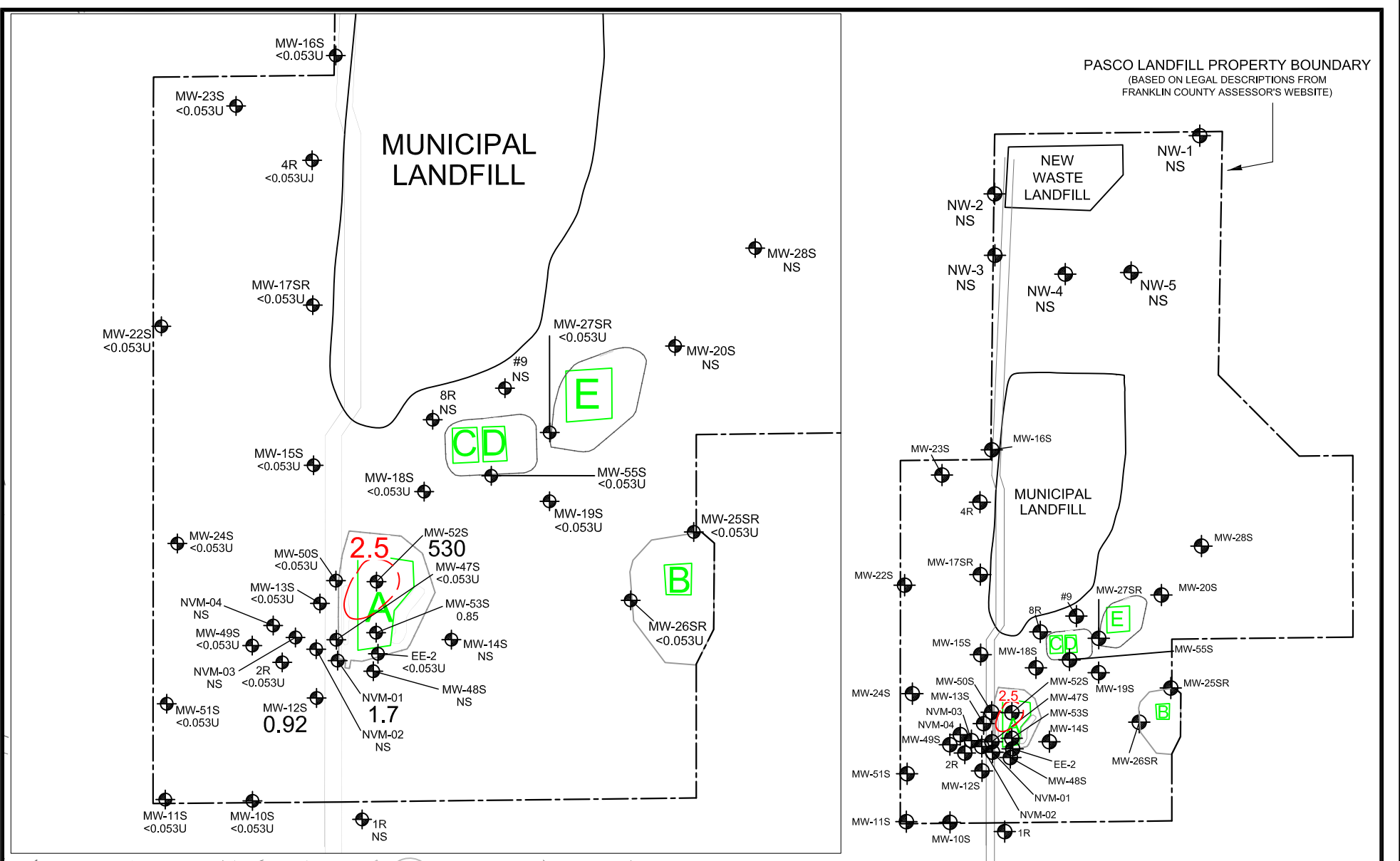
MW-47S 0.08
 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER (µg/L)
 TRICHLOROETHENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED. QUERIED WHERE UNCERTAIN
 YENNEY1 (KNOPP) ○ RESIDENTIAL WELL (WITH PROPERTY OWNER)
 TRICHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 2.5 µg/L
 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED

0 250 500 1000
 APPROXIMATE SCALE: 1" = 1,000'

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ISOCONCENTRATION MAP OF
 TRICHLOROETHENE IN
 SHALLOW GROUNDWATER
 JANUARY 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
14	VPB	MMH	02/17/15



MW-29S 0.2

SHALLOW MONITORING WELL
CONCENTRATION IN GROUNDWATER (µg/L)

TRICHLOROETHENE CONCENTRATION CONTOUR
DASHED WHERE INFERRED, QUERRIED WHERE UNCERTAIN

YENNEY1 (KNOPP)

RESIDENTIAL WELL (WITH PROPERTY OWNER)

TRICHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 2.5 µg/L

<##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT

NS = NOT SAMPLED

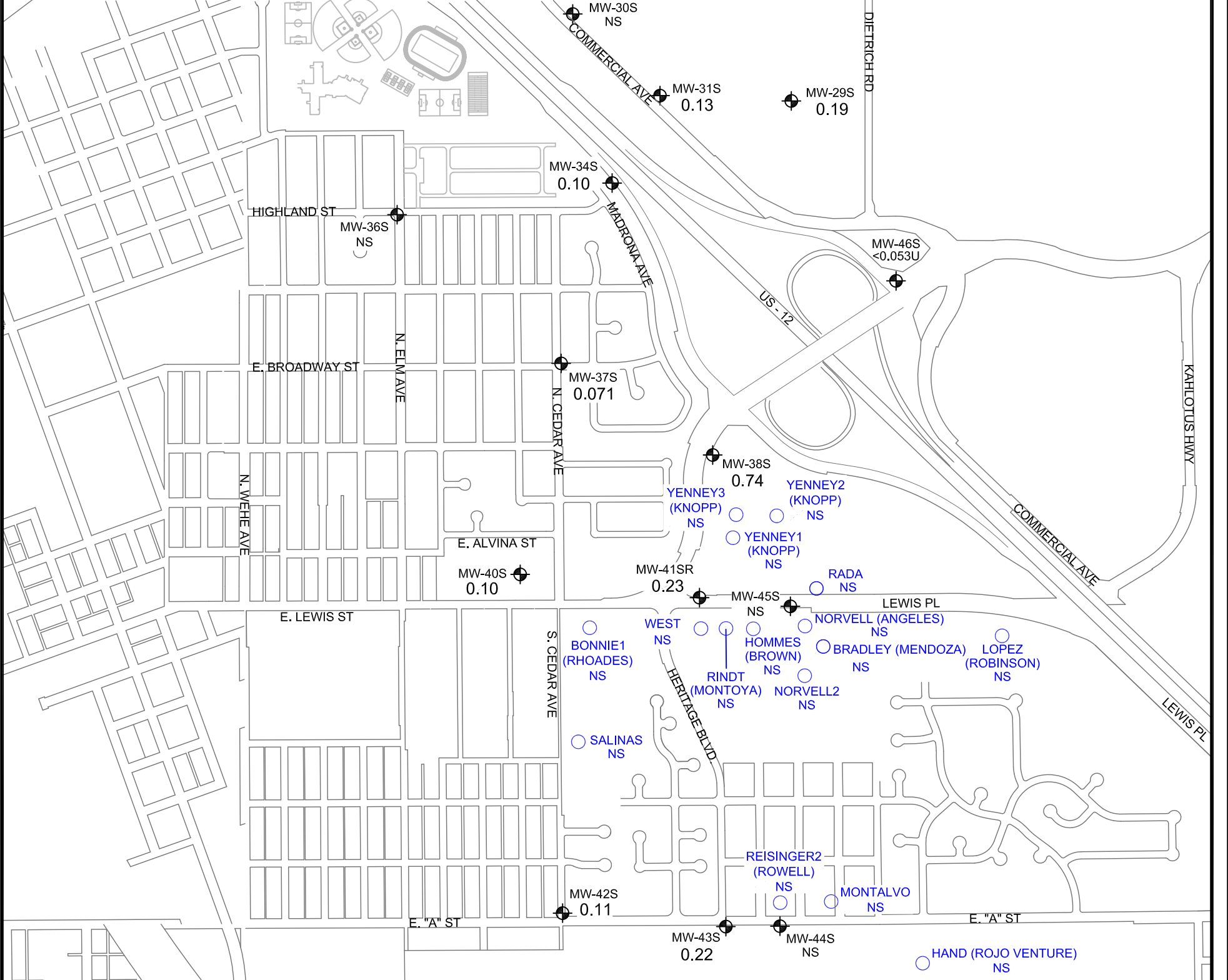
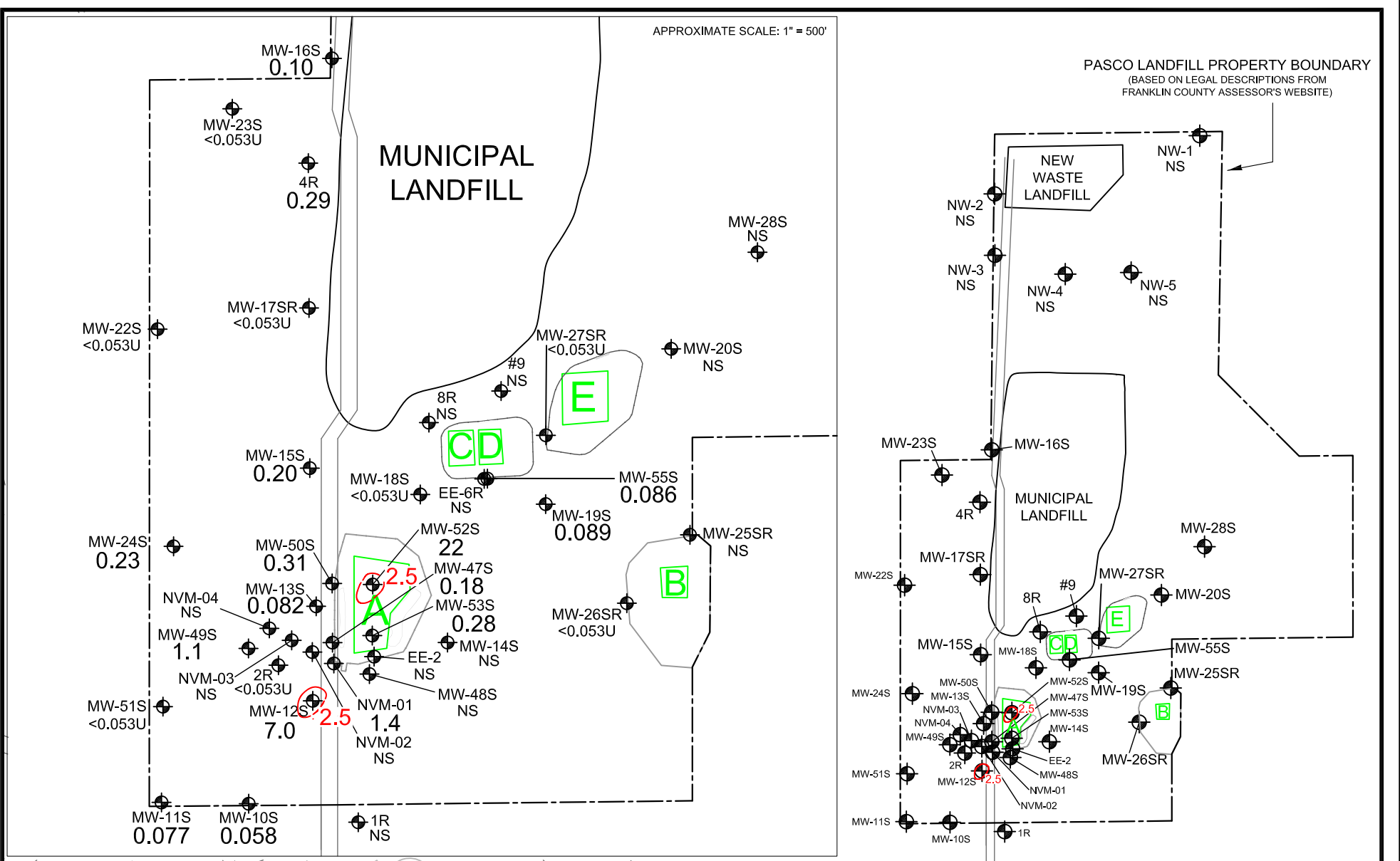
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APPROXIMATE SCALE: 1" = 1,000'

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ISOCONCENTRATION MAP OF TRICHLOROETHENE IN SHALLOW GROUNDWATER
APRIL 2014

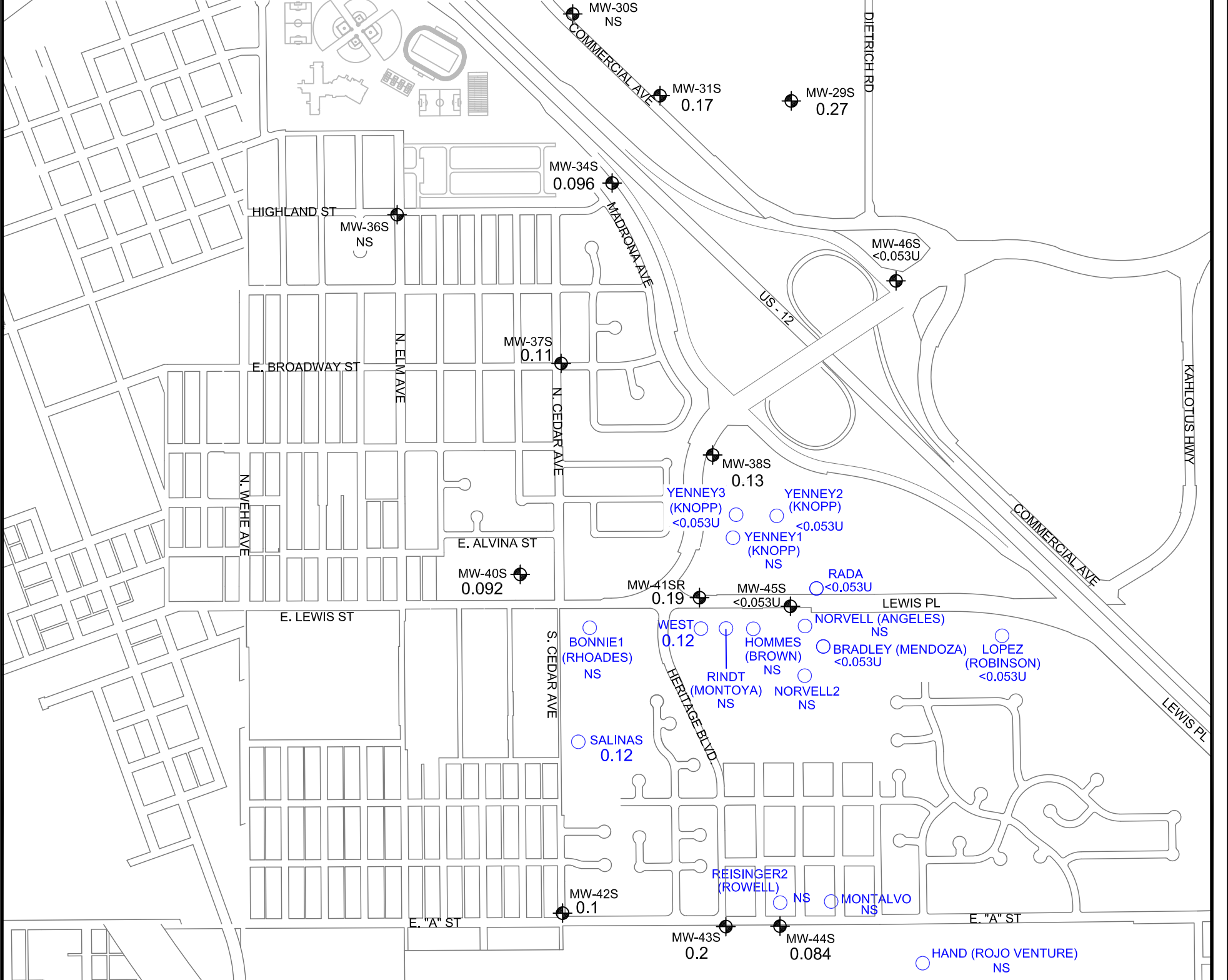
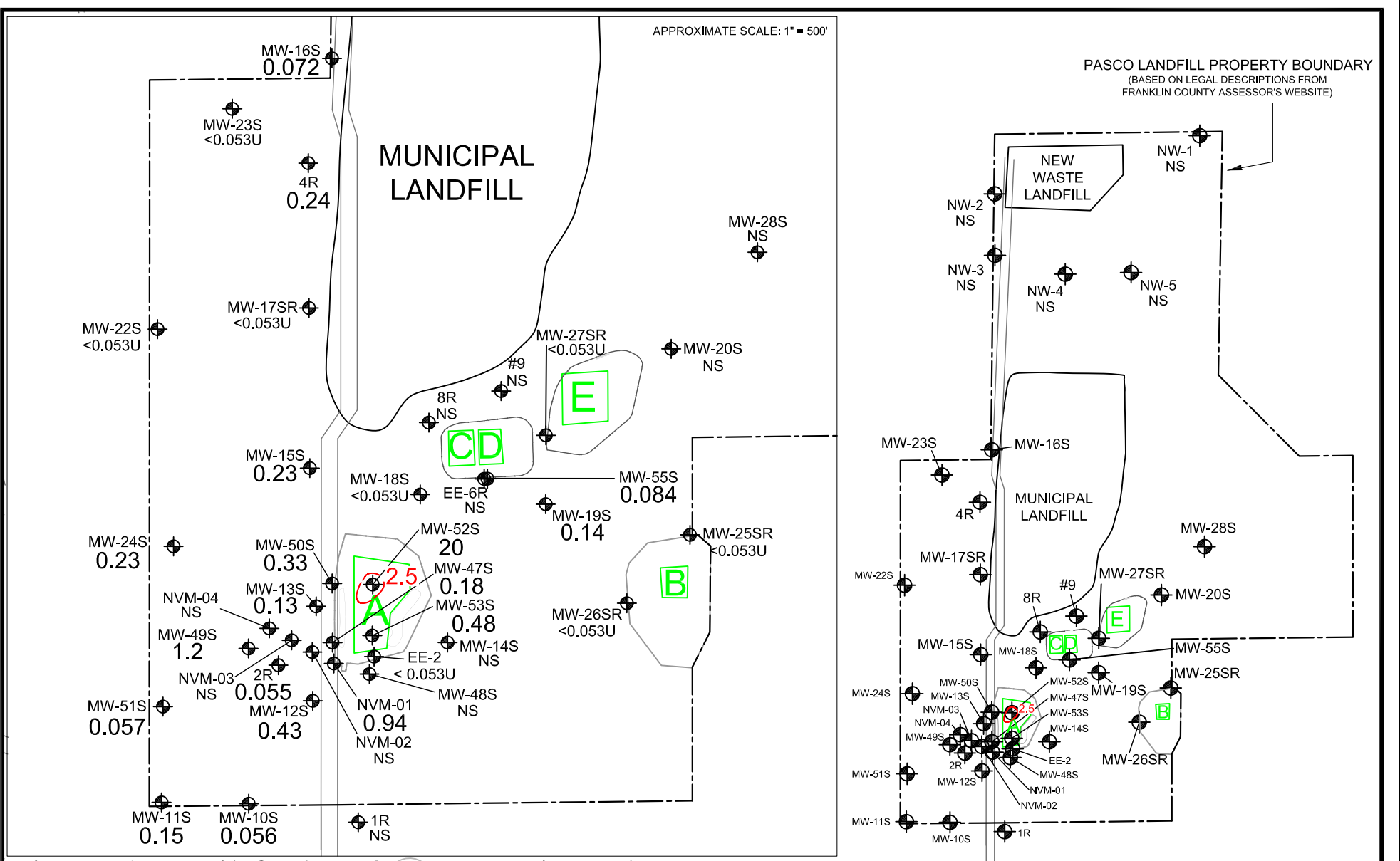
PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
15	VPB	MMH	02/17/15



MW-29S 0.19
 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER ($\mu\text{g/L}$)
 TRICHLOROETHENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN
 YENNEY1 (KNOPP)
 RESIDENTIAL WELL (WITH PROPERTY OWNER)
 TRICHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 2.5 $\mu\text{g/L}$
 $\#\#\text{U}$ = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED
 APPROXIMATE SCALE: 1" = 1,000'

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ISOCONCENTRATION MAP OF TRICHLOROETHENE IN SHALLOW GROUNDWATER JULY 2014

PROJECT	03914.2
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON
FIGURE 16	DRAWN BY VPB REVIEWED BY MMH DATE 02/17/15



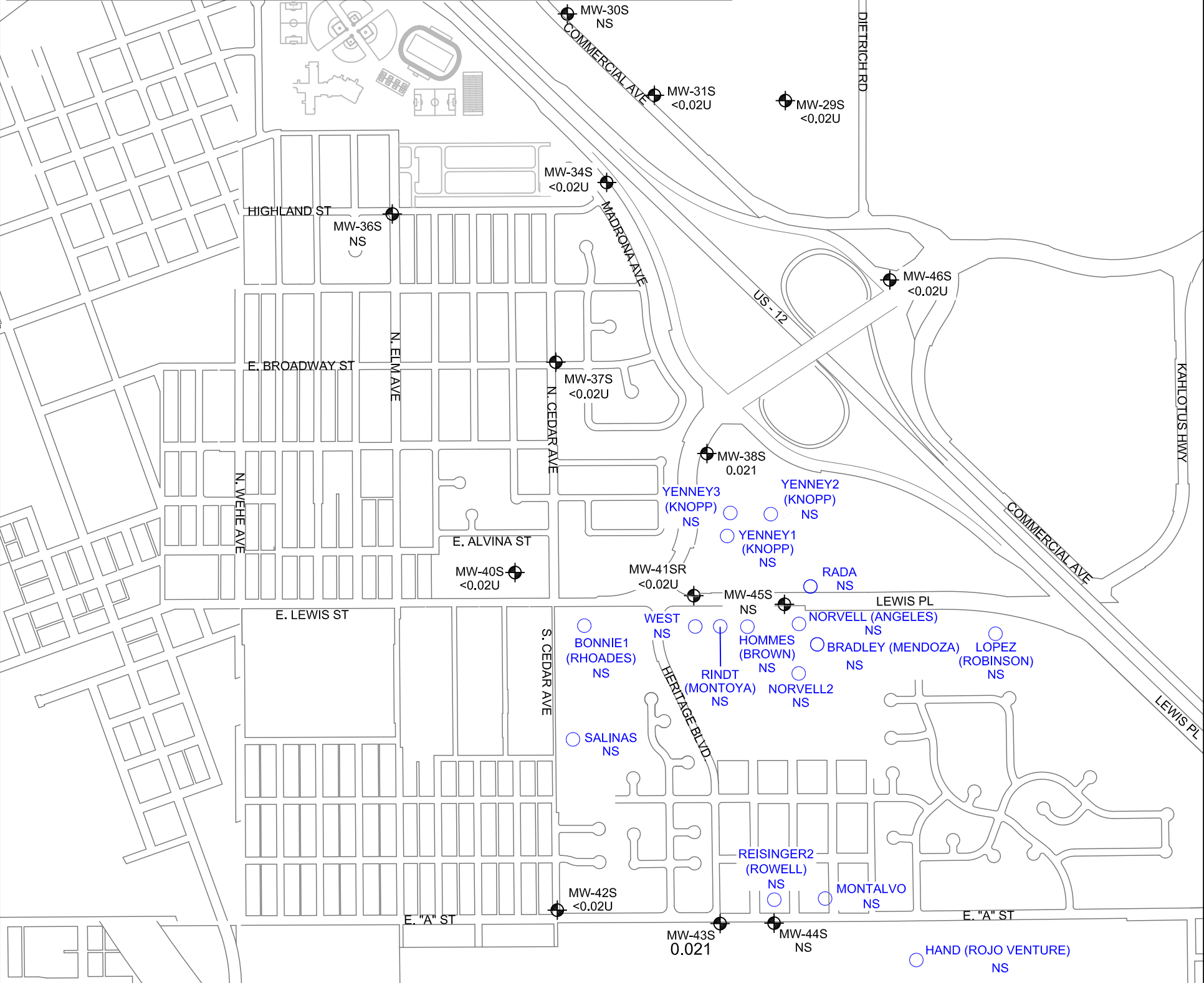
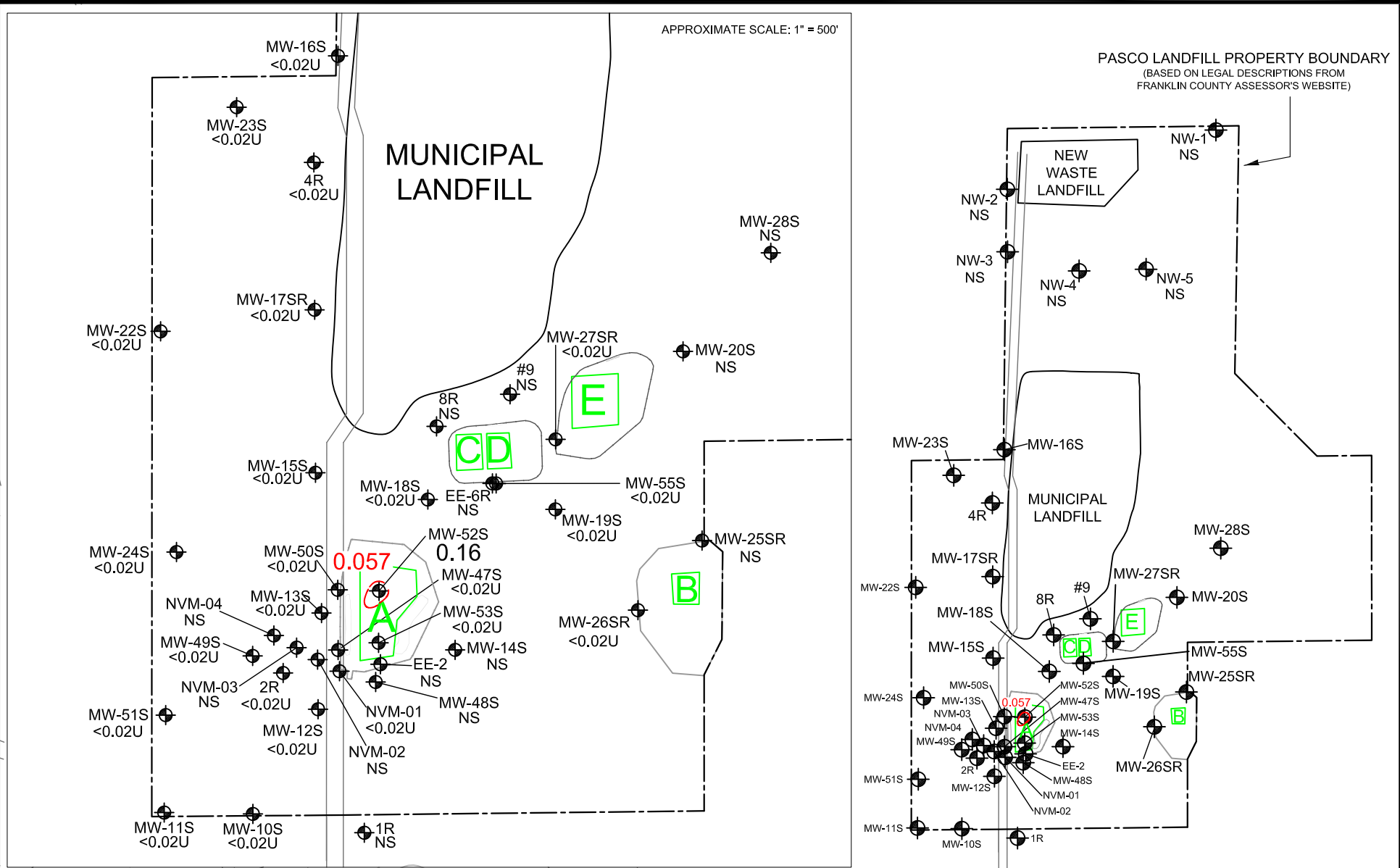
MW-29S 0.19 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER ($\mu\text{g/L}$)
 TRICHLOROETHENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED, QUERRIED WHERE UNCERTAIN
 YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)
 TRICHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 2.5 $\mu\text{g/L}$
 $\#\#\text{U}$ = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED

0 250 500 1000
 APPROXIMATE SCALE: 1" = 1,000'

ept ENVIRONMENTAL PARTNERS INC
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 Issaquah, Washington 98027

ISOCONCENTRATION MAP OF TRICHLOROETHENE IN SHALLOW GROUNDWATER OCTOBER 2014

PROJECT	03914.2
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON
FIGURE 17	DRAWN BY VPB REVIEWED BY MMH DATE 02/22/15



MW-52S 0.16

 1,1-DICHLOROETHENE CONCENTRATION CONTOUR

 DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

 RESIDENTIAL WELL (WITH PROPERTY OWNER)

 1,1-DICHLOROETHENE 2013 DRAFT CLEANUP LEVEL = 0.057 µg/L

 <##>U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT

 NS = NOT SAMPLED

0 250 500 1000

 APPROXIMATE SCALE: 1" = 1,000'

ENVIRONMENTAL PARTNERS INC

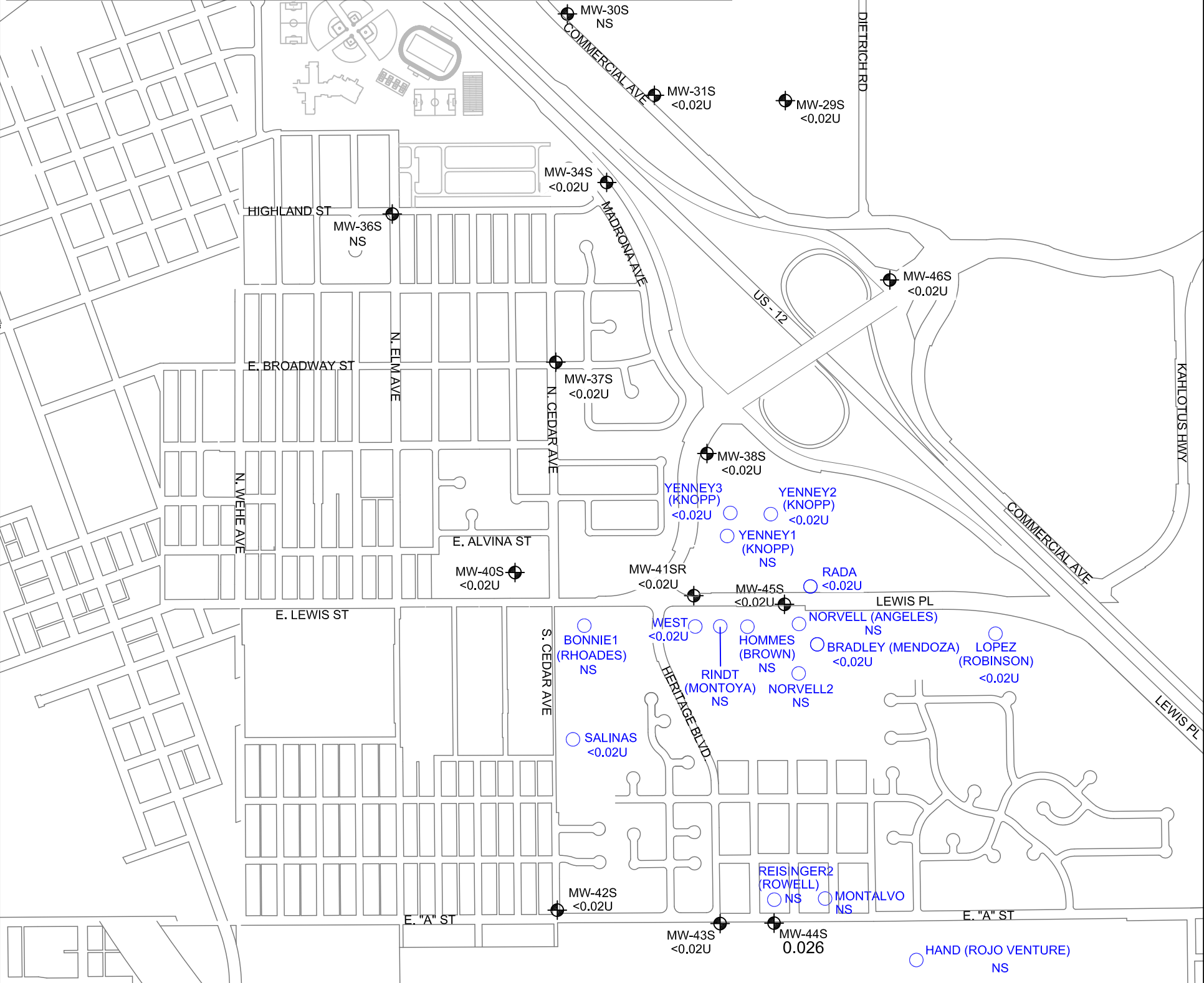
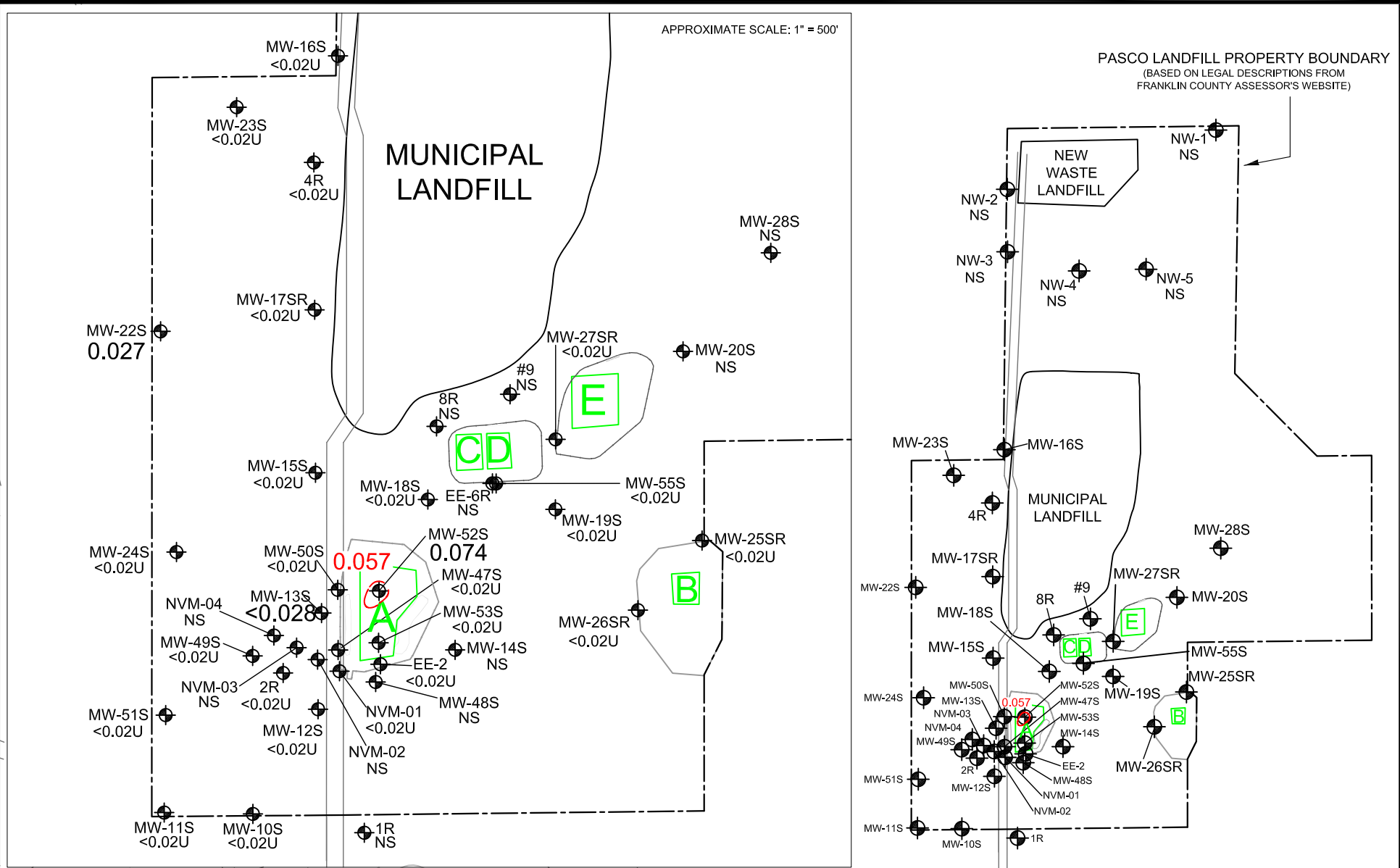
 1180 NW Maple Street, Suite 310

 Issaquah, Washington 98027

ISOCONCENTRATION MAP OF 1,1-DICHLOROETHENE IN SHALLOW GROUNDWATER

 JULY 2014

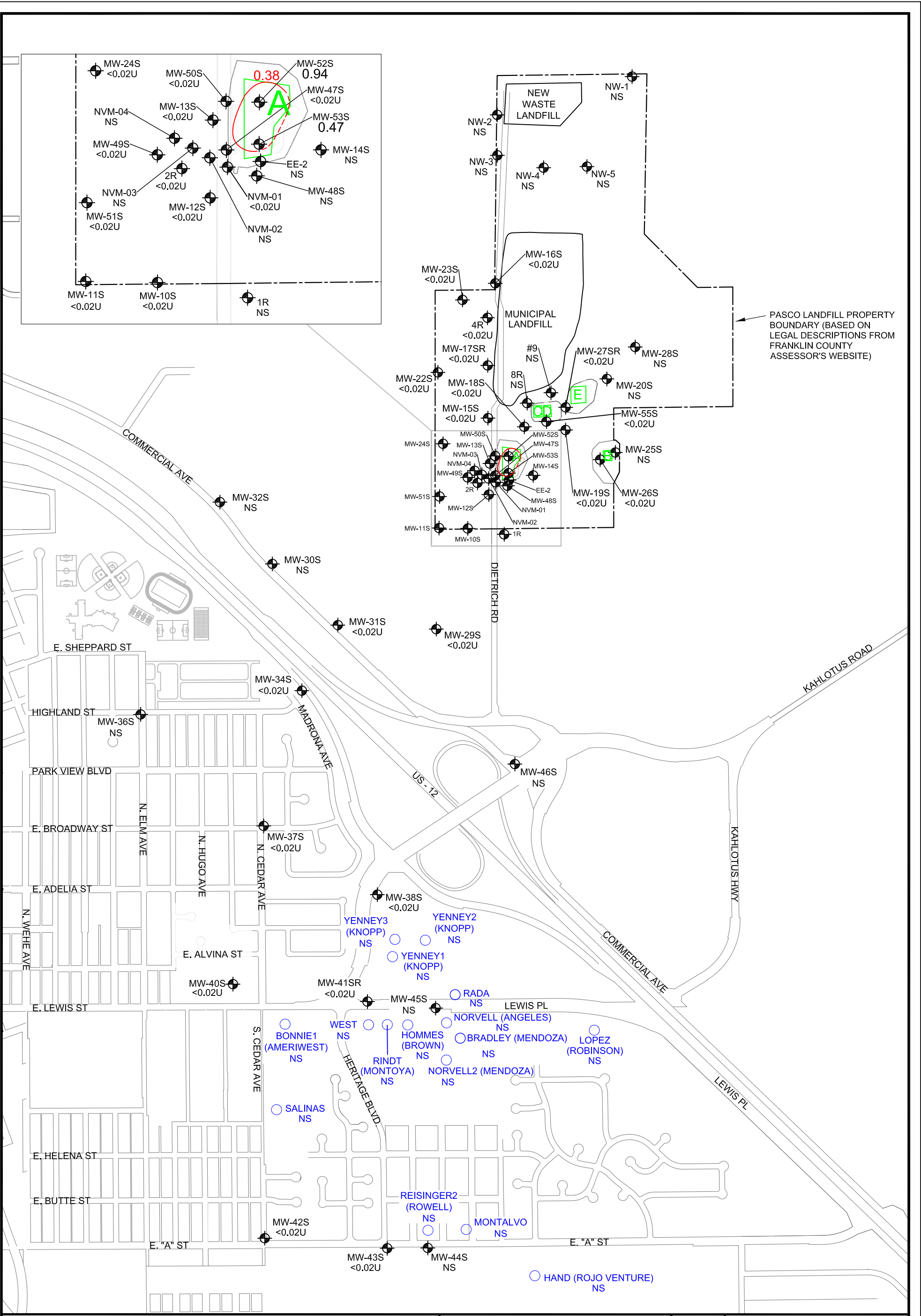
PROJECT	03914.2
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON
FIGURE 18	DRAWN BY VPB REVIEWED BY MMH DATE 02/17/15



MW-52S 0.16
 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER ($\mu\text{g/L}$)
 1,1-DICHLOROETHENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN
 YENNEY1 (KNOPP)
 RESIDENTIAL WELL (WITH PROPERTY OWNER)
 1,1-DICHLOROETHENE 2013 DRAFT CLEANUP LEVEL = $0.057 \mu\text{g/L}$
 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED
 APPROXIMATE SCALE: 1" = 1,000'

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 Issaquah, Washington 98027
ISOCONCENTRATION MAP OF 1,1-DICHLOROETHENE IN SHALLOW GROUNDWATER OCTOBER 2014

PROJECT	03914.2
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON
FIGURE 19	DRAWN BY VPB REVIEWED BY MMH DATE 02/25/15



MW-47S 0.08 SHALLOW MONITORING WELL CONCENTRATION IN GROUND WATER (ug/L)

 YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)

 1,2-DICHLOROETHANE CONCENTRATION CONTOUR DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT

 1,2-DICHLOROETHANE DRAFT CLEANUP LEVEL = 0.38 ug/L

 NS = NOT SAMPLED

ENVIRONMENTAL PARTNERS INC

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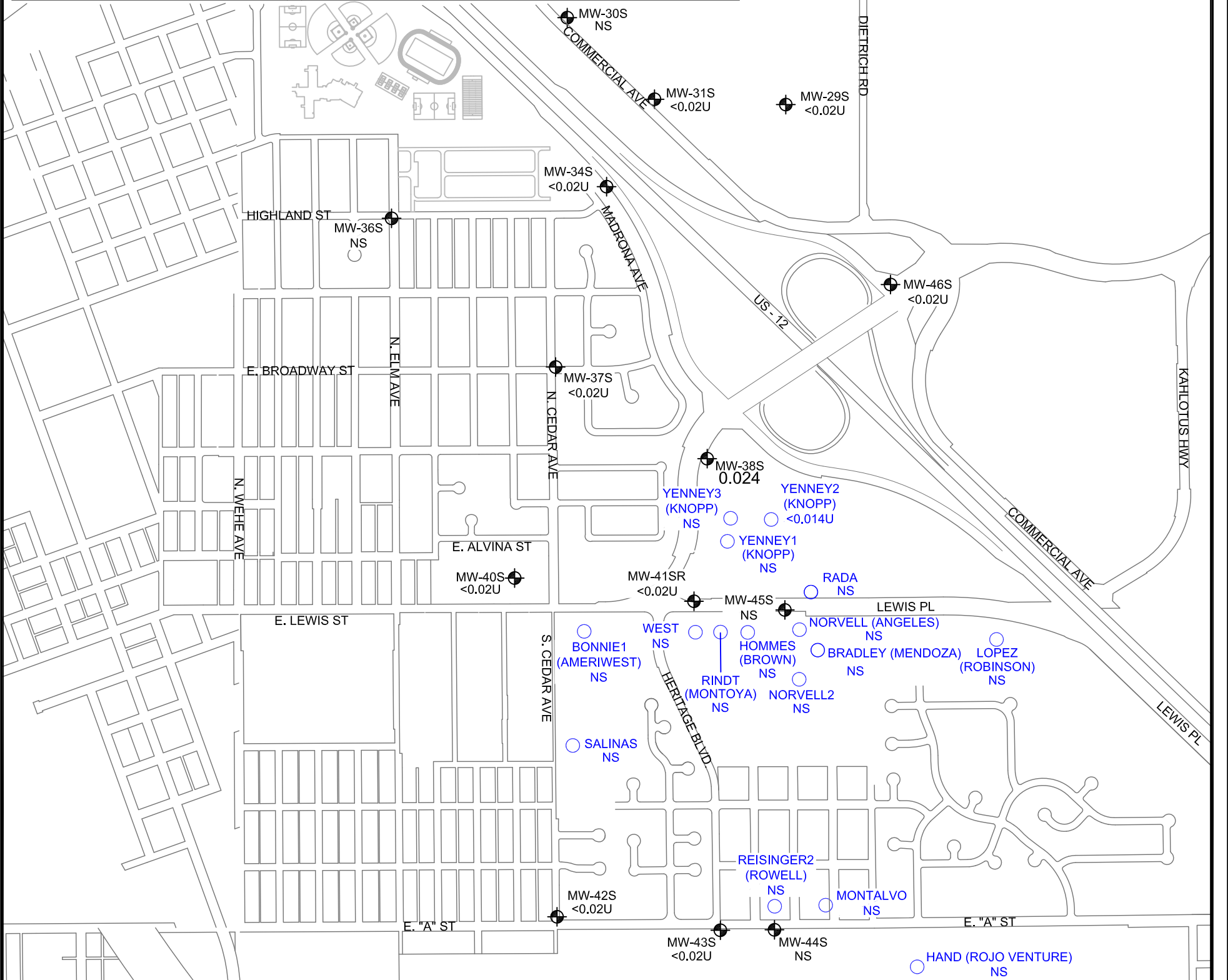
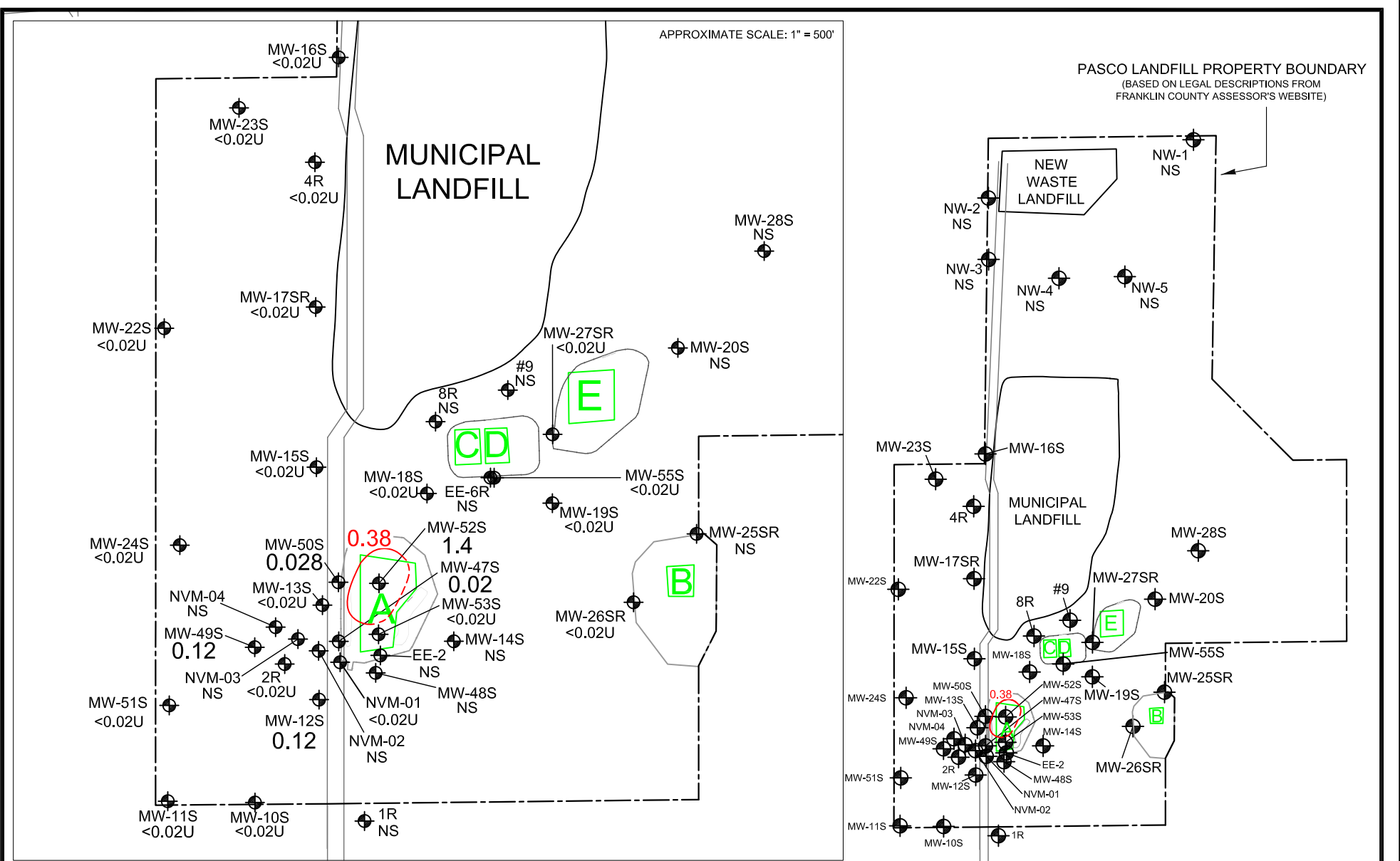
 Issaquah, Washington 98027


ISOCONCENTRATION MAP OF 1,2-DICHLOROETHANE IN SHALLOW GROUND WATER JANUARY 2014


PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE 20	DRAWN BY VPB	REVIEWED BY MMH	DATE 03/10/14

APPROXIMATE SCALE: 1" = 500'

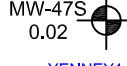
PASCO LANDFILL PROPERTY BOUNDARY
(BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)










 APPROXIMATE SCALE: 1" = 1,000'

 MW-47S 0.02 SHALLOW MONITORING WELL CONCENTRATION IN GROUND WATER (ug/L)

 YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)

 0.38 1,2 DICHLOROETHANE CONCENTRATION CONTOUR DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

<##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 1,2-DICHLOROETHANE CLEANUP LEVEL = 0.38 ug/L
 NS = NOT SAMPLED

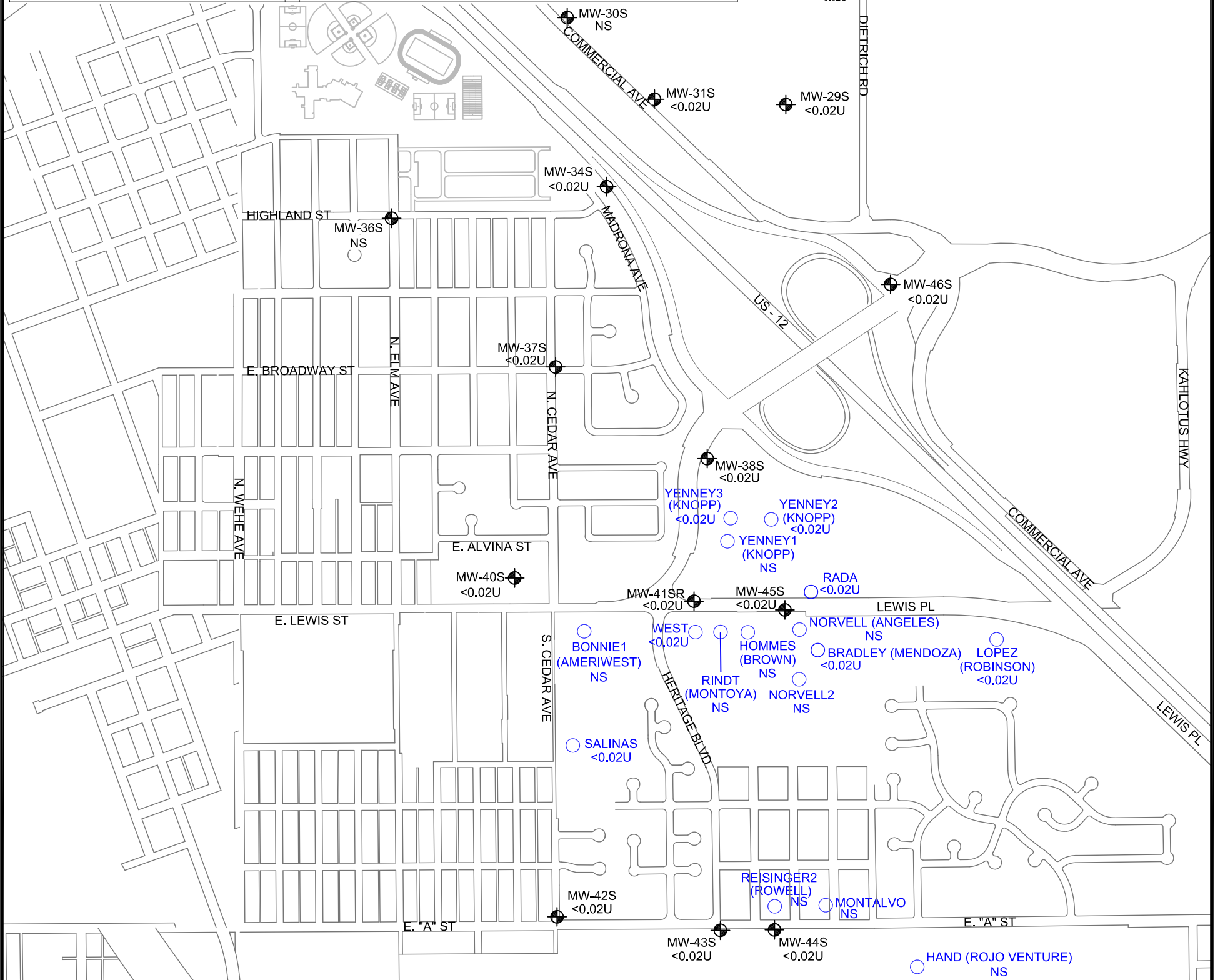
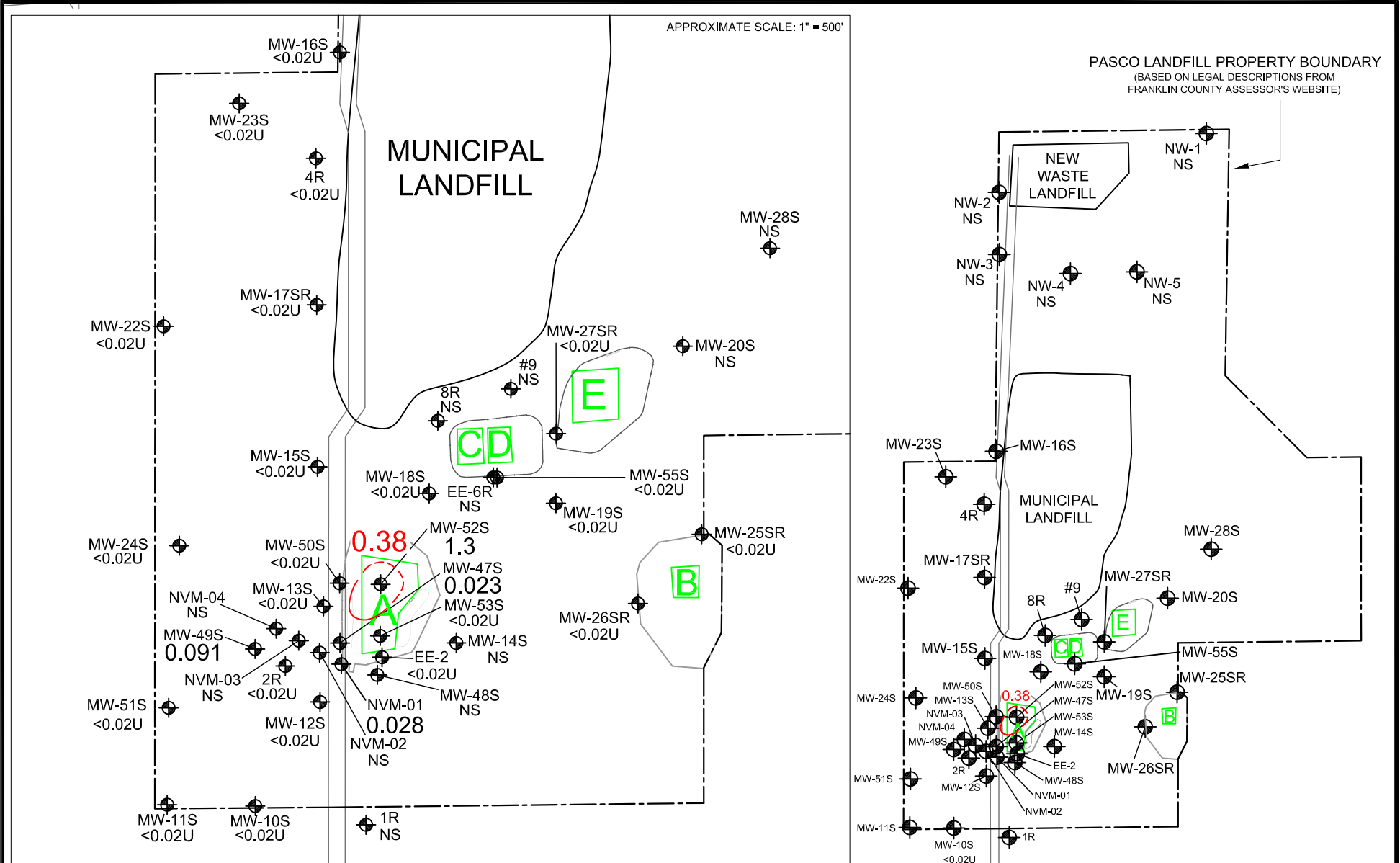
 **ENVIRONMENTAL PARTNERS INC**
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

ISOCONCENTRATION MAP OF 1,2-DICHLOROETHANE IN SHALLOW GROUNDWATER JULY 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE 21	DRAWN BY VPB	REVIEWED BY MMH	DATE 02/17/15

APPROXIMATE SCALE: 1" = 500'

PASCO LANDFILL PROPERTY BOUNDARY
(BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)



MW-47S 0.02
SHALLOW MONITORING WELL
CONCENTRATION IN GROUND WATER (ug/L)

YENNEY1 (KNOPP) ○
RESIDENTIAL WELL (WITH PROPERTY OWNER)

0.38
1,2 DICHLOROETHANE CONCENTRATION CONTOUR
DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

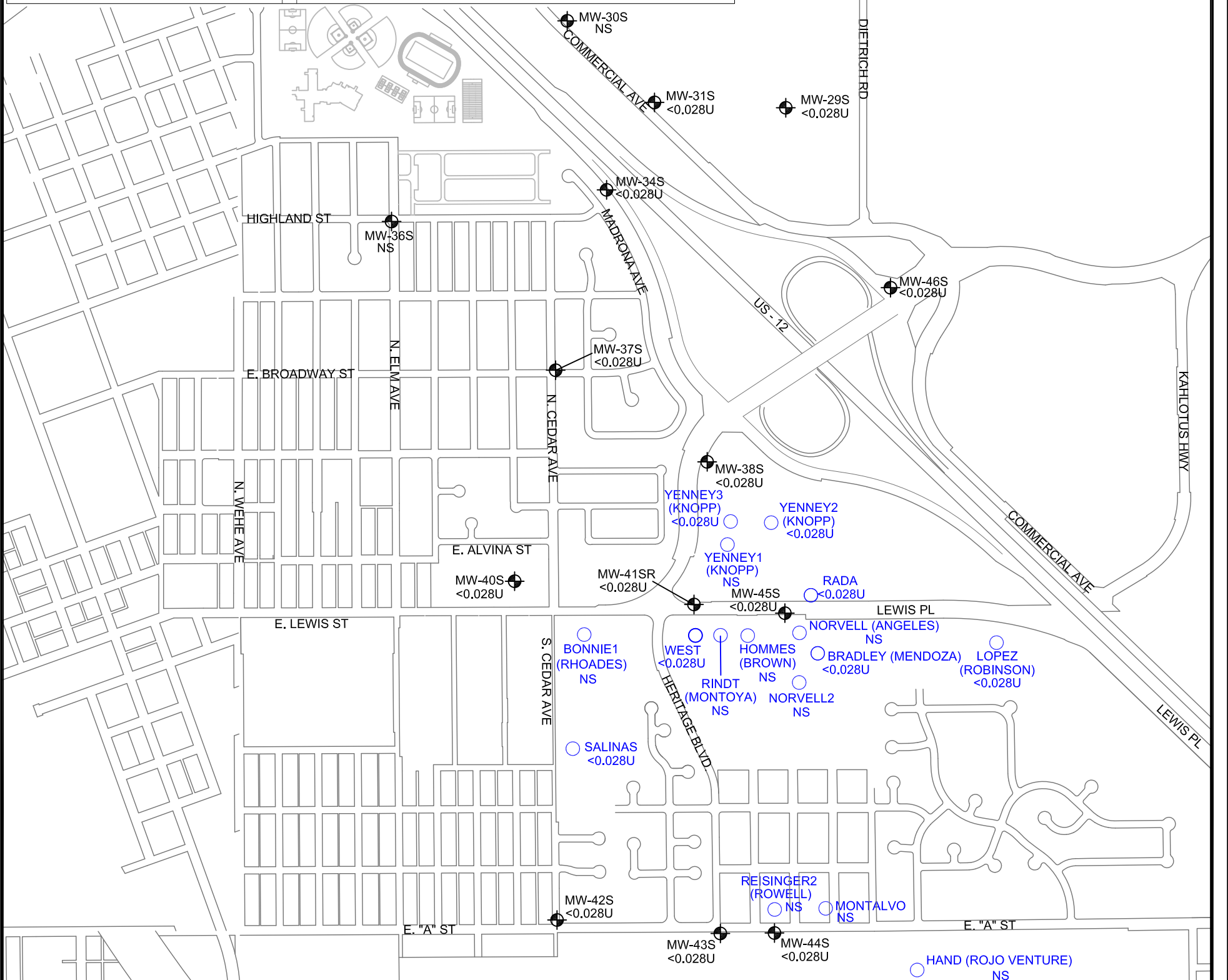
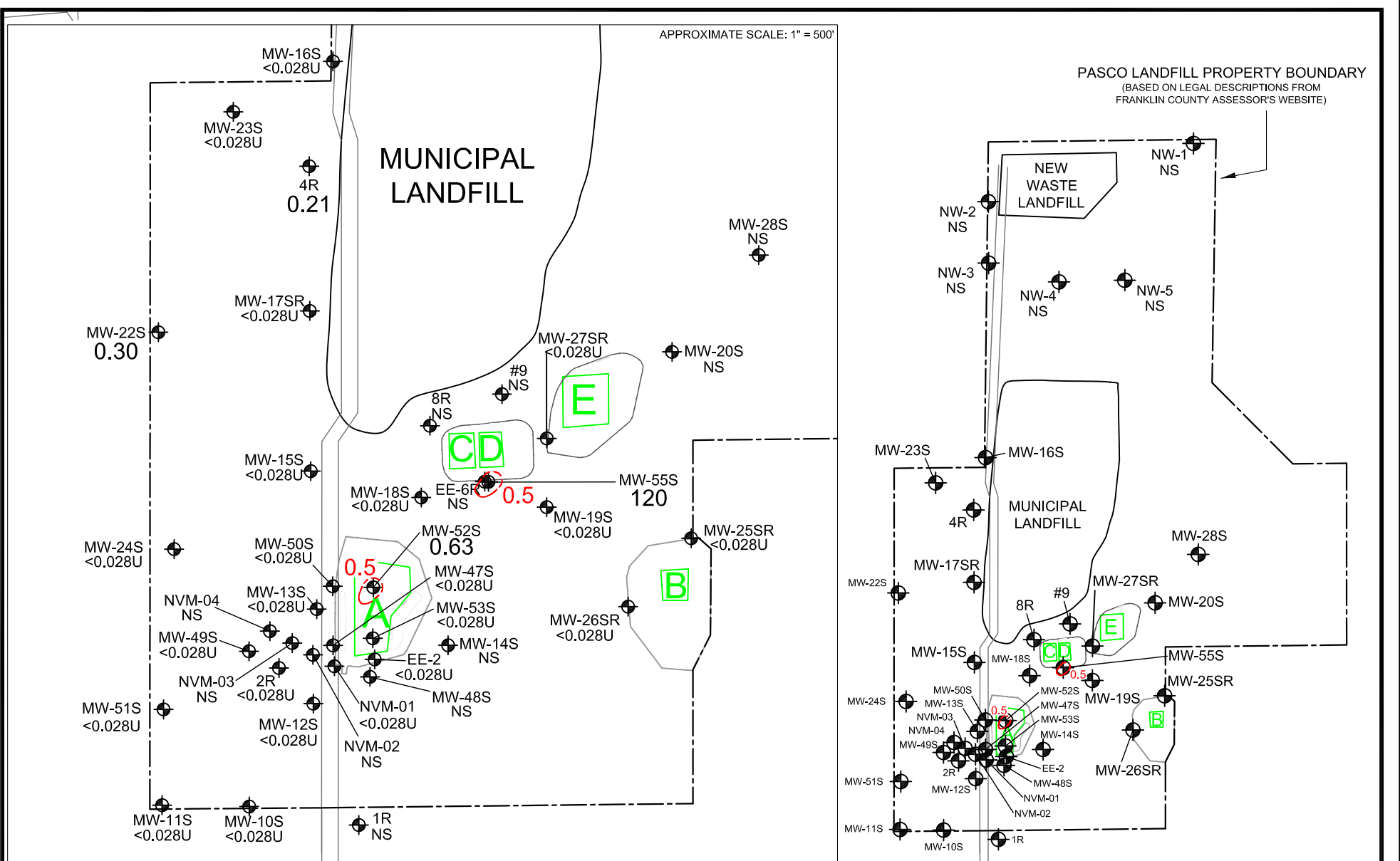
<##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
1,2-DICHLOROETHANE CLEANUP LEVEL = 0.38 ug/L
NS = NOT SAMPLED

0 250 500 1000
APPROXIMATE SCALE: 1" = 1,000'

epl ENVIRONMENTAL PARTNERS INC
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Issaquah, Washington 98027

**ISOCONCENTRATION MAP OF
1,2-DICHLOROETHANE IN
SHALLOW GROUND WATER
OCTOBER 2014**

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE	DRAWN BY	REVIEWED BY	DATE
22	VPB	MMH	03/10/15



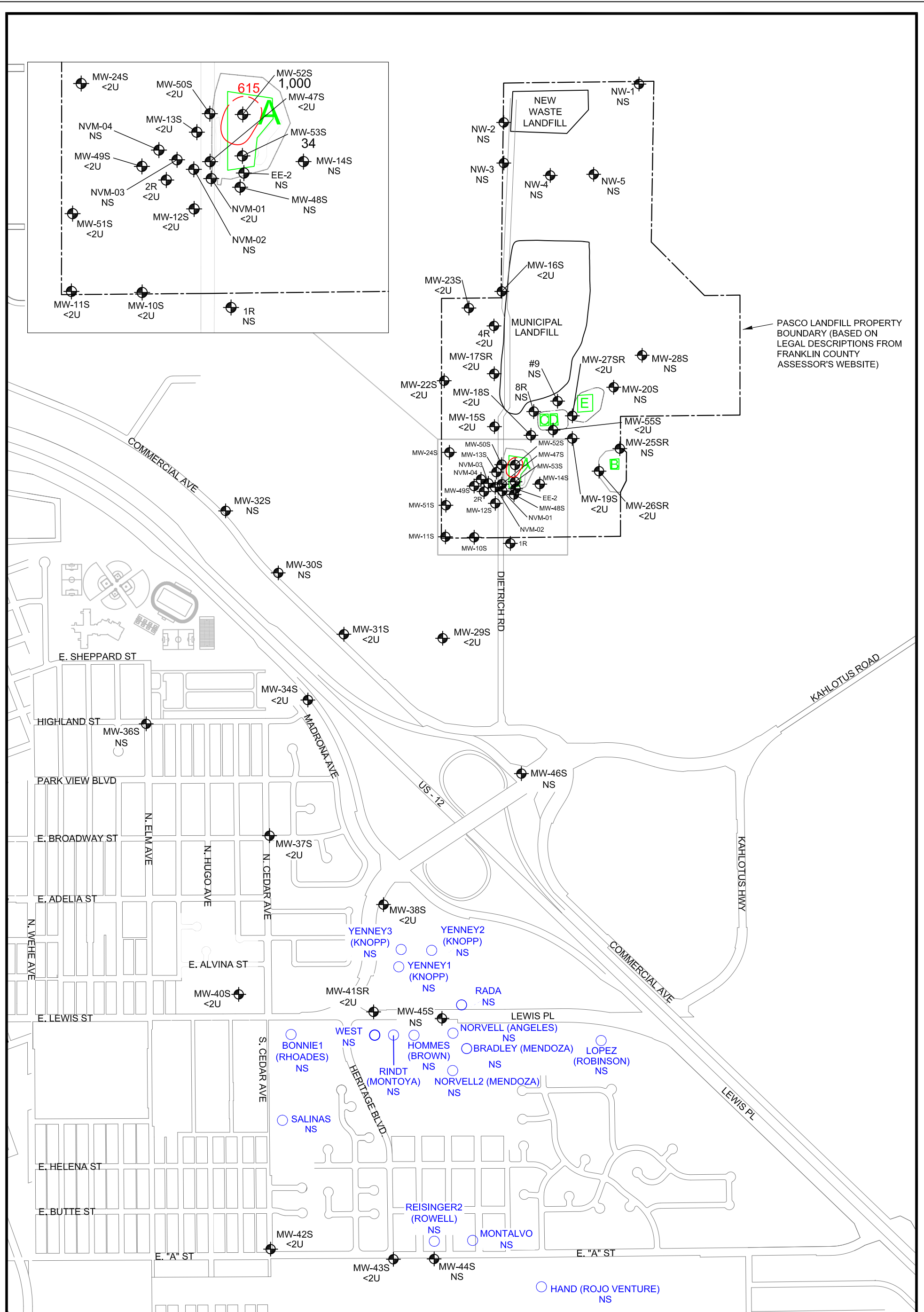
MW-47S <2U
 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER (µg/L)
 BENZENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED, QUERRIED WHERE UNCERTAIN
 YENNEY1 (KNOPP)
 RESIDENTIAL WELL (WITH PROPERTY OWNER)
 BENZENE 2013 DRAFT CLEANUP LEVEL = 0.5 µg/L
 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED

0 250 500 1000
 APPROXIMATE SCALE: 1" = 1,000'

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ISOCONCENTRATION MAP OF BENZENE IN SHALLOW GROUND WATER OCTOBER 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL NPL SITE		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE 23	DRAWN BY VPB	REVIEWED BY MMH	DATE 03/10/15



PASCO LANDFILL PROPERTY BOUNDARY (BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)

MW-47S
 0.08
 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER (µg/L)

615
 TOLUENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED, QUERIED WHERE UNCERTAIN

YENNEY1 (KNOPP)
 RESIDENTIAL WELL (WITH PROPERTY OWNER)

TOLUENE DRAFT CLEANUP LEVEL = 615 µg/L
 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED

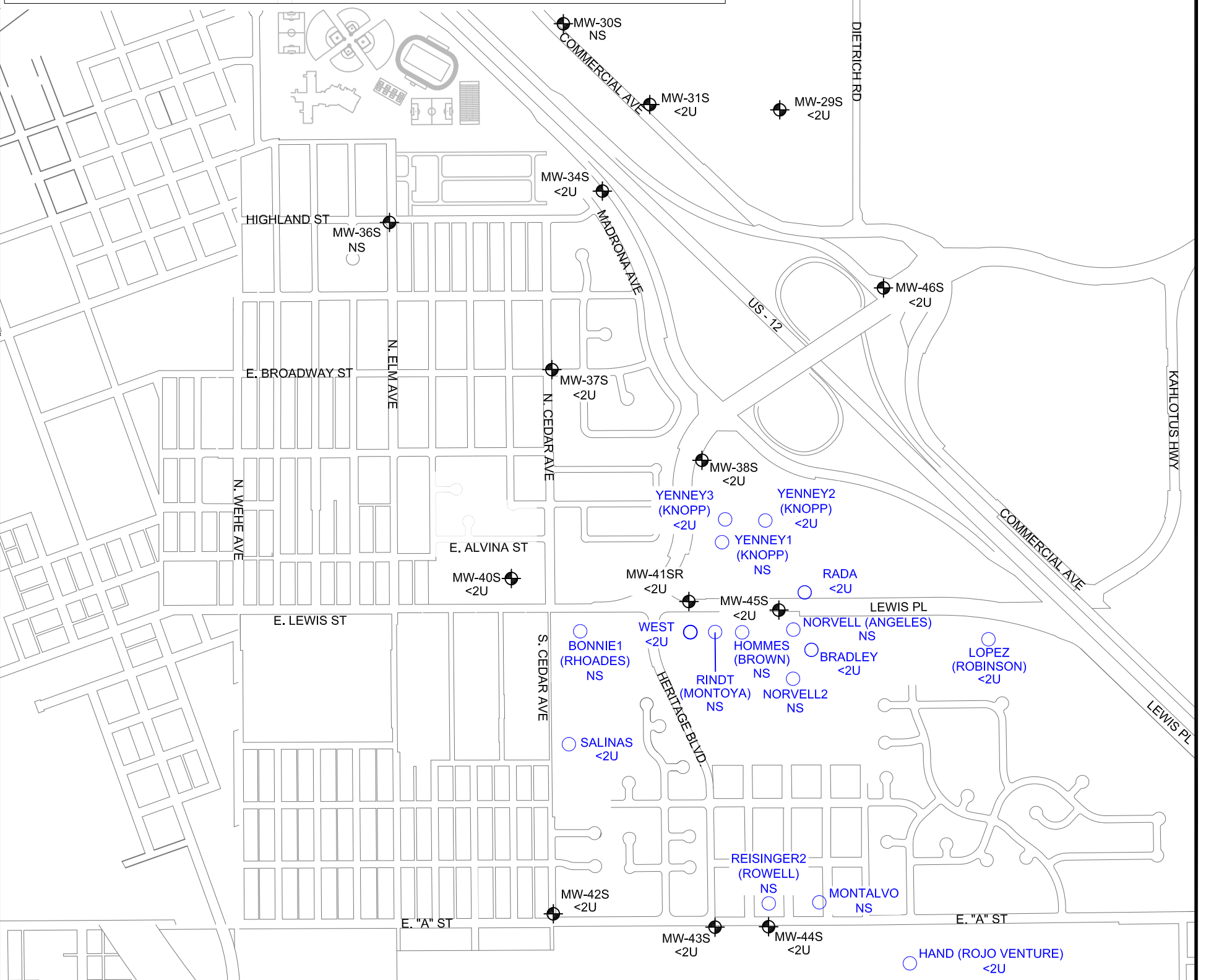
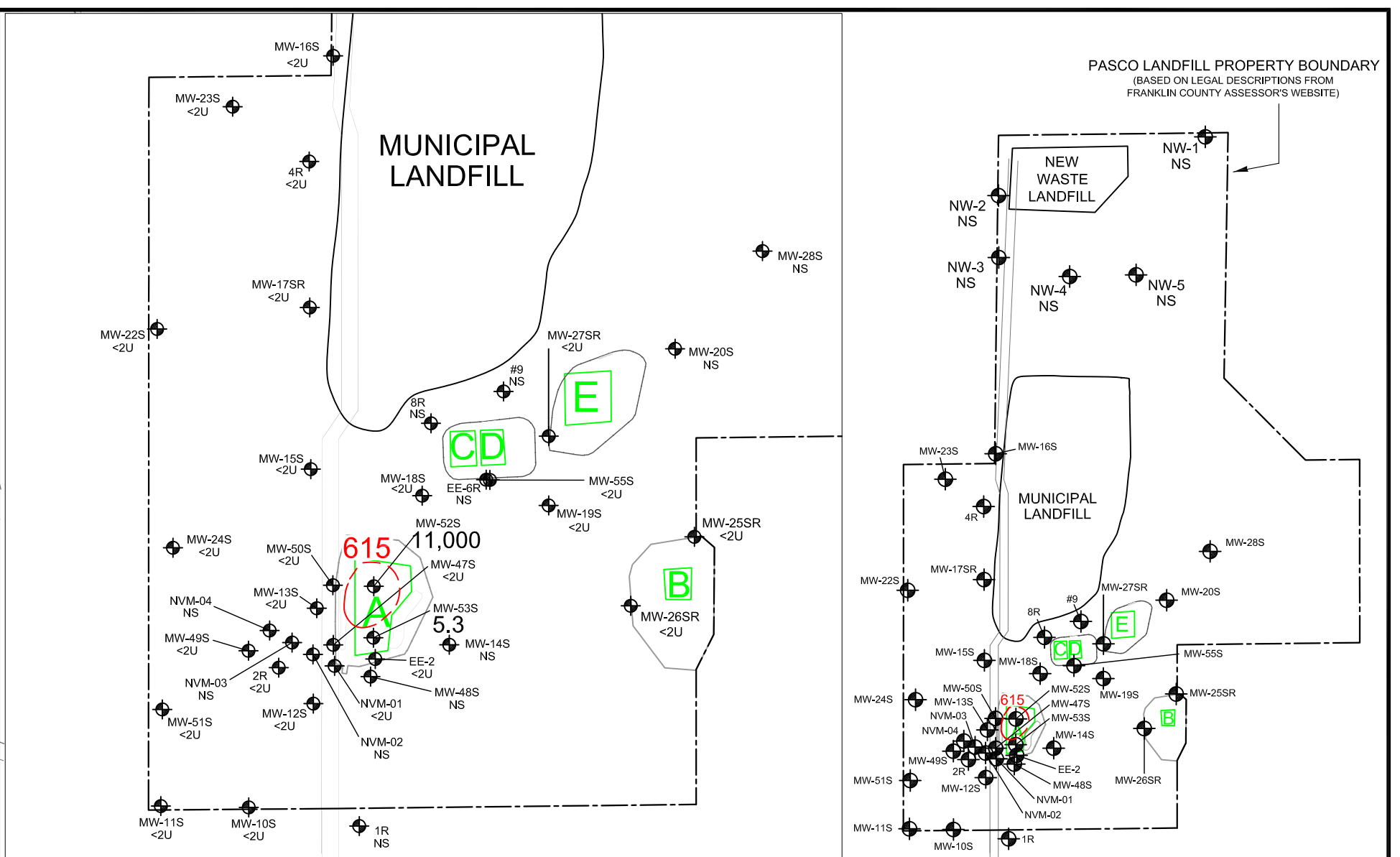
0 250 500 1000
 APPROXIMATE SCALE: 1" = 1,000'

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ISOCONCENTRATION MAP OF TOLUENE IN SHALLOW GROUNDWATER JANUARY 2014

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE 24	DRAWN BY VPB	REVIEWED BY MMH	DATE 02/17/15

PASCO LANDFILL PROPERTY BOUNDARY
(BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)

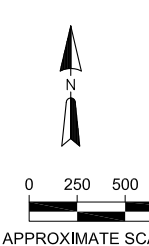


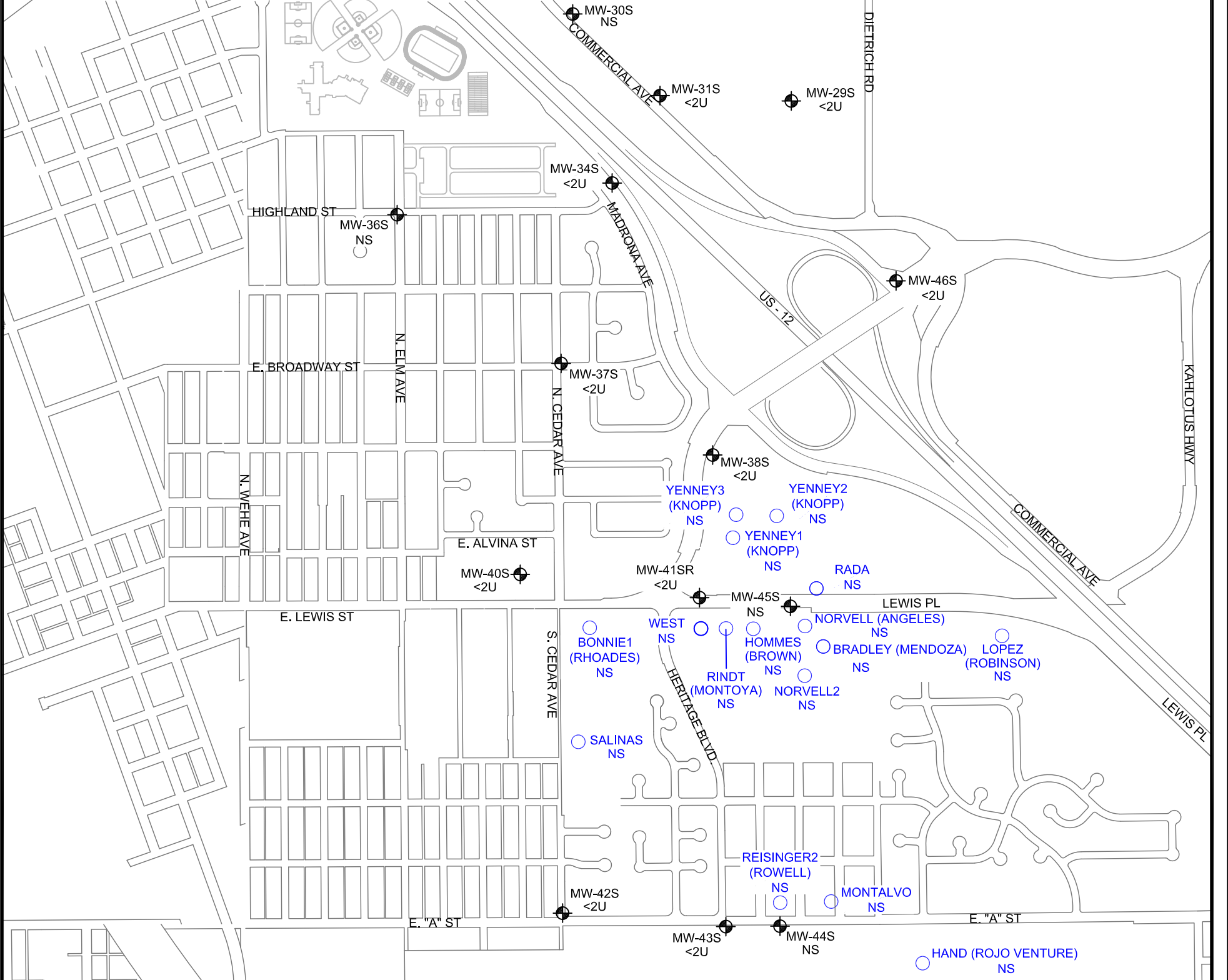
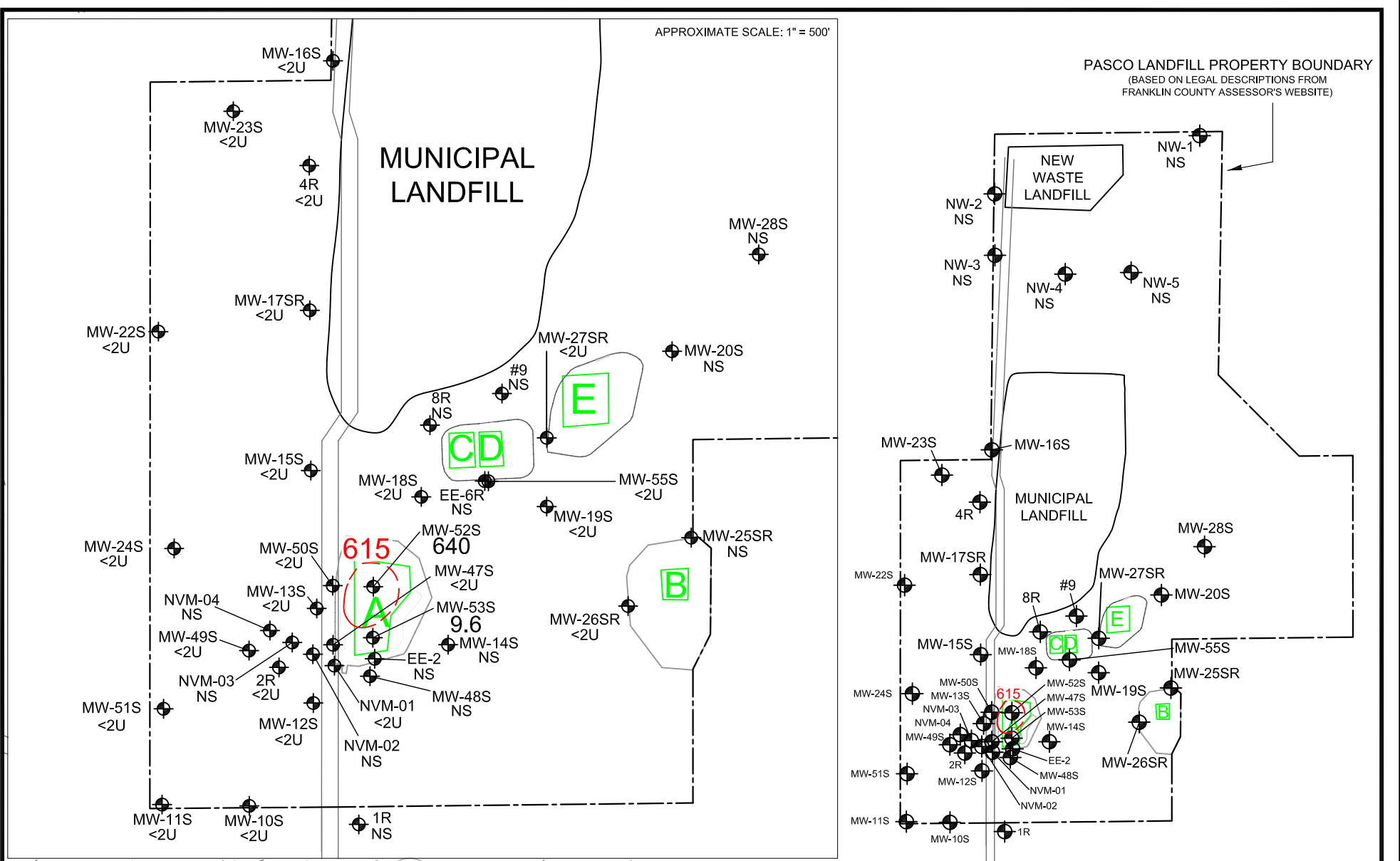
MW-47S <2U
 SHALLOW MONITORING WELL
 CONCENTRATION IN GROUNDWATER (µg/L)
 TOLUENE CONCENTRATION CONTOUR
 DASHED WHERE INFERRED, QUERRIED WHERE UNCERTAIN
 YENNEY1 (KNOPP)
 RESIDENTIAL WELL (WITH PROPERTY OWNER)
 TOLUENE 2013 DRAFT CLEANUP LEVEL = 615 µg/L
 <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT
 NS = NOT SAMPLED

epi ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

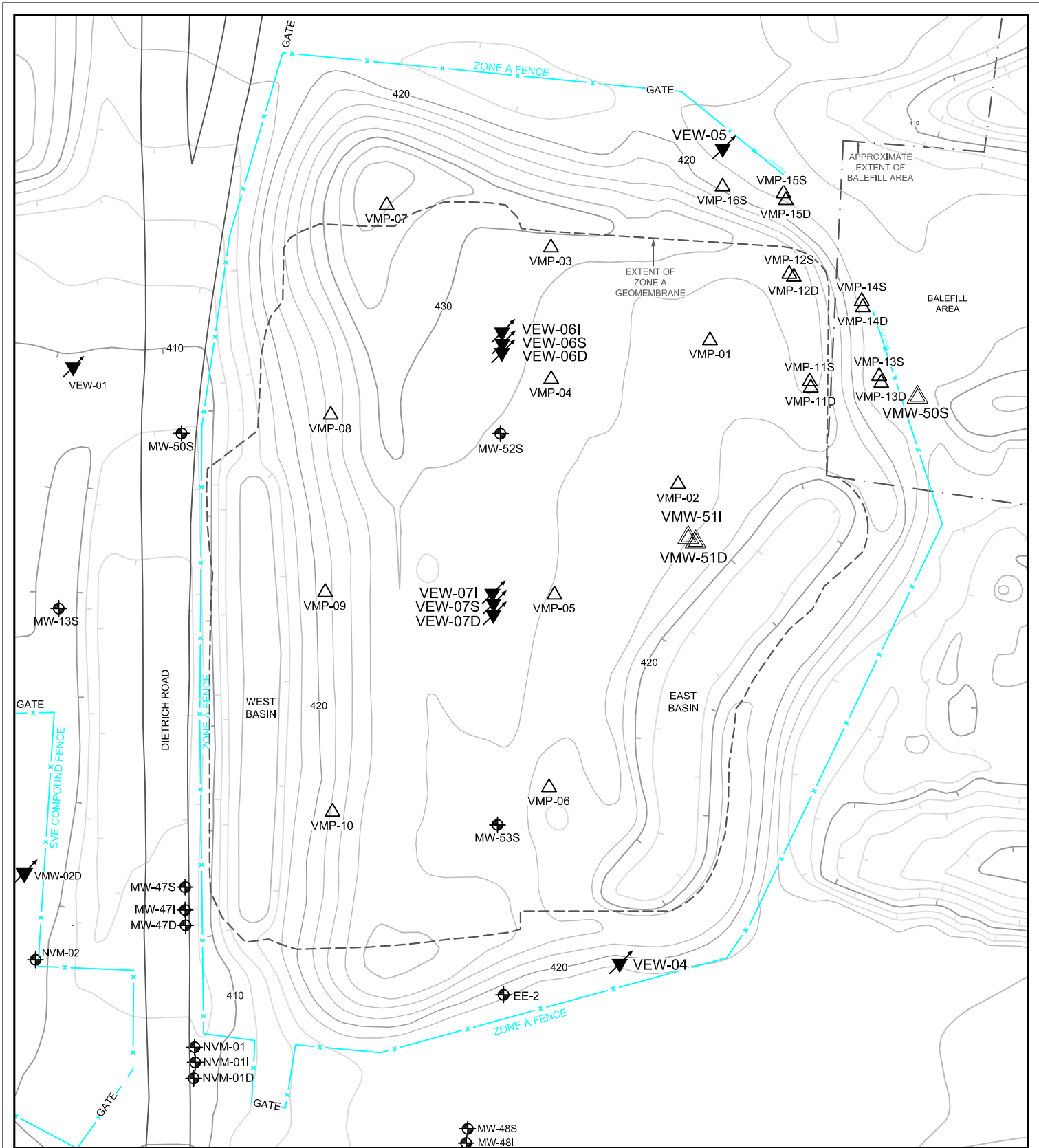
ISOCONCENTRATION MAP OF
 TOLUENE IN
 SHALLOW GROUNDWATER
 APRIL 2014

PROJECT	03914.2
PREPARED FOR	IWAG GROUP III PASCO LANDFILL
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON
FIGURE 25	DRAWN BY VPB REVIEWED BY MMH DATE 02/17/15





	MW-47S <2U SHALLOW MONITORING WELL CONCENTRATION IN GROUNDWATER (µg/L)	615 TOLUENE CONCENTRATION CONTOUR DASHED WHERE INFERRED, QUERRIED WHERE UNCERTAIN	YENNEY1 (KNOPP) RESIDENTIAL WELL (WITH PROPERTY OWNER)			PROJECT 03914.2
	TOLUENE 2013 DRAFT CLEANUP LEVEL = 615 µg/L <##U = COMPOUND NOT DETECTED ABOVE REPORTING LIMIT NS = NOT SAMPLED					PREPARED FOR IWAG GROUP III PASCO LANDFILL NPL SITE
ISOCONCENTRATION MAP OF TOLUENE IN SHALLOW GROUNDWATER JULY 2014						LOCATION 1901 DIETRICH ROAD PASCO, WASHINGTON
APPROXIMATE SCALE: 1" = 1,000'						FIGURE 26
ENVIRONMENTAL PARTNERS INC 1180 NW Maple Street, Suite 310 Issaquah, Washington 98027						DRAWN BY VPB
PASCO LANDFILL PROPERTY BOUNDARY (BASED ON LEGAL DESCRIPTIONS FROM FRANKLIN COUNTY ASSESSOR'S WEBSITE)						REVIEWED BY MMH
MUNICIPAL LANDFILL						DATE 02/17/15



KEY:

- VEW-06S SOIL VAPOR EXTRACTION (SVE) WELL
- VMW-51D VAPOR MONITORING WELL
- VMP-10 VAPOR MONITORING PROBE
- MW-53S GROUND WATER MONITORING WELL
- TOPOGRAPHIC CONTOUR LINE (IN FEET) AERIAL MAPPING PERFORMED ON 1-11-2013

0 15 30 60
 APPROXIMATE SCALE: 1" = 60'

ept ENVIRONMENTAL PARTNERS INC
 1180 NW Maple Street, Suite 310
 Issaquah, Washington 98027

SOIL VAPOR EXTRACTION SYSTEM MONITORING LOCATIONS

PROJECT	03914.2		
PREPARED FOR	IWAG GROUP III PASCO LANDFILL		
LOCATION	1901 DIETRICH ROAD PASCO, WASHINGTON		
FIGURE 27	DRAWN BY MMH	REVIEWED BY MMH	DATE 02/26/2015

Figure 28
 SVE System Removal Rates
 2014 Annual Report
 Pasco Landfill, Pasco, WA

PERIOD: 3/14/2012 - 12/29/2015

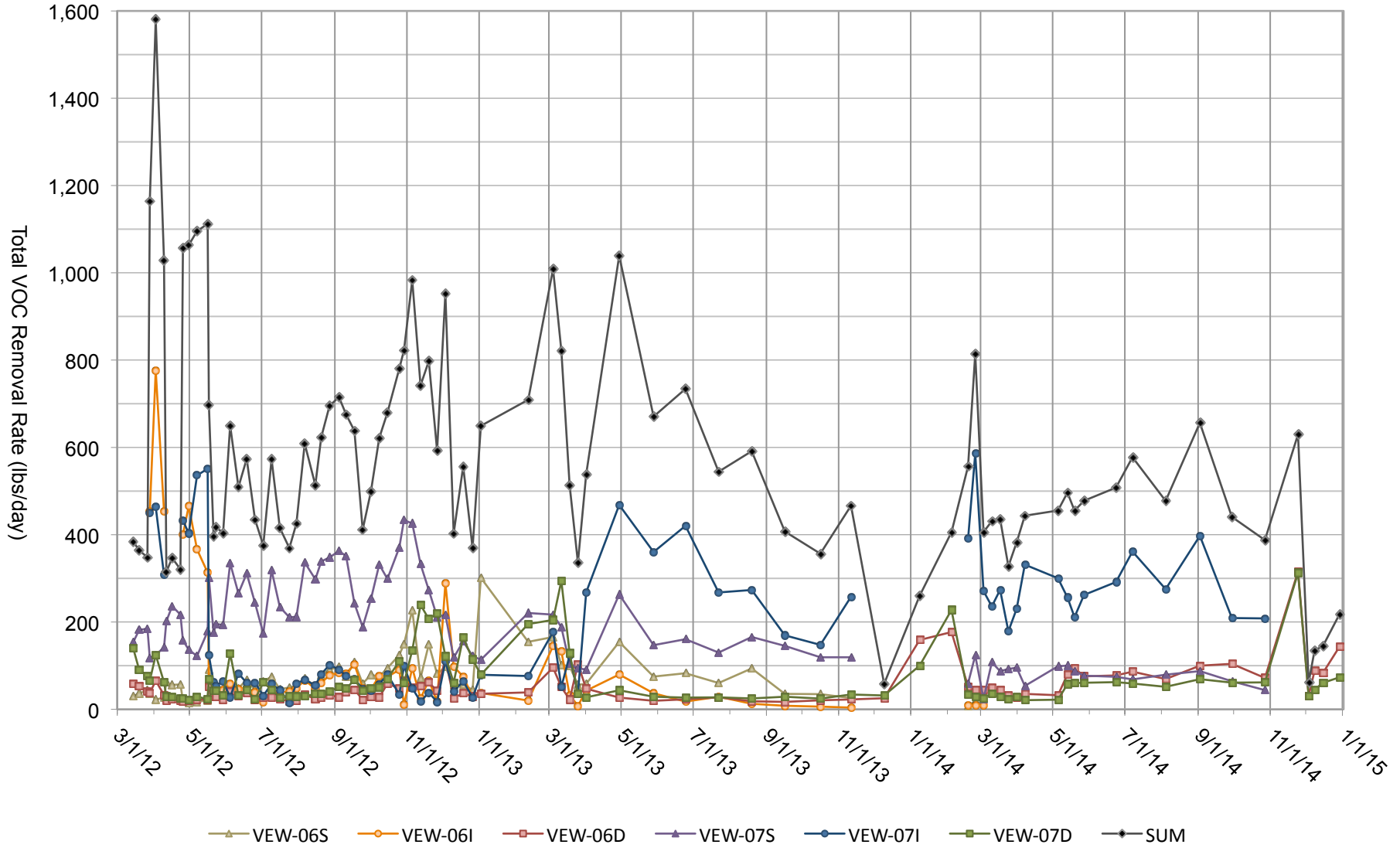


Figure 29
Cumulative Mass Removed Since May 1997
by Zone A SVE System
2014 Annual Report
Pasco Landfill, Pasco, WA

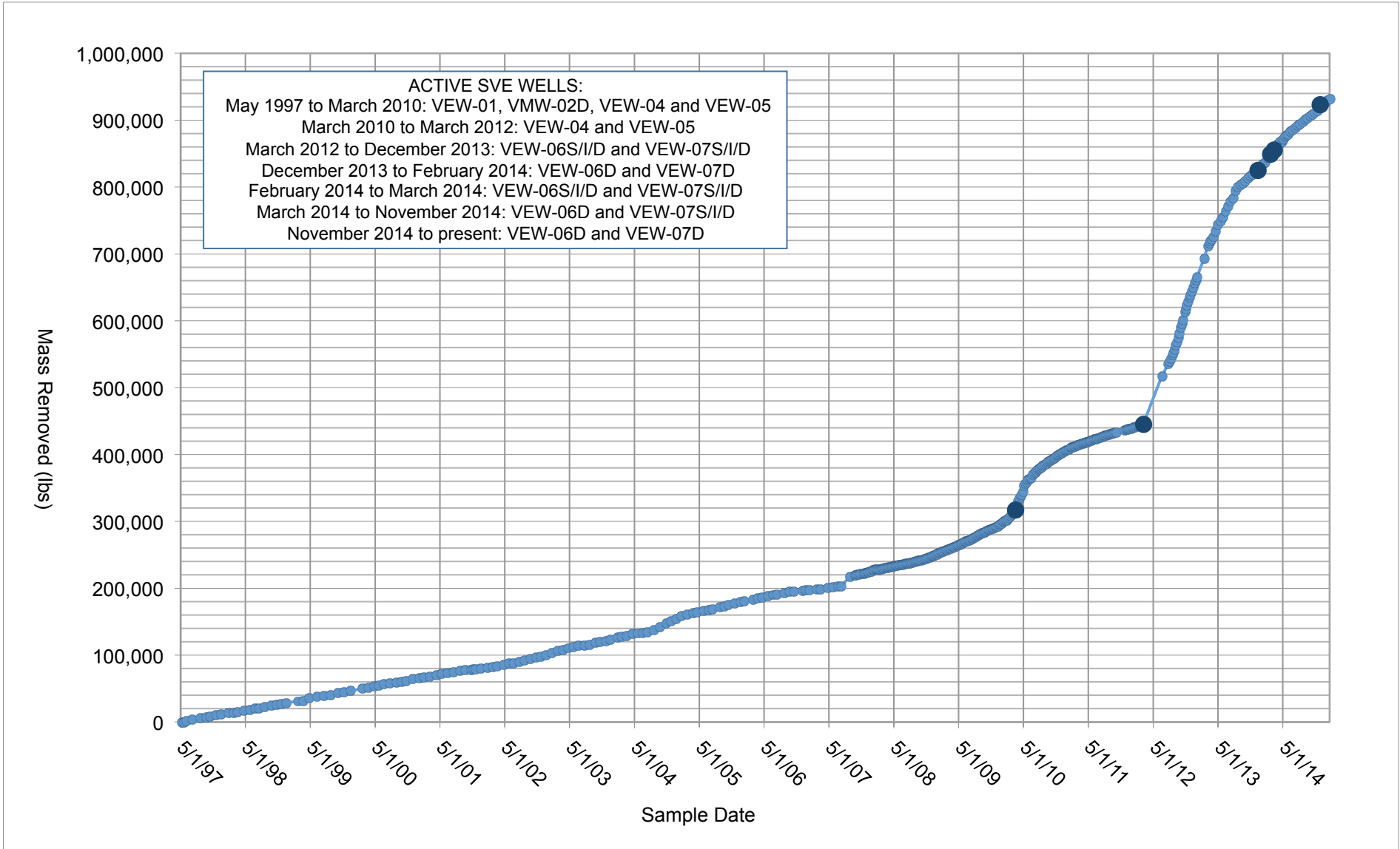


Figure 30
SVE System Vacuum Measurements
2014 Annual Report
Pasco Landfill, Pasco, WA

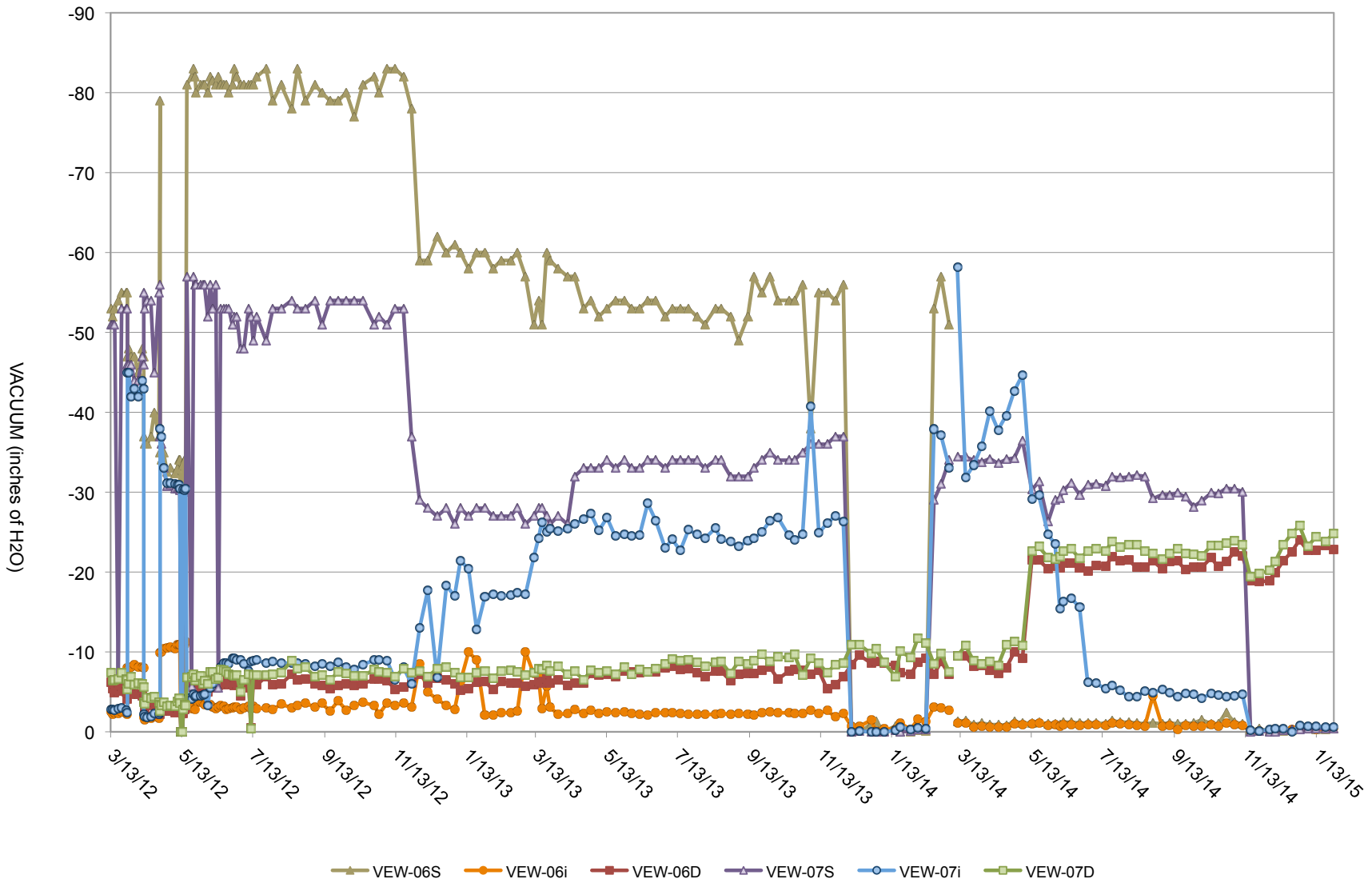


Figure 31
 SVE System Airflow Measurements
 2014 Annual Report
 Pasco Landfill, Pasco, WA

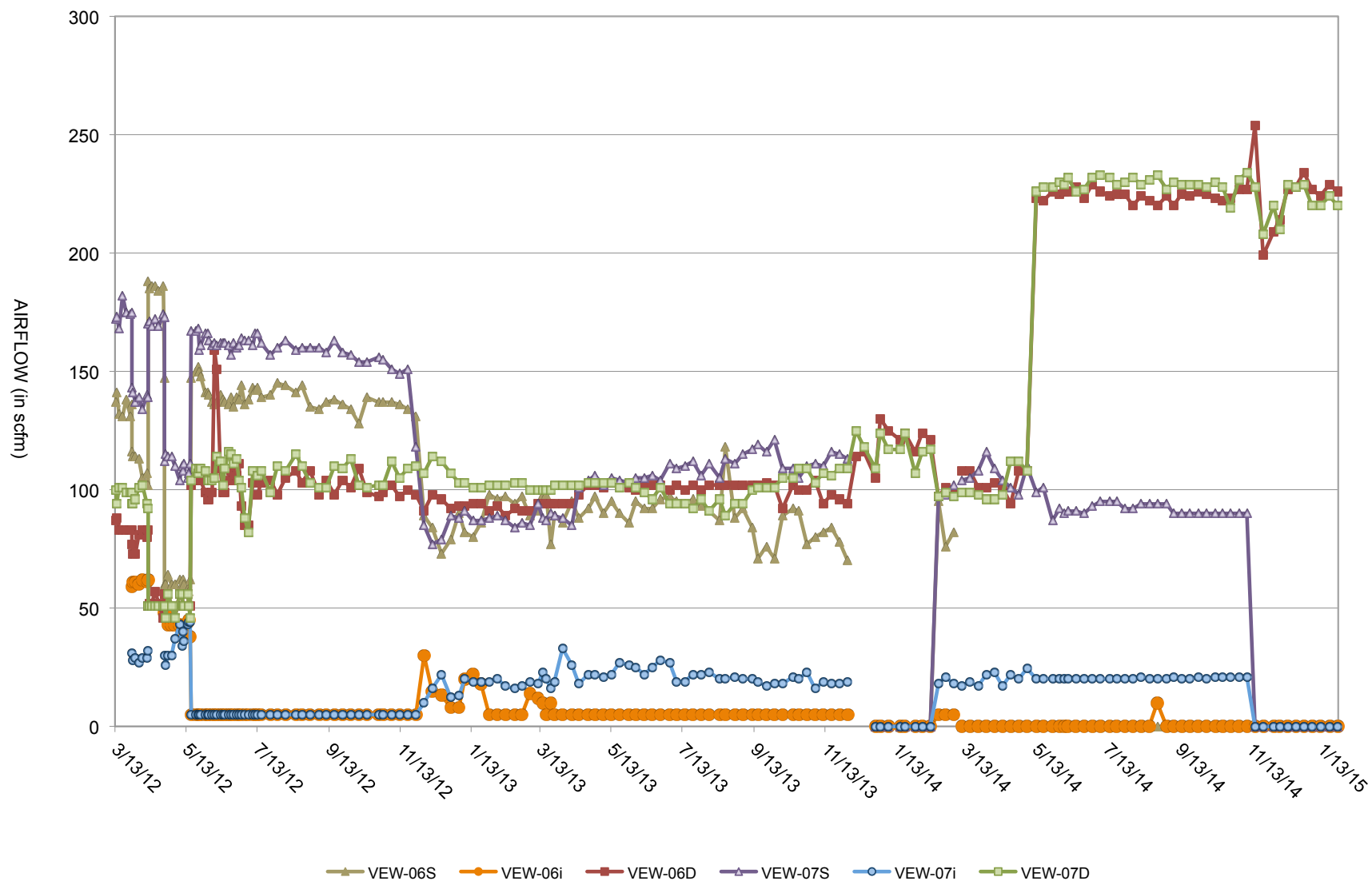


Figure 32
 MW-52S Groundwater Sampling Results
 2014 Annual Report
 Pasco Landfill, Pasco, WA

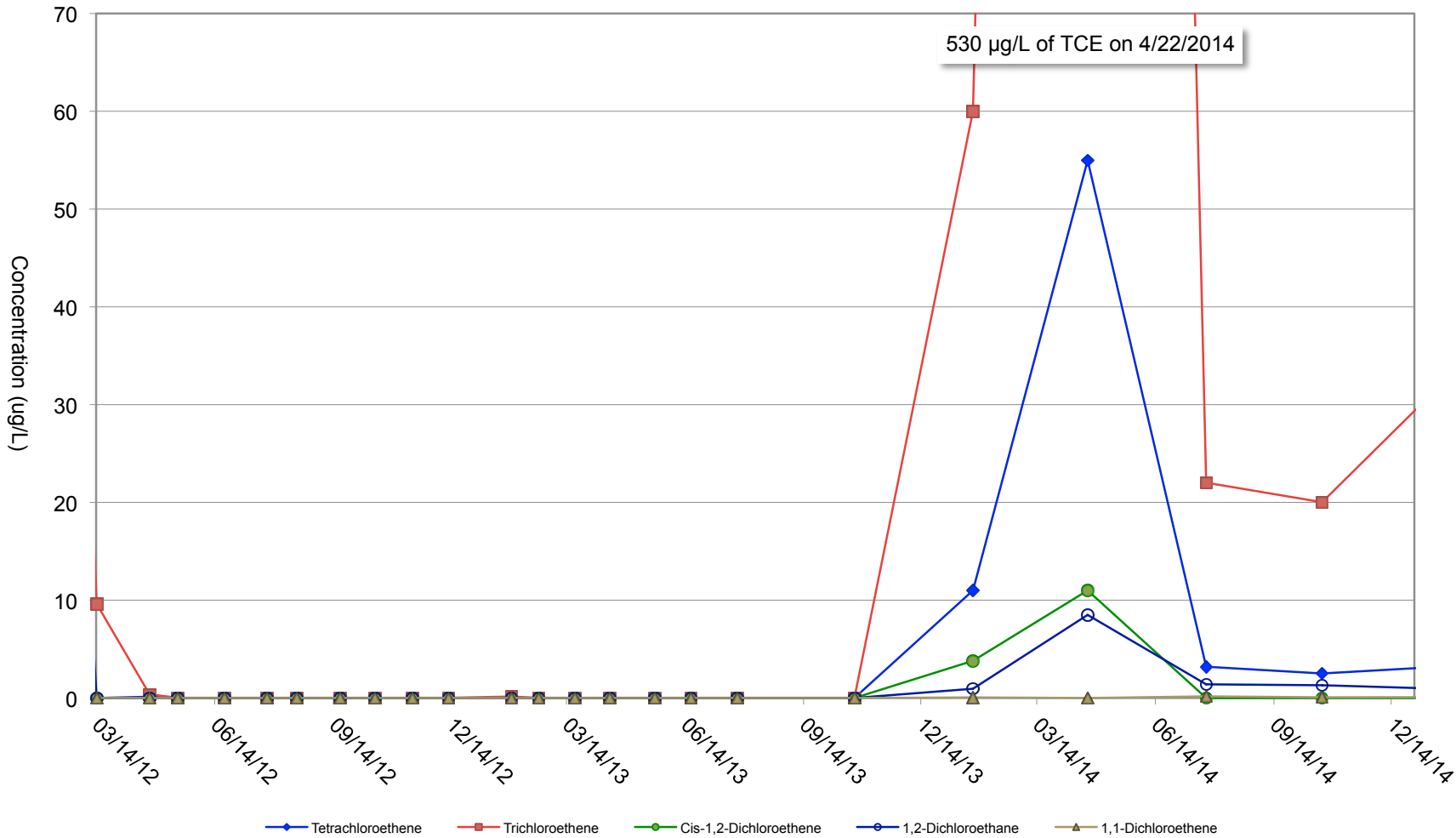


Figure 33
MW-53S Groundwater Sampling Results
2014 Annual Report
Pasco Landfill, Pasco, WA

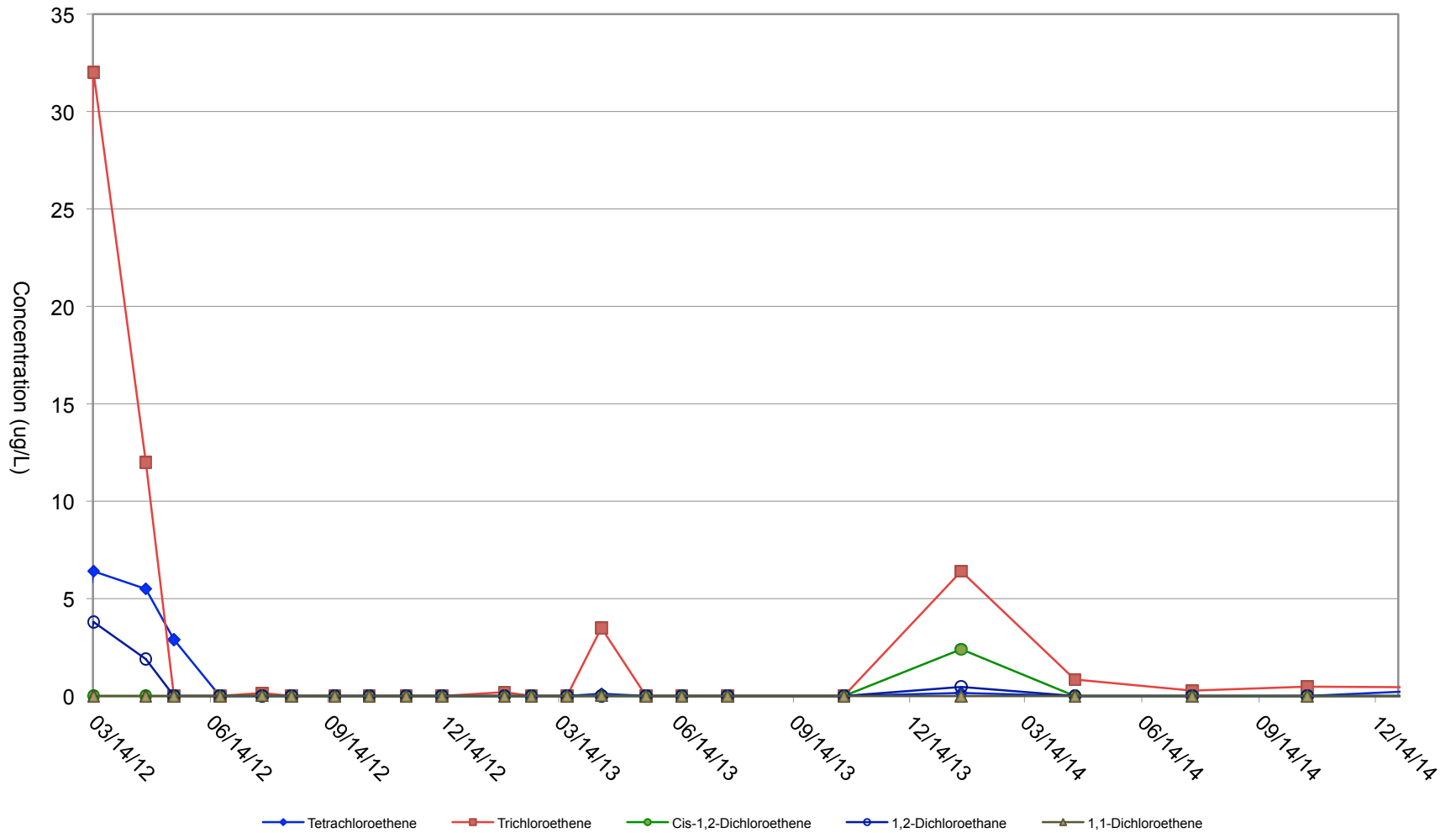


Figure 34
MW-47S Groundwater Sampling Results
2014 Annual Report
Pasco Landfill, Pasco, WA

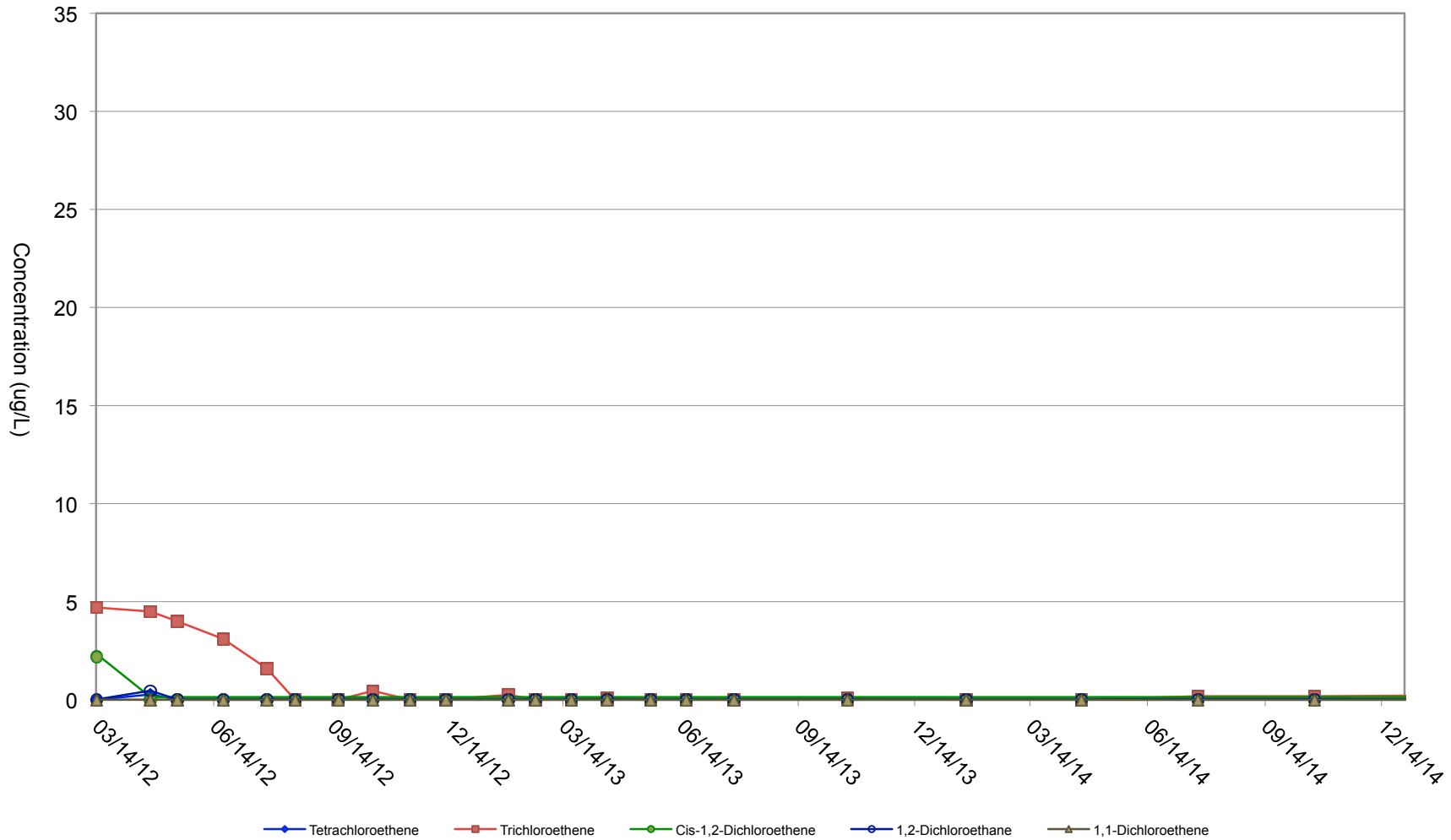


Figure 35
MW-50S Groundwater Sampling Results
2014 Annual Report
Pasco Landfill, Pasco, WA

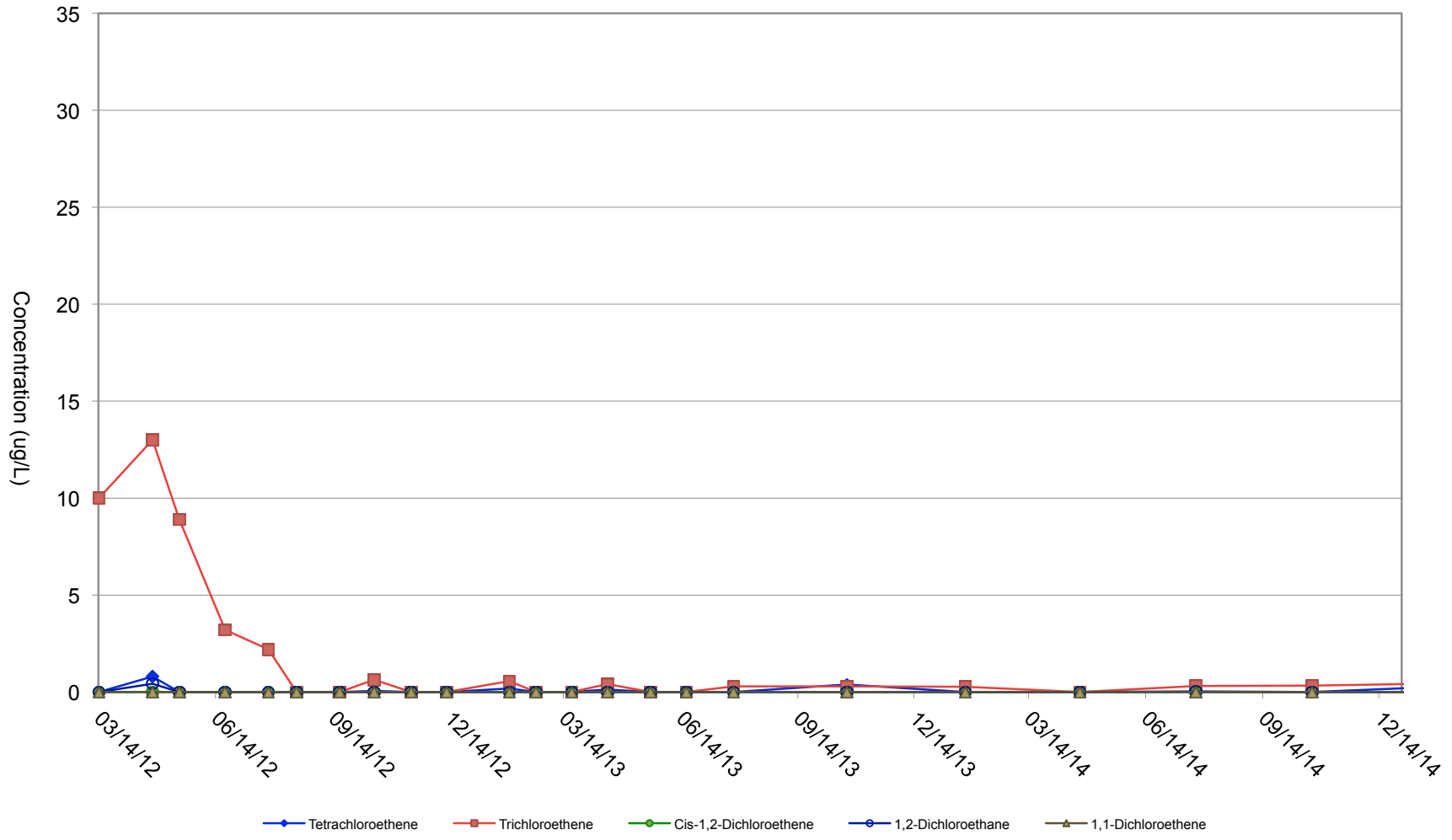


Figure 36
NVM-01 Groundwater Sampling Results
2014 Annual Report
Pasco Landfill, Pasco, WA

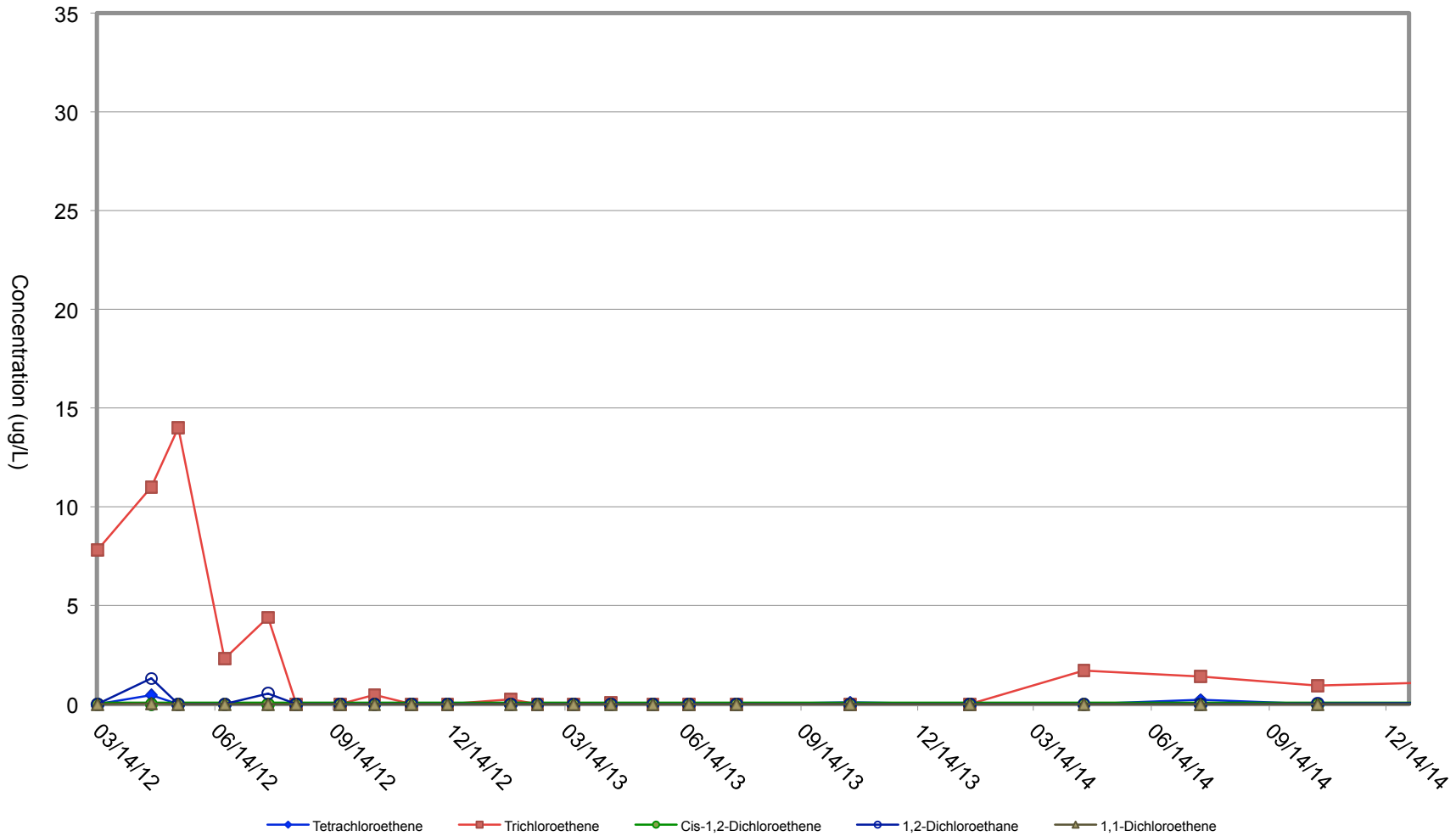
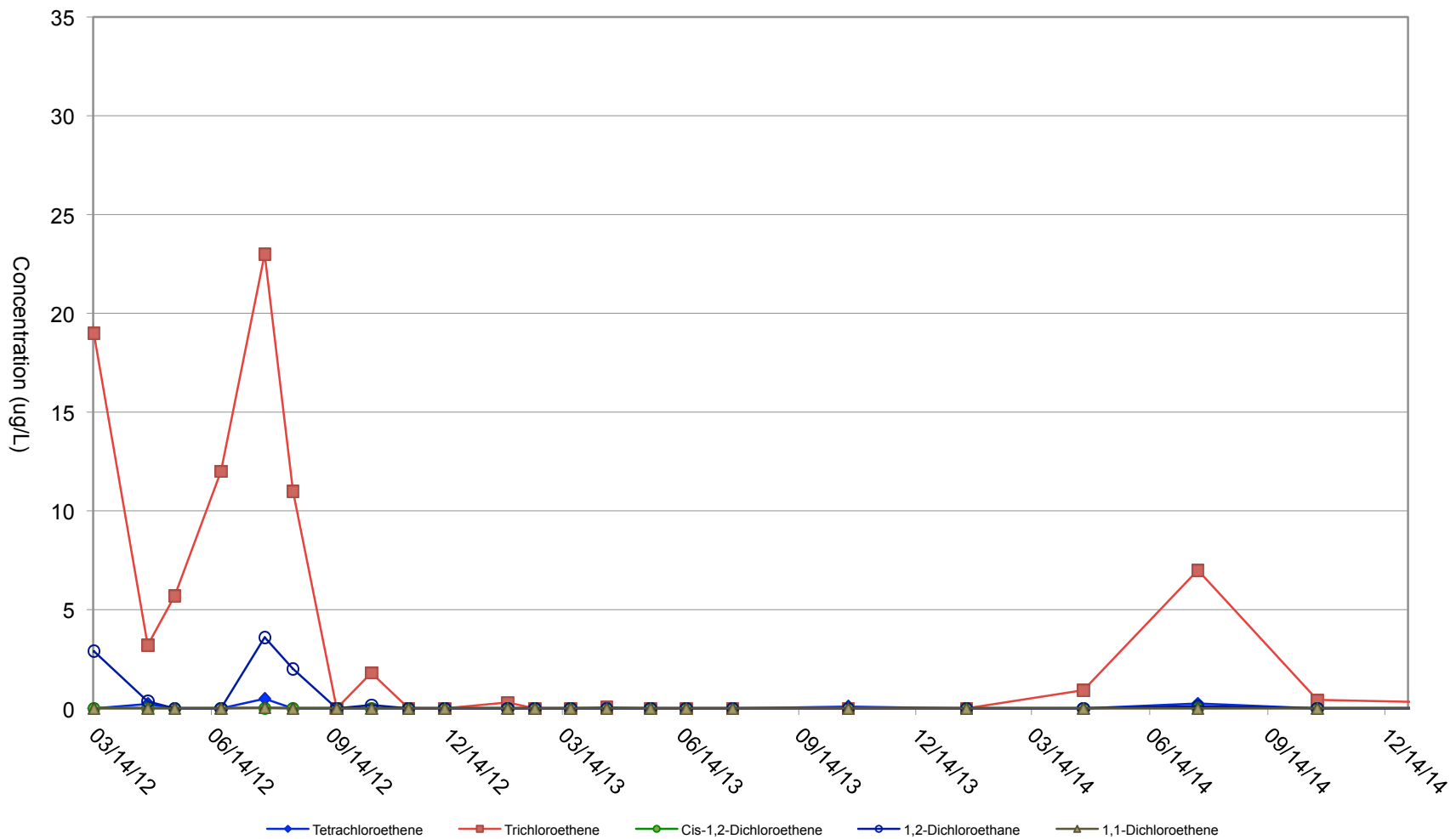
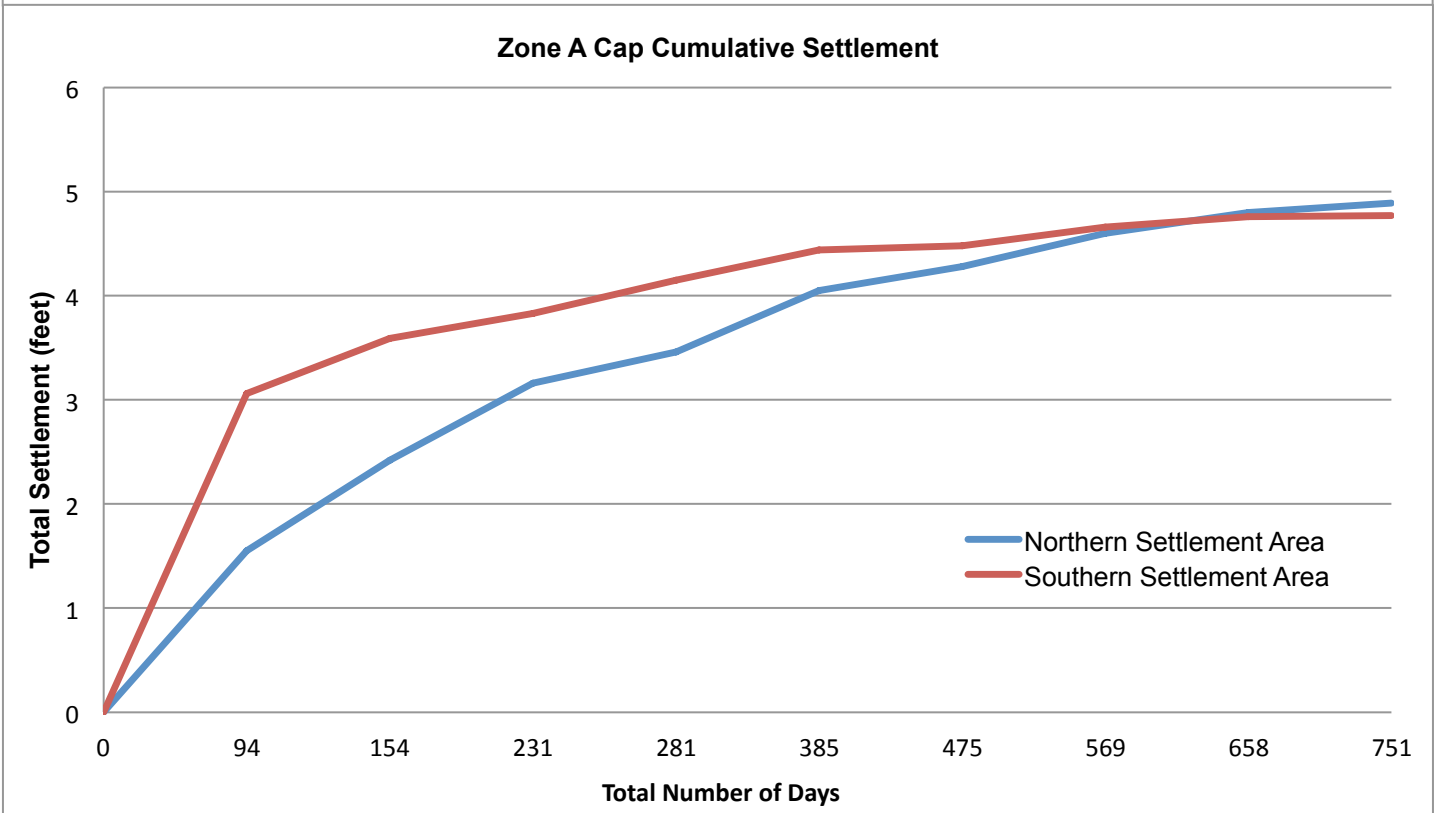
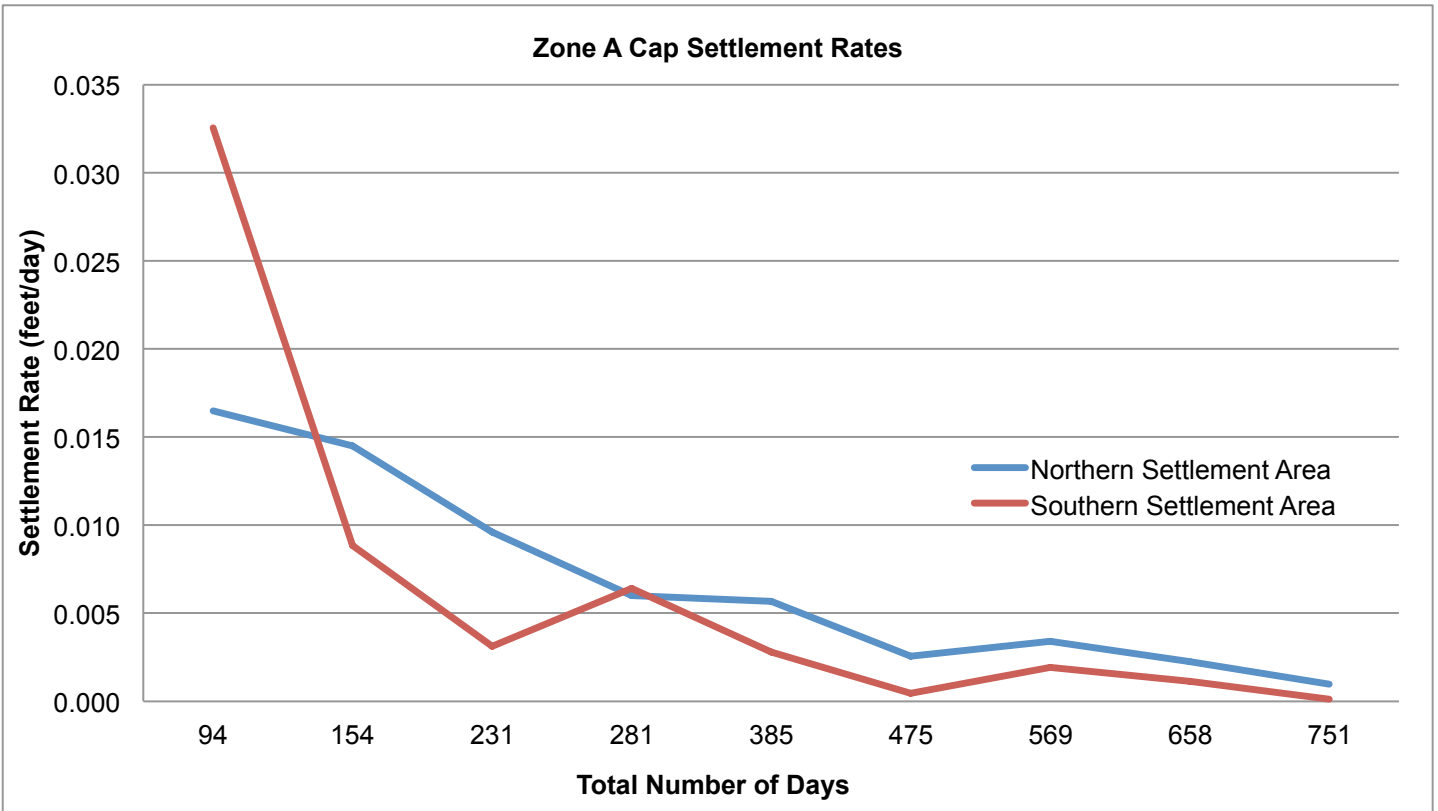


Figure 37
MW-12S Groundwater Sampling Results
2014 Annual Report
Pasco Landfill, Pasco, WA





Attachment A
Data Validation Report

Data Validation Report

Pasco Sanitary Landfill Groundwater Monitoring October 2014 Sampling

Laboratory SDG Number: EV14100135

Prepared for:

Environmental Partners, Inc.

*1180 NW Maple St, Suite 310
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Prepared by:

Pyron Environmental, Inc.

*3530 32nd Way NW
Olympia, WA 98502*

February 20, 2015

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Acronyms

%D	percent difference
%D_f	percent drift
%R	percent recovery
%RSD	percent relative standard deviation
ALS-Everett	ALS Laboratory Group, Everett, Washington
ALS-Kelso	ALS Laboratory Group, Kelso, Washington
ARI	Analytical Resources, Inc., Tukwila, Washington
BFB	bromofluorobenzene
CCB	continuing calibration blank
CCV	continuing calibration verification
CF	calibration factor
CLP	U.S. EPA Contract Laboratory Program
COC	chain-of-custody
COD	chemical oxygen demand
Cr	chromium
Cr (VI)	hexavalent chromium
DQO	data quality objective
DFTPP	decafluorotriphenylphosphine
EDD	electronic data deliverable
EPA	U.S. Environmental Protection Agency
GC/FID	gas chromatography/flame ionization detector
GC/MS	gas chromatography/mass spectrometer
HPLC/MS	high performance liquid chromatography/mass spectrometer
ICAL	initial calibration
ICB	initial calibration blank
ICP/MS	Inductively coupled plasma/mass spectrometer
ICS	interference check sample
ICV	initial calibration verification
IDL	instrument detection limit
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
µg/L	micrograms per liter

mg/L	milligrams per liter
MDL	method detection limit
MEE	methane, ethane, and ethane
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
ND	not detected
OMM	Operations and Maintenance Manual SVE, No VOCs and Groundwater Monitoring, Environmental Partners, Inc., 2007.
PAHs	polycyclic aromatic hydrocarbons
PAL	Pacific Agricultural Laboratory
QA/QC	quality assurance/quality control
RF	response factor
RL	reporting limit
RPD	relative percent difference
SDG	sample delivery group
SIM	selective ion monitoring
SOP	standard operating procedures
SRM	standard reference material
SVOCs	semi-volatile organic compounds
TDS	total dissolved solids
TOC	total organic carbon
VOCs	volatile organic compounds

I. INTRODUCTION

This report presents and discusses findings of the data validation performed on analytical data associated with the 64 water samples collected during October 21 through 23, 2014 for the referenced project. The validation procedures followed the requirements specified in the following documents, as applicable:

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*. Office of Superfund Remediation and Technical Innovation. August 2014. EPA 540-R-013-001.
- *USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review*. Office of Superfund Remediation and Technical Innovation. August 2014. EPA 540-R-014-002.

A level III (or Stage 2B as defined in EPA 2009) validation was performed based on the summaries of sample and quality control (QC) analytical results submitted by the laboratories. The numerical quality assurance and quality control (QA/QC) criteria applied to the validation were in accordance with those specified in the analytical methods, the *Site-Wide Groundwater Performance and Protection Monitoring Operations and Maintenance Manual (OMM)*, Environmental Partners, Inc., May 2014 & Revisions in October 2014), and the performance-based control limits established by the laboratories (laboratory control limits). The frequency of QC analyses was evaluated according to the OMM and the analytical methods. Sample-specific method detection limits and reporting limits were evaluated against the reporting limits revised in February 2012. Raw data were not reviewed herein unless necessary for clarification purposes.

Validation findings are discussed in **Section II – Data Validation Findings**, pertinent to the QC parameters for each type of analysis. Field duplicate results were compared and data qualified based on the advisory criteria and presented in **Section III**. Qualified data along with proper data qualifiers, qualification reasons, and qualifier definitions are presented in **Section IV - Data Validation Summary**.

A data quality objective assessment summarizing the overall precision, accuracy, representativeness, comparability, completeness, and sensitivity of data collected in this sampling event was prepared and included in **Section V – Data Quality Objective Assessment**. Any additional laboratory submittals requested during the validation are transferred to Environmental Partners, Inc. along with this report.

As part of the validation, the electronic data deliverables (EDDs) were verified against the hardcopy report. Data qualifiers, qualification reasons, and any required corrections identified *via* this validation have been added to the EDDs and submitted along with this report. Samples collected during this sampling event and the associated analyses are summarized below:

Field Sample ID	ALS Laboratory Sample ID	Sampling Date	Matrix	Analysis					
				VOCs	Herb SVOCs	MEE	Cr Cr (VI)	Metals	Inorganic
PLF-MW12ID-1014	EV14100135-01	10/21/14	Water	X					
PLF-MW51S-1014	EV14100135-02	10/21/14	Water	X					
PLF-MW11I-1014	EV14100135-03	10/21/14	Water	X					
PLF-MW11S-1014	EV14100135-04	10/21/14	Water	X					
PLF-MW10S-1014	EV14100135-05	10/21/14	Water	X					
PLF-NVM01I-1014	EV14100135-06	10/21/14	Water	X					
PLF-NVM01-1014	EV14100135-07	10/21/14	Water	X					
PLF-MW47I-1014	EV14100135-08	10/21/14	Water	X					
PLF-MW53S-1014	EV14100135-09	10/21/14	Water	X	X				
PLF-#2I-1014	EV14100135-10	10/21/14	Water	X					
PLF-MW52S-1014	EV14100135-11	10/21/14	Water	X	X				
PLF-TripBlank1-1014	EV14100135-12	10/21/14	Water	X					
PLF-MW25SR-1014	EV14100135-13	10/21/14	Water	X		X		X	X
PLF-MW26SR-1014	EV14100135-14	10/21/14	Water	X	X				
PLF-MW19S-1014	EV14100135-15	10/21/14	Water	X			X		
PLF-MW27SR-1014	EV14100135-16	10/21/14	Water	X			X		
PLF-MW20S-1014	EV14100135-17	10/21/14	Water			X		X	X
PLF-MW16S-1014	EV14100135-18	10/21/14	Water	X				X	X ^(A)
PLF-MW17SR-1014	EV14100135-19	10/21/14	Water	X				X	X ^(A)
PLF-DUP4-1014	EV14100135-20	10/21/14	Water	X	X				
PLF-MW15S-1014	EV14100135-21	10/22/14	Water	X					
PLF-MW18S-1014	EV14100135-22	10/22/14	Water	X					
PLF-MW23S-1014	EV14100135-23	10/22/14	Water	X					
PLF-MW24S-1014	EV14100135-24	10/22/14	Water	X					
PLF-EE2-1014	EV14100135-25	10/22/14	Water	X					
PLF-MW31S-1014	EV14100135-26	10/22/14	Water	X					
PLF-MW29S-1014	EV14100135-27	10/22/14	Water	X					
PLF-MW29I-1014	EV14100135-28	10/22/14	Water	X					
PLF-TripBlank2-1014	EV14100135-29	10/22/14	Water	X					
PLF-MW49I-1014	EV14100135-30	10/22/14	Water	X					
PLF-MW49S-1014	EV14100135-31	10/22/14	Water	X		X		Mn	X ^(A)
PLF-MW55S-1014	EV14100135-32	10/22/14	Water	X			X		

Field Sample ID	ALS Laboratory Sample ID	Sampling Date	Matrix	Analysis					
				VOCs	Herb SVOCs	MEE	Cr Cr (VI)	Metals	Inorganic
PLF-#4R-1014	EV14100135-33	10/22/14	Water	X				X	X ^(A)
PLF-MW22S-1014	EV14100135-34	10/22/14	Water	X			X	X	X ^(A)
PLF-MW12S-1014	EV14100135-35	10/22/14	Water	X		X	X	Mn	X
PLF-MW13S-1014	EV14100135-36	10/22/14	Water	X			X		
PLF-#2R-1014	EV14100135-37	10/22/14	Water	X		X		Mn	X
PLF-DUP1-1014	EV14100135-38	10/22/14	Water	X				X	
PLF-DUP2-1014	EV14100135-39	10/22/14	Water	X		X		Mn	X
PLF-MW47S-1014	EV14100135-40	10/22/14	Water	X		X		Mn	X
PLF-MW50S-1014	EV14100135-41	10/22/14	Water	X		X		Mn	X
PLF-DUP3-1014	EV14100135-42	10/22/14	Water				X		
PLF-MW46S-1014	EV14100135-43	10/23/14	Water	X					
PLF-MW37S-1014	EV14100135-44	10/23/14	Water	X					
PLF-MW34S-1014	EV14100135-45	10/23/14	Water	X					
PLF-MW40S-1014	EV14100135-46	10/23/14	Water	X					
PLF-MW42S-1014	EV14100135-47	10/23/14	Water	X					
PLF-MW54I-1014	EV14100135-48	10/23/14	Water	X					
PLF-MW44S-1014	EV14100135-49	10/23/14	Water	X					
PLF-MW43I-1014	EV14100135-50	10/23/14	Water	X					
PLF-MW43S-1014	EV14100135-51	10/23/14	Water	X					
PLF-MW45S-1014	EV14100135-52	10/23/14	Water	X					
PLF-MW41SR-1014	EV14100135-53	10/23/14	Water	X					
PLF-MW38S-1014	EV14100135-54	10/23/14	Water	X					
PLF-MW38I-1014	EV14100135-55	10/23/14	Water	X					
PLF-LOPEZ-1014	EV14100135-56	10/23/14	Water	X					
PLF-BRADLEY-1014	EV14100135-57	10/23/14	Water	X					
PLF-RADA-1014	EV14100135-58	10/23/14	Water	X					
PLF-WEST-1014	EV14100135-59	10/23/14	Water	X					
PLF-YENNEY2-1014	EV14100135-60	10/23/14	Water	X					
PLF-YENNEY3-1014	EV14100135-61	10/23/14	Water	X					
PLF-SALINAS-1014	EV14100135-62	10/23/14	Water	X					
PLF-DUP5-1014	EV14100135-63	10/23/14	Water	X					
PLF-TripBlank3-1014	EV14100135-64	10/23/14	Water	X					

Notes:

X - The analysis was requested and performed on the sample.

VOCs – Volatile organic compounds

SVOCs – Semi-volatile organic compounds

Mn – The sample was only analyzed for manganese by EPA Method 200.8.

Metals – Calcium, Iron, magnesium, manganese, potassium, and sodium

MEE – Methane, ethane, and ethane gases

Cr – Chromium

Cr (VI) – Hexavalent chromium

Herb - Chlorophenoxy herbicides, pentachlorophenol (PCP), and 4-nitrophenol

Inorganic – Alkalinity (total, carbonate, bicarbonate, & hydroxide), chloride, nitrate, nitrite, sulfate, chemical oxygen demand (COD), total organic carbon (TOC), total dissolved solids (TDS), ammonia, and ferrous iron (Fe [II]).

^(A) – The sample was not analyzed for nitrite, COD, or Fe (II).

The analytical parameters requested for the samples, the respective analytical methods, and the analytical laboratories are summarized below:

Parameter	Analytical Method	Laboratory
Volatile organic compounds (VOCs)	SW846 Method 8260C - SIM ^(A)	ALS Laboratory Group (ALS) Everett, Washington
Semi-volatile organic compounds (SVOCs)	SW846 Methods 3510C/8270D full scan and SIM ^(B)	
Methane, ethane, ethane (MEE)	Laboratory Standard Operation Procedure	
Chromium, manganese	EPA Method 200.8	
Anions (chloride, nitrate, nitrite, & sulfate)	EPA Method 300.0	
Total dissolved solids (TDS)	SM Method 2540C	
Hexavalent chromium (Cr [VI])	SW846 Method 7196A	
Calcium, iron, magnesium, manganese, potassium, sodium	EPA Method 200.7	ALS Kelso, Washington
Alkalinity (total, carbonate, bicarbonate, & hydroxide)	SM Method 2320B	
Chemical oxygen demand (COD)	SM Method 5220D	
Total organic carbon (TOC)	SM Method 5310B	
Ammonia	EPA Method 350.1 Modified	
Chlorophenoxy Herbicides , 4-Nitrophenol, & PCP	SW846 Method 3535A/8151A	Pacific Agricultural Laboratory (PAL) Portland, Oregon
Ferrous Iron (Fe [II])	Field Screening (Hach-8146)	Environmental Partners, Inc. Issaquah, Washington

Notes:

SW846 - *USEPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, December 1996.

EPA Methods - *USEPA Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-79-020, March 1983 Revision.

SM – Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 20th Edition, 1995.

^(A) – Selective ion monitoring (SIM) technique was performed for target compounds to achieve lower detection limits.

^(B) – SIM technique was performed for selected SVOCs to achieve lower detection limits.

II. DATA VALIDATION FINDINGS

1. Sample Custody, Preservation, and Analysis Completeness

Sample custody was maintained and documented as required from the sample collection to the receipt at the laboratory. The samples were received properly preserved and consistent with the accompanying chain-of-custody (COC) documentation. All requested analyses on the COC forms were completed and reported.

2. Volatile Organic Compounds (VOCs; SW846 Method 8260C – SIM)

2.1 Holding Time

Water samples should be analyzed within 14 days of collection. All samples were analyzed within the required holding time.

2.2 GC/MS Instrument Performance Check

Bromofluorobenzene (BFB) tuning analyses were performed at the required frequency. Relative abundance of all required ions met the method requirements.

2.3 Initial Calibration (ICAL)

The method requires that (1) if linear average response factors (RFs) is chosen as the quantitation option, the %RSD of RFs be $\leq 20\%$ for target compounds, (2) if least-square linear regression is chosen for quantitation, the correlation coefficient (r) be ≥ 0.99 , (3) if six-point non-linear (quadratic) curve is chosen for quantitation, the coefficient of determination (r^2) be ≥ 0.99 , (4) compound RFs are \geq the minimum RF specified in Method 8260C, Table 4, and (5) a second source standard (ICV) should be analyzed immediately after the initial calibration and the percent difference (%D) or percent drift (%D_f) values for all target and surrogate compounds should be within $\pm 30\%$.

The Initial calibration met all the criteria above. However, The recovery of the lowest calibration standards in both ICALs applied in this SDG were less than 70% of the true values for a number of target compounds. In particular, vinyl chloride and 1,2-dichloroethane recovery in ICAL: 5973N 11011024 were less than 70% of the true values at various standards (including the lowest ones), and the lowest standard concentrations and detected concentrations were approaching the project cleanup levels. Vinyl chloride and 1,2-dichloroethane results for samples associated with this ICAL were qualified (UJ) for non-detects and (J) for detects as estimated, as summarized in **Section IV -1**.

2.4 Calibration Verification

The method requires that (1) continuing calibrations be analyzed at the beginning of each 12-hour analysis period prior to the analysis of method blank and samples, (2) the %D or %D_f values be within ±20%, (3) compound RFs are ≥ the minimum RF specified in Method 8260C, Table 4, and (4) the internal standards in the calibration verification standard changes by a factor of two (-50% to + 100%) from that in the mid-point standard level of the most recent initial calibration sequence.

Calibration verification analyses met the frequency criteria. The %D and %D_f values either met the criteria or the outliers had no effects on associated data (e.g., bias-high %D value for a compound that was not detected in associated samples), except for the following:

Calibration Verification ID	Analyte	%D	Bias	Affected Sample	Data Qualification
J2416.D	1,2,3-Trichloropropane	31.0%	Low	PLF-MW12ID-1014 PLF-MW51S-1014 PLF-MW11I-1014 PLF-MW11S-1014 PLF-MW10S-1014 PLF-NVM01I-1014 PLF-NVM01-1014 PLF-MW47I-1014 PLF-MW53S-1014 PLF-#2I-1014 PLF-MW52S-1014	UJ
J2803.D	1,2,3-Trichloropropane	24.8%	Low	PLF-MW29S-1014 PLF-MW29I-1014 PLF-TripBlank2-1014 PLF-MW49I-1014 PLF-MW49S-1014 PLF-MW55S-1014 PLF-#4R-1014 PLF-MW22S-1014 PLF-MW12S-1014 PLF-MW13S-1014 PLF-#2R-1014	UJ

2.5 Blanks

Method Blanks: Method blanks were analyzed at the required frequency. Target compounds were not detected at or above the reporting limits (RLs) in the method blanks.

Trip Blanks: One trip blank was submitted with each sample shipment for VOCs analyses. Target compounds were not detected at or above the RLs in the trip blanks.

2.6 Laboratory Control Sample (LCS) and LCS Duplicate (LCSD)

LCS and LCSD analyses, named as blank spike and blank spike duplicate by the laboratory, were performed as required. The %R and relative percent difference (RPD) values met the laboratory control criteria.

2.7 Surrogate Spikes

Surrogate spikes were added to all samples as required by the method. All %R values were within the laboratory control limits.

2.8 Matrix Spike and Matrix Spike Duplicate (MS/MSD)

MS/MSD analyses were performed on project samples as requested. All %R and RPD values were either within the laboratory control limits or the %R outliers had no adverse effects on data usability (*e.g.*, biased-high %R values for a non-detected compound), except for the following:

Parent Sample ID	Analyte	MS %R	MSD %R	Control Limit	RPD	Affected Sample	Data Qualifier
PLF-MW53S-1014	Toluene	337%	361%	72-139%	5%	PLF-MW53S-1014	J

2.9 Internal Standards

Proper internal standards were added to all samples. Internal standard retention times were within the ± 0.5 minute window of the associated standard in all samples. All internal standard intensity either met the method requirement of -50% to $+100\%$ of the associated standard or the recovery outliers had no adverse effects on data usability (*e.g.*, biased-high internal standard recovery where all associated compounds were not detected in the sample).

2.10 Field Duplicates

Four field duplicate pairs were submitted for VOCs analysis. The RPD (or concentration difference values) and data qualification for detected target compounds are presented in **Section III**.

2.11 Laboratory Reporting Limits

Target compounds specified for the project were analyzed for and reported as required. Reporting limits were supported with proper initial calibration concentrations for all target compounds. The reporting limit goals specified in the OMM and revisions were achieved.

2.12 Overall Assessment of VOCs Data Usability

VOCs data are acceptable for use as qualified, based on the information submitted by the laboratory.

3. Semi-volatile Organic Compounds (SVOCs; SW846 Method 8270D – Full Scan and SIM)

3.1 Holding Time

Water samples should be extracted within 7 days of collection and the extracts analyzed within 40 days of extraction. All samples were extracted and analyzed within the required holding times.

3.2 GC/MS Instrument Performance Check

Decafluorotriphenylphosphine (DFTPP) tuning analyses were performed at the required frequency. Relative abundance for all required ions met the method requirements.

3.3 Initial Calibration

The method requires that (1) if linear average response factors (RFs) is chosen as the quantitation option, the %RSD of RFs be $\leq 20\%$ for target compounds, (2) if least-square linear regression is chosen for quantitation, the correlation coefficient (r) be ≥ 0.99 , (3) if six-point non-linear (quadratic) curve is chosen for quantitation, the coefficient of determination (r^2) be ≥ 0.99 , (4) compound RFs are \geq the minimum RF specified in Method 8270D, Table 4, and (5) a second source standard (ICV) should be analyzed immediately after the initial calibration and the %D or %D_f values for all target and surrogate compounds should be within $\pm 30\%$.

The Initial calibration met the criteria for linearity. The ICAL was considered valid. Data affected by calibration accuracy were qualified based on the calibration verification analyses (see Section 3.4).

3.4 Calibration Verification

The method requires that (1) continuing calibrations be analyzed at the beginning of each 12-hour analysis period prior to the analysis of method blank and samples, (2) the %D values be within $\pm 20\%$, (3) compound RFs are \geq the minimum RF specified in Method 8270D, Table 4, and (4) the internal standards in the calibration verification standard changes by a factor of two (-50% to +100%) from that in the mid-point standard level of the most recent initial calibration sequence.

Calibration verification analyses met the frequency criteria. The %D or %D_f values either met the criteria or the outliers had no effects on associated data (*e.g.*, bias-high %D value for a compound that was not detected in associated samples).

3.5 Method Blanks

Method blanks were analyzed at the required frequency. No target compounds were detected at or above the RLs in the method blank.

3.6 Laboratory Control Sample (LCS) and LCS Duplicate (LCSD)

LCS and LCSD analyses were performed as required. The %R and RPD values either met the laboratory control criteria or the %R and RPD outliers had no adverse effects on data quality and usability (*e.g.*, high-bias %R or out-of-control RPD for a compound that was not detected in associated samples).

3.7 Surrogate Spikes

Surrogate spikes were added to all samples as required by the method. All surrogate %R values were within the laboratory control limits.

3.8 Matrix Spike and Matrix Spike Duplicate (MS/MSD)

MS/MSD analyses were performed on sample PLF-MW53S-1014 as requested. All %R and RPD values for spiked compounds were either within the laboratory control limits or the outliers had no adverse effects on data usability (*e.g.*, biased-high %R values for a non-detected compound).

3.9 Internal Standards

Proper internal standards were added to all samples. Internal standard retention times were within the ± 0.5 minute window of the associated standard in all samples. All internal standard intensity either met the method requirement of -50% to $+100\%$ of the associated standard or the recovery outliers had no adverse effects on data usability (*e.g.*, biased-high internal standard recovery where all associated compounds were not detected in the sample).

3.10 Field Duplicates

Samples PLF-MW53S-1014 and PLF-DUP4-1014 were field duplicates submitted for SVOCs analyses. Target compounds were not detected at or above the RLs in either sample. The field precision met the project criteria.

3.11 Laboratory Reporting Limits

Target compounds specified for the project were analyzed for and reported as required. Reporting limits were supported with proper initial calibration concentrations for all target compounds. The reporting limit goals specified in the OMM and revisions were achieved.

3.12 Overall Assessment of SVOCs Data Usability

All polycyclic aromatic hydrocarbons (PAHs), 1-Methylphthalate, 2-methylphthalate, and *bis*(2-chloroethyl)ether results for all samples analyzed for SVOCs were to be reported from the SW8270D-SIM analyses in favor of the lower detection limits. The results from the SW8270D full scan analyses were qualified (DNR) and rejected.

Hexachlorobutadiene results for samples analyzed with both methods SW8260C and SW8270D should be reported from the SW8260C analyses in favor of the lower detection limits. Results from the SW8270D analyses were qualified (DNR) and rejected.

1,2-Dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene results for samples analyzed with both methods SW8260C and SW8270D should be reported from the SW8270D analyses. The two methods provided the same MRLs for these compounds. Based on the nature of these compounds, Method SW8270D may be more efficient than Method SW8260C. Results for these compounds were to be reported from SW8270D analyses; results reported from SW8260C were qualified (DNR) and rejected.

Pentachlorophenol and 4-nitrophenol were to be reported from the SW8151A analyses for samples PLF-MW53S-1014, PLF-MW52S-1014, PLF-MW26SR-1014, and PLF-DUP4-1014 in favor of the lower detection limits. Results for these compounds reported from SW8270D-SIM and/or SW8270D full scan were to be qualified (DNR) and rejected.

Data qualified in these respects are summarized in **Section IV -1**. SVOCs data are acceptable for use as qualified, based on the information submitted by the laboratory.

4. Chlorophenoxy Herbicides, PCP, and 4-Nitrophenol (SW846 Method 8151A)

4.1 Holding Times

Water samples should be extracted within 7 days of collection and the extracts analyzed within 40 days of extraction. All samples were initially extracted and analyzed within the required holding times.

4.2 GC/MS-MS Instrument Performance Check

According to the laboratory standard operation procedure, tuning analyses were not necessary since the method was modified using the GC/MS-MS techniques (rather than the method stated GC/MS technique). Data were not qualified on this basis.

4.3 Initial Calibration

The method and laboratory criteria require that (1) if linear average RFs is chosen as the quantitation option, the %RSD of RFs be $\leq 20\%$ for the compound, (2) if least-square linear regression is chosen for quantitation, the correlation coefficient (r) be ≥ 0.99 , (3) if six-point non-linear (quadratic) curve is chosen for quantitation, the coefficient of determination (r^2) be ≥ 0.99 , and (4) a second source standard be analyzed immediately after the analysis of last calibration standard and the %D values be within $\pm 30\%$. The initial calibration met the criteria.

4.4 Calibration Verification

The method criteria require that (1) continuing calibrations be analyzed at the beginning of each 12-hour analysis period prior to the analysis of method blank and samples, and (2) the %D value be within $\pm 20\%$. Calibration verification analysis was performed as required. The %D values either met the criteria or the outliers had no adverse effects on data quality and usability (*e.g.*, biased-high recovery for a compound that was not detected in associated samples).

4.5 Method Blank

A method blank was prepared and analyzed with samples as required by the method. Target compounds were not detected at or above the RLs in the method blank, except for the following:

Blank ID	Compound	Blank	Affected Sample	Original Result	Adjusted Result	Unit
4102702-BLK1	Pentachlorophenol	0.11	PLF-MW53S-1014	0.15	0.15 U	µg/L
			PLF-MW52S-1014	0.18	0.18 U	
			PLF-DUP4-1014	0.16	0.16 U	
			PLF-MW26SR-1014	0.16	0.16 U	

4.6 Laboratory Control Sample (LCS) and LCS Duplicate (LCSD)

LCS and LCSD analyses were performed as required. The %R and RPD values met the laboratory control criteria.

4.7 Surrogate Spikes

Surrogate spikes were added to all samples as required by the method. The surrogate %R values either met the laboratory control criteria or the outliers had no adverse effects on data quality and usability (*e.g.*, biased-high recovery of a surrogate spike where associated compounds were not detected in the sample).

4.8 Matrix Spike (MS) and MS Duplicate (MSD)

MS and MSD analyses were performed on sample PLF-MW53S-1014 as requested. All %R and RPD values met the laboratory control criteria, except for the following:

Parent Sample ID	Analyte	MS %R	MSD %R	Control Limit	Affected Sample	Data Qualifier
PLF-MW53S-1014	4-Nitrophenol	58%	56%	60-140%	PLF-MW53S-1014	J
	Dinoseb	59%	61%			
	Pentachlorophenol	55%	54%			

4.9 Internal Standards

An external calibration method was applied to compound quantitation. Internal standard evaluation was not applicable.

4.10 Field Duplicates

Samples PLF-MW53S-1014 and PLF-DUP4-1014 were field duplicates submitted for chlorophenoxy herbicides, PCP, and 4-nitrophenol analyses. Target compounds were not detected at or above the RLs in either sample. The field precision met the project criteria.

4.11 Laboratory Reporting Limits

Target compounds specified for the project were analyzed for and reported as required. Reporting limits were supported with proper initial calibration concentrations for all target compounds. The reporting limit goals specified in the OMM and revision were achieved.

4.12 Overall Assessment of Chlorophenoxy Herbicides, PCP, and 4-Nitrophenol Data Usability

Chlorophenoxy herbicides, PCP, and 4-nitrophenol data are acceptable for use as qualified, based on the information submitted by the laboratory.

5. Metals (EPA Methods 200.7 and 200.8)

5.1 Holding Time

Water samples should be analyzed within 180 days of collection. All samples were analyzed within the required holding times.

5.2 ICP/MS Tune Analysis

Instrument tuning was performed at the required frequency. The stability check (%RSD <5%), mass calibration (mass difference <0.1 AMU), and resolution check (peak width <0.75 AMU at 5% peak height) met the method criteria.

5.3 Initial Calibration

The ICP methods require that (1) a blank and one calibration standard be used in establishing the analytical curve, and (2) the average of replicate exposures be reported for all standards, QC, and sample analyses.

5.4 Initial and Continuing Calibration Verification

Initial calibration verification (ICV) and continuing calibration verification (CCV) analyses were performed at the required frequency. All %R values were within 90-110%.

5.5 Blanks

Calibration Blanks: Initial calibration blanks (ICBs) and continuing calibration blanks (CCBs) were analyzed at the required frequency. Chromium and manganese were not detected at or above the instrument detection limits (IDLs) in the ICBs and CCBs. Negative detections of chromium

and manganese were present at levels less than RLs but greater than MDLs in CCBs; affected results were qualified as follows:

Blank ID	Analyte	Blank	Affected Sample	Original Result	Adjusted Result	Unit
CCB 10/31/14,13:30	Manganese	-0.71	PLF-MW12S-1014	3.6 U	3.6 UJ	µg/L
CCB 10/31/14, 14:40		-0.76	PLF-#2R-1014	3.6 U	3.6 UJ	
CCB 10/31/14, 15:39		-0.71	PLF-DUP2-1014	3.6 U	3.6 UJ	
CCB 10/31/14,13:30	Chromium	-0.66	PLF-MW12S-1014	0.59 U	0.59 UJ	µg/L
CCB 10/31/14, 14:40		-0.82				

Method Blank: Method blanks were analyzed at the required frequency. No target analytes were detected at or above the RLs in method blanks.

5.6 ICP Interference Check Sample (ICS)

ICS analyses were performed as required. No false positive or negative detections were observed (no detections of target analytes in ICS Solution A). All %R values were within 80-120% in Solution AB for target analytes.

5.7 Laboratory Control Sample (LCS)

LCS analyses were performed as required. All %R values were within the method control limits.

5.8 Laboratory Duplicate Analysis

Duplicate analyses were performed on project samples as requested. The RPD or concentration difference values met the laboratory control limits.

5.9 Matrix Spike (MS)

MS analyses were performed on project samples as requested. The %R values were within the laboratory control limits.

5.10 ICP/MS Internal Standards

At least three internal standards were added to all samples and QC analyses. All percent relative intensity values were within the method control criterion (70 - 125% of those of the calibration blank).

5.11 Field Duplicates

Samples PLF-MW12S-1014 and PLF-DUP2-1014 were field duplicates submitted for manganese analyses; samples PLF-#4R-1014 and PLF-DUP1-1014 were field duplicates submitted for calcium, iron, magnesium, manganese, potassium, and sodium analyses; and samples PLF-22SMW-1014 and PLF-DUP3-1014 were field duplicates submitted for total chromium analyses. The RPD (or concentration difference values) and data qualification are presented in **Section III**.

5.12 Laboratory Reporting Limits

RLs were supported with proper initial calibration concentrations for target analytes, and met the detection limit goals listed in the OMM and revisions.

5.13 Overall Assessment of Metals Data Usability

Metals data are acceptable for use as qualified, based on the information submitted by the laboratory.

6. Methane, Ethane, & Ethene (MEE) Gases (Laboratory Standard Operation Procedure)

6.1 Holding Time

Water samples should be analyzed within 14 days of collection. All samples were analyzed within the required holding time.

6.2 Initial Calibration

A 4-point calibration was performed for each target compound according to the analytical method. The correlation coefficient was ≥ 0.995 for the initial calibration linear regression and met the method requirement.

6.3 Calibration Verification

The method requires that (1) a mid-range check standard be analyzed prior to and after each analytical batch, and (2) the %D_f value be within $\pm 20\%$ of the true value. Calibration verification analyses met the laboratory SOP criteria.

6.4 Method Blanks

Method blanks were prepared and analyzed as required. No target compounds were detected at or above the RLs in the method blanks.

6.5 Laboratory Duplicate Analyses

Duplicate analyses were not reported in this SDG. Analytical precision was evaluated with LCS/LCSD and field duplicate results.

6.6 Matrix Spike and Matrix Spike Duplicate (MS/MSD)

MS/MSD analyses were not applicable for the method.

6.7 Laboratory Control Sample (LCS)

LCS and LCS duplicate (LCSD) analyses were performed as required by the method for methane. All %R and RPD values met the laboratory control limits.

6.8 Field Duplicates

Samples PLF-MW12S-1014 and PLF-DUP2-1014 were field duplicates submitted for MEE gases analyses. MEE gases were not detected at or above the RLs in these samples; the field precision was acceptable for MEE analyses.

6.9 Reporting Limits

The reported RLs were supported with adequate ICAL concentrations. Sample-specific RLs met the OMM reporting limit requirements for all samples.

6.10 Overall Assessment of MEE Gases Data Usability

MEE gases data are of known quality and acceptable for use, based on the information submitted by the laboratory.

7. Alkalinity, COD, TOC, TDS, Anions, Cr (VI), Ammonia, and Fe (II)

7.1 Holding Times

The samples were analyzed within the required holding times of 24 hours for Cr (VI) and Fe(II), 48 hours for nitrate and nitrite; seven days for total dissolved solids (TDS), 14 days for alkalinity; and 28 days for ammonia, chloride, sulfate, chemical oxygen demand (COD), and total organic carbon (TOC). All analyses were performed within the required holding times.

Note that ferrous iron analyses were performed in the field with a field screening methodology (Hach-8146). Ferrous iron results were considered as Stage I data and were qualified (UJ) for non-detects and (J) for detects as estimated values.

7.2 Initial Calibration

Initial calibration (ICAL) is required for anions (nitrite, nitrate, chloride, and sulfate by EPA Method 300.0), Cr (VI), ammonia, and TOC analyses. The initial calibration correlation coefficients were ≥ 0.995 and met the method requirements for these parameters.

7.3 Initial and Continuing Calibration Verification

Initial calibration verification (ICV) and continuing calibration verification (CCV) analyses were performed at the required frequency for all inorganic constituents. All %R values were within the control limits (80-120% for anions; 90 – 110% for TOC and ammonia).

7.4 Blanks

Calibration Blanks: ICBs and CCBs were analyzed at the required frequency. Target analytes were either not detected at or above the RLs in ICBs and CCBs, or detected at levels that had no adverse effects on sample results (*e.g.*, sample result was $>10x$ the concentration in the blank).

Method Blanks: Method blanks were analyzed at the required frequency. Target analytes were either not detected at or above the RLs in method blanks, or detected at levels that had no adverse effects on sample results (*e.g.*, sample result was $>10x$ the concentration in the blank).

7.5 Laboratory Duplicate Analysis

Duplicate analyses were performed for all inorganic constituents on project samples. All RPD or concentration difference values met the laboratory control criteria.

7.6 Matrix Spike (MS) and MS Duplicate (MSD)

MS and/or MSD analyses were performed for anions, COD, TOC, Cr (VI), and ammonia on project samples. All %R and RPD values met the laboratory control criteria.

7.7 Laboratory Control Sample (LCS)

LCS analyses were performed for TDS, alkalinity, anions, TOC, COD, Cr (VI), and ammonia at the required frequency. All %R values were within the laboratory control limits.

7.8 Field Duplicates

Samples PLF-MW12S-1014 and PLF-DUP2-1014 were field duplicates submitted for inorganic constituent analyses, and samples PLF-MW22S-1014 and PLF-DUP3-1014 were field duplicates submitted for hexavalent chromium analyses. The RPD (or concentration difference values) and data qualification are presented in **Section III**.

7.9 Laboratory Reporting Limits

The reporting limits were supported with adequate ICAL concentrations and met the OMM goals for inorganic constituents.

7.10 Overall Assessment of Inorganic Constituent Data

Inorganic constituent data are of known quality and acceptable for use as qualified, based on the information submitted by the laboratory.

III. FIELD DUPLICATE SUMMARY

Field duplicate RPD is indicative of field and laboratory precision and sample homogeneity in combination. The Functional Guidelines or OMM do not specify criteria for field duplicate evaluation. An advisory criterion of 35 percent was applied to evaluating the RPD values of field duplicate results $\geq 5xRL$. For results $< 5xRL$, an advisory criterion of $2xRL$ was applied to evaluating the concentration differences. The RPD (or concentration difference) values and data qualification for detected compounds in field duplicate pairs are presented as follows:

Detected Analyte	Unit	RL	Field Duplicate Sample ID & Concentration		RPD (%)	Concentration Difference	Data Qualification
			4R	DUP1			
Benzene	µg/L	0.028	0.21	0.083	87%	0.127	J/J
Tetrachloroethene	µg/L	0.2	0.67	0.58		0.09	
Trichloroethene	µg/L	0.053	0.24	0.2		0.04	
Calcium	µg/L	20	87000	87000	0%		
Iron	µg/L	20	25	ND		25	
Magnesium	µg/L	5	24000	24000	0%		
Manganese	µg/L	1	440	160	93%		J/J
Potassium	µg/L	200	7400	7300	1%		
Sodium	µg/L	200	36000	35000	3%		
			MW12S	DUP2			
Trichloroethene	µg/L	0.053	0.43	0.33	26%		
Manganese	µg/L	3.6	ND	ND		0	
Chloride	µg/L	920	29000	32000	10%		
Nitrate as N	µg/L	340	8600	9900	14%		
Nitrite as N	µg/L	42	ND	ND		0	
Sulfate	µg/L	2600	83000	89000	7%		
Ammonia	mg/L	0.05	ND	ND		0	
Methane	mg/L	0.01	ND	ND		0	
Ethane	mg/L	0.01	ND	ND		0	
Ethylene	mg/L	0.01	ND	ND		0	
Alkalinity, Total	mg/L	9	220	210	5%		
Bicarbonate	mg/L	9	220	210	5%		
Carbonate	mg/L	9	ND	ND		0	
Hydroxide	mg/L	9	ND	ND		0	
Total Dissolved Solids	mg/L	5	420	380	10%		
Chemical Oxygen Demand	mg/L	5	ND	ND		0	
Total Organic Carbon	mg/L	0.5	1.2	1.1		0.1	
Iron, Ferrous	mg/L	NA	ND	ND		0	
			MW22S	DUP3			
Chromium, Hexavalent	µg/L	10	ND	ND			

Detected Analyte	Unit	RL	Field Duplicate Sample ID & Concentration		RPD (%)	Concentration Difference	Data Qualification
Chromium	µg/L	0.59	27	42	43%		J/J
			MW53S	DUP4			
Ethylbenzene	µg/L	2	3.1	3.6		0.5	
m, p-Xylene	µg/L	4	9	11		2	
o-Xylene	µg/L	2	3.1	3.6		0.5	
Toluene	µg/L	2	16	20	22%		
Tetrachloroethene	µg/L	0.2	ND	0.23		0.23	
Trichloroethene	µg/L	0.053	0.48	0.56	15%		
1-Methylnaphthalene	µg/L	0.02	0.14	0.15	7%		
2-Methylnaphthalene	µg/L	0.02	0.26	0.3	14%		
Acenaphthene	µg/L	0.02	0.075	0.035		0.04	
Naphthalene	µg/L	0.02	1.5	1.4	7%		
Pyrene	µg/L	0.02	0.076	0.022		0.054	J/J
Tetrachloroethene	µg/L	0.05	ND	0.077		0.077	
			MW54I	DUP5			
Trichloroethene	µg/L	0.053	0.25	0.22		0.03	

Notes:

mg/L – milligram per liter
 ND – Not detected at or above the RL
 NA – Not applicable
 RL – Reporting limit
 RPD – Relative percent difference
 µg/L – microgram per liter

IV. DATA VALIDATION SUMMARY

1. Data Qualification

Sample ID	Analyte	Data Qualifier	Reason	Report Section
PLF-DUP1-1014 PLF-DUP2-1014 PLF-MW47S-1014 PLF-MW50S-1014 PLF-MW46S-1014 PLF-MW37S-1014 PLF-MW34S-1014 PLF-MW40S-1014 PLF-MW42S-1014 PLF-MW54I-1014 PLF-MW44S-1014 PLF-MW43I-1014 PLF-MW43S-1014 PLF-MW45S-1014 PLF-MW41SR-1014 PLF-MW38S-1014 PLF-MW38I-1014 PLF-LOPEZ-1014 PLF-BRADLEY-1014 PLF-RADA-1014 PLF-WEST-1014 PLF-YENNEY2-1014 PLF-YENNEY3-1014 PLF-SALINAS-1014 PLF-DUP5-1014 PLF-TripBlank3-1014	1,2-Dichloroethane Vinyl Chloride	J/U	Lowest ICAL standard recovery was less than the lower control limit, and result was approaching project Cleanup Level.	Section II, 2.3
PLF-MW12ID-1014 PLF-MW51S-1014 PLF-MW11I-1014 PLF-MW11S-1014 PLF-MW10S-1014 PLF-NVM01I-1014 PLF-NVM01-1014 PLF-MW47I-1014 PLF-MW53S-1014 PLF-#2I-1014 PLF-MW52S-1014 PLF-MW29S-1014 PLF-MW29I-1014 PLF-TripBlank2-1014 PLF-MW49I-1014 PLF-MW49S-1014 PLF-MW55S-1014	1,2,3-Trichloropropane	U	The calibration verification %D value indicated a potential low bias of the reported value.	Section II, 2.4

Sample ID	Analyte	Data Qualifier	Reason	Report Section
PLF-#4R-1014 PLF-MW22S-1014 PLF-MW12S-1014 PLF-MW13S-1014 PLF-#2R-1014				
PLF-MW53S-1014	Toluene	J	MS and MSD %R values were less than the lower control limit.	Section II, 2.8
PLF-MW53S-1014 PLF-MW52S-1014 PLF-DUP4-1014 PLF-MW26SR-1014	1-Methylnaphthalene 2-Methylnaphthalene Acenaphthalene Acenaphthene Anthracene Benezo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene <i>bis</i> (2-chloroethyl)ether Chrysene Dibenz(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Pyrene (SW8270D-Full Scan)	DNR	Report from SW8270D-SIM analysis in favor of the lower detection limit.	Section II, 3.12
PLF-MW53S-1014 PLF-MW52S-1014 PLF-DUP4-1014 PLF-MW26SR-1014	1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Naphthalene ^(A) 1,2,4-Trichlorobenzene (SW8260C-Full Scan)	DNR	Report from SW8270D analysis in favor of the lower detection limit.	Section II, 3.12
PLF-MW53S-1014 PLF-MW52S-1014 PLF-DUP4-1014 PLF-MW26SR-1014	Hexachlorobutadiene (SW8270D-Full Scan)	DNR	Report from the SW8260C analysis.	Section II, 3.12
PLF-MW53S-1014 PLF-MW52S-1014 PLF-DUP4-1014 PLF-MW26SR-1014	Pentachlorophenol ^(B) 4-Nitrophenol ^(C) (SW8270D-Full Scan and/or SIM)	DNR	Report from the SW8151A analysis in favor of the lower detection limit.	Section II, 3.12
PLF-MW53S-1014 PLF-MW52S-1014 PLF-DUP4-1014 PLF-MW26SR-1014	Pentachlorophenol	U	Analyte was detected in the method blank and the result was affected.	Section II, 4.5

Sample ID	Analyte	Data Qualifier	Reason	Report Section
PLF-MW53S-1014	4-Nitrophenol Dinoseb Pentachlorophenol	UJ	MS and/or MSD %R values were less than the lower control limit.	Section II, 4.8
PLF-MW12S-1014 PLF-#2R-1014 PLF-DUP2-1014	Manganese	UJ	Result was affected by negative detections in CCBs.	Section II, 5.5
PLF-MW12S-1014	Chromium, Total	UJ	Result was affected by negative detections in CCBs.	Section II, 5.5
PLF-MW49S-1014 PLF-MW47S-1014 PLF-MW50S-1014 PLF-MW12S-1014 PLF-DUP2-1014 PLF-#2R-1014 PLF-MW20S-1014 PLF-MW25SR-1014	Iron, Ferrous	J/UJ	The result was reported from a field screening analysis.	Section II, 7.1
PLF-#4R-1014 PLF-DUP1-1014	Benzene Manganese	J	The field duplicate results did not meet the advisory control criteria.	Section III
PLF-MW22S-1014 PLF-DUP3-1014	Chromium, Total	J	The field duplicate results did not meet the advisory control criteria.	Section III
PLF-MW53S-1014 PLF-DUP4-1014	Pyrene	J	The field duplicate results did not meet the advisory control criteria.	Section III

Note:

J/UJ – Detections are qualified (J) and non-detects are qualified (UJ) as estimated values.

ICAL - Initial calibration

CCB - Continuing calibration blank

CCV - Continuing calibration verification

MS/MSD - Matrix spike/matrix spike duplicate

^(A) – This compound was to be reported from EPA 8270D-SIM analysis.

^(B) – Included both EPA 8270D Full Scan and SIM analyses.

^(C) – EPA 8270D Full Scan only.

2. Data Qualifier Definition

Data Qualifier	Definition
DNR	The result for this analyte should be reported from an alternative analysis for optimal result.
J	The analyte was detected above the reported quantitation limit, and the reported concentration is an estimated value.
U	The analyte was not detected at or above the reported value or quantitation limit.
UJ	The analyte is not detected above the sample quantitation limit, and the reported quantitation limit is an estimated value.

V. DATA QUALITY OBJECTIVE ASSESSMENT

The quality of the data collected in this sampling event is assessed against the data quality objectives (DQOs) defined in the OMM. The assessment evaluates whether the DQOs were achieved in various QC elements - precision, accuracy, representativeness, comparability, and completeness, as presented below.

1. Precision

Precision is defined as the degree of mutual agreement among independent measurements as the result of repeated application of the same process under similar conditions. Analytical precision is evaluated via the relative percent difference (RPD) values of LCS/LCSD, MS/MSD, and duplicate sample (inorganic only) analyses. The RPD values of field duplicate analyses are used to evaluate the analytical and field precision in conjunction with sample homogeneity.

The precision of VOCs, SVOCs, chlorophenoxy herbicides, methane, ethane, ethane, metals, and inorganic constituent (anions, alkalinity, bicarbonate, COD, TDS, hexavalent chromium, ammonia, and TOC) analyses met the project DQOs.

1.1 Field Duplicates

The RPD values for benzene and manganese in field duplicate pair, samples PLF-#4R-1014 and PLF-DUP1-1014, were outside the advisory criteria ($\leq 35\%$); benzene and manganese results for both samples were qualified (J) as estimated values.

The RPD value for total chromium in field duplicate pair, samples PLF-MW22S-1014 and PLF-DUP3-1014, was outside the advisory criteria ($\leq 35\%$); the total chromium result for both samples were qualified (J) as estimated values.

The RPD value for pyrene in field duplicate pair, samples PLF-MW53S-1014 and PLF-DUP4-1014, was outside the advisory criteria ($\leq 35\%$); the total chromium result for both samples were qualified (J) as estimated values.

2. Accuracy

Accuracy is a statistical measurement of correctness and includes components of random and system errors. Accuracy is defined as the degree of agreement between a measurement and the known reference. Analytical accuracy is evaluated via the percent recovery (%R) values of initial and continuing calibration (percent difference or percent drift for organic analyses), surrogate spikes (organic analyses only), MS, MSD, LCS, LCSD, and internal standards (as applicable for the analytical methods) in conjunction with method blank and field blank results. Method and field blanks

identify the type and magnitude of effects contributed to the system error through field and/or laboratory procedures.

The accuracy of VOCs, SVOCs, chlorophenoxy herbicides, methane, ethane, ethane, metals, and inorganic constituents (anions, alkalinity, COD, TDS, hexavalent chromium, ammonia, and TOC) analyses met the DQOs of the OMM, except for the following:

2.1 Initial Calibration - VOCs

The recovery of the lowest calibration standards in both ICALs applied in this SDG were less than 70% of the true values for a number of target compounds. In particular, vinyl chloride and 1,2-dichloroethane recovery in ICAL: 5973N 11011024 were less than 70% of the true values at various standards (including the lowest ones), and the lowest standard concentrations and detected concentrations were approaching the project cleanup levels. The reported RLs for non-detects and reported values for detections may pose potential effects on project decisions. Vinyl chloride and 1,2-dichloroethane results for the 27 samples associated with this ICAL were qualified (UJ) for non-detects and (J) for detects as estimated.

2.2 Calibration Verification – VOCs

The %D values for 1,2,3-trichloropropane in two of the calibration verification analyses were greater than the upper control limit (20%), indicating a potential low bias of the associated sample results for the compound. 1,2,3-Trichloropropane was not detected in associated samples; the results were qualified (UJ) as estimated.

2.3 MS and MSD %R - VOCs

The %R values for toluene in the MS/MSD analyses performed on sample PLF-MW53S-1014 were greater than the upper control limits, indicating a high-bias potential associated with this result. The toluene result for sample PLF-MW53S-1014 was qualified (J) as estimated.

2.4 MS and MSD %R - Dinoseb, 4-Nitrophenol, and PCP

The %R values for Dinoseb, 4-nitrophenol, and PCP in the MS/MSD analyses performed on sample PLF-MW53S-1014 were less than the upper control limits, indicating a low-bias potential associated with this result. Dinoseb, 4-nitrophenol, and PCP results for sample PLF-MW53S-1014 was qualified (UJ) as estimated.

2.5 Calibration Blanks - Chromium and Manganese

Negative detections of chromium and manganese were present in selected CCBs associated with chromium and manganese analyses at levels between -MDLs and -RLs. Non-detect results in associated samples were qualified (UJ) as estimated.

3. Representativeness

Representativeness is the level of confidence that the analytical data reflect the actual field condition. Representativeness is evaluated via the integrity of the samples during the course from collection through preparation/analysis at the laboratory. The evaluation of associated method and field blanks also assists in identifying artifacts that may skew the representativeness of the samples.

No anomalies were identified in the procedures of sample preservation, handling, preparation, and analyses. Sample preparation and analyses were all performed within the required holding times. The laboratory and field blanks were either free of contaminants or at levels that had no significant effects on sample results. The VOCs, SVOCs, chlorophenoxy herbicides, methane, ethane, ethane, metals, and inorganic constituent data are assumed representative.

4. Comparability

Comparability is the confidence with which one data set can be compared to another data set. Using standard methods throughout the data generation processes ensures the comparability of data generated in separated sampling events.

Data collected in this sampling event are assumed comparable because standard methods were used for sample preparation and analyses, and the methods were consistent with those specified in the OMM.

Selective ion monitoring (SIM) technique was applied to the analyses of full list VOCs, as opposed to only compounds requiring lower detection limits in all previous sampling events. The reporting limits remained the same as those specified in the OMM. No significant deviations of results from the previous sampling events were observed.

5. Completeness

Completeness is a ratio of the number of valid data to the expected number of data that can be obtained under normal conditions for a given sampling event. Valid data are sample results determined acceptable for use. Rejected results are considered un-useable and thus invalid. In cases where data were rejected in favor of those obtained from a separate valid analysis, the rejection does not affect the completeness.

The completeness of this sampling event is 100 percent for all analyses except chlorophenoxy herbicides. One of the four samples collected for this analysis was not performed due to sample container breakage during the transportation to the subcontracted laboratory. The overall completeness for this sampling event met the 95 percent completeness goal of the OMM.

6. Sensitivity

Sensitivity depicts the level of ability an analytical system (i.e., sample preparation and instrumental analysis) of detecting a target component in a given sample matrix with a defined level of confidence. Factors affecting the sensitivity of an analytical system include: analytical system background (e.g., laboratory artifact or method blank contamination), sample matrix (e.g., mass spectrometry ion ratio change, co-elution of peaks, or baseline elevation) and instrument instability.

To evaluate if the analytical sensitivity achieved the project expectation, sample-specific PQLs were compared against the RL goals set forth in the OMM and the revisions. In addition, sample results were compared to detections of target analytes in method blanks, trip blanks, and calibration blanks to identify potential effects of laboratory and field background on sensitivity.

The sensitivity associated with the analyses of all samples was attained to the project goals in this sampling event, except for the following:

6.1 Method Blank - PCP

Pentachlorophenol (PCP) was detected in the method blank associated with the chlorophenoxy herbicides SW8151A analyses at a level greater than the RL. PCP was detected in all four samples at levels similar to that of the method blank, and greater than their RLs. Sample-specific RLs were elevated to the reported values for all samples; the sensibility for the analysis of this compound was altered.

VI. REFERENCES

USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review. Office of Superfund Remediation and Technical Innovation. August 2014. EPA 540-R-013-001.

USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review. Office of Superfund Remediation and Technical Innovation. August 2014. EPA 540-R-014-002.

USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, January 13 2009, EPA 540-R-08-005.

USEPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, December 1996.

USEPA Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March 1983 and updates.

Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 20th Edition, 1995.

Revised Site-Wide Groundwater Performance and Protection Monitoring Operations and Maintenance Manual – Pasco Landfill Site, Environmental Partners Inc., May 9, 2014. and October 10, 2014 Revisions.

Attachment B
Waste Disposal Documentation



February 6, 2014

Mr. Thom Morin
Environmental Partners, Inc.
295 NE Gilman Blvd., Suite 201
Issaquah, WA 98027

Dear Mr. Morin,

On January 27th, 2 samples were received by our laboratory and assigned our laboratory project number EV14010138. The project was identified as your 03913.0. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 295 NE Gilman Blvd., Suite 201
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.0
 CLIENT SAMPLE ID: SVESKIDCOND-012414

DATE: 2/6/2014
 ALS JOB#: EV14010138
 ALS SAMPLE#: EV14010138-01
 DATE RECEIVED: 01/27/2014
 COLLECTION DATE: 1/24/2014 9:45:00 AM
 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Chloromethane	EPA-8260	U	2.3	10	UG/L	02/03/2014	GAP
Vinyl Chloride	EPA-8260	0.41	0.31	10	UG/L	02/03/2014	GAP
Bromomethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Chloroethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Carbon Tetrachloride	EPA-8260	U	0.34	10	UG/L	02/03/2014	GAP
Trichlorofluoromethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Ethanol	EPA-8260	1800000	71000	100	UG/L	02/03/2014	GAP
Carbon Disulfide	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Acetone	EPA-8260	530000	27000	40000	UG/L	02/04/2014	GAP
1,1-Dichloroethene	EPA-8260	7.0	2.0	10	UG/L	02/03/2014	GAP
Methylene Chloride	EPA-8260	990	68	100	UG/L	02/03/2014	GAP
Acrylonitrile	EPA-8260	U	10	10	UG/L	02/03/2014	GAP
Methyl T-Butyl Ether	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Diisopropyl Ether	EPA-8260	U	35	10	UG/L	02/03/2014	GAP
Ethyl T-Butyl Ether	EPA-8260	U	41	10	UG/L	02/03/2014	GAP
1,1-Dichloroethane	EPA-8260	81	2.0	10	UG/L	02/03/2014	GAP
2-Butanone	EPA-8260	350000	14000	10000	UG/L	02/03/2014	GAP
Cis-1,2-Dichloroethene	EPA-8260	34	2.0	10	UG/L	02/03/2014	GAP
2,2-Dichloropropane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Bromochloromethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Chloroform	EPA-8260	5.0	2.0	10	UG/L	02/03/2014	GAP
1,1,1-Trichloroethane	EPA-8260	14	2.0	10	UG/L	02/03/2014	GAP
1,1-Dichloropropene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,2-Dichloroethane	EPA-8260	170	2.0	10	UG/L	02/03/2014	GAP
Benzene	EPA-8260	6.9	2.0	10	UG/L	02/03/2014	GAP
Trichloroethene	EPA-8260	400	5.4	100	UG/L	02/03/2014	GAP
tert-Amyl Methyl Ether	EPA-8260	U	3.9	10	UG/L	02/03/2014	GAP
tert-Butanol	EPA-8260	19000	1300	100	UG/L	02/03/2014	GAP
1,2-Dichloropropane	EPA-8260	U	0.64	10	UG/L	02/03/2014	GAP
Dibromomethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Bromodichloromethane	EPA-8260	U	0.71	10	UG/L	02/03/2014	GAP
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
4-Methyl-2-Pentanone	EPA-8260	53000	3400	10000	UG/L	02/03/2014	GAP
Toluene	EPA-8260	6300	15	1000	UG/L	02/03/2014	GAP
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,1,2-Trichloroethane	EPA-8260	12	0.77	10	UG/L	02/03/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT:	Environmental Partners, Inc. 295 NE Gilman Blvd., Suite 201 Issaquah, WA 98027	DATE:	2/6/2014
CLIENT CONTACT:	Thom Morin	ALS JOB#:	EV14010138
CLIENT PROJECT:	03913.0	ALS SAMPLE#:	EV14010138-01
CLIENT SAMPLE ID	SVESKIDCOND-012414	DATE RECEIVED:	01/27/2014
		COLLECTION DATE:	1/24/2014 9:45:00 AM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
2-Hexanone	EPA-8260	2200	94	100	UG/L	02/03/2014	GAP
1,3-Dichloropropane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Tetrachloroethylene	EPA-8260	82	2.0	10	UG/L	02/03/2014	GAP
Dibromochloromethane	EPA-8260	U	0.74	10	UG/L	02/03/2014	GAP
1,2-Dibromoethane	EPA-8260	U	0.10	10	UG/L	02/03/2014	GAP
Chlorobenzene	EPA-8260	3.2	2.0	10	UG/L	02/03/2014	GAP
1,1,1,2-Tetrachloroethane	EPA-8260	U	1.7	10	UG/L	02/03/2014	GAP
Ethylbenzene	EPA-8260	1500	2.9	100	UG/L	02/03/2014	GAP
m,p-Xylene	EPA-8260	5500	11	100	UG/L	02/03/2014	GAP
Styrene	EPA-8260	5.3	1.5	10	UG/L	02/03/2014	GAP
o-Xylene	EPA-8260	2400	6.9	100	UG/L	02/03/2014	GAP
Bromoform	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Isopropylbenzene	EPA-8260	110	2.0	10	UG/L	02/03/2014	GAP
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,2,3-Trichloropropane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Bromobenzene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
N-Propyl Benzene	EPA-8260	280	2.0	10	UG/L	02/03/2014	GAP
2-Chlorotoluene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,3,5-Trimethylbenzene	EPA-8260	570	4.1	100	UG/L	02/03/2014	GAP
4-Chlorotoluene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
T-Butyl Benzene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,2,4-Trimethylbenzene	EPA-8260	1700	5.4	100	UG/L	02/03/2014	GAP
S-Butyl Benzene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
P-Isopropyltoluene	EPA-8260	30	2.0	10	UG/L	02/03/2014	GAP
1,3 Dichlorobenzene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,4-Dichlorobenzene	EPA-8260	34	1.8	10	UG/L	02/03/2014	GAP
N-Butylbenzene	EPA-8260	52	2.0	10	UG/L	02/03/2014	GAP
1,2-Dichlorobenzene	EPA-8260	390	2.8	100	UG/L	02/03/2014	GAP
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	10	UG/L	02/03/2014	GAP
1,2,4-Trichlorobenzene	EPA-8260	57	2.0	10	UG/L	02/03/2014	GAP
Hexachlorobutadiene	EPA-8260	U	0.69	10	UG/L	02/03/2014	GAP
Naphthalene	EPA-8260	2200	5.5	100	UG/L	02/03/2014	GAP
1,2,3-Trichlorobenzene	EPA-8260	16	2.0	10	UG/L	02/03/2014	GAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4 10000X Dilution	EPA-8260	106	02/03/2014	GAP
1,2-Dichloroethane-d4 1000X	EPA-8260	100	02/03/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT:	Environmental Partners, Inc. 295 NE Gilman Blvd., Suite 201 Issaquah, WA 98027	DATE:	2/6/2014
CLIENT CONTACT:	Thom Morin	ALS JOB#:	EV14010138
CLIENT PROJECT:	03913.0	ALS SAMPLE#:	EV14010138-01
CLIENT SAMPLE ID	SVESKIDCOND-012414	DATE RECEIVED:	01/27/2014
		COLLECTION DATE:	1/24/2014 9:45:00 AM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
Dilution				
1,2-Dichloroethane-d4 100X Dilution	EPA-8260	90.3	02/03/2014	GAP
1,2-Dichloroethane-d4 10X Dilution	EPA-8260	88.7	02/03/2014	GAP
1,2-Dichloroethane-d4 40000X Dilution	EPA-8260	106	02/04/2014	GAP
Toluene-d8 10000X Dilution	EPA-8260	96.8	02/03/2014	GAP
Toluene-d8 1000X Dilution	EPA-8260	100	02/03/2014	GAP
Toluene-d8 100X Dilution	EPA-8260	100	02/03/2014	GAP
Toluene-d8 10X Dilution	EPA-8260	97.3	02/03/2014	GAP
Toluene-d8 40000X Dilution	EPA-8260	94.8	02/04/2014	GAP
4-Bromofluorobenzene 10000X Dilution	EPA-8260	99.1	02/03/2014	GAP
4-Bromofluorobenzene 1000X Dilution	EPA-8260	100	02/03/2014	GAP
4-Bromofluorobenzene 100X Dilution	EPA-8260	102	02/03/2014	GAP
4-Bromofluorobenzene 10X Dilution	EPA-8260	100	02/03/2014	GAP
4-Bromofluorobenzene 40000X Dilution	EPA-8260	101	02/04/2014	GAP

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 295 NE Gilman Blvd., Suite 201
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.0
 CLIENT SAMPLE ID: SVEFLARECOND-012414

DATE: 2/6/2014
 ALS JOB#: EV14010138
 ALS SAMPLE#: EV14010138-02
 DATE RECEIVED: 01/27/2014
 COLLECTION DATE: 1/24/2014 10:15:00 AM
 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Chloromethane	EPA-8260	U	2.3	10	UG/L	02/03/2014	GAP
Vinyl Chloride	EPA-8260	1.6	0.31	10	UG/L	02/03/2014	GAP
Bromomethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Chloroethane	EPA-8260	6.9	2.0	10	UG/L	02/03/2014	GAP
Carbon Tetrachloride	EPA-8260	U	0.34	10	UG/L	02/03/2014	GAP
Trichlorofluoromethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Ethanol	EPA-8260	7400000	7.10E+05	1000	UG/L	02/03/2014	GAP
Carbon Disulfide	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Acetone	EPA-8260	1300000	54000	80000	UG/L	02/04/2014	GAP
1,1-Dichloroethene	EPA-8260	14	2.0	10	UG/L	02/03/2014	GAP
Methylene Chloride	EPA-8260	3300	68	100	UG/L	02/03/2014	GAP
Acrylonitrile	EPA-8260	U	10	10	UG/L	02/03/2014	GAP
Methyl T-Butyl Ether	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Diisopropyl Ether	EPA-8260	U	35	10	UG/L	02/03/2014	GAP
Ethyl T-Butyl Ether	EPA-8260	U	41	10	UG/L	02/03/2014	GAP
1,1-Dichloroethane	EPA-8260	270	2.0	10	UG/L	02/03/2014	GAP
2-Butanone	EPA-8260	1300000	1.10E+05	80000	UG/L	02/04/2014	GAP
Cis-1,2-Dichloroethene	EPA-8260	94	2.0	10	UG/L	02/03/2014	GAP
2,2-Dichloropropane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Bromochloromethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Chloroform	EPA-8260	20	2.0	10	UG/L	02/03/2014	GAP
1,1,1-Trichloroethane	EPA-8260	52	2.0	10	UG/L	02/03/2014	GAP
1,1-Dichloropropene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,2-Dichloroethane	EPA-8260	490	2.0	100	UG/L	02/03/2014	GAP
Benzene	EPA-8260	38	2.0	10	UG/L	02/03/2014	GAP
Trichloroethene	EPA-8260	2200	5.4	100	UG/L	02/03/2014	GAP
tert-Amyl Methyl Ether	EPA-8260	U	3.9	10	UG/L	02/03/2014	GAP
tert-Butanol	EPA-8260	110000	13000	1000	UG/L	02/03/2014	GAP
1,2-Dichloropropane	EPA-8260	U	0.64	10	UG/L	02/03/2014	GAP
Dibromomethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Bromodichloromethane	EPA-8260	U	0.71	10	UG/L	02/03/2014	GAP
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
4-Methyl-2-Pentanone	EPA-8260	280000	3400	10000	UG/L	02/03/2014	GAP
Toluene	EPA-8260	30000	15	1000	UG/L	02/03/2014	GAP
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,1,2-Trichloroethane	EPA-8260	36	0.77	10	UG/L	02/03/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT:	Environmental Partners, Inc. 295 NE Gilman Blvd., Suite 201 Issaquah, WA 98027	DATE:	2/6/2014
CLIENT CONTACT:	Thom Morin	ALS JOB#:	EV14010138
CLIENT PROJECT:	03913.0	ALS SAMPLE#:	EV14010138-02
CLIENT SAMPLE ID	SVEFLARECOND-012414	DATE RECEIVED:	01/27/2014
		COLLECTION DATE:	1/24/2014 10:15:00 AM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
2-Hexanone	EPA-8260	9800	940	1000	UG/L	02/03/2014	GAP
1,3-Dichloropropane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Tetrachloroethylene	EPA-8260	170	2.0	10	UG/L	02/03/2014	GAP
Dibromochloromethane	EPA-8260	U	0.74	10	UG/L	02/03/2014	GAP
1,2-Dibromoethane	EPA-8260	U	0.10	10	UG/L	02/03/2014	GAP
Chlorobenzene	EPA-8260	8.1	2.0	10	UG/L	02/03/2014	GAP
1,1,1,2-Tetrachloroethane	EPA-8260	U	1.7	10	UG/L	02/03/2014	GAP
Ethylbenzene	EPA-8260	3500	2.9	100	UG/L	02/03/2014	GAP
m,p-Xylene	EPA-8260	14000	110	1000	UG/L	02/03/2014	GAP
Styrene	EPA-8260	5.3	1.5	10	UG/L	02/03/2014	GAP
o-Xylene	EPA-8260	5200	69	1000	UG/L	02/03/2014	GAP
Bromoform	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Isopropylbenzene	EPA-8260	120	2.0	10	UG/L	02/03/2014	GAP
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,2,3-Trichloropropane	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
Bromobenzene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
N-Propyl Benzene	EPA-8260	320	2.0	10	UG/L	02/03/2014	GAP
2-Chlorotoluene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,3,5-Trimethylbenzene	EPA-8260	870	4.1	100	UG/L	02/03/2014	GAP
4-Chlorotoluene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
T-Butyl Benzene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
1,2,4-Trimethylbenzene	EPA-8260	2100	5.4	100	UG/L	02/03/2014	GAP
S-Butyl Benzene	EPA-8260	U	2.0	10	UG/L	02/03/2014	GAP
P-Isopropyltoluene	EPA-8260	23	2.0	10	UG/L	02/03/2014	GAP
1,3 Dichlorobenzene	EPA-8260	8.5	2.0	10	UG/L	02/03/2014	GAP
1,4-Dichlorobenzene	EPA-8260	16	1.8	10	UG/L	02/03/2014	GAP
N-Butylbenzene	EPA-8260	31	2.0	10	UG/L	02/03/2014	GAP
1,2-Dichlorobenzene	EPA-8260	270	2.0	10	UG/L	02/03/2014	GAP
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	10	UG/L	02/03/2014	GAP
1,2,4-Trichlorobenzene	EPA-8260	17	2.0	10	UG/L	02/03/2014	GAP
Hexachlorobutadiene	EPA-8260	U	0.69	10	UG/L	02/03/2014	GAP
Naphthalene	EPA-8260	770	5.5	100	UG/L	02/03/2014	GAP
1,2,3-Trichlorobenzene	EPA-8260	4.6	2.0	10	UG/L	02/03/2014	GAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4 10000X Dilution	EPA-8260	104	02/03/2014	GAP
1,2-Dichloroethane-d4 1000X	EPA-8260	93.3	02/03/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT:	Environmental Partners, Inc. 295 NE Gilman Blvd., Suite 201 Issaquah, WA 98027	DATE:	2/6/2014
CLIENT CONTACT:	Thom Morin	ALS JOB#:	EV14010138
CLIENT PROJECT:	03913.0	ALS SAMPLE#:	EV14010138-02
CLIENT SAMPLE ID	SVEFLARECOND-012414	DATE RECEIVED:	01/27/2014
		COLLECTION DATE:	1/24/2014 10:15:00 AM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
Dilution				
1,2-Dichloroethane-d4 100X Dilution	EPA-8260	86.5	02/03/2014	GAP
1,2-Dichloroethane-d4 10X Dilution	EPA-8260	111	02/03/2014	GAP
1,2-Dichloroethane-d4 80000X Dilution	EPA-8260	105	02/04/2014	GAP
Toluene-d8 10000X Dilution	EPA-8260	99.3	02/03/2014	GAP
Toluene-d8 1000X Dilution	EPA-8260	101	02/03/2014	GAP
Toluene-d8 100X Dilution	EPA-8260	99.0	02/03/2014	GAP
Toluene-d8 10X Dilution	EPA-8260	91.8	02/03/2014	GAP
Toluene-d8 80000X Dilution	EPA-8260	98.0	02/04/2014	GAP
4-Bromofluorobenzene 10000X Dilution	EPA-8260	99.3	02/03/2014	GAP
4-Bromofluorobenzene 1000X Dilution	EPA-8260	103	02/03/2014	GAP
4-Bromofluorobenzene 100X Dilution	EPA-8260	103	02/03/2014	GAP
4-Bromofluorobenzene 10X Dilution	EPA-8260	114	02/03/2014	GAP
4-Bromofluorobenzene 80000X Dilution	EPA-8260	103	02/04/2014	GAP

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 295 NE Gilman Blvd., Suite 201
 Issaquah, WA 98027

DATE: 2/6/2014
 ALS SDG#: EV14010138
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.0

LABORATORY BLANK RESULTS

MB-013114W - Batch 7599 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Chloromethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Vinyl Chloride	EPA-8260	U	0.20	1	UG/L	01/31/2014	GAP
Bromomethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Chloroethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Carbon Tetrachloride	EPA-8260	U	0.34	1	UG/L	01/31/2014	GAP
Trichlorofluoromethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Ethanol	EPA-8260	U	710	1	UG/L	01/31/2014	GAP
Carbon Disulfide	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Acetone	EPA-8260	U	25	1	UG/L	01/31/2014	GAP
1,1-Dichloroethene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Methylene Chloride	EPA-8260	U	5.0	1	UG/L	01/31/2014	GAP
Acrylonitrile	EPA-8260	U	10	1	UG/L	01/31/2014	GAP
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Diisopropyl Ether	EPA-8260	U	3.5	1	UG/L	01/31/2014	GAP
Ethyl T-Butyl Ether	EPA-8260	U	4.1	1	UG/L	01/31/2014	GAP
1,1-Dichloroethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
2-Butanone	EPA-8260	U	10	1	UG/L	01/31/2014	GAP
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
2,2-Dichloropropane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Bromochloromethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Chloroform	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,1-Dichloropropene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,2-Dichloroethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Benzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Trichloroethene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
tert-Amyl Methyl Ether	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
tert-Butanol	EPA-8260	U	13	1	UG/L	01/31/2014	GAP
1,2-Dichloropropane	EPA-8260	U	0.64	1	UG/L	01/31/2014	GAP
Dibromomethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Bromodichloromethane	EPA-8260	U	0.71	1	UG/L	01/31/2014	GAP
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
4-Methyl-2-Pentanone	EPA-8260	U	10	1	UG/L	01/31/2014	GAP
Toluene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,1,2-Trichloroethane	EPA-8260	U	0.77	1	UG/L	01/31/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 295 NE Gilman Blvd., Suite 201
 Issaquah, WA 98027

DATE: 2/6/2014
 ALS SDG#: EV14010138
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.0

LABORATORY BLANK RESULTS

MB-013114W - Batch 7599 - Water by EPA-8260

2-Hexanone	EPA-8260	U	10	1	UG/L	01/31/2014	GAP
1,3-Dichloropropane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Tetrachloroethylene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Dibromochloromethane	EPA-8260	U	0.52	1	UG/L	01/31/2014	GAP
1,2-Dibromoethane	EPA-8260	U	0.010	1	UG/L	01/31/2014	GAP
Chlorobenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,1,1,2-Tetrachloroethane	EPA-8260	U	1.7	1	UG/L	01/31/2014	GAP
Ethylbenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
m,p-Xylene	EPA-8260	U	4.0	1	UG/L	01/31/2014	GAP
Styrene	EPA-8260	U	1.5	1	UG/L	01/31/2014	GAP
o-Xylene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Bromoform	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Isopropylbenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Bromobenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
N-Propyl Benzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
2-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
4-Chlorotoluene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
T-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
S-Butyl Benzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
P-Isopropyltoluene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,3 Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,4-Dichlorobenzene	EPA-8260	U	1.8	1	UG/L	01/31/2014	GAP
N-Butylbenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	UG/L	01/31/2014	GAP
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
Hexachlorobutadiene	EPA-8260	U	0.56	1	UG/L	01/31/2014	GAP
Naphthalene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	UG/L	01/31/2014	GAP

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 295 NE Gilman Blvd., Suite 201
 Issaquah, WA 98027

DATE: 2/6/2014
 ALS SDG#: EV14010138
 WDOE ACCREDITATION: C601

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.0

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 7599 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene - BS	EPA-8260	109			01/31/2014	GAP
1,1-Dichloroethene - BSD	EPA-8260	104	4		01/31/2014	GAP
Benzene - BS	EPA-8260	113			01/31/2014	GAP
Benzene - BSD	EPA-8260	109	4		01/31/2014	GAP
Trichloroethene - BS	EPA-8260	111			01/31/2014	GAP
Trichloroethene - BSD	EPA-8260	107	3		01/31/2014	GAP
Toluene - BS	EPA-8260	104			01/31/2014	GAP
Toluene - BSD	EPA-8260	101	2		01/31/2014	GAP
Chlorobenzene - BS	EPA-8260	101			01/31/2014	GAP
Chlorobenzene - BSD	EPA-8260	98.6	2		01/31/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT:	Environmental Partners, Inc. 295 NE Gilman Blvd., Suite 201 Issaquah, WA 98027	DATE:	2/6/2014
CLIENT CONTACT:	Thom Morin	ALS SDG#:	EV14010138
CLIENT PROJECT:	03913.0	WDOE ACCREDITATION:	C601

MATRIX SPIKE RESULTS

ALS Test Batch ID: 7599 - Water

Parent Sample: BATCH QC

SPIKED COMPOUND	METHOD	PARENT SAMPLE RESULT	SPIKE ADDED	RESULT	RPD	%REC	QUAL	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene - MS	EPA-8260	0	10.0	11.4		114		01/31/2014	GAP
1,1-Dichloroethene - MSD	EPA-8260	0	10.0	10.8	6	108		01/31/2014	GAP
Benzene - MS	EPA-8260	0	10.0	11.1		111		01/31/2014	GAP
Benzene - MSD	EPA-8260	0	10.0	10.7	4	107		01/31/2014	GAP
Trichloroethene - MS	EPA-8260	2.9	10.0	17.4		146	SQ2	01/31/2014	GAP
Trichloroethene - MSD	EPA-8260	2.9	10.0	16.6	5	138		01/31/2014	GAP
Toluene - MS	EPA-8260	37	10.0	42.5		52.0	SQ2	01/31/2014	GAP
Toluene - MSD	EPA-8260	37	10.0	40.7	4	34.3	SQ2	01/31/2014	GAP
Chlorobenzene - MS	EPA-8260	0	10.0	9.84		98.4		01/31/2014	GAP
Chlorobenzene - MSD	EPA-8260	0	10.0	9.56	3	95.6		01/31/2014	GAP

SQ2 - Spike outside of control limits due to matrix effect.

APPROVED BY

Laboratory Director



ALS Environmental
 8620 Holly Drive, Suite 100
 Everett, WA 98208
 Phone (425) 356-2600
 Fax (425) 356-2626
 http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

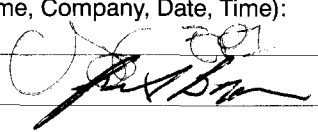
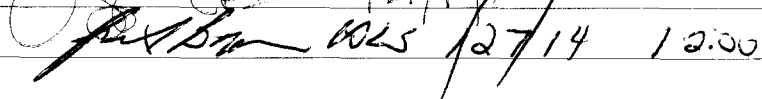
EV14010138

Date 1/24/14 Page 1 Of 1

PROJECT ID: 03913.0					ANALYSIS REQUESTED												OTHER (Specify)		
REPORT TO COMPANY: Environmental Partners Inc					NWTPH-HCID NWTPH-DX NWTPH-GX BTEX by EPA-8021 MTBE by EPA-8021 <input type="checkbox"/> EPA-8260 <input type="checkbox"/> Halogenated Volatiles by EPA 8260 Volatile Organic Compounds by EPA 8260 EDB / EDC by EPA 8260 SIM (water) EDB / EDC by EPA 8260 (soil) Semivolatile Organic Compounds by EPA 8270 Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM <input type="checkbox"/> PCB <input type="checkbox"/> Pesticides <input type="checkbox"/> by EPA 8081/8082 Metals-MTCA-5 <input type="checkbox"/> RCRA-8 <input type="checkbox"/> PFI Pol <input type="checkbox"/> TAL <input type="checkbox"/> Metals Other (Specify) TCLP-Metals <input type="checkbox"/> VDA <input type="checkbox"/> Semi-Vol <input type="checkbox"/> Pest <input type="checkbox"/> Herbs <input type="checkbox"/>														
PROJECT MANAGER: Thom Mevin / Mary McElheron Holder																			
ADDRESS: 295 NE Gilman Blvd Suite 201 Issaquah WA 98027																			
PHONE: 425-281-4778 FAX:																			
P.O. #: E-MAIL: Maryh@epi-wa.com																			
INVOICE TO COMPANY: TWAG Group III																			
ATTENTION:																			
ADDRESS:																			
1/24/14																			
SAMPLE I.D.	DATE	TIME	TYPE	LAB#															
1. SUESKID COND-012414	↓	0945	water	1	X No SIM														
2. SUEFLARE COND-012414	↓	1015	↓	2	X														
3.																			
4.																			
5.																			
6.																			
7.																			
8.																			
9.																			
10.																			

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By:  1/27/14
 Received By:  1/27/14 12:00

2. Relinquished By: _____
 Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis
 10 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis
 5 3 1 SAME DAY

OTHER:
 Specify: only need standard xls and pdf reports

* Turnaround request less than standard may incur Rush Charges



May 2, 2014

Mr. Thom Morin
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

Dear Mr. Morin,

On April 25th, 1 sample was received by our laboratory and assigned our laboratory project number EV14040143. The project was identified as your 03911.2. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 1180 NW Maple St, Suite 310
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03911.2
 CLIENT SAMPLE ID: PLF-PURGE-0414

DATE: 5/2/2014
 ALS JOB#: EV14040143
 ALS SAMPLE#: EV14040143-01
 DATE RECEIVED: 04/25/2014
 COLLECTION DATE: 4/24/2014 9:30:00 AM
 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Chloromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Vinyl Chloride	EPA-8260	U	0.20	1	ug/L	04/30/2014	GAP
Bromomethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Chloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Carbon Tetrachloride	EPA-8260	U	0.34	1	ug/L	04/30/2014	GAP
Trichlorofluoromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Ethanol	EPA-8260	U	710	1	ug/L	04/30/2014	GAP
Carbon Disulfide	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Acetone	EPA-8260	U	25	1	ug/L	04/30/2014	GAP
1,1-Dichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Methylene Chloride	EPA-8260	U	5.0	1	ug/L	04/30/2014	GAP
Acrylonitrile	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Diisopropyl Ether	EPA-8260	U	3.5	1	ug/L	04/30/2014	GAP
Ethyl T-Butyl Ether	EPA-8260	U	4.1	1	ug/L	04/30/2014	GAP
1,1-Dichloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
2-Butanone	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
2,2-Dichloropropane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Bromochloromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Chloroform	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1-Dichloropropene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2-Dichloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Trichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
tert-Amyl Methyl Ether	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
tert-Butanol	EPA-8260	U	13	1	ug/L	04/30/2014	GAP
1,2-Dichloropropane	EPA-8260	U	0.64	1	ug/L	04/30/2014	GAP
Dibromomethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Bromodichloromethane	EPA-8260	U	0.71	1	ug/L	04/30/2014	GAP
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
4-Methyl-2-Pentanone	EPA-8260	15	10	1	ug/L	04/30/2014	GAP
Toluene	EPA-8260	36	2.0	1	ug/L	04/30/2014	GAP
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,2-Trichloroethane	EPA-8260	U	0.77	1	ug/L	04/30/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT:	Environmental Partners, Inc. 1180 NW Maple St, Suite 310 Issaquah, WA 98027	DATE:	5/2/2014
CLIENT CONTACT:	Thom Morin	ALS JOB#:	EV14040143
CLIENT PROJECT:	03911.2	ALS SAMPLE#:	EV14040143-01
CLIENT SAMPLE ID	PLF-PURGE-0414	DATE RECEIVED:	04/25/2014
		COLLECTION DATE:	4/24/2014 9:30:00 AM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
2-Hexanone	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
1,3-Dichloropropane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Tetrachloroethylene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Dibromochloromethane	EPA-8260	U	0.52	1	ug/L	04/30/2014	GAP
1,2-Dibromoethane	EPA-8260	U	0.010	1	ug/L	04/30/2014	GAP
Chlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,1,2-Tetrachloroethane	EPA-8260	U	1.7	1	ug/L	04/30/2014	GAP
Ethylbenzene	EPA-8260	4.7	2.0	1	ug/L	04/30/2014	GAP
m,p-Xylene	EPA-8260	16	4.0	1	ug/L	04/30/2014	GAP
Styrene	EPA-8260	U	1.5	1	ug/L	04/30/2014	GAP
o-Xylene	EPA-8260	6.1	2.0	1	ug/L	04/30/2014	GAP
Bromoform	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Isopropylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,1,2-Tetrachloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Bromobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
N-Propyl Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
2-Chlorotoluene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
4-Chlorotoluene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
T-Butyl Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
S-Butyl Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
P-Isopropyltoluene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,3 Dichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,4-Dichlorobenzene	EPA-8260	U	1.8	1	ug/L	04/30/2014	GAP
N-Butylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Hexachlorobutadiene	EPA-8260	U	0.56	1	ug/L	04/30/2014	GAP
Naphthalene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP

SURROGATE	METHOD	%REC	ANALYSIS	ANALYSIS
			DATE	BY
1,2-Dichloroethane-d4	EPA-8260	102	04/30/2014	GAP
Toluene-d8	EPA-8260	100	04/30/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc. DATE: 5/2/2014
1180 NW Maple St, Suite 310 ALS JOB#: EV14040143
Issaquah, WA 98027 ALS SAMPLE#: EV14040143-01
CLIENT CONTACT: Thom Morin DATE RECEIVED: 04/25/2014
CLIENT PROJECT: 03911.2 COLLECTION DATE: 4/24/2014 9:30:00 AM
CLIENT SAMPLE ID: PLF-PURGE-0414 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
4-Bromofluorobenzene	EPA-8260	102	04/30/2014	GAP

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 1180 NW Maple St, Suite 310
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03911.2

DATE: 5/2/2014
 ALS SDG#: EV14040143
 WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-043014W - Batch 81409 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Chloromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Vinyl Chloride	EPA-8260	U	0.20	1	ug/L	04/30/2014	GAP
Bromomethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Chloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Carbon Tetrachloride	EPA-8260	U	0.34	1	ug/L	04/30/2014	GAP
Trichlorofluoromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Ethanol	EPA-8260	U	710	1	ug/L	04/30/2014	GAP
Carbon Disulfide	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Acetone	EPA-8260	U	25	1	ug/L	04/30/2014	GAP
1,1-Dichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Methylene Chloride	EPA-8260	U	5.0	1	ug/L	04/30/2014	GAP
Acrylonitrile	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Diisopropyl Ether	EPA-8260	U	3.5	1	ug/L	04/30/2014	GAP
Ethyl T-Butyl Ether	EPA-8260	U	4.1	1	ug/L	04/30/2014	GAP
1,1-Dichloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
2-Butanone	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
2,2-Dichloropropane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Bromochloromethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Chloroform	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1-Dichloropropene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2-Dichloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Trichloroethene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
tert-Amyl Methyl Ether	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
tert-Butanol	EPA-8260	U	13	1	ug/L	04/30/2014	GAP
1,2-Dichloropropane	EPA-8260	U	0.64	1	ug/L	04/30/2014	GAP
Dibromomethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Bromodichloromethane	EPA-8260	U	0.71	1	ug/L	04/30/2014	GAP
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
4-Methyl-2-Pentanone	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
Toluene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,2-Trichloroethane	EPA-8260	U	0.77	1	ug/L	04/30/2014	GAP



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 1180 NW Maple St, Suite 310
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03911.2

DATE: 5/2/2014
 ALS SDG#: EV14040143
 WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-043014W - Batch 81409 - Water by EPA-8260

2-Hexanone	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
1,3-Dichloropropane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Tetrachloroethylene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Dibromochloromethane	EPA-8260	U	0.52	1	ug/L	04/30/2014	GAP
1,2-Dibromoethane	EPA-8260	U	0.010	1	ug/L	04/30/2014	GAP
Chlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,1,2-Tetrachloroethane	EPA-8260	U	1.7	1	ug/L	04/30/2014	GAP
Ethylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
m,p-Xylene	EPA-8260	U	4.0	1	ug/L	04/30/2014	GAP
Styrene	EPA-8260	U	1.5	1	ug/L	04/30/2014	GAP
o-Xylene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Bromoform	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Isopropylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Bromobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
N-Propyl Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
2-Chlorotoluene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
4-Chlorotoluene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
T-Butyl Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
S-Butyl Benzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
P-Isopropyltoluene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,3 Dichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,4-Dichlorobenzene	EPA-8260	U	1.8	1	ug/L	04/30/2014	GAP
N-Butylbenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	ug/L	04/30/2014	GAP
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
Hexachlorobutadiene	EPA-8260	U	0.56	1	ug/L	04/30/2014	GAP
Naphthalene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	ug/L	04/30/2014	GAP

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

DATE: 5/2/2014
ALS SDG#: EV14040143
WDOE ACCREDITATION: C601

CLIENT CONTACT: Thom Morin
CLIENT PROJECT: 03911.2

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 81409 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene - BS	EPA-8260	116			04/30/2014	GAP
1,1-Dichloroethene - BSD	EPA-8260	115	0		04/30/2014	GAP
Benzene - BS	EPA-8260	102			04/30/2014	GAP
Benzene - BSD	EPA-8260	104	2		04/30/2014	GAP
Trichloroethene - BS	EPA-8260	98.6			04/30/2014	GAP
Trichloroethene - BSD	EPA-8260	101	3		04/30/2014	GAP
Toluene - BS	EPA-8260	105			04/30/2014	GAP
Toluene - BSD	EPA-8260	108	2		04/30/2014	GAP
Chlorobenzene - BS	EPA-8260	102			04/30/2014	GAP
Chlorobenzene - BSD	EPA-8260	105	3		04/30/2014	GAP

APPROVED BY

Laboratory Director



ALS Environmental
 8620 Holly Drive, Suite 100
 Everett, WA 98208
 Phone (425) 356-2600
 Fax (425) 356-2626
 http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV14040143

Date _____ Page 1 Of 1

PROJECT ID: 0393 03913.0					ANALYSIS REQUESTED										OTHER (Specify)						
REPORT TO COMPANY: Environmental Partners Inc					NWTPH-HCID NWTPH-DX NWTPH-GX BTEX by EPA-8021 MTBE by EPA-8021 <input type="checkbox"/> EPA-8260 <input type="checkbox"/> Halogenated Volatiles by EPA 8260 Volatile Organic Compounds by EPA 8260 EDB / EDC by EPA 8260 SIM (water) EDB / EDC by EPA 8260 (soil) Semivolatile Organic Compounds by EPA 8270 Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM <input type="checkbox"/> PCB <input type="checkbox"/> Pesticides <input type="checkbox"/> by EPA 8081/8082 Metals-MTCA-5 <input type="checkbox"/> RCRA-8 <input type="checkbox"/> Pri Pol <input type="checkbox"/> TAL <input type="checkbox"/> Metals Other (Specify) TCLP-Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-Vol <input type="checkbox"/> Pest <input type="checkbox"/> Herbs <input type="checkbox"/>	NUMBER OF CONTAINERS RECEIVED IN GOOD CONDITION?															
PROJECT MANAGER: Thom Marin / Mary McElheron Holder																					
ADDRESS: 1180 NW Maple St Suite 310 Issaquah WA																					
PHONE: 425-281-4778 FAX:																					
P.O. #: E-MAIL: maryh@epi-wa.com																					
INVOICE TO COMPANY: IWAG Group III																					
ATTENTION:																					
ADDRESS:																					
SAMPLE I.D.	DATE	TIME	TYPE	LAB#																	
1. PLF-PURGE-0414	4/24/14	0930	Water	1																	
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

SPECIAL INSTRUCTIONS No SIM analysis

SIGNATURES (Name, Company, Date, Time):
 1. Relinquished By: [Signature] BOI 4/25/14 1045
 Received By: [Signature] AS 4/25/14 1045
 2. Relinquished By: _____
 Received By: _____

TURNAROUND REQUESTED in Business Days*
 Organic, Metals & Inorganic Analysis: 5 3 2 1 SAME DAY
 Fuels & Hydrocarbon Analysis: 5 3 1 SAME DAY
 OTHER: _____
 Specify: only basic report
(ie not validation package)
 * Turnaround request less than standard may incur Rush Charges

LABORATORY COPY



July 10, 2014

Mr. Thom Morin
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

Dear Mr. Morin,

On July 3rd, 1 sample was received by our laboratory and assigned our laboratory project number EV14070023. The project was identified as your 03913.5. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 1180 NW Maple St, Suite 310
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.5
 CLIENT SAMPLE ID: LNAPL-070214

DATE: 7/10/2014
 ALS JOB#: EV14070023
 ALS SAMPLE#: EV14070023-01
 DATE RECEIVED: 07/03/2014
 COLLECTION DATE: 7/2/2014 9:00:00 AM
 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Dichlorodifluoromethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Chloromethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Vinyl Chloride	EPA-8260	U	2.00E+04	1.00E+05	ug/L	07/08/2014	DLC
Bromomethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Chloroethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Carbon Tetrachloride	EPA-8260	U	3.40E+04	1.00E+05	ug/L	07/08/2014	DLC
Trichlorofluoromethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Ethanol	EPA-8260	U	7.10E+07	1.00E+05	ug/L	07/08/2014	DLC
Carbon Disulfide	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Acetone	EPA-8260	U	2.50E+06	1.00E+05	ug/L	07/08/2014	DLC
1,1-Dichloroethene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Methylene Chloride	EPA-8260	U	5.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Acrylonitrile	EPA-8260	U	1.00E+06	1.00E+05	ug/L	07/08/2014	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Diisopropyl Ether	EPA-8260	U	3.50E+05	1.00E+05	ug/L	07/08/2014	DLC
Ethyl T-Butyl Ether	EPA-8260	U	4.10E+05	1.00E+05	ug/L	07/08/2014	DLC
1,1-Dichloroethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
2-Butanone	EPA-8260	U	1.00E+06	1.00E+05	ug/L	07/08/2014	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
2,2-Dichloropropane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Bromochloromethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Chloroform	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,1-Dichloropropene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,2-Dichloroethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Benzene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Trichloroethene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
tert-Amyl Methyl Ether	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
tert-Butanol	EPA-8260	U	1.30E+06	1.00E+05	ug/L	07/08/2014	DLC
1,2-Dichloropropane	EPA-8260	U	6.40E+04	1.00E+05	ug/L	07/08/2014	DLC
Dibromomethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Bromodichloromethane	EPA-8260	U	7.10E+04	1.00E+05	ug/L	07/08/2014	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
4-Methyl-2-Pentanone	EPA-8260	U	1.00E+06	1.00E+05	ug/L	07/08/2014	DLC
Toluene	EPA-8260	4200000	2.00E+06	1.00E+06	ug/L	07/08/2014	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,1,2-Trichloroethane	EPA-8260	U	7.70E+04	1.00E+05	ug/L	07/08/2014	DLC



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 1180 NW Maple St, Suite 310
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.5
 CLIENT SAMPLE ID: LNAPL-070214

DATE: 7/10/2014
 ALS JOB#: EV14070023
 ALS SAMPLE#: EV14070023-01
 DATE RECEIVED: 07/03/2014
 COLLECTION DATE: 7/2/2014 9:00:00 AM
 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
2-Hexanone	EPA-8260	U	1.00E+06	1.00E+05	ug/L	07/08/2014	DLC
1,3-Dichloropropane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Tetrachloroethylene	EPA-8260	370000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Dibromochloromethane	EPA-8260	U	5.20E+04	1.00E+05	ug/L	07/08/2014	DLC
1,2-Dibromoethane	EPA-8260	U	1.00E+03	1.00E+05	ug/L	07/08/2014	DLC
Chlorobenzene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	1.70E+05	1.00E+05	ug/L	07/08/2014	DLC
Ethylbenzene	EPA-8260	6900000	2.00E+06	1.00E+06	ug/L	07/08/2014	DLC
m,p-Xylene	EPA-8260	29000000	4.00E+06	1.00E+06	ug/L	07/08/2014	DLC
Styrene	EPA-8260	U	1.50E+05	1.00E+05	ug/L	07/08/2014	DLC
o-Xylene	EPA-8260	11000000	2.00E+06	1.00E+06	ug/L	07/08/2014	DLC
Bromoform	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Isopropylbenzene	EPA-8260	1300000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,1,1,2,2-Tetrachloroethane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Bromobenzene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
N-Propyl Benzene	EPA-8260	3800000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
2-Chlorotoluene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,3,5-Trimethylbenzene	EPA-8260	11000000	2.00E+06	1.00E+06	ug/L	07/08/2014	DLC
4-Chlorotoluene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
T-Butyl Benzene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,2,4-Trimethylbenzene	EPA-8260	25000000	2.00E+06	1.00E+06	ug/L	07/08/2014	DLC
S-Butyl Benzene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
P-Isopropyltoluene	EPA-8260	1200000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,3 Dichlorobenzene	EPA-8260	U	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,4-Dichlorobenzene	EPA-8260	200000	1.80E+05	1.00E+05	ug/L	07/08/2014	DLC
N-Butylbenzene	EPA-8260	3400000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,2-Dichlorobenzene	EPA-8260	2500000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	1.00E+06	1.00E+05	ug/L	07/08/2014	DLC
1,2,4-Trichlorobenzene	EPA-8260	1600000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Hexachlorobutadiene	EPA-8260	U	5.60E+04	1.00E+05	ug/L	07/08/2014	DLC
Naphthalene	EPA-8260	17000000	2.00E+06	1.00E+06	ug/L	07/08/2014	DLC
1,2,3-Trichlorobenzene	EPA-8260	370000	2.00E+05	1.00E+05	ug/L	07/08/2014	DLC
Flash Point	EPA-1010	125	70.0	1	DEG F	07/08/2014	DLC
pH	SM4500H	2.03	1.00	1	S.U.	07/03/2014	SMR

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
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CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc. DATE: 7/10/2014
1180 NW Maple St, Suite 310 ALS JOB#: EV14070023
Issaquah, WA 98027 ALS SAMPLE#: EV14070023-01
CLIENT CONTACT: Thom Morin DATE RECEIVED: 07/03/2014
CLIENT PROJECT: 03913.5 COLLECTION DATE: 7/2/2014 9:00:00 AM
CLIENT SAMPLE ID LNAPL-070214 WDOE ACCREDITATION: C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
1,2-Dichloroethane-d4 100000X Dilution	EPA-8260	102	07/08/2014	DLC
1,2-Dichloroethane-d4 100000X Dilution	EPA-8260	99.1	07/08/2014	DLC
Toluene-d8 1000000X Dilution	EPA-8260	98.6	07/08/2014	DLC
Toluene-d8 100000X Dilution	EPA-8260	94.8	07/08/2014	DLC
4-Bromofluorobenzene 1000000X Dilution	EPA-8260	99.4	07/08/2014	DLC
4-Bromofluorobenzene 100000X Dilution	EPA-8260	107	07/08/2014	DLC

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 1180 NW Maple St, Suite 310
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.5

DATE: 7/10/2014
 ALS SDG#: EV14070023
 WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-070814W - Batch 83888 - Water by EPA-8260

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS	ANALYSIS
						DATE	BY
Dichlorodifluoromethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Chloromethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Vinyl Chloride	EPA-8260	U	0.20	1	ug/L	07/08/2014	DLC
Bromomethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Chloroethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Carbon Tetrachloride	EPA-8260	U	0.34	1	ug/L	07/08/2014	DLC
Trichlorofluoromethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Ethanol	EPA-8260	U	710	1	ug/L	07/08/2014	DLC
Carbon Disulfide	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Acetone	EPA-8260	U	25	1	ug/L	07/08/2014	DLC
1,1-Dichloroethene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Methylene Chloride	EPA-8260	U	5.0	1	ug/L	07/08/2014	DLC
Acrylonitrile	EPA-8260	U	10	1	ug/L	07/08/2014	DLC
Methyl T-Butyl Ether	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Trans-1,2-Dichloroethene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Diisopropyl Ether	EPA-8260	U	3.5	1	ug/L	07/08/2014	DLC
Ethyl T-Butyl Ether	EPA-8260	U	4.1	1	ug/L	07/08/2014	DLC
1,1-Dichloroethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
2-Butanone	EPA-8260	U	10	1	ug/L	07/08/2014	DLC
Cis-1,2-Dichloroethene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
2,2-Dichloropropane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Bromochloromethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Chloroform	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,1,1-Trichloroethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,1-Dichloropropene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,2-Dichloroethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Benzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Trichloroethene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
tert-Amyl Methyl Ether	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
tert-Butanol	EPA-8260	U	13	1	ug/L	07/08/2014	DLC
1,2-Dichloropropane	EPA-8260	U	0.64	1	ug/L	07/08/2014	DLC
Dibromomethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Bromodichloromethane	EPA-8260	U	0.71	1	ug/L	07/08/2014	DLC
Trans-1,3-Dichloropropene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
4-Methyl-2-Pentanone	EPA-8260	U	10	1	ug/L	07/08/2014	DLC
Toluene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Cis-1,3-Dichloropropene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,1,2-Trichloroethane	EPA-8260	U	0.77	1	ug/L	07/08/2014	DLC



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
 1180 NW Maple St, Suite 310
 Issaquah, WA 98027

CLIENT CONTACT: Thom Morin
 CLIENT PROJECT: 03913.5

DATE: 7/10/2014
 ALS SDG#: EV14070023
 WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-070814W - Batch 83888 - Water by EPA-8260

2-Hexanone	EPA-8260	U	10	1	ug/L	07/08/2014	DLC
1,3-Dichloropropane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Tetrachloroethylene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Dibromochloromethane	EPA-8260	U	0.52	1	ug/L	07/08/2014	DLC
1,2-Dibromoethane	EPA-8260	U	0.010	1	ug/L	07/08/2014	DLC
Chlorobenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,1,1,2-Tetrachloroethane	EPA-8260	U	1.7	1	ug/L	07/08/2014	DLC
Ethylbenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
m,p-Xylene	EPA-8260	U	4.0	1	ug/L	07/08/2014	DLC
Styrene	EPA-8260	U	1.5	1	ug/L	07/08/2014	DLC
o-Xylene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Bromoform	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Isopropylbenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,1,2,2-Tetrachloroethane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,2,3-Trichloropropane	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Bromobenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
N-Propyl Benzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
2-Chlorotoluene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,3,5-Trimethylbenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
4-Chlorotoluene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
T-Butyl Benzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,2,4-Trimethylbenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
S-Butyl Benzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
P-Isopropyltoluene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,3 Dichlorobenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,4-Dichlorobenzene	EPA-8260	U	1.8	1	ug/L	07/08/2014	DLC
N-Butylbenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,2-Dichlorobenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,2-Dibromo 3-Chloropropane	EPA-8260	U	10	1	ug/L	07/08/2014	DLC
1,2,4-Trichlorobenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
Hexachlorobutadiene	EPA-8260	U	0.56	1	ug/L	07/08/2014	DLC
Naphthalene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC
1,2,3-Trichlorobenzene	EPA-8260	U	2.0	1	ug/L	07/08/2014	DLC

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

DATE: 7/10/2014
ALS SDG#: EV14070023
WDOE ACCREDITATION: C601

CLIENT CONTACT: Thom Morin
CLIENT PROJECT: 03913.5

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 83888 - Water by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
1,1-Dichloroethene - BS	EPA-8260	110			07/08/2014	DLC
1,1-Dichloroethene - BSD	EPA-8260	96.0	13		07/08/2014	DLC
Benzene - BS	EPA-8260	99.3			07/08/2014	DLC
Benzene - BSD	EPA-8260	87.3	13		07/08/2014	DLC
Trichloroethene - BS	EPA-8260	106			07/08/2014	DLC
Trichloroethene - BSD	EPA-8260	92.5	13		07/08/2014	DLC
Toluene - BS	EPA-8260	101			07/08/2014	DLC
Toluene - BSD	EPA-8260	88.9	13		07/08/2014	DLC
Chlorobenzene - BS	EPA-8260	101			07/08/2014	DLC
Chlorobenzene - BSD	EPA-8260	91.5	10		07/08/2014	DLC

APPROVED BY

Laboratory Director



ALS Laboratory Group
 8620 Holly Drive, Suite 100
 Everett, WA 98208
 Phone (425) 356-2600
 (206) 292-9059 Seattle
 (425) 356-2626 Fax
 http://www.alsenviro.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV14070023

Date 07/02/14 Page 1 Of 1

PROJECT ID: <u>03913.5</u>					ANALYSIS REQUESTED										OTHER (Specify)	
REPORT TO COMPANY: <u>Epi</u>					<input type="checkbox"/> NWTPH-HCID <input type="checkbox"/> NWTPH-DX <input type="checkbox"/> NWTPH-GX <input type="checkbox"/> BTEX by EPA-8021 <input type="checkbox"/> MTBE by EPA-8021 <input type="checkbox"/> EPA-8260 <input type="checkbox"/> Halogenated Volatiles by EPA 8260 <input type="checkbox"/> Volatile Organic Compounds by EPA 8260 <input type="checkbox"/> EDB / EDC by EPA 8260 SIM (water) <input type="checkbox"/> EDB / EDC by EPA 8260 (soil) <input type="checkbox"/> Semivolatile Organic Compounds by EPA 8270 <input type="checkbox"/> Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM <input type="checkbox"/> <input type="checkbox"/> PCB <input type="checkbox"/> Pesticides <input type="checkbox"/> by EPA 8081/8082 <input type="checkbox"/> Metals-MTCA-5 <input type="checkbox"/> RCRA-8 <input type="checkbox"/> Pri Pol <input type="checkbox"/> TAL <input type="checkbox"/> <input type="checkbox"/> Metals Other (Specify) <input type="checkbox"/> TCLP-Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-Vol <input type="checkbox"/> Pest <input type="checkbox"/> Herbs <input type="checkbox"/> <input type="checkbox"/> pH <input type="checkbox"/> closed cup Flash Point										NUMBER OF CONTAINERS RECEIVED IN GOOD CONDITION?	
PROJECT MANAGER: <u>Thom Morin</u>																
ADDRESS: <u>1180 NW Maple Street, Suite 310</u> <u>Issaquah, WA 98027</u>																
PHONE: <u>425 395-0030</u> FAX:																
P.O. NUMBER: E-MAIL: <u>Tmorin@epi-wa.com</u>																
INVOICE TO COMPANY:																
ATTENTION: <u>IWAG Group III</u>																
ADDRESS:																
SAMPLE I.D.	DATE	TIME	TYPE	LAB#												
<u>1 LNAPL-070214</u>	<u>07/02/14</u>	<u>0900</u>	<u>Liquid product</u>	<u>1</u>											<u>2</u>	
2.																
3.																
4.																
5.																
6.																
7.																
8.																
9.																
10.																

LABORATORY COPY

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: L. J. Epi, 07/02/14, 1630 hrs
 Received By: Shipped FedEx 8059 2219 8932, 07/02/14, 1630 hrs

2. Relinquished By: Shawn Roberson ACU 7/3/14 3:20 pm
 Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis

Standard 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis

Standard 5 3 1 SAME DAY

OTHER:

Specify: please provide results to Peter Bannister

* Turnaround request less than standard may incur Rush Charges

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

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000094805 DAT
---	--	-------------------	---	--

5. Generator's Name and Mailing Address CALIBRE SYSTEMS ATTN: ERIC JENSEN 2030 HAVISON AVE RICHMOND WA 99354 (509)554-1247		Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 BIETRICH ROAD PASCO WA 99301 (509)554-1247		
---	--	--	--	--

6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC	U.S. EPA ID Number WAD000001743
--	------------------------------------

7. Transporter 2 Company Name	U.S. EPA ID Number
-------------------------------	--------------------

8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 20245 77TH AVENUE SOUTH KENT, WA 98032 (253) 872-0030	U.S. EPA ID Number WAD991281767
--	------------------------------------

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
X	HA3082 HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PAIII	1	TT	3965	g	D035	D040

14. Special Handling Instructions and Additional Information (1) 482743-02 - ER6(171) ZONE A VAPOR CONDENS

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name Eric Jensen	Signature <i>[Signature]</i>	Month Day Year 01 31 14
---	---------------------------------	----------------------------

16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.	Port of entry/exit: Date leaving U.S.:
--	---

17. Transporter Acknowledgment of Receipt of Materials	Signature	Month Day Year
Transporter 1 Printed/Typed Name Sampathkumar, Rana	<i>[Signature]</i>	01 31 14
Transporter 2 Printed/Typed Name	<i>[Signature]</i>	Month Day Year

18. Discrepancy	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection
-----------------	--

18b. Alternate Facility (or Generator)	Manifest Reference Number:	U.S. EPA ID Number
--	----------------------------	--------------------

Facility's Phone:	18c. Signature of Alternate Facility (or Generator)	Month Day Year
-------------------	---	----------------

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)			
1. H135 H082	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a	Signature Christine Chicostomo	Month Day Year 01 31 14
--	-----------------------------------	----------------------------

40597 GENERATOR TRANSPORTER INT'L DESIGNATED FACILITY

DESIGNATED FACILITY TO GENERATOR

116159-14

1782123

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000098123 DAT		
5. Generator's Name and Mailing Address CALIBRE SYSTEMS ATTN: ERIC JENSEN 2030 DAVISON AVE Generator's Phone: RICHMOND WA 99351 (509)554-1247				Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 BIEZTRICH ROAD PASCO WA 99381 (509)554-1247			
6. Transporter 1 Company Name RURLINGTON ENVIRONMENTAL, LLC					U.S. EPA ID Number WAD000001743		
7. Transporter 2 Company Name					U.S. EPA ID Number		
8. Designated Facility Name and Site Address RURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 28245 77TH AVENUE SOUTH Facility's Phone: KENT WA 98032 (253) 872-0030					U.S. EPA ID Number WAD991281767		
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
X	1. W03002 HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PGIII	1	TT	4793	G	0035	0048
	2.						
	3.						
	4.						
14. Special Handling Instructions and Additional Information (1) 482743-02 - ER6(171) ZONE A VAPOR CONDENS Dana Yamada							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offoror's Printed/Typed Name Eric Jensen				Signature <i>[Signature]</i>		Month Day Year 03 05 14	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____							
17. Transporter Acknowledgment of Receipt of Materials							
Transporter 1 Printed/Typed Name Vasyl Koroshchynskyi				Signature <i>[Signature]</i>		Month Day Year 03 05 14	
Transporter 2 Printed/Typed Name				Signature		Month Day Year	
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
18b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number _____							
Facility's Phone: _____							
18c. Signature of Alternate Facility (or Generator)						Month Day Year	
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. H100		2.		3.		4.	
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a.							
Printed/Typed Name Christine Crisostomo				Signature <i>[Signature]</i>		Month Day Year 13 16 14	

205CS

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

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number
WAD991281874

2. Page 1 of 1

3. Emergency Response Phone
(877) 577-2669

4. Manifest Tracking Number
000098373 DAT

5. Generator's Name and Mailing Address
CALIBRE SYSTEMS ATTN: ERIC JENSEN
2838 DAVISON AVE

Generator's Site Address (if different than mailing address)
PASCO LANDFILL
1981 DIETRICH ROAD
PASCO WA 99301 (509)554-1267

Generator's Phone: RICHMOND WA 99354 (509)554-1747

6. Transporter 1 Company Name
BURLINGTON ENVIRONMENTAL, LLC

U.S. EPA ID Number
WA0000001743

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY
28245 77TH AVENUE SOUTH
Facility's Phone: KENT, WA 98032 (253) 872-8030

U.S. EPA ID Number
WAD991281767

9a. HM

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
X	1. H3002 HAZARDOUS WASTE, LIQUID, H.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 4 PGIII	1	TT	509.6	6	3035	3040
	2.						
	3.						
	4.						

14. Special Handling Instructions and Additional Information
(1) 402743-03 - ERG(171) ZONE A VAPOR CONDENS

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offoror's Printed/Typed Name: Eric Jensen
Signature: [Signature]
Month Day Year: 03 27 14

16. International Shipments
 Import to U.S. Export from U.S.
Port of entry/exit: _____
Date leaving U.S.: _____

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [Signature]
Signature: [Signature]
Month Day Year: 03 27 14

Transporter 2 Printed/Typed Name: [Signature]
Signature: [Signature]
Month Day Year: _____

18. Discrepancy
18a. Discrepancy Indication Space
 Quantity Type Residue Partial Rejection Full Rejection

18b. Alternate Facility (or Generator)
Manifest Reference Number: _____
U.S. EPA ID Number: _____

Facility's Phone: _____
18c. Signature of Alternate Facility (or Generator)
Month Day Year: _____

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H100 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Camanaka Gallegos
Signature: [Signature]
Month Day Year: 13 27 14

6080Z GENERATOR TRANSPORTER INT'L DESIGNATED FACILITY

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000098655 DAT				
5. Generator's Name and Mailing Address CALINRE SYSTEMS ATTN: ERIC JENSEN 2030 DAVISON AVE RICHMOND WA 99354 (509)554-1217 Generator's Phone: RICHMOND WA 99354 (509)554-1217				Generator's Site Address (if different than mailing address) PASCO LANDFILL 1401 DIETRICH ROAD PASCO WA 99301 (509)554-1247					
6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC				U.S. EPA ID Number WAR000001743					
7. Transporter 2 Company Name				U.S. EPA ID Number					
8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC, KENT FACILITY 20245 77TH AVENUE SOUTH Facility's Phone: KENT, WA 98032 (253) 872-0030				U.S. EPA ID Number WAD991281767					
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
X	1. HA2002 HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PGIII			1 TT		5000		D035	D040
	2.								
	3.								
	4.								
14. Special Handling Instructions and Additional Information (1) 482743-03 - ER6(171) ZONE A VAPOR CONDENS									
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.									
Generator's/Offeror's Printed/Typed Name Eric Jensen				Signature EJA		Month Day Year 04 23 14			
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:									
17. Transporter Acknowledgment of Receipt of Materials									
Transporter 1 Printed/Typed Name MICHAEL T. FAYE				Signature [Signature]		Month Day Year 04 23 14			
Transporter 2 Printed/Typed Name				Signature		Month Day Year			
18. Discrepancy									
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection									
18b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number									
18c. Signature of Alternate Facility (or Generator) Month Day Year									
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)									
1. H100		2.		3.		4.			
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a									
Printed/Typed Name Oreste Casostano				Signature [Signature]		Month Day Year 04 23 14			

7/5/12 GENERATOR

INTL TRANSPORTER

DESIGNATED FACILITY

DESIGNATED FACILITY TO GENERATOR

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2889	4. Manifest Tracking Number 000098864 DAT	
5. Generator's Name and Mailing Address CALIBRE SYSTEMS ATTN: ERIC JENSEN 2838 DAVISON AVE VICLAND WA 99354 (509)554-1247			Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 BIETRICH ROAD PASCO WA 99301 (509)554-1247			
6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC			U.S. EPA ID Number WAD000001743			
7. Transporter 2 Company Name			U.S. EPA ID Number			
8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 28245 77TH AVENUE SOUTH KENT WA 98032 (253) 872-8838			U.S. EPA ID Number WAD991281767			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
			No.	Type		
X	1. HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PGIII		1	TT	5210 4918	G
	2.					
	3.					
	4.					
14. Special Handling Instructions and Additional Information (1) 182743-03 - ER6(171) ZONE A VAPOR CONDENS						
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.						
Generator's/Offoror's Printed/Typed Name Eric Jensen			Signature EJ		Month 05	Day 22
					Year 14	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____						
17. Transporter Acknowledgment of Receipt of Materials						
Transporter 1 Printed/Typed Name RONALD J. DUTTON			Signature Ronald J Dutton		Month 15	Day 22
Transporter 2 Printed/Typed Name			Signature		Year 14	
18. Discrepancy						
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
18b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number _____						
18c. Signature of Alternate Facility (or Generator) _____ Month _____ Day _____ Year _____						
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1. H100		2.		3.		4.
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a						
Printed/Typed Name Christine Crisostomo			Signature Crisostomo		Month 10	Day 23
					Year 14	

84532

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000100079 DAT					
5. Generator's Name and Mailing Address CALIBRE SYSTEMS ATTN: ERIC JENSEN 2038 HAVISON AVE Generator's Phone: RICHMOND WA 99354 (509)554-1247				Generator's Site Address (if different than mailing address) PASCO LANDFILL 1501 DIETRICH ROAD PASCO WA 99301 (509)554-1247						
6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC					U.S. EPA ID Number WAD000001743					
7. Transporter 2 Company Name					U.S. EPA ID Number					
8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC, KENT FACILITY 28745 77TH AVENUE SOUTH Facility's Phone: KENT, WA 98922 (253) 877-8030					U.S. EPA ID Number WAD991281767					
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
	1. X NA3002 HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PGIII			1 I TT		4251	0	8035	3040	
	2.									
	3.									
	4.									
14. Special Handling Instructions and Additional Information (1) 482743-03 - ERG(171) ZONE A VAPOR CONDENS										
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.										
Generator's/Offeror's Printed/Typed Name Eric Jensen					Signature <i>Eric Jensen</i>			Month	Day	Year
								06	17	14
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____										
17. Transporter Acknowledgment of Receipt of Materials										
Transporter 1 Printed/Typed Name RONALD J. DOIRON					Signature <i>Ronald J. Doiron</i>			Month	Day	Year
								06	17	14
18. Discrepancy										
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection										
Manifest Reference Number: _____										
18b. Alternate Facility (or Generator) U.S. EPA ID Number _____										
Facility's Phone: _____										
18c. Signature of Alternate Facility (or Generator)								Month	Day	Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)										
1. H135			2.			3.		4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a										
Printed/Typed Name Megan Swick					Signature <i>Megan Swick</i>			Month	Day	Year
								06	17	14

95947

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000100335 DAT				
5. Generator's Name and Mailing Address ENVIRONMENTAL PARTNERS ATTN: MARY HOLDER 1100 NW MAPLE ST STE 310 ISSAQUAH WA 98027 (509)554-1247				Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 DIETRICH ROAD PASCO WA 99301 (509)554-1247					
6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC					U.S. EPA ID Number WARG00001743				
7. Transporter 2 Company Name					U.S. EPA ID Number				
8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 20245 77TH AVENUE SOUTH KENT, WA 98032 (253) 872-8830					U.S. EPA ID Number WAD991281767				
9a. HM		9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))		10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
				No.	Type				
X		1. HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PGIII		1	TT	4200	G	D035	D040
		2.							
		3.							
		4.							
14. Special Handling Instructions and Additional Information (1) 482743-03 - ERG(171) ZONE A VAPOR CONDENS									
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.									
Generator's/Offeror's Printed/Typed Name Eric Jensen					Signature 			Month Day Year 07 15 14	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____									
17. Transporter Acknowledgment of Receipt of Materials									
Transporter 1 Printed/Typed Name Mark Kaczmarsh					Signature 			Month Day Year 7 15 14	
Transporter 2 Printed/Typed Name					Signature			Month Day Year	
18. Discrepancy									
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection									
Manifest Reference Number:									
18b. Alternate Facility (or Generator) BE, LLC (TACOMA) 1701 Alexander Ave E. Tacoma, WA 98421					U.S. EPA ID Number (253)627-7568 WAD020257945				
18c. Signature of Alternate Facility (or Generator)								Month Day Year	
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)									
1. H141		2.		3.		4.			
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a									
Printed/Typed Name Wanda Grandack					Signature 			Month Day Year 7 18 14	

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAD991261874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000107090 DAT			
5. Generator's Name and Mailing Address ENVIRONMENTAL PARTNERS ATTN: MARY HOLBER 1180 NW MAPLE ST STE 318 YSSAQUOINI WA 99027 (509)554-1247				Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 DIETRICH ROAD PASCO WA 99301 (509)554-1247				
6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC					U.S. EPA ID Number WAD000001743			
7. Transporter 2 Company Name					U.S. EPA ID Number			
8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC. TACOMA PLANT Kent Plant 1701 East Alexander Avenue 30245 77th Ave. S. Tacoma, WA 98521 (253) 827-7500 Kent, WA 98032					U.S. EPA ID Number WAD0020257945			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. 001902 HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PGIII			1 TT		473 G		D035 D040
	2.							
	3.							
	4.							
14. Special Handling Instructions and Additional Information (1) 482743-03 - ERG(171) ZONE A VAPOR CONDENS								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.								
Generator's/Offoror's Printed/Typed Name Eric Jensen					Signature <i>EJ</i>		Month Day Year 08 27 14	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:								
17. Transporter Acknowledgment of Receipt of Materials								
Transporter 1 Printed/Typed Name MICHAEL T. EARLE					Signature <i>MTE</i>		Month Day Year 08 27 14	
Transporter 2 Printed/Typed Name					Signature		Month Day Year	
18. Discrepancy								
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection								
Manifest Reference Number:								
18b. Alternate Facility (or Generator) U.S. EPA ID Number:								
Facility's Phone:								
18c. Signature of Alternate Facility (or Generator)							Month Day Year	
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)								
1. H141			2.			3.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a								
Printed/Typed Name Melvin Gault					Signature <i>Melvin Gault</i>		Month Day Year 08 27 14	

A 2858

GENERATOR

INTL

TRANSPORTER

DESIGNATED FACILITY

DESIGNATED FACILITY TO GENERATOR

City of Pasco Water/Sewer A/R

ACCOUNTS RECEIVABLE

PO Box 293
PASCO, WA 99301
(509) 544-3066

Federal Tax ID: 91-6001264

INVOICE

Account Number: 13919
Invoice Number: M092214
Date: 09/22/2014

Purge water from groundwater monitoring.

525 GALLONS OF LEACHATE FROM PASCO LANDFILL PMC 3.07.200 (c)

DUMPED 8/27/14 CHARGE \$.24 GALLON

ENVIRONMENTAL PARTNERS, INC
ATTN: MARY HOLDER
295 NE GILMAN BLVD STE 201
ISSAQUAH, WA 98027

DESCRIPTION OF CHARGES
Misc - Water/Sewer

QUANTITY
1.0

UNIT PRICE
\$126.00

AMOUNT
\$126.00



DATE: 10/12	SUBAGMT? <input checked="" type="checkbox"/>
APPROVED BY: TE Mmt	ENTERED: 10/12
CATEGORY: DISBURSE ^{WASTE}	PAID:
PROJ#: 039113.2	

Finance Charge: _____
Total Charges \$126.00

Total Credits 0.00

PLEASE PAY THIS AMOUNT => \$126.00

^DETACH ALONG ABOVE LINE AND RETURN STUB WITH YOUR PAYMENT^

ENVIRONMENTAL PARTNERS, INC
Account Number 13919

Billing Number M092214
Current Date: 09/22/2014

Amount Due: \$126.00
Amount Enclosed \$ _____

Invoice payments are due by the 15th of the next month. If you have any questions concerning this matter, please call (509) 544-3066. Thank you.

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000096485 DAT
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5. Generator's Name and Mailing Address ENVIRONMENTAL PARTNERS ATTN: MARY HOLDER 1180 NW MAPLE ST STE 310 ISSAQUAH WA 98027 (509)554-1247	Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 DIERTRICH ROAD. PASCO WA 99301 (509)554-1247
---	---

6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC	U.S. EPA ID Number WAR000001743
---	---

7. Transporter 2 Company Name	U.S. EPA ID Number
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8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 20245 77TH AVENUE SOUTH KENT WA 98032. (253) 872-8030	U.S. EPA ID Number WAD991281767
---	---

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		No.	Type					
1	UN1993 WASTE FLAMMABLE LIQUIDS, N.O.S. (ACETONE, TOLUENE) 3 PGII	4	DM-DF	2100 1560	P	D001	D027	D035
2						D039	D040	
3								
4								

14. Special Handling Instructions and Additional Information
(1) 647377-00 - RRG(128) ZONE A VAPOR CONDENS.

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offoror's Printed/Typed Name: **Eric Jensen** Signature: *[Signature]* Month: **19** Day: **13** Year: **14**

16. International Shipments Import to U.S. Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name Bill Buchholz	Signature <i>[Signature]</i>	Month 19	Day 13	Year 14
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

18. Discrepancy

18a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

Manifest Reference Number: _____

18b. Alternate Facility (or Generator) _____ U.S. EPA ID Number _____

Facility's Phone: _____

18c. Signature of Alternate Facility (or Generator) _____ Month: _____ Day: _____ Year: _____

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H141	2.	3.	4.
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20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: **Cassandra Gallagos** Signature: *[Signature]* Month: **19** Day: **15** Year: **14**

GENERATOR
 TRANSPORTER
 DESIGNATED FACILITY

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

14 SEP 16 AM 4:16

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number WAD991281764	2. Page 1 of 1	3. Emergency Response Phone: (877) 577-2669	4. Manifest Tracking Number 000107581 DAT
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5. Generator's Name and Mailing Address: ENVIRONMENTAL PARTNERS ATTN: MARY HOLBER 1130 NW MAPLE ST STE 310 ISSINGTON VA 22087 (509)554-1247	Generator's Site Address (if different than mailing address): PASCO LANDFILL 1981 BIETRICH ROAD PASCO WA 99381 (509)554-1247
--	---

6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC	U.S. EPA ID Number WAR000001743
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7. Transporter 2 Company Name	U.S. EPA ID Number
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8. Designated Facility Name and Site Address: BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 28245 77TH AVENUE SOUTH KENT, WA 98032 (253) 877-8010	U.S. EPA ID Number WAD991281767
---	------------------------------------

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		No.	Type					
1.	HAZARDOUS WASTE, LIQUID, N.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 3 PIII	1	TT	4735	6	0035	0040	
2.								
3.								
4.								

14. Special Handling Instructions and Additional Information (1) 482743-03 - ERG(171) ZONE A VAPOR CONDENS

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offoror's Printed/Typed Name Eric Jensen agent of Iwat	Signature 	Month 10	Day 16	Year 14
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16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.	Port of entry/exit: Date leaving U.S.:
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17. Transporter Acknowledgment of Receipt of Materials	Signature 	Month 10	Day 16	Year 14
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18. Discrepancy	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection
-----------------	--

18b. Alternate Facility (or Generator)	Manifest Reference Number: U.S. EPA ID Number
--	--

18c. Signature of Alternate Facility (or Generator)	Month 10	Day 16	Year 14
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19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)	1. H100	2.	3.	4.
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20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a	Printed/Typed Name Melvin Gault	Signature 	Month 10	Day 16	Year 14
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GENERATOR

TRANSPORTER INT'L

DESIGNATED FACILITY

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

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number WAD991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2669	4. Manifest Tracking Number 000107661 DAT
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5. Generator's Name and Mailing Address ENVIRONMENTAL PARTNERS ATTN: MARY HOLDER 1180 NW MAPLE ST STE 318 ISSAQUAH WA 98027 (509)554-1247	Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 DIETRICH ROAD PASCO WA 99301 (509)554-1267
---	---

6. Transporter 1 Company Name BURLINGTON ENVIRONMENTAL, LLC	U.S. EPA ID Number WAD000001743
---	------------------------------------

7. Transporter 2 Company Name	U.S. EPA ID Number
-------------------------------	--------------------

8. Designated Facility Name and Site Address BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 28245 77TH AVENUE SOUTH KENT, WA 98032 (253) 872-8038	U.S. EPA ID Number WAD991281767
---	------------------------------------

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit WL/Vol.	13. Waste Codes		
		No.	Type					
X	1. HA3002 HAZARDOUS WASTE, LIQUID, H.D.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 9 PGIII	1		4,767	Gal.	DN35	DN40	
	2.							
	3.							
	4.							

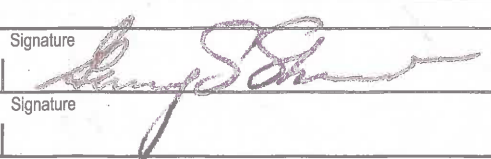
14. Special Handling Instructions and Additional Information
(1) 492763-03 - ENG(171) ZONE A VAPOR CONDENS

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offoror's Printed/Typed Name Eric Jensen agent of IWH	Signature 	Month 11	Day 04	Year 14
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16. International Shipments Import to U.S. Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name Gary Shaw	Signature 	Month 11	Day 4	Year 14
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

18. Discrepancy

18a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

Manifest Reference Number: _____

18b. Alternate Facility (or Generator) _____ U.S. EPA ID Number _____

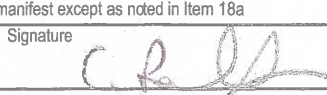
Facility's Phone: _____

18c. Signature of Alternate Facility (or Generator) _____ Month _____ Day _____ Year _____

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H100	2.	3.	4.
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20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name Cassandra Challegar	Signature 	Month 11	Day 4	Year 14
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48044 GENERATOR
 TRANSPORTER INT'L
 DESIGNATED FACILITY

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

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number MD0991281874	2. Page 1 of 1	3. Emergency Response Phone (877) 577-2660	4. Manifest Tracking Number 000100584 DAT			
5. Generator's Name and Mailing Address ENVIRONMENTAL PARTNERS OTM: MARY HOLBER 1100 NW MAPLE ST STE 210				Generator's Site Address (if different than mailing address) PASCO LANDFILL 1901 DIETRICH ROAD PASCO WA 99701 (509)551-1767				
Generator's Phone: 509-551-1767		6. Transporter 1 Company Name DUNLINGTON ENVIRONMENTAL, LLC		U.S. EPA ID Number MD0991281763				
		7. Transporter 2 Company Name		U.S. EPA ID Number				
8. Designated Facility Name and Site Address DUNLINGTON ENVIRONMENTAL, LLC. KENT FACILITY 28265 77TH AVENUE SOUTH				U.S. EPA ID Number MD0991281767				
Facility's Phone: KENT WA 98035 (253) 871-8030								
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. HAZARDOUS WASTE, LIQUID, H.O.S. (METHYL ETHYL KETONE, TRICHLOROETHYLENE) 3 PGIII	1	TT	2936	G	D035	D040	
	2.							
	3.							
	4.							
14. Special Handling Instructions and Additional Information (1) 102743-03 - ERG(171) ZONE A VAPOR CONDENS								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.								
Generator's/Offoror's Printed/Typed Name FRIETZSEN				Signature <i>[Signature]</i>		Month 11	Day 24	Year 14
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____								
17. Transporter Acknowledgment of Receipt of Materials								
Transporter 1 Printed/Typed Name MARK HARMON				Signature <i>[Signature]</i>		Month 11	Day 24	Year 14
Transporter 2 Printed/Typed Name				Signature		Month	Day	Year
18. Discrepancy								
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection								
Manifest Reference Number: _____								
18b. Alternate Facility (or Generator)				U.S. EPA ID Number				
Facility's Phone: _____								
18c. Signature of Alternate Facility (or Generator)						Month	Day	Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)								
1.	2.	3.	4.					
H111								
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a								
Printed/Typed Name Melvin Gault				Signature <i>[Signature]</i>		Month 11	Day 24	Year 14

AG 11/24/14

Attachment C
Monthly IWA Performance Monitoring Checklists

Zone A Landfill Cover Inspection Checklist

Project Inspection Report No.: 10-2014
 Project Inspector Name: Eric Jensen
 Date: 28-Oct-14
 Weather: Clear, 43°f wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>No</i>	<i>No</i>
Foot Traffic Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>No</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>Yes</i>	<i>Under Evaluation</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)		
North Sump Inspection		
Water in Sump	<i>No</i>	<i>N/A</i>
Thickness of Water (inches)	<i>N/A</i>	<i>N/A</i>
Water pumped out	<i>N/A</i>	<i>N/A</i>
Approximate volume pumped (gals)	<i>N/A</i>	<i>N/A</i>
South Sump Inspection		
Water in Sump	<i>No</i>	<i>N/A</i>
Thickness of Water (inches)	<i>N/A</i>	<i>N/A</i>
Water pumped out	<i>N/A</i>	<i>N/A</i>
Approximate volume pumped (gals)	<i>N/A</i>	<i>N/A</i>

Comments, Remarks, and Action Items:

Elevation surveys and visual observations will be used for further evaluation of settlement

Zones C/D Landfill Cover Inspection Checklist

Project Inspection Report No.: 10-2014

Project Inspector Name: Eric Jensen

Date: 28-Oct-14

Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>No</i>	<i>No</i>
Foot Traffic Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>No</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>No</i>	<i>No</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Vegetation is sparse on crown and soil is holding.

Zone E Landfill Cover Inspection Checklist

Project Inspection Report No.: 10-2014

Project Inspector Name: Eric Jensen

Date: 28-Oct-14

Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	No	No
Foot Traffic Disturbance	No	No
Other (Define in Inspection Report)	No	No
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	No	No
Consumption of Vegetation	No	No
Other (Define in Inspection Report)	No	No
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	Yes	No
Stormwater Erosion	No	No
Settlement	No	No
Sparse Vegetation	Yes	No
Distressed Vegetation	No	No
Other (Define in Inspection Report)	No	No

Comments, Remarks, and Action Items:

Vegetation is growing well on the cover and holding the soil.

Zone A West Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 10-2014
 Project Inspector Name: Eric Jensen
 Date: 28-Oct-14
 Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

The Sediment depth is 0" to 3", Ave. is 1". The water depth is 2".
The basin liner is exposed on the west side of the west berm between the fence and the top of the berm.

Zone A East Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 10-2014
 Project Inspector Name: Eric Jensen
 Date: 28-Oct-14
 Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench	<i>No</i>	<i>No</i>
Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

The water depth is 2". The average sediment depth is approx. 1/2". Vegetation only growing in the sediment at North end near the inlet pipe. Minor sediment below keystone blocks.

Zone C/D Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 10-2014
 Project Inspector Name: Eric Jensen
 Date: 28-Oct-14
 Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	No	No
Sediment/Water Level Staff Gauge Disturbance	No	No
Other (Define in Inspection Report)	No	No
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	No	No
Foot Traffic Damage to Liner	No	No
Other (Define in Inspection Report)	No	No
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	No	No
Water Level Greater than 4.0 feet	No	No
Anchor Trench	No	No
Disturbed/Exposed/Pull Out	No	No
Ballooning Liner	Yes	No
Vegetation Growing in Sediment	Yes	No
Other (Define in Inspection Report)	No	No

Comments, Remarks, and Action Items:

Water depth is 0". The Sediment depth is 0" to 6", ave. is 3" on the bottom, 0" on the side walls. Some sediment in North drainage pipe. Some vegetation growth in sediment.

Zone E Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 10-2014
 Project Inspector Name: Eric Jensen
 Date: 28-Oct-14
 Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench	<i>No</i>	<i>No</i>
Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Water depth is 0". Sediment is 0" to 5", Ave is 2" on the bottom, 0" on the side walls.

Vegetation is growing along the edge.

Zone A Perimeter Fence Checklist

Project Inspection Report No.: 10-2014
 Project Inspector Name: Eric Jensen
 Date: 28-Oct-14
 Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>Yes</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence.

One of the fence poles is bent on the south side.

Part of the fence was removed on the East side for Bale fill work.

Zones C/D Perimeter Fence Checklist

Project Inspection Report No.: 10-2014
 Project Inspector Name: Eric Jensen
 Date: 28-Oct-14
 Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>No</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence inside and out.

Zone E Perimeter Fence Checklist

Project Inspection Report No.: 10-2014

Project Inspector Name: Eric Jensen

Date: 28-Oct-14

Weather: Clear, 43^of wind NW 5, Pressure 30.10

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>No</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence inside and out.

Zone A Landfill Cover Inspection Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53°f wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>Yes</i>	<i>No</i>
Foot Traffic Disturbance	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>No</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>Yes</i>	<i>Under Evaluation</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)		
North Sump Inspection		
Water in Sump	<i>No</i>	<i>N/A</i>
Thickness of Water (inches)	<i>N/A</i>	<i>N/A</i>
Water pumped out	<i>N/A</i>	<i>N/A</i>
Approximate volume pumped (gals)	<i>N/A</i>	<i>N/A</i>
South Sump Inspection		
Water in Sump	<i>No</i>	<i>N/A</i>
Thickness of Water (inches)	<i>N/A</i>	<i>N/A</i>
Water pumped out	<i>N/A</i>	<i>N/A</i>
Approximate volume pumped (gals)	<i>N/A</i>	<i>N/A</i>

Comments, Remarks, and Action Items:

Elevation surveys and visual observations will be used for further evaluation of settlement

Some trails developed due to foot traffic.

Zones C/D Landfill Cover Inspection Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>No</i>	<i>No</i>
Foot Traffic Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>No</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>No</i>	<i>No</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Vegetation is sparse on crown and soil is holding.

Zone E Landfill Cover Inspection Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>No</i>	<i>No</i>
Foot Traffic Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>Yes</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>No</i>	<i>No</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Vegetation is growing well on the cover and holding the soil.

Zone A West Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

The Sediment depth is 0" to 3", Ave. is 1". The water depth is 2".

The basin liner is exposed on the west side of the west berm between the fence and the top of the berm.

Zone A East Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench	<i>No</i>	<i>No</i>
Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

The water depth is 4". The average sediment depth is approx. 1/2". Vegetation only growing in the sediment at North end near the inlet pipe. Minor sediment below keystone blocks.

Zone C/D Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench	<i>No</i>	<i>No</i>
Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Water depth is 1". The Sediment depth is 0" to 6", ave. is 3" on the bottom, 0" on the side walls. Some sediment in North drainage pipe. Some vegetation growth in sediment.

Zone E Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	No	No
Sediment/Water Level Staff Gauge Disturbance	No	No
Other (Define in Inspection Report)	No	No
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	No	No
Foot Traffic Damage to Liner	No	No
Other (Define in Inspection Report)	No	No
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	No	No
Water Level Greater than 4.0 feet	No	No
Anchor Trench	No	No
Disturbed/Exposed/Pull Out	No	No
Ballooning Liner	Yes	No
Vegetation Growing in Sediment	Yes	No
Other (Define in Inspection Report)	No	No

Comments, Remarks, and Action Items:

Water depth is 1". Sediment is 0" to 5", Ave is 2" on the bottom, 0" on the side walls.

Vegetation is growing along the edge.

Zone A Perimeter Fence Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>Yes</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence.

One of the fence poles is bent on the south side.

Part of the fence was removed on the East side for Bale fill work.

Zones C/D Perimeter Fence Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>No</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence inside and out.

Zone E Perimeter Fence Checklist

Project Inspection Report No.: 11-2014

Project Inspector Name: Eric Jensen

Date: 25-Nov-14

Weather: Overcast, 53^of wind NW 9, Pressure 30.12

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>No</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence inside and out.

Zone A Landfill Cover Inspection Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>Yes</i>	<i>No</i>
Foot Traffic Disturbance	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>No</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>Yes</i>	<i>Under Evaluation</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)		
North Sump Inspection		
Water in Sump	<i>No</i>	<i>N/A</i>
Thickness of Water (inches)	<i>N/A</i>	<i>N/A</i>
Water pumped out	<i>N/A</i>	<i>N/A</i>
Approximate volume pumped (gals)	<i>N/A</i>	<i>N/A</i>
South Sump Inspection		
Water in Sump	<i>No</i>	<i>N/A</i>
Thickness of Water (inches)	<i>N/A</i>	<i>N/A</i>
Water pumped out	<i>N/A</i>	<i>N/A</i>
Approximate volume pumped (gals)	<i>N/A</i>	<i>N/A</i>

Comments, Remarks, and Action Items:

Elevation surveys and visual observations will be used for further evaluation of settlement

Some trails developed due to foot traffic.

Zones C/D Landfill Cover Inspection Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>No</i>	<i>No</i>
Foot Traffic Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>No</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>No</i>	<i>No</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Vegetation is sparse on crown and soil is holding.

Zone E Landfill Cover Inspection Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Vehicle Rutting	<i>No</i>	<i>No</i>
Foot Traffic Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Consumption of Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Wind Erosion	<i>Yes</i>	<i>No</i>
Stormwater Erosion	<i>No</i>	<i>No</i>
Settlement	<i>No</i>	<i>No</i>
Sparse Vegetation	<i>Yes</i>	<i>No</i>
Distressed Vegetation	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Vegetation is growing well on the cover and holding the soil.

Zone A West Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench	<i>No</i>	<i>No</i>
Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

The Sediment depth is 0" to 3", Ave. is 1". The water depth is 4".

The basin liner is exposed on the west side of the west berm between the fence and the top of the berm.

Zone A East Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	No	No
Sediment/Water Level Staff Gauge Disturbance	No	No
Other (Define in Inspection Report)	No	No
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	No	No
Foot Traffic Damage to Liner	No	No
Other (Define in Inspection Report)	No	No
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	No	No
Water Level Greater than 4.0 feet	No	No
Anchor Trench	No	No
Disturbed/Exposed/Pull Out	No	No
Ballooning Liner	Yes	No
Vegetation Growing in Sediment	Yes	No
Other (Define in Inspection Report)	No	No

Comments, Remarks, and Action Items:

The water depth is 8". The average sediment depth is approx. 1/2". Vegetation only growing in the sediment at North end near the inlet pipe. Minor sediment below keystone blocks.

Zone C/D Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	<i>No</i>	<i>No</i>
Sediment/Water Level Staff Gauge Disturbance	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	<i>No</i>	<i>No</i>
Foot Traffic Damage to Liner	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	<i>No</i>	<i>No</i>
Water Level Greater than 4.0 feet	<i>No</i>	<i>No</i>
Anchor Trench	<i>No</i>	<i>No</i>
Disturbed/Exposed/Pull Out	<i>No</i>	<i>No</i>
Ballooning Liner	<i>Yes</i>	<i>No</i>
Vegetation Growing in Sediment	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Water depth is 4". The Sediment depth is 0" to 6", ave. is 3" on the bottom, 0" on the side walls. Some sediment in North drainage pipe. Some vegetation growth in sediment.

Zone E Detention/Evaporation Basin Inspection Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Liner Puncture	No	No
Sediment/Water Level Staff Gauge Disturbance	No	No
Other (Define in Inspection Report)	No	No
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing	No	No
Foot Traffic Damage to Liner	No	No
Other (Define in Inspection Report)	No	No
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Sediment Level Greater than 0.9 feet average	No	No
Water Level Greater than 4.0 feet	No	No
Anchor Trench	No	No
Disturbed/Exposed/Pull Out	No	No
Ballooning Liner	Yes	No
Vegetation Growing in Sediment	Yes	No
Other (Define in Inspection Report)	No	No

Comments, Remarks, and Action Items:

Water depth is 2". Sediment is 0" to 5", Ave is 2" on the bottom, 0" on the side walls.

Vegetation is growing along the edge.

Zone A Perimeter Fence Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>Yes</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence.

One of the fence poles is bent on the south side.

Part of the fence was removed on the East side for Bale fill work.

Zones C/D Perimeter Fence Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>No</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>Yes</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence inside and out.

Zone E Perimeter Fence Checklist

Project Inspection Report No.: 12-2014

Project Inspector Name: Eric Jensen

Date: 18-Dec-14

Weather: Overcast, 38°f wind calm, Pressure 30.06

Man-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Fence Hit by Vehicle	<i>No</i>	<i>No</i>
Fence Cut	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Animal-Made Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Burrowing under Fence	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>
Natural Disturbance	Disturbance Noted (Yes/No)	Repair Required (Yes/No)
Build Up of Blown Vegetation (Tumbleweed)	<i>Yes</i>	<i>No</i>
Vegetation Growing on Fence	<i>No</i>	<i>No</i>
Fence Leaning or Falling	<i>No</i>	<i>No</i>
Other (Define in Inspection Report)	<i>No</i>	<i>No</i>

Comments, Remarks, and Action Items:

Tumbleweeds along the fence inside and out.

Attachment D
2013 SCS Technical Memorandum – Cover
Settlement Evaluation Update

TECHNICAL MEMORANDUM
COVER SETTLEMENT EVALUATION UPDATE
ZONE A DRUM DISPOSAL AREA
PASCO SANITARY LANDFILL SITE
SEPTEMBER 12, 2013

INTRODUCTION

This technical memorandum provides an updated evaluation of the cover system settlement at Zone A of the Pasco Sanitary Landfill (PSL) Site in Pasco, Washington. SCS has periodically evaluated the Zone A cover performance and settlement since 2008. Those evaluations have been presented in prior reports and have indicated that the tensile strain induced on the cover system by the settlement is within acceptable limits and does not adversely affect its performance as an infiltration barrier.

This technical memorandum has been prepared at the request of the Industrial Waste Area Generators Group III (IWAG) in response to localized surface depressions that became apparent in early 2013 and that are indicative of differential settlement. The recently observed depressions are relatively localized compared to previously observed settlement and appeared to progress at a more rapid rate than previously monitored.

The intent of the updated evaluation is to assess whether the recently observed differential settlement has adversely affected the performance of the cover and whether the cover continues to perform within its original design parameters. Of particular interest to the IWAG was an assessment of whether the observed differential settlement may be placing excessive strain on the high-density polyethylene (HDPE) geomembrane in the cover system. The cover system was constructed in 2001 and consists of the following components (from top to bottom):

- The 24 inch minimum soil layer with top 6-inches as vegetative layer
- Woven separation geotextile
- 12-inch sand drainage layer
- 40 mil HDPE textured geomembrane
- Geosynthetic clay liner (GCL)
- 24-inch minimum engineered fill for grading, drainage and foundation
- Geogrid on existing grade (Husker/Fortrac)

SETTLEMENT SURVEY HISTORY

Database

The settlement monitoring database for Zone A dates back to 2008 and includes both ground (field) surveying and three-dimensional (3D) laser surface scanning.

Field surveying was performed on up to 26 different settlement plates or monuments that were installed in the cover at various times over the past 5 years. Some of the settlement monuments have been removed, or were damaged, during or after site maintenance activities in 2010-2011. In addition to field surveying, three rounds of cap-wide 3D laser surface scanning have occurred in December 2011, April 2013 and June 2013. In total, the settlement database for Zone A covers the time period between May 29, 2008 and June 4, 2013, which is slightly more than 5 years.

The initial eight settlement markers (SB-1 through SB-8) were installed on the Zone A cover in May 2008. In August 2011, six of these eight original settlement markers were removed during cover maintenance activities and six new monitoring markers designated as SB-9 and SB-10, and SP-1 through SP-4 were installed. Subsequently, in January 2013, twelve additional settlement markers designated as SP-5 to SP-16 were added to the monitoring network. The placement of those settlement markers was based on the results of an evaluation of suspected off-gas heating within the Zone A soil vapor extraction effluent.

On December 13, 2011 a site wide 3D laser scanning survey was conducted as a component of the as-built documentation for the upgraded SVE system. That survey included the entire Zone A cover. The 3D survey was repeated on April 3, 2013 and June 4, 2013 to help assess differential settlement patterns that had been observed beginning in January 2013, as well as to supplement the physical field surveys.

The 3D laser scans provide a full surface depiction of the Zone A cover and improves our ability to monitor for differential settlement at locations in between the physical survey points. The December 2011 3D survey was completed after Zone A cover maintenance and was performed in support of the As-Built documentation for the upgraded SVE system. This 3D survey serves as the baseline surface for future comparisons. The April 2013 3D scan was performed after differential settlement was visually noted during routine monthly cover inspections in January 2013. The June 2013 3D scan was the first of the ongoing bi-monthly scans that will be performed on the cover.

Previous Evaluations

Previous evaluations of settlement and Zone A cover performance were provided in the following SCS reports:

- Pasco Landfill Zone A Cover Evaluation dated October 6, 2008 (revised March 10, 2009), and

- Cover Maintenance Documentation Report – Pasco Landfill Zone A, dated September 2011

Discussions of Zone A cover performance were also included in various quarterly and annual reports prepared on behalf of the IWAG by Environmental Partners Inc. (EPI).

Initial settlement evaluations were based on field surveying of eight (8) settlement plate locations (designated as SP-1 to SP-8). Those original eight settlement markers were located in three areas along the west side of the Zone A cover that had exhibited visible differential settlement prior to 2008 and in areas suitable for evaluating general cover settlement. The three areas were designated as the Northern, Middle and Southern areas.

Key conclusions from prior evaluations included:

- Elongation of the HDPE geomembrane and GCL, which are in direct contact, at SB-5 was estimated to be 1.38 percent as of March 2009. In October 2010, about 17 months later, it was estimated that continued settlement at SB-5 increased the strain slightly to 1.55 percent.
- Through 2009, the maximum settlement experienced on the Zone A cover (i.e., SB-5) did not result in a total tensile strain or elongation of the geomembrane liner material that exceeded the original design parameter of 10 percent.

RELEVANT HIGH DENSITY POLYETHYLENE (HDPE) TENSILE PROPERTIES

YIELD ELONGATION AND BREAK ELONGATION

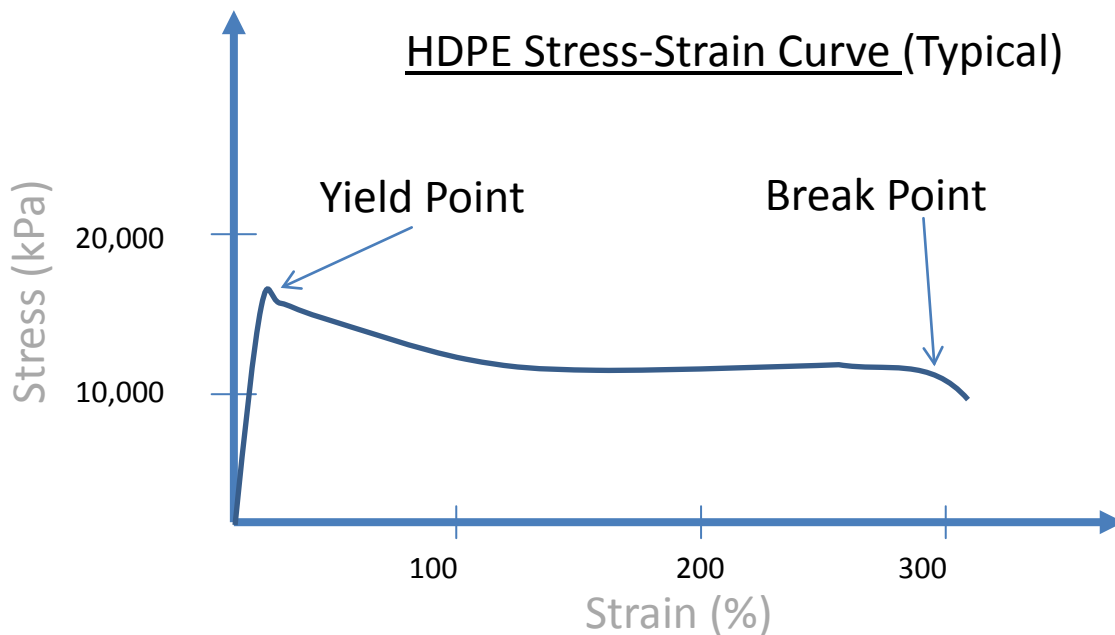
A key outcome of the settlement monitoring and analysis is a quantitative estimate of elongation of the HDPE geomembrane resulting from settlement, and how that estimated elongation compares to the allowable “yield point” and “break point” of the geomembrane material. In practice, the yield point and break point are tested in the laboratory using representative geomembrane samples following ASTM Method D638. This method measures the tensile properties of plastics including yield and break elongation.

In standard terminology, “yield point” (or “yield elongation”) refers to a point along the tensile stress-strain curve where the geomembrane deformation transitions from elastic (linear) to plastic (non-linear); the corresponding stress is called the “yield strength” value. The yield point does not correspond to a rupture, tear or break in the material.

In contrast, “break point” (or “break elongation”) is the point along the stress-strain curve where the geomembrane begins to exhibit mechanical separation or rupture. As shown on the typical stress-strain curve below (Figure 1), the break point is reached at a substantially higher strain than the yield point. This typical curve shape indicates that a geomembrane will begin to deform plastically at about 12 percent strain, but does not experience rupture until the strain has reached at least 100 percent elongation, and likely much more based on actual testing.

For reference purposes, the minimum industry standard yield elongation for textured 40-mil HDPE, per GRI-GM13 (Geosynthetic Research Institute, Test Method GM13), is conservatively set at 12 percent and for break elongation is 100 percent. In practice, yield elongation for textured geomembranes is typically 15 to 18 percent, while break elongation is well over 100 percent and sometimes as high as 500 percent. This means that a section of 40-mil textured HDPE liner must be elongated more than twice its original length before it would exhibit tearing or rupture in response to differential settlement.

FIGURE 1 - TYPICAL STRESS-STRAIN CURVE



It is notable that in the original cover system design, geogrid reinforcement was included beneath the HDPE geomembrane to help support the cover system in the event of a void developing under the liner. Design calculations (IT Corporation 2001) indicated the geogrid (Huesker/Fortrac 110/30-20) provided a tensile strength that was 18 times higher than needed to support the liner due to formation of a void. This calculation included the weight of 15 feet of overlying cap soil.

2001 MQC AND CQA CONSTRUCTION TESTING

As part of cover construction activities in 2001, the 40-mil textured HDPE geomembrane underwent Manufacturer's Quality Control (MQC) and Construction Quality Assurance (CQA) testing for tensile properties. As reported in GeoSyntec's CQA report (January 2002) yield elongation and break elongation results for the 40-mil textured HDPE are summarized in Table 1 below:

TABLE 1 - 2001 RESULTS OF MQC OR CQA TESTING OF 40-MIL HDPE

Roll No.	Elongation at Yield (percent)	Elongation at Break (percent)	MQC or CQA Testing (1 test per 100,000 sf)
25655	14.3	313	MQC
25658	13.6	241	MQC
25660	15.0	283	CQA
25661	14.5	249	MQC
25664	13.2	472	MQC
25664	15.0	373	CQA

These tests confirmed that the selected HDPE geomembrane material exceeded the minimum material standards noted above with a yield elongation of between 13.2 percent and 15 percent and a break elongation of between 241 percent and 472 percent. The HDPE material met project specifications set forth in the original design documents and the geomembrane significantly exceeded the 10 percent design basis yield elongation.

2008 SAMPLE TESTING

In 2008, SCS obtained a sample of the installed 40-mil textured HDPE from a non-critical area near the eastern detention pond. This sample was submitted to TRI/Environmental for a range of material properties tests including Tensile Properties using the ASTM Method D638. Test results and the testing procedures used are summarized in Table 2 below:

TABLE 2 - 40-MIL HDPE TESTING RESULTS

Parameter	ASTM Method	Material Property Test Results	
		2008 TRI Tests	2001 MQC/CQA Tests
Thickness (mil)	D5994	44 mil	40 mil
Density (g/cm ³)	D1505	0.947	0.947
Carbon Black			
• Content	D1603	2.95 %	2.88 %
• Dispersion	D5596	1	1
Dimensional Stability (MD/TD)	D1204	0.04/-0.03	-0.21/0.00
• Tensile Properties	D638		
• Yield Strength (MD/TD) (ppi)		119/126	116/120
• Break Strength (MD/TD) (ppi)	GRI GM13	111/98	126/105
• Yield Elongation (MD/TD) (%)		16/13	16/15
• Break Elongation (MD/TD) (%)		289/66	445/283
Puncture Resistance (lbs)	D 4833	110	105
Tear Resistance (MD/TD) (lbs)	D 1004	40/39	Not Tested

MD/TD = Machine Direction/Transverse Direction
 ppi = pounds per inch
 lbs = pounds

These results are consistent with MQC and CQA testing conducted in 2001 with respect to tensile properties, carbon black content/dispersion, puncture resistance, and dimensional stability.

Material testing performed in 2008 was in response to a concern expressed by the Washington Department of Ecology (Ecology) that long-term contact of the HDPE material with high concentrations of VOC vapors present beneath the geomembrane material may have the potential to degrade the material property. The findings of the testing in 2008 indicated that there was no observable degradation of HDPE material properties and that the material has performed within, or better than, the original minimum design criteria on which the cover design was based.

SETTLEMENT MONITORING RESULTS THROUGH JUNE 2013

Surveyed Settlement Plates

Table 3 and Figure 3 provide the surveyed elevations for the 26 field settlement markers (i.e., SB-1 to S10, SP-1 to SP-16), which include some markers that are no longer in place.

Based on the survey information presented herein, and our calculations of settlement rates, the settlement monitoring points on the Zone A cover have continued to show steady settlement over time. As these points were located in the field prior to observation of the recent depressions, they do not reflect settlement in those newly defined areas. The following settlement trends based on the settlement marker data are noteworthy:

- The annualized total settlement rates range from 1.0 inches per year (SB-16) to 13.0 inches per year (SP-2), and the average rate of settlement is 4.7 inches per year. The high value at SP-2 is confirmed by the 3D laser scan survey discussed below, which indicated SP-2 is in proximity to an area that experienced up to 1.4 feet of settlement over a 3.5 month period.
- The annualized average settlement rate for the original SB-1 to SB-10 settlement markers is 2.79 inches per year while the more recent SP-1 to SP-16 settlement markers have an annualized average settlement rate of 5.74 inches per year. The higher rate of annualized settlement for the newer SP settlement markers is expected since those settlement markers, by agreement with the Ecology, were intentionally located in areas that exhibited more deformation than others. This result is meaningful in demonstrating that the rate of settlement varies across the Zone A cover.
- The settlement graphs presented in Figure 3 graphically also confirm that the settlement trends for the physical monitoring points are relatively smooth and do not exhibit obvious or abrupt changes over short periods of time.
- One exception to the smooth settlement trend is SP-2, which exhibited an increase in settlement rate beginning in April 2012. Prior to April 2012, SP-2 was settling at approximately 9.0 inches per year; however the rate increased to 15.8 inches per after April 2012. SP-2 is located outside, but proximal to, an area of differential settlement that is discussed in more detail below.
- With regard to linear elongation of the geomembrane due to settlement between two known points, there are no two field survey monitoring points that have experienced a sufficiently large differential settlement (with respect to one another) to produce a linear elongation even approaching 1 percent. All of the physical survey points indicate that while the surface of the Zone A cover is settling at slightly different rates, those rates have not significantly increased or decreased over the 5 years of monitoring, but more importantly the magnitude of settlement is still well below the amount needed to reach the design yield elongation value for HDPE of 10 percent.

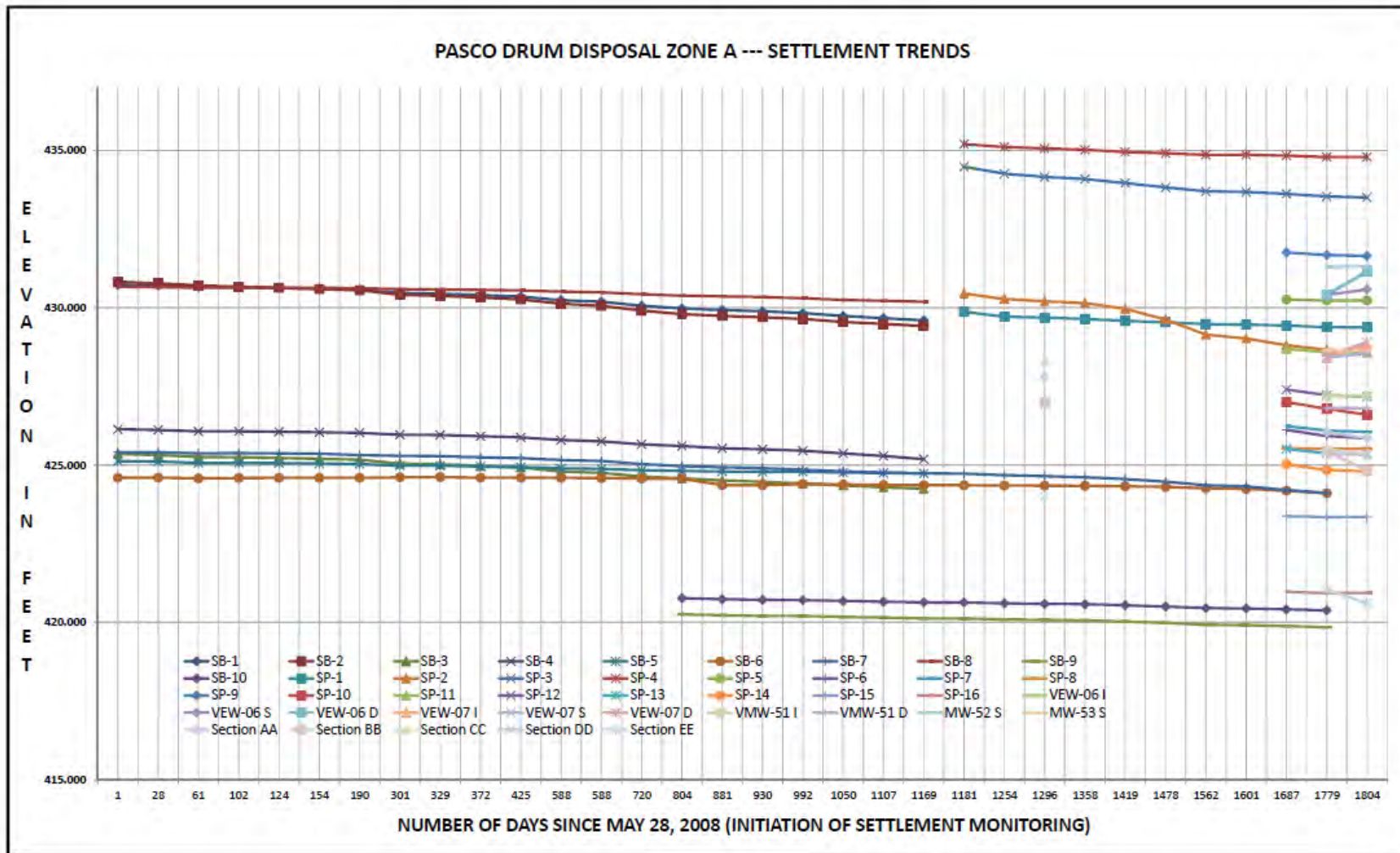
TABLE 3 - SURFACE SETTLEMENT POINT ELEVATIONS

ENVIRONMENTAL PARTNERS, INC.
 PASCO LANDFILL
 SUDDENCE BENCH MARK MONITORING TABLE

PASCO DRUM DISPOSAL LANDFILL ZONE A SETTLEMENT PLATE MONITORING RESULTS

BENCH MARK	5/29/2008	05/29/08	07/29/08	09/09/08	09/29/08	10/30/08	12/09/08	03/26/09	04/23/09	06/09/09	07/29/09	11/18/09	01/07/10	05/19/10	10/27/10	12/15/10	02/15/11	04/14/11	06/10/11	08/11/11	08/23/11	11/04/11	12/19/11	02/16/12	04/11/12	6/5/12	8/7/12	10/9/12	01/09/13	04/12/13	04/25/13	BENCH MARK			
SB-1	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-1			
SB-2	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-2		
SB-3	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-3		
SB-4	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-4		
SB-5	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-5		
SB-6	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-6		
SB-7	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-7	
SB-8	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-8	
SB-9	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	428.724	SB-9	
SP-10																																			SP-10
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FIGURE 2 - SURFACE SETTLEMENT POINT ELEVATIONS



3D Laser Scanning Survey

Methodology Summary

On December 13, 2011, as a component of the SVE system as-built documentation, the surface topography of the Zone A cover was surveyed by Triad Associates using a laser scanning system referred to as Advanced Laser Scanning Technology. This system captures and measures an area in 3D space, rather than at individual surveyed locations as represented by the physical settlement points. The 3D scanner measures thousands of data points per second (each with its own distance, angle, and reflected return signal power) and generates a "point cloud" data set from multiple set ups in the field. These multiple "point clouds" are tied together using a Total Station and orientated to a specific horizontal datum, NAD 83/91 Washington State Plane South Zone (horizontal datum) and vertical datum NAVD 88. Each 3D survey of the Zone A surface utilizes over 150 million individual data points to achieve a rendering of the surface with a vertical and horizontal accuracy of not less than 0.02 feet.

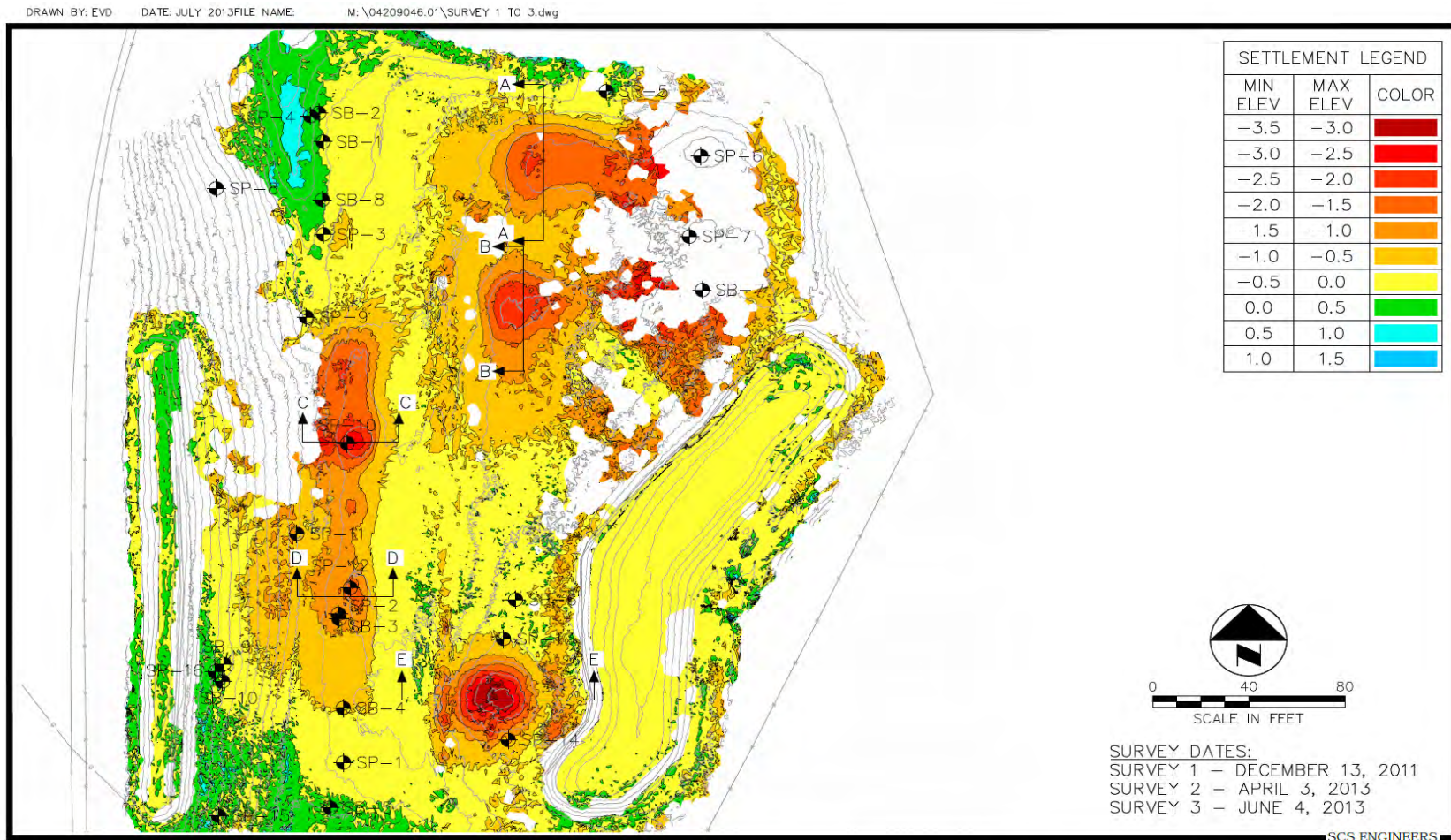
A second 3D survey was performed on April 3, 2013, which was the initial survey event following the observation of differential settlement at several locations in January 2013. The third 3D survey occurred on June 4, 2013, 62 days later. The total period of observation for the 3D survey evaluated herein is 539 days (i.e., December 13, 2011 to June 4, 2013).

For our analysis the Triad "point clouds" data sets were processed and imported into a Computer Aided Design (CAD) environment. Using these data a site map was constructed showing the total elevation differences measured by the different 3D surveys.

Figure 3 summarizes the 3D settlement information, providing colored-coded contours of settlement for the entire 539-day period. Areas colored yellow experienced settlements of 0 to 0.5 feet, orange areas experienced settlements of 0.5 to 1.5 feet and dark orange/red areas experienced settlements of 1.5 to 3 feet. Settlements of over 3.0 feet are shown as purple. Areas without color indicate that data was missing from one or both surveys used to perform the analysis.

Five areas of the Zone A cover experienced readily observable settlement which was initially noted in January 2013 during site inspections and continued through at least June 2013. These areas are indicated on Figure 3 and have been transected with cross-sections labeled A-A through E-E.

FIGURE 3 - TOTAL ZONE A CAP SETTLEMENT
DECEMBER 15, 2011 TO JUNE 4, 2013



PASCO WASTE LANDFILL ZONE A - SURFACE COMPARISON FROM SURVEY 1 TO SURVEY 3

3D Survey Results

Based on the 3D laser scanning results, the following observations were made:

- Approximately 75 to 80 percent of Zone A experienced total settlements of less than 6 inches between December 2011 and June 2013, which corresponds to an average rate of less than 4.1 inches per year. This finding is relatively consistent with the field survey of fixed settlement markers (Table 3 above) that indicated an average settlement rate of 4.7 inches per year.
- The remaining 20 to 25 percent of the Zone A cover experienced noticeable differential settlements, localized to five areas that exhibited physical ground depressions. Within those five areas, approximately 1,500 square feet exhibited differential settlements of more than 2 feet between December 2011 and April 2013, while about 160 square feet exhibited differential settlement of more than 3 feet over that same period. The monthly visual inspection of the Zone A cover indicates that the majority of that settlement occurred between January and March 2013.
- Surface elevations around some portions of the Zone A perimeter were slightly higher than previously measured or exhibited no change. This finding may reflect the influence of vegetation growth between scans, or other site activities such as minor earthwork, cover surface maintenance, and wheel rutting. The five areas of visually observable differential settlement experienced total settlements ranging between 1.58 and 3.41 feet over the 539-day period. These five areas measured between 25 and 40 feet in diameter and are apparent on Figure 3. Table 4 presents the settlement rates for these five areas between December 2011 and April 2013 (i.e., the first survey after differential settlement was noted) and between April and June 2013, the date of the most recent 3D scan. Table 4 also presents the total settlement at the center of these areas, and the corresponding estimated tensile strain between December 2011 and June 2013.
- The settlement patterns identified between January and April 2013 exhibited a more rapid rate of differential settlement than observed at the physical survey points. The IWAG inspects the Zone A cover on a monthly basis and the differential settlement in the five areas noted was reportedly first observed in January 2013. As a conservative evaluation of the recently observed settlement, Table 4 below presents the rates of settlement between January 1, 2013 (when the settlement is assumed to have commenced) and April 3, 2013 (a period of 92 days) and between April 3, 2013 and June 4, 2013 (a period of 62 days). As a component of this analysis SCS assumed 4 inches of general settlement likely occurred over the entire Zone A cap between December 2011 and January 2013, which is based on an average of the field survey markers. The remainder of the settlement is attributed to the time period between January 1 and June 4, 2013. These calculations provide a preliminary estimate of the rates of settlement, and indicate that the rate of settlement decreased significantly between the two periods. In Section DD, for example, the rate of settlement decreased from 1.18 inches per day to 0.02 inches per day, a very significant

reduction. In Section BB, the rate of settlement decreased from 0.16 inches per day to 0.12 inches per day, and suggests it will continue to decrease over time. A decreasing rate of settlement over time is the expected condition for areas of differential settlement. Future 3D laser monitoring and field surveys will allow for an evaluation of whether this decrease in the rate of settlement at these locations continues as expected and will allow for the observation and monitoring of future areas of differential settlement, should that condition occur.

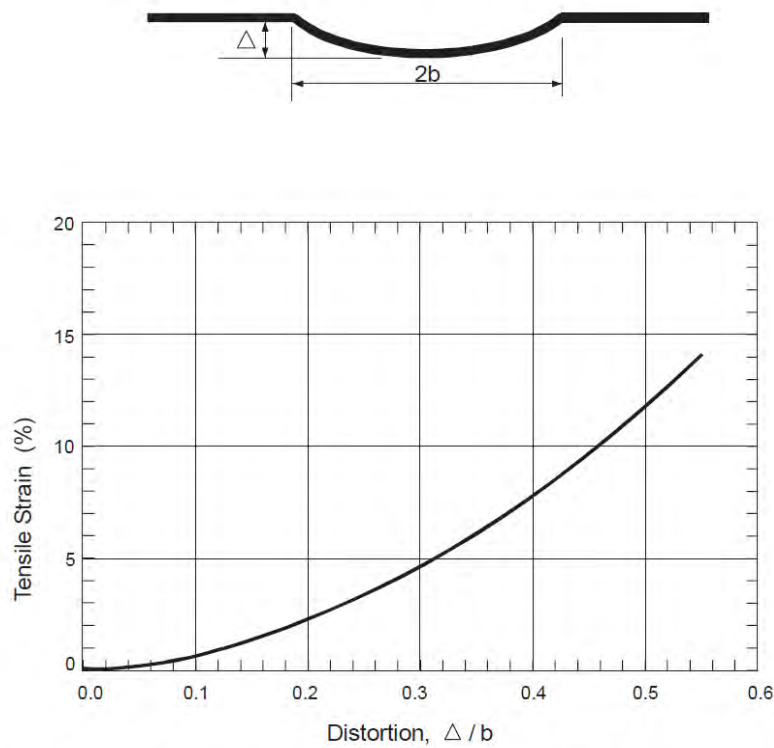
- Tensile strains in the geomembrane liner are included in Table 4 and are based on the total settlement and the approximate dimensions of the depression based on the 3D scan. Using the strain relationship developed by Gilbert and Murphy, 1987, for angular distortion (see Figure 4) and assuming that the geomembrane distortion mirrors the ground surface movement, the calculated strains range from less than 0.06 percent to almost 3 percent, which are well below the allowable 10 percent design basis and about two orders of magnitude less than the break elongation of the material necessary to suggest a strain-induced rupture of the HDPE geomembrane.
- If settlement in these five areas continues, it is expected that the radius of the area of settlement will broaden, which has a mitigating effect on tensile strain. Using Figure 4, a closed depression 50 feet in diameter with 7 feet of total settlement would result in a 4 percent strain on the HDPE geomembrane. Based on our monitoring and observations to date, no area in the Zone A cover has experienced that magnitude of settlement. In order for a 50-foot diameter depression to create a 10 percent tensile strain, the depression must be approximately 11.5 feet in depth. That depth of settlement does not appear to be reasonably possible given that the drums are thought to be stacked up to 4 high (i.e., about 12 feet) and would retain some volume even after collapse, assuming drum collapse constitutes the primary mechanism for differential settlement. However unlikely that degree of differential settlement may be, ongoing settlement monitoring will allow for an assessment of the total tensile strain on the HDPE liner.

TABLE 4 - SETTLEMENT RATES BETWEEN JANUARY 1, 2013 AND JUNE 4, 2013

Section ¹	Settlement Rate ²		Δ =Maximum Settlement @Center (feet) ²	Width =2b (feet)	Tensile Strain@* (percent)
	1/1/13 to 4/3/13 (inches/day)	4/3/12 to 6/4/13 (inches per day)			
A-A	0.19	0.03	1.94	44.8	~0.06
B-B	0.16	0.12	2.18	37.8	1.0
C-C	0.32	0.03	2.94	25.0	3.0
D-D	1.18	0.02	1.58	27.0	1.0
E-E	0.34	0.09	3.41	44.1	1.5

- 1) See Figure 4 for the location of the sections and Figure 5 for the cross sections
- 2) Conservatively assumes elevations as of Jan. 1, 2013 are the same as Dec. 2011

FIGURE 4 - RELATIONSHIP BETWEEN TENSILE STRAIN AND ANGULAR DISTORTION



Theoretical Relationship Between Tensile Strain and Angular Distortion (modified from Gilbert and Murphy, 1987).

CONCLUSIONS

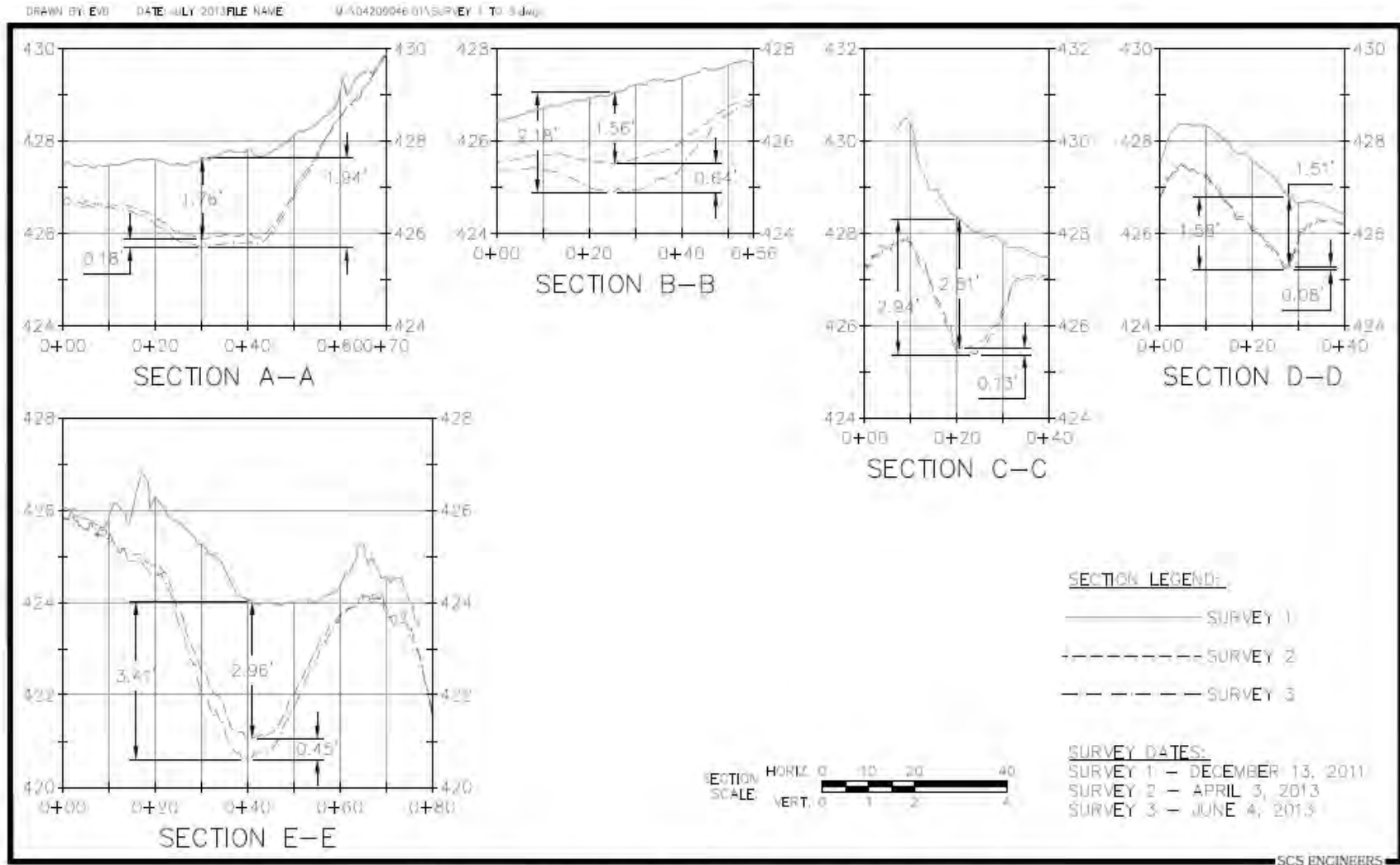
Based on surveys of 26 different field monitoring points between 2008 and 2013, a period of over 5 years, as well as data from 3D surveys between December 2011 and June 2013, along with field observations by SCS and EPI personnel, the following conclusions are applicable at this time:

- The majority of the cover over Zone A is continuing to settle at a rate that averages less than 5 inches per year. The geomembrane liner elongation in areas due to general settlement is estimated to be well below 1 percent, which is acceptable based on the original design parameters and currently accepted standards.
- Although the majority of the Zone A cover is settling relatively smoothly, localized differential settlement has been visually observed in five separate areas since early January 2013. Using 3D laser scanning, the lowest point in each of these five areas has settled between 1.58 to 3.41 feet as of June 4, 2013. Continued bi-monthly 3D surveys will allow for continued settlement evaluation in these areas.
- In the five areas of depressions, the maximum geomembrane elongation is calculated to range between approximately 0.06 percent to less than 3 percent. The highest elongation area is shown in Section C-C (Figure 5). These strain values are well below the allowable 10 percent design yield elongation value as well as the 289 percent break elongation determined for the HDPE liner material during testing in 2008.
- Based on the recent monitoring results, there are no areas within Zone A that have experienced differential or total settlement that would result in a liner elongation of more than 3 percent. Based on the current maximum calculated strain on the HDPE liner there is no basis to expect plastic deformation of the HDPE geomembrane. Additionally, the current strain on the HDPE geomembrane is about 2 orders of magnitude less than what would be required to suspect the potential presence of a strain-induced rupture of the material.
- We recommend continued monitoring of settlement using the 3D laser method on a bi-monthly basis as currently planned.

Settlement of the cover is an expected condition of all waste sites and, to one degree or another; differential settlement is a normal condition. The potential for differential settlement is considered as part of the design of a cover system. Our review of the Zone A cover design and the material properties of the HDPE geomembrane indicate that the design is appropriate for the wastes contained within Zone A. Considering the magnitudes, patterns and timing of ground settlements measured over the past 5 years, we find it difficult to envision a scenario where differential settlement would result in a tensile strain of 10 percent or where a strain-induced rupture of the HDPE material would occur.

Technical Memorandum
Final Cover Settlement Evaluation Update
Zone A Drum Disposal Area
Pasco Sanitary Landfill Site
September 12, 2013

FIGURE 5 CROSS SECTIONS A-A, B-B, C-C, D-D AND E-E



PASCO WASTE LANDFILL ZONE A - CROSS SECTIONS SURVEY 1 TO SURVEY 3

Attachment E
Differential Settlement Survey Maps

Attachment F
Annual Institutional Controls Reports

MEMORANDUM

DATE: December 4, 2014

TO: Dave Zabell, City Manager

CC: Rick White, Director, Community & Economic Development
Mary Holder, Environmental Scientist, Environmental Partners, Inc.
Teresa K. Reed-Jennings, PE, Senior Civil Engineer
James Coleman, Biologist, B-F Health District

FROM: Troy Hendren, Inspection Services Manager

RE: 2014- East Pasco Plume Area-Well Location Survey

Attachments: 1) Status chart 2) Monitoring Well Map

Please find attached a revised chart which provides the address, parcel number, property owner information, current water use and status of monitored wells located within a section of East Pasco, inclusive of the area south of East "A" street, determined by the Department of Ecology to be effected by the subterranean plume of ground water contamination. The well names shown in the first column of the chart provided coincide with the names of the wells shown on the attached monitoring wells map, as prepared by the Environmental Partners, Inc.

On Thursday, December 4, 2014, Teresa K. Reed-Jennings, PE, Senior Civil Engineer, Mary Holder, Environmental Scientist, Environmental Partners, Inc., James Coleman, Biologist, B-F Health District and I surveyed the target area to verify the exact locations of known wells and to locate any wells not previously known to the city. We also verified that no changes have been done since the previous 2013 survey.

No additional wells were discovered during the 2014 survey and the status of the existing wells have not changed. The number of City water connections and the properties upon which they are located and record owners of those properties have been updated in the attached chart. As directed we will continue performing an East Pasco well survey annually and provide you the updated well status chart and monitoring well map.

Please advise if you have any questions.

Troy Hendren

**OPERATIONAL WELLS/DECEMBER-2014
EAST PASCO PLUME IMPACT AREA**

NUMBER AND NAME OF WELLS	ADDRESS	PROPERTY OWNER(S)	CITY WATER? WELL WATER? STATUS?	CITY WATER ACCOUNT STATUS	CHANGE FROM 2013
1 WELL BONNIE 1	2508 E. LEWIS ST. TAX PARCEL # 113900057	BILL RHOADES 17740 B. SW. ALEXANDER ST. ALOHA, OR 97006	CITY WATER AVAILABLE AND IN USE. WELL IS DISABLED	2 ACCTS. W/WATER 1 ACCT. NO WATER 9 APARTMENTS AND 3 SINGLE FAMILY RESIDENCES CONNECTED TO CITY WATER	NO
1 WELL WEST	2400 E. LEWIS PL. TAX PARCEL # 113900011	LESTER & MARJORIE WEST 2400 E LEWIS ST. PASCO, WA 99301	CITY WATER AVAILABLE AND IN USE. WELL USED FOR IRRIGATION ONLY	4 ACCTS. W/ WATER 3 RENTALS AND 1 OWNER OCCUPIED HOME ALL CONNECTED TO CITY WATER	NO
1 WELL RINDT	2500 E. LEWIS PL. TAX PARCEL # 113870135	ENRIQUE & ELODIA MONTOKA 2500 E. LEWIS ST. PASCO, WA 99301	CITY WATER AVAILABLE AND IN USE. WELL IS DISABLED	1 ACCT. W/WATER 1 SINGLE FAMILY HOME CONNECTED TO CITY WATER	NO
2 WELLS HOMME'S	2506 E. LEWIS PL. TAX PARCEL # 113870198	DOUG BROWN (ETUX) 2506 E. LEWIS PL. PASCO, WA 99301	CITY WATER AVAILABLE AND IN USE. BOTH WELLS ARE DISABLED	1 ACCT. W/ WATER 7 APARTMENTS AND 1 SINGLE FAMILY DWELLING CONNECTED TO CITY WATER	NO
1 WELL NORVELL (ANJELES)	2700 E. LEWIS PL. TAX PARCEL # 113870170	ALEJANDRO ANJELES (ETUX) 2700 E. LEWIS ST. PASCO, WA 99337	CITY WATER AVAILABLE AT STREET. NOT USED. WELL CERTIFIED BY THE WA DEPT. OF ECOLOGY AND B-F HEALTH DISTRICT.	NO WATER ACCT. WELL IS THE ONLY WATER SOURCE FOR THIS PROPERTY. BUILDINGS ARE ABANDONED. NO ACTIVE BUSINESSES ON SITE.	NO

**OPERATIONAL WELLS/DECEMBER-2014
EAST PASCO PLUME IMPACT AREA**

NUMBER AND NAME OF WELLS	ADDRESS	PROPERTY OWNER(S)	CITY WATER? WELL WATER? STATUS?	CITY WATER ACCOUNT STATUS	CHANGE FROM 2013
1 WELL NORVELL #2	2750 E. LEWIS ST. TAX PARCEL # 113870223	RAMIRO & IRMA MENDOZA 4114 FINNHORSE LANE PASCO, WA 99301	CITY WATER AVAILABLE AT STREET BUT NOT CONNECTED. WELL DRILLED IN 2005 WITH DOE APPROVAL. NO APPROVAL BY CITY OF PASCO OR B-F HEALTH DIST	NO WATER ACCT. WELL IS THE ONLY WATER SOURCE ON THIS PROPERTY. SINGLE FAMILY DWELLING HAS BEEN REMOVED AND WELL IS NOT IN USE.	NO
1 WELL BRADLEY	2904 E. LEWIS PL. TAX PARCEL # 113870018	RAMIRO & IRMA MENDOZA 4114 FINNHORSE LANE PASCO, WA 99301	CITY WATER AVAILABLE BUT NOT CONNECTED. WELL USED FOR ENTIRE PROPERTY	NO WATER ACCT. WELL IS THE ONLY WATER SOURCE FOR THIS PROPERTY. 1 OFFICE BATHROOM AND OUTDOOR HOSE BIBS CONNECTED TO WELL	NO
1 WELL LOPEZ (ROBINSON- FLEA MARKET)	3620 E. LEWIS PL. TAX PARCEL # 113730044	SHEREE ROBINSON (KYLE ROBINSON)(SON) 10120 W. ARGENT RD PASCO, WA 99301	CITY WATER AVAILABLE BUT NOT CONNECTED. WELL IS DISABLED	NO WATER ACCT. ON THIS PARCEL CITY WATER IS OBTAINED FROM ADJACENT LOT. (3904 E. LEWIS PL) NO CONNECTIONS TO WELL	NO
1 WELL RADA	2707 E. LEWIS PL. TAX PARCEL # 113780053	DOUGLAS RADA (ETAL) 2707 E. LEWIS PL. PASCO, WA 99301	CITY WATER AVAILABLE BUT NOT CONNECTED.	NO WATER ACCTS. WELL IS THE ONLY WATER SOURCE ON THESE PROPERTIES. 1 BUSINESS OFFICE 3 SINGLE FAMILY DWELLINGS ALL CONNECTED TO WELL LOCATED ON PARCEL # 113780053 (2707 E. LEWIS PL)	NO

**OPERATIONAL WELLS/DECEMBER-2014
EAST PASCO PLUME IMPACT AREA**

NUMBER AND NAME OF WELLS	ADDRESS	PROPERTY OWNER(S)	CITY WATER? WELL WATER? STATUS?	CITY WATER ACCOUNT STATUS	CHANGE FROM 2013
CONT. RADA	3004 E. GEORGE TAX PARCEL# 1137800104	DOUGLAS RADA (ETAL) 2707 E. LEWIS PL. PASCO, WA 99301	CITY WATER NOT AVAILABLE.	CONT. NO WATER ACCT. WELL IS THE ONLY WATER SOURCE.	NO
CONT. RADA	3012 E. GEORGE TAX PARCEL # 113780113	JOSEPH E. & DEANNE RADA 440 MERRY LANE BURBANK, WA 99301	CITY WATER NOT AVAILABLE.	CONT. NO WATER ACCT. WELL IS THE ONLY WATER SOURCE.	NO
1 WELL YENNEY #1	900 N. AVERY AVE. TAX PARCEL # 113780035	GLENN & CAROL KNOPP 4172 N. FRONTAGE RD. MOSES LAKE, WA 98837 (TENENT- HANCOCK SANDBLAST)	CITY WATER AVAILABLE AND IN USE. WELL IS OPERATIONAL	1 ACCT. W/ WATER WELL IS USED FOR IRRIGATION ONLY	NO
1 WELL YENNEY #3	900 ½ N. AVERY AVE. TAX PARCEL # 113780062	GLENN & CAROL KNOPP 4172 N. FRONTAGE RD. MOSES LAKE, WA 98837 (TENENT- TARP-IT)	CITY WATER AVAILABLE AND IN USE. WELL IS OPERATIONAL	1 ACCT. W/ WATER WELL IS USED FOR IRRIGATION ONLY	NO
1 WELL YENNEY #2	3021 E. GEORGE ST. TAX PARCEL # 113780017	GLENN & CAROL KNOPP 4172 N. FRONTAGE RD. MOSES LAKE, WA 98837	CITY WATER NOT AVAILABLE. WELL IS OPERATIONAL	NO WATER ACCT. WELL IS ONLY WATER SOURCE ON THIS PROPERTY. ELECTRIC SERVICE TO WELL IS ACTIVE. 1 SINGLE FAMILY HOME IS CONNECTED TO WELL. HOUSE IS VACANT AND DECAYED.	NO

**OPERATIONAL WELLS/DECEMBER-2014
EAST PASCO PLUME IMPACT AREA**

NUMBER AND NAME OF WELLS	ADDRESS	PROPERTY OWNER(S)	CITY WATER? WELL WATER? STATUS?	CITY WATER ACCOUNT STATUS	CHANGE FROM 2013
1 WELL SALINAS	407 S. CEDAR AVE. TAX PARCEL# 113900084	JULIAN SALINAS 407 S. CEDAR AVE PASCO, WA 99301	CITY WATER AVAILABLE AND CONNECTED. WELL IS OPERATIONAL	1 ACCT. W/ WATER 1 SINGLE FAMILY DWELLING CONNECTED TPO CITY WATER. WELL IS USED FOR IRRIGATION ONLY	NO
1 WELL REISINGER #1	2505 E. "A" ST. TAX PARCEL # 113884147	PFI MART LLC PO BOX 3367 PASCO, WA 99301	CITY WATER AVAILABLE. WELL IS DECOMMISSIONED	1 ACCT. W/ WATER CITY WATER FOR IRRIGATION WATER METER FOR DUST CONTROL. HOUSE IS DEMOLISHED.	NO
1 WELL REISINGER #2	NO ADDRESS TAX PARCEL # 113883031	ROWELL (TRUSTEES) HA 7 LINDA 4709 HILLTOP DRIVE PASCO,WA 99301	CITY WATER AVAILABLE NOT CONNECTED. WELL IS OPERATIONAL	NO WATER ACCT. NO DWELLING ONLY PUMP HOUSE. WELL IS USED FOR IRRIGATION ONLY	NO
1 WELL MONTALVO	2700 E. "A" ST. TAX PARCEL # 113882078	JUAN MONTALVO 2700 E. "A" ST. PASCO, WA 99301	CITY WATER AVAILABLE AT STREET. WELL IS OPERATIONAL AND IS USED FOR DRINKING WATER	NO WATER ACCT. WELL IS THE ONLY WATER SOURCE ON THIS PROPERTY. 1 SINGLE FAMILY DWELLING 3 RENTALS	NO
1 WELL HAND	3300 E. "A" ST. TAX PARCEL # 112530057	RONALD & ALICE HJALTALIN DBA ROJO VENTURE LLC 4520 WEST WERNETT PASCO, WA 99301	CITY WATER AVAILABLE AND IN USE. WELL IS OPERATIONAL	1 ACCT. W/ WATER. WELL IS USED FOR FILLING HYDRO-MULCH TANKS. 1 BUSINESS OFFICE CONNECTED TO CITY WATER.	NO

**PROSECUTING ATTORNEY
FRANKLIN COUNTY, WASHINGTON**

**SHAWN P. SANT
PROSECUTING ATTORNEY**

**DAVID W. CORKRUM
CHIEF CRIMINAL DEPUTY**

**TIMOTHY E. DICKERSON
CHIEF CIVIL DEPUTY**

**KELLY J. SCHADLER
OFFICE ADMINISTRATOR**

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TERESA CHEN
JANET E. TAYLOR
LUCAS G. DOWNER**

January 9, 2015

Ms. Mary Holder
Environmental Partners, Inc.
295 NE Gilman Boulevard
Suite 201
Issaquah, WA 98027

JAN 14 2015

Re: Pasco Sanitary Landfill
Annual Institutional Controls Reports for 2014

Dear Ms. Holder,

Enclosed please find the Annual Institutional Controls Report for 2014.

Very truly yours,



Timothy E. Dickerson, Chief Civil
Deputy Prosecuting Attorney

TED:adi

Enclosure



FRANKLIN COUNTY

PLANNING AND BUILDING DEPARTMENT

JERROD B. MACPHERSON – DIRECTOR

January 6, 2015

Shawn Sant
Prosecuting Attorney
Franklin County PA's Office
1016 North 4th Avenue
Pasco, WA 99301

RE: Pasco Sanitary Landfill - "Annual Institutional Controls Report" for 2014.

Dear Mr. Sant:

Please consider this letter as the "Annual Institutional Controls Report" to inform you of the activity that has taken place in the year 2014 for the Pasco Sanitary Landfill.

Throughout the calendar year of 2014 our department continued to carefully monitor all building and development permits for the affected area. No land use approvals or building permits were issued within the affected zone for the 2014 calendar year.

These control measures include building and development permit tracking for the affected area through our land use and building permit programs, as well as quarterly site investigations to ensure that no illegal activities are taking place within the affected zone.

To date, all of these controls measures are in place and working very well. Our main goal in instituting these control measures is to prevent any drinking water wells from going into the affected area.

If you have any further comments, questions, and/or concerns don't hesitate to contact me at anytime.

Sincerely,

A handwritten signature in cursive script that reads "Jerrod MacPherson".

Jerrod MacPherson,
Director

JM/jm

Attachment G
Electronic Data Deliverable
(available on compact disc)