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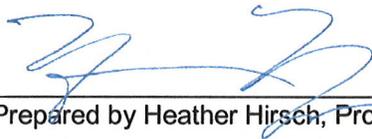
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2008 – 2009 Annual Site-Wide Groundwater Monitoring Report

BNSF Former Fueling and Maintenance Facility –
Skykomish, Washington

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Skykomish, Washington



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Contents

1.0 Introduction.....	1-1
1.1 Groundwater Monitoring Objectives	1-1
1.2 Background	1-1
1.3 Report Organization	1-2
2.0 Groundwater Monitoring Network	2-1
2.1 Changes to the Monitoring Network	2-1
2.1.1 Air Sparging System	2-1
2.1.2 HCC System.....	2-1
2.1.3 Backfill and Downgradient of the HCC System Barrier Wall	2-2
2.1.4 FMCZ – East Wetland and Surrounding Areas	2-2
2.1.5 FMCZ – West Wetland	2-2
2.1.6 Levee Zone	2-2
2.1.7 Schoolyard	2-2
2.1.8 Site-Wide.....	2-2
2.2 2008 to 2009 Groundwater Monitoring Network.....	2-3
3.0 Gauging and Sampling Procedures.....	3-1
3.1 Fluid Level Measurements.....	3-1
3.1.1 Groundwater Levels and Product Thickness Measurements	3-1
3.1.2 Surface Water Level Measurements	3-1
3.2 Sampling Methods	3-2
3.2.1 Well Purging and Field Parameter Measurement.....	3-2
3.2.2 Sample Preservation and Handling.....	3-2
3.2.3 Investigation-Derived Waste.....	3-3
4.0 Laboratory Analysis and Reporting.....	4-1
4.1 Analytical Methods	4-1
4.2 Data Management and Validation	4-1
4.3 Applicable Groundwater Cleanup Levels and Remediation Levels	4-2
5.0 Results and Discussion	5-1
5.1 Fluid Levels	5-1
5.2 Field Parameters.....	5-2
5.2.1 pH	5-2
5.2.2 Conductivity.....	5-2
5.2.3 Temperature.....	5-2

5.2.4	Dissolved Oxygen	5-2
5.2.5	Oxidation-Reduction Potential	5-2
5.2.6	Turbidity	5-2
5.3	Total Petroleum Hydrocarbons	5-2
5.3.1	Site-Wide	5-3
5.3.2	Air Sparging System Monitoring	5-4
5.3.3	Hydraulic Control and Containment System	5-4
5.3.4	Schoolyard Perimeter Zone Monitoring	5-5
5.3.5	Levee Zone	5-6
5.3.6	Former Maloney Creek Zone – East Wetland and Surrounding Area	5-6
5.3.7	Former Maloney Creek Zone – West Wetland	5-7
6.0	Summary and Recommendations	6-1
7.0	References	7-1

List of Tables

Table 2-1	Modifications to the Groundwater Monitoring Network
Table 2-2	Well Completion Details
Table 2-3	Groundwater Monitoring Event Dates
Table 2-4	Groundwater Sampling Event Details
Table 2-5	Fluid Gauging Events Summary
Table 5-1	Fluid Level Elevations and Product Thicknesses October 2008 through September 2009
Table 5-2	Stabilized Groundwater Field Parameter Measurements
Table 5-3	Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results
Table 5-4	Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Semi-Annual Site-Wide Analytical Results

List of Figures

Figure 1-1	Regional Location Map
Figure 1-2	Site Layout and Site Zones
Figure 2-1	Groundwater Monitoring Network
Figure 5-1	October 2008 Groundwater Elevation Map
Figure 5-2	November 2008 Groundwater Elevation Map
Figure 5-3	December 2008 Groundwater Elevation Map
Figure 5-4	January 2009 Groundwater Elevation Map
Figure 5-5	February 2009 Groundwater Elevation Map
Figure 5-6	March 2009 Groundwater Elevation Map
Figure 5-7	April 2009 Groundwater Elevation Map
Figure 5-8	May 2009 Groundwater Elevation Map
Figure 5-9	June 2009 Groundwater Elevation Map
Figure 5-10	July 2009 Groundwater Elevation Map
Figure 5-11	August 2009 Groundwater Elevation Map
Figure 5-12	September 2009 Groundwater Elevation Map
Figure 5-13	Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater – December 2008
Figure 5-14	Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater – March 2009
Figure 5-15	Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater – June 2009
Figure 5-16	Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater – September 2009

List of Appendices

Appendix A	2009 Groundwater Report Scope Memo
Appendix B	Well Logs and 5-W-42 Installation Memo
Appendix C	Field Forms
Appendix D	Laboratory and Data Validation Reports

1.0 Introduction

AECOM has prepared this Site-Wide Groundwater Monitoring Report (report) on behalf of the BNSF Railway Company (BNSF) for the Former Fueling and Maintenance Facility (site) located in Skykomish, Washington. This report was prepared in accordance with the *2009 Groundwater Monitoring Plan* (GWMP; AECOM 2009a). The GWMP was submitted by BNSF and approved by the Department of Ecology (Ecology) pursuant to a Consent Decree between BNSF and Ecology, *State of Washington v. BNSF Railway Company*, King County Superior Court Cause No. 07-2-33672-9SEA. This report describes the details and results of the site-wide groundwater monitoring activities performed from October 2008 to September 2009. This monitoring period includes 1) semi-annual site-wide monitoring events completed in March and September 2009; 2) quarterly remediation area (2006, 2008, and 2009 cleanup actions) monitoring events in December 2008 and June 2009; and 3) additional monthly monitoring of the air sparging system wells and hydraulic control and containment (HCC) system monitoring network wells which do not yet meet the groundwater remediation level (RL).

1.1 Groundwater Monitoring Objectives

The *Groundwater Monitoring Plan* (GWMP) (RETEC 2005a, 2007; ENSR 2008a; AECOM 2009a) established the following objectives for the groundwater monitoring program:

- Monitor any changes in contaminant distribution during and after implementation of the cleanup actions throughout the site;
- Provide monitoring data for the groundwater in the levee zone to assess the effect of the 2006 interim cleanup on groundwater quality;
- Provide monitoring data for the 2008 remediation area groundwater to assess the impacts on groundwater quality;
- Provide monitoring data for the 2009 remediation area groundwater to assess the impacts on groundwater quality; and
- Provide gauging data to assess the groundwater flow direction in the area of Former Maloney Creek Zone (FMCZ).

Information obtained during the 2008 to 2009 groundwater monitoring activities was collected in order to meet these groundwater monitoring objectives and are presented in this report. Some figures and data analysis which represent temporal and spatial trends and which were included in previous annual groundwater reports are discussed in detail in the *2008 to 2009 Annual Site-Wide Groundwater Monitoring Report Scope* memo as Appendix A to this report. With Ecology concurrence, these figures and data analysis have not been included in this report and will not be included in future reports, unless requested by Ecology.

1.2 Background

The site includes BNSF property and public and private properties within the Town of Skykomish (Town), and encompasses an area of about 40 acres (Figure 1-1). The site is approximately bounded by: the South Fork Skykomish River to the north, Skykomish city limits to the east, Old Cascade Highway to the south, and Maloney Creek to the west. Railroad Avenue separates BNSF property from the main commercial district of the Town (Figure 1-2).

The Former Railway Maintenance and Fueling Facility in Skykomish is owned and operated by BNSF. Historical activities since the facility opened in the late 1890s included refueling and maintaining

locomotives and operating an electrical substation for electric engines. BNSF stored Bunker C and diesel fuel at the site in aboveground storage tanks (ASTs) and underground storage tanks (USTs) until 1974, when BNSF discontinued most fuel handling activities at the site.

Some of the historic site activities resulted in the release of petroleum products and other compounds to the surrounding environment. In early 1991, Ecology designated the site as a high priority cleanup site. Later that year, BNSF initiated plans to conduct a Remedial Investigation/ Feasibility Study (RI/FS) in accordance with the Ecology Model Toxics Control Act (MTCA). At that time, formal negotiations for Agreed Order No. DE 91TC-N213 began. Negotiations were completed in mid-1993. Following a public comment period, the Agreed Order, which included detailed work plans for the RI/FS process and early interim action for cleanup work, was signed by Ecology and BNSF in 1993. Ecology and BNSF signed a separate Agreed Order (No. DE 01TCPNR-2800) in 2001 for additional interim action cleanup work near the South Fork Skykomish River and the levee west of 5th Street. BNSF routinely monitored groundwater at the site pursuant to the 2001 Agreed Order and *Interim Action Basis of Design Report for the LNAPL Barrier System* (RETEC 2001). BNSF also conducted groundwater monitoring pursuant to the 1993 Order (after the RI and supplemental RI) in conjunction with the 1995 interim action (passive skimming wells).

In 2006, Ecology and BNSF signed an additional Agreed Order (No. DE-2379) outlining the interim action for cleanup work in the Levee Zone and part of the Northwest Developed Zone (NWDZ). This interim action consisted of:

- Temporary relocation of five residences
- Excavation of the levee, underlying soils and sediments along the south bank of the South Fork Skykomish River
- Reconstruction of the levee, and restoration of natural resources, private property and public infrastructure that were disturbed by the remediation activities.

Under the 2006 Agreed Order, BNSF was required to continue groundwater monitoring as described in the *Groundwater Monitoring Plan* (RETEC 2005a).

In October 2007, Ecology issued a Cleanup Action Plan (CAP) (Ecology 2007; Exhibit B of the CD) and BNSF and Ecology signed a Consent Decree (CD, No. 07-2-33672-9 SEA). Any remaining work required by the 2006 Agreed Order was incorporated into the CD. For example, Section VI.A.6 of the CD required BNSF to conduct groundwater monitoring consistent with the then-current *Groundwater Monitoring Plan* (RETEC 2005a), as amended. The most recent revision, *Groundwater Monitoring Plan* (AECOM 2009a), was approved by Ecology pursuant to the CD and became effective in March 2009.

Since 1993, investigations performed by BNSF, in cooperation with Ecology, have revealed petroleum residuals in soil, groundwater, sediments, and surface water. Detailed information about the scope of prior investigations and the results appear in the 1996 *Remedial Investigation Report* (RETEC 1996), the 2002 *Supplemental Remedial Investigation Report* (RETEC 2002), the 2005 *Feasibility Study* (RETEC 2005b), the 2008 and 2009 *Remedial Design Investigation Reports* (RDI Reports, ENSR 2008b; AECOM 2010), and the 2008 *Addendum to the Remedial Design Investigation Report* (AECOM 2009b). Annual groundwater monitoring reports were submitted by BNSF and approved by Ecology under various Agreed Orders and the CD in 2005 (RETEC 2005a), 2007 (RETEC 2007), 2008 (ENSR 2008a), and 2009 (AECOM 2009a).

1.3 Report Organization

Section 1 of this report provides an introduction, background information, and the objectives of the site-wide groundwater monitoring. Section 2 describes the monitoring well network, changes made to the

network during the monitoring period, and forthcoming changes related to cleanup activities. Section 3 describes the methods used to perform the monitoring activities. Section 4 describes the laboratory analyses and reporting and the subsequent data management and validation activities performed by AECOM. This section also describes the groundwater cleanup levels and remediation levels that have been established for the site. Section 5 describes the results of the monitoring activities; specifically the fluid level gauging and analytical results from the groundwater sampling. Section 6 provides a summary of the data and recommendations for future sampling events. Finally, Section 7 provides cited references.

2.0 Groundwater Monitoring Network

This section describes the wells, piezometers, and vaults that were included in the groundwater monitoring network for fluid level gauging and groundwater analytical sampling during the monitoring period. Groundwater monitoring locations are shown in Figure 2-1.

2.1 Changes to the Monitoring Network

This section describes monitoring network changes since the 2007 to 2008 monitoring period, including new well installation, well abandonment, and planned (but not completed) modifications. Modifications to the groundwater monitoring network and the rationale for the abandoned or destroyed wells are summarized in Table 2-1. These modifications were planned and completed with Ecology's concurrence. Modification plans and construction and/or abandonment details for the completed modifications were presented in multiple site documents. Newly installed wells and piezometers were added to the groundwater monitoring network in the 2009 GWMP (AECOM 2009a) and the 2009 *Remedial Design Investigation Work Plan* (AECOM 2009c). Construction details and well logs for newly installed wells that have not been referenced in previous reports are included in this report (Table 2-2 and Appendix B).

This report provides a summary of the monitoring functions (by site area or remediation system) and abandonment/destruction rationale for locations added to or removed from the groundwater monitoring network since October 1, 2008. Note that some monitoring locations are monitored for multiple assessments purposes. Locations added to or removed from the groundwater monitoring network and their respective monitoring functions or abandonment/destruction rationale follow:

2.1.1 Air Sparging System

New wells and piezometers. Two additional wells (1C-W-7 and 1C-W-8) were installed in March and April 2009 in the vicinity of the air sparging system to aid in system optimization and performance monitoring.

2.1.2 HCC System

New wells and piezometers. A total of 45 wells were installed between October 2008 through April 2009 as operational components of the HCC system, to monitor performance of the HCC system, or to evaluate groundwater quality downgradient of the HCC wall or within the backfill emplaced during HCC wall construction. These wells include 1 end well (EW), 4 gate wells (GWs), 2 injection wells (IW), 4 recovery wells (RWs), 20 gate vault sentry wells (Ss), and 14 monitoring wells and 14 piezometers (PZs).

Planned but deferred. Planned wells EW-2 and EW-2A were intended to assess groundwater quality and gradients at the east end of the HCC wall, but were deferred due to observations of blebs of product and sheen during the attempted well installations. A well will be installed at the east end of the HCC wall after the 2010 remediation activities are completed and will be sampled during the 2009 - 2010 monitoring period. Monitoring results will be reported in the next annual report.

Abandoned. Temporary pumping wells PW-01, PW-02, and PW-03 were abandoned when the permanent recovery wells (RWs) were brought on-line.

Installed and/or abandoned outside the reporting period. Temporary pumping wells PW-01 through PW-04 were installed in September 2008 to provide temporary hydraulic gradient information and act as temporary recovery wells prior to the recovery wells (RW-01 through RW-08) coming on-line. PW-01,

PW-02, and PW-03 were abandoned in October 2009. PW-04 was retained to provide additional groundwater gradient information on the south side of the East Gate of the HCC wall. Although the PW wells were abandoned outside of the current reporting period, their status is listed as abandoned in this report to provide the most up-to-date monitoring network conditions.

Four gate vaults were constructed as components of the HCC wall: the far west vault (FWV [S1]), west vault (WV [S2]), central vault (CV [S3]), and east vault (EV [S4]). These vaults were installed prior to the reporting period during the HCC system construction in 2008. Construction details for the vaults are presented in the *2008 As-Built Completion Report* (AECOM 2009i). Fluid gauging and groundwater sampling conducted at these locations will be used to assess HCC system performance. Gate vault sentry wells (Ss) were installed within these vaults during this reporting period, as discussed above.

2.1.3 Backfill and Downgradient of the HCC System Barrier Wall

Planned but deferred. Planned monitoring wells 1A-W-36, 1A-W-37, 5-W-44, and 5-W-45 were intended to monitor groundwater quality and gradients along the boundary between the clean backfill emplaced during HCC wall construction and the planned 2009 excavation area. The decision was made with Ecology concurrence (personal communication with Ronald Timm of Ecology) to defer installation of these wells during the 2008 to 2009 monitoring period since the planned well locations were within the 2009 excavation area; at the time the installations were scheduled, the 2009 excavation activities had not yet been completed. These four wells will be installed and will be sampled during the 2009 - 2010 monitoring period. Monitoring results will be reported in the next annual report.

2.1.4 FMCZ – East Wetland and Surrounding Areas

New Wells. Two wells (2B-W-45 and 2B-W-46) were installed south of the Former Maloney Creek Zone – East Wetland, within the South Development Zone, to monitor groundwater quality and groundwater gradients in the vicinity of the East Wetland.

2.1.5 FMCZ – West Wetland

New Wells. Three wells (3-W-41, 3-W-42, and 3-W-43) were installed along the northern boundary of Former Maloney Creek Zone – West Wetland in order to monitor groundwater quality and gradients along the northern buffer zone of the west wetland.

2.1.6 Levee Zone

New Wells. One well (5-W-42) was installed at the west end of the Levee Zone to monitor groundwater quality and gradients along the west end of the 2006 Interim Action Cleanup excavation area.

2.1.7 Schoolyard

No changes were made to the monitoring network in the schoolyard and vicinity.

2.1.8 Site-Wide

New Well (Replacement). One well installation (MW-38R) was completed by the Town as a replacement well for site-wide monitoring well MW-38, which was inadvertently destroyed by the Town sub-contractor during excavation activities associated with a sewer line replacement. Note that the Town sub-contractor incorrectly labeled this well as MW-38A on the well log. AECOM has corrected this error in the records for archival purposes.

Planned but deferred. Planned monitoring well 1A-W-38 was intended as a compliance monitoring well, which will replace abandoned well 1A-W-3 and 1A-W-5. The two wells will be abandoned in preparation

for the 2010 bridge excavation activities. 1A-W-38 was deferred because the excavation in this area is not yet complete. It will be installed after the 2010 excavation activities are completed.

Abandoned/Destroyed. Five wells (1A-W-2, 1A-W-3, 5-W-1, MW-26, and MW-36) located within the 2009 cleanup action area were located within the 2009 excavation area and were abandoned prior to excavation activities. In addition, MW-35 and 1A-W-1 were inadvertently destroyed during the 2008 and 2009 excavation activities.

2.2 2008 to 2009 Groundwater Monitoring Network

The current groundwater monitoring network, including locations utilized for the October 2008 to September 2009 monitoring period (as defined in the 2009 GWMP [AECOM 2009a]), as well as locations abandoned or destroyed since October 1, 2008, is shown in Figure 2-1. Note that some, but not all, of the locations that were abandoned or destroyed were utilized prior to abandonment or destruction. Locations that were not utilized for fluid gauging or groundwater monitoring during the 2008 to 2009 period are indicated on the figure. The 2008 to 2009 groundwater monitoring network consists of the following locations, as categorized by the monitoring frequency:

- **Semi-weekly gauging** – On January 15, 2009 the HCC system commenced operation. Since the permanent system, which includes continuous monitoring by water level transducers, was not online at that time, the temporary system was gauged manually twice a week. Gauging locations included the 4 gate vaults (FWV, WV, CV, and EV), 14 HCC system piezometers (PZs), 4 temporary pumping wells (PWs), 2 recovery wells (RW-1 and RW-6), and the 2 injection wells (IWs) (note that the HCC gate vault sentry wells [Ss] were not gauged at any time as planned in the GWMP [AECOM 2009a]). The transducers began collecting data on August 31, 2009. At that time, manual gauging continued, but the frequency was decreased to weekly gauging and some locations were dropped. Only data from semi-weekly gauging events that coincided with monthly gauging events are presented in this report. Data from the semi-weekly gauging events will be presented in the annual HCC system operations report for 2009.
- **Weekly gauging** – The HCC system water level transducers went on-line on August 31, 2009. From that date through the rest of the reporting period, manual gauging was continued in the 4 gate vaults, 1 pumping well (PW-4), and the 4 gate wells (GWs). Only data from weekly gauging events that coincided with monthly gauging events are presented in this report. Data from the weekly gauging events will be presented in the annual HCC system operations report for 2009.
- **Daily gauging** – Water level transducers were installed in the HCC system piezometers (PZs) and 2 of the recovery wells (RW-2 and RW-5) in order to collect water level measurements for HCC system performance monitoring. The water level transducers located in these wells may be accessed at anytime and data recorded approximately every 4 hours using the on-site Programmable Logic Controller (PLC). The transducers came online August 31, 2009. Transducer data are not presented in this report. All water levels presented herein were gauged manually.
- **Monthly Monitoring** – 39 site-wide and Former Maloney Creek – East Wetland locations are gauged monthly;
- **Quarterly Monitoring** – 42 site-wide, air sparging system, HCC backfill or downgradient, HCC system, Levee Zone, and schoolyard perimeter zone locations are gauged quarterly; 27 of these locations are sampled for Total Petroleum Hydrocarbons (TPH) analysis by NWTPH-Dx.

- **Semi-Annual Monitoring –**

- Semi-annual gauging events include gauging locations from all site areas that are gauged on a monthly, quarterly, or semi-annual basis (122 total); 49 site-wide, Former Maloney Creek Zone – West Wetland, Former Maloney Creek Zone – East Wetland and surrounding area, schoolyard perimeter zone, and HCC system locations are sampled semi-annually for TPH analysis by NWTPH-Dx.
- 18 locations for surface water level gauging.

The 2008 to 2009 sampling event dates are summarized in Table 2-3. Sampling details and gauging frequencies for wells utilized in the groundwater monitoring network are summarized in Tables 2-4 and 2-5, respectively. Well installation and abandonment dates, where applicable, are included in Tables 2-4 and 2-5 to provide a rationale for monitoring start or end dates. Note that groundwater samples were collected during additional monthly sampling events (in addition to the regularly scheduled quarterly and semi-annual monitoring) from the air sparging system wells, from newly installed wells (in order to obtain initial baseline results), and from wells designated to monitor the operational performance of the HCC system until TPH concentrations are below the groundwater RL in accordance with the *2009 Compliance Monitoring Plan Update* (AECOM 2009d).

The conditional points of compliance (CPOCs) for groundwater are generally described in Section 3.4 and Figure 6 of the CAP (Ecology 2007). The monitoring network described above was established, in part, before the CAP was issued by Ecology in October 2007; however, all of the wells in the network are inside the groundwater compliance boundary and the locations and designations as interim compliance wells were approved by Ecology in the *2009 Compliance Monitoring Plan Update* (AECOM 2009d). Compliance boundary wells will be identified in a Long-Term Confirmational Monitoring Plan to be developed at the conclusion of active remediation pursuant to the CD (Ecology 2007; Exhibit C).

3.0 Gauging and Sampling Procedures

This section describes the field methods that were used for the fluid level gauging and sample collection activities described in the GWMP. The procedures described are for gauging and sampling in wells, but these same procedures also apply to piezometer and vault locations.

3.1 Fluid Level Measurements

3.1.1 Groundwater Levels and Product Thickness Measurements

Fluid level measurements were performed to collect groundwater elevation and free product thickness data. Fluid levels were measured and recorded at each well location prior to purging or sample collection activities. One of two methods was used to measure fluid levels in a well. The method selected depended upon whether or not the well contained light non-aqueous phase liquid (LNAPL).

If LNAPL was observed as a light trace (0.01 feet thick) then the depth to the top and the thickness of the LNAPL was measured using tape and paste. In this method, a measuring tape was coated with a water-reactive paste. The tape was then lowered into the well until it was below the water level. The paste reacted to the water by changing color and the LNAPL thickness was estimated by the tape interval that was coated with the petroleum product. The groundwater elevation was then derived from the length of measuring tape that had not changed color. The LNAPL thickness was added to the groundwater elevation to derive the LNAPL top elevation.

If the LNAPL was observed at a greater thickness (0.02 feet or more thick), then, in addition to the tape and paste method, the thickness was verified using a site-specific method that employs a peristaltic pump. First, the top of fluid was measured. Then, polyethylene tubing was lowered into the well to a depth below the water table. Water was pumped while the tubing was gradually raised. Once the pump began to pump LNAPL instead of water, the remaining tubing was pulled from the well and its length was measured to derive elevation.

If LNAPL was not observed, then a water level meter was used to gauge depth to water. The method used for gauging each well was noted on the gauging field forms, which are provided in Appendix C.

All measurements were collected in accordance with the GWMP (AECOM 2009a). Measurement equipment was decontaminated between wells in accordance with Standard Operating Procedure (SOP) 7600 and fluid level data were recorded on appropriate field forms (provided in Appendix A of the GWMP). The field form includes fields for date and time of the measurement, depth to water (in feet), depth to LNAPL (in feet), LNAPL thickness (in feet) and measurement method. In addition, the well condition (including the condition of the lock, monument integrity, and legibility of well labels) was recorded for each location.

Upon completion of a gauging event, the field manager inspected the field forms and collected data. After assuring that the information was complete, the field manager signed the quarterly gauging sheets before the field staff left the site.

3.1.2 Surface Water Level Measurements

River stage measurements were collected at five locations (SK1 to SK5) along the South Fork Skykomish River during the site-wide gauging events. Two of the locations are at known permanent landmarks (a storm outfall and a bridge abutment). The other three locations are set equidistant from the two landmarks.

The river stage elevations at each location were measured using a surveying level and rod. The elevations were measured from permanent surveying monuments in the street, parallel to the river bank.

Surface water level measurements were taken at four piezometer locations within the FMCZ -East Wetland (2B-W-11 to 2B-W-15 and 2B-W-33). The piezometers, which are also used to measure groundwater elevations beneath the wetlands, were constructed with blank casing tops finished well above the surface water. The top-of-casing elevations have been surveyed allowing for surface water level elevations to be calculated relative to the top-of-casing elevation. Surface water elevations were measured relative to the top-of-casing by placing a water level meter along the outside of the piezometers and measuring from the top of the casing to the surface of the water.

Surface water level measurements were collected from seven staff gauges located along the Former Maloney Creek Channel in the FMCZ-East Wetland (ML1 to ML4) and FMCZ-west wetland (WW1 to WW3) investigation areas.

3.2 Sampling Methods

Standard EPA-approved low-flow groundwater sampling techniques, described in the GWMP (SOP 235), were used to sample monitoring wells and piezometers that have historically been free of LNAPL.

A different sampling methodology was used for wells containing LNAPL. Due to the physical properties (high viscosity and specific gravity of 0.97) of Bunker C, there is a risk that LNAPL could mix with the underlying groundwater and be entrained in groundwater samples if standard sampling procedures are used. Therefore, as described in the GWMP, air was blown out through the polyethylene tubing as it was lowered into the well. This was done in an attempt to prevent any free product from entering the tubing. Wells sampled using this method were then purged for 10 minutes at a low flow rate before sample collection. The low-flow purging was intended to minimize disturbance and the potential for LNAPL/water mixing. No field parameters were collected because petroleum product could damage the water quality meters.

The fluid level measurements (collected according to the procedure outlined in Section 3.1) were used at each product-containing well to position the inlet of the polyethylene tubing approximately one foot below the LNAPL/water interface. Samples were then collected using low-flow sampling techniques. After sampling was complete at each location, the used polyethylene tubing was discarded.

3.2.1 Well Purging and Field Parameter Measurement

Each well was purged prior to sampling using a peristaltic pump with new disposable tubing at a flow rate of 0.1 to 0.5 L/min. During purging, the flow rates, water levels, and water quality parameters (pH, conductivity, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity) were recorded. Purging continued until the parameters stabilized (i.e., the measured values showed little variation). Water quality parameter measurements are discussed in Section 5.2 of this report.

As previously stated, field parameters were not measured at wells that contain measurable LNAPL because the petroleum product could damage the water quality meters.

3.2.2 Sample Preservation and Handling

Appropriate packaging and shipping methods were used to minimize the potential for sample breakage, leakage or cross contamination (GWMP, SOP 7600). In addition, the documentation accompanying the samples provided a record of sample custody from collection to analysis. All sample containers were pre-preserved in laboratory-cleaned containers. All sample preservation, handling, and analysis were conducted in accordance with the GWMP.

3.2.3 Investigation-Derived Waste

All decontamination water and purge water was drummed and labeled. Investigation-derived waste (IDW) water collected during monitoring events from October 2008 through July 2009 was disposed of at a licensed disposal facility in accordance with applicable regulations and the GWMP. IDW water collected during the August and September 2009 monitoring events was disposed of in the HCC water treatment system.

4.0 Laboratory Analysis and Reporting

This section summarizes the laboratory analysis and reporting procedures, and the subsequent data management and validation. Groundwater samples were analyzed by Test America Analytical Laboratories (TestAmerica). Test America was formerly located in Bothell, Washington. On July 1, 2009, the laboratory completed their move to Tacoma Washington; therefore, the December 2008 through June 2009 samples were analyzed by the Bothell lab, whereas the July 2009 through September 2009 samples were analyzed in Tacoma. TestAmerica is a Washington State-certified laboratory.

4.1 Analytical Methods

Groundwater samples were analyzed for TPH using method NWTPH-Dx both with (TPH-SG) and without (TPH) the silica gel cleanup method.

The laboratory was instructed to report sample concentrations to the method detection limit (MDL) rather than the higher method reporting limit (MRL). It was recognized that reported concentrations above the MDL but below the MRL have a greater degree of uncertainty. Accordingly, these results were qualified as estimated (J-flagged). Reporting of results to the MDL has the advantage of reporting detected concentrations at a lower level. This also minimizes the chances that a non-detected result will be reported with a detection limit greater than the cleanup level (CUL).

4.2 Data Management and Validation

The analytical laboratory provided both electronic data deliverables that could be directly imported into the environmental data management system and text data reports. The text data reports were provided as hard copies (Appendix D) and in electronic (.pdf) files.

Each data report included copies of the chain-of-custody forms and a case narrative with the following information: description of case, comments on sample condition upon receipt, and description of sample preparation and analysis. The following data were included in the data report: MDL, MRL, units of measure, dilution factor, batch number, date received, date prepared, date analyzed, analytical method, and any notes or qualifiers.

The report also contained the details and results of laboratory QA/QC procedures that were performed on the samples.

Upon receipt of the data from TestAmerica, the electronic data deliverables and case narratives were checked for completeness, and then validated by staff chemists. Once validated, the data were imported into the environmental data management system. Finally, a quality control check was performed on the imported data to ensure that it was accurately uploaded and that transfer errors did not occur.

AECOM chemists evaluated the groundwater data to assess whether the analytical results met the quality control/validation standards described in the GWMP. These metrics included precision, accuracy, method compliance and completeness of the data set. The validation results were then used to evaluate whether the data were suitable for their intended use. The validation was performed based on the criteria provided in:

- USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, document number EPA540/R-99/008, October 1999.

- USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, document number USEPA-540-R-07-003, July 2007.
- Analytical Methods for Petroleum Hydrocarbons, ECY 97-602, June 1997.
- Field duplicate relative percent difference review and applicable control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.

Data validation reports are presented in Appendix D.

4.3 Applicable Groundwater Cleanup Levels and Remediation Levels

The groundwater TPH CUL (208 µg/L) and RL (477 µg/L) are specified in Section 3.4 and Table 1 of the CAP (Ecology 2007). The CAP anticipates that cleanup levels will be attained at points of compliance following implementation of all cleanup actions specified in the CAP and final compliance monitoring begins in 2012 (CAP, Sections 4 and 6.2.).

5.0 Results and Discussion

This section presents a summary and evaluation of the results from the fluid level gauging and TPH analytical sampling conducted during the reporting period.

5.1 Fluid Levels

This section presents data and conclusions drawn from the fluid level gauging that occurred from October 2008 through September 2009 during the monthly, quarterly, and semi-annual monitoring events. Table 5-1 presents the groundwater elevation, surface water elevation, and product thickness measurements made during this reporting period. Variations in groundwater elevations and product thickness, and changes in groundwater gradients in relation to seasonal variations and remedial activities are discussed below.

Monthly groundwater surface elevation maps (October 2008 to September 2009) are shown in Figures 5-1 through 5-12. As shown in these figures, the groundwater flow direction is consistent, regardless of the season. To the south of the HCC wall, groundwater flow is predominantly towards the northwest or north. The HCC wall acts as a barrier to groundwater flow. Localized groundwater depressions are present near the HCC gates due to the pumping of the recovery wells on the south side of the wall, thus demonstrating that groundwater is being captured in the recovery trench. On the north side of the wall, groundwater typically flows towards the northwest in the direction of the Skykomish River with some east to west flow and a significant gradient reduction within the 2008 and 2009 excavation areas.

The groundwater surface elevation maps also show that groundwater elevations are lower in the levee remediation area due, at least in part, to the impermeable liner, which is shown on the figures and is described in the *Levee Zone Interim Action for Cleanup 2007- As Built Completion Report (ENSR 2007)*.

The September 2009 groundwater elevation map (Figure 5-12) is one exception to the seasonal continuity in groundwater flow patterns. During the September gauging event, construction dewatering was occurring in the excavation area. Construction dewatering occurred between September 11 and September 22, 2009; the September gauging event occurred on September 21, 2009. Therefore, groundwater surface gradients and flow directions on the north side of the HCC wall were affected by construction dewatering. In addition, water sprayed from fire hoses was used to consolidate LNAPL on the water surface within the excavation. Consequently, a large volume of water was added to the excavation areas. The most notable difference in the groundwater gradient from previous months is observed at the west end of the wall. In this area, groundwater flow directions trend more towards the 2009 excavation area, and less towards the River (as observed during other months). There is also evidence of intermittent localized groundwater mounding and depressions occurring around the HCC vaults and piezometers on the north side of the wall. These localized anomalies are attributed to excavation watering and dewatering activities.

During site-wide gauging events, anomalous groundwater elevations were observed at the following locations: HCC vault locations EV on February 24, 2009 and 2B-W-21 on March 23, 2009. The anomalous groundwater elevation at EV is attributed to a recording error. Piezometer 2B-W-21 was buried under surface material prior to the March sampling event and needed to be dug out prior to sampling. This situation may have resulted in the anomalous water level gauged at this location in March. These anomalies were single event occurrences. The anomalous water levels were omitted from contouring.

5.2 Field Parameters

Table 5-2 presents the stabilized field parameter measurements collected during the quarterly and semi-annual groundwater sampling events from all wells except those containing free product. Each field parameter is discussed separately below.

5.2.1 pH

The mean pH of groundwater across the site during the reporting period was 6.06. The minimum pH was 4.91 at 1C-W-1 on August 25, 2009 and the maximum pH was 7.04 at GW-4 on April 1, 2009. The median, minimum and maximum pH measurements were consistent with past measurements at the site.

5.2.2 Conductivity

The mean conductivity (in $\mu\text{mhos/cm}$) of groundwater across the site during the reporting period was 82. The minimum was 12 at 5-W-43 on April 2, 2009 and the maximum was 417 at 5-W-56 on September 22, 2009, although this maximum value is attributed to a potential field measurement error. These measurements were consistent with historical values.

5.2.3 Temperature

The mean temperature ($^{\circ}\text{C}$) in groundwater during the reporting period was 9.38. The minimum temperature was 0.5 at 5-W-16 on December 17, 2008, and a maximum temperature was 20.73 at 1C-W-3 on September 22, 2009. The temperature varied seasonally.

5.2.4 Dissolved Oxygen

The mean dissolved oxygen (DO) concentration (mg/L) in groundwater across the site during the reporting period was 3.24. DO ranged from non-detect to a maximum of 12.0 measured at 5-W-16 on December 17, 2008. In general, the wells outside the areas of known contamination had higher concentrations of DO than the wells within the dissolved plume area. The lowest concentrations of DO were typically measured in areas within and downgradient from the areas of known contamination and in areas having higher concentrations of groundwater contamination. These measurements are consistent with historical values.

5.2.5 Oxidation-Reduction Potential

The mean oxidation-reduction potential (ORP in mV) in groundwater across the site during the reporting period was 67. The minimum ORP value was -225.9 at 1C-W-7 on April 21, 2009 and a maximum was 254.1 at 1C-W-1 on July 28, 2009. ORP in groundwater at the site is most commonly positive. These measurements were consistent with historical values.

5.2.6 Turbidity

The mean turbidity (NTU) in groundwater across the site during the reporting period was 5.82. Turbidity ranged from non-detect (1C-W-1 on April 21, 2009 and at 2B-W-4 on September 21, 2009), to a maximum of 178 measured at 5-W-15 on December 17, 2008. Turbidity measurements were generally less than 10 (91% of the recorded values) during the reporting period and are consistent with historic measurements.

5.3 Total Petroleum Hydrocarbons

TPH in groundwater was analyzed using method NWTPH-Dx without silica gel cleanup (all samples) and with silica gel cleanup (in select samples collected mainly from the Levee Zone area). NWTPH-Dx measures diesel range (TPH-D, C12–C25) and oil range (TPH-O, C25–C36) hydrocarbons.

Total TPH and TPH-SG concentrations were calculated by adding the analytical results for the diesel and oil range components. These total concentrations are referred to as TPH (calc) and TPH-SG (calc), respectively. If either the diesel or the oil TPH fraction was not detected, half of the MDL was used for the non-detected component to calculate the total TPH concentration. If both components were not detected, the TPH calculated value is provided, but it is followed by the qualifier (ND). Figures 5-13 through 5-16 show the extent of TPH (calc) and TPH-SG (calc) concentrations detected in groundwater during the quarterly and semi-annual groundwater monitoring events; groundwater data from monthly sampling events are not displayed on the figures. Table 5-3 presents all groundwater TPH data collected during the reporting period, including monthly events.

TPH (calc) and TPH-SG (calc) concentrations were compared to the CUL (208 µg/L) and RL (477 µg/L). As described in the CAP, the CUL for TPH in groundwater is intended to protect sediments from recontamination by groundwater (e.g., near the South Fork Skykomish River and Former Maloney Creek) and the RL for TPH in groundwater is intended to protect drinking water. The approximate CPOC boundary shown on figures 5-13 through 5-16 is adapted from CAP Figure 6 (Ecology 2007).

5.3.1 Site-Wide

Groundwater samples were collected from site-wide monitoring locations during the semi-annual groundwater monitoring events in March and September 2009. All groundwater sampling locations from all site areas are included in the site-wide TPH analysis, except the HCC gate vaults and sentry wells (discussed below). TPH results from these semi-annual events are displayed on Figures 5-14 and 5-16 and in Tables 5-3 and 5-4.

During the March 23 to 25, 2009 semi-annual groundwater monitoring event, 41 groundwater samples were collected from 37 site-wide monitoring locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in 19 of the 41 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 208 to 7740 µg/L with an average concentration of 1671.7 µg/L. Thirteen of the 19 samples with detected TPH had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 502 to 7740 µg/L. The RL exceedances were detected in samples from the following eleven locations: 1A-W-3, 1C-W-4, 2A-W-11, 2A-W-9, 5-W-18, 5-W-20, 5-W-4, 5-W-50, 5-W-51, 5-W-52, and MW-39. The RL exceedances occurred in wells located primarily within or adjacent to the residual NAPL plume, with only a few exceptions (1C-W-4, 2A-W-9, and MW-39) (Figure 5-14). Trace product was observed in the samples collected from locations 2A-W-11, MW-39, and 5-W-51, all of which had TPH (calc) concentrations exceeding the RL.

During the March 2009 groundwater monitoring event, nine groundwater samples, collected from 8 site-wide monitoring locations (all within the Levee Zone), were analyzed for TPH-SG by NWTPH-Dx. All results were non-detect.

During the September 21 to 24, 2009, semi-annual groundwater monitoring event, 56 groundwater samples were collected from 50 site-wide monitoring locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in 36 of the 56 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 63 to 3490 µg/L with an average concentration of 663.9 µg/L. Seventeen of the 36 samples with detected TPH had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 490 to 3490 µg/L. The RL exceedances were detected at the following 16 locations: 1B-W-23, 1C-W-8, 2A-W-11, 2A-W-9, 3-W-42, 5-W-20, 5-W-4, 5-W-42, 5-W-50, 5-W-51, 5-W-52, 5-W-53, 5-W-55, 5-W-56, MW-3, and MW-39. The RL exceedances occurred in wells located primarily within or adjacent to the residual NAPL plume, with only a few exceptions (1C-W-8, 2A-W-9, MW-3, and MW-39) (Figure 5-14). Trace product was observed in the samples collected from locations 2A-W-11, MW-39, and 5-W-51, all of which had TPH (calc) concentrations exceeding the RL.

During the September 2009 groundwater monitoring event nine groundwater samples, collected from 8 site-wide monitoring locations (all within the Levee Zone), were also analyzed for TPH-SG by NWTPH-Dx. TPH-SG was detected in 3 of the 9 samples. TPH-SG (calc) concentrations in the samples with detected TPH-SG ranged from 62 to 640 µg/L with an average concentration of 263 µg/L. One of the 3 samples with detected TPH-SG had a TPH-SG (calc) concentration exceeding the RL (5-W-42, 640 µg/L). Well 5-W-42 is located within the Levee Zone, but outside and to the west of the 2006 interim cleanup action area (Figure 5-16).

5.3.2 Air Sparging System Monitoring

Groundwater samples were collected from air sparging system monitoring locations (1C-W-1, 1C-W-7, and 1C-W-8) on a monthly basis from March (system start-up) to September 2009. TPH results from these events are displayed on Figures 5-14 to 5-16 and in Tables 5-3 and 5-4. All results from the air sparging system well monitoring events will be analyzed as part of the annual AS system operations report for 2009. Monitoring well 1C-W-1 was sampled prior to the system start-up, but 1C-W-7 and 1C-W-8 were not sampled until after start-up because 1C-W-7 was not yet developed and 1C-W-8 was not yet installed (2009 *Annual Air Sparging System Report* [AECOM 2009e]). Twenty-one groundwater samples were collected from these three locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in 18 of the 21 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 85.1 to 3924 µg/L with an average concentration of 670.3 µg/L. Of the 18 samples with detected TPH, 5 had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 530 to 3924 µg/L. The RL exceedances were detected in samples from wells 1C-W-7 and 1C-W-8, which are located upgradient and downgradient, respectively, of the air sparging system.

5.3.3 Hydraulic Control and Containment System

The following sections summarize groundwater analytical results from wells that characterize the HCC and adjacent areas. A quarterly monitoring frequency was planned for HCC system monitoring locations located in the backfill and downgradient of the HCC and for the HCC system performance monitoring end well and gate wells, but these locations were not sampled during the December 2008 and March 2009 quarterly monitoring events. Installation of these monitoring locations was completed in late March; therefore, the first sampling event for these locations was conducted in early April and is presented as a monthly monitoring event in this report. Quarterly monitoring proceeded as planned during the June and September 2009 monitoring events. TPH results from these events are displayed on Figures 5-15 and 5-16 and in Tables 5-3 and 5-4. All results from the HCC well monitoring events will be analyzed as part of the annual HCC system operations report for 2009.

5.3.3.1 Backfill and Downgradient of the HCC

Groundwater samples were collected from monitoring locations within the clean backfill emplaced during the HCC wall construction and downgradient of the HCC wall (1B-W-23, 1C-W-7, 2A-W-40, 2A-W-41, 2A-W-42, and 5-W-43) in April 2009 (after initial installation), quarterly during the June and September 2009 events, and monthly (1C-W-7 only, which is sampled on a monthly basis because it is also used to monitor the air sparging system). Twenty-six groundwater samples were collected from these six backfill/downgradient locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in 17 of the 26 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 222 to 1677 µg/L with an average concentration of 473.8 µg/L. Five of the 17 samples with detected TPH had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 510 to 1677 µg/L. The RL exceedances were detected in samples from the following 4 locations: 1B-W-23, 1C-W-7, 2A-W-41, and 5-W-43. These four wells are all located in the clean backfill on the north side of the HCC wall. Monthly follow-up groundwater samples were collected from these wells from April to

September 2009. Results from the backfill/downgradient wells will be analyzed as part of the annual HCC system operations report for 2009.

Note that during the September 23, 2009 sampling of well 1B-W-23, groundwater was turbid and drew down quickly and the field parameters did not stabilize. This is most likely attributable to the 2009 construction dewatering activities that were active from September 11 to September 22, 2009. Based on the field notes the data are not representative of normal steady state groundwater conditions and may have been affected by increased turbidity/solids due to construction activities.

5.3.3.2 HCC System Performance

End Well

Groundwater samples were collected from EW-1, located at the west end of the HCC wall, in April 2009 (after initial installation) and quarterly during the June and September 2009 events. Note that two attempts were made to install an additional end well (EW-2 and EW-2A), which was planned for a location near the east end of the HCC wall, but it was not installed due to the observation of free product. The EW-1 samples were analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was not detected in any of the three samples.

Gate Wells

Groundwater samples were collected from the four gate wells (GW-1 to GW-4) quarterly during the June and September 2009 events and on a monthly basis from April to September 2009 (after initial installation and for wells that exhibited RL exceedances). The samples were analyzed for TPH by NWTPH-Dx without silica gel cleanup. Eighteen groundwater samples were collected from these four locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in 13 of the 18 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 63 to 1060 µg/L with an average concentration of 520 µg/L. Of the 13 samples with detected TPH, 6 had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 660 to 1060 µg/L. The RL exceedances were all detected in samples from HCC gate well GW-2, located to the north of the west vault.

Gate Vaults and Sentry Wells

Groundwater samples were collected from the HCC system vaults during the December 2008 quarterly monitoring event and from sentry wells located within the vaults during the semi-annual groundwater monitoring events in March and September 2009. These locations are intended to monitor TPH concentrations in the reactive material in each gate in order to evaluate treatment capacity and exhaustion rates (AECOM 2009d). TPH in groundwater collected from these locations is affected by the reactive media; therefore, these results are not representative of site groundwater conditions and are not analyzed in this report. The groundwater results are presented in Table 5-3 for reference, but are not presented on the report figures.

5.3.4 Schoolyard Perimeter Zone Monitoring

Groundwater samples were collected from monitoring locations around the perimeter of the schoolyard (5-W-50 to 5-W-56) during the semi-annual groundwater monitoring events in March and September 2009. TPH results from these semi-annual events are displayed on Figures 5-14 and 5-16. Sixteen groundwater samples were collected from these six schoolyard perimeter zone monitoring locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in 11 of the 16 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 263 to 7740 µg/L with an average concentration of 2250 µg/L. Of the 11 samples with detected TPH, 10 had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 490 to 7740 µg/L. The RL exceedances were detected in samples from all schoolyard perimeter wells, with the exception of 5-W-

54. Trace product was observed in both samples collected from 5-W-51, one of which had the highest observed TPH (calc) concentration (7740 µg/L); both detected concentrations exceeded the RL.

5.3.5 Levee Zone

Groundwater samples were collected from levee zone monitoring locations (5-W-14 to 5-W-20 and 5-W-42) quarterly during the March, June, and September 2009 events. TPH results from these events are displayed on Figures 5-13 to 5-16. Thirty-seven groundwater samples were collected from these eight levee zone monitoring locations and analyzed for TPH by NWTPH-Dx with and without silica gel cleanup. TPH was detected in 16 of the 37 samples; TPH-SG was detected in 3 of the 37 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 254 to 2057 µg/L with an average concentration of 1006.8 µg/L. TPH-SG (calc) concentrations in the samples with detected TPH ranged from 62 to 640 µg/L with an average concentration of 263 µg/L. Of the 16 samples with detected TPH, 11 had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 530 to 2057 µg/L. The TPH (calc) RL exceedances were detected in samples from wells 5-W-18, 5-W-20, and 5-W-42. One of the three samples with detected TPH-SG had a TPH-SG (calc) concentration exceeding the RL (5-W-42, 640 µg/L). Wells 5-W-18 and 5-W-20, which exhibited TPH (calc) RL exceedances, are located within the 2006 interim cleanup action area and downgradient of the excavation liner. Well 5-W-42, which exhibited both TPH (calc) and TPH-SG (calc) RL exceedances, is located outside (west) of the 2006 interim cleanup action area.

During the 2007 to 2008 groundwater monitoring period, a groundwater sample was collected from a seep observed on the bank of the South Fork Skykomish River (in addition to the groundwater monitoring network locations) per Ecology's request. The 2007 to 2008 *Annual Site-Wide Groundwater Monitoring Report* (AECOM 2009f) recommended additional seep sampling during the 2008 to 2009 monitoring period due to the elevated TPH (calc) concentration (in excess of the CUL, but below the RL) observed in the seep sample. In August 2009, a soil investigation was conducted at the west end of the levee zone as part of the 2009 remedial design investigation activities (AECOM 2010) in order to delineate the extent of TPH in this area. The investigation results identified soil RL (3,400 mg/kg) exceedances in the area west of the levee. The extent of soil with TPH above the RL is well constrained by the August 2009 investigation results; therefore, AECOM did not conduct additional seep sampling during the 2008 to 2009 monitoring period.

5.3.6 Former Maloney Creek Zone – East Wetland and Surrounding Area

Groundwater samples were collected from monitoring locations surrounding the FMCZ – East Wetland (2A-W-9, 2A-W-10, 2A-W-11, 2B-W-4, 2B-W-45, 2B-W-46, MW-3, MW-4, and MW-39) quarterly during the December, March, June, and September 2009 events. TPH results from these events are displayed on Figures 5-13 to 5-16. Twenty-five groundwater samples were collected from these nine monitoring locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in 12 of the 25 samples. TPH (calc) concentrations in the samples with detected TPH ranged from 86 to 2024 µg/L with an average concentration of 957.2 µg/L. Of the 12 samples with detected TPH, 8 had TPH (calc) concentrations exceeding the RL (477 µg/L) with concentrations ranging from 600 to 2024 µg/L. The RL exceedances were detected in samples from the following four locations: 2A-W-9, 2A-W-11, MW-3, and MW-39. Trace product was observed in all four samples collected from 2A-W-9 and MW-39, one of which had the highest observed TPH (calc) concentration (2024 µg/L); all samples that were observed to contain product had TPH(calc) concentrations exceeding the RL.

Two groundwater samples collected from two locations south of the FMCZ- East Wetland (2B-W-45 and 2B-W-46) were also analyzed for TPH-SG by NWTPH-Dx with silica gel cleanup. TPH-SG was non-detect in both samples.

5.3.7 Former Maloney Creek Zone – West Wetland

Groundwater samples were collected from monitoring locations along the northern boundary of the FMCZ – west wetland (3-W-41, 3-W-42, and 3-W-43) on August 25 and September 23, 2009. TPH results from the September event are displayed on Figures 5-16. Seven groundwater samples were collected from these three monitoring locations and analyzed for TPH by NWTPH-Dx without silica gel cleanup. TPH was detected in four of the seven samples. TPH (calc) concentrations in the samples with detected TPH ranged from 65 to 930 µg/L with an average concentration of 292 µg/L. One of the four samples with detected TPH had a TPH (calc) concentration exceeding the RL (3-W-42, 930 µg/L). Well 3-W-42 is located in the 25-foot buffer zone boundary just north of the north-reaching neck of the west wetland, which extends along the Former Maloney Creek channel (Figure 5-16).

The sampling protocol for the newly installed FMCZ – west wetland wells (3-W-41, 3-W-42, and 3-W-43) was identified in the 2009 *Remedial Design Investigation Work Plan* (AECOM 2009c). The work plan specified collection of TOC and TPH with and without silica gel from three well/boring locations (3-W-41, 3-W-42, and 3-W-43) located in the west wetland buffer area. However, because this area is not subject to OC-normalization (since it is above the ordinary high water mark), there was no reason to collect TOC data. Similarly, since the initial dissolved TPH without silica gel concentrations were below the cleanup level, we believed it was not necessary to analyze for TPH with silica gel analysis. Elevated TPH was detected at 3-W-43 (in exceedance of the RL) in September 2009; therefore, these locations were sampled again in October and November 2009 for NWTPH-Dx with and without silica gel cleanup. The October and November 2009 groundwater analytical results from these locations will be included in the next annual groundwater monitoring report (2009 to 2010).

6.0 Summary and Recommendations

This report presents the results of groundwater monitoring performed from October 14, 2008 to September 24, 2009. Approximately 217 groundwater samples were collected during the reporting period.

The fluid level and analytical data collected throughout the reporting period were compared to previous monitoring data. These data indicate groundwater flow gradients are relatively consistent throughout the year and similar to gradients observed during the previous monitoring periods. The exception is September 2009, which coincided with construction dewatering activities. Mounding on the upgradient side of the HCC wall is being adequately controlled by pumping the groundwater from recovery wells into the on-site treatment system.

TPH data collected during the monitoring period indicate that the LNAPL and dissolved plume extents have remained relatively stable throughout the monitoring period and do not appear to have migrated.

TPH concentrations during the monitoring events exceeded the CUL (208 µg/L) and RL (477 µg/L) at locations downgradient and immediately adjacent to areas containing free and residual product.

Groundwater monitoring should continue pursuant to the 2009 *Groundwater Monitoring Plan* (AECOM 2009a) and the 2009 *Compliance Monitoring Plan Update* (AECOM 2009d), and future plans, including the 2010 *Compliance Monitoring Plan Update* and 2010 *Groundwater Monitoring Plan*, pending completion of all cleanup actions specified in the CAP, as amended, and approval of a Final Long-term Conformational Monitoring Plan in 2012 in accordance with Exhibit C to the CD.

7.0 References

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Table 2-1 Modifications to the Groundwater Monitoring Network

Activity	Activity Date	Location ID	Location Type	Location Monitoring Function	Rationale for Abandoned/Destroyed or Not Installed Locations	*Reference for Planned Activity	*Reference for Completed Activity
Abandoned	3/24/2009	1A-W-2	Monitoring Well	Site-wide	located within 2009 excavation extent	Specifications - NWDZ Remediation (AECOM, 2009h)	2009 As-Built Completion Report (AECOM, 2009i [in review])
Abandoned	3/26/2009	1A-W-3	Monitoring Well	Site-wide	located within 2009 excavation extent	Specifications - NWDZ Remediation (AECOM, 2009h)	2009 As-Built Completion Report (AECOM, 2009i [in review])
Abandoned	3/26/2009	5-W-1	Monitoring Well	Site-wide	located within 2009 excavation extent	Specifications - NWDZ Remediation (AECOM, 2009h)	2009 As-Built Completion Report (AECOM, 2009i [in review])
Abandoned	3/26/2009	MW-26	Monitoring Well	Site-wide	located within 2009 excavation extent	Specifications - NWDZ Remediation (AECOM, 2009h)	2009 As-Built Completion Report (AECOM, 2009i [in review])
Abandoned	3/26/2009	MW-36	Monitoring Well	Site-wide	located within 2009 excavation extent	Specifications - NWDZ Remediation (AECOM, 2009h)	2008 As-Built Completion Report (AECOM, 2009j)
Abandoned	10/6/2009	PW-01	Pumping Well	HCC System	temporary location; abandoned when RW wells came on-line	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report (AECOM, 2009i [in review])
Abandoned	10/6/2009	PW-02	Pumping Well	HCC System	temporary location; abandoned when RW wells came on-line	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report (AECOM, 2009i [in review])
Abandoned	10/6/2009	PW-03	Pumping Well	HCC System	temporary location; abandoned when RW wells came on-line	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report (AECOM, 2009i [in review])
Destroyed	Between 7/20 and 7/24/2009	1A-W-1	Monitoring Well	Site-wide	inadvertently destroyed during 2009 excavation activities	NA	2009 As-Built Completion Report (AECOM, 2009i [in review])
Destroyed	10/13/2008	MW-35	Monitoring Well	Site-wide	inadvertently destroyed during 2008 excavation activities	NA	2008 As-Built Completion Report (AECOM, 2009j)
Destroyed	10/1/2008 (approximately)	MW-38	Monitoring Well	Site-wide	inadvertently destroyed by Town sub-contractor	NA	2008 As-Built Completion Report (AECOM, 2009j)
Installed	3/18/2009	1B-W-23	Monitoring Well	Backfill and Downgradient of the HCC	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Table 2-2 and Appendix B
Installed	3/20/2009	1C-W-7	Monitoring Well	Air Sparging System/Downgradient of the HCC	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	2009 Annual Air Sparging System Report (AECOM, 2009f)
Installed	4/2/2009	1C-W-8	Monitoring Well	Air Sparging System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	2009 Annual Air Sparging System Report (AECOM, 2009f)
Installed	3/23/2009	2A-W-40	Monitoring Well	Downgradient of the HCC	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Table 2-2 and Appendix B
Installed	3/24/2009	2A-W-41	Monitoring Well	Downgradient of the HCC	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Table 2-2 and Appendix B
Installed	3/24/2009	2A-W-42	Monitoring Well	Downgradient of the HCC	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Table 2-2 and Appendix B
Installed	11/11/2008	2B-W-45	Monitoring Well	FMCZ-EW and Surrounding Area	NA	Addendum 4 to the BNSF Skykomish Remedial Design Investigation Work Plan (ENSR, 2008d)	2008 Addendum to the Remedial Design Investigation (AECOM, 2009c)
Installed	11/11/2008	2B-W-46	Monitoring Well	FMCZ-EW and Surrounding Area	NA	Addendum 4 to the BNSF Skykomish Remedial Design Investigation Work Plan (ENSR, 2008d)	2008 Addendum to the Remedial Design Investigation (AECOM, 2009c)
Installed	8/19/2009	3-W-41	Monitoring Well	FMCZ-WW	NA	2009 Remedial Design Investigation Work Plan (AECOM, 2009d)	2009 Remedial Design Investigation (AECOM, 2009b [in review])
Installed	8/14/2009	3-W-42	Monitoring Well	FMCZ-WW	NA	2009 Remedial Design Investigation Work Plan (AECOM, 2009d)	2009 Remedial Design Investigation (AECOM, 2009b [in review])
Installed	8/18/2009	3-W-43	Monitoring Well	FMCZ-WW	NA	2009 Remedial Design Investigation Work Plan (AECOM, 2009d)	2009 Remedial Design Investigation (AECOM, 2009b [in review])

Table 2-1 Modifications to the Groundwater Monitoring Network

Activity	Activity Date	Location ID	Location Type	Location Monitoring Function	Rationale for Abandoned/Destroyed or Not Installed Locations	*Reference for Planned Activity	*Reference for Completed Activity
Installed	11/13/2008	5-W-42	Monitoring Well	Levee Zone	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Table 2-2 and Appendix B
Installed	3/27/2009	5-W-43	Monitoring Well	Backfill and Downgradient of the HCC	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Table 2-2 and Appendix B
Installed	3/26/2009	EW-1	HCC End Well	HCC System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Annual HCC Operations Report (AECOM, 2009k)
Installed	3/23/2009	GW-1	HCC Gate Well	HCC System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Annual HCC Operations Report (AECOM, 2009k)
Installed	3/20/2009	GW-2	HCC Gate Well	HCC System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Annual HCC Operations Report (AECOM, 2009k)
Installed	3/17/2009	GW-3	HCC Gate Well	HCC System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Annual HCC Operations Report (AECOM, 2009k)
Installed	3/19/2009	GW-4	HCC Gate Well	HCC System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	IW-01	HCC Injection Well	HCC System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	IW-02	HCC Injection Well	HCC System	NA	2008 Groundwater Monitoring Plan (ENSR, 2008a)	Annual HCC Operations Report (AECOM, 2009k)
Installed	3/2/2009	MW-38R	Monitoring Well	Site-wide	NA	NA	Table 2-2 and Appendix B
Installed	10/7/2008	PZ-1	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	11/4/2008	PZ-2N	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report Addendum (AECOM, Pending)
Installed	10/7/2008	PZ-2S	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	11/3/2008	PZ-3N	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report Addendum (AECOM, Pending)
Installed	10/8/2008	PZ-3S	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	11/3/2008	PZ-4N	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report Addendum (AECOM, Pending)
Installed	10/8/2008	PZ-4S	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	11/3/2008	PZ-5N	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report Addendum (AECOM, Pending)
Installed	10/7/2008	PZ-5S	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	11/4/2008	PZ-6N	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2009 As-Built Completion Report Addendum (AECOM, Pending)
Installed	10/8/2008	PZ-6S	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	10/10/2008	PZ-7N	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	10/16/2008	PZ-7S	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	10/15/2008	PZ-8	HCC Piezometer	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	2008 As-Built Completion Report (AECOM, 2009j)
Installed	10/28/2008	RW-03	HCC Recovery Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	10/28/2008	RW-04	HCC Recovery Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)

Table 2-1 Modifications to the Groundwater Monitoring Network

Activity	Activity Date	Location ID	Location Type	Location Monitoring Function	Rationale for Abandoned/Destroyed or Not Installed Locations	*Reference for Planned Activity	*Reference for Completed Activity
Installed	4/24/2009	RW-07	HCC Recovery Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	4/24/2009	RW-08	HCC Recovery Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S1-AD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S1-AU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S1-BD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S1-BU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S2-AD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S2-AU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S2-BD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S2-BU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S3-AD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S3-AU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S3-BD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S3-BU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S3-CD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S3-CU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S4-AD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S4-AU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S4-BD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S4-BU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S4-CD	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Installed	During HCC system installation	S4-CU	Sentry Well	HCC System	NA	Hydraulic Control and Containment System Special Design Report (ENSR, 2008c)	Annual HCC Operations Report (AECOM, 2009k)
Deferred	NA	1A-W-36	Monitoring Well	Backfill and Downgradient of the HCC	2009 Excavation activities	2009 Groundwater Monitoring Plan (AECOM, 2009a)	NA
Deferred	NA	1A-W-37	Monitoring Well	Backfill and Downgradient of the HCC	2009 Excavation activities	2009 Groundwater Monitoring Plan (AECOM, 2009a)	NA
Deferred	NA	1A-W-38	Monitoring Well	Site-wide	2009 Excavation activities	2009 Groundwater Monitoring Plan (AECOM, 2009a)	NA
Deferred	NA	5-W-44	Monitoring Well	Backfill and Downgradient of the HCC	2009 Excavation activities	2009 Groundwater Monitoring Plan (AECOM, 2009a)	NA

Table 2-1 Modifications to the Groundwater Monitoring Network

Activity	Activity Date	Location ID	Location Type	Location Monitoring Function	Rationale for Abandoned/Destroyed or Not Installed Locations	*Reference for Planned Activity	*Reference for Completed Activity
Deferred	NA	5-W-45	Monitoring Well	Backfill and Downgradient of the HCC	2009 Excavation activities	2009 Groundwater Monitoring Plan (AECOM, 2009a)	NA
Deferred	NA	EW-2	HCC End Well	HCC System	Blebs of product and sheen observed during attempted well installation	2008 Groundwater Monitoring Plan (ENSR, 2008a)	NA
Deferred	NA	EW-2A	HCC End Well	HCC System	Blebs of product and sheen observed during attempted well installation	2009 Remedial Design Investigation Work Plan (AECOM, 2009d)	NA

Notes:
 *Complete references are included in references section of the report.
 HCC = Hydraulic Control and Containment
 FMCZ - EW = Former Maloney Creek Zone - East Wetland
 FMCZ - WW = Former Maloney Creek Zone - West Wetland

Table 2-2 Well Completion Details

Well ID	Date Installed	MP Elevation	Ground Surface Elevation (NAVD 88)	Total Well Depth (ft – bgs)	Surface Completion	Well Diameter (inches)	Well Material	Screen Slot Size (inch)
1B-W-23	3/18/2009	935.81	936.10	22	Flush Mount	2	Schedule 40 PVC	0.010
2A-W-40	3/23/2009	933.32	933.66	40.5	Flush Mount	2	Schedule 40 PVC	0.010
2A-W-41	3/24/2009	935.05	935.39	21	Flush Mount	2	Schedule 40 PVC	0.020
2A-W-42	3/24/2009	934.92	935.14	21	Flush Mount	2	Schedule 40 PVC	0.020
5-W-42	11/13/2008	923.45	923.84	20.0	Flush Mount	2	Schedule 40 PVC	0.020
5-W-43	3/23/2009	925.77	926.04	40.5	Flush Mount	2	Schedule 40 PVC	0.010
MW-38R	3/2/2009	922.39	922.59	20.0	Flush Mount	2	Schedule 40 PVC	0.010

Well ID	Screen Interval (ft – bgs)	Concrete Interval (ft – bgs)	Seal Material	Surface Seal Interval	Sand Pack Material	Sand Pack Interval during Installation	DTW during Installation (ft.)
1B-W-23	5 - 19.75	0 – 1	Bentonite	1 – 3	#10/20 silica sand	3 – 20	9
2A-W-40	30.5 - 40	0 – 1.5	Bentonite	1.5 - 29.5	#10/20 silica sand	29.5 - 41	11
2A-W-41	6 – 21	0 – 1	Bentonite	1 – 5	#2/12 silica sand	5 – 21	10
2A-W-42	6 – 21	0 – 1	Bentonite	1 – 5	#2/12 silica sand	5 – 21	10
5-W-42	5 – 20	0 – 1	Bentonite	1 – 3	#10/20 silica sand	3 – 20.2	9
5-W-43	30.5 - 40.5	0 – 1.5	Bentonite	1.5 - 29.5	#10/20 silica sand	29.5 - 41	11
MW-38R	5 – 20	0 – 1	Bentonite	1 – 4	#10/20 silica sand	4 – 20	4

Notes:

ID = identification

MP = Measuring Point

ft – bgs = feet below ground surface

DTW = depth to water

Table 2-3 Groundwater Monitoring Event Dates

Event	Start Date	End Date
Monthly Fluid Gauging Event	10/14/2008	10/14/2008
Monthly Fluid Gauging Event	11/10/2008	11/10/2008
Quarterly Fluid Gauging Event	12/16/2008	12/16/2008
Quarterly Groundwater Sampling Event	12/17/2008	12/17/2008
Monthly Fluid Gauging Event	1/22/2009	1/22/2009
Monthly Fluid Gauging Event	2/24/2009	2/24/2009
Monthly Groundwater Sampling Event	3/5/2009	3/5/2009
Semi-Annual Fluid Gauging Event	3/23/2009	3/23/2009
Semi-Annual Groundwater Sampling Event	3/23/2009	3/25/2009
Monthly Groundwater Sampling Event	4/1/2009	4/2/2009
Air Sparge System Monthly Groundwater Sampling Event	4/7/2009	4/7/2009
Monthly Fluid Gauging Event	4/21/2009	4/21/2009
Air Sparge System Monthly Groundwater Sampling Event	5/12/2009	5/12/2009
Monthly Fluid Gauging Event	5/12/2009	5/12/2009
Quarterly Fluid Gauging Event	6/9/2009	6/9/2009
Quarterly Groundwater Sampling Event	6/9/2009	6/11/2009
Monthly Groundwater Sampling Event	7/7/2009	7/7/2009
Air Sparge System Monthly Groundwater Sampling Event	7/28/2009	7/28/2009
Monthly Fluid Gauging Event	7/28/2009	7/28/2009
Monthly Fluid Gauging Event	8/24/2009	8/25/2009
Monthly Groundwater Sampling Event	8/25/2009	8/25/2009
Air Sparge System Monthly Groundwater Sampling Event	8/25/2009	8/25/2009
Semi-Annual Fluid Gauging Event	9/21/2009	9/21/2009
Semi-Annual Groundwater Sampling Event	9/21/2009	9/24/2009

Note:

Sampling details for each monitoring event are included in Table 2-4.

Table 2-4 Groundwater Sampling Event Details

Site Area	Location ID	Groundwater Sampling Events					Analyte
		Quarterly (12/17/08)	Semi-Annual (3/23/09 to 3/25/09)	Quarterly (6/9/09 to 6/11/09)	Semi-Annual (9/21/09 to 9/24/09)	Monthly sampling event(s)	
Air Sparging System	1C-W-7*	Installed 3/20/2009		X	X	X	NWTPH-Dx
	1C-W-8	Installed 4/2/2009		X	X	X	NWTPH-Dx
	1C-W-1	-	X	X	X	X	NWTPH-Dx
Backfill and Downgradient of the HCC	1A-W-36	Not installed					NA
	1A-W-37	Not installed					NA
	1B-W-23	Installed 3/18/2009		X	X	X	NWTPH-Dx
	1C-W-7*	Installed 3/20/2009		X	X	X	NWTPH-Dx
	2A-W-40	Installed 3/23/2009		X	X	X	NWTPH-Dx
	2A-W-41	Installed 3/24/2009		X	X	X	NWTPH-Dx
	2A-W-42	Installed 3/24/2009		X	X	X	NWTPH-Dx
	5-W-43	Installed 3/27/2009		X	X	X	NWTPH-Dx
	5-W-44	Not installed					NA
5-W-45	Not installed					NA	
FMCZ - WW	3-W-41	Installed 8/19/2009		X	X	X	NWTPH-Dx
	3-W-42	Installed 8/14/2009		X	X	X	NWTPH-Dx
	3-W-43	Installed 8/18/2009		X	X	X	NWTPH-Dx
Former Maloney Creek Zone - East Wetland and Surrounding Areas	2B-W-45	X	X	X	X	-	NWTPH-Dx
	2B-W-46	X	X	X	X	-	NWTPH-Dx
	2A-W-10	-	X	-	X	-	NWTPH-Dx
	2A-W-11	-	X	-	X	-	NWTPH-Dx
	2A-W-9	-	X	-	X	-	NWTPH-Dx
	2B-W-4	-	X	-	X	-	NWTPH-Dx
	MW-3	-	X	-	X	-	NWTPH-Dx
	MW-39	-	X	-	X	-	NWTPH-Dx
	MW-4	-	X	-	X	-	NWTPH-Dx
HCC System	CV (S3)	X	-	-	-	-	NWTPH-Dx
	EV (S4)	-	-	-	-	-	NWTPH-Dx
	EW-1	Installed 3/26/2009		X	X	X	NWTPH-Dx
	EW-2	Not installed					NA
	EW-2A	Not installed					NA
	FWV (S1)	X	-	-	-	-	NWTPH-Dx
	GW-1	Installed 3/23/2009		X	X	X	NWTPH-Dx
	GW-2	Installed 3/20/2009		X	X	X	NWTPH-Dx
	GW-3	Installed 3/17/2009		X	X	X	NWTPH-Dx
	GW-4	Installed 3/19/2009		X	X	X	NWTPH-Dx
	S1-AD	-	X	-	X	-	NWTPH-Dx
	S1-AU	-	X	-	X	-	NWTPH-Dx
	S1-BD	-	X	-	X	-	NWTPH-Dx
	S1-BU	-	X	-	X	-	NWTPH-Dx
	S2-AD	-	X	-	X	-	NWTPH-Dx
	S2-AU	-	X	-	X	-	NWTPH-Dx
	S2-BD	-	X	-	X	-	NWTPH-Dx
	S2-BU	-	X	-	X	-	NWTPH-Dx
	S3-AD	-	X	-	X	-	NWTPH-Dx
	S3-AU	-	X	-	X	-	NWTPH-Dx
	S3-BD	-	X	-	X	-	NWTPH-Dx
	S3-BU	-	X	-	X	-	NWTPH-Dx
	S3-CD	-	X	-	X	-	NWTPH-Dx
	S3-CU	-	X	-	X	-	NWTPH-Dx
	S4-AD	-	X	-	X	-	NWTPH-Dx
	S4-AU	-	X	-	X	-	NWTPH-Dx
	S4-BD	-	X	-	X	-	NWTPH-Dx
	S4-BU	-	X	-	X	-	NWTPH-Dx
	S4-CD	-	X	-	X	-	NWTPH-Dx
	S4-CU	-	X	-	X	-	NWTPH-Dx
WV (S2)	X	-	-	-	-	-	NWTPH-Dx

Table 2-4 Groundwater Sampling Event Details

Site Area	Location ID	Groundwater Sampling Events					Analyte
		Quarterly (12/17/08)	Semi-Annual (3/23/09 to 3/25/09)	Quarterly (6/9/09 to 6/11/09)	Semi-Annual (9/21/09 to 9/24/09)	Monthly sampling event(s)	
Levee Zone	5-W-14	X	X	X	X	-	NWTPH-Dx
	5-W-15	X	X	X	X	-	NWTPH-Dx
	5-W-16	X	X	X	X	-	NWTPH-Dx
	5-W-17	X	X	X	X	-	NWTPH-Dx
	5-W-18	X	X	X	X	-	NWTPH-Dx
	5-W-19	X	X	X	X	-	NWTPH-Dx
	5-W-20	X	X	X	X	-	NWTPH-Dx
	5-W-42	X	X	X	X	-	NWTPH-Dx
Schoolyard Perimeter Zone	5-W-50	-	X	-	X	-	NWTPH-Dx
	5-W-51	-	X	-	X	-	NWTPH-Dx
	5-W-52	-	X	-	X	-	NWTPH-Dx
	5-W-53	-	X	-	X	-	NWTPH-Dx
	5-W-54	-	X	-	X	-	NWTPH-Dx
	5-W-55	-	X	-	X	-	NWTPH-Dx
	5-W-56	-	X	-	X	-	NWTPH-Dx
Site-Wide**	1A-W-1	-	X	Destroyed between 7/20 and 7/24/2009			NWTPH-Dx
	1A-W-3	-	X	Abandoned 3/26/2009			NWTPH-Dx
	1A-W-4	-	X	-	X	-	NWTPH-Dx
	1A-W-5	-	X	-	X	-	NWTPH-Dx
	1A-W-38	Not installed					NA
	1B-W-2	-	X	-	X	-	NWTPH-Dx
	1B-W-3	-	X	-	X	X	NWTPH-Dx
	1C-W-2	-	X	-	X	-	NWTPH-Dx
	1C-W-3	-	X	-	X	-	NWTPH-Dx
	1C-W-4	-	X	-	X	-	NWTPH-Dx
	5-W-4	-	X	-	X	-	NWTPH-Dx
	MW-16	-	X	-	X	-	NWTPH-Dx
	MW-35	Well destroyed 10/13/2008					NA
	MW-38	Well destroyed on approximately 10/1/2008					NA
	MW-38R	-	X	-	X	-	NWTPH-Dx

Notes:

Sample analyzed for NWTPH-Dx with and without silica gel cleanup. All other locations analyzed without silica gel cleanup.

Where the sampling frequency differs from the planned frequency presented in the 2009 Groundwater Monitoring Plan (AECOM, 2009), a rationale is provided.

* Location is being monitored for multiple assessments.

**Location is being monitored for the site-wide assessment only. Locations sampled semi-annually from all site areas are included in the site-wide assessment, except HCC gate vault sentry wells.

- Not sampled

FMCZ - WW = Former Maloney Creek Zone - West Wetland

HCC = Hydraulic Control and Containment

TPH = Total Petroleum Hydrocarbons

Table 2-5 Fluid Gauging Events Summary

Area	Well	Gauging Monitoring Frequency				Well Installation Date^^	Well Abandonment/ Destruction Date	
		Continuous^	Monthly	Quarterly	Semi-annual			
Air Sparging System	1C-W-1			X		NA	NA	
	1C-W-7*			X		3/20/2009	NA	
	1C-W-8			X		4/2/2009	NA	
Backfill and Downgradient of the HCC	1B-W-23			X		3/18/2009	NA	
	1C-W-7*			X		3/20/2009	NA	
	2A-W-40			X		3/23/2009	NA	
	2A-W-41			X		3/24/2009	NA	
	2A-W-42			X		3/24/2009	NA	
	5-W-43			X		3/27/2009	NA	
	5-W-44	Not installed				NA	NA	
5-W-45	Not installed				NA	NA		
FMCZ - WW	3-W-41				X	8/19/2009	NA	
	3-W-42				X	8/14/2009	NA	
	3-W-43				X	8/18/2009	NA	
Former Maloney Creek Zone - East Wetland and Surrounding Areas	2A-W-10		X		X	NA	NA	
	2A-W-11		X		X	NA	NA	
	2A-W-3		X		X	NA	NA	
	2A-W-4		X		X	NA	NA	
	2A-W-5		X			NA	NA	
	2A-W-7		X			NA	NA	
	2A-W-9		X		X	NA	NA	
	2B-B-21		X			NA	NA	
	2B-B-33		X			NA	NA	
	2B-W-11		X			NA	NA	
	2B-W-12		X			NA	NA	
	2B-W-13		X			NA	NA	
	2B-W-14		X			NA	NA	
	2B-W-15		X			NA	NA	
	2B-W-19		X			NA	NA	
	2B-W-21		X			NA	NA	
	2B-W-30		X			NA	NA	
	2B-W-32		X			NA	NA	
	2B-W-4		X			X	NA	NA
	2B-W-45		X				11/11/2008	NA
	2B-W-46		X				11/11/2008	NA
	MW-1		X			X	NA	NA
	MW-10		X				NA	NA
	MW-11		X				NA	NA
	MW-12		X			X	NA	NA
	MW-13		X				NA	NA
	MW-14		X			X	NA	NA
	MW-15		X				NA	NA
	MW-17		X				NA	NA
	MW-18		X			X	NA	NA
	MW-2		X			X	NA	NA
	MW-3		X			X	NA	NA
MW-39		X			X	NA	NA	
MW-4		X			X	NA	NA	
MW-40		X				NA	NA	
MW-5		X				NA	NA	
MW-7		X				NA	NA	
MW-9		X				NA	NA	

Table 2-5 Fluid Gauging Events Summary

Area	Well	Gauging Monitoring Frequency				Well Installation Date^^	Well Abandonment/ Destruction Date
		Continuous^	Monthly	Quarterly	Semi-annual		
HCC System	CV (S3)	X				NA	NA
	EV (S4)	X				NA	NA
	EW-1			X		3/26/2009	NA
	EW-2	Not installed				NA	NA
	EW-2A	Not installed				NA	NA
	FWV (S1)	X				NA	NA
	GW-1			X		3/23/2009	NA
	GW-2			X		3/20/2009	NA
	GW-3			X		3/17/2009	NA
	GW-4			X		3/19/2009	NA
	IW-01			X		During HCC system installation	NA
	IW-02			X		During HCC system installation	NA
	PW-01			X		NA	10/6/2009
	PW-03			X		NA	10/6/2009
	PW-04			X		NA	10/6/2009
	PZ-1	X				10/7/2008	NA
	PZ-2N	X				11/4/2008	NA
	PZ-2S	X				10/7/2008	NA
	PZ-3N	X				11/3/2008	NA
	PZ-3S	X				10/8/2008	NA
	PZ-4N	X				11/3/2008	NA
	PZ-4S	X				10/8/2008	NA
	PZ-5N	X				11/3/2008	NA
	PZ-5S	X				10/7/2008	NA
	PZ-6N	X				11/4/2008	NA
	PZ-6S	X				10/8/2008	NA
	PZ-7N	X				10/10/2008	NA
	PZ-7S	X				10/16/2008	NA
	PZ-8	X				10/15/2008	NA
	RW-01			X		NA	NA
	RW-02			X		NA	NA
	RW-03			X		10/28/2008	NA
	RW-04			X		10/28/2008	NA
RW-05			X		NA	NA	
RW-06			X		NA	NA	
RW-07			X		4/24/2009	NA	
RW-08			X		4/24/2009	NA	
WV (S2)	X				NA	NA	
Levee Zone	5-W-14			X		NA	NA
	5-W-15			X		NA	NA
	5-W-16			X		NA	NA
	5-W-17			X		NA	NA
	5-W-18			X		NA	NA
	5-W-19			X		NA	NA
	5-W-20			X		NA	NA
5-W-42			X		11/13/2008	NA	
Schoolyard Perimeter Zone	5-W-50			X		NA	NA
	5-W-51			X		NA	NA
	5-W-52			X		NA	NA
	5-W-53			X		NA	NA
	5-W-54			X		NA	NA
	5-W-55			X		NA	NA
5-W-56			X		NA	NA	

Table 2-5 Fluid Gauging Events Summary

Area	Well	Gauging Monitoring Frequency				Well Installation Date^^	Well Abandonment/ Destruction Date
		Continuous^	Monthly	Quarterly	Semi-annual		
Site-Wide**	1A-W-1				X	NA	NA
	1A-W-2		X			NA	3/24/2009
	1A-W-3				X	NA	3/26/2009
	1A-W-4				X	NA	NA
	1A-W-38	Not installed				NA	NA
	1B-W-2				X	NA	NA
	1B-W-3				X	NA	NA
	1C-W-2				X	NA	NA
	1C-W-3				X	NA	NA
	1C-W-4				X	NA	NA
	2A-W-8				X	NA	NA
	5-W-2				X	NA	NA
	5-W-3			X		NA	NA
	5-W-4				X	NA	NA
	MW-16				X	NA	NA
	MW-22			X		NA	NA
	MW-26			X		NA	3/26/2009
	MW-28				X	NA	NA
	MW-32				X	NA	NA
	MW-35				X	NA	10/13/2008
MW-36			X		NA	3/26/2009	
MW-38				X	NA	10/1/2008 (approximately)	
MW-38R				X	3/2/2009	NA	

Notes:

* Location is being monitored for multiple assessments.

**Location is being monitored for the site-wide assessment only. Locations gauged semi-annually from all site areas are included in the site-wide assessment.

^Water level transducers began collecting continuous water level measurements at these locations on August 31, 2009.

^^Installation dates for wells installed during the 2008 to 2009 monitoring period.

FMCZ - WW = Former Maloney Creek Zone - West Wetland

HCC = Hydraulic Control and Containment

TPH = Total Petroleum Hydrocarbons

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	10/14/2008			11/10/2008		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
1A-W-1	NM	-	-	NM	-	-
1A-W-2	NM	-	-	NM	-	-
1A-W-3	NM	-	-	NM	-	-
1A-W-4	NM	-	-	NM	-	-
1A-W-5	NM	-	-	NM	-	-
1B-W-2	NM	-	-	NM	-	-
1B-W-3	NM	-	-	NM	-	-
1B-W-23	Well Not Installed			Well Not Installed		
1C-W-1	NM	-	-	NM	-	-
1C-W-2	NM	-	-	NM	-	-
1C-W-3	NM	-	-	NM	-	-
1C-W-4	NM	-	-	NM	-	-
1C-W-7	Well Not Installed			Well Not Installed		
1C-W-8	Well Not Installed			Well Not Installed		
2A-W-3	NM	-	-	926.48	-	-
2A-W-4	923.56	-	-	927.22	-	trace
2A-W-5	926.02	-	-	929.22	-	-
2A-W-7	925.93	-	-	927.84	-	-
2A-W-8	NM	-	-	NM	-	-
2A-W-9	926.30	-	-	928.99	-	-
2A-W-10	927.47	-	-	930.02	-	-
2A-W-11	925.49	-	trace	928.60	-	-
2A-W-40	Well Not Installed			Well Not Installed		
2A-W-41	Well Not Installed			Well Not Installed		
2A-W-42	Well Not Installed			Well Not Installed		
2B-B-21	924.49	-	-	927.48	-	-
2B-W-4	927.52	-	-	930.12	-	-
2B-W-11	927.91	Dry	-	930.35	930.35	-
2B-W-12 ¹	927.66	Dry	-	930.11	930.11	-
2B-W-13	926.84	Dry	-	929.30	929.62	-
2B-W-14	926.62	Dry	-	929.13	929.28	-
2B-W-15	925.25	Dry	-	928.32	Dry	-
2B-W-19	927.89	-	-	931.09	-	-
2B-W-21	926.56	-	-	929.24	-	-
2B-W-30	925.04	-	-	928.07	-	-
2B-W-32	927.51	-	-	930.30	-	-
2B-W-33	927.97	-	-	931.11	-	-
2B-W-45 ²	Well Not Installed			Well Installed 11/11/09		
2B-W-46 ³	Well Not Installed			Well Installed 11/11/09		
3-W-41	Well Not Installed			Well Not Installed		
3-W-42	Well Not Installed			Well Not Installed		
3-W-43	Well Not Installed			Well Not Installed		
5-W-1	NM	-	-	NM	-	-
5-W-2	NM	-	-	NM	-	-
5-W-3	NM	-	-	NM	-	-
5-W-4	NM	-	-	NM	-	-
5-W-14	NM	-	-	NM	-	-
5-W-15	NM	-	-	NM	-	-
5-W-16	NM	-	-	NM	-	-
5-W-17	NM	-	-	NM	-	-
5-W-18	NM	-	-	NM	-	-
5-W-19	NM	-	-	NM	-	-
5-W-20	NM	-	-	NM	-	-
5-W-42	Well Not Installed			Well Installed 11/13/08		

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	10/14/2008			11/10/2008		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
5-W-43	Well Not Installed			Well Not Installed		
5-W-50	NM	-	-	NM	-	-
5-W-51	NM	-	-	NM	-	-
5-W-52	NM	-	-	NM	-	-
5-W-53	NM	-	-	NM	-	-
5-W-54	NM	-	-	NM	-	-
5-W-55	NM	-	-	NM	-	-
5-W-56	NM	-	-	NM	-	-
EW-1	Well Not Installed			Well Not Installed		
GW-1	Well Not Installed			Well Not Installed		
GW-2	Well Not Installed			Well Not Installed		
GW-3	Well Not Installed			Well Not Installed		
GW-4	Well Not Installed			Well Not Installed		
IW-01	NM	-	-	NM	-	-
IW-02	NM	-	-	NM	-	-
MW-1	926.25	-	-	928.76	-	-
MW-2	926.64	-	-	929.58	-	-
MW-3	928.40	-	-	931.33	-	-
MW-4	927.57	-	-	930.33	-	-
MW-5	926.11	-	-	928.89	-	-
MW-7	923.98	-	-	926.79	-	-
MW-9	924.75	-	-	927.71	-	-
MW-10	925.41	-	-	928.60	-	-
MW-11	925.40	-	-	928.70	-	-
MW-12	925.20	-	-	928.39	-	-
MW-13	924.65	-	-	927.40	-	-
MW-14	924.34	-	-	926.99	-	-
MW-15	923.61	-	-	926.20	-	-
MW-16	NM	-	-	NM	-	-
MW-17	NM	-	-	NM	-	-
MW-18	925.78	-	-	928.89	-	-
MW-22	NM	-	-	NM	-	-
MW-26	NM	-	-	NM	-	-
MW-28	NM	-	-	NM	-	-
MW-32	NM	-	-	NM	-	-
MW-35	NM	-	-	Well Destroyed during Construction		
MW-36	NM	-	-	NM	-	-
MW-38	NM	-	-	Well Destroyed during Construction		
MW-38R	Not Installed			Not Installed		
MW-39	926.60	-	-	929.32	-	-
MW-40	923.80	-	-	926.37	-	-
PW-01	NM	-	-	NM	-	-
PW-03	NM	-	-	NM	-	-
PW-04	NM	-	-	NM	-	-
PZ-1	NM	-	-	NM	-	-
PZ-2N	NM	-	-	NM	-	-
PZ-2S	NM	-	-	NM	-	-
PZ-3N	NM	-	-	NM	-	-
PZ-3S	NM	-	-	NM	-	-
PZ-4N	NM	-	-	NM	-	-
PZ-4S	NM	-	-	NM	-	-
PZ-5N	NM	-	-	NM	-	-
PZ-5S	NM	-	-	NM	-	-
PZ-6N	NM	-	-	NM	-	-
PZ-6S	NM	-	-	NM	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	10/14/2008			11/10/2008		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
PZ-7N	NM	-	-	NM	-	-
PZ-7S	NM	-	-	NM	-	-
PZ-8	NM	-	-	NM	-	-
RW-01	Well Not Installed			Well Not Installed		
RW-02	Well Not Installed			Well Not Installed		
RW-03	Well Not Installed			Well Not Installed		
RW-04	Well Not Installed			Well Not Installed		
RW-05	Well Not Installed			Well Not Installed		
RW-06	Well Not Installed			Well Not Installed		
CV	NM	-	-	NM	-	-
EV	NM	-	-	NM	-	-
FWV	NM	-	-	NM	-	-
WV	NM	-	-	NM	-	-
SK1**	NM	-	-	NM	-	-
SK2**	NM	-	-	NM	-	-
SK3**	NM	-	-	NM	-	-
SK4**	NM	-	-	NM	-	-
SK5**	NM	-	-	NM	-	-
ML1	NM	-	-	NM	-	-
ML2	NM	-	-	NM	-	-
ML3	NM	-	-	NM	-	-
ML4	NM	-	-	NM	-	-
WW1	NM	-	-	NM	-	-
WW2	NM	-	-	NM	-	-
WW3	NM	-	-	NM	-	-

Notes:

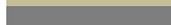
* Groundwater elevation collected on August 24, 2009

**Survey elevation is suspect; location will be re-surveyed.

^Suspect elevation attributed to sampling conditions or recording errors

NM - Not Measured

 Piezometer and Surface Water Staff Gauge Location

 Surface Water Staff Gauge Locations

 Surface Water Elevation

2B-W-12¹ - was installed at an angle of 14 degrees from vertical. All potentiometric elevations have been corrected to vertical.

2B-W-45² - was installed at an angle of 20 degrees from vertical. All potentiometric elevations have been corrected to vertical.

2B-W-46³ - was installed at an angle of 30 degrees from vertical. All potentiometric elevations have been corrected to vertical.

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	12/16/2008			1/22/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
1A-W-1	NM	-		NM	-	-
1A-W-2	922.14	-	Heavy Trace	NM	-	-
1A-W-3	NM	-	-	NM	-	-
1A-W-4	NM	-	-	NM	-	-
1A-W-5	918.94	-	-	NM	-	-
1B-W-2	922.28	-	-	922.41	-	-
1B-W-3	921.74	-	-	NM	-	-
1B-W-23	Well Not Installed			Well Not Installed		
1C-W-1	NM	-	-	NM	-	-
1C-W-2	925.81	-	-	926.28	-	-
1C-W-3	NM	-	-	NM	-	-
1C-W-4	NM	-	-	NM	-	-
1C-W-7	Well Not Installed			Well Not Installed		
1C-W-8	Well Not Installed			Well Not Installed		
2A-W-3	925.60	-	Trace	NM	-	Trace
2A-W-4	924.99	-	Heavy Trace	NM	-	Heavy Trace
2A-W-5	927.55	-	-	927.92	-	-
2A-W-7	NM	-	-	NM	-	-
2A-W-8	NM	-	-	NM	-	-
2A-W-9	928.01	-	-	928.36	-	-
2A-W-10	929.27	-	-	929.57	-	-
2A-W-11	927.30	-	Trace	927.82	-	Trace
2A-W-40	Well Not Installed			Well Not Installed		
2A-W-41	Well Not Installed			Well Not Installed		
2A-W-42	Well Not Installed			Well Not Installed		
2B-B-21	926.39	-	-	NM	-	-
2B-W-4	929.10	-	-	NM	-	-
2B-W-11	NM	929.92	-	927.35	930.28	-
2B-W-12 ¹	929.40	930.04	-	929.63	929.98	-
2B-W-13	NM	929.30	-	926.98	929.39	-
2B-W-14	NM	929.05	-	927.93	929.23	-
2B-W-15	NM	929.14	-	NM	NM	-
2B-W-19	929.62	-	-	NM	-	-
2B-W-21	928.10	-	-	NM	-	-
2B-W-30	926.75	-	-	926.93	-	-
2B-W-32	929.08	-	-	929.24	-	-
2B-W-33	930.22	-	-	928.60	-	-
2B-W-45 ²	926.39	-	-	926.62	-	-
2B-W-46 ³	926.73	-	-	NM	-	-
3-W-41	Well Not Installed			Well Not Installed		
3-W-42	Well Not Installed			Well Not Installed		
3-W-43	Well Not Installed			Well Not Installed		
5-W-1	920.61	-	Trace	NM	-	-
5-W-2	919.45	-	-	NM	-	-
5-W-3	918.26	-	-	NM	-	-
5-W-4	NM	-	-	NM	-	-
5-W-14	917.38	-	-	NM	-	-
5-W-15	917.45	-	-	NM	-	-
5-W-16	917.20	-	-	NM	-	-
5-W-17	917.22	-	-	NM	-	-
5-W-18	917.12	-	-	NM	-	-
5-W-19	916.90	-	-	NM	-	-
5-W-20	916.81	-	-	NM	-	-
5-W-42	NM	-	-	NM	-	-

Table 5-1

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	12/16/2008			1/22/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
5-W-43	Well Not Installed			Well Not Installed		
5-W-50	NM	-	-	NM	-	-
5-W-51	NM	-	-	NM	-	-
5-W-52	NM	-	-	NM	-	-
5-W-53	NM	-	-	NM	-	-
5-W-54	NM	-	-	NM	-	-
5-W-55	NM	-	-	NM	-	-
5-W-56	NM	-	-	NM	-	-
EW-1	Well Not Installed			Well Not Installed		
GW-1	Well Not Installed			Well Not Installed		
GW-2	Well Not Installed			Well Not Installed		
GW-3	Well Not Installed			Well Not Installed		
GW-4	Well Not Installed			Well Not Installed		
IW-01	924.096	-	-	924.136	-	-
IW-02	925.715	-	-	925.925	-	-
MW-1	927.13	-	-	927.47	-	-
MW-2	927.61	-	-	NM	-	-
MW-3	928.88	-	-	NM	-	-
MW-4	929.51	-	-	929.95	-	-
MW-5	927.75	-	-	NM	-	-
MW-7	925.84	-	Trace	NM	-	-
MW-9	NM	-	-	926.52	-	-
MW-10	NM	-	-	927.23	-	-
MW-11	NM	-	-	NM	-	-
MW-12	927.16	-	-	927.74	-	-
MW-13	926.42	-	-	NM	-	-
MW-14	926.06	-	-	NM	-	-
MW-15	925.36	-	-	925.67	-	-
MW-16	NM	-	-	NM	-	-
MW-17	928.22	-	Trace	NM	-	-
MW-18	927.15	-	-	927.49	-	-
MW-22	919.79	-	Heavy Trace	NM	-	-
MW-26	NM	-	-	NM	-	-
MW-28	NM	-	-	NM	-	-
MW-32	NM	-	-	NM	-	-
MW-35	Well Destroyed during Construction			Well Destroyed during Construction		
MW-36	921.03	-	-	NM	-	-
MW-38	Well Destroyed during Construction			Well Destroyed during Construction		
MW-38R	Not Installed			Not Installed		
MW-39	928.48	-	Trace	928.79	-	Trace
MW-40	925.50	-	-	925.84	-	-
PW-01	921.78	-	-	921.01	-	-
PW-03	922.01	-	-	921.24	-	-
PW-04	924.13	-	-	923.56	-	-
PZ-1	924.771	-	-	924.941	-	-
PZ-2N	921.955	-	-	921.935	-	-
PZ-2S	926.888	-	-	927.108	-	-
PZ-3N	921.98	-	-	921.78	-	-
PZ-3S	927.04	-	-	927.28	-	-
PZ-4N	921.96	-	-	921.77	-	-
PZ-4S	925.57	-	-	925.73	-	-
PZ-5N	921.83	-	-	921.64	-	-
PZ-5S	925.56	-	-	925.76	-	-
PZ-6N	921.92	-	-	921.76	-	-
PZ-6S	925.07	-	-	925.25	-	-

Table 5-1

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	12/16/2008			1/22/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
PZ-7N	921.57	-	-	921.35	-	-
PZ-7S	924.57	-	-	924.78	-	-
PZ-8	920.86	-	-	920.92	-	-
RW-01	921.99	-	-	921.76	-	-
RW-02	Well Not Installed			Well Not Installed		
RW-03	Well Not Installed			Well Not Installed		
RW-04	Well Not Installed			Well Not Installed		
RW-05	Well Not Installed			Well Not Installed		
RW-06	921.93	-	-	921.74	-	-
CV	921.98	-	-	921.78	-	-
EV	924.08	-	-	924.13	-	-
FWV	921.55	-	-	921.58	-	-
WV	921.89	-	-	921.71	-	-
SK1**	924.59	-	-	NM	-	-
SK2**	919.22	-	-	NM	-	-
SK3**	918.71	-	-	NM	-	-
SK4**	918.3	-	-	NM	-	-
SK5**	916.4	-	-	NM	-	-
ML1	dry	-	-	NM	-	-
ML2	dry	-	-	NM	-	-
ML3	dry	-	-	NM	-	-
ML4	dry	-	-	NM	-	-
WW1	NM	-	-	927.04	-	-
WW2	NM	-	-	927.36	-	-
WW3	NM	-	-	926.73	-	-

Notes: Notes:
 * Groundwater elevatic* Groundwater elevation collected on August 24, 2009
 Survey elevation is sSurvey elevation is suspect; location will be re-surveyed.
 ^Suspect elevation attr^Suspect elevation attributed to sampling conditions or recording errors
 NM - Not Measured NM - Not Measured

916.40 916.40
 Piezometer and Surface Water Staff Gauge Location
 Surface Water Staff Gauge Locations
 Surface Water Elevation

2B-W-12¹ - was installk2B-W-12¹ - was installed at an angle of 14 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-45² - was installk2B-W-45² - was installed at an angle of 20 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-46³ - was installk2B-W-46³ - was installed at an angle of 30 degrees from vertical. All potentiometric elevations have been corrected to vertical.

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	2/24/2009			3/23/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
1A-W-1	NM	-	-	921.74	-	-
1A-W-2	NM	-	-	922.20	-	Heavy Trace
1A-W-3	NM	-	-	919.96	-	Trace
1A-W-4	NM	-	-	920.56	-	-
1A-W-5	NM	-	-	919.38	-	-
1B-W-2	923.09	-	-	922.70	-	-
1B-W-3	922.06	-	-	921.98	-	-
1B-W-23	Well Not Installed			922.00	-	-
1C-W-1	NM	-	-	923.25	-	-
1C-W-2	925.54	-	-	925.68	-	-
1C-W-3	NM	-	-	922.86	-	-
1C-W-4	NM	-	-	922.50	-	-
1C-W-7	Well Not Installed			923.35	-	-
1C-W-8	Well Not Installed			Well Not Installed		
2A-W-3	NM	-	-	NM	-	-
2A-W-4	NM	-	-	926.31	-	Heavy Trace
2A-W-5	926.82	-	-	927.55	-	-
2A-W-7	926.22	-	-	926.49	-	-
2A-W-8	NM	-	-	928.02	-	-
2A-W-9	927.57	-	-	928.02	-	-
2A-W-10	928.88	-	-	929.16	-	-
2A-W-11	927.47	-	Heavy Trace	927.50	-	-
2A-W-40	Well Not Installed			Well Installed 3/23/09		
2A-W-41	Well Not Installed			Well Not Installed		
2A-W-42	Well Not Installed			Well Not Installed		
2B-B-21	NM	-	-	922.75**	-	-
2B-W-4	928.58	-	-	928.92	-	-
2B-W-11	927.47	930.25	-	929.69	930.14	-
2B-W-12 ¹	929.07	929.65	-	929.28	NM	-
2B-W-13	928.79	929.32	-	928.90	NM	-
2B-W-14	928.85	929.15	-	928.94	NM	-
2B-W-15	927.03	Dry	-	NM	929.19	-
2B-W-19	NM	-	-	929.19	-	-
2B-W-21	927.52	-	-	932.00^	-	-
2B-W-30	925.93	-	-	926.83	-	-
2B-W-32	NM	-	-	928.78	-	-
2B-W-33	929.89	-	-	930.41	-	-
2B-W-45 ²	926.12	-	-	926.37	-	-
2B-W-46 ³	926.50	-	-	927.14	-	-
3-W-41	Well Not Installed			Well Not Installed		
3-W-42	Well Not Installed			Well Not Installed		
3-W-43	Well Not Installed			Well Not Installed		
5-W-1	NM	-	-	NM	-	-
5-W-2	NM	-	-	919.50	-	Heavy Trace
5-W-3	NM	-	-	918.34	-	Trace
5-W-4	NM	-	-	920.01	-	-
5-W-14	NM	-	-	917.33	-	-
5-W-15	NM	-	-	917.40	-	-
5-W-16	NM	-	-	917.07	-	-
5-W-17	NM	-	-	917.15	-	-
5-W-18	NM	-	-	917.03	-	-
5-W-19	NM	-	-	916.82	-	-
5-W-20	NM	-	-	916.70	-	-
5-W-42	NM	-	-	916.80	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	2/24/2009			3/23/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
5-W-43	Well Not Installed			Well Installed 3/27/09		
5-W-50	NM	-	-	918.14	-	-
5-W-51	NM	-	-	918.23	-	Heavy Trace
5-W-52	NM	-	-	919.77	-	-
5-W-53	NM	-	-	918.94	-	-
5-W-54	NM	-	-	918.35	-	-
5-W-55	NM	-	-	917.83	-	-
5-W-56	NM	-	-	918.04	-	-
EW-1	Well Not Installed			Well Installed 3/26/09		
GW-1	Well Not Installed			Well Installed 3/23/09		
GW-2	Well Installed 3/20/09			921.72	-	-
GW-3	Well Installed 3/17/09			922.01	-	-
GW-4	Well Installed 3/19/09			923.86	-	-
IW-01	924.216	-	-	923.756	-	-
IW-02	925.665	-	-	926.065	-	-
MW-1	926.53	-	-	926.96	-	-
MW-2	926.89	-	-	927.35	-	-
MW-3	929.52	-	-	929.56	-	-
MW-4	929.70	-	-	929.63	-	-
MW-5	NM	-	-	927.83	-	-
MW-7	925.71	-	-	926.14	-	-
MW-9	925.63	-	-	926.48	-	-
MW-10	926.26	-	-	927	-	-
MW-11	NM	-	-	NM	-	-
MW-12	927.05	-	-	927.45	-	-
MW-13	926.34	-	-	926.74	-	-
MW-14	925.80	-	-	926.37	-	-
MW-15	924.85	-	-	925.65	-	-
MW-16	920.42	-	-	920.86	-	-
MW-17	NM	-	-	928.46	-	Heavy Trace
MW-18	926.52	-	-	927.19	-	-
MW-22	NM	-	-	917.77	-	Heavy Trace
MW-26	920.87	-	-	NM	-	-
MW-28	NM	-	-	927.46	-	-
MW-32	NM	-	-	920.24	-	-
MW-35	Well Destroyed during Construction			Well Destroyed during Construction		
MW-36	NM	-	-	921.09	-	Heavy Trace
MW-38	Well Destroyed during Construction			Well Destroyed during Construction		
MW-38R	Well Installed 3/2/09			918.30	-	-
MW-39	928.56	-	-	928.64	-	-
MW-40	925.07	-	-	925.82	-	-
PW-01	921.26	-	-	921.82	-	-
PW-03	921.35	-	-	922.05	-	-
PW-04	924.06	-	-	923.66	-	-
PZ-1	925.5	-	-	925.74	-	-
PZ-2N	923.39	-	-	923.42	-	-
PZ-2S	927.096	-	-	927.286	-	-
PZ-3N	921.45	-	-	922.14	-	-
PZ-3S	925.74	-	-	926.38	-	-
PZ-4N	921.457	-	-	922.147	-	-
PZ-4S	925.35	-	-	925.98	-	-
PZ-5N	921.26	-	-	919.98**	-	-
PZ-5S	925.35	-	-	925.89	-	-
PZ-6N	921.407	-	-	922.057	-	-
PZ-6S	924.92	-	-	925.35	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	2/24/2009			3/23/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
PZ-7N	921.50	-	-	921.87	-	-
PZ-7S	923.76	-	-	924.65	-	-
PZ-8	920.70	-	-	921.005	-	-
RW-01	NM	-	-	922.08	-	-
RW-02	Well Not Installed			922.06	-	-
RW-03	Well Not Installed			922.11	-	-
RW-04	Well Not Installed			NM	-	-
RW-05	Well Not Installed			921.97	-	-
RW-06	921.38	-	-	922.03	-	-
CV	921.36	-	-	922.10	-	-
EV	922.67^	-	-	923.75	-	-
FWV	NM	-	-	921.65	-	-
WV	921.34	-	-	922.03	-	-
SK1**	NM	-	-	923.94	-	-
SK2**	NM	-	-	919.13	-	-
SK3**	NM	-	-	918.35	-	-
SK4**	NM	-	-	917.96	-	-
SK5**	NM	-	-	916.53	-	-
ML1	NM	-	-	dry	-	-
ML2	NM	-	-	dry	-	-
ML3	NM	-	-	dry	-	-
ML4	NM	-	-	dry	-	-
WW1	NM	-	-	926.95	-	-
WW2	NM	-	-	927.25	-	-
WW3	NM	-	-	926.65	-	-

Notes: Notes:
 * Groundwater elevatic* Groundwater elevation collected on August 24, 2009
 Survey elevation is sSurvey elevation is suspect; location will be re-surveyed.
 ^Suspect elevation attr^Suspect elevation attributed to sampling conditions or recording errors
 NM - Not Measured NM - Not Measured

916.40 916.40
 Piezometer and Surface Water Staff Gauge Location
 Surface Water Staff Gauge Locations
 Surface Water Elevation

2B-W-12¹ - was installk2B-W-12¹ - was installed at an angle of 14 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-45² - was installk2B-W-45² - was installed at an angle of 20 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-46³ - was installk2B-W-46³ - was installed at an angle of 30 degrees from vertical. All potentiometric elevations have been corrected to vertical.

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	4/21/2009			5/12/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
1A-W-1	NM	-	-	NM	-	-
1A-W-2	Well Abandoned 3/24/09			Well Abandoned 3/24/09		
1A-W-3	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
1A-W-4	NM	-	-	NM	-	-
1A-W-5	NM	-	-	NM	-	-
1B-W-2	922.21	-	-	922.89	-	-
1B-W-3	921.91	-	-	922.51	-	-
1B-W-23	NM	-	-	NM	-	-
1C-W-1	923.42	-	-	923.86	-	-
1C-W-2	926.71	-	-	927.09	-	-
1C-W-3	NM	-	-	NM	-	-
1C-W-4	NM	-	-	NM	-	-
1C-W-7	923.28	-	-	923.75	-	-
1C-W-8	921.69	-	-	922.18	-	-
2A-W-3	925.56	-	Heavy Trace	925.99	-	Trace
2A-W-4	926.84	-	0.91	926.62	-	0.22
2A-W-5	927.68	-	-	927.84	-	-
2A-W-7	927.15	-	-	927.47	-	-
2A-W-8	NM	-	-	NM	-	-
2A-W-9	927.93	-	-	928.05	-	-
2A-W-10	929.22	-	-	929.45	-	-
2A-W-11	927.31	-	Trace	927.51	-	Light Trace
2A-W-40	NM	-	-	NM	-	-
2A-W-41	NM	-	-	NM	-	-
2A-W-42	NM	-	-	NM	-	-
2B-B-21	926.45	-	-	926.7	-	-
2B-W-4	929.21	-	-	929.41	-	-
2B-W-11	927.37	929.94	-	927.39	930.19	-
2B-W-12 ¹	929.33	929.43	-	929.53	929.64	-
2B-W-13	927.00	929.22	-	927.02	929.31	-
2B-W-14	928.82	Dry	-	928.97	929.15	-
2B-W-15	NM	Dry	-	927.29	Dry	-
2B-W-19	929.75	-	-	930.05	-	-
2B-W-21	928.25	-	-	928.43	-	-
2B-W-30	926.72	-	-	926.94	-	-
2B-W-32	929.2	-	-	929.41	-	-
2B-W-33	929.91	-	-	930.23	-	-
2B-W-45 ²	926.44	-	-	926.59	-	-
2B-W-46 ³	926.82	-	-	926.99	-	-
3-W-41	Well Not Installed			Well Not Installed		
3-W-42	Well Not Installed			Well Not Installed		
3-W-43	Well Not Installed			Well Not Installed		
5-W-1	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
5-W-2	920.07	-	Heavy Trace	920.48	-	Heavy Trace
5-W-3	919.35	-	Trace	919.76	-	Light Trace
5-W-4	NM	-	-	NM	-	-
5-W-14	NM	-	-	NM	-	-
5-W-15	NM	-	-	NM	-	-
5-W-16	NM	-	-	NM	-	-
5-W-17	NM	-	-	NM	-	-
5-W-18	NM	-	-	NM	-	-
5-W-19	NM	-	-	NM	-	-
5-W-20	NM	-	-	NM	-	-
5-W-42	NM	-	-	NM	-	-

Table 5-1

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	4/21/2009			5/12/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
5-W-43	NM	-	-	NM	-	-
5-W-50	NM	-	-	NM	-	-
5-W-51	NM	-	-	NM	-	-
5-W-52	NM	-	-	NM	-	-
5-W-53	NM	-	-	NM	-	-
5-W-54	NM	-	-	NM	-	-
5-W-55	NM	-	-	NM	-	-
5-W-56	NM	-	-	NM	-	-
EW-1	NM	-	-	NM	-	-
GW-1	NM	-	-	NM	-	-
GW-2	NM	-	-	NM	-	-
GW-3	NM	-	-	NM	-	-
GW-4	NM	-	-	NM	-	-
IW-01	924.026	-	-	NM	-	-
IW-02	925.675	-	-	NM	-	-
MW-1	927.73	-	-	927.85	-	-
MW-2	928.34	-	-	928.65	-	-
MW-3	929.49	-	-	930.53	-	-
MW-4	929.48	-	-	929.87	-	-
MW-5	927.66	-	-	927.83	-	-
MW-7	925.85	-	Trace	926.23	-	-
MW-9	926.28	-	-	926.78	-	-
MW-10	927.06	-	-	927.39	-	-
MW-11	927.04	-	Heavy Trace	927.62	-	Heavy Trace
MW-12	927.13	-	-	927.33	-	-
MW-13	926.5	-	-	926.71	-	-
MW-14	926.15	-	-	926.38	-	-
MW-15	925.45	-	-	925.7	-	-
MW-16	921	-	-	921.34	-	-
MW-17	928.57	-	Heavy Trace	928.95	-	Heavy Trace
MW-18	927.41	-	-	927.68	-	-
MW-22	NM	-	-	NM	-	-
MW-26	Well Abandoned 3/26/09			NM	-	-
MW-28	NM	-	-	NM	-	-
MW-32	NM	-	-	NM	-	-
MW-35	Well Destroyed during Construction			Well Destroyed during Construction		
MW-36	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
MW-38	Well Destroyed during Construction			Well Destroyed during Construction		
MW-38R	NM	-	-	NM	-	-
MW-39	928.62	-	-	928.57	-	-
MW-40	925.63	-	-	925.9	-	-
PW-01	921.74	-	-	NM	-	-
PW-03	922.06	-	-	NM	-	-
PW-04	923.91	-	-	NM	-	-
PZ-1	926.93	-	-	NM	-	-
PZ-2N	925.96	-	-	NM	-	-
PZ-2S	923.22	-	-	NM	-	-
PZ-3N	927.096	-	-	NM	-	-
PZ-3S	922.12	-	-	NM	-	-
PZ-4N	926.20	-	-	NM	-	-
PZ-4S	922.137	-	-	NM	-	-
PZ-5N	925.59	-	-	NM	-	-
PZ-5S	922.11	-	-	NM	-	-
PZ-6N	925.58	-	-	NM	-	-
PZ-6S	922.057	-	-	NM	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	4/21/2009			5/12/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
PZ-7N	921.90	-	-	NM	-	-
PZ-7S	924.51	-	-	NM	-	-
PZ-8	921.92	-	-	NM	-	-
RW-01	922.09	-	-	NM	-	-
RW-02	922.09	-	-	NM	-	-
RW-03	922.16	-	-	NM	-	-
RW-04	NM	-	-	NM	-	-
RW-05	922.03	-	-	NM	-	-
RW-06	922.06	-	-	NM	-	-
CV	922.10	-	-	NM	-	-
EV	924.02	-	-	NM	-	-
FWV	921.63	-	-	NM	-	-
WV	922.06	-	-	NM	-	-
SK1**	NM	-	-	NM	-	-
SK2**	NM	-	-	NM	-	-
SK3**	NM	-	-	NM	-	-
SK4**	NM	-	-	NM	-	-
SK5**	NM	-	-	NM	-	-
ML1	NM	-	-	NM	-	-
ML2	NM	-	-	NM	-	-
ML3	NM	-	-	NM	-	-
ML4	NM	-	-	NM	-	-
WW1	916.40	-	-	916.40	-	-
WW2	916.40	-	-	916.40	-	-
WW3	916.40	-	-	916.40	-	-

Notes: Notes:
 * Groundwater elevatic* Groundwater elevation collected on August 24, 2009
 Survey elevation is sSurvey elevation is suspect; location will be re-surveyed.
 ^Suspect elevation attr^Suspect elevation attributed to sampling conditions or recording errors
 NM - Not Measured NM - Not Measured

916.40 916.40
 Piezometer and Surface Water Staff Gauge Location
 Surface Water Staff Gauge Locations
 Surface Water Elevation

2B-W-12¹ - was installk2B-W-12¹ - was installed at an angle of 14 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-45² - was installk2B-W-45² - was installed at an angle of 20 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-46³ - was installk2B-W-46³ - was installed at an angle of 30 degrees from vertical. All potentiometric elevations have been corrected to vertical.

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	6/9/2009			7/28/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
1A-W-1	Well Covered from Construction Activities			Well Covered from Construction Activities		
1A-W-2	Well Abandoned 3/24/09			Well Abandoned 3/24/09		
1A-W-3	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
1A-W-4	NM	-	-	NM	-	-
1A-W-5	920.19	-	-	NM	-	-
1B-W-2	922.4	-	-	921.52	-	-
1B-W-3	922.2	-	-	921.22	-	-
1B-W-23	922.19	-	-	NM	-	-
1C-W-1	923.79	-	-	922.47	-	-
1C-W-2	926.81	-	-	924.86	-	-
1C-W-3	NM	-	-	NM	-	-
1C-W-4	NM	-	-	NM	-	-
1C-W-7	NM	-	-	922.18	-	-
1C-W-8	922.18	-	-	920.63	-	-
2A-W-3	924.63	-	Trace	922.83	-	Heavy Trace
2A-W-4	925.28	-	0.16	923.30	-	0.35
2A-W-5	927.16	-	-	925.19	-	-
2A-W-7	927.13	-	-	925.49	-	-
2A-W-8	NM	-	-	NM	-	-
2A-W-9	926.82	-	-	925.16	-	-
2A-W-10	928.06	-	-	925.9	-	-
2A-W-11	926.13	-	Trace	924.64	-	Trace
2A-W-40	922.36	-	-	NM	-	-
2A-W-41	922.22	-	-	NM	-	-
2A-W-42	923.43	-	-	NM	-	-
2B-B-21	925.11	-	-	923.73	-	-
2B-W-4	928.33	-	-	926.41	-	-
2B-W-11	928.74	929.70	-	926.29	Dry	-
2B-W-12 ¹	928.22	927.75	-	925.91	Dry	-
2B-W-13	927.33	Dry	-	925.38	Dry	-
2B-W-14	927.31	Dry	-	923.49	Dry	-
2B-W-15	925.76	Dry	-	924.52	Dry	-
2B-W-19	928.84	-	-	926.72	-	-
2B-W-21	927.3	-	-	925.71	-	-
2B-W-30	925.91	-	-	924.22	-	-
2B-W-32	928.34	-	-	926.47	-	-
2B-W-33	928.91	-	-	926.38	-	-
2B-W-45 ²	925.44	-	-	924.22	-	-
2B-W-46 ³	925.81	-	-	924.58	-	-
3-W-41	Well Not Installed			Well Installed 8/19/09		
3-W-42	Well Not Installed			Well Installed 8/14/09		
3-W-43	Well Not Installed			Well Installed 8/18/09		
5-W-1	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
5-W-2	919.98	-	0.24	918.00	-	Trace
5-W-3	919.34	-	Heavy Trace	917.47	-	Light Trace
5-W-4	NM	-	-	NM	-	-
5-W-14	918.53	-	-	NM	-	-
5-W-15	918.65	-	-	NM	-	-
5-W-16	918.38	-	-	NM	-	-
5-W-17	918.44	-	-	NM	-	-
5-W-18	918.38	-	-	NM	-	-
5-W-19	918.21	-	-	NM	-	-
5-W-20	918.12	-	-	NM	-	-
5-W-42	915.65	-	-	NM	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	6/9/2009			7/28/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
5-W-43	919.97	-	-	NM	-	-
5-W-50	919.15	-	-	NM	-	-
5-W-51	919.38	-	Trace	NM	-	-
5-W-52	920.05	-	-	NM	-	-
5-W-53	919.26	-	-	NM	-	-
5-W-54	918.63	-	-	NM	-	-
5-W-55	918.25	-	-	NM	-	-
5-W-56	918.70	-	-	NM	-	-
EW-1	919.94	-	-	NM	-	-
GW-1	921.09	-	-	NM	-	-
GW-2	922.07	-	-	NM	-	-
GW-3	922.12	-	-	NM	-	-
GW-4	924.78	-	-	NM	-	-
IW-01	925.16	-	-	NM	-	-
IW-02	924.9	-	-	NM	-	-
MW-1	927.59	-	-	925.71	-	-
MW-2	928.09	-	-	926.01	-	-
MW-3	NM	-	-	926.4	-	-
MW-4	928.46	-	-	926.13	-	-
MW-5	926.69	-	-	925.03	-	-
MW-7	924.76	-	-	923.04	-	-
MW-9	925.53	-	-	923.78	-	-
MW-10	926.66	-	-	924.74	-	-
MW-11	927.04	-	Heavy Trace	925.06	-	Trace
MW-12	925.79	-	-	924.44	-	-
MW-13	925.22	-	-	923.91	-	-
MW-14	924.98	-	-	923.56	-	-
MW-15	924.37	-	-	922.69	-	-
MW-16	920.67	-	-	919.52	-	-
MW-17	928.2	-	Heavy Trace	NM	-	-
MW-18	927.08	-	-	925.14	-	-
MW-22	918.83	-	Trace	NM	-	-
MW-26	928.62	-	-	NM	-	-
MW-28	NM	-	-	NM	-	-
MW-32	NM	-	-	NM	-	-
MW-35	Well Destroyed during Construction			Well Destroyed during Construction		
MW-36	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
MW-38	Well Destroyed during Construction			Well Destroyed during Construction		
MW-38R	918.46	-	-	917.34	-	-
MW-39	927.32	-	-	925.71	-	-
MW-40	924.54	-	-	922.88	-	-
PW-01	922.1	-	-	NM	-	-
PW-03	922.29	-	-	NM	-	-
PW-04	925.08	-	-	NM	-	-
PZ-1	926.27	-	-	NM	-	-
PZ-2N	923.76	-	-	NM	-	-
PZ-2S	926.826	-	-	NM	-	-
PZ-3N	922.30	-	-	NM	-	-
PZ-3S	925.62	-	-	NM	-	-
PZ-4N	922.307	-	-	NM	-	-
PZ-4S	924.95	-	-	NM	-	-
PZ-5N	922.25	-	-	NM	-	-
PZ-5S	924.63	-	-	NM	-	-
PZ-6N	922.207	-	-	NM	-	-
PZ-6S	924.33	-	-	NM	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	6/9/2009			7/28/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
PZ-7N	922.05	-	-	NM	-	-
PZ-7S	923.63	-	-	NM	-	-
PZ-8	920.815	-	-	NM	-	-
RW-01	922.31	-	-	NM	-	-
RW-02	NM	-	-	NM	-	-
RW-03	NM	-	-	NM	-	-
RW-04	NM	-	-	NM	-	-
RW-05	NM	-	-	NM	-	-
RW-06	922.19	-	-	NM	-	-
CV	921.30	-	-	NM	-	-
EV	925.14	-	-	NM	-	-
FWV	921.61	-	-	NM	-	-
WV	922.17	-	-	NM	-	-
SK1**	NM	-	-	NM	-	-
SK2**	NM	-	-	NM	-	-
SK3**	NM	-	-	NM	-	-
SK4**	NM	-	-	NM	-	-
SK5**	NM	-	-	NM	-	-
ML1	NM	-	-	NM	-	-
ML2	NM	-	-	NM	-	-
ML3	NM	-	-	NM	-	-
ML4	NM	-	-	NM	-	-
WW1	926.89	-	-	926.48	-	-
WW2	927.23	-	-	926.85	-	-
WW3	926.65	-	-	926.3	-	-

Notes: Notes:
 * Groundwater elevatic* Groundwater elevation collected on August 24, 2009
 Survey elevation is sSurvey elevation is suspect; location will be re-surveyed.
 ^Suspect elevation attr^Suspect elevation attributed to sampling conditions or recording errors
 NM - Not Measured NM - Not Measured

916.40 916.40
 Piezometer and Surface Water Staff Gauge Location
 Surface Water Staff Gauge Locations
 Surface Water Elevation

2B-W-12¹ - was installk2B-W-12¹ - was installed at an angle of 14 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-45² - was installk2B-W-45² - was installed at an angle of 20 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-46³ - was installk2B-W-46³ - was installed at an angle of 30 degrees from vertical. All potentiometric elevations have been corrected to vertical.

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	8/25/2009			9/21/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
1A-W-1	Well Covered from Construction Activities			Well Covered from Construction Activities		
1A-W-2	Well Abandoned 3/24/09			Well Abandoned 3/24/09		
1A-W-3	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
1A-W-4	NM			918.64		
1A-W-5	NM			917.50		
1B-W-2	921.54	-	-	921.56	-	-
1B-W-3	921.14	-	-	921.11	-	-
1B-W-23	NM	-	-	918.38	-	-
1C-W-1	922.22	-	-	922.25	-	-
1C-W-2	924.27	-	-	924.18	-	-
1C-W-3	NM	-	-	921.78	-	-
1C-W-4	NM	-	-	921.85	-	-
1C-W-7	922.06	-	-	922.18	-	-
1C-W-8	920.47	-	-	920.6	-	-
2A-W-3	922.07	-	Heavy Trace	921.36	-	Heavy trace
2A-W-4	922.67	-	0.31	NM	-	2.47
2A-W-5	924.46	-	-	924.51	-	-
2A-W-7	924.9	-	-	924.94	-	-
2A-W-8		-	-	926.17	-	-
2A-W-9	924.35	-	-	924.39	-	-
2A-W-10	925.04	-	-	925.25	-	-
2A-W-11	923.97	-	Heavy Trace	924.02	-	trace
2A-W-40	NM	-	-	919.61	-	-
2A-W-41	NM	-	-	916.37	-	-
2A-W-42	NM	-	-	921.98	-	-
2B-B-21	923.12	-	-	923.16	-	-
2B-W-4	925.45	-	-	925.79	-	-
2B-W-11	925.39	Dry	-	925.68	Dry	-
2B-W-12 ¹	925.06	Dry	-	925.28	Dry	-
2B-W-13	924.47	Dry	-	924.57	Dry	-
2B-W-14	924.65	Dry	-	924.81	Dry	-
2B-W-15	924.52	Dry	-	NM	NM	-
2B-W-19	925.67	-	-	926.05	-	-
2B-W-21	924.86	-	-	925.15	-	-
2B-W-30	923.5	-	-	923.43	-	-
2B-W-32	925.5	-	-	925.85	-	-
2B-W-33	925.44	-	-	925.7	-	-
2B-W-45 ²	923.61	-	-	923.71	-	-
2B-W-46 ³	923.94	-	-	924.07	-	-
3-W-41	919.54	-	-	920.09	-	-
3-W-42	920.36	-	-	920.58	-	-
3-W-43	922.74	-	-	923.06	-	-
5-W-1	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
5-W-2	NM	-	-	916.33	-	Heavy Trace
5-W-3	NM	-	-	916.36	-	0.88
5-W-4	NM	-	-	916.75	-	-
5-W-14	NM	-	-	916.27	-	-
5-W-15	NM	-	-	916.35	-	-
5-W-16	NM	-	-	916.2	-	-
5-W-17	NM	-	-	916.21	-	-
5-W-18	NM	-	-	916.18	-	-
5-W-19	NM	-	-	916.07	-	-
5-W-20	NM	-	-	916.04	-	-
5-W-42	NM	-	-	915.87	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	8/25/2009			9/21/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
5-W-43	NM	-	-	917.54	-	-
5-W-50	NM	-	-	916.69	-	-
5-W-51	NM	-	-	916.6	-	Trace
5-W-52	NM	-	-	917.02	-	-
5-W-53	NM	-	-	917.00	-	-
5-W-54	NM	-	-	916.77	-	-
5-W-55	NM	-	-	916.36	-	-
5-W-56	NM	-	-	916.35	-	-
EW-1	NM	-	-	917.67	-	-
GW-1	NM	-	-	917.06	-	-
GW-2	NM	-	-	916.42	-	-
GW-3	NM	-	-	919.51	-	-
GW-4	NM	-	-	923.52	-	-
IW-01	923.54*	-	-	NM	-	-
IW-02	922.44*	-	-	NM	-	-
MW-1	NM	-	-	925.10	-	-
MW-2	NM	-	-	925.35	-	-
MW-3	NM	-	-	925.73	-	-
MW-4	925.32	-	-	925.55	-	-
MW-5	924.23	-	-	924.29	-	-
MW-7	922.38	-	-	922.01	-	-
MW-9	923.02	-	-	922.75	-	-
MW-10	NM	-	-	924.07	-	-
MW-11	NM	-	-	924.46	-	-
MW-12	NM	-	-	923.87	-	-
MW-13	NM	-	-	923.42	-	-
MW-14	NM	-	-	923.03	-	-
MW-15	NM	-	-	921.6	-	-
MW-16	NM	-	-	918.78	-	-
MW-17	NM	-	-	NM	-	-
MW-18	NM	-	-	924.49	-	-
MW-22	NM	-	-	916.12	-	Trace
MW-26	NM	-	-	NM	-	-
MW-28	NM	-	-	924.97	-	-
MW-32	NM	-	-	915.78	-	-
MW-35	Well Destroyed during Construction			Well Destroyed during Construction		
MW-36	Well Abandoned 3/26/09			Well Abandoned 3/26/09		
MW-38	Well Destroyed during Construction			Well Destroyed during Construction		
MW-38R	916.68	-	-	916.57	-	-
MW-39	925.02	-	Trace	925.17	-	-
MW-40	922.17	-	-	921.87	-	-
PW-01	919.72*	-	-	NM	-	-
PW-03	919.97*	-	-	NM	-	-
PW-04	923.46*	-	-	NM	-	-
PZ-1	924.1*	-	-	924.12	-	-
PZ-2N	922.13*	-	-	922.18	-	-
PZ-2S	924.17*	-	-	924.116	-	-
PZ-3N	920.44*	-	-	920.39	-	-
PZ-3S	923.98*	-	-	922.72	-	-
PZ-4N	920.67*	-	-	920.627	-	-
PZ-4S	922.40*	-	-	921.96	-	-
PZ-5N	919.91*	-	-	917.56	-	-
PZ-5S	922.17*	-	-	921.31	-	-
PZ-6N	919.91*	-	-	916.687	-	-
PZ-6S	NM	-	-	919.54	-	-

Table 5-1 Fluid Level Elevations and Product Thicknesses

Well Number	8/25/2009			9/21/2009		
	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)	Potentiometric Elevation (NAVD88)	Wetland water elevation (NAVD88)	Product Thickness (feet)
PZ-7N	919.68*	-	-	916.945	-	-
PZ-7S	920.67*	-	-	919.27	-	-
PZ-8	919.08*	-	-	918.315	-	-
RW-01	919.99*	-	-	NM	-	-
RW-02	NM	-	-	919.58	-	-
RW-03	NM	-	-	919.8	-	-
RW-04	NM	-	-	NM	-	-
RW-05	NM	-	-	916.6	-	-
RW-06	919.86*	-	-	NM	-	-
CV	918.96*	-	-	918.65	-	-
EV	923.5*	-	-	923.55	-	-
FWV	920.12*	-	-	918.96	-	-
WV	919.86*	-	-	916.65	-	-
SK1**	NM	-	-	923.31	-	-
SK2**	NM	-	-	917.73	-	-
SK3**	NM	-	-	917.57	-	-
SK4**	NM	-	-	916.87	-	-
SK5**	NM	-	-	916.06	-	-
ML1	NM	-	-	dry	-	-
ML2	NM	-	-	dry	-	-
ML3	NM	-	-	dry	-	-
ML4	NM	-	-	dry	-	-
WW1	Dry	-	-	Dry	-	-
WW2	Dry	-	-	Dry	-	-
WW3	Dry	-	-	Dry	-	-

Notes: Notes:
 * Groundwater elevatic* Groundwater elevation collected on August 24, 2009
 Survey elevation is sSurvey elevation is suspect; location will be re-surveyed.
 ^Suspect elevation attr^Suspect elevation attributed to sampling conditions or recording errors
 NM - Not Measured NM - Not Measured

916.40 916.40
 Piezometer and Surface Water Staff Gauge Location
 Surface Water Staff Gauge Locations
 Surface Water Elevation

2B-W-12¹ - was installk2B-W-12¹ - was installed at an angle of 14 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-45² - was installk2B-W-45² - was installed at an angle of 20 degrees from vertical. All potentiometric elevations have been corrected to vertical.
 2B-W-46³ - was installk2B-W-46³ - was installed at an angle of 30 degrees from vertical. All potentiometric elevations have been corrected to vertical.

Table 5-2 Stabilized Groundwater Field Parameter Measurements

Well	Sample Date	Field Parameters						
		Time	pH	Conductivity	Temperature	ORP	Dissolved Oxygen	Turbidity
	Units:			(µmhos/cm)	(°C)	(mV)	(mg/L)	(NTU)
1A-W-1	24-Mar-09	1152	5.69	81	6.21	157.4	4.21	2.98
	21-Sep-09	Well was within construction area and unable to be sampled.						
1A-W-3	23-Mar-09	1722	6.16	94	6.03	93.4	2.47	17.96
	23-Sep-08	Well Abandoned on March 26, 2009.						
1A-W-4	24-Mar-09	1051	6.40	62	5.9	136.8	6.07	1.39
	23-Sep-09	1735	6.44	66	11.73	-140.7	6.53	0.51
1A-W-5	24-Mar-09	959	6.39	58	3.56	143.8	6.10	1.42
	24-Sep-09	1115	6.47	59	8.68	140.3	7.56	1.43
1B-W-2	24-Mar-09	1400	5.25	376	5.44	179.1	4.93	1.98
	23-Sep-09	1552	5.82	342	16.26	-150.9	0.37	5.26
1B-W-3	24-Mar-09	1256	6.25	83	5.89	112.5	3.05	3.01
	23-Sep-09	1437	6.37	88	13.39	-161.8	1.17	2.35
1B-W-23	1-Apr-09	1039	6.35	159	5.20	170.0	7.76	1.71
	11-Jun-09	1029	6.00	68	9.27	114.3	4.31	1.97
	23-Sep-09	Parameters not stabilized. Water drawdown during purge.						
1C-W-1	25-Mar-09	1243	5.69	43	4.71	178.8	7.23	2.59
	21-Apr-09	1600	5.20	63	9.69	178.2	5.67	ND
	12-May-09	1618	5.30	56	6.71	-44.6	6.74	0.96
	9-Jun-09	1634	5.67	53	11.17	164.4	6.80	2.59
	28-Jul-09	1045	5.27	48	11.10	254.1	6.46	1.41
	25-Aug-09	959	4.91	44	10.50	204.0	5.82	4.91
	22-Sep-09	914	5.74	54	11.57	-112.1	5.22	0.95
1C-W-2	25-Mar-09	1138	5.55	47	3.83	172.9	6.27	2.09
	22-Sep-09	1630	5.67	71	12.56	-127.0	3.67	0.04
1C-W-3	24-Mar-09	1055	5.62	49	4.89	214.8	7.6	38.0
	22-Sep-09	1142	5.94	72	20.73	-88.8	4.96	71.4
1C-W-4	24-Mar-09	1144	5.49	86	6.02	218.7	0.72	2.80
	22-Sep-09	1354	5.70	54	11.40	-145.5	0.50	1.03
1C-W-7	21-Apr-09	1455	5.71	70	11.50	-225.9	0.15	0.06
	12-May-09	1518	5.56	70	7.94	-104.8	0.52	0.85
	10-Jun-09	1536	5.94	83	13.10	-1	ND	3.51
	28-Jul-09	1229	6.89	90	15.44	24.2	6.30	5.65
	25-Aug-09	1156	6.51	83	11.81	157.0	7.70	2.35
	22-Sep-09	1455	6.88	114	14.57	-120.1	7.73	1.80

Table 5-2

Table 5-2 Stabilized Groundwater Field Parameter Measurements

Well	Sample Date	Field Parameters						
		Time	pH	Conductivity	Temperature	ORP	Dissolved Oxygen	Turbidity
Units:				(µmhos/cm)	(°C)	(mV)	(mg/L)	(NTU)
1C-W-8	21-Apr-09	1651	5.36	90	14.70	-210.3	0.50	1.43
	12-May-09	1703	5.31	40	6.86	-120.7	1.84	2.31
	9-Jun-09	1656	5.26	74	16.30	90.0	2.59	1.06
	28-Jul-09	1140	5.49	46	10.37	43.9	0.29	NM
	25-Aug-09	1055	5.31	63	12.05	179.0	0.67	1.34
	22-Sep-09	954	5.93	60	14.49	-129.2	0.42	0.95
2A-W-9	25-Mar-09	904	5.65	111	1.76	126.7	0.50	2.31
	23-Sep-09	1125	5.66	88	12.3	17.0	0.03	3.39
2A-W-10	24-Mar-09	1252	5.31	38	2.66	246.7	6.06	1.41
	21-Sep-09	1624	5.10	42	11.40	157.4	0.50	3.44
2A-W-11	24-Mar-09	Product in discharge line. No parameters collected.						
	22-Sep-09							
2A-W-40	1-Apr-09	1728	6.95	122	3.8	64	4.52	5.31
	10-Jun-09	1429	6.5	66	13.02	119	3.8	1.84
	24-Sep-09	913	6.48	43	9.35	224.9	4.77	1.04
2A-W-41	1-Apr-09	944	5.95	111	5.7	183	6.24	3.18
	10-Jun-09	1656	6.24	79	11.7	87.4	4.14	0.96
	24-Sep-09	1021	6.33	103	9.54	169.2	6.38	1.11
2A-W-42	1-Apr-09	1256	6.55	132	5.4	119	8.89	2.23
	10-Jun-09	1254	6.22	117	11.19	103.5	2.04	1.78
	23-Sep-09	856	5.91	102	10.39	-143.2	1.07	0.33
2B-W-4	23-Mar-09	1617	5.98	24	3.50	153.0	0.61	0.85
	21-Sep-09	1622	5.76	66	12.53	-27.3	1.60	ND
2B-W-45	17-Dec-08	808	5.71	34	6.9	162	2.98	2.01
	24-Mar-09	1511	5.45	46	3.69	239.8	8.5	0.98
	11-Jun-09	926	5.61	54	9.2	179	1.02	5.94
	23-Sep-09	1011	5.63	61	10.9	148	1.67	2.49
2B-W-46	17-Dec-08	852	5.83	39	8.7	175	3.6	1.44
	24-Mar-09	1432	5.68	40	5.41	220.3	3.42	0.72
	11-Jun-09	1006	5.7	52	8.4	182	1.23	3.97
	23-Sep-09	930	5.58	69	10.6	193	2.5	1.00
3-W-41	25-Aug-09	1328	6.17	102	11.55	43.2	0.64	1.75
	23-Sep-09	1503	6.19	99	15.4	-27	ND	8.03
3-W-42	25-Aug-09	1432	6.13	52	13.81	52.3	3.62	0.86
	23-Sep-09	1557	6.7	108	15.8	-15	0.89	4.14
3-W-43	25-Aug-09	1520	6.06	91	14.09	75.6	1.81	1.72
	23-Sep-09	1642	6.4	67	15	23	0.6	1.72
5-W-4	25-Mar-09	1344	6.33	93	4.7	146.4	2.04	1.25
	23-Sep-09	1802	6.28	117	14.0	29.1	0.19	1.00

Table 5-2

Table 5-2 Stabilized Groundwater Field Parameter Measurements

Well	Sample Date	Field Parameters						
		Time	pH	Conductivity (µmhos/cm)	Temperature (°C)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
Units:								
5-W-14	17-Dec-08	1244	6.17	89	4.99	104.6	5.44	2.70
	24-Mar-09	0917	6.21	53	6.26	185.1	5.46	1.11
	10-Jun-09	922	6.09	100	10.7	122.0	1.73	0.79
	23-Sep-09	1116	6.50	60	9.32	71.1	5.89	0.88
5-W-15	17-Dec-08	1437	6.53	72	6.8	-34	0.43	178.0
	25-Mar-09	1205	6.61	72	5.87	4.90	0.18	17.00
	10-Jun-09	1104	6.28	114	11.7	-34	ND	49.70
	23-Sep-09	1333	6.76	100	12.7	42.5	0.21	10.8
5-W-16	17-Dec-08	1406	6.31	56	0.5	137.2	12.0	3.90
	25-Mar-09	1002	6.75	35	3.29	183.9	10.33	7.65
	10-Jun-09	1012	6.32	61	11.3	112.0	3.47	3.83
	23-Sep-09	1023	6.90	53	12.8	52.7	5.69	1.00
5-W-17	17-Dec-08	1320	6.14	45	4.8	108.0	2.91	NM
	25-Mar-09	1619	6.14	48	6.62	102.7	4.87	NM
	10-Jun-09	1319	6.11	76	11.30	40.0	1.18	4.47
	23-Sep-09	922	6.30	56	9.2	69.8	5.64	0.71
5-W-18	17-Dec-08	1540	6.15	168	4.7	47.0	0.69	NM
	25-Mar-09	1301	6.27	92	5.29	-1.4	0.32	7.45
	10-Jun-09	1445	5.97	92	12.50	17.0	ND	12.40
	22-Sep-09	1452	6.56	74	13.9	42.5	0.17	3.29
5-W-19	17-Dec-08	1119	6.09	65	4.6	62.1	5.08	2.90
	25-Mar-09	1401	6.24	41	5.96	40.4	6.36	0.45
	10-Jun-09	1627	6.09	68	12.30	62.0	1.41	5.01
	23-Sep-09	1517	6.47	50	10.8	32.3	5.71	0.39
5-W-20	17-Dec-08	1021	6.15	161	6.5	25.2	0.50	5.20
	25-Mar-09	1516	6.36	107	5.86	78.8	0.28	2.31
	10-Jun-09	1745	6.14	153	11.50	36.0	ND	5.31
	23-Sep-09	1609	6.69	88	13.1	14.1	0.22	0.93
5-W-42	17-Dec-08	851	6.18	83	6.10	61.5	3.01	4.00
	25-Mar-09	1625	6.33	54	5.40	80.7	4.63	1.95
	10-Jun-09	1756	6.30	105	10.32	-47.1	1.35	1.72
	23-Sep-09	1431	6.49	109	13.24	23.0	0.36	5.00

Table 5-2

Table 5-2 Stabilized Groundwater Field Parameter Measurements

Well	Sample Date	Field Parameters						
		Time	pH	Conductivity	Temperature	ORP	Dissolved Oxygen	Turbidity
	Units:			(µmhos/cm)	(°C)	(mV)	(mg/L)	(NTU)
5-W-43	2-Apr-09	937	6.47	12	3.30	130.0	6.18	3.81
	10-Jun-09	1040	6.29	101	11.05	168.1	0.96	1.61
	7-Jul-09	1219	6.07	72	9.11	17.6	0.31	2.67
	23-Sep-09	1725	5.96	49	11.05	48.8	1.27	6.81
5-W-50	25-Mar-09	1539	5.46	32	3.81	106.0	0.44	3.09
	23-Sep-09	845	5.86	88	12.69	79.3	0.21	2.57
5-W-51	24-Mar-09 22-Sep-09	Product in discharge line. No parameters collected.						
5-W-52	24-Mar-09	1602	6.22	109	4.66	-16.3	3.17	1.00
	22-Sep-09	1002	6.38	94	12.96	108.5	0.41	2.21
5-W-53	24-Mar-09	947	5.89	78	4.70	213.6	5.89	8.24
	22-Sep-09	1052	6.33	93	17.23	83.7	0.34	2.69
5-W-54	25-Mar-09	1447	6.06	56	4.43	98.9	9.33	2.08
	22-Sep-09	1147	6.08	60	14.22	91.9	0.41	2.64
5-W-55	24-Mar-09	914	5.82	44	5.48	209.1	8.65	0.94
	22-Sep-09	1636	5.99	64	14.22	40.0	0.22	3.46
5-W-56	24-Mar-09	1656	6.06	14	4.33	33.6	10.06	3.92
	22-Sep-09	1545	6.29	417*	19.63	34.9	0.21	2.53
EW-1	2-Apr-09	1026	6.33	40	3.10	152.0	6.72	0.04
	10-Jun-09	957	5.70	47	11.71	190.1	1.46	1.20
	23-Sep-09	1839	5.85	31	9.22	73.3	0.56	0.67
GW-1	2-Apr-09	840	6.19	140	3.30	148.0	4.21	1.09
	10-Jun-09	1550	6.64	106	11.00	-33.1	0.66	1.61
	24-Sep-09	1021	6.22	118	12.22	-185.1	0.24	1.54
GW-2	1-Apr-09	1609	6.77	180	4.20	40.0	4.25	2.73
	10-Jun-09	1344	6.18	108	12.51	120.8	1.17	1.63
	7-Jul-09	1110	5.80	70	10.46	70.2	0.62	2.91
	28-Jul-09	1427	5.58	71	12.88	129.7	0.21	0.84
	25-Aug-09	1639	6.30	180	14.01	53.8	0.45	0.77
	24-Sep-09	915	6.23	78	10.88	-165.6	1.09	0.73
GW-3	1-Apr-09	1151	6.45	96	6.70	103.0	6.03	1.28
	11-Jun-09	929	5.97	66	8.72	45.4	3.80	1.87
	23-Sep-09	1254	6.26	82	13.20	-169.7	0.08	35.70
GW-4	1-Apr-09	1418	7.04	194	6.60	-47	4.41	11.76
	10-Jun-09	1203	6.87	147	11.88	58.6	1.03	1.90
	22-Sep-09	1713	6.13	95	12.60	-137.4	0.82	2.46
MW-3	24-Mar-09	1557	5.67	23	1.8	171.6	8.36	0.94
	23-Sep-09	1318	6.64	17	17.3	69.0	0.05	37.0

Table 5-2

Table 5-2 Stabilized Groundwater Field Parameter Measurements

Well	Sample Date	Field Parameters						
		Time	pH	Conductivity	Temperature	ORP	Dissolved Oxygen	Turbidity
	Units:			(µmhos/cm)	(°C)	(mV)	(mg/L)	(NTU)
MW-4	24-Mar-09	1702	5.65	20	1.82	177.40	7.15	2.19
	23-Sep-09	1355	5.80	53	15.9	-4	0.10	9.50
MW-16	25-Mar-09	1041	5.48	43	2.46	158.2	6.89	1.31
	23-Sep-09	1741	5.68	67	15.00	105.0	0.81	15.30
MW-38R	24-Mar-09	854	6.12	49	5.09	148.0	1.22	1.65
	22-Sep-09	1342	6.20	58	10.31	84.6	1.14	0.91
MW-39	26-Mar-08	Product in discharge line. No parameters collected.						
	22-Sep-09							

Notes:

2A-W-6 was removed from the sampling network in May 2008 as approved by the Department of Ecology and explained in the 2008 GW Monitoring Plan.

*Potential field error

ND = not detected

Table 5-3 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)		
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL				
Air Sparging System																						
1C-W-1	1C-W-1-0309	3/5/2009	159	J	142	472	NA				120	J	94.3	236	NA					279	NA	
1C-W-1	1C-W-1-032509	3/25/2009	162	J	142	472	NA				273	J	94.3	236	NA					435	NA	
1C-W-1	1C-W-1-040709	4/7/2009	ND		142	472	NA				141	J	94.3	236	NA					212	NA	
1C-W-1	1C-W-1-051209	5/12/2009	ND		40.6	118	NA				64.8	J	15.1	47.2	NA					85.1	NA	
1C-W-1	1C-W-1-0609	6/9/2009	ND		40.6	118	NA				ND		15.1	47.2	NA					27.9 (ND)	NA	
1C-W-1	1C-W-1-0709	7/28/2009	ND		18	95	NA				ND		23	48	NA					21 (ND)	NA	
1C-W-1	1C-W-1-0809	8/25/2009	ND		18	94	NA				ND		23	47	NA					21 (ND)	NA	
1C-W-1	1C-W-1-0909	9/22/2009	110		18	94	NA				86		23	47	NA					196	NA	
1C-W-7*	1C-W-7-040709	4/7/2009	227	J	142	472	NA				1450	J	94.3	236	NA					1677	NA	
1C-W-7*	1C-W-7-051209	5/12/2009	186		40.6	118	NA				578	J	15.1	47.2	NA					764	NA	
1C-W-7*	1C-W-7-0609	6/9/2009	ND		40.6	118	NA				287	J	15.1	47.2	NA					307.3	NA	
1C-W-7*	1C-W-7-0709	7/28/2009	ND		18	95	NA				250		23	48	NA					259	NA	
1C-W-7*	1C-W-7-0809	8/25/2009	ND		18	94	NA				300		23	47	NA					309	NA	
1C-W-7*	1C-W-7-0909	9/22/2009	130		18	94	NA				240		23	47	NA					370	NA	
1C-W-7* (FD)	1C-W-70-0909	9/22/2009	110		18	94	NA				250		23	47	NA					360	NA	
1C-W-8	1C-W-8-040709	4/7/2009	424	J	142	472	NA				3500	J	94.3	236	NA					3924	NA	
1C-W-8	1C-W-8-051209	5/12/2009	275		40.6	118	NA				901	J	15.1	47.2	NA					1176	NA	
1C-W-8	1C-W-8-0609	6/9/2009	ND		40.6	118	NA				434	J	15.1	47.2	NA					454.3	NA	
1C-W-8	1C-W-8-0709	7/28/2009	ND		18	95	NA				330		23	48	NA					339	NA	
1C-W-8	1C-W-8-0809	8/25/2009	ND		18	94	NA				380		23	47	NA					389	NA	
1C-W-8	1C-W-8-0909	9/22/2009	130		18	94	NA				400		23	47	NA					530	NA	
Maximum			424				NA				3500				NA					3924	NA	
Minimum			ND				NA				ND				NA						ND	NA
Average																				670.3**	NA	
Backfill and Downgradient of the Hydraulic Control and Containment System																						
1B-W-23	1B-W-23-0409	4/1/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA	
1B-W-23	1B-W-23-0609	6/11/2009	ND		40.6	118	NA				ND		15.1	47.2	NA					27.9 (ND)	NA	
1B-W-23	1B-W-23-0909	9/23/2009	310		18	94	NA				490		23	47	NA					800	NA	
1B-W-23 (FD)	1B-W-123-0409	4/1/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA	
1C-W-7*	1C-W-7-040709	4/7/2009	227	J	142	472	NA				1450	J	94.3	236	NA					1677	NA	
1C-W-7*	1C-W-7-051209	5/12/2009	186		40.6	118	NA				578	J	15.1	47.2	NA					764	NA	
1C-W-7*	1C-W-7-0609	6/9/2009	ND		40.6	118	NA				287	J	15.1	47.2	NA					307.3	NA	
1C-W-7*	1C-W-7-0709	7/28/2009	ND		18	95	NA				250		23	48	NA					259	NA	
1C-W-7*	1C-W-7-0809	8/25/2009	ND		18	94	NA				300		23	47	NA					309	NA	
1C-W-7*	1C-W-7-0909	9/22/2009	130		18	94	NA				240		23	47	NA					370	NA	
1C-W-7* (FD)	1C-W-70-0909	9/22/2009	110		18	94	NA				250		23	47	NA					360	NA	
2A-W-40	2A-W-40-0409	4/1/2009	ND		142	472	NA				220	J	94.3	236	NA					291	NA	
2A-W-40	2A-W-40-0609	6/10/2009	ND		40.6	118	NA				ND		15.1	47.2	NA					27.9 (ND)	NA	
2A-W-40	2A-W-40-0909	9/24/2009	ND		18	94	NA				ND		23	47	NA					21 (ND)	NA	
2A-W-40 (FD)	2A-W-400-0409	4/1/2009	ND		142	472	NA				191	J	94.3	236	NA					262	NA	
2A-W-40 (FD)	2A-W-400-0609	6/10/2009	ND		40.6	118	NA				ND		15.1	47.2	NA					27.9 (ND)	NA	
2A-W-41	2A-W-41-0409	4/1/2009	183	J	142	472	NA				438	J	94.3	236	NA					621	NA	

Table 5-3 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)		
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL				
2A-W-41	2A-W-41-0609	6/10/2009	ND		40.6	118	NA								ND		15.1	47.2	NA	27.9 (ND)	NA	
2A-W-41	2A-W-41-0909	9/24/2009	120		18	94	NA				280				23		47		NA	400	NA	
2A-W-42	2A-W-42-0409	4/1/2009	ND		142	472	NA				ND				94.3		236		NA	118.2 (ND)	NA	
2A-W-42	2A-W-42-0609	6/10/2009	ND		40.6	118	NA				202	J			15.1		47.2		NA	222.3	NA	
2A-W-42	2A-W-42-0909	9/23/2009	140		18	94	NA				280				23		47		NA	420	NA	
5-W-43	5-W-43-0409	4/2/2009	ND		142	472	NA				151	J			94.3		236		NA	222	NA	
5-W-43	5-W-43-0609	6/10/2009	217		40.6	118	NA				293	J			15.1		47.2		NA	510	NA	
5-W-43	5-W-43-0709	7/7/2009	120		18	94	NA				140				23		47		NA	260	NA	
5-W-43	5-W-43-0909	9/23/2009	ND		18	94	NA				ND				23		47		NA	21 (ND)	NA	
Maximum			310				NA				1450								NA	1677	NA	
Minimum			ND				NA				ND								NA	ND	NA	
Average																				473.8**	NA	
Former Maloney Creek Zone - East Wetland and Surrounding Areas																						
2A-W-10	2A-W-10-0309	3/24/2009	192	J	144	481	NA				ND				96.2		240		NA	240.1	NA	
2A-W-10	2A-W-10-0909	9/21/2009	190		18	94	NA				180				23		47		NA	370	NA	
2A-W-11	2A-W-11-0309	3/24/2009	727	J	142	472	NA				686	J			94.3		236		NA	1413	NA	
2A-W-11	2A-W-11-0909	9/22/2009	930		18	94	NA				630				23		47		NA	1560	NA	
2A-W-9	2A-W-9-0309	3/25/2009	799	J	142	472	NA				927	J			94.3		236		NA	1726	NA	
2A-W-9	2A-W-9-0909	9/23/2009	130		18	94	NA				470				23		47		NA	600	NA	
2A-W-9 (FD)	2A-W-90-0309	3/25/2009	772	J	142	472	NA				902	J			94.3		236		NA	1674	NA	
2B-W-4	2B-W-4-0309	3/23/2009	ND		142	472	NA				ND				94.3		236		NA	118.2 (ND)	NA	
2B-W-4	2B-W-4-0909	9/21/2009	ND		18	94	NA				ND				23		47		NA	21 (ND)	NA	
2B-W-45	2B-W-45-1208	12/17/2008	ND		84.9	472	ND			151	472	ND			37.7		236	ND	37.7	236	61.3 (ND)	94.4 (ND)
2B-W-45	2B-W-45-0309	3/24/2009	ND		142	472	NA				ND				94.3		236		NA	118.2 (ND)	NA	
2B-W-45	2B-W-45-0609	6/11/2009	ND		40.6	118	NA				ND				15.1		47.2		NA	27.9 (ND)	NA	
2B-W-45	2B-W-45-0909	9/23/2009	ND		18	94	NA				ND				23		47		NA	21 (ND)	NA	
2B-W-45 (FD)	2B-W-450-0909	9/23/2009	ND		18	94	NA				ND				23		47		NA	21 (ND)	NA	
2B-W-46	2B-W-46-1208	12/17/2008	ND		84.9	472	ND			151	472	ND			37.7		236	ND	37.7	236	61.3 (ND)	94.4 (ND)
2B-W-46	2B-W-46-0309	3/24/2009	ND		142	472	NA				ND				94.3		236		NA	118.2 (ND)	NA	
2B-W-46	2B-W-46-0609	6/11/2009	ND		40.6	118	NA				ND				15.1		47.2		NA	27.9 (ND)	NA	
2B-W-46	2B-W-46-0909	9/23/2009	ND		18	94	NA				ND				23		47		NA	21 (ND)	NA	
MW-3	MW-3-0309	3/24/2009	ND		142	472	NA				ND				94.3		236		NA	118.2 (ND)	NA	
MW-3	MW-3-0909	9/23/2009	290		18	94	NA				640				23		47		NA	930	NA	
MW-39	MW-39-0309	3/24/2009	1130	J	142	472	NA				894	J			94.3		236		NA	2024	NA	
MW-39	MW-39-0909	9/22/2009	250		18	94	NA				380				23		47		NA	630	NA	
MW-4	MW-4-0309	3/24/2009	ND		142	472	NA				ND				94.3		236		NA	118.2 (ND)	NA	
MW-4	MW-41-0909	9/23/2009	ND		18	94	NA				77				23		47		NA	86	NA	
MW-4 (FD)	MW-400-0309	3/24/2009	186	J	142	472	NA				ND				94.3		236		NA	233.2	NA	
Maximum			1130				ND				927								NA	2024	ND	
Minimum			ND				ND				ND								NA	ND	ND	
Average																				957.2**	ND	

Table 5-3 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL		
Former Maloney Creek Zone - West Wetland																				
3-W-41	3-W-41-0809	8/25/2009	ND		18	94	NA				76		23	47	NA				86	NA
3-W-41	3W-41-0909	9/23/2009	ND		18	94	NA				56		23	47	NA				65	NA
3-W-41 (FD)	3-W-410-0809	8/25/2009	ND		18	94	NA				77		23	47	NA				85	NA
3-W-42	3-W-42-0809	8/25/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
3-W-42	3-W-42-0909	9/23/2009	190		18	94	NA				740		23	47	NA				930	NA
3-W-43	3-W-43-0809	8/25/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
3-W-43	3-W-43-0909	9/23/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
Maximum			190				NA				740				NA				930	NA
Minimum			ND				NA				ND				NA				ND	NA
Average																			292**	NA
Hydraulic Control and Containment System																				
EW-1	EW-1	4/2/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
EW-1	EW-1-0609	6/10/2009	ND		40.6	118	NA				ND		15.1	47.2	NA				27.9 (ND)	NA
EW-1	EW-1-0909	9/23/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
GW-1	GW-1-0409	4/2/2009	ND		142	472	NA				102	J	94.3	236	NA				173	NA
GW-1	GW-1-0609	6/10/2009	160		40.6	118	NA				254	J	15.1	47.2	NA				414	NA
GW-1	GW-1-0909	9/24/2009	ND		18	94	NA				54		23	47	NA				63	NA
GW-2	GW-2-0409	4/1/2009	363	J	142	472	NA				499	J	94.3	236	NA				862	NA
GW-2	GW-2-0609	6/10/2009	360		40.6	118	NA				688	J	15.1	47.2	NA				1048	NA
GW-2	GW-2-0709	7/7/2009	410	J	18	94	NA				650	J	23	47	NA				1060	NA
GW-2	GW-2-072809	7/28/2009	250		18	95	NA				410		23	48	NA				660	NA
GW-2	GW-2-0809	8/25/2009	320		18	94	NA				710		23	47	NA				1030	NA
GW-2	GW-2-0909	9/24/2009	100		18	94	NA				160		23	47	NA				260	NA
GW-2 (FD)	GW-20-0709	7/28/2009	290	J	18	95	NA				430	J	23	48	NA				720	NA
GW-2 (FD)	GW-20-0909	9/24/2009	100		18	94	NA				150		23	47	NA				250	NA
GW-3	GW-3-0409	4/1/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
GW-3	GW-3-0609	6/11/2009	ND		40.6	118	NA				ND		15.1	47.2	NA				27.9 (ND)	NA
GW-3	GW-3-0909	9/23/2009	ND		18	94	NA				110		23	47	NA				119	NA
GW-3 (FD)	GW-30-0609	6/11/2009	ND		40.6	118	NA				ND		15.1	47.2	NA				27.9 (ND)	NA
GW-4	GW-4-0409	4/1/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
GW-4	GW-4-0609	6/10/2009	ND		40.6	118	NA				ND		15.1	47.2	NA				27.9 (ND)	NA
GW-4	GW-4-0909	9/22/2009	ND		18	94	NA				97		23	47	NA				106	NA
Maximum			410				ND				710				ND				1060	ND
Minimum			ND				ND				ND				ND				ND	ND
Average																			520**	ND

Table 5-3 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL		
Hydraulic Control and Containment System Gate Vault Sentry Wells																				
CV (S3)	S3-1208	12/17/2008	ND		84.9	472	ND		151	472	913	JN	37.7	236	ND		37.7	236	955.5	94.4 (ND)
FWV (S1)	S1-1208	12/17/2008	ND		84.9	472	ND		151	472	310	JN	37.7	236	ND		37.7	236	352.5	94.4 (ND)
WV (S2)	S2-1208	12/17/2008	ND		84.9	472	ND		151	472	1020	JN	37.7	236	ND		37.7	236	1062.5	94.4 (ND)
S1-AD	S1-AD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S1-AD	S1-AD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S1-AU	S1-AU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S1-AU	S1-AU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S1-BD	S1-BD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S1-BD	S1-BD-0909	9/22/2009	190		18	94	NA				ND		23	47	NA				201.5	NA
S1-BD (FD)	S10-BD-0309	3/24/2009	162	J	142	472	NA				ND		94.3	236	NA				209.2	NA
S1-BU	S1-BU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S1-BU	S1-BU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S2-AD	S2-AD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S2-AD	S2-AD-0909	9/22/2009	ND		18	94	NA				50		23	47	NA				59	NA
S2-AU	S2-AU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S2-AU	S2-AU-0909	9/22/2009	95		18	94	NA				47		23	47	NA				142	NA
S2-BD	S2-BD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S2-BD	S2-BD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S2-BU	S2-BU-0309	3/24/2009	ND	J	142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S2-BU	S2-BU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S2-BU (FD)	S20-BU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S3-AD	S3-AD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S3-AD	S3-AD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S3-AU	S3-AU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S3-AU	S3-AU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S3-AU (FD)	S30-AU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S3-BD	S3-BD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S3-BD	S3-BD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S3-BU	S3-BU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S3-BU	S3-BU-0909	9/22/2009	ND		18	94	NA				94		23	47	NA				103	NA
S3-CD	S3-CD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S3-CD	S3-CD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S3-CU	S3-CU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S3-CU	S3-CU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S4-AD	S4-AD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S4-AD	S4-AD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S4-AD (FD)	S40-AD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S4-AU	S4-AU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S4-AU	S4-AU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
S4-BD	S4-BD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S4-BD	S4-BD-0909	9/22/2009	ND		18	94	NA				54		23	47	NA				63	NA
S4-BU	S4-BU-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
S4-BU	S4-BU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA

Table 5-3 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)	
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL			
S4-CD	S4-CD-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
S4-CD	S4-CD-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA					21 (ND)	NA
S4-CU	S4-CU-0309	3/24/2009	173	J	142	472	NA				ND		94.3	236	NA					220.2	NA
S4-CU	S4-CU-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA					21 (ND)	NA
Maximum			190				ND				1020				ND					1063	ND
Minimum			ND				ND				ND				ND					ND	ND
Average																				336.8**	ND
Levee Zone																					
5-W-14	5-W-14-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236		61.3 (ND)	94.4 (ND)
5-W-14	5-W-14-0309	3/24/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-14	5-W-14-0609	6/10/2009	ND		40.6	118	ND		40.6	118	ND		15.1	47.2	ND		15.1	47.2		27.9 (ND)	27.9 (ND)
5-W-14	5-W-14-0909	9/23/2009	ND		18	94	ND		18	94	ND		23	47	ND		23	47		21 (ND)	21 (ND)
5-W-15	5-W-15-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236		61.3 (ND)	94.4 (ND)
5-W-15	5-W-15-0309	3/25/2009	ND		142	472	ND		142	472	183	J	94.3	236	ND		94.3	236		254	118.2 (ND)
5-W-15	5-W-15-0609	6/10/2009	139		40.6	118	ND		40.6	118	213	J	15.1	47.2	ND		15.1	47.2		338	27.9 (ND)
5-W-15	5-W-15-0909	9/23/2009	110		18	94	ND		18	94	220		23	47	ND		23	47		330	21 (ND)
5-W-15 (FD)	5-W-150-0609	6/10/2009	135		40.6	118	ND		40.6	118	203	J	15.1	47.2	ND		15.1	47.2		352	27.9 (ND)
5-W-16	5-W-16-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236		61.3 (ND)	94.4 (ND)
5-W-16	5-W-16-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-16	5-W-16-0609	6/10/2009	ND		40.6	118	ND		40.6	118	ND		15.1	47.2	ND		15.1	47.2		27.9 (ND)	27.9 (ND)
5-W-16	5-W-16-0909	9/23/2009	ND		18	94	ND		18	94	ND		23	47	ND		23	47		21 (ND)	21 (ND)
5-W-17	5-W-17-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236		61.3 (ND)	94.4 (ND)
5-W-17	5-W-17-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-17	5-W-17-0609	6/10/2009	ND		40.6	118	ND		40.6	118	ND		15.1	47.2	ND		15.1	47.2		27.9 (ND)	27.9 (ND)
5-W-17	5-W-17-0909	9/23/2009	ND		18	94	ND		18	94	ND		23	47	ND		23	47		21 (ND)	21 (ND)
5-W-17 (FD)	5-W-170-0909	9/23/2009	ND		18	94	ND		18	94	ND		23	47	78		23	47		21 (ND)	87
5-W-18	5-W-18-1208	12/17/2008	ND		84.9	472	ND		151	472	1940	JN	37.7	236	ND		37.7	236		1982.5	94.4 (ND)
5-W-18	5-W-18-0309	3/25/2009	452	J	142	472	ND		142	472	1540	J	94.3	236	ND		94.3	236		1992	118.2 (ND)
5-W-18	5-W-18-0609	6/10/2009	223		40.6	118	ND		40.6	118	669	J	15.1	47.2	ND		15.1	47.2		892	27.9 (ND)
5-W-18	5-W-18-0909	9/22/2009	120		18	94	ND		18	94	250		23	47	ND		23	47		370	21 (ND)
5-W-18 (FD)	5-W-180-1208	12/17/2008	ND		84.9	472	ND		151	472	1580	JN	37.7	236	ND		37.7	236		1622.5	94.4 (ND)
5-W-18 (FD)	5-W-180-0309	3/25/2009	487	J	142	472	ND		142	472	1570	J	94.3	236	ND		94.3	236		2057	118.2 (ND)
5-W-19	5-W-19-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236		61.3 (ND)	94.4 (ND)
5-W-19	5-W-19-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-19	5-W-19-0609	6/10/2009	ND		40.6	118	ND		40.6	118	ND		15.1	47.2	ND		15.1	47.2		27.9 (ND)	27.9 (ND)
5-W-19	5-W-19-0909	9/23/2009	ND		18	94	ND		18	94	ND		23	47	ND		23	47		21 (ND)	21 (ND)
5-W-20	5-W-20-1208	12/17/2008	ND		84.9	472	ND		151	472	1580	JN	37.7	236	ND		37.7	236		1622.5	94.4 (ND)
5-W-20	5-W-20-0309	3/25/2009	229	J	142	472	ND		142	472	811	J	94.3	236	ND		94.3	236		1040	118.2 (ND)
5-W-20	5-W-20-0609	6/10/2009	233		40.6	118	ND		40.6	118	637	J	15.1	47.2	ND		15.1	47.2		870	27.9 (ND)
5-W-20	5-W-20-0909	9/23/2009	190		18	94	ND		18	94	340		23	47	53		23	47		530	62
5-W-42	5-W-42-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236		61.3 (ND)	94.4 (ND)
5-W-42	5-W-42-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-42	5-W-42-0609	6/10/2009	258		40.6	118	ND		40.6	118	599	J	15.1	47.2	ND		15.1	47.2		857	27.9 (ND)

Table 5-3 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL		
5-W-42	5-W-42-0909	9/23/2009	560		18	94	430		18	94	440		23	47	210		23	47	1000	640
5-W-42 (FD)	5-W-420-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236	61.3 (ND)	94.4 (ND)
Maximum			560				430				1940				210				2057	640
Minimum			ND				ND				ND				ND				ND	ND
Average																			1006.8**	263**
Schoolyard Perimeter Zone																				
5-W-50	5-W-50-0309	3/25/2009	1510	J	142	472	NA				3570	J	94.3	236	NA				5080	NA
5-W-50	5-W-50-0909	9/23/2009	840		18	94	NA				1800		23	47	NA				2640	NA
5-W-51	5-W-51-0309	3/24/2009	3430	J	142	472	NA				4310	J	94.3	236	NA				7740	NA
5-W-51	5-W-51-0909	9/22/2009	730		18	94	NA				1200		23	47	NA				1930	NA
5-W-52	5-W-52-0309	3/24/2009	455	J	142	472	NA				982	J	94.3	236	NA				1437	NA
5-W-52	5-W-52-0909	9/22/2009	240		18	94	NA				410		23	47	NA				650	NA
5-W-53	5-W-53-0309	3/24/2009	144	J	142	472	NA				119	J	94.3	236	NA				263	NA
5-W-53	5-W-53-0909	9/22/2009	230		18	94	NA				300		23	47	NA				530	NA
5-W-53 (FD)	5-W-530-0909	9/22/2009	220		18	94	NA				270		23	47	NA				490	NA
5-W-54	5-W-54-0309	3/25/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
5-W-54	5-W-54-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
5-W-55	5-W-55-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
5-W-55	5-W-55-0909	9/22/2009	230		18	94	NA				270		23	47	NA				500	NA
5-W-56	5-W-56-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
5-W-56	5-W-56-0909	9/22/2009	790		18	94	NA				2700		23	47	NA				3490	NA
5-W-56 (FD)	5-W-500-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
Maximum			3430				NA				4310				NA				7740	NA
Minimum			ND				NA				ND				NA				ND	NA
Average																			2250**	NA
Site-wide^																				
1A-W-1	1A-W-1-0309	3/24/2009	ND		142	472	NA				137	J	94.3	236	NA				208	NA
1A-W-3	1A-W-3-0309	3/23/2009	1540	J	142	472	NA				818	J	94.3	236	NA				2358	NA
1A-W-4	1A-W-4-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
1A-W-4	1A-W-4-0909	9/23/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
1A-W-5	1A-W-5-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
1A-W-5	1A-W-5-0909	9/24/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
1B-W-2	1B-W-2-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
1B-W-2	1B-W-2-0909	9/23/2009	120		18	94	NA				170		23	47	NA				290	NA
1B-W-3	1B-W-3-030509	3/5/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
1B-W-3	1B-W-3-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
1B-W-3	1B-W-3-0909	9/23/2009	ND		18	94	NA				90		23	47	NA				99	NA
1C-W-2	1C-W-2-0309	3/25/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
1C-W-2	1C-W-2-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
1C-W-3	1C-W-3-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA				118.2 (ND)	NA
1C-W-3	1C-W-3-0909	9/22/2009	ND		18	94	NA				ND		23	47	NA				21 (ND)	NA
1C-W-4	1C-W-4-0309	3/24/2009	143	J	142	472	NA				359	J	94.3	236	NA				502	NA
1C-W-4	1C-W-4-0909	9/22/2009	ND		18	94	NA				120		23	47	NA				129	NA

Table 5-3 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Analytical Results

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)	
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL			
5-W-4	5-W-4-0309	3/25/2009	596	J	142	472	NA				485	J	94.3	236	NA					1081	NA
5-W-4	5-W-4-0909	9/23/2009	490		18	94	NA				1300		23	47	NA					1790	NA
MW-16	MW-16-0309	3/25/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
MW-16	MW-16-0909	9/23/2009	ND		18	94	NA				ND		23	47	NA					21 (ND)	NA
MW-16 (FD)	MW-160-0909	9/23/2009	ND		18	94	NA				ND		23	47	NA					21 (ND)	NA
MW-38R	MW-38R-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
MW-38R	MW-38R-0909	9/22/2009	ND		18	94	NA				79		23	47	NA					88	NA
Maximum			1540				NA				1300				NA					2358	NA
Minimum			ND				NA				ND				NA					ND	NA
Average																				727.2**	NA
Field Equipment Blanks																					
FIELDQC (EB)	MW-500-1208	12/17/2008	ND		84.9	472	ND		151	472	ND		37.7	236	ND		37.7	236		61.3 (ND)	94.4 (ND)
FIELDQC (EB)	MW-500-0309	3/24/2009	ND		142	472	ND		151	472	ND		94.3	236	ND		37.7	236		118.2 (ND)	94.4 (ND)
FIELDQC (EB)	MW-500-0609	6/10/2009	ND		40.6	118	ND		40.6	118	ND		15.1	47.2	ND		15.1	47.2		27.9 (ND)	27.9 (ND)
FIELDQC (EB)	MW-500-0909	9/23/2009	ND		18	94	ND		18	94	ND		23	47	ND		23	47		21 (ND)	21 (ND)

Notes:

* Location is being monitored for multiple assessments.

**Value based on calculated concentrations, excluding non-detects.

^Location is being monitored for the site-wide assessment only. Locations from all site areas, except the HCC gate vault sentry wells, are included in the site-wide assessment (Table 5-4).

All samples analyzed by NWTPH-Dx with or without silica gel cleanup.

Units = µg/L

Bold Exceeds cleanup level (CUL) of 208 ug/L or remediation level (RL) of 477 ug/L

Light Green Trace LNAPL

MDL Method Detection Limit; Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B.

MRL Method Reporting Limit; Reporting Level at, or above, the lowest level standard of the Calibration Table.

Results between the MDL and MRL are reported as Estimated Results.

µg/L micrograms per liter

EB Equipment Blank

FD Field Duplicate

HCC Hydraulic Control and Containment

J Estimated concentration

JN Analyte must be considered presumptively present at an estimated concentration

NA Not Analyzed

ND Not Detected

(ND) Both the Oil Range and Diesel Range Hydrocarbons were non-detect, but the TPH (calc) value is shown.

TPH Total Petroleum Hydrocarbons

TPH (calc) Sum of the Oil Range and Diesel Range Hydrocarbons by Method NWTPH-Dx. 1/2 the MDL was used for all ND's.

TPH-SG (calc) Sum of the Oil Range and Diesel Range Hydrocarbons by Method NWTPH-Dx with Silica Gel Cleanup. 1/2 the MDL was used for all ND's.

Table 5-4 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Semi-Annual Site-Wide Analytical Results*

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)	
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL			
March 2009 Semi-Annual Event Results																					
2B-W-4	2B-W-4-0309	3/23/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1A-W-3	1A-W-3-0309	3/23/2009	1540	J	142	472	NA				818	J	94.3	236	NA					2358	NA
2A-W-10	2A-W-10-0309	3/24/2009	192	J	144	481	NA				ND		96.2	240	NA					240.1	NA
2A-W-11	2A-W-11-0309	3/24/2009	727	J	142	472	NA				686	J	94.3	236	NA					1413	NA
2B-W-45	2B-W-45-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
2B-W-46	2B-W-46-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
MW-3	MW-3-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
MW-39	MW-39-0309	3/24/2009	1130	J	142	472	NA				894	J	94.3	236	NA					2024	NA
MW-4	MW-4-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
MW-4 (FD)	MW-400-0309	3/24/2009	186	J	142	472	NA				ND		94.3	236	NA					233.2	NA
5-W-14	5-W-14-0309	3/24/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-51	5-W-51-0309	3/24/2009	3430	J	142	472	NA				4310	J	94.3	236	NA					7740	NA
5-W-52	5-W-52-0309	3/24/2009	455	J	142	472	NA				982	J	94.3	236	NA					1437	NA
5-W-53	5-W-53-0309	3/24/2009	144	J	142	472	NA				119	J	94.3	236	NA					263	NA
5-W-55	5-W-55-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
5-W-56	5-W-56-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
5-W-56 (FD)	5-W-500-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1A-W-1	1A-W-1-0309	3/24/2009	ND		142	472	NA				137	J	94.3	236	NA					208	NA
1A-W-4	1A-W-4-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1A-W-5	1A-W-5-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1B-W-2	1B-W-2-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1B-W-3	1B-W-3-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1C-W-3	1C-W-3-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1C-W-4	1C-W-4-0309	3/24/2009	143	J	142	472	NA				359	J	94.3	236	NA					502	NA
MW-38R	MW-38R-0309	3/24/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1C-W-1	1C-W-1-032509	3/25/2009	162	J	142	472	NA				273	J	94.3	236	NA					435	NA
2A-W-9	2A-W-9-0309	3/25/2009	799	J	142	472	NA				927	J	94.3	236	NA					1726	NA
2A-W-9 (FD)	2A-W-90-0309	3/25/2009	772	J	142	472	NA				902	J	94.3	236	NA					1674	NA
5-W-15	5-W-15-0309	3/25/2009	ND		142	472	ND		142	472	183	J	94.3	236	ND		94.3	236		254	118.2 (ND)
5-W-16	5-W-16-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-17	5-W-17-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-18	5-W-18-0309	3/25/2009	452	J	142	472	ND		142	472	1540	J	94.3	236	ND		94.3	236		1992	118.2 (ND)
5-W-18 (FD)	5-W-180-0309	3/25/2009	487	J	142	472	ND		142	472	1570	J	94.3	236	ND		94.3	236		2057	118.2 (ND)
5-W-19	5-W-19-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-20	5-W-20-0309	3/25/2009	229	J	142	472	ND		142	472	811	J	94.3	236	ND		94.3	236		1040	118.2 (ND)
5-W-42	5-W-42-0309	3/25/2009	ND		142	472	ND		142	472	ND		94.3	236	ND		94.3	236		118.2 (ND)	118.2 (ND)
5-W-50	5-W-50-0309	3/25/2009	1510	J	142	472	NA				3570	J	94.3	236	NA					5080	NA
5-W-54	5-W-54-0309	3/25/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
1C-W-2	1C-W-2-0309	3/25/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
5-W-4	5-W-4-0309	3/25/2009	596	J	142	472	NA				485	J	94.3	236	NA					1081	NA
MW-16	MW-16-0309	3/25/2009	ND		142	472	NA				ND		94.3	236	NA					118.2 (ND)	NA
Maximum			3430				ND				4310				ND					7740	ND
Minimum			ND				ND				ND				ND					ND	ND
Average																				1671.4**	ND

Table 5-4 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Semi-Annual Site-Wide Analytical Results*

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)			
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL					
September 2009 Semi-Annual Event Results																							
2A-W-10	2A-W-10-0909	9/21/2009	190		18	94	NA							180		23	47	NA			370	NA	
2B-W-4	2B-W-4-0909	9/21/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
1C-W-1	1C-W-1-0909	9/22/2009	110		18	94	NA							86		23	47	NA			196	NA	
1C-W-8	1C-W-8-0909	9/22/2009	130		18	94	NA							400		23	47	NA			530	NA	
1C-W-7	1C-W-7-0909	9/22/2009	130		18	94	NA							240		23	47	NA			370	NA	
1C-W-7 (FD)	1C-W-70-0909	9/22/2009	110		18	94	NA							250		23	47	NA			360	NA	
2A-W-11	2A-W-11-0909	9/22/2009	930		18	94	NA							630		23	47	NA			1560	NA	
MW-39	MW-39-0909	9/22/2009	250		18	94	NA							380		23	47	NA			630	NA	
GW-4	GW-4-0909	9/22/2009	ND		18	94	NA							97		23	47	NA			106	NA	
5-W-18	5-W-18-0909	9/22/2009	120		18	94	ND		18	94				250		23	47	ND		23	47	370	21 (ND)
5-W-51	5-W-51-0909	9/22/2009	730		18	94	NA							1200		23	47	NA			1930	NA	
5-W-52	5-W-52-0909	9/22/2009	240		18	94	NA							410		23	47	NA			650	NA	
5-W-53	5-W-53-0909	9/22/2009	230		18	94	NA							300		23	47	NA			530	NA	
5-W-53 (FD)	5-W-530-0909	9/22/2009	220		18	94	NA							270		23	47	NA			490	NA	
5-W-54	5-W-54-0909	9/22/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
5-W-55	5-W-55-0909	9/22/2009	230		18	94	NA							270		23	47	NA			500	NA	
5-W-56	5-W-56-0909	9/22/2009	790		18	94	NA							2700		23	47	NA			3490	NA	
1C-W-2	1C-W-2-0909	9/22/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
1C-W-3	1C-W-3-0909	9/22/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
1C-W-4	1C-W-4-0909	9/22/2009	ND		18	94	NA							120		23	47	NA			129	NA	
MW-38R	MW-38R-0909	9/22/2009	ND		18	94	NA							79		23	47	NA			88	NA	
1B-W-23	1B-W-23-0909	9/23/2009	310		18	94	NA							490		23	47	NA			800	NA	
2A-W-42	2A-W-42-0909	9/23/2009	140		18	94	NA							280		23	47	NA			420	NA	
5-W-43	5-W-43-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
2A-W-9	2A-W-9-0909	9/23/2009	130		18	94	NA							470		23	47	NA			600	NA	
2B-W-45	2B-W-45-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
2B-W-45 (FD)	2B-W-450-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
2B-W-46	2B-W-46-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
MW-3	MW-3-0909	9/23/2009	290		18	94	NA							640		23	47	NA			930	NA	
MW-4	MW-41-0909	9/23/2009	ND		18	94	NA							77		23	47	NA			86	NA	
3-W-41	3W-41-0909	9/23/2009	ND		18	94	NA							56		23	47	NA			65	NA	
3-W-42	3-W-42-0909	9/23/2009	190		18	94	NA							740		23	47	NA			930	NA	
3-W-43	3-W-43-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
EW-1	EW-1-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
GW-3	GW-3-0909	9/23/2009	ND		18	94	NA							110		23	47	NA			119	NA	
5-W-14	5-W-14-0909	9/23/2009	ND		18	94	ND		18	94				ND		23	47	ND		23	47	21 (ND)	21 (ND)
5-W-15	5-W-15-0909	9/23/2009	110		18	94	ND		18	94				220		23	47	ND		23	47	330	21 (ND)
5-W-16	5-W-16-0909	9/23/2009	ND		18	94	ND		18	94				ND		23	47	ND		23	47	21 (ND)	21 (ND)
5-W-17	5-W-17-0909	9/23/2009	ND		18	94	ND		18	94				ND		23	47	ND		23	47	21 (ND)	21 (ND)
5-W-17 (FD)	5-W-170-0909	9/23/2009	ND		18	94	ND		18	94				ND		23	47	78		23	47	21 (ND)	87
5-W-19	5-W-19-0909	9/23/2009	ND		18	94	ND		18	94				ND		23	47	ND		23	47	21 (ND)	21 (ND)
5-W-20	5-W-20-0909	9/23/2009	190		18	94	ND		18	94				340		23	47	53		23	47	530	62
5-W-42	5-W-42-0909	9/23/2009	560		18	94	430		18	94				440		23	47	210		23	47	1000	640
5-W-50	5-W-50-0909	9/23/2009	840		18	94	NA							1800		23	47	NA			2640	NA	
1A-W-4	1A-W-4-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA	
1B-W-2	1B-W-2-0909	9/23/2009	120		18	94	NA							170		23	47	NA			290	NA	

Table 5-4 Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater (µg/L) Semi-Annual Site-Wide Analytical Results*

Chemical Name			Oil Range				Oil Range with Silica Gel Cleanup				Diesel Range				Diesel Range with Silica Gel Cleanup				TPH (calc)	TPH-SG (calc)		
Location ID	Sample ID	Sample Date	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL	Result	Qualifier	MDL	MRL				
1B-W-3	1B-W-3-0909	9/23/2009	ND		18	94	NA							90		23	47	NA			99	NA
5-W-4	5-W-4-0909	9/23/2009	490		18	94	NA							1300		23	47	NA			1790	NA
MW-16	MW-16-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA
MW-16 (FD)	MW-160-0909	9/23/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA
2A-W-40	2A-W-40-0909	9/24/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA
2A-W-41	2A-W-41-0909	9/24/2009	120		18	94	NA							280		23	47	NA			400	NA
GW-1	GW-1-0909	9/24/2009	ND		18	94	NA							54		23	47	NA			63	NA
GW-2	GW-2-0909	9/24/2009	100		18	94	NA							160		23	47	NA			260	NA
GW-2 (FD)	GW-20-0909	9/24/2009	100		18	94	NA							150		23	47	NA			250	NA
1A-W-5	1A-W-5-0909	9/24/2009	ND		18	94	NA							ND		23	47	NA			21 (ND)	NA
Maximum			930				430							2700				210			3490	640
Minimum			ND				ND							ND				ND			ND	ND
Average																					663.9**	263**
Field Equipment Blanks																						
FIELDQC (EB)	MW-500-0309	3/24/2009	ND		142	472	ND		151	472	ND		94.3	236	ND		37.7	236			118.2 (ND)	94.4 (ND)
FIELDQC (EB)	MW-500-0909	9/23/2009	ND		18	94	ND		18	94	ND		23	47	ND		23	47			21 (ND)	21 (ND)

Notes:

*Locations sampled semi-annually from all site areas are included in the site-wide assessment, except HCC gate vault sentry wells.

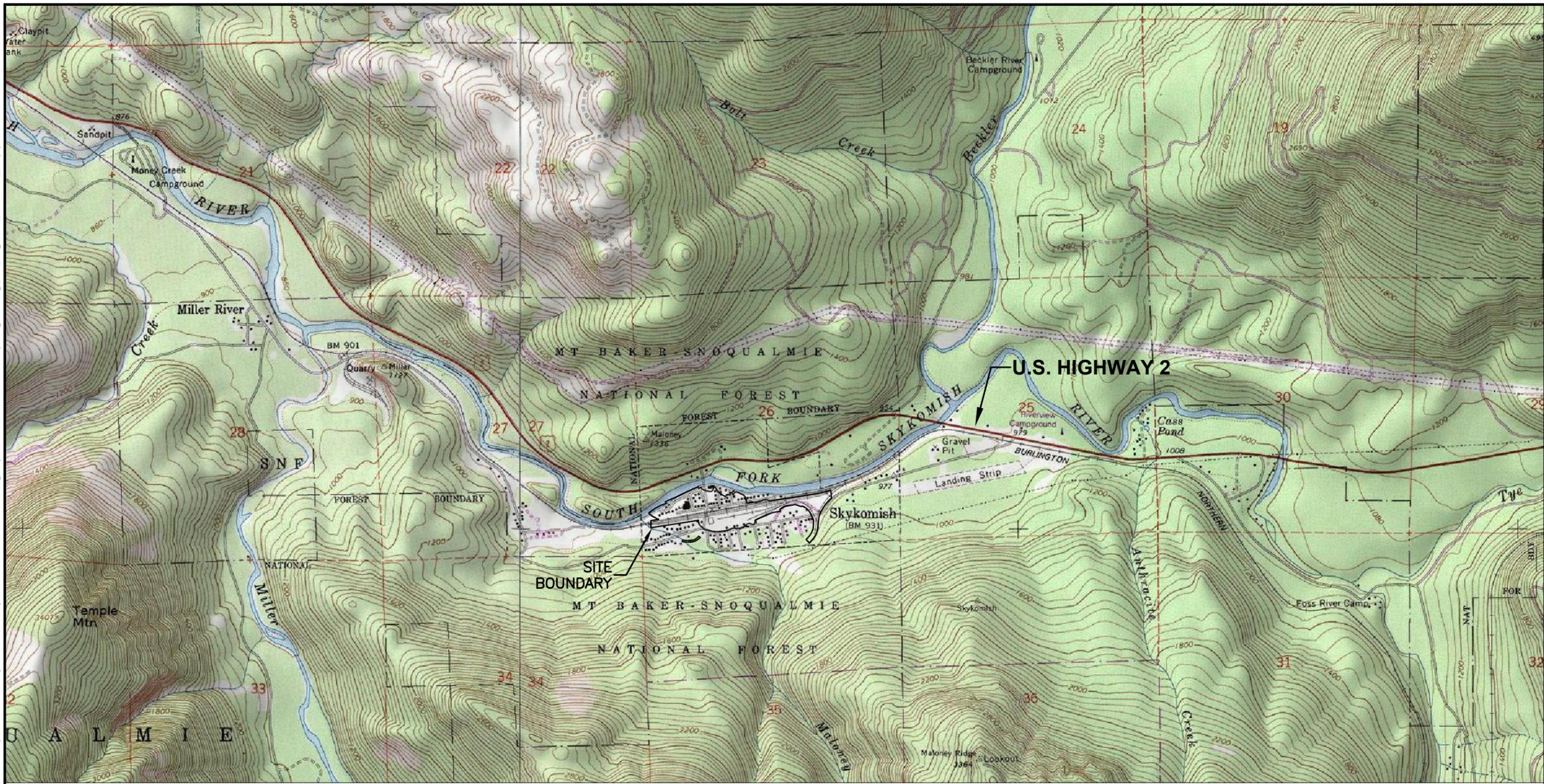
**Value based on calculated concentrations, excluding non-detects.

All samples analyzed by NWTPH-Dx with or without silica gel cleanup.

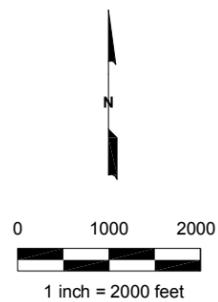
Units = µg/L

- Bold** Exceeds cleanup level (CUL) of 208 ug/L or remediation level (RL) of 477 ug/L
- Light Green** Trace LNAPL
- MDL Method Detection Limit; Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B.
- MRL Method Reporting Limit; Reporting Level at, or above, the lowest level standard of the Calibration Table.
- Results between the MDL and MRL are reported as Estimated Results.
- µg/L micrograms per liter
- EB Equipment Blank
- FD Field Duplicate
- HCC Hydraulic Control and Containment
- J Estimated concentration
- JN Analyte must be considered presumptively present at an estimated concentration
- NA Not Analyzed
- ND Not Detected
- (ND) Both the Oil Range and Diesel Range Hydrocarbons were non-detect, but the TPH (calc) value is shown.
- TPH Total Petroleum Hydrocarbons
- TPH (calc) Sum of the Oil Range and Diesel Range Hydrocarbons by Method NWTPH-Dx. 1/2 the MDL was used for all ND's.
- TPH-SG (calc) Sum of the Oil Range and Diesel Range Hydrocarbons by Method NWTPH-Dx with Silica Gel Cleanup. 1/2 the MDL was used for all ND's.

\\ussea3fp001\drive\Project\BNSF Skykomish\SKY GW Monitoring Reports\2008 to 2009 GW Rpt\Figures\Fig_1-1_Regional_Location_Map.pdf



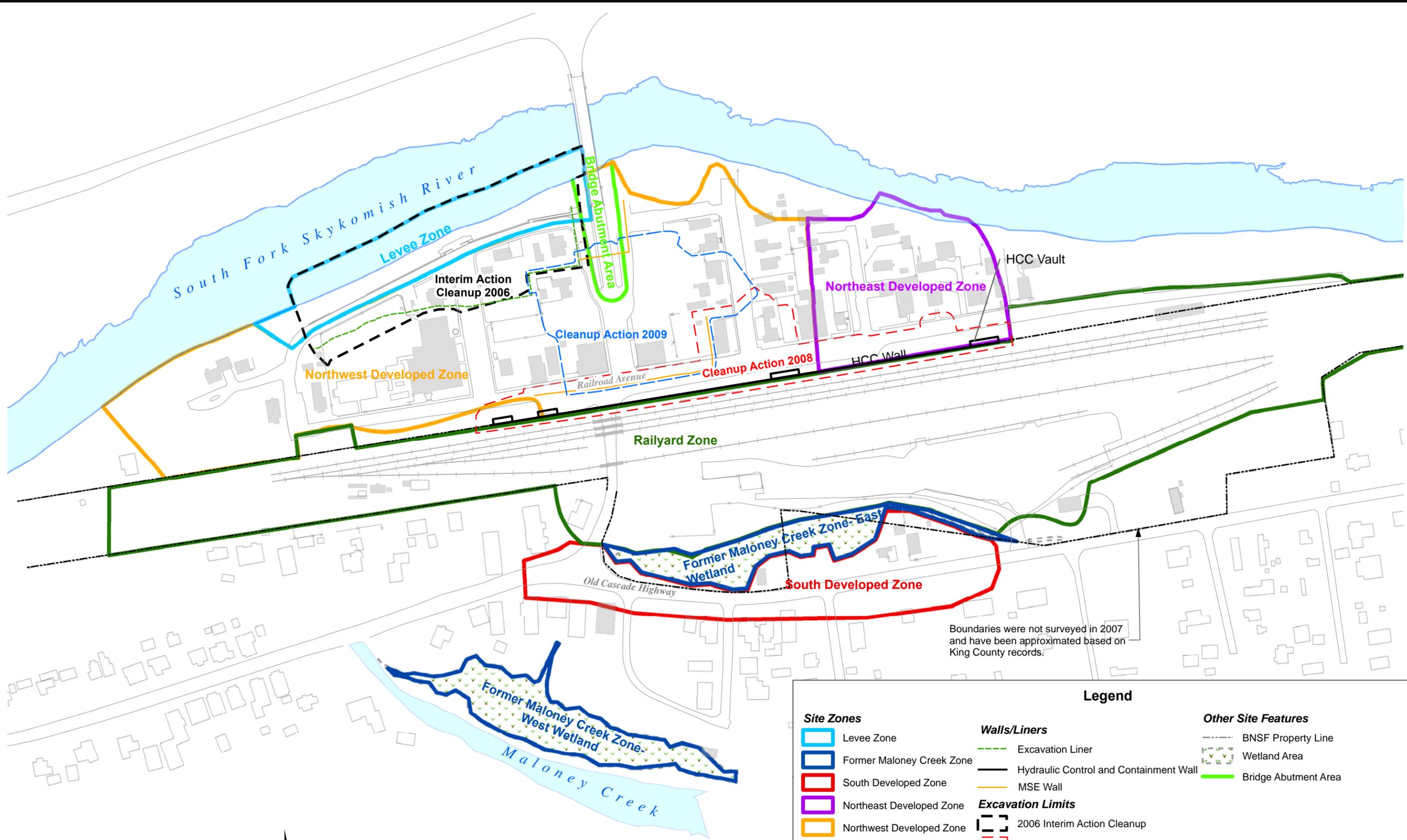
SOURCE: TOPO!, National Geographic Holdings, Inc.



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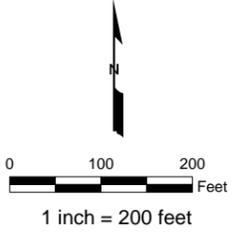
Regional Location Map
FIGURE 1-1

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Boundaries were not surveyed in 2007 and have been approximated based on King County records.

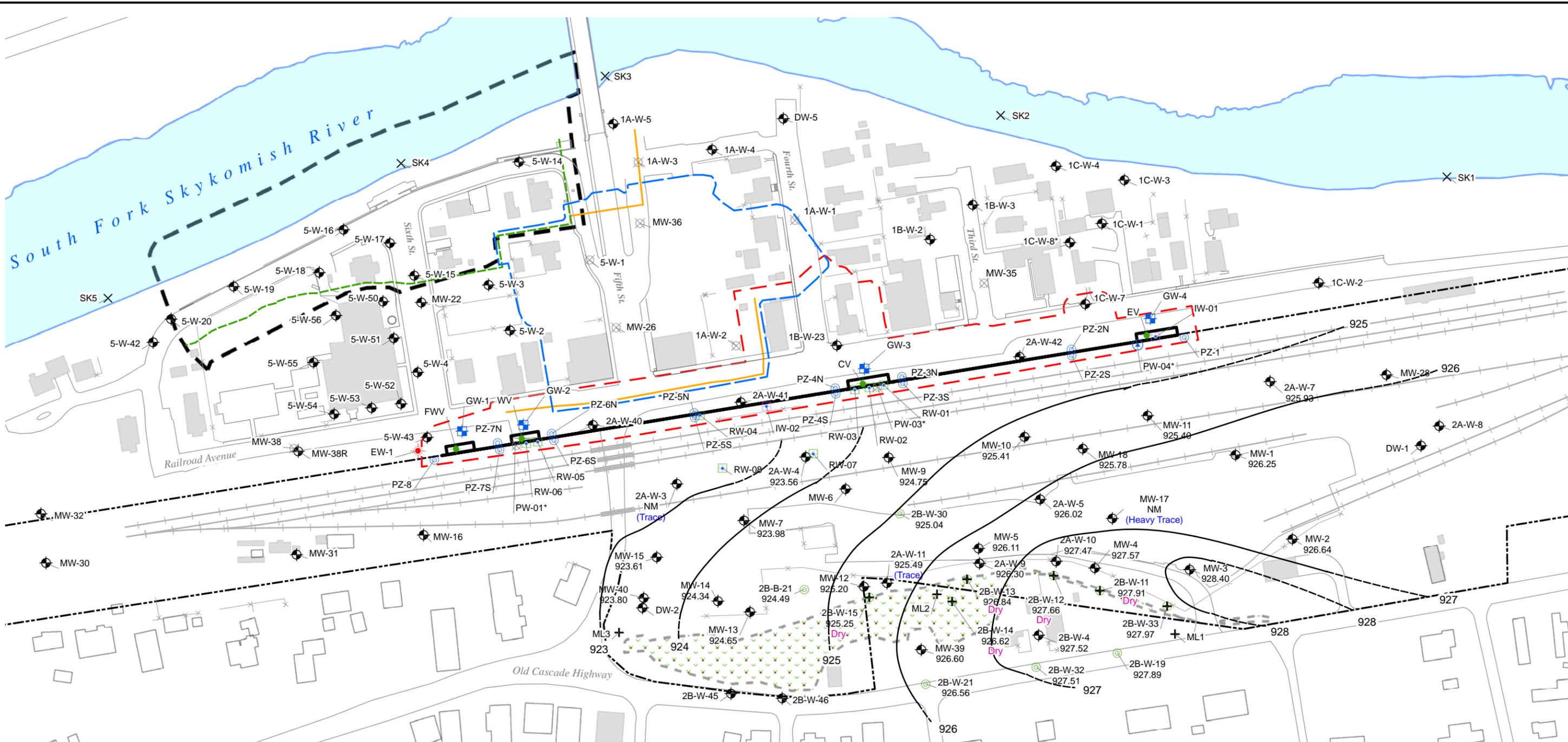
Legend		
Site Zones	Walls/Liners	Other Site Features
Levee Zone	Excavation Liner	BNSF Property Line
Former Maloney Creek Zone	Hydraulic Control and Containment Wall	Wetland Area
South Developed Zone	MSE Wall	Bridge Abutment Area
Northeast Developed Zone	Excavation Limits	
Northwest Developed Zone	2006 Interim Action Cleanup	
Railyard Zone	2008 Cleanup Action	
	2009 Cleanup Action	



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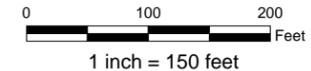
Site Layout and Site Zones
FIGURE 1-2

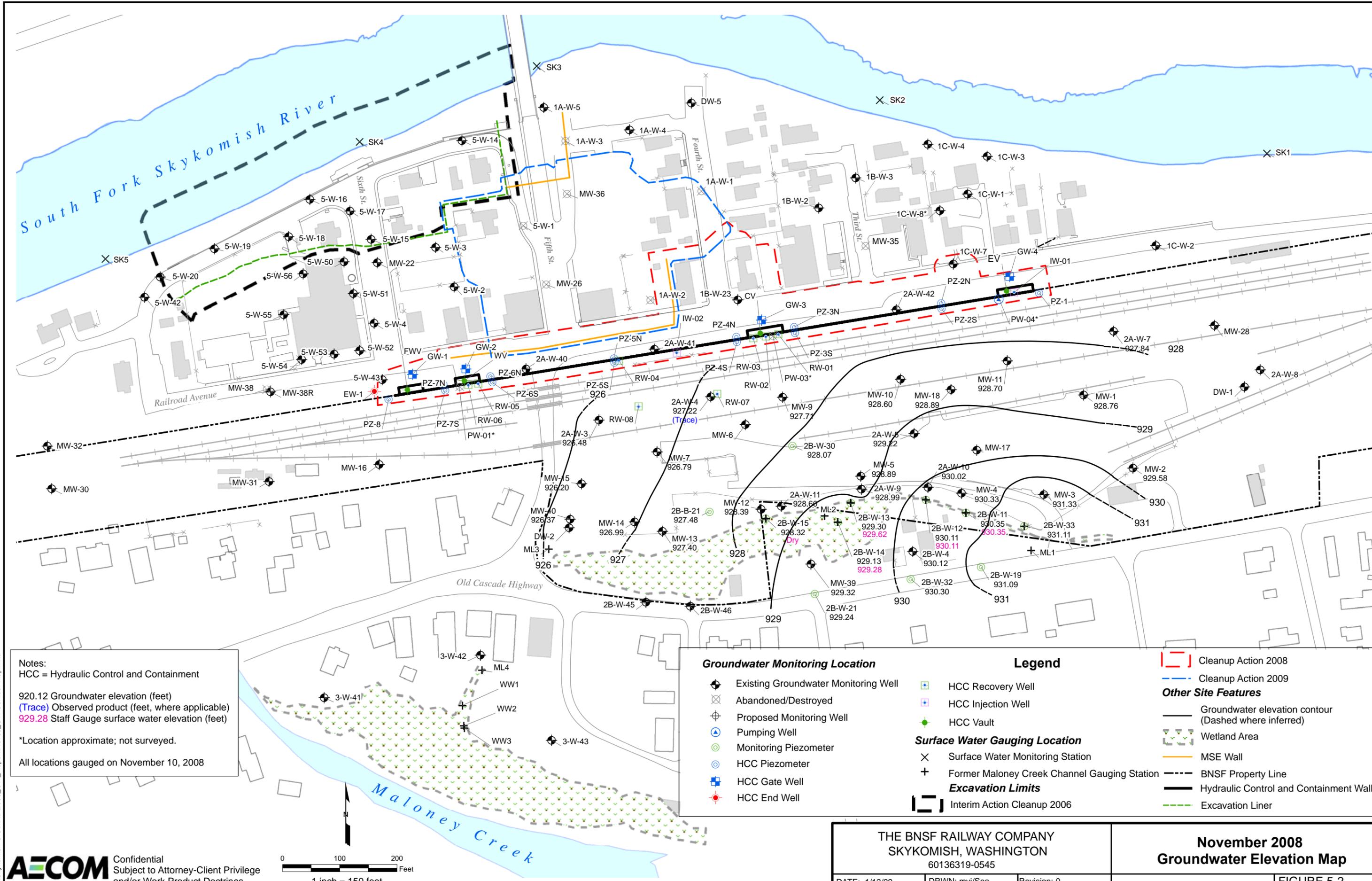


Notes:
 HCC = Hydraulic Control and Containment
 920.12 Groundwater elevation (feet)
 (Trace) Observed product (feet, where applicable)
 Dry Staff Gauge surface water elevation
 *Location approximate; not surveyed.
 All locations gauged on October 14, 2008

Groundwater Monitoring Location		Legend	
	Existing Groundwater Monitoring Well		HCC Recovery Well
	Abandoned/Destroyed		HCC Injection Well
	Proposed Monitoring Well		HCC Vault
	Pumping Well	Surface Water Gauging Location	
	Monitoring Piezometer		Surface Water Monitoring Station
	HCC Piezometer		Former Maloney Creek Channel Gauging Station
	HCC Gate Well	Excavation Limits	
	HCC End Well		Interim Action Cleanup 2006
	Cleanup Action 2008		Cleanup Action 2009
		Other Site Features	
			Groundwater elevation contour (Dashed where inferred)
			Wetland Area
			MSE Wall
			BNSF Property Line
			Hydraulic Control and Containment Wall
			Excavation Liner

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Notes:
 HCC = Hydraulic Control and Containment
 920.12 Groundwater elevation (feet)
 (Trace) Observed product (feet, where applicable)
 929.28 Staff Gauge surface water elevation (feet)
 *Location approximate; not surveyed.
 All locations gauged on November 10, 2008

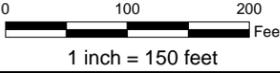
Groundwater Monitoring Location

- Existing Groundwater Monitoring Well
- Abandoned/Destroyed
- Proposed Monitoring Well
- Pumping Well
- Monitoring Piezometer
- HCC Piezometer
- HCC Gate Well
- HCC End Well

Legend

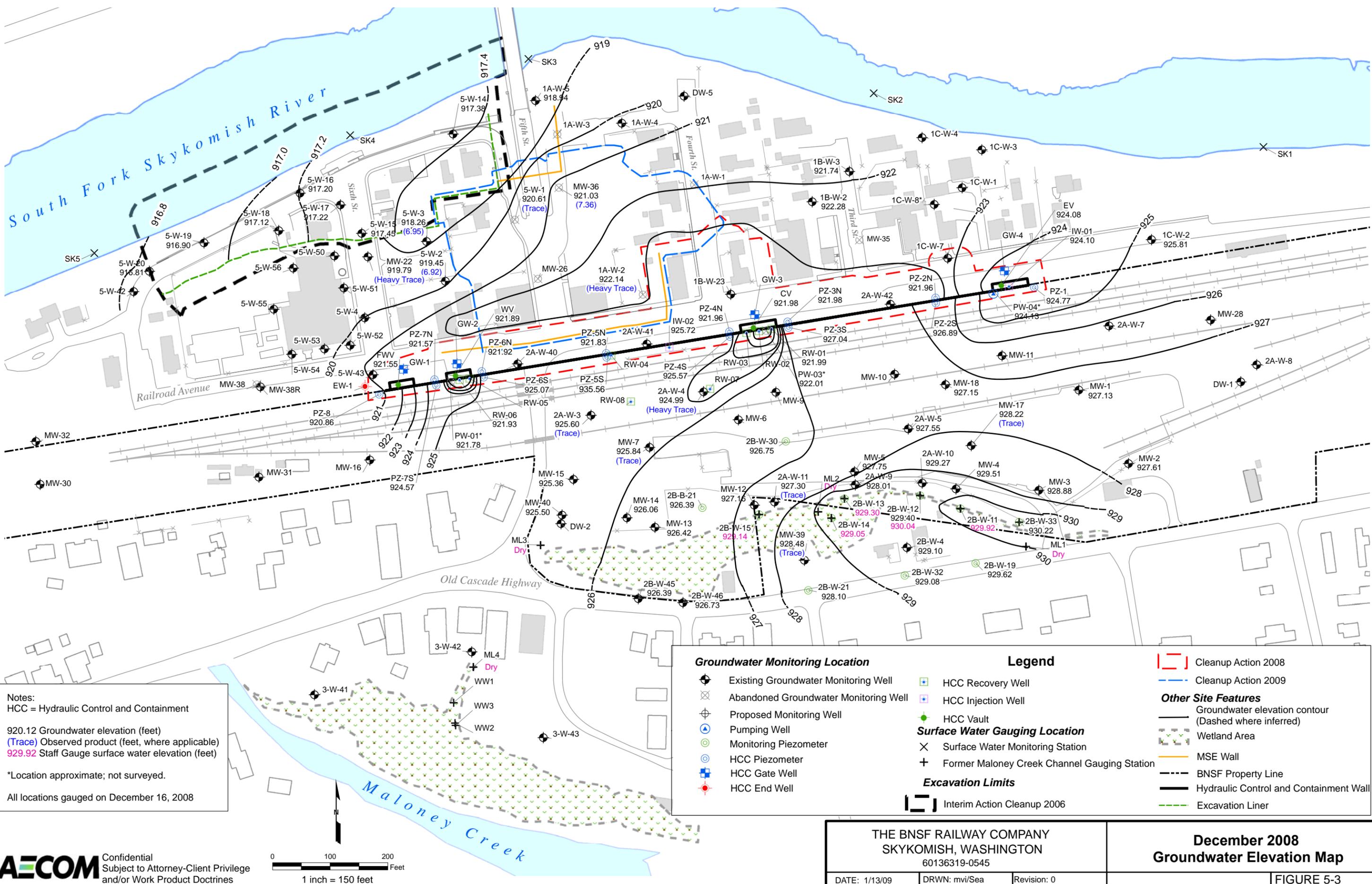
- HCC Recovery Well
- HCC Injection Well
- HCC Vault
- Surface Water Gauging Location
- Former Maloney Creek Channel Gauging Station
- Excavation Limits
- Interim Action Cleanup 2006

- Cleanup Action 2008
- Cleanup Action 2009
- Other Site Features
- Groundwater elevation contour (Dashed where inferred)
- Wetland Area
- MSE Wall
- BNSF Property Line
- Hydraulic Control and Containment Wall
- Excavation Liner

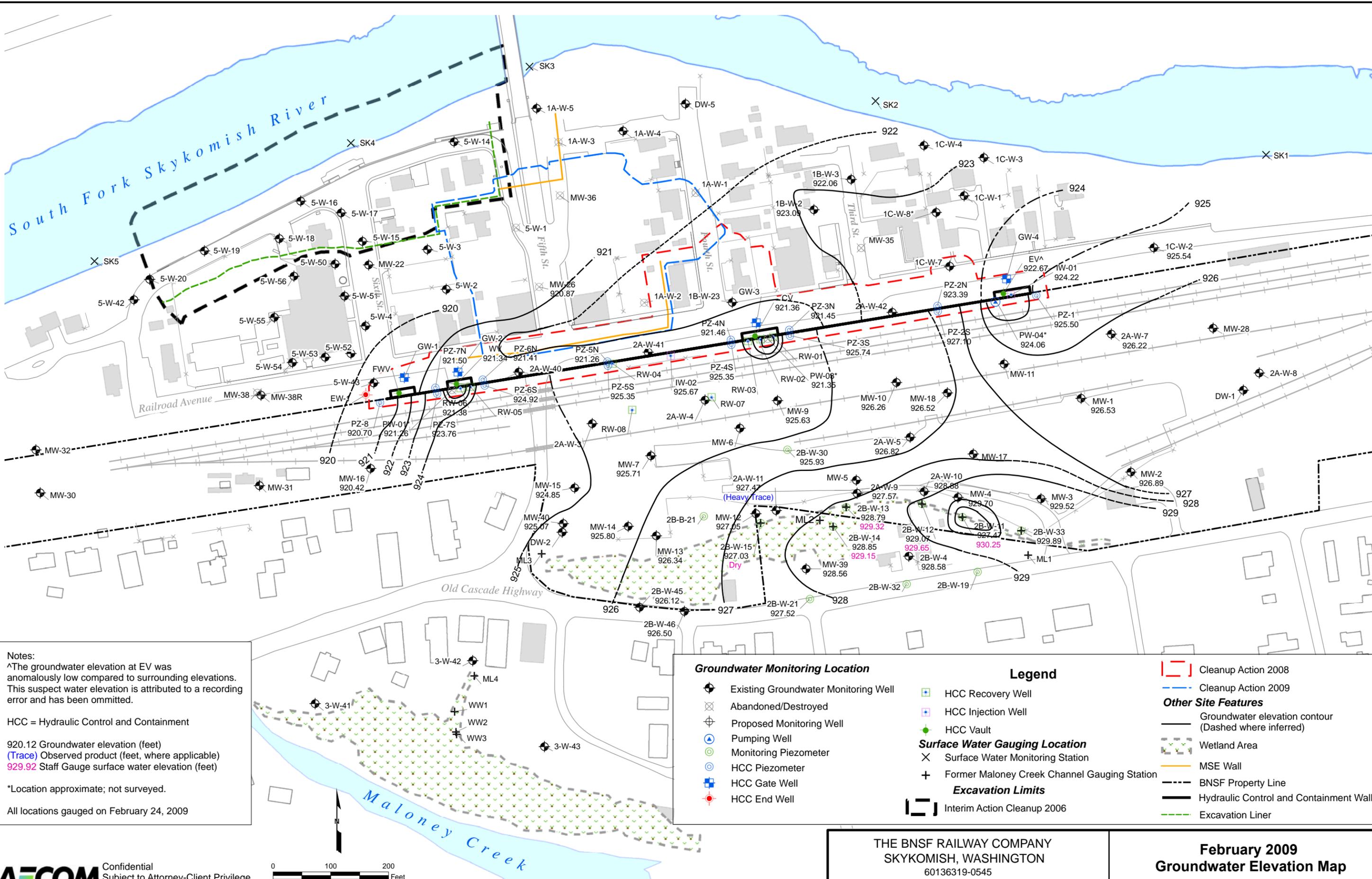


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**November 2008
 Groundwater Elevation Map**
 FIGURE 5-2



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Notes:
 ^The groundwater elevation at EV was anomalously low compared to surrounding elevations. This suspect water elevation is attributed to a recording error and has been omitted.

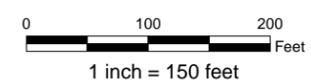
HCC = Hydraulic Control and Containment

920.12 Groundwater elevation (feet)
 (Trace) Observed product (feet, where applicable)
 929.92 Staff Gauge surface water elevation (feet)

*Location approximate; not surveyed.

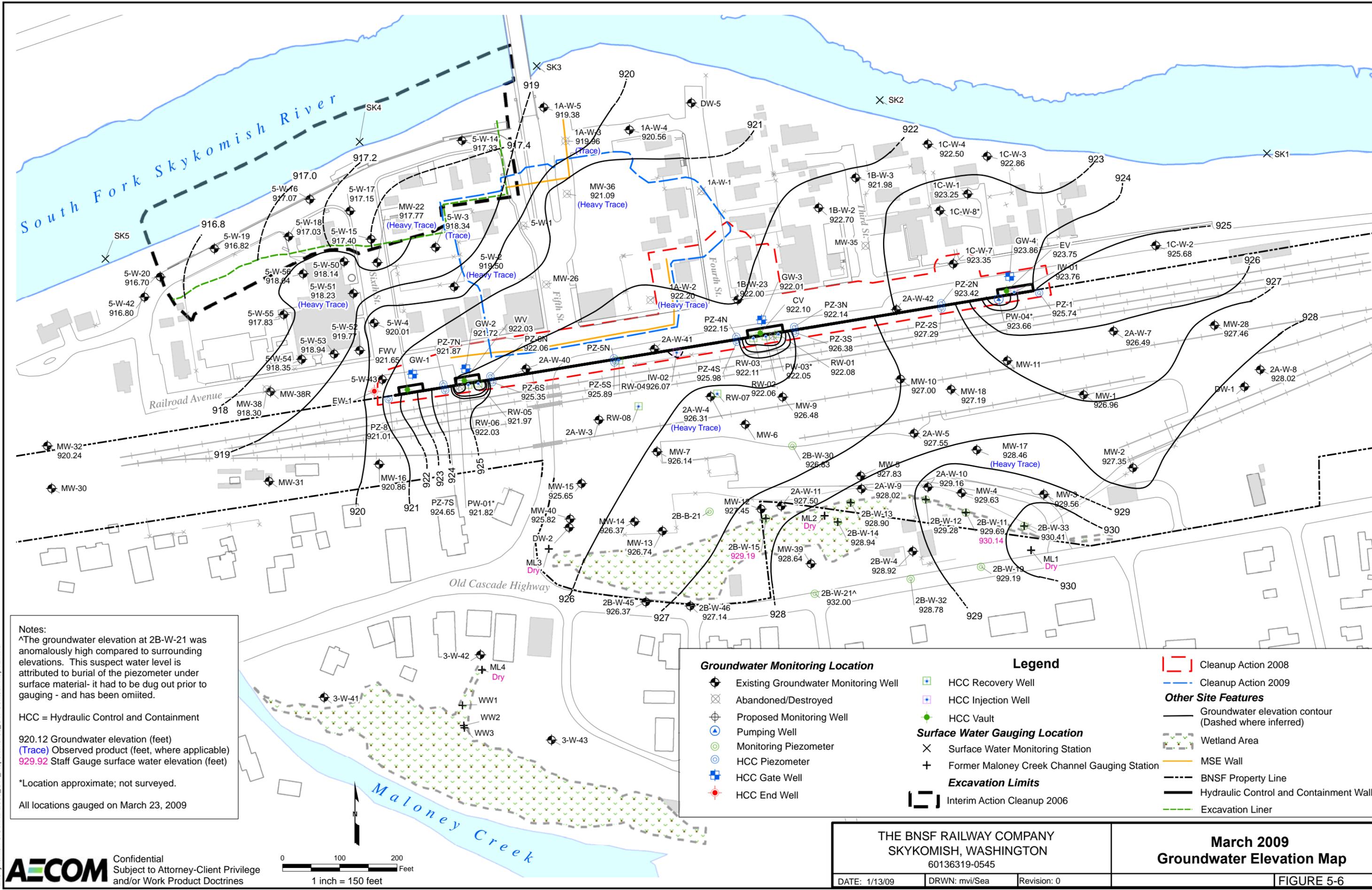
All locations gauged on February 24, 2009

Groundwater Monitoring Location		Legend	
⊕	Existing Groundwater Monitoring Well	⊕	HCC Recovery Well
⊗	Abandoned/Destroyed	⊕	HCC Injection Well
⊕	Proposed Monitoring Well	⊕	HCC Vault
⊕	Pumping Well	⊕	Surface Water Gauging Location
⊕	Monitoring Piezometer	⊕	Surface Water Monitoring Station
⊕	HCC Piezometer	+	Former Maloney Creek Channel Gauging Station
⊕	HCC Gate Well	Excavation Limits	
⊕	HCC End Well	⊕	Interim Action Cleanup 2006
		⊕	Cleanup Action 2008
		⊕	Cleanup Action 2009
		Other Site Features	
		⊕	Groundwater elevation contour (Dashed where inferred)
		⊕	Wetland Area
		⊕	MSE Wall
		⊕	BNSF Property Line
		⊕	Hydraulic Control and Containment Wall
		⊕	Excavation Liner



THE BNSF RAILWAY COMPANY SKYKOMISH, WASHINGTON 60136319-0545		February 2009 Groundwater Elevation Map
DATE: 1/13/09	DRWN: mvi/Sea	Revision: 0
		FIGURE 5-5

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Notes:
 ^The groundwater elevation at 2B-W-21 was anomalously high compared to surrounding elevations. This suspect water level is attributed to burial of the piezometer under surface material- it had to be dug out prior to gauging - and has been omitted.

HCC = Hydraulic Control and Containment

920.12 Groundwater elevation (feet)
 (Trace) Observed product (feet, where applicable)
 929.92 Staff Gauge surface water elevation (feet)

*Location approximate; not surveyed.

All locations gauged on March 23, 2009

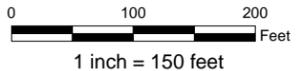
Groundwater Monitoring Location

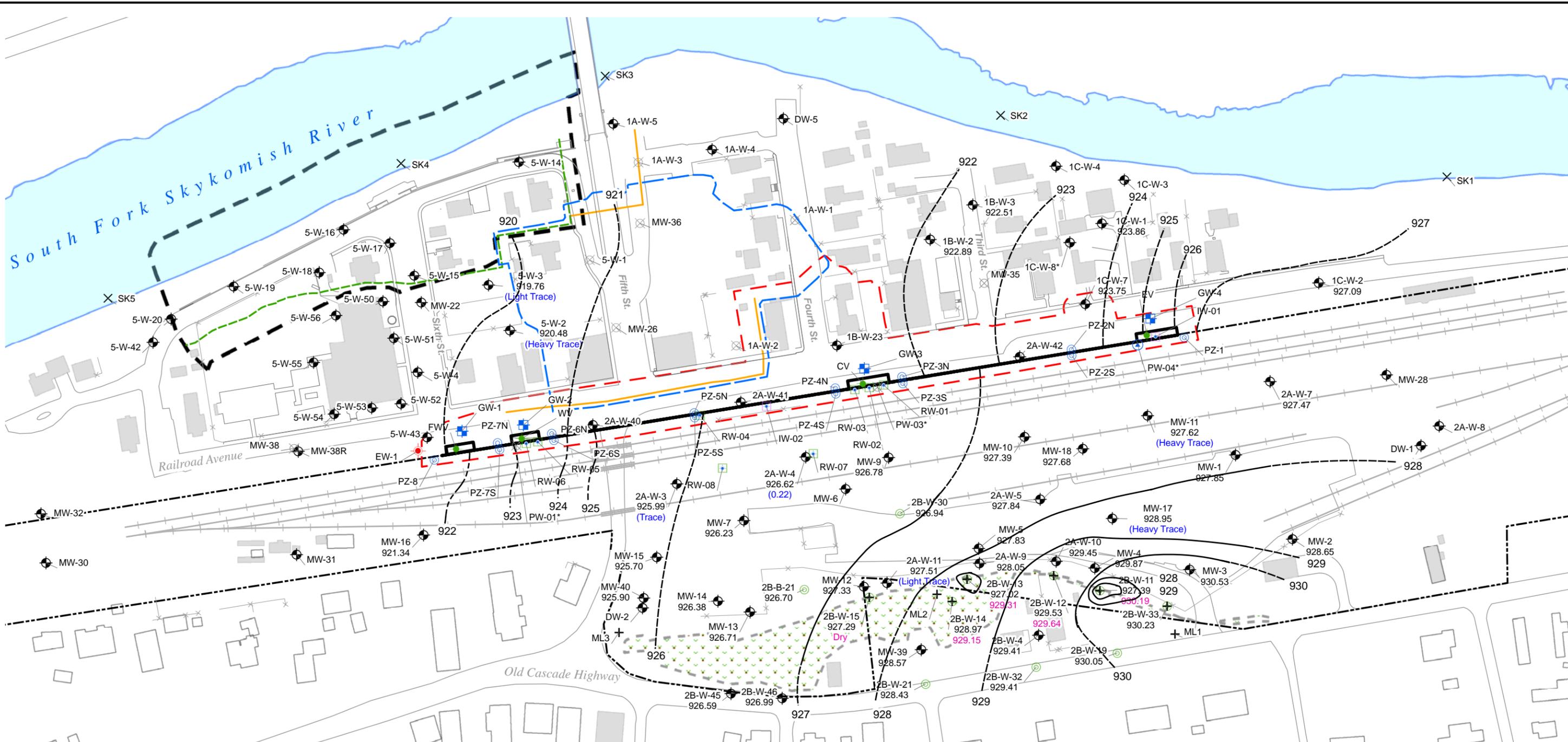
- Existing Groundwater Monitoring Well
- Abandoned/Destroyed
- Proposed Monitoring Well
- Pumping Well
- Monitoring Piezometer
- HCC Piezometer
- HCC Gate Well
- HCC End Well

Legend

- HCC Recovery Well
- HCC Injection Well
- HCC Vault
- Surface Water Gauging Location**
- Surface Water Monitoring Station
- Former Maloney Creek Channel Gauging Station
- Excavation Limits**
- Interim Action Cleanup 2006
- Cleanup Action 2008
- Cleanup Action 2009
- Other Site Features**
- Groundwater elevation contour (Dashed where inferred)
- Wetland Area
- MSE Wall
- BNSF Property Line
- Hydraulic Control and Containment Wall
- Excavation Liner

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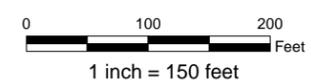
Notes:
HCC = Hydraulic Control and Containment

920.12 Groundwater elevation (feet)
(Trace) Observed product (feet, where applicable)
929.92 Staff Gauge surface water elevation (feet)

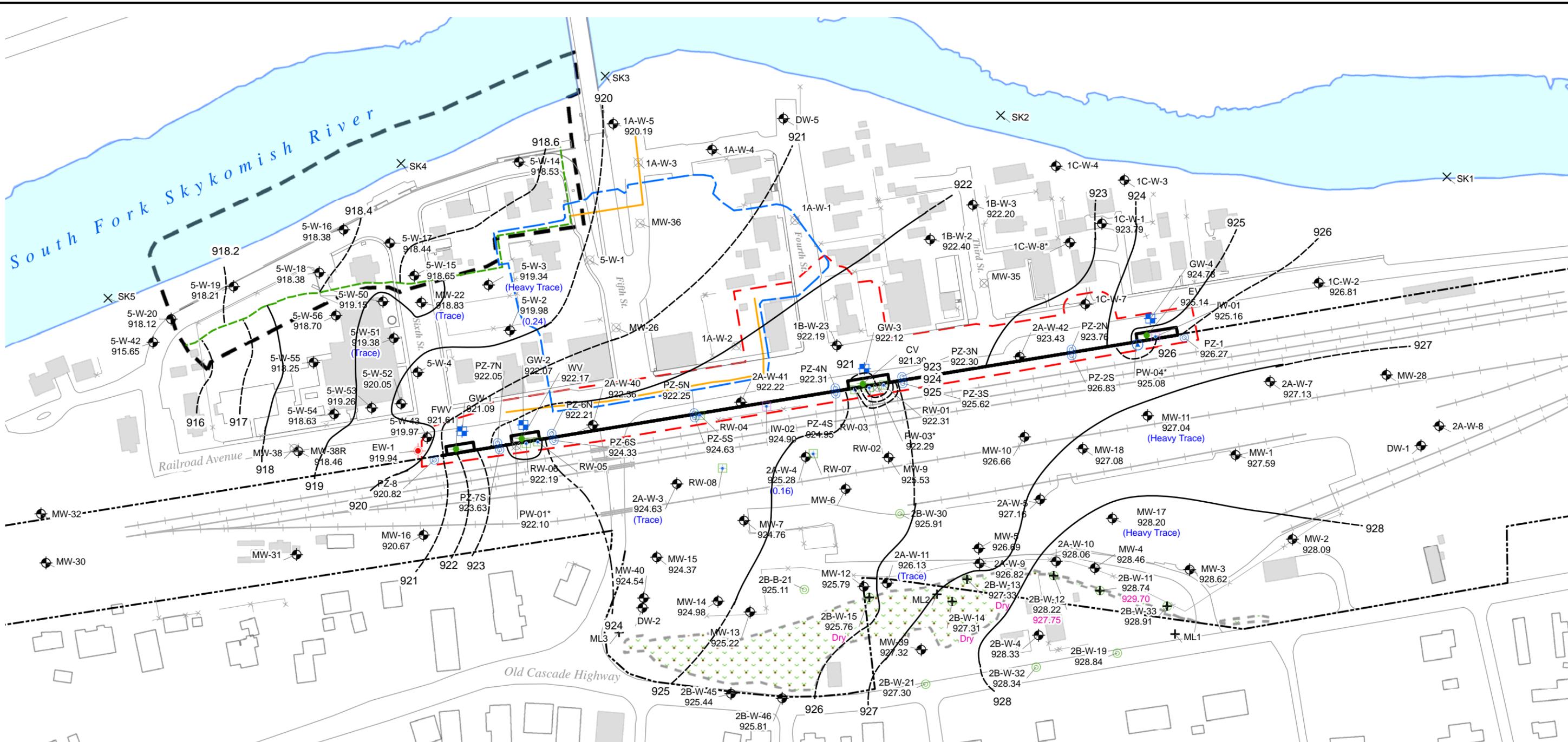
*Location approximate; not surveyed.

All locations gauged on May 12, 2009

Groundwater Monitoring Location		Legend	
◆	Existing Groundwater Monitoring Well	⊕	HCC Recovery Well
⊗	Abandoned/Destroyed	⊕	HCC Injection Well
⊕	Proposed Monitoring Well	●	HCC Vault
⊕	Pumping Well	Surface Water Gauging Location	
⊕	Monitoring Piezometer	×	Surface Water Monitoring Station
⊕	HCC Piezometer	+	Former Maloney Creek Channel Gauging Station
⊕	HCC Gate Well	Excavation Limits	
⊕	HCC End Well	⊔	Interim Action Cleanup 2006
		⊔	Cleanup Action 2008
		⊔	Cleanup Action 2009
		Other Site Features	
		—	Groundwater elevation contour (Dashed where inferred)
		⊔	Wetland Area
		⊔	MSE Wall
		⊔	BNSF Property Line
		⊔	Hydraulic Control and Containment Wall
		⊔	Excavation Liner

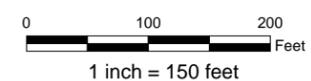


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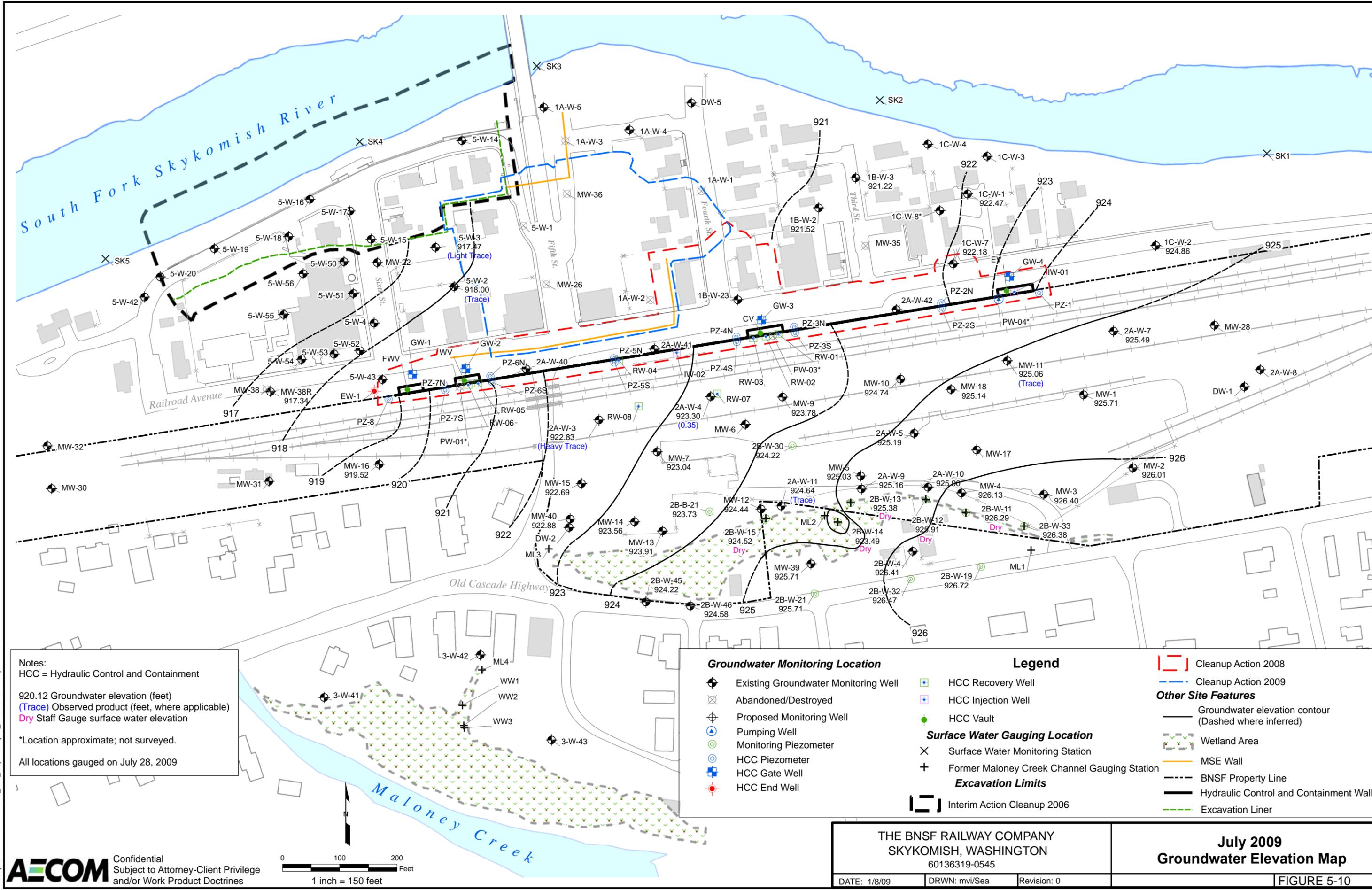


Notes:
HCC = Hydraulic Control and Containment
920.12 Groundwater elevation (feet)
(Trace) Observed product (feet, where applicable)
929.92 Staff Gauge surface water elevation (feet)
*Location approximate; not surveyed.
All locations gauged on June 9, 2009

Groundwater Monitoring Location		Legend	
●	Existing Groundwater Monitoring Well	+	HCC Recovery Well
⊗	Abandoned/Destroyed	⊕	HCC Injection Well
⊕	Proposed Monitoring Well	●	HCC Vault
⊕	Pumping Well	Surface Water Gauging Location	
⊕	Monitoring Piezometer	×	Surface Water Monitoring Station
⊕	HCC Piezometer	+	Former Maloney Creek Channel Gauging Station
⊕	HCC Gate Well	Excavation Limits	
⊕	HCC End Well	⊔	Interim Action Cleanup 2006
		⊔	Cleanup Action 2008
		⊔	Cleanup Action 2009
		Other Site Features	
		—	Groundwater elevation contour (Dashed where inferred)
		⊔	Wetland Area
		⊔	MSE Wall
		⊔	BNSF Property Line
		⊔	Hydraulic Control and Containment Wall
		⊔	Excavation Liner



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Notes:
 HCC = Hydraulic Control and Containment
 920.12 Groundwater elevation (feet)
 (Trace) Observed product (feet, where applicable)
 Dry Staff Gauge surface water elevation
 *Location approximate; not surveyed.
 All locations gauged on July 28, 2009

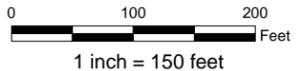
Groundwater Monitoring Location

- ◆ Existing Groundwater Monitoring Well
- ⊗ Abandoned/Destroyed
- ⊕ Proposed Monitoring Well
- ⊕ Pumping Well
- ⊙ Monitoring Piezometer
- ⊙ HCC Piezometer
- ⊕ HCC Gate Well
- ⊕ HCC End Well

Legend

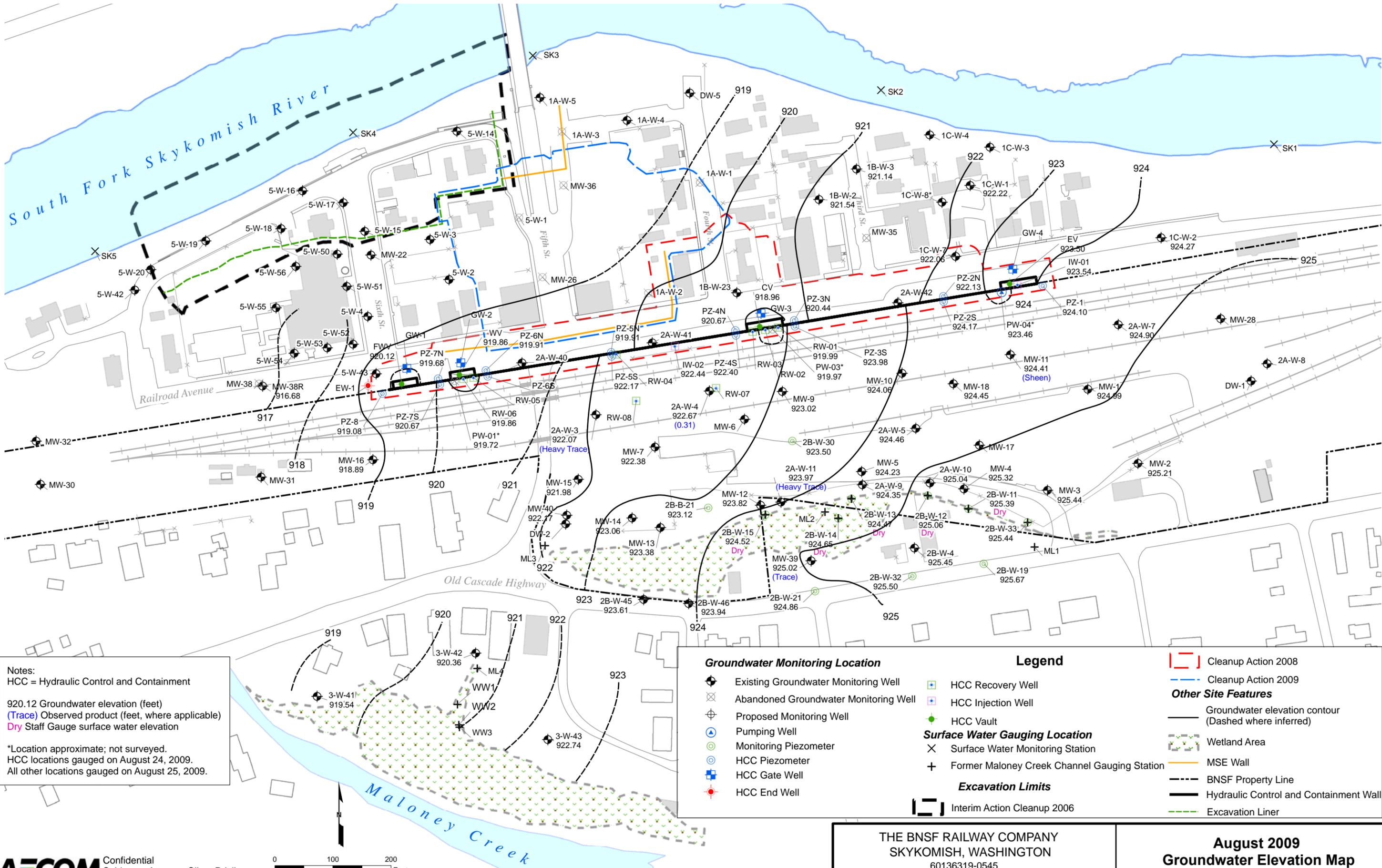
- ⊕ HCC Recovery Well
- ⊕ HCC Injection Well
- ◆ HCC Vault
- ⊕ Surface Water Gauging Location
- ⊕ Surface Water Monitoring Station
- ⊕ Former Maloney Creek Channel Gauging Station
- Excavation Limits**
- ⊕ Interim Action Cleanup 2006

- ⊕ Cleanup Action 2008
- ⊕ Cleanup Action 2009
- Other Site Features**
- ⊕ Groundwater elevation contour (Dashed where inferred)
- ⊕ Wetland Area
- ⊕ MSE Wall
- ⊕ BNSF Property Line
- ⊕ Hydraulic Control and Containment Wall
- ⊕ Excavation Liner



THE BNSF RAILWAY COMPANY SKYKOMISH, WASHINGTON 60136319-0545		July 2009 Groundwater Elevation Map
DATE: 1/8/09	DRWN: mvi/Sea	Revision: 0
		FIGURE 5-10

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Notes:
 HCC = Hydraulic Control and Containment

920.12 Groundwater elevation (feet)
 (Trace) Observed product (feet, where applicable)
 Dry Staff Gauge surface water elevation

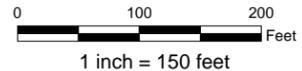
*Location approximate; not surveyed.
 HCC locations gauged on August 24, 2009.
 All other locations gauged on August 25, 2009.

Groundwater Monitoring Location

- ◆ Existing Groundwater Monitoring Well
- ⊗ Abandoned Groundwater Monitoring Well
- ⊕ Proposed Monitoring Well
- ⊙ Pumping Well
- ⊙ Monitoring Piezometer
- ⊙ HCC Piezometer
- ⊕ HCC Gate Well
- ⊙ HCC End Well

Legend

- ⊕ HCC Recovery Well
- ⊕ HCC Injection Well
- ◆ HCC Vault
- ⊕ Former Maloney Creek Channel Gauging Station
- ⊕ Interim Action Cleanup 2006
- ▭ Cleanup Action 2008
- ▭ Cleanup Action 2009
- Other Site Features**
- Groundwater elevation contour (Dashed where inferred)
- ▭ Wetland Area
- ▭ MSE Wall
- ▭ BNSF Property Line
- ▭ Hydraulic Control and Containment Wall
- ▭ Excavation Liner



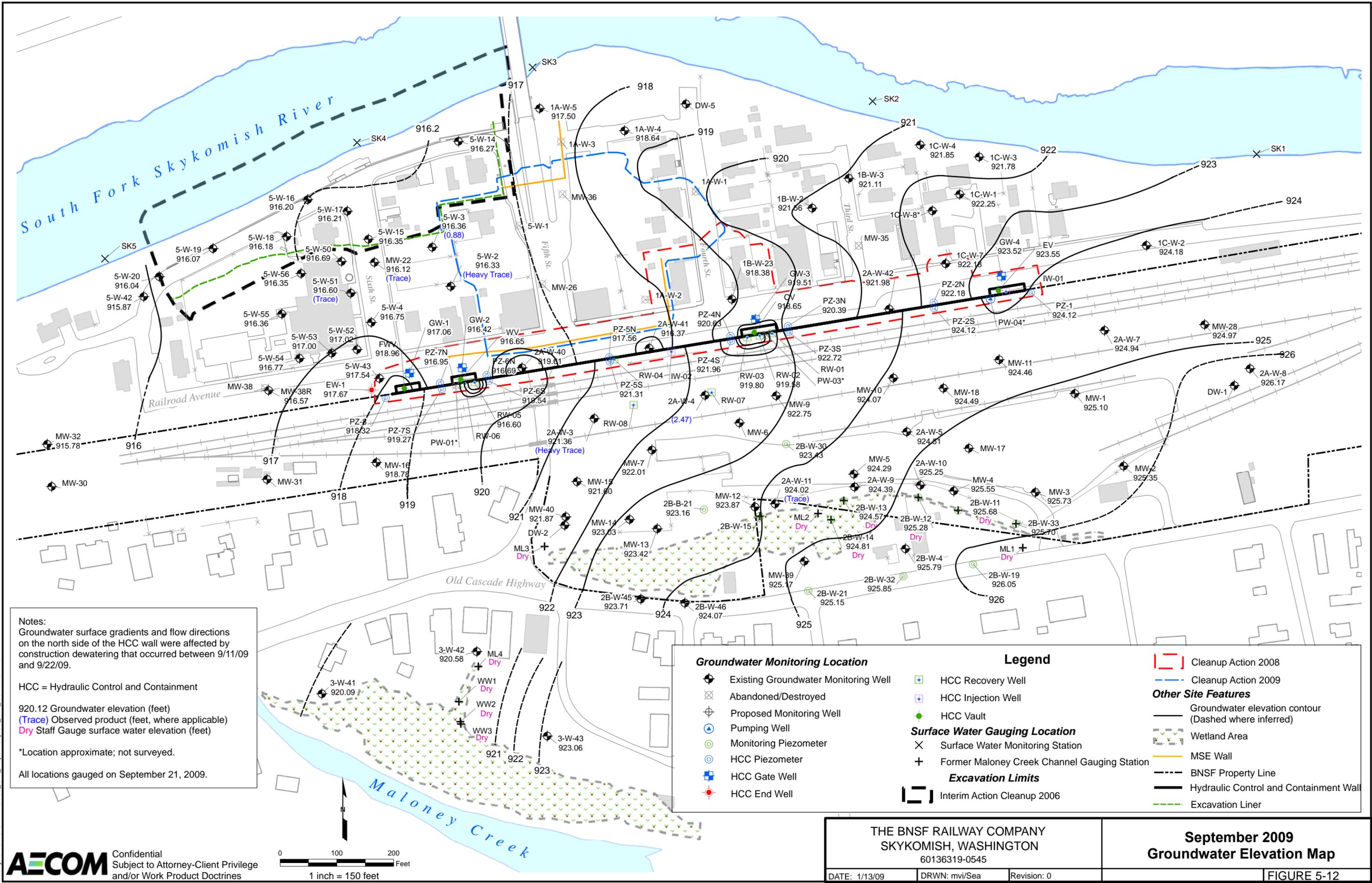
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 60136319-0545

DATE: 1/13/09 DRWN: mvi/Sea Revision: 0

**August 2009
 Groundwater Elevation Map**

FIGURE 5-11

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Notes:
 Groundwater surface gradients and flow directions on the north side of the HCC wall were affected by construction dewatering that occurred between 9/11/09 and 9/22/09.

HCC = Hydraulic Control and Containment

920.12 Groundwater elevation (feet)
 (Trace) Observed product (feet, where applicable)
 Dry Staff Gauge surface water elevation (feet)

*Location approximate; not surveyed.

All locations gauged on September 21, 2009.

Groundwater Monitoring Location

- Existing Groundwater Monitoring Well
- ⊗ Abandoned/Destroyed
- ⊕ Proposed Monitoring Well
- ⊙ Pumping Well
- ⊙ Monitoring Piezometer
- ⊙ HCC Piezometer
- ⊕ HCC Gate Well
- HCC End Well

Legend

- ⊕ HCC Recovery Well
- ⊕ HCC Injection Well
- HCC Vault
- ⊕ Former Maloney Creek Channel Gauging Station
- Excavation Limits**
- ⊕ Interim Action Cleanup 2006
- ⊕ Cleanup Action 2008
- ⊕ Cleanup Action 2009
- Other Site Features**
- ⊕ Groundwater elevation contour (Dashed where inferred)
- ⊕ Wetland Area
- ⊕ MSE Wall
- ⊕ BNSF Property Line
- ⊕ Hydraulic Control and Containment Wall
- ⊕ Excavation Liner

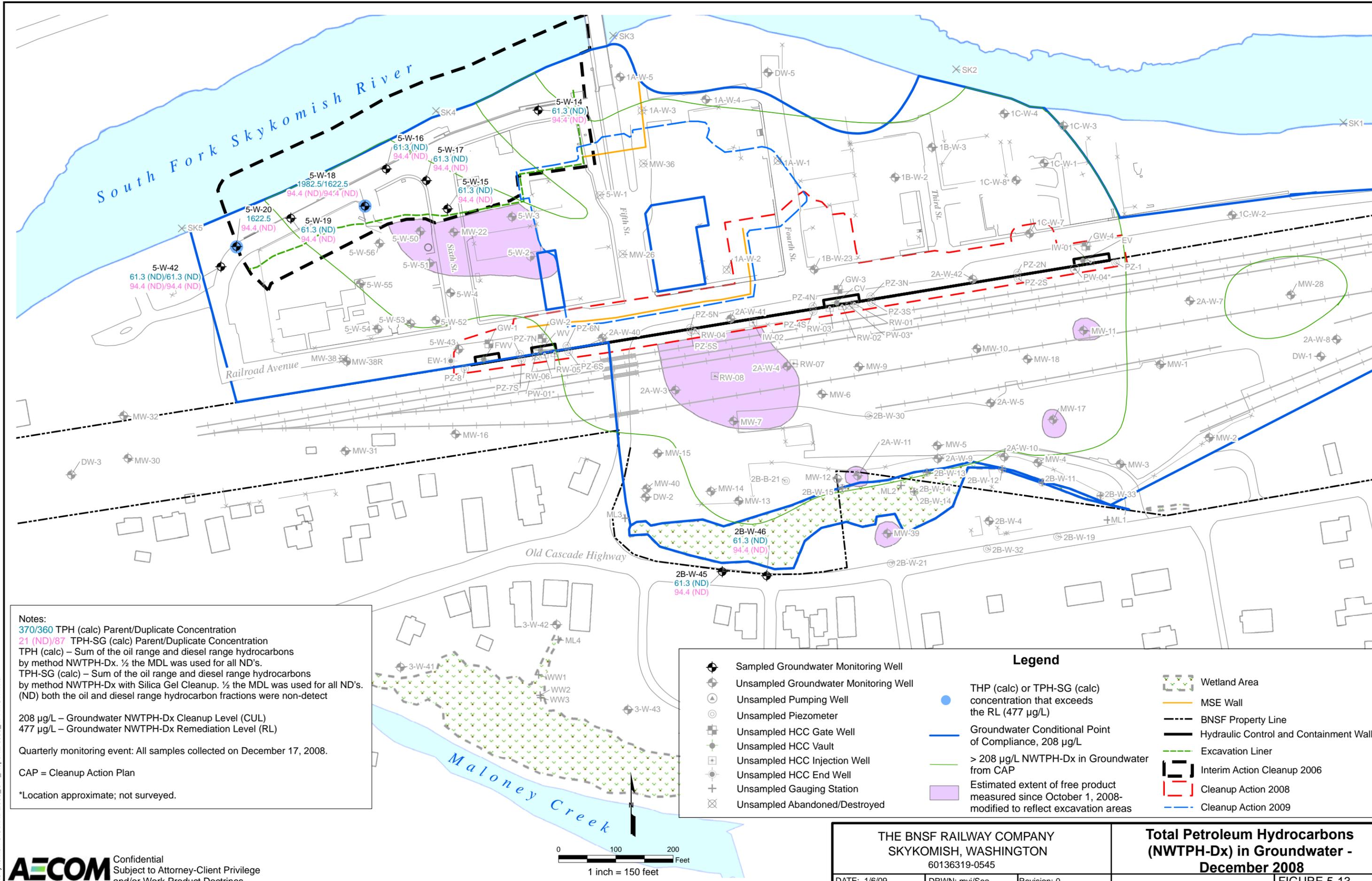
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 60136319-0545

DATE: 1/13/09 DRWN: mvi/Sea Revision: 0

**September 2009
 Groundwater Elevation Map**

FIGURE 5-12

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Notes:
 370/360 TPH (calc) Parent/Duplicate Concentration
 21 (ND)/87 TPH-SG (calc) Parent/Duplicate Concentration
 TPH (calc) – Sum of the oil range and diesel range hydrocarbons by method NWTPH-Dx. ½ the MDL was used for all ND's.
 TPH-SG (calc) – Sum of the oil range and diesel range hydrocarbons by method NWTPH-Dx with Silica Gel Cleanup. ½ the MDL was used for all ND's.
 (ND) both the oil and diesel range hydrocarbon fractions were non-detect

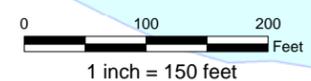
208 µg/L – Groundwater NWTPH-Dx Cleanup Level (CUL)
 477 µg/L – Groundwater NWTPH-Dx Remediation Level (RL)

Quarterly monitoring event: All samples collected on December 17, 2008.

CAP = Cleanup Action Plan

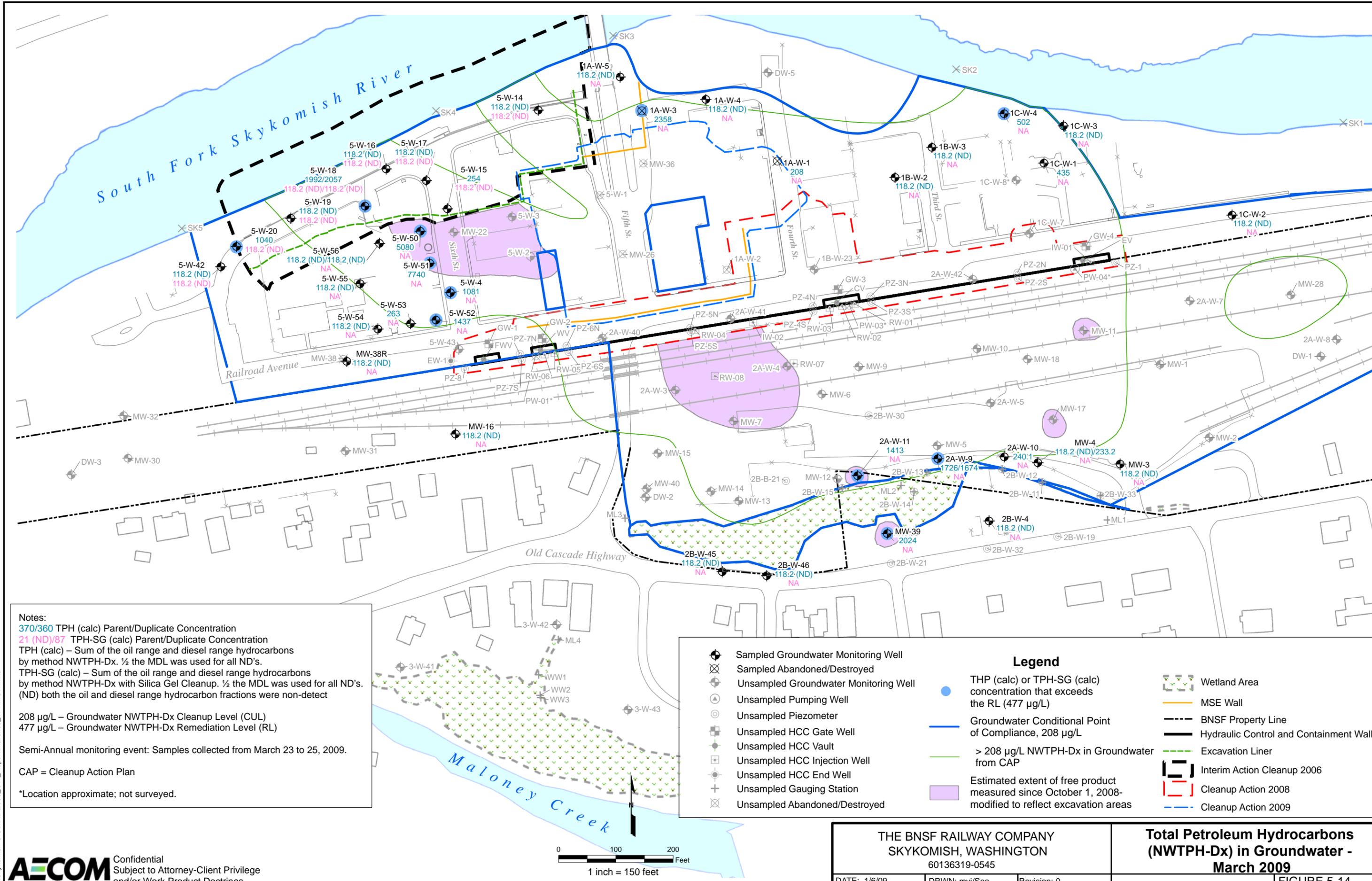
*Location approximate; not surveyed.

Legend	
	Sampled Groundwater Monitoring Well
	Unsampld Groundwater Monitoring Well
	Unsampld Pumping Well
	Unsampld Piezometer
	Unsampld HCC Gate Well
	Unsampld HCC Vault
	Unsampld HCC Injection Well
	Unsampld HCC End Well
	Unsampld Gauging Station
	Unsampld Abandoned/Destroyed
	THP (calc) or TPH-SG (calc) concentration that exceeds the RL (477 µg/L)
	Groundwater Conditional Point of Compliance, 208 µg/L
	> 208 µg/L NWTPH-Dx in Groundwater from CAP
	Estimated extent of free product measured since October 1, 2008-modified to reflect excavation areas
	Wetland Area
	MSE Wall
	BNSF Property Line
	Hydraulic Control and Containment Wall
	Excavation Liner
	Interim Action Cleanup 2006
	Cleanup Action 2008
	Cleanup Action 2009



THE BNSF RAILWAY COMPANY SKYKOMISH, WASHINGTON 60136319-0545		Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater - December 2008	
DATE: 1/6/09	DRWN: mvi/Sea	Revision: 0	FIGURE 5-13

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Notes:
 370/360 TPH (calc) Parent/Duplicate Concentration
 21 (ND)/87 TPH-SG (calc) Parent/Duplicate Concentration
 TPH (calc) – Sum of the oil range and diesel range hydrocarbons by method NWTPH-Dx. ½ the MDL was used for all ND's.
 TPH-SG (calc) – Sum of the oil range and diesel range hydrocarbons by method NWTPH-Dx with Silica Gel Cleanup. ½ the MDL was used for all ND's.
 (ND) both the oil and diesel range hydrocarbon fractions were non-detect

208 µg/L – Groundwater NWTPH-Dx Cleanup Level (CUL)
 477 µg/L – Groundwater NWTPH-Dx Remediation Level (RL)

Semi-Annual monitoring event: Samples collected from March 23 to 25, 2009.

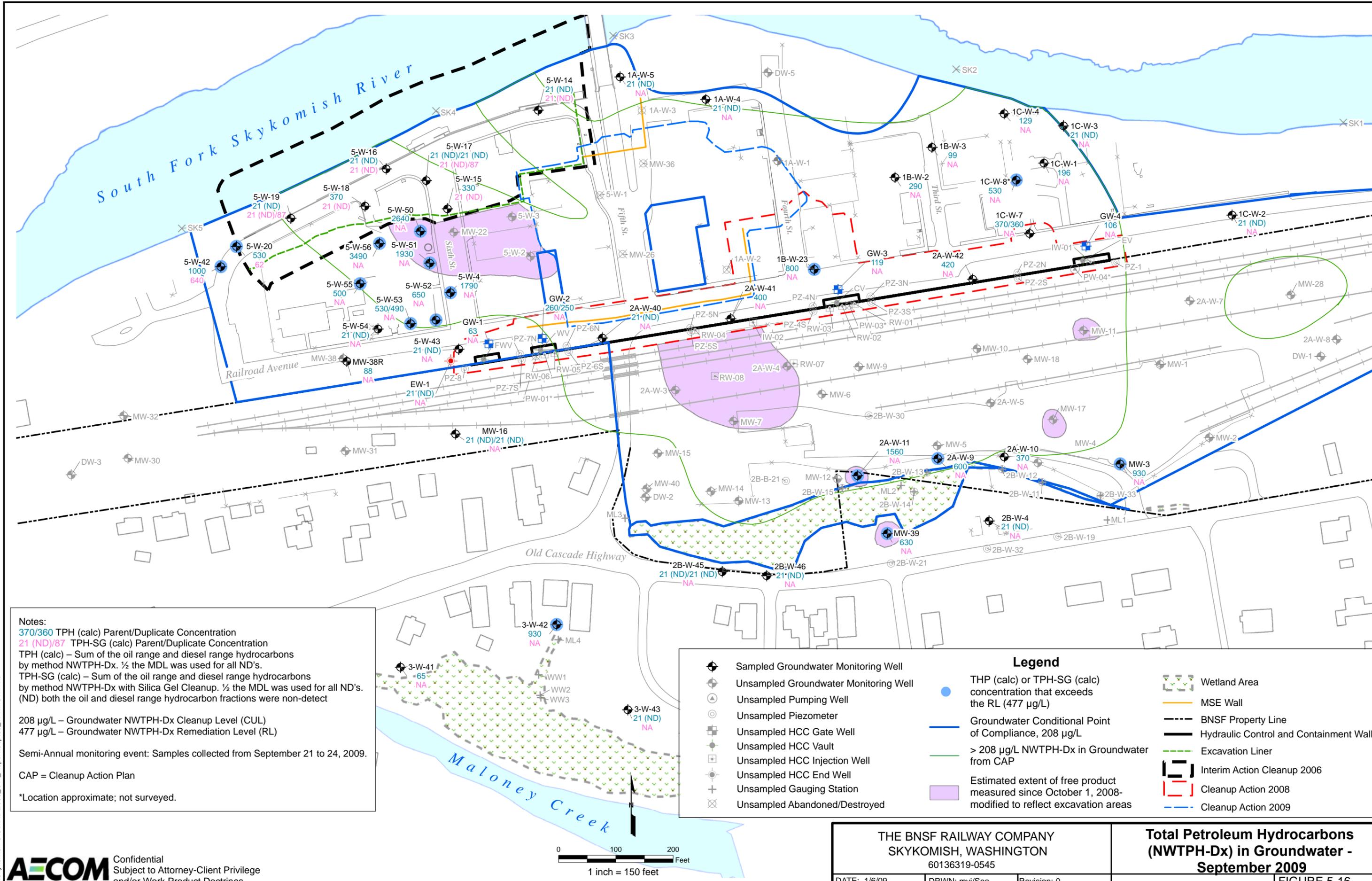
CAP = Cleanup Action Plan

*Location approximate; not surveyed.

Legend	
	Sampled Groundwater Monitoring Well
	Sampled Abandoned/Destroyed
	Unsampld Groundwater Monitoring Well
	Unsampld Pumping Well
	Unsampld Piezometer
	Unsampld HCC Gate Well
	Unsampld HCC Vault
	Unsampld HCC Injection Well
	Unsampld HCC End Well
	Unsampld Gauging Station
	Unsampld Abandoned/Destroyed
	THP (calc) or TPH-SG (calc) concentration that exceeds the RL (477 µg/L)
	Groundwater Conditional Point of Compliance, 208 µg/L
	> 208 µg/L NWTPH-Dx in Groundwater from CAP
	Estimated extent of free product measured since October 1, 2008-modified to reflect excavation areas
	Wetland Area
	MSE Wall
	BNSF Property Line
	Hydraulic Control and Containment Wall
	Excavation Liner
	Interim Action Cleanup 2006
	Cleanup Action 2008
	Cleanup Action 2009

THE BNSF RAILWAY COMPANY SKYKOMISH, WASHINGTON 60136319-0545		Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater - March 2009	
DATE: 1/6/09	DRWN: mvi/Sea	Revision: 0	FIGURE 5-14

L:\Skykomish GIS\MXD\2009_GW_Report\March09_TPHinGW.mxd



Notes:
 370/360 TPH (calc) Parent/Duplicate Concentration
 21 (ND)/87 TPH-SG (calc) Parent/Duplicate Concentration
 TPH (calc) – Sum of the oil range and diesel range hydrocarbons by method NWTPH-Dx. ½ the MDL was used for all ND's.
 TPH-SG (calc) – Sum of the oil range and diesel range hydrocarbons by method NWTPH-Dx with Silica Gel Cleanup. ½ the MDL was used for all ND's.
 (ND) both the oil and diesel range hydrocarbon fractions were non-detect

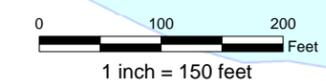
208 µg/L – Groundwater NWTPH-Dx Cleanup Level (CUL)
 477 µg/L – Groundwater NWTPH-Dx Remediation Level (RL)

Semi-Annual monitoring event: Samples collected from September 21 to 24, 2009.

CAP = Cleanup Action Plan

*Location approximate; not surveyed.

Legend			
	Sampled Groundwater Monitoring Well		Wetland Area
	Unsampld Groundwater Monitoring Well		MSE Wall
	Unsampld Pumping Well		BNSF Property Line
	Unsampld Piezometer		Hydraulic Control and Containment Wall
	Unsampld HCC Gate Well		Excavation Liner
	Unsampld HCC Vault		Interim Action Cleanup 2006
	Unsampld HCC Injection Well		Cleanup Action 2008
	Unsampld HCC End Well		Cleanup Action 2009
	Unsampld Gauging Station		TPH (calc) or TPH-SG (calc) concentration that exceeds the RL (477 µg/L)
	Unsampld Abandoned/Destroyed		Groundwater Conditional Point of Compliance, 208 µg/L
			> 208 µg/L NWTPH-Dx in Groundwater from CAP
			Estimated extent of free product measured since October 1, 2008-modified to reflect excavation areas



THE BNSF RAILWAY COMPANY SKYKOMISH, WASHINGTON 60136319-0545		Total Petroleum Hydrocarbons (NWTPH-Dx) in Groundwater - September 2009	
DATE: 1/6/09	DRWN: mvi/Sea	Revision: 0	FIGURE 5-16

L:\Skykomish GIS\MXD\2009_GW_Report\Sept09_TPHinGW.mxd

Appendix A

2009 Groundwater Report Scope Memo

AECOM Environment

710 2nd Avenue, Suite 1000, Seattle, WA 98104
T 206.624.9349 F 206.623.3793 www.aecom.com

Technical Memorandum

Date: November 19, 2009

To: Ronald Timm, Site Technical Coordinator,
Washington State Department of Ecology,
Toxics Cleanup Program

From: Heather Hirsch, Project Geologist

Subject: 2008 to 2009 Annual Site-Wide Groundwater Monitoring Report Scope

Distribution:	<u>Brian Sato (Ecology)</u>	<u>Thom Booth (AECOM)</u>	<u>Halah Voges (AECOM)</u>	<u>Renee Knecht (AECOM)</u>
---------------	---------------------------------	-------------------------------	--------------------------------	---------------------------------

Dear Mr. Timm,

AECOM is currently preparing the *2008 to 2009 Annual Site-Wide Groundwater Monitoring Report* (report) for the Burlington Northern Santa Fe (BNSF) Railway Company Former Maintenance and Fueling Facility Site (Site) in Skykomish, Washington. It has come to our attention that some of the data analyses included in the Site annual groundwater reports, which have been carried over from year to year, are no longer relevant at this time or are outside the scope of the current report objectives. AECOM is proposing to exclude some of these analyses from the 2008 to 2009 report in order to stream-line the data presentation and maintain consistency with the report objectives.

Report Objectives

AECOM identified the following investigation and reporting objectives for the 2008 to 2009 annual site-wide groundwater monitoring (*2009 Groundwater Monitoring Plan*; AECOM, 2009):

- Monitor any changes in chemical/petroleum distribution pending implementation of the cleanup actions throughout the site;
- Provide monitoring data for the groundwater in the levee zone to assess the effect of the 2006 interim cleanup of the levee zone on groundwater quality;
- Provide monitoring data for the 2008 remediation area groundwater to assess the effects on groundwater quality;
- Provide monitoring data for the 2009 remediation area groundwater to assess the effects on groundwater quality; and
- Provide gauging data to assess the groundwater flow direction for the area of Former Maloney Creek Zone (FMCZ).

Data collected during the 2008 to 2009 monitoring period will be analyzed in the current report in order to meet these objectives.

Analyses Proposed for Removal

In addition to the groundwater quality monitoring and post-remediation groundwater impact assessments outlined in the objectives, the annual groundwater reports have historically also included additional data analysis, which is no longer relevant and is outside the scope of the report objectives. These analyses include spatial and temporal trend analyses, such as groundwater hydrographs, product thickness vs. groundwater elevation trends, and temporal trends in NWTPH-DX concentrations in groundwater for select wells. These analyses were originally included in order to supplement the conceptual site model and to assess the nature and movement of NAPL at the site.

Groundwater hydrographs were originally developed to identify the smear zone. The product thickness vs. groundwater elevation trends were developed to analyze the affect of water elevation on product mobility. Whereas these analyses contribute to the conceptual model of the site, they are beyond the objectives of this report. In addition, the conceptual site model has been adequately described in other investigation reports.

Temporal NWTPH-Dx trends in groundwater cannot be analyzed accurately presently because the physical and chemical regime is constantly changing as the remedial actions are implemented. Temporal trends will be analyzed after active remediation as part of long-term compliance monitoring. Therefore, these trend analyses are beyond the objectives of this report.

To maintain consistency with the stated report objectives, AECOM proposes to exclude the aforementioned analyses from the 2008 to 2009 report. These analyses were presented in the following figures in the *2007 to 2008 Annual Site-Wide Groundwater Monitoring Report* (AECOM, 2009b):

Figure 5-1: Hydrograph Source Data Locations Plotted on Hydrographs

Figure 5-2: Groundwater Elevations – Selected Wells January 2003 – September 2007

Figure 5-3: Groundwater Elevations – Selected Wells August 2007 – September 2008

Figure 5-4: Skykomish River and Select Wells Groundwater Elevations August 2007 – September 2008

Figure 5-5: Product Thickness vs. Groundwater Elevation in Well 5-W-2 (2002-2008)

Figure 5-6: Product Thickness vs. Groundwater Elevation in Well 5-W-3 (2002-2008)

Figure 5-7: Product Thickness vs. Groundwater Elevation in Well MW-8 (2002-2008)

Figure 5-8: Product Thickness vs. Groundwater Elevation in Well MW-20 (2002-2008)

Figure 5-9: Product Thickness vs. Groundwater Elevation in Well MW-21 (2002-2008)

Figure 5-10: Product Thickness vs. Groundwater Elevation in Well MW-36 (2002-2008)

Figure 5-29: TPH Concentrations in Select Wells versus Time August 2007 – September 2008

Figure 5-30: TPH Concentrations in Select Wells versus Time (2003 – 2008)

AECOM Environment – to enhance and sustain the world's built, natural and social environments

Ronald Timm
Page 2

If you would like any additional information or have any questions, please don't hesitate to contact me.

Sincerely yours,



Heather Hirsch
heather.hirsch@aecom.com

References

AECOM, 2009. *2009 Groundwater Monitoring Plan, BNSF Former Maintenance and Fueling Facility – Skykomish, Washington*. Seattle, Washington: AECOM Environment, March 2009.

AECOM 2009b. *2007-2008 Annual Site-Wide Groundwater Monitoring Report, BNSF Former Maintenance and Fueling Facility – Skykomish, Washington*. Seattle, Washington: AECOM Environment, July 2009.

Hirsch, Heather

From: Timm, Ronald W. (ECY) [rtim461@ECY.WA.GOV]
Sent: Monday, November 30, 2009 10:06 AM
To: Voges, Halah; Sato, Brian (ECY)
Cc: Bruce.Sheppard@BNSF.com; Hirsch, Heather; Booth, Thom; Albano, Sarah; Havighorst, Mark
Subject: RE: proposed changes to annual GW monitoring rpt

Hi, Halah

We concur that Figures 5-1 through 5-10, and Figures 5-29 and 5-30, along with their associated analyzes can be excluded from the next annual groundwater report.

Sincerely,

Ronald W. Timm, L.Hg., M.S.
Senior Hydrogeologist/Site Manager
TCP/NWRO (Bellevue, WA)
Washington State Department of Ecology
425-649-7185
rtim461@ecy.wa.gov

From: Voges, Halah [mailto:Halah.Voges@aecom.com]
Sent: Thursday, November 19, 2009 12:24 PM
To: Timm, Ronald W. (ECY); Sato, Brian (ECY)
Cc: Bruce.Sheppard@BNSF.com; Hirsch, Heather; Booth, Thom; Albano, Sarah; Havighorst, Mark
Subject: proposed changes to annual GW monitoring rpt

Ron and Brian –

Attached is a memo describing proposed changes to the annual groundwater monitoring report for Skykomish. As we began work on the report, it became apparent that some of the graphs, figures and data analysis that we typically include in the report are not meaningful given the on-going remediation work. Please let us know if you agree with our proposed changes, and we will continue with report preparation. Thanks.

Halah M. Voges, P.E.
Senior Program Manager
Environment
D 206.403.4227 C 206.399.2191
halah.voges@aecom.com

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Please consider the environment before printing this e-mail.

Appendix B

Well Logs and 5-W-42 Installation Memo

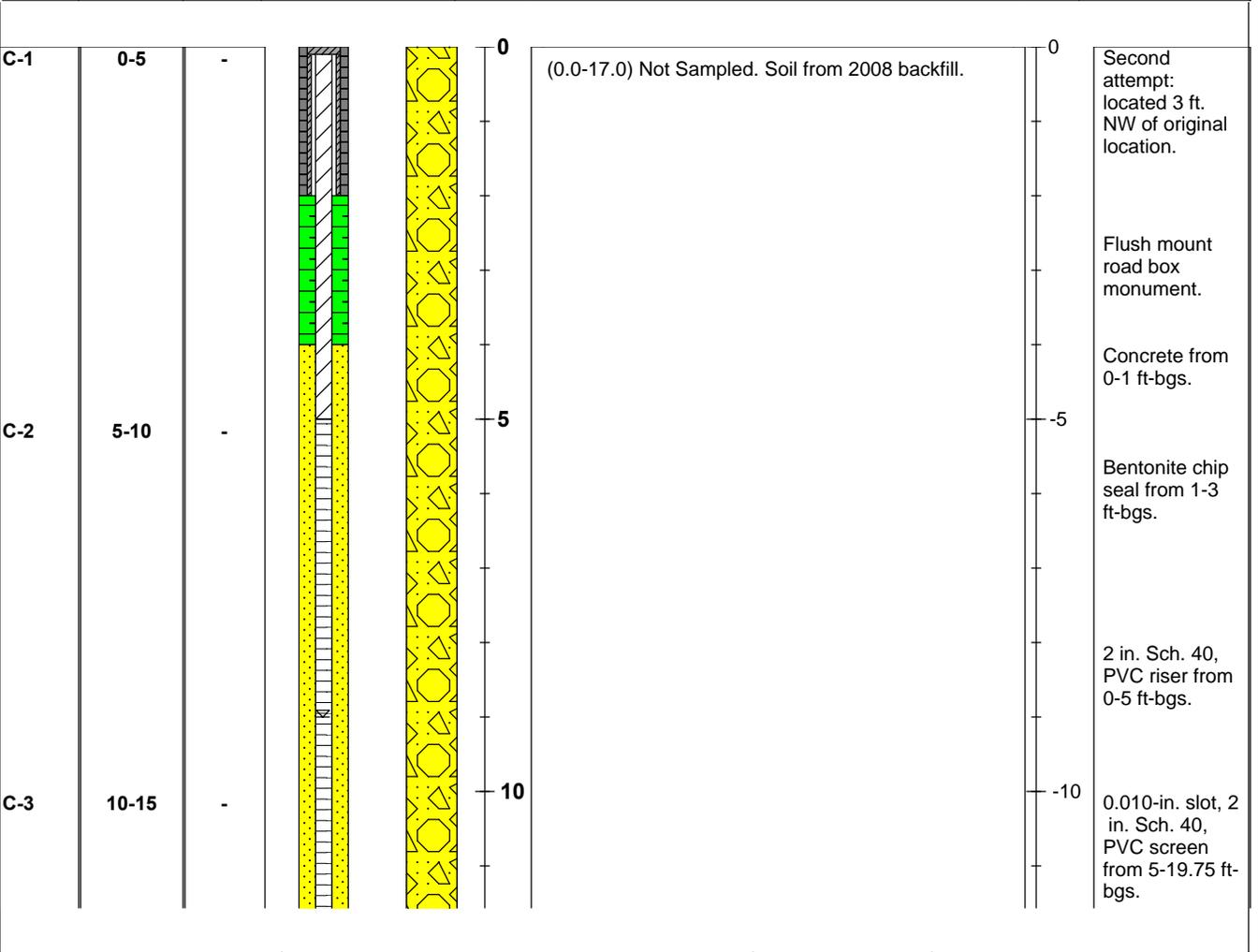
Boring/Well Log

Well #: 1B-W-23

Sheet 1 of 2

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 22 ft.
Start Date & Time: 03/18/09 0810	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/18/09 0925	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot, Sch. 40 PVC, 5-20 ft-bgs

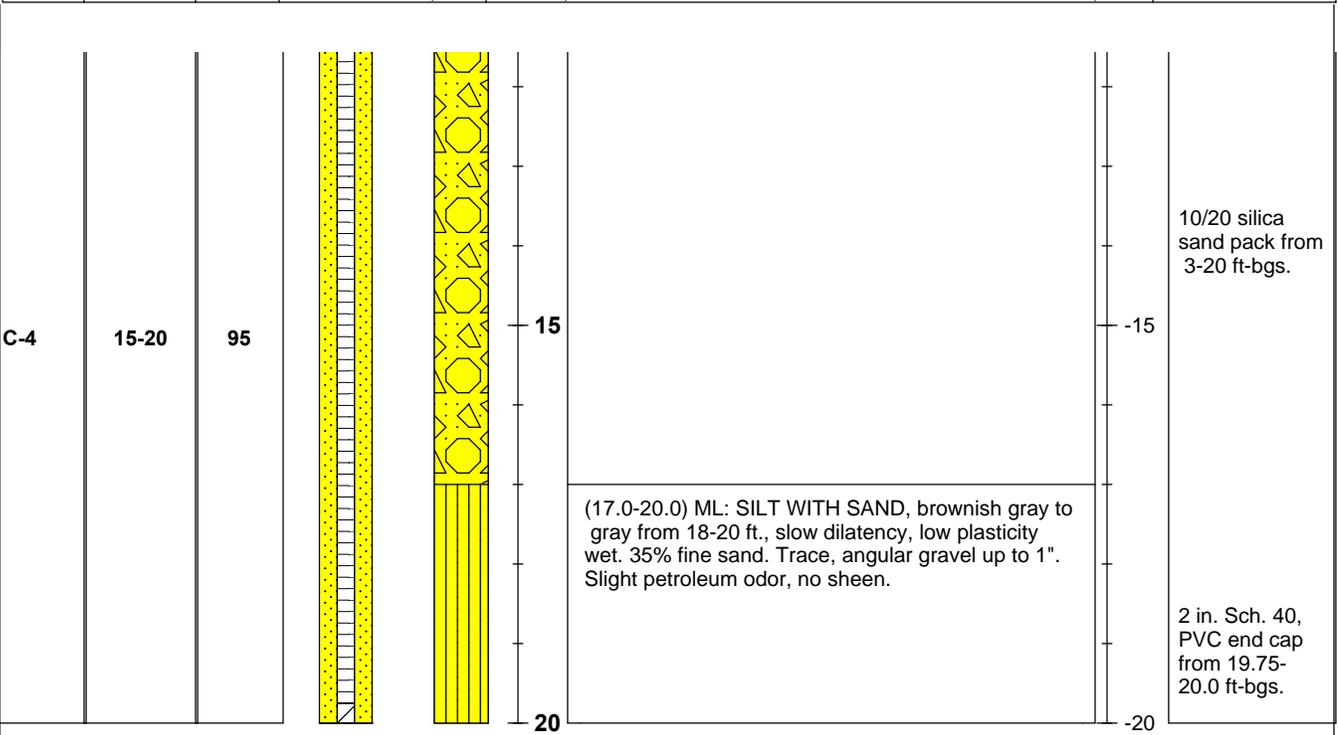
Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 22 ft.
Start Date & Time: 03/18/09 0810	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/18/09 0925	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot, Sch. 40 PVC, 5-20 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



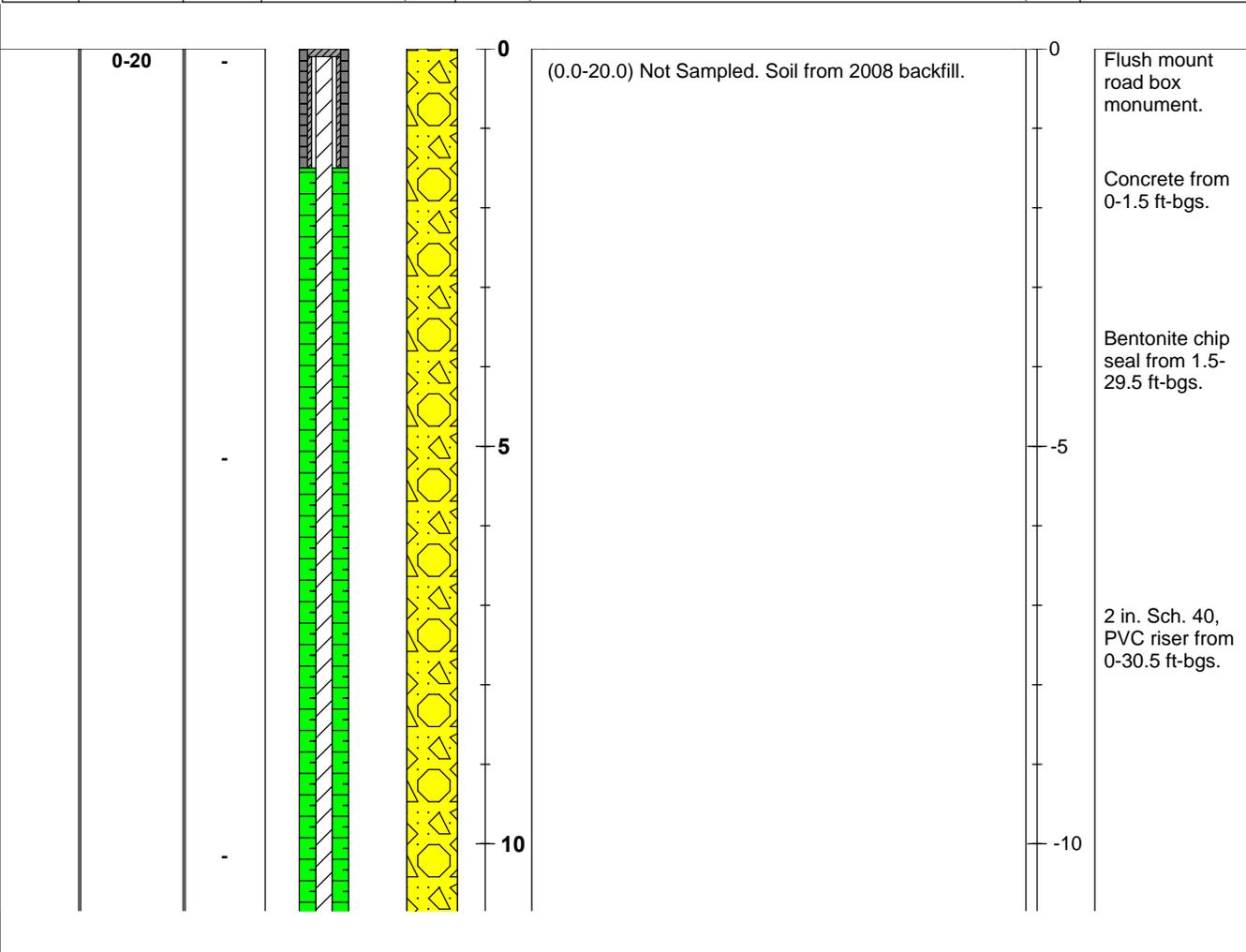
Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)

Boring/Well Log

Well #: 2A-W-40
Sheet 1 of 4

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/23/09 1040	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1520	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

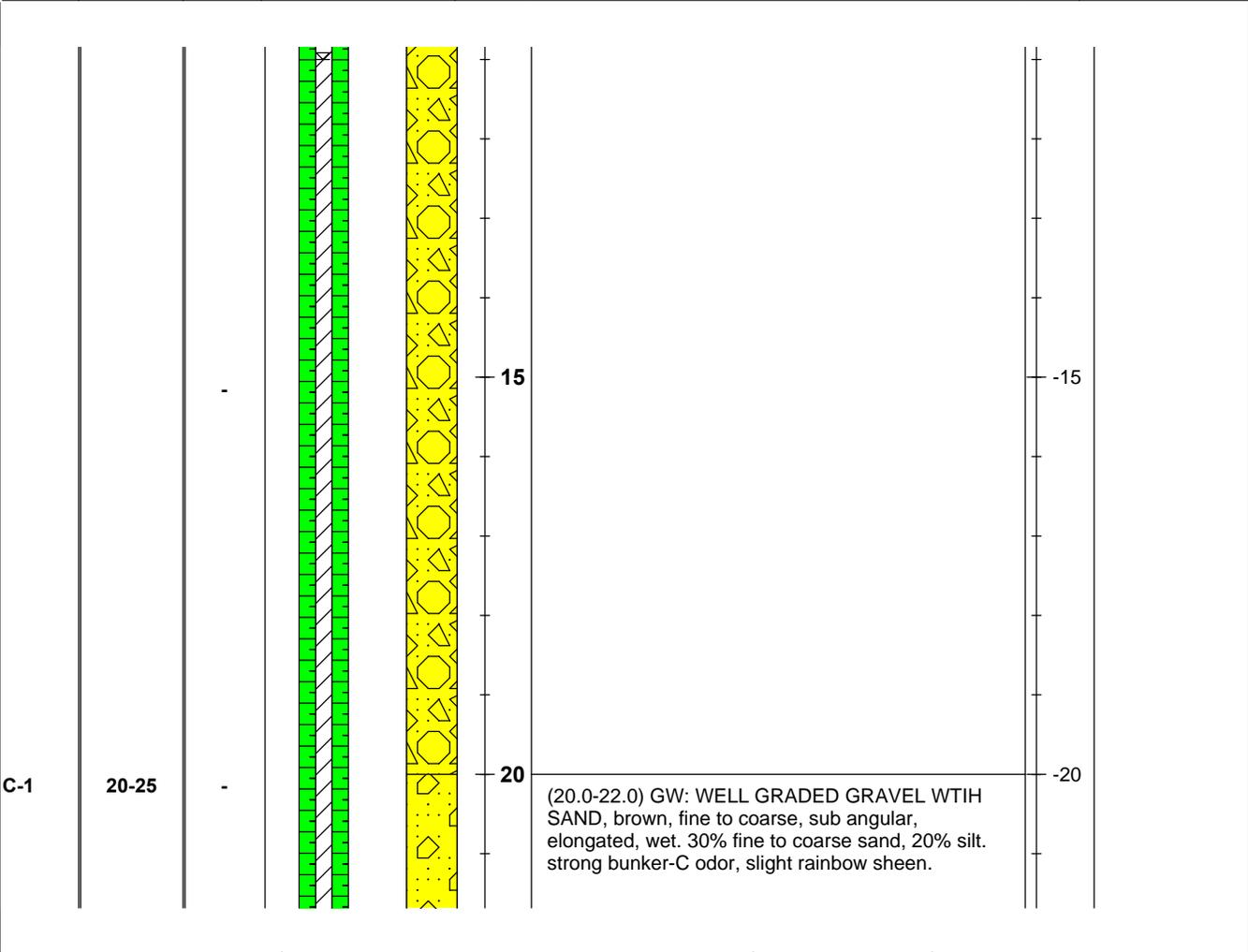
Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type	Groundwater		
	ft-bgs - feet below ground surface	N = SPT DP = Direct Push SS = Split Spoon C = Core	Date	Time	Depth (ft.)
			03/27/09	0805	11.33 ft.

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/23/09 1040	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1520	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule ft-bgs - feet below ground surface	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
			Date 03/27/09	Time 0805	Depth (ft.) 11.33 ft.

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/23/09 1040	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1520	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

Type & Number	Sample		Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
	Depth Range	% Rec						

C-2	25-30	-			25	(22.0-24.0) WELL GRADED SAND WITH GRAVEL, brown, fine to coarse, angular to sub rounded, elongated, moist. 20% fine to coarse gravel up to 2". 10% silt. Slight bunker-C odor, no visible contamination.	-25	
						(24.0-25.0) ML: SILT, light brown, medium plasticity, mottled, moist. 20% fine to coarse gravel up to 2 in. 10% silt. Slight bunker-C odor, no visible contamination.		
						(25.0-28.0) ML: SILT WITH SAND, grayish brown, medium plasticity, slightly mottled, wet. 30% fine sand. No odor or visible contamination.		
						(28.0-28.5) SM: SILTY SAND, grayish brown, fine to coarse, angular to sub rounded, mottled, moist. 30% silt. Trace gravel up to 1/5 in. No odor or visible contamination.		
						(28.5-29.5) ML: SILT WITH SAND, light brown, high plasticity, iron stained mottles, moist. 30% fine to medium sand. No odor or visible contamination.		
C-3	30-35	-			30	(29.5-30.0) SM: SILTY SAND, brown, fine to coarse, angular to sub angular, elongated, black mottles, moist. 35% silt. No odor or visible contamination.	-30	
						(30.0-32.5) SM: SILTY SAND WITH GRAVEL, brownish gray, fine to coarse, angular to sub rounded, elongated, wet. 35% silt. 35% fine to medium gravel up to 1.5". No odor or visible contamination.		

0.010-in. slot, 2 in. Sch. 40, PVC screen from 30.5-40 ft-bgs.

Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)
			03/27/09	0805	11.33 ft.

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/23/09 1040	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1520	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						

C-4	35-37	-			35	(32.5-34.5) ML: SILT WITH SAND, brownish gray, high plasticity, brown ring-like mottles, wet. 25% fine to medium sand. No odor or visible contamination.	-35	
						(34.5-35) SM: SILTY SAND, brownish gray, fine to coarse, angular to sub rounded, elongated, wet. 30% silt. No odor or visible contamination.		
C-5	37-41	-			35	(35.0-36.0) ML: SILT WITH SAND, gray, medium plasticity, mottled, wet. 35% fine to coarse sand. No odor or visible contamination.	-35	10/20 silica sand pack from 29.5-41 ft-bgs.
						(36.0-37.0) SM: SILTY SAND, brownish gray, fine to coarse, angular to sub rounded, elongate, wet. 25% silt. 15% fine to coarse gravel up to 2 in. No odor or visible contamination.		
					40	(37.0-41.0) SW: WELL GRADED SAND, brownish gray, fine to coarse angular to rounded, elongate, wet. 30% fine to coarse gravel up to 3 in. 10% silt. No odor or visible contamination.	-40	2 in. Sch. 40, PVC end cap from 40-40.5 ft-bgs.

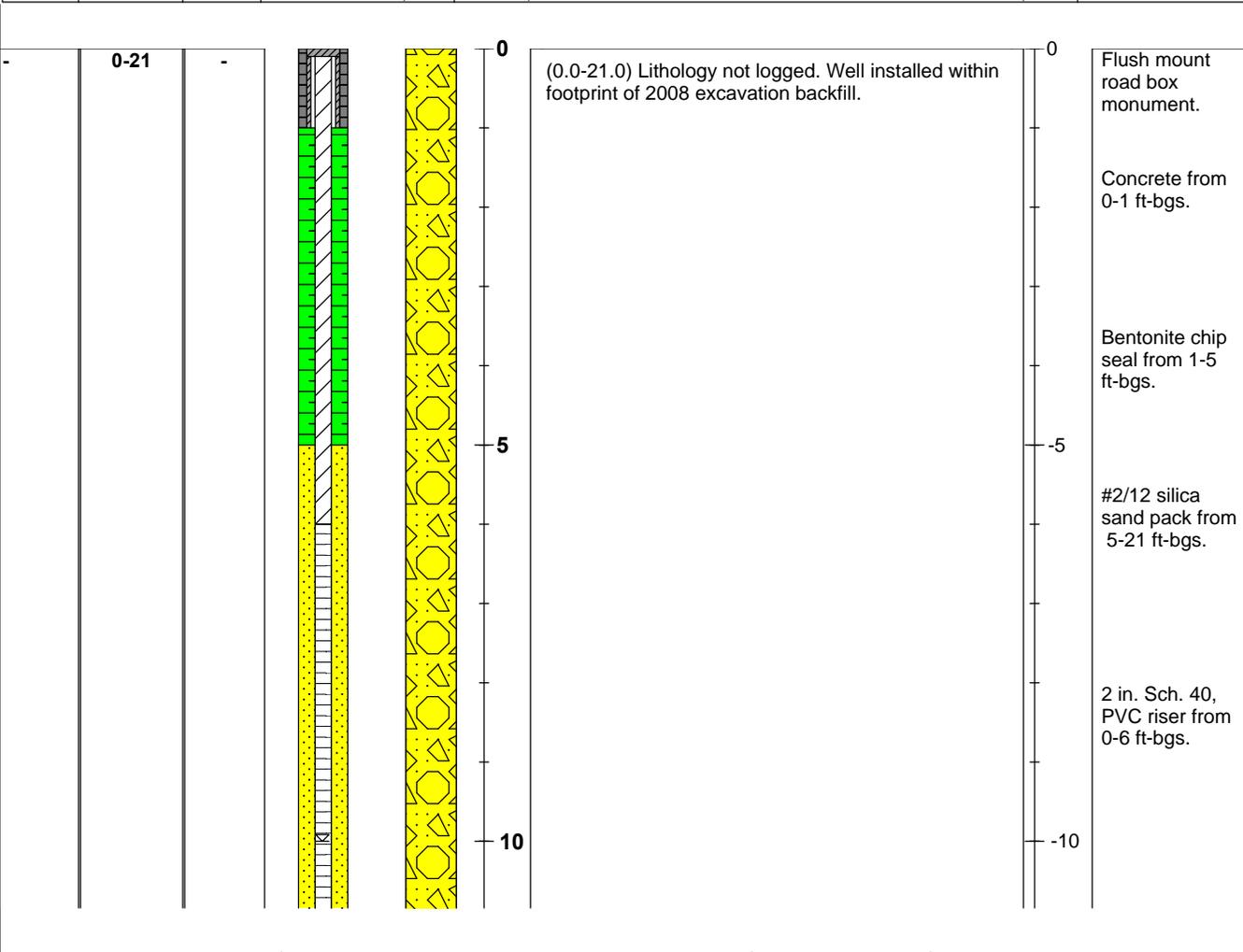
Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)
			03/27/09	0805	11.33 ft.

Boring/Well Log

Well #: 2A-W-41
Sheet 1 of 2

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 21 ft.
Start Date & Time: 03/24/09	Casing ID: 2 in.	Filter Pack: #2/12 Silica sand
Finish Date & Time: 03/24/09	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: R. Knecht, M. Graddon	Screen: 0.020-in. slot PVC, 6-21 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type	Groundwater		
	ft-bgs - feet below ground surface	N = SPT DP = Direct Push SS = Split Spoon C = Core	Date	Time	Depth (ft.)
			03/24/09		12.57

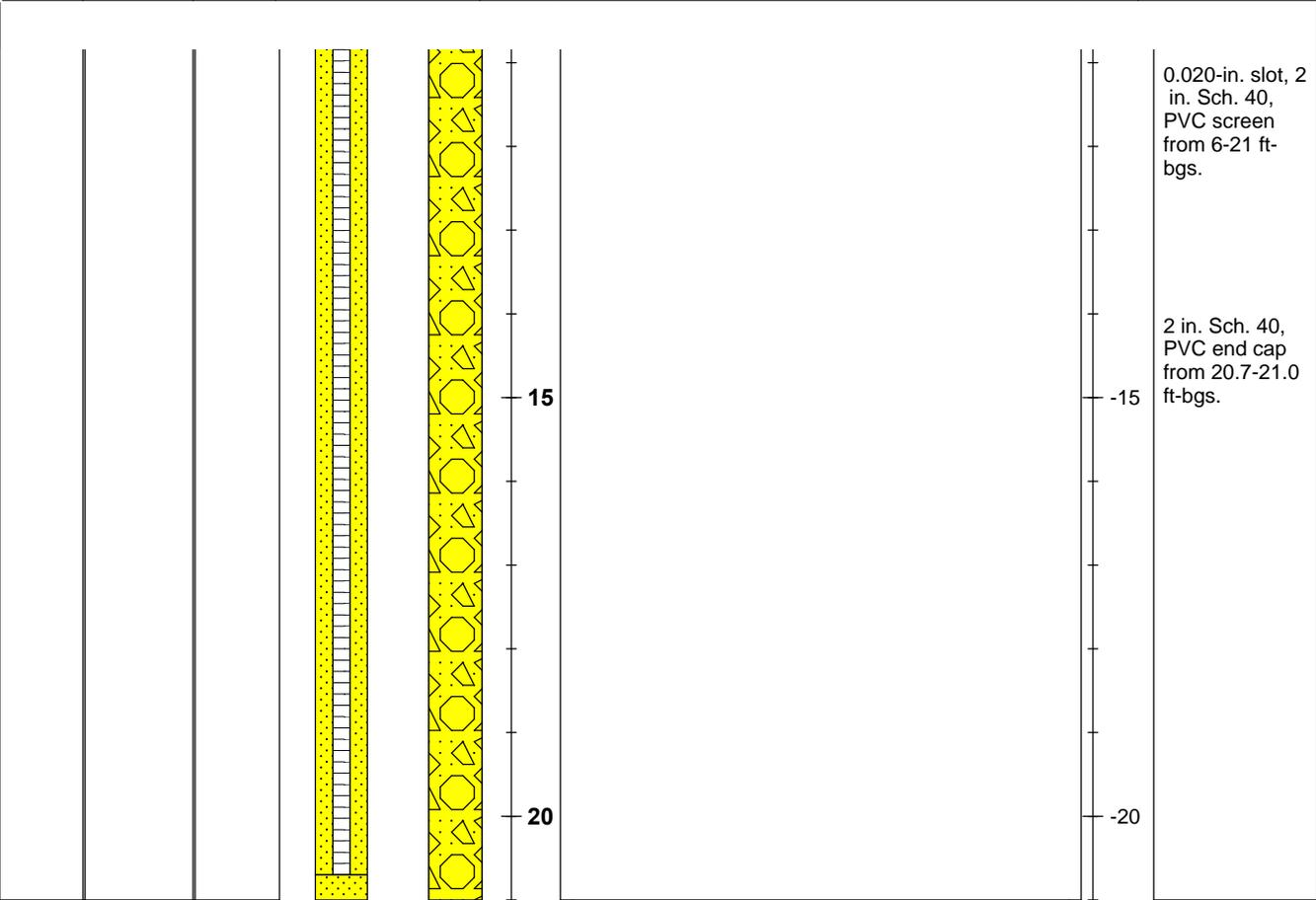
Boring/Well Log

Well #: **2A-W-41**

Sheet 2 of 2

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 21 ft.
Start Date & Time: 03/24/09	Casing ID: 2 in.	Filter Pack: #2/12 Silica sand
Finish Date & Time: 03/24/09	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: R. Knecht, M. Graddon	Screen: 0.020-in. slot PVC, 6-21 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)
			03/24/09		12.57

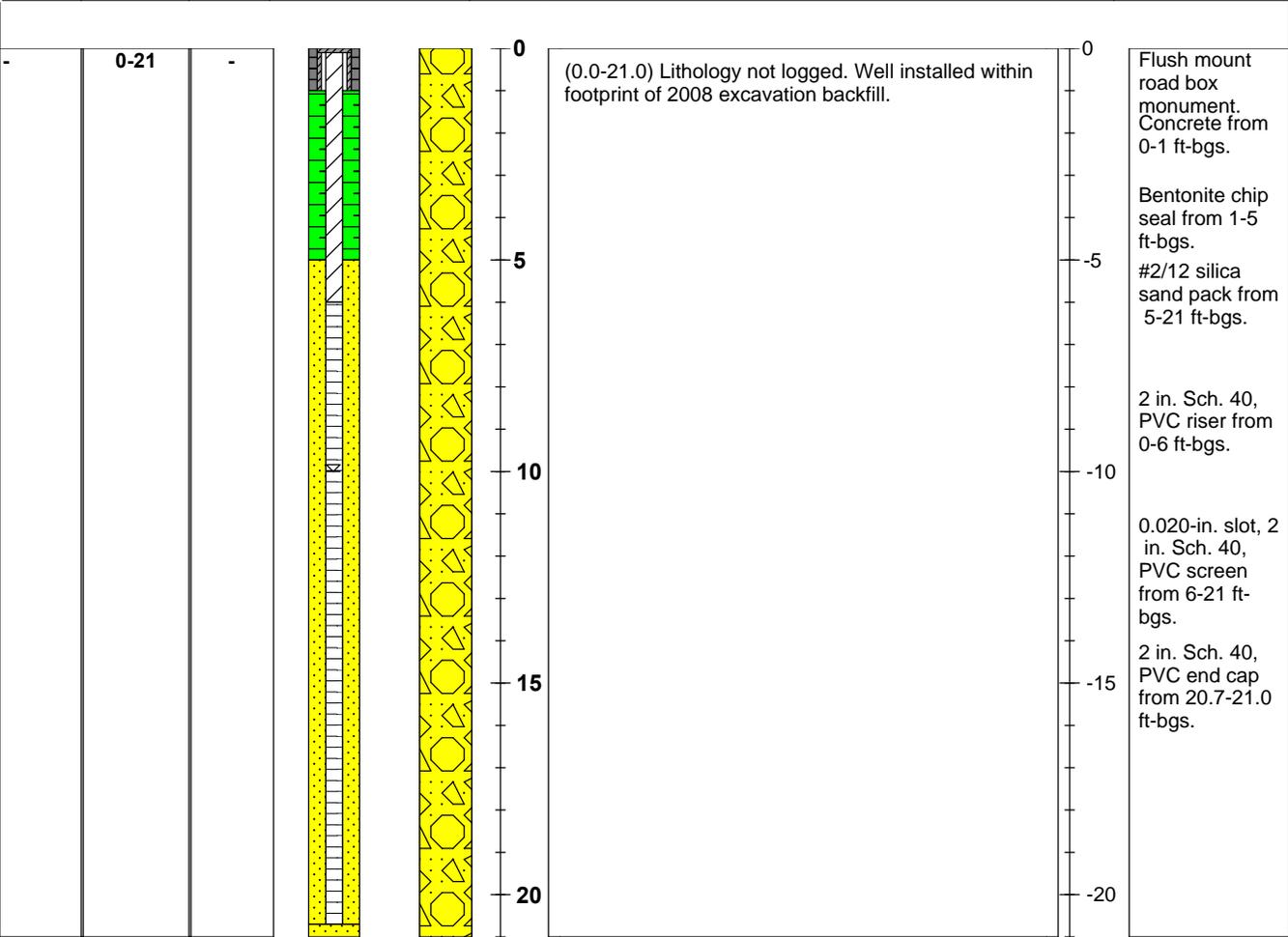
Boring/Well Log

Well #: **2A-W-42**

Sheet 1 of 1

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 21 ft.
Start Date & Time: 03/24/09	Casing ID: 2 in.	Filter Pack: #2/12 Silica sand
Finish Date & Time: 03/24/09	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: R. Knecht, M. Graddon	Screen: 0.020-in. slot PVC, 6-21 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule ft-bgs - feet below ground surface	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater			
				Date	Time	Depth (ft.)
				03/24/09		11.40

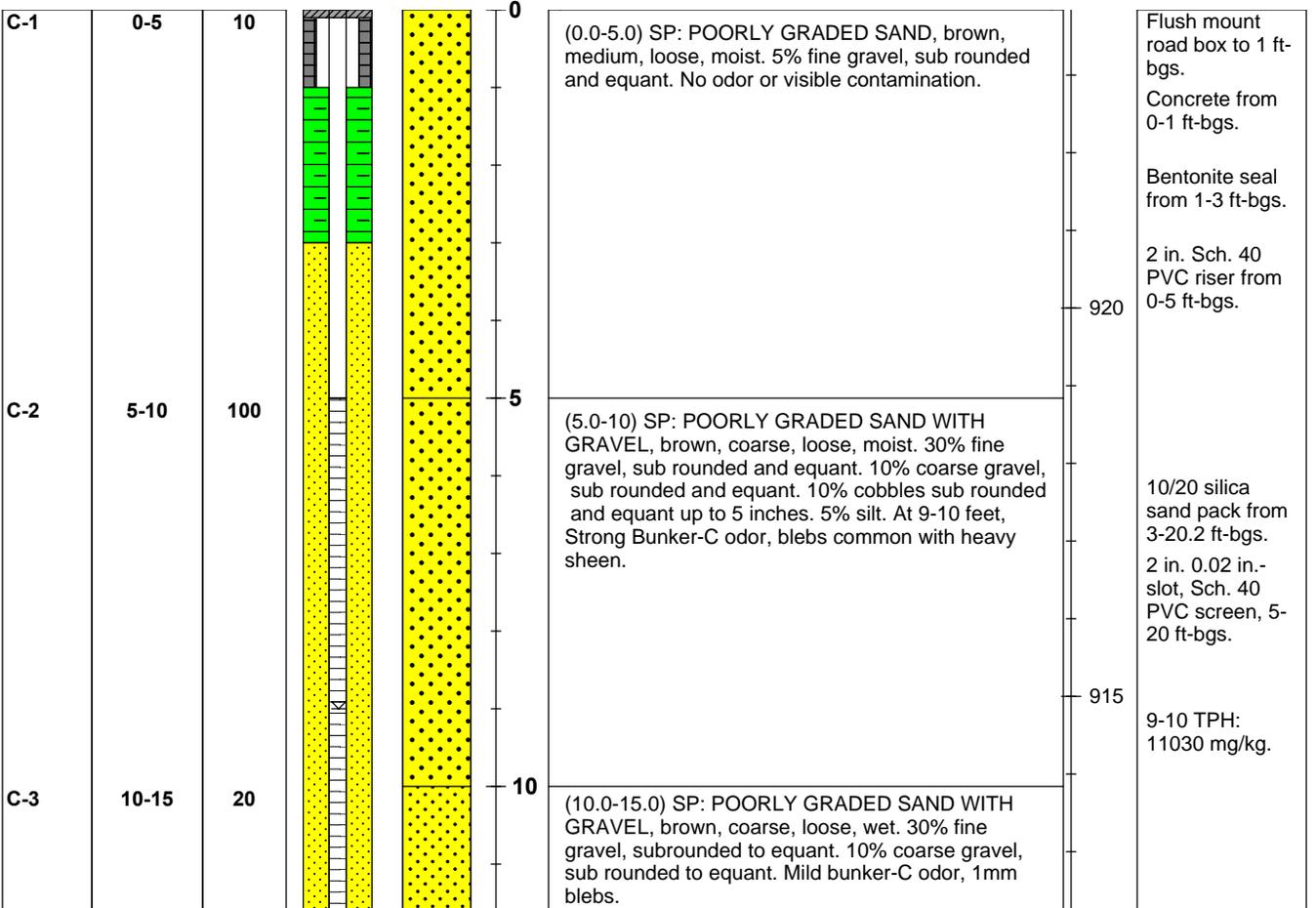
Boring/Well Log

Well #: **5-W-42**

Sheet 1 of 2

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-204-0320	Northing: 259235.732 Easting: 1509858.08	Ground Elevation: 923.84 ft.
Location: Skykomish, WA	Drill Rig Type: Spider Sonic	MP Elevation: 923.45 ft.
Client: BNSF	Method: Rotosonic	Total Depth: 20 ft.
Start Date & Time: 11/13/2008 0830	Casing ID: 2 in.	Filter Pack: 3-20.2 ft.
Finish Date & Time: 11/13/2008 0945	Boring ID: 6 in.	Seal: Bentonite
Contractor: Boart Longyear	Bit Type: Carbide Tooth Coring Bit	Grout: -
Operator: Brian Owens	Logged By: Jesse Waknitz	Screen: 0.020-in. slot, Sch. 40 PVC, 5-20 ft-bgs

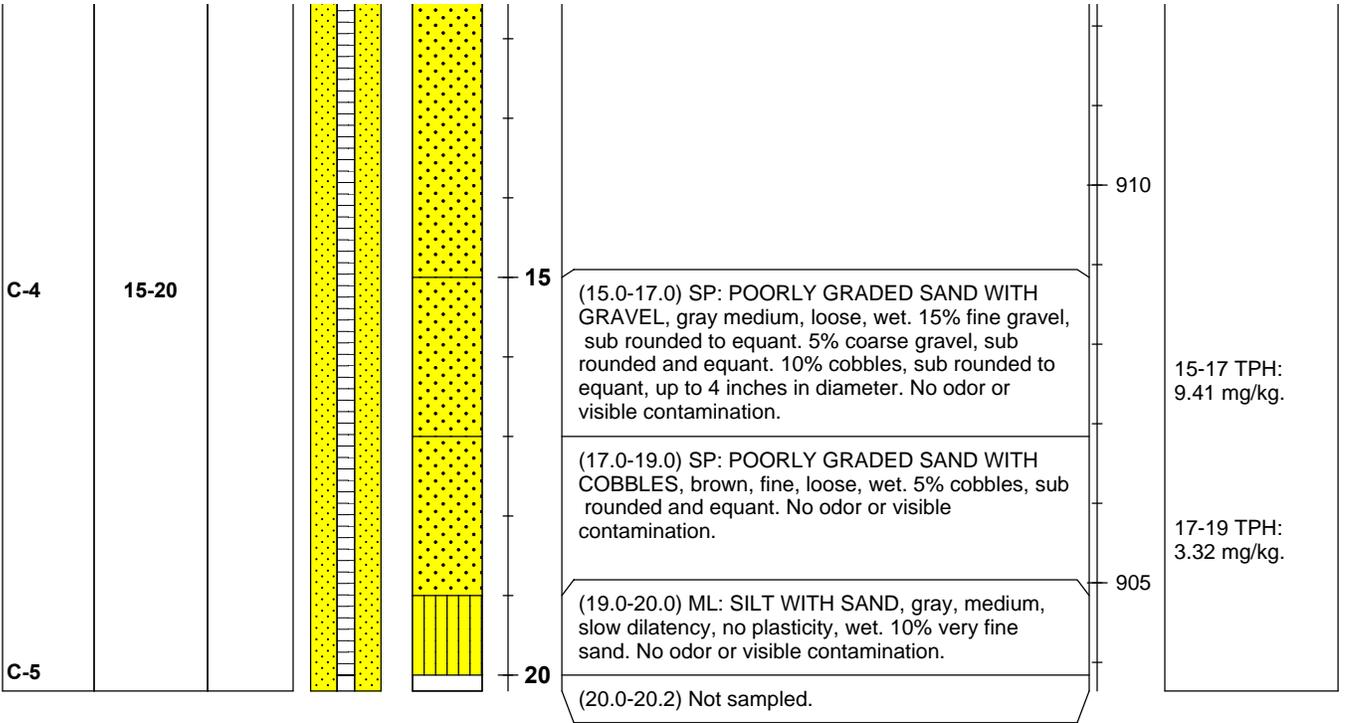
Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation (ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-204-0320	Northing: 259235.732 Easting: 1509858.08	Ground Elevation: 923.84 ft.
Location: Skykomish, WA	Drill Rig Type: Spider Sonic	MP Elevation: 923.45 ft.
Client: BNSF	Method: Rotosonic	Total Depth: 20 ft.
Start Date & Time: 11/13/2008 0830	Casing ID: 2 in.	Filter Pack: 3-20.2 ft.
Finish Date & Time: 11/13/2008 0945	Boring ID: 6 in.	Seal: Bentonite
Contractor: Boart Longyear	Bit Type: Carbide Tooth Coring Bit	Grout: -
Operator: Brian Owens	Logged By: Jesse Waknitz	Screen: 0.020-in. slot, Sch. 40 PVC, 5-20 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation (ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)

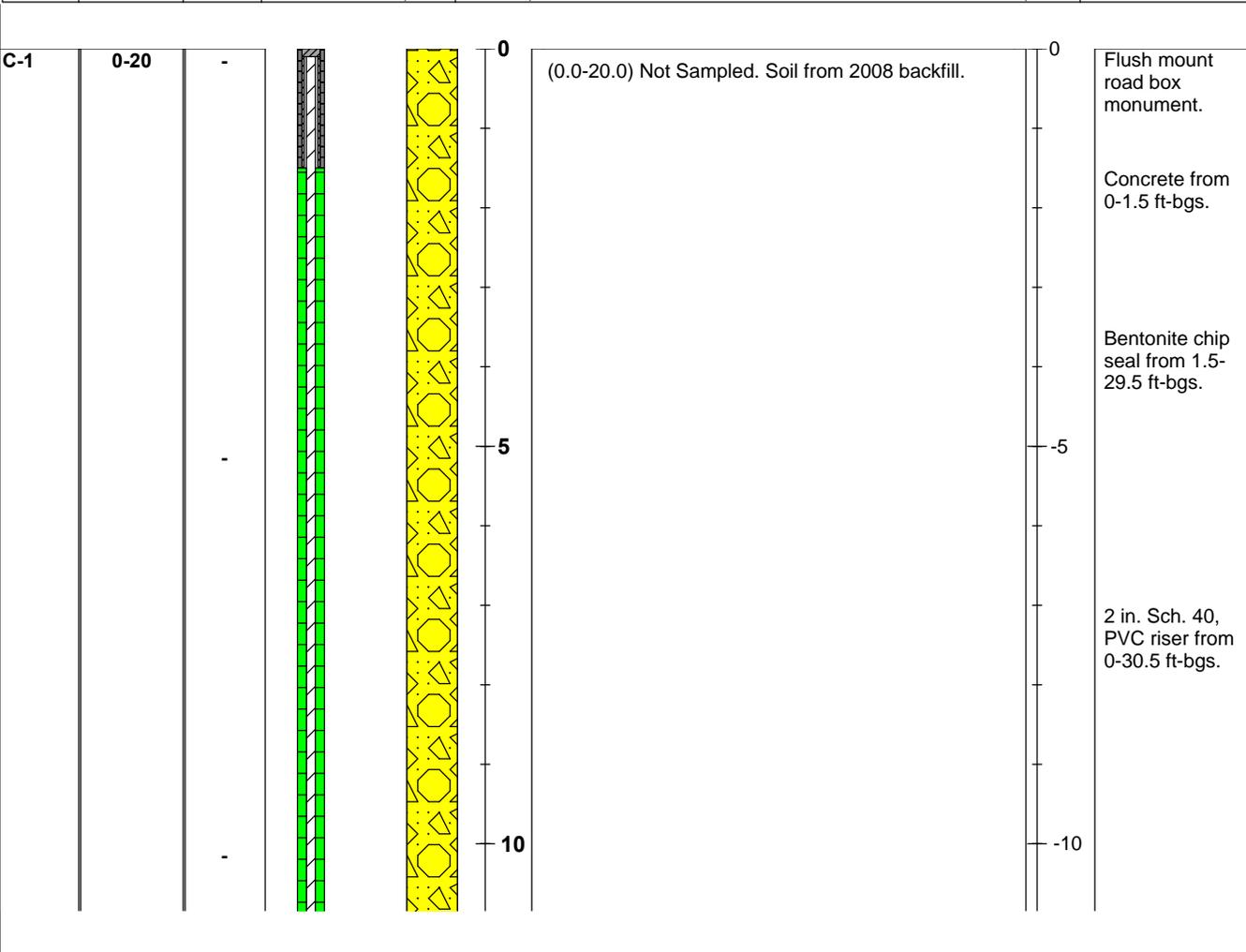
Boring/Well Log

Well #: 5-W-43

Sheet 1 of 4

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/26/09 0840	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1050	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						



Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule ft-bgs - feet below ground surface	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
				Date	Time
			03/27/09	0805	11.33 ft.

Boring/Well Log

Well #: 5-W-43

Sheet 2 of 4

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/26/09 0840	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1050	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						

C-2	20-25	-			15 20	(20.0-22.0) GW: WELL GRADED GRAVEL WITH SAND, brown, fine to coarse, sub angular, elongated, wet. 30% fine to coarse sand, 20% silt. strong bunker-C odor, slight rainbow sheen.	-15 -20	
-----	-------	---	--	--	----------	--	------------	--

Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)
			03/27/09	0805	11.33 ft.

Boring/Well Log

Well #: 5-W-43

Sheet 3 of 4

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/26/09 0840	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1050	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

Type & Number	Sample		Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
	Depth Range	% Rec						

C-3	25-30	-			22.0-24.0	(22.0-24.0) WELL GRADED SAND WITH GRAVEL, brown, fine to coarse, angular to sub rounded, elongated, moist. 20% fine to coarse gravel up to 2". 10% silt. Slight bunker-C odor, no visible contamination.	-25	
					24.0-25.0	(24.0-25.0) ML: SILT, light brown, medium plasticity, mottled, moist. 20% fine to coarse gravel up to 2 in. 10% silt. Slight bunker-C odor, no visible contamination.		
					25.0-28.0	(25.0-28.0) ML: SILT WITH SAND, grayish brown, medium plasticity, slightly mottled, wet. 30% fine sand. No odor or visible contamination.		
					28.0-28.5	(28.0-28.5) SM: SILTY SAND, grayish brown, fine to coarse, angular to sub rounded, mottled, moist. 30% silt. Trace gravel up to 1/5 in. No odor or visible contamination.		
					28.5-29.5	(28.5-29.5) ML: SILT WITH SAND, light brown, high plasticity, iron stained mottles, moist. 30% fine to medium sand. No odor or visible contamination.		
C-4	30-35	-			29.5-30.0	(29.5-30.0) SM: SILTY SAND, brown, fine to coarse, angular to sub angular, elongated, black mottles, moist. 35% silt. No odor or visible contamination.	-30	
					30.0-32.5	(30.0-32.5) SM: SILTY SAND WITH GRAVEL, brownish gray, fine to coarse, angular to sub rounded, elongated, wet. 35% silt. 35% fine to medium gravel up to 1.5". No odor or visible contamination.		

0.010-in. slot, 2 in. Sch. 40, PVC screen from 30.5-40 ft-bgs.

Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)
			03/27/09	0805	11.33 ft.

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-222-0300	Northing: - Easting: -	Ground Elevation: -
Location: Skykomish, WA	Drill Rig Type: Rotosonic compact 17-C	MP Elevation: -
Client: BNSF	Method: Rotosonic	Total Depth: 40.5 ft.
Start Date & Time: 03/26/09 0840	Casing ID: 2 in.	Filter Pack: 10/20 Silica sand
Finish Date & Time: 03/23/09 1050	Boring ID: 6 in.	Seal: Bentonite chips
Contractor: Cascade Drilling Inc.	Bit Type: Carbide tooth coring bit	Grout: -
Operator: Valentino	Logged By: Renee Knecht	Screen: 0.010-in. slot PVC, 30.5-40.5 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						

C-5	35-37	-			35	(32.5-34.5) ML: SILT WITH SAND, brownish gray, high plasticity, brown ring-like mottles, wet. 25% fine to medium sand. No odor or visible contamination.	-35	10/20 silica sand pack from 29.5-41 ft-bgs.
						(34.5-35) SM: SILTY SAND, brownish gray, fine to coarse, angular to sub rounded, elongated, wet. 30% silt. No odor or visible contamination.		
C-6	37-41	-			40	(35.0-36.0) ML: SILT WITH SAND, gray, medium plasticity, mottled, wet. 35% fine to coarse sand. No odor or visible contamination.	-40	2 in. Sch. 40, PVC end cap from 40-40.5 ft-bgs.
						(36.0-37.0) SM: SILTY SAND, brownish gray, fine to coarse, angular to sub rounded, elongate, wet. 25% silt. 15% fine to coarse gravel up to 2 in. No odor or visible contamination.		
						(37.0-41.0) SW: WELL GRADED SAND, brownish gray, fine to coarse angular to rounded, elongate, wet. 30% fine to coarse gravel up to 3 in. 10% silt. No odor or visible contamination.		

Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. - Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)
			03/27/09	0805	11.33 ft.

DRILLING COMPANY: Holocene Drilling

SURFACE ELEVATION:

± feet

DATE STARTED: 3/2/2009

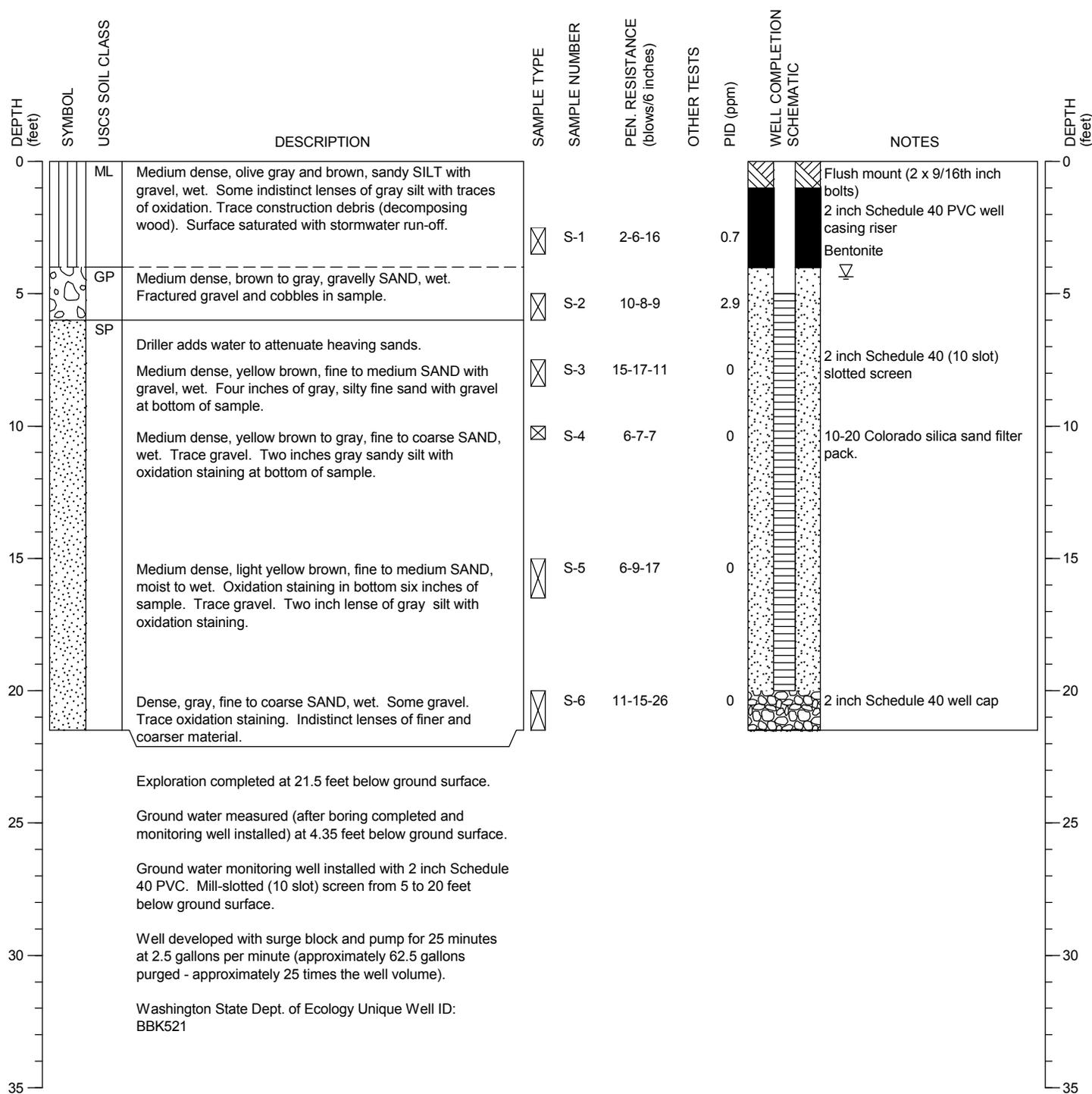
DRILLING METHOD: Diedrich D120, HSA, SPT autohammer

DATE COMPLETED: 3/2/2009

SAMPLING METHOD: SPT

LOGGED BY: J. Speck

LOCATION:



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



HWAGEOSCIENCES INC.

Skykomish Airport
Town of Skykomish
General Sewer and Facilities Plan

MONITORING WELL:
MW-38A

PAGE: 1 of 1

PROJECT NO.: 2006046-100

FIGURE:

A-

AECOM Environment
710 2nd Avenue, Suite 1000, Seattle, WA 98104
T 206.624.9349 F 206.623.3793 www.aecom.com

Memorandum

Date: March 23, 2009
To: Ron Timm, Department of Ecology
From: Renee Knecht
Subject: 5-W-42 draft boring log, draft soil and groundwater results table

Distribution: _____

Attached is the boring log, and results you requested from me on March 12, 2009. All attached information is draft. Please let me know if you have any questions.

Sincerely yours,



Renee Knecht
renee.knecht@aecom.com

Boring/Well Log

Well #: 5-W-42
Sheet 1 of 2

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-204-0320	Northing: 259235.732 Easting: 1509858.08	Ground Elevation: 923.84 ft.
Location: Skykomish, WA	Drill Rig Type: Spider Sonic	MP Elevation: 923.45 ft.
Client: BNSF	Method: Rotosonic	Total Depth: 20 ft.
Start Date & Time: 11/13/2008 0830	Casing ID: 2 in.	Filter Pack: 3-20.2 ft.
Finish Date & Time: 11/13/2008 0945	Boring ID: 6 in.	Seal: Bentonite
Contractor: Boart Longyear	Bit Type: Carbide Tooth Coring Bit	Grout: -
Operator: Brian Owens	Logged By: Jesse Waknitz	Screen: 0.020-in. slot, Sch. 40 PVC, 5-20 ft-bgs

Type & Number	Sample		Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
	Depth Range	% Rec						

C-1	0-5	10			0	(0.0-5.0) SP: POORLY GRADED SAND, brown, medium, loose, moist. 5% fine gravel, sub rounded and equant. No odor or visible contamination.	920	Flush mount road box to 1 ft-bgs. Concrete from 0-1 ft-bgs. Bentonite seal from 1-3 ft-bgs. 2 in. Sch. 40 PVC riser from 0-5 ft-bgs.
C-2	5-10	100			5	(5.0-10) SP: POORLY GRADED SAND WITH GRAVEL, brown, coarse, loose, moist. 30% fine gravel, sub rounded and equant. 10% coarse gravel, sub rounded and equant. 10% cobbles sub rounded and equant up to 5 inches. 5% silt. At 9-10 feet, Strong Bunker-C odor, blebs common with heavy sheen.	915	10/20 silica sand pack from 3-20.2 ft-bgs. 2 in. 0.02 in.-slot, Sch. 40 PVC screen, 5-20 ft-bgs.
C-3	10-15	20			10	(10.0-15.0) SP: POORLY GRADED SAND WITH GRAVEL, brown, coarse, loose, wet. 30% fine gravel, subrounded to equant. 10% coarse gravel, sub rounded to equant. Mild bunker-C odor, 1mm blebs.		9-10 TPH: 11030 mg/kg.

Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. Schedule	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
	ft-bgs - feet below ground surface		Date	Time	Depth (ft.)

DRAFT

Boring/Well Log

Well #: 5-W-42
Sheet 2 of 2

Project: Skykomish	Monument: Flush Mount	Stick Up: -
Project #: 01140-204-0320	Northing: 259235.732 Easting: 1509858.08	Ground Elevation: 923.84 ft.
Location: Skykomish, WA	Drill Rig Type: Spider Sonic	MP Elevation: 923.45 ft.
Client: BNSF	Method: Rotosonic	Total Depth: 20 ft.
Start Date & Time: 11/13/2008 0830	Casing ID: 2 in.	Filter Pack: 3-20.2 ft.
Finish Date & Time: 11/13/2008 0945	Boring ID: 6 in.	Seal: Bentonite
Contractor: Boart Longyear	Bit Type: Carbide Tooth Coring Bit	Grout: -
Operator: Brian Owens	Logged By: Jesse Waknitz	Screen: 0.020-in. slot, Sch. 40 PVC, 5-20 ft-bgs

Sample			Well Completion Log	Graphic	Depth (ft.)	Soil and Rock Description Classification Scheme: USCS/ASTM	Elevation(ft.)	Comments & Samples
Type & Number	Depth Range	% Rec						

C-4	15-20				15	(15.0-17.0) SP: POORLY GRADED SAND WITH GRAVEL, gray medium, loose, wet. 15% fine gravel, sub rounded to equant. 5% coarse gravel, sub rounded and equant. 10% cobbles, sub rounded to equant, up to 4 inches in diameter. No odor or visible contamination.	910	15-17 TPH: 9.41 mg/kg.
						(17.0-19.0) SP: POORLY GRADED SAND WITH COBBLES, brown, fine, loose, wet. 5% cobbles, sub rounded and equant. No odor or visible contamination.		17-19 TPH: 3.32 mg/kg.
C-5					20	(19.0-20.0) ML: SILT WITH SAND, gray, medium, slow dilatency, no plasticity, wet. 10% very fine sand. No odor or visible contamination.	905	
						(20.0-20.2) Not sampled.		

DRAFT

Remarks and Datum Used: AECOM - Environment 710 2nd Ave. Suite 1000 Seattle, WA 98104 Phone: (206) 624-9349 Fax: (206) 623-3793	Sch. Schedule ft-bgs - feet below ground surface	Sample Type N = SPT DP = Direct Push SS = Split Spoon C = Core	Groundwater		
			Date	Time	Depth (ft.)

Skykomish - 5-W-42 GW Data

Analytical Method				NWTPH-Dx			NWTPH-Dx SG			NWTPH-Dx			NWTPH-Dx SG			NWTPH-Dx		NWTPH-Dx SG	
Chemical Name Unit				Lube Oil Range Hydrocarbons ug/l			Lube Oil Range Hydrocarbons ug/l			PHC AS DIESEL FUEL ug/l			PHC AS DIESEL FUEL ug/l			TPH (calc) ug/l		TPH (calc) ug/l	
Location ID	Sample ID	Sample Date	Sample Type	Result & Qualifier	MDL	RDL	Result & Qualifier	MDL	RDL	Result & Qualifier	MDL	RDL	Result & Qualifier	MDL	RDL				
5-W-42	5-W-42-1208	12/17/2008	N	ND	84.9	472	ND	151	472	ND	38	236	ND	37.7	236	61.3	94.35		
5-W-42	5-W-420-1208	12/17/2008	FD	ND	84.9	472	ND	151	472	ND	38	236	ND	37.7	236	61.3	94.35		

DRAFT

Skykomish - 5-W-42 Soil Data

Location ID	Sample ID	Sample Date	Sample Matrix	Sample Type	Analytical Method Chemical Name Unit				NWTPH-Dx Lube Oil Range Hydrocarbons mg/kg				NWTPH-Dx PHC AS DIESEL FUEL mg/kg				NWTPH-Dx TPH (calc) mg/kg
					Result & Qualifier	MDL	RDL		Result & Qualifier	MDL	RDL		Result & Qualifier	MDL	RDL		
5-W-42	5-W-42(9-10)	11/13/2008	SO	N	6070	JN	68.8	539	4960	JN	34.5	216	11030				
5-W-42	5-W-42(17-19)	11/13/2008	SO	N	ND		4.42	34.7	ND		2.22	13.9	3.32				
5-W-42	5-W-42(15-17)	11/13/2008	SO	N	6.46	J	3.66	28.7	2.95	J	1.84	11.5	9.41				

DRAFT

Appendix C

Field Forms

FIELD ACTIVITY LOG

ENSR

PROJECT NAME: BNSF-Skykomish
 PROJECT NO: 01140-204-0340
 DAY & DATE: Weds Dec 17th 2008

COMPLETED BY: D. Kinney
 APPROVED BY: _____
 SHEET 1 OF 2

FIELD ACTIVITY SUBJECT: Groundwater Sampling
 DESCRIPTION OF DAILY ACTIVITIES & EVENTS:

TIME	
0645	Setting up to sample & had safety meeting
0700	Calibrated meters (MSI model 555 & Oakton model F100)
0715	Cleaning off vehicle
0730	Went to start on 2B-W-45
0750	Started purging 2B-W-45
0810	Sampled 2B-W-45 for NATPAI-Dx (see gw sampling form)
0830	Started purging 2B-W-46
0855	Sampled 2B-W-46
0925	Went to start contry well samples
0950	started pumping at S1 S1 (SW pile 20)
1000	Sampled S1
1030	Clearing snow to access S2
1048	started pumping S2
1100	sampled S2
1119	Clearing snow to access S3
1152	started pumping S3
1145	sampled S3
1205	Went to get lunch
1235	Returned & digging out 5-W-17
1304	started purging 5-W-17
1325	Sampled 5-W-17
1345	Took equip. PK - labeled: MW-500-1708
1418	Started purging 5-W-15
1440	Sampled 5-W-15
1515	Putting equipment away & getting ready to leave
1715	Left site

VISITORS ONSITE:
 None

CHANGES FROM PLANS OR IMPORTANT DECISIONS:
 didn't sample S4 → wells not put in at this time

WEATHER CONDITIONS:
 Snowing, 25-30 °F

IMPORTANT TELEPHONE CALLS:
 Grant Rainsworth - don't sample S4

PERSONNEL ONSITE: Dean Kinney, Ghadi Sabbane

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 5-W-1A
 Sampled By Ghani
 weather Snow 19 °F

WELL INFORMATION	
Depth to water	9.15 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	Good

COMMENTS

PURGE DATA							
start purge time	1225						
time		1235	1238	1241	1244		
DTW	(ft)	9.17	9.17	9.17	9.17		
purge rate	(L/min)	300	300	300	300		
pH	(Units)	6.16	6.10	6.15	6.17		
conductivity	(umhos/cm)	0.080	0.085	0.087	0.089		
temperature	(deg C)	4.62	4.83	4.89	4.99		
D.O.	(mg/L)	5.65	5.52	5.48	5.44		
ORP	(mv)	99.3	101.6	104.1	104.6		
turbidity	(NTU)	2.9	2.9	2.7	2.7		
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-1A-1208	1250	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. S-W-15
 Sampled By DWK
 weather snowing, 25 °F

WELL INFORMATION	
Depth to water	<u>7.65</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>Extra sample for lab QC</u>
<u>sample input at</u>
<u>~ 8:25</u>

PURGE DATA					
start purge time	<u>1418</u>				
time		<u>1428</u>	<u>1431</u>	<u>1434</u>	<u>1437</u>
DTW	(ft)	<u>7.69</u>	<u>7.69</u>	<u>7.69</u>	<u>7.69</u>
purge rate	(L/min)	<u>0.30</u>			
pH	(Units)	<u>6.53</u>	<u>6.53</u>	<u>6.53</u>	<u>6.53</u>
conductivity μS	(umhos/cm)	<u>0.073</u>	<u>0.072</u>	<u>0.072</u>	<u>0.072</u>
temperature	(deg C)	<u>7.0</u>	<u>6.9</u>	<u>6.8</u>	<u>6.8</u>
D.O.	(mg/L)	<u>0.59</u>	<u>0.50</u>	<u>0.45</u>	<u>0.43</u>
ORP	(mv)	<u>-33</u>	<u>-33</u>	<u>-34</u>	<u>-34</u>
turbidity	(NTU)	<u>158</u>	<u>173</u>	<u>169</u>	<u>178</u>
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing				

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>S-W-15-1208</u>	<u>1440</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	<u>6</u>	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	<u>6</u>	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 5-W-16
 Sampled By Ghani
 weather Snow 19 °F

WELL INFORMATION	
Depth to water	8.02 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	Good

COMMENTS

PURGE DATA						
start purge time	1350					
time		1400	1403	1406		
DTW	(ft)	8.02	8.02	8.02		
purge rate	(L/min)	300	300	300		
pH	(Units)	6.29	6.29	6.31		
conductivity	(umhos/cm)	0.055	0.055	0.056		
temperature	(deg C)	0.57	0.51	0.46		
D.O.	(mg/L)	12.48	12.07	12.01		
ORP	(mv)	136.0	137.0	137.2		
turbidity	(NTU)	4.5	4.0	3.9		
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-16-1208	1410	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 17/11/08

Well No. S-W-17
 Sampled By DWIC
 weather snowing, 25°F

WELL INFORMATION	
Depth to water	<u>7.35</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA						
start purge time	<u>1304</u>					
time		<u>1314</u>	<u>1317</u>	<u>1320</u>		
DTW	(ft)	<u>7.37</u>	<u>7.37</u>	<u>7.37</u>		
purge rate	(L/min)	<u>0.50</u>				
pH	(Units)	<u>6.13</u>	<u>6.14</u>			
conductivity ^{MS}	(umhos/cm)	<u>0.046</u>	<u>0.046</u>	<u>0.045</u>		
temperature	(deg C)	<u>4.7</u>	<u>4.8</u>	<u>4.8</u>		
D.O.	(mg/L)	<u>3.00</u>	<u>2.97</u>	<u>2.91</u>		
ORP	(mv)	<u>104</u>	<u>106</u>	<u>108</u>		
turbidity	(NTU)	<u>0.95</u>	<u>0.</u>			
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>S-W-17-1208</u>	<u>1325</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 5-W-18
 Sampled By Ghani
 weather Snow 19 °F

WELL INFORMATION	
Depth to water	7.53 (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA								
start purge time	1512							
time		1522	1525	1528	1531	1534	1537	1540
DTW (ft)		7.53		7.53	7.53	7.53	7.53	7.53
purge rate (L/min)		300	300	300	300	300	300	300
pH (Units)		6.18	6.18	6.18	6.15	6.16	6.15	6.15
conductivity (umhos/cm)		0.156	0.162	0.167	0.168	0.169	0.168	0.168
temperature (deg C)		4.22	4.39	4.38	4.44	4.35	4.35	4.44
D.O. (mg/L)		1.03	0.63	0.64	0.33	0.33	0.43	0.69
ORP (mv)		82.6	78.6	70.4	64.1	58.0	52.8	47.0
turbidity (NTU)		11.0	7.8	6.5	4.8	NM	NM	NM
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5W-18-1208	1545	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl
5W-180-1208	1550	↓	↓	2	↓
				2	

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 5-W-19
 Sampled By Ghani
 weather Snow 19 °F

WELL INFORMATION	
Depth to water	<u>7.36</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>missing hole</u>

COMMENTS

PURGE DATA							
start purge time	<u>1100</u>						
time		<u>1110</u>	<u>1113</u>	<u>1116</u>	<u>1119</u>		
DTW	(ft)	<u>7.36</u>	<u>7.36</u>	<u>7.36</u>	<u>7.36</u>		
purge rate	(L/min)	<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>		
pH	(Units)	<u>6.07</u>	<u>6.06</u>	<u>6.09</u>	<u>6.09</u>		
conductivity	(umhos/cm)	<u>0.076</u>	<u>0.070</u>	<u>0.067</u>	<u>0.065</u>		
temperature	(deg C)	<u>4.53</u>	<u>4.58</u>	<u>4.61</u>	<u>4.63</u>		
D.O.	(mg/L)	<u>5.16</u>	<u>5.04</u>	<u>5.08</u>	<u>5.08</u>		
ORP	(mv)	<u>49.9</u>	<u>55.5</u>	<u>57.9</u>	<u>62.1</u>		
turbidity	(NTU)	<u>3.0</u>	<u>2.8</u>	<u>2.8</u>	<u>2.9</u>		
purge and sample equip.		Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5W-19-1208</u>	<u>1125</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 5-W-20
 Sampled By Ghani S
 weather Snow 19 °F

WELL INFORMATION	
Depth to water	<u>6.94</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS

PURGE DATA									
start purge time	<u>0949</u>								
time	<u>0959</u>	<u>1002</u>	<u>1005</u>	<u>1008</u>	<u>1011</u>	<u>1015</u>	<u>1018</u>	<u>1021</u>	
DTW	(ft) <u>6.94</u>	<u>6.94</u>	<u>6.94</u>	<u>6.94</u>	<u>6.94</u>	<u>6.94</u>	<u>6.94</u>	<u>6.94</u>	<u>6.94</u>
purge rate	(L/min) <u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>
pH	(Units) <u>6.14</u>	<u>6.14</u>	<u>6.16</u>	<u>6.17</u>	<u>6.17</u>	<u>6.16</u>	<u>6.16</u>	<u>6.16</u>	<u>6.15</u>
conductivity	(umhos/cm) <u>0.145</u>	<u>0.148</u>	<u>0.151</u>	<u>0.152</u>	<u>0.155</u>	<u>0.159</u>	<u>0.161</u>	<u>0.161</u>	<u>0.161</u>
temperature	(deg C) <u>6.17</u>	<u>6.43</u>	<u>6.53</u>	<u>6.53</u>	<u>6.45</u>	<u>6.37</u>	<u>6.37</u>	<u>6.37</u>	<u>6.47</u>
D.O.	(mg/L) <u>1.12</u>	<u>1.70</u>	<u>2.03</u>	<u>1.57</u>	<u>0.91</u>	<u>0.57</u>	<u>0.51</u>	<u>0.51</u>	<u>0.50</u>
ORP	(mv) <u>43.3</u>	<u>37.3</u>	<u>33.6</u>	<u>30.3</u>	<u>27.8</u>	<u>25.5</u>	<u>25.5</u>	<u>25.5</u>	<u>25.2</u>
turbidity	(NTU) <u>8.5</u>	<u>7.1</u>	<u>6.1</u>	<u>6.2</u>	<u>6.1</u>	<u>5.3</u>	<u>5.0</u>	<u>5.0</u>	<u>5.2</u>
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing								

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-20-1208</u>	<u>1025</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. S-W-42
 Sampled By Ghani
 weather Snow 19 °F

WELL INFORMATION	
Depth to water	<u>6.65</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Duplicate sample -</u>
<u>S-W-420-1208</u>
<u>collected</u>

PURGE DATA									
start purge time	<u>0820</u>								
time	<u>0830</u>	<u>0830</u>	<u>0833</u>	<u>0836</u>	<u>0839</u>	<u>0842</u>	<u>0845</u>	<u>0848</u>	<u>0851</u>
DTW	(ft)	<u>6.67</u>							
purge rate	(L/min)	<u>300</u>							
pH	(Units)	<u>6.27</u>	<u>6.17</u>	<u>6.18</u>	<u>6.20</u>	<u>6.19</u>	<u>6.18</u>	<u>6.19</u>	<u>6.18</u>
conductivity	(umhos/cm)	<u>0.076</u>	<u>0.077</u>	<u>0.078</u>	<u>0.078</u>	<u>0.080</u>	<u>0.082</u>	<u>0.082</u>	<u>0.083</u>
temperature	(deg C)	<u>5.63</u>	<u>5.56</u>	<u>5.70</u>	<u>5.76</u>	<u>5.85</u>	<u>5.99</u>	<u>6.02</u>	<u>6.10</u>
D.O.	(mg/L)	<u>4.19</u>	<u>3.96</u>	<u>3.88</u>	<u>3.48</u>	<u>3.36</u>	<u>3.06</u>	<u>3.07</u>	<u>3.01</u>
ORP	(mv)	<u>60.0</u>	<u>62.6</u>	<u>61.7</u>	<u>60.2</u>	<u>60.6</u>	<u>61.3</u>	<u>61.3</u>	<u>61.5</u>
turbidity	(NTU)	<u>4.9</u>	<u>4.8</u>	<u>4.6</u>	<u>4.3</u>	<u>3.8</u>	<u>4.2</u>	<u>4.3</u>	<u>4.0</u>
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing								

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>S-W-42-1208</u>	<u>0855</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl
<u>S-W-420-1208</u> <u>(duplicate)</u> <u>sample</u>	<u>0850</u>	↓	↓	↓	↓

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. Equip Blk (MW-500)
 Sampled By DWK
 weather Snowing, 25°F

WELL INFORMATION	
Depth to water	(ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA							
start purge time							
time							
DTW	(ft)						
purge rate	(L/min)						
pH	(Units)						
conductivity	(umhos/cm)						
temperature	(deg C)						
D.O.	(mg/L)						
ORP	(mv)						
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>MW-500-1208</u>	<u>1345</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. SI
 Sampled By DWIC
 weather Snowing, 25 °F

WELL INFORMATION	
Depth to water	<u>8.20</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	<u>—</u> (ft)
Screen interval:	
well condition:	<u>OK</u>

COMMENTS
<u>Sampled SW plezo</u>

PURGE DATA							
start purge time	<u>0950</u>						
time		<u>1000</u>					
DTW	(ft)						
purge rate	(L/min)	<u>0.30</u>					
pH	(Units)	<u>7.81</u>					
conductivity μS	($\mu mhos/cm$)	<u>5086</u>					
temperature	(deg C)	<u>4.2</u>					
D.O.	(mg/L)	<u>4.1</u>					
ORP	(mv)	<u>197</u>					
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>SI - 1208</u>	<u>1000</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. S-2
 Sampled By DWK
 weather Snowing, 25 °F

WELL INFORMATION	
Depth to water	<u>9.52</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>ok</u>

COMMENTS
<u>sampled NE plaza</u>

PURGE DATA							
start purge time	<u>1042</u>						
time		<u>1056</u>					
DTW	(ft)						
purge rate	(L/min)	<u>0.30</u>					
pH	(Units)	<u>7.63</u>					
conductivity μS	(umhos/cm)	<u>207.8</u>					
temperature	(deg C)	<u>4.8</u>					
D.O.	(mg/L)	<u>1.81</u>					
ORP	(mv)	<u>150</u>					
turbidity	(NTU)	<u>8.14</u>					
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>S2 -12R</u>	<u>1100</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 53
 Sampled By DWK
 weather Snowing, 25°F

WELL INFORMATION	
Depth to water	<u>14.82</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>OK</u>

COMMENTS
<u>NW plezo</u>

PURGE DATA							
start purge time	<u>1132</u>						
time		<u>1142</u>					
DTW	(ft)						
purge rate	(L/min)	<u>0.30</u>					
pH	(Units)	<u>5.91</u>					
conductivity <u>ns</u>	(umhos/cm)	<u>0.068</u>					
temperature	(deg C)	<u>5.4</u>					
D.O.	(mg/L)	<u>1.34</u>					
ORP	(mv)	<u>57</u>					
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>53-1208</u>	<u>1145</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. S4
 Sampled By DWZ
 weather Snowing, 75 °F

WELL INFORMATION	
Depth to water	(ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA							
start purge time							
time							
DTW	(ft)						
purge rate	(L/min)						
pH	(Units)						
conductivity _{ms}	(umhos/cm)						
temperature	(deg C)						
D.O.	(mg/L)						
ORP	(mv)						
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

*Not sampled
not installed*

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>S4-1208</u>	<u>NOT</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
	<u>SAMPLE</u>	NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 2B-W-46
 Sampled By DWJ
 weather snowing, 25°F

WELL INFORMATION	
Depth to water	<u>9.88</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	<u>—</u> (ft)
Screen interval:	
well condition:	<u>ok</u>

COMMENTS
<u>Tubing inlet at ~ 12.5'</u>

PURGE DATA							
start purge time	<u>0836</u>						
time		<u>0846</u>	<u>0849</u>	<u>0852</u>			
DTW	(ft)	<u>9.89</u>	<u>9.89</u>	<u>9.89</u>			
purge rate	(L/min)	<u>0.30</u>					
pH	(Units)	<u>5.82</u>	<u>5.84</u>	<u>5.82</u>			
conductivity _{AS}	(umhos/cm)	<u>0.039</u>	<u>0.039</u>	<u>0.039</u>			
temperature	(deg C)	<u>8.6</u>	<u>8.6</u>	<u>8.7</u>			
D.O.	(mg/L)	<u>3.00</u>	<u>3.61</u>	<u>3.60</u>			
ORP	(mv)	<u>174</u>	<u>175</u>	<u>175</u>			
turbidity	(NTU)	<u>1.24</u>	<u>1.58</u>	<u>1.44</u>			
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>2B-W-46-1208</u>	<u>0855</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 12/17/08

Well No. 2B-W-45
 Sampled By DWLK
 weather SARWNY, 25°F

WELL INFORMATION	
Depth to water	9.93 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	— (ft)
Screen interval:	
well condition:	OK

COMMENTS
Tubing inlet at r 10.75

PURGE DATA							
start purge time	0752						
time		0802	0805	0808			
DTW	(ft)	9.96					
purge rate	(L/min)	0.30					
pH	(Units)	5.68	5.69	5.71			
conductivity	MS (umhos/cm)	0.037	0.35	0.034			
temperature	(deg C)	6.9	6.9	6.9			
D.O.	(mg/L)	3.27	3.01	2.98			
ORP	(mv)	162	163	161			
turbidity	(NTU)	2.06	2.04	2.01			
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
2B-W-45-1208	0810	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

wells to be gauged twice a week for the HCC wall

	Date	TOC	DTW	GW Elev.	Notes:
CV	12/16/2008	937.10	15.12	921.98	
EV	12/16/2008	933.75	9.67	924.08	
FWV	12/16/2008	930.76	9.21	921.55	
IW-01	12/16/2008		9.34		PVC's been cut. Still need new elevation.
IW-02	12/16/2008		8.38		Trace Product
P-1	12/16/2008	930.42	9.56	920.86	
P-2D	12/16/2008	931.66	9.80	921.86	
P-2U	12/16/2008	931.37	7.09	924.28	
P-3D	12/16/2008	932.13	10.21	921.92	
P-3U	12/16/2008	932.21	7.14	925.07	
P-4D	12/16/2008	938.42	16.59	921.83	
P-4U	12/16/2008	934.06	8.50	925.56	
P-5D	12/16/2008	935.26	13.30	921.96	
P-5U	12/16/2008	935.42	9.85	925.57	
P-6D	12/16/2008	934.50	12.52	921.98	
P-6U	12/16/2008	935.58	8.54	927.04	
P-7D	12/16/2008	935.70	12.56	923.14	
P-7U	12/16/2008		7.98		PVC's been cut. Still need new elevation.
P-8	12/16/2008		10.58		PVC's been cut. Still need new elevation.
PW-01	12/16/2008	929.84	8.06	921.78	
PW-02	12/16/2008	935.09	13.08	922.01	
PW-04	12/16/2008	937.76	13.63	924.13	
RW-01	12/16/2008	932.80	10.81	921.99	
RW-06	12/16/2008	928.51	6.58	921.93	
WV	12/16/2008	931.82	9.93	921.89	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	12/ /2008							NM		NM			
P-2U								NM		NM			
P-2D								NM		NM			
P-3U								NM		NM			
P-3D								NM		NM			
P-4U								NM		NM			
P-4D								NM		NM			
P-5U								NM		NM			
P-5D								NM		NM			
P-6U								NM		NM			
P-6D								NM		NM			
P-7U								NM		NM			
P-7D								NM		NM			
P-8								NM		NM			
HCC-RW-01								NM		NM			
HCC-RW-02								NM		NM			
HCC-RW-03								NM		NM			
HCC-RW-04								NM		NM			
HCC-RW-05								NM		NM			
HCC-RW-06								NM		NM			
HCC-IW-01								NM		NM			
HCC-IW-02								NM		NM			
MW-7	12/10/08 10:20			11.05				10.10	None	12.91	None		12-1.95
MW-17	12/10/08 11:34			8.73		1.5 ft trace T/P		NM		NM			10-1.07 # Well Ctl
2A-W-3	12/10/08 0:03			8.83		very trace T/P		7.95	Tr	NM			10-1.17
2A-W-11	12/10/08 11:55			6.29				4.99	Hvy Tr	2.89	Hvy Tr		7-1.71
MW-39	12/10/08 15:46			7.73				6.89	Tr	9.61	Tr		5-1.27
2A-W-4	12/10/08 15:46			10.34				8.09	Hvy Tr	11.75	Hvy Tr		10-1.68
	12/10/08 15:51			6.92		1.5 ft trace T/P							8-1.05

brake Shimlock

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-204-0340
 Collected by: DNK

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	12/16/2008	13						10.25		13.45			
2A-W-7		1325		NM				9.92		11.83			can't get id off
2A-W-9		0950		8.57				7.59		10.28			
2A-W-10		0936		8.66				7.91		10.46			
2B-W-4		0715		1.93				0.91		3.51			
2B-W-11		1339		NM		0.88		0.45		2.89			Ice in casing @ 2.85'
2B-W-12		1324		4.21		3.55		3.47		6.00			
2B-W-13		134		NM		3.22		3.22		5.68			Ice in casing @ 2.8'
2B-W-14		1344		NM		2.12		2.12		4.63			Ice in casing @ 4.7'
2B-W-15		1248		NW		2.21		3.42		6.49			dry @ 4.2'
2B-W-19		1700		5.63		2.61		4.16		7.36			
2B-W-21		1220		7.71				6.57		9.25			
2B-W-30		1307		9.85				8.53		11.56			
2B-W-32		1205		6.37				5.15		7.94			
2B-W-33		0923		8.06				7.17		10.31			
2B-B-21		1245		4.11				3.02		6.01			
2B-W-45		1235		9.05				NM		NM			
2B-W-46		1248		9.87				NM		NM			

65

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	12/16/2008	1145		12.07				10.44		12.95			
MW-2		1138		11.59				9.62		12.56			
MW-3		1132		9.15				6.70		9.63			
MW-4		1123		7.44				6.62		9.38			
MW-5		1053		5.61				4.47		7.25			
MW-9		1201		11.35				9.82		12.78			
MW-10		1155		11.48				9.74		12.93			
MW-11		1209		12.25				10.50		13.80			
MW-12		1041		4.29				3.06		6.25			product on prob. trace with heavy stream
MW-13		1028		8.51				7.53		10.28			
MW-14		1021	13.5	10.43				9.50		12.15			
MW-15		1003		11.44				10.60		13.19			
MW-16		1232		12.65				NM		NM			
MW-18		1115		13.53				11.79		14.90			
MW-26		1244		9.32				NM		NM			
MW-38				NM				NM		NM			well obstructed
MW-40		1014		11.02				10.15		12.72			
1A-W-2								NM		NM			product
1B-W-2								NM		NM			
1B-W-3								NM		NM			
1C-W-2		1511		9.48				NM		NM			
2A-W-2								NM		NM			
5-W-2								NM		NM			
5-W-3								NM		NM			

2AW.5 : 1167 11.92

X X

Fluid Level Gauging Form

68

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by: **68**

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	9/15/2008		6/23/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
1A-W-5	12/16/08	1435		9.65				10.22		7.98			
5-W-13								NI		NI			
5-W-14								9.66		7.60			
5-W-15		1338		7.79				8.15		6.19			
5-W-16								8.43		6.45			
5-W-17		1439		7.38				7.79		5.77			
5-W-18		1407		7.52				7.91		5.92			
5-W-19		1432		7.45				7.82		5.82			
5-W-20		1415		7.02				7.41		5.44			
5-W42		1421		6.70				NM		NM			
5-W-1								9.63	Tr	6.48	Trace		
5-W-3								7.95	Hvy Tr	5.26	Trace		
MW-22								8.22	Hvy Tr	6.46	Hvy Tr		
MW-36								8.52	Tr	6.45	Hvy Tr		

X
X
X
X

Other Notes:

- dirty casing, possible trace product
- dirty well
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by: **FM**
 Well Number: **1A-W-5**

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	9/15/2008		6/23/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
1A-W-5	12/16/08							10.22		7.98			
5-W-13								NI		NI			
5-W-14								9.66		7.60			
5-W-15								8.15		6.19			
5-W-16								8.43		6.45			
5-W-17								7.79		5.77			
5-W-18								7.91		5.92			
5-W-19								7.82		5.82			
5-W-20								7.41		5.44			
5-W42								NM		NM			
5-W-1	12/16/08	1420		5.1675		LNAPL	TP	9.63	Tr	6.48	Trace		10.2-2.4
5-W-3	12/16/08	1340		6.95		Heavy TL	TP	7.95	Hvy Tr	5.26	Trace		8-1.05
MW-22	12/16/08	1231		5.45		TL	TP	8.22	Hvy Tr	6.46	Hvy Tr		6.5-0.57
MW-36	12/16/08	1434		7.36		Light	TP	8.52	Tr	6.45	Hvy Tr		8-0.67
1A-W-2	12/16/08	1444		13.17		Heavy TL	TP						14-1.83

Other Notes:

- dirty casing, possible trace product
- dirty well
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by: _____

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	9/15/2008		6/23/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
1A-W-5	12/16/08	1455		9.65				10.22		7.98		GS	
5-W-13				NI				NI		NI			
5-W-14		1418		9.21				9.66		7.60		DWK	
5-W-15		1338		7.70				8.15		6.19		GS	
5-W-16		1440		8.00				8.43		6.45		DWK	
5-W-17		1439		7.38				7.79		5.77		GS	
5-W-18		1407		7.52				7.91		5.92			
5-W-19		1432		7.45				7.82		5.82			
5-W-20		1415		7.02				7.41		5.44			
5-W42		1421		6.70				NM		NM			
5-W-1		1420		7.76		None	TP	9.63	Tr	6.48	Trace	FM	10-2,24
5-W-3		1340		6.95		Hvy Tr		7.95	Hvy Tr	5.26	Trace		8-1,05
MW-22		1731		5.43		TR		8.22	Hvy Tr	6.46	Hvy Tr		6-0,57
MW-36		1424		7.36		TR		8.52	Tr	6.45	Hvy Tr		8-0,64

Other Notes:

dirty casing, possible trace product
 dirty well

use tape and paste (TP)
 use tape & paste (TP) + peristaltic pump (PP)

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-204-0340
 Collected by:

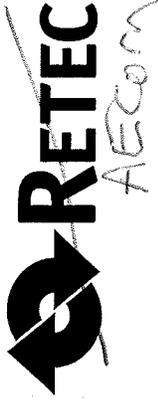
Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	12/16/2008	1107		11.9Z				10.25		13.45		GS	
2A-W-7		1325		NM				9.92		11.83		DWK	couldnt get cover off
2A-W-9		0950		8.57				7.59		10.28			
2A-W-10		0936		8.66		DTW (casing) (ft)		7.91		10.46			
2B-W-4		1215		1.93				0.91		3.51			
2B-W-11		1339		NM		0.88		0.45		2.89			Ice in casing @ 2.5'
2B-W-12		1324		4.21		3.55		3.47		6.00			
2B-W-13		1349		NM		3.22		3.22		5.88			Ice in casing @ 2.8'
2B-W-14		1348		NM		2.22		2.12		4.63			" " " " 1.7'
2B-W-15		1248		NM		2.6		3.42		6.49			Dry at 4.2'
2B-W-19		1200		5.63				4.16		7.36			
2B-W-21		1220		7.71				6.57		9.25			
2B-W-30		1307		9.85				8.53		11.56			
2B-W-32		1205		6.37				5.15		7.94			
2B-W-33		0923		8.06				7.17		10.31			
2B-B-21		1245		4.11				3.02		6.01			
2B-W-45		1235		9.95				NM		NM			
2B-W-46		1728		9.87				NM		NM			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	12/16/2008	1145		12.07				10.44		12.95		GS	
MW-2		1128		11.59				9.62		12.56			
MW-3		1132		9.15				6.70		9.63			
MW-4		1123		3.44				6.62		9.38			
MW-5		1053		5.61				4.47		7.25			
MW-9		1201		11.35				9.82		12.78			
MW-10		1155		11.48				9.74		12.93			
MW-11		1209		12.75		TR		10.50		13.80			
MW-12		1041		4.29				3.06		6.25			
MW-13		1028		8.51				7.53		10.28			
MW-14		1021	13.5	10.43				9.50		12.15			
MW-15		1003		11.44				10.60		13.19			
MW-16		1232		12.65				NM		NM			
MW-18		1115		13.53				11.79		14.90			
MW-26		1244		9.32				NM		NM			
MW-38				NM				NM		NM			Well destroyed
MW-40		1014		11.02				10.15		12.72			
1A-W-2		1440		13.17		Hvy TC	TAP	NM		NM		FM 14-0.83	
1B-W-2		1513		13.53				NM		NM		DNK	
1B-W-3		1457		14.97				NM		NM			
1C-W-2		1511		9.48				NM		NM		GS	
1C-W-3								NM		NM			
5-W-2		1549		6.92		Hvy TC	TAP	NM		NM		FM 80-1.08	
5-W-3		1340		6.25		Hvy TC	TAP	NM		NM		FM 8. - 10.5	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	12/16/2008			9.56				NM		NM		AH	
P-2U				9.80				NM		NM			
P-2D				7.09				NM		NM			
P-3U				7.14				NM		NM			
P-3D				10.74				NM		NM			
P-4U				8.50				NM		NM			
P-4D				16.59				NM		NM			
P-5U				9.85				NM		NM			
P-5D				13.30				NM		NM			
P-6U				8.54				NM		NM			
P-6D				12.52				NM		NM			
P-7U				7.98				NM		NM			
P-7D				12.50				NM		NM			
P-8				16.58				NM		NM			
HCC-RW-01				10.81				NM		NM			
HCC-RW-02								NM		NM			
HCC-RW-03								NM		NM			
HCC-RW-04								NM		NM			
HCC-RW-05								NM		NM			
HCC-RW-06				6.58				NM		NM			
HCC-IW-01				9.34				NM		NM			
HCC-IW-02				8.38				NM		NM			
MW-7		1020		11.05		NM	TR	10.10	None	12.91	None	FM	12-0.95
MW-17		1134		8.93		TR		NM		NM			10-1.07
2A-W-3		1003		8.83		Hwy Tr		7.95	Tr	NM			10-1.17
2A-W-11		1034		6.29		TR		4.99	Hwy Tr	2.89	Hwy Tr		7-0.21
MW-39		1155		7.73		NM		6.89	Tr	9.61	Tr		5-1.27
2A-W-4		1546		10.34		TR		8.09	Hwy Tr	11.75	Hwy Tr		10-0.68

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)



River Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0250 Measured by: G. Sabbarwal/D. Kinney

stake ID	date	time	backsight	foresight	water level	comments
SK-1	12/16/08	1619	4.38	15.08		Used IC-W-2 for backsight
SK-2		1608	3.91	21.31		
SK-3		1555	10.30	16.52		Used SKAN-17 for backsight
SK-4		1545	↓	16.93		↓ ↓ ↓ ↓
SK-5		1541	↓	18.83		↓ ↓ ↓ ↓
ML-1						
ML-2						
ML-3						
ML-4						

stake ID: SK# = Skykomish River gauging locations, ML# = Former Maloney Creek channel gauging locations
all measurements in feet

backsight: height of level above surveyed point (staff placed at PK nail)

foresight: height of level above gauging point (staff placed in stream bed at SKx, MLx)

water level: depth of water at gauging point

SK-17 = 10.30 at 1530

IC-W-2 =

wells to be gauged twice a week for the HCC wall

	Date	TOC	DTW	GW Elev.	Notes:
CV	12/16/2008	937.10	15.12	921.98	
EV	12/16/2008	933.75	9.67	924.08	
FWW	12/16/2008	930.76	9.21	921.55	
IW-01	12/16/2008		9.34		PVC's been cut. Still need new elevation.
IW-02	12/16/2008		8.38		Trace Product
P-1	12/16/2008	930.42	9.56	920.86	
P-2D	12/16/2008	931.66	9.80	921.86	
P-2U	12/16/2008	931.37	7.09	924.28	
P-3D	12/16/2008	932.13	10.21	921.92	
P-3U	12/16/2008	932.21	7.14	925.07	
P-4D	12/16/2008	938.42	16.59	921.83	
P-4U	12/16/2008	934.06	8.50	925.56	
P-5D	12/16/2008	935.26	13.30	921.96	
P-5U	12/16/2008	935.42	9.85	925.57	
P-6D	12/16/2008	934.50	12.52	921.98	
P-6U	12/16/2008	935.58	8.54	927.04	
P-7D	12/16/2008	935.70	12.56	923.14	
P-7U	12/16/2008		7.98		
P-8	12/16/2008		10.58		PVC's been cut. Still need new elevation.
PW-01	12/16/2008	929.84	8.06	921.78	
PW-02	12/16/2008	935.09	13.08	922.01	
PW-04	12/16/2008	937.76	13.63	924.13	
RW-01	12/16/2008	932.80	10.81	921.99	
RW-06	12/16/2008	928.51	6.58	921.93	
VW	12/16/2008	931.82	9.93	921.89	



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: SKYKOMISH
 BNSF Project Name: SKYKOMISH
 BNSF Contact: BRUCE SHEPPARD
 Project State of Origin: WA
 Project City: SKYKOMISH
 Company: AECOM
 Address: 710 2nd AVE, Ste. 1000
 City/State/Zip: Seattle, WA 98104
 Project Number: 01140-Z04-0340
 Project Manager: Halah Vogels
 Email: halah.vogels@aecom.com
 Phone: (206) 624-9340
 Fax:

LABORATORY INFORMATION
 Laboratory: Test America
 Project Manager:
 Address: 11720 North Creek Pkwy N, Ste 400
 City/State/Zip: Bothell, WA 98011
 Phone: (425) 420-9200
 Fax:

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 Project Manager:
 Address: 11720 North Creek Pkwy N, Ste 400
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 City/State/Zip: Bothell, WA 98011
 Phone: (425) 420-9200
 Fax:

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?
 EDD Req. Format?
RETEC-EQUIS

TURNAROUND TIME
 1-day Rush
 2-day Rush
 3-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Filled Y/N	Type (Comp/Grab)	Matrix
		Date	Time			
1. 2A-W-1-0309	2	3/25/09	0910	N		W
2. 2A-W-90-0309	2	3/25/09	0920	N		W
3. 1C-W-2-0309	2	3/25/09	1140	N		W
4. 1C-W-1-0309	2	3/25/09	1245	N		W
5. 1W-16-0309	2	3/25/09	1045	N		W
6. MW-4-0309	2	3/25/09	1705	N		W
7. MW-3-0309	2	3/25/09	1600	N		W
8. MW-400-0309	2	3/25/09	1710	N		W
9. S-W-4-0309	2	3/25/09	1345	N		W
10. S-W-20-0309	4	3/25/09	1520	N		W
11. S-W-42-0309	4	3/25/09	1630	N		W
12. S-W-16-0309	12	3/25/09	1005	N		W
13. S-W-17-0309	4	3/25/09	1620	N		W
14. S-W-50-0309	2	3/25/09	1540	N		W
15. S-W-54-0309	2	3/25/09	1450	N		W

METHODS FOR ANALYSIS
 W/SCCN
 N/TPH-DX
 W/SCCN
 N/TPH-DX

COMMENTS
 W/SCCN
 N/TPH-DX
 W/SCCN
 N/TPH-DX

LAB USE

Comments and Special Analytical Requirements:
SCCN - silica gel cleanup
 Date/Time: 3/26/09
 Relinquished By: BRUCE SHEPPARD
 Date/Time: 03/25
 Relinquished By:
 Date/Time:
 Relinquished By:
 Date/Time:
 Relinquished By:
 Date/Time:
 Lab Remarks:
 Date/Time:
 BNSF COC No.:
 Custody Seal No.:
 Yes No



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: _____
 BNSF Project Name: Skykomish
 BNSF Contact: Bruce Shepard

TURNAROUND TIME
 1-day Rush
 2-day Rush
 3-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other _____

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables? _____

EDD Req. Format?
 RETEC-E-RUTS

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix
		Date	Time			
1 S-W-56-0309	2	2/24/09	1700 PM	N		W
2 S-W-500-0309	2	3/23/09	1600 PM			
3 S-W-18-0309	4	3/25/09	1305 PM			
4 S-W-180-0309	4	3/25/09	1205 PM			
5 S-W-15-0309	4	3/25/09	1210 PM			
6 S-W-14-0309	4	3/25/09	0920 PM			
7 S-W-19-0309	4	3/25/09	1405 PM			
8 S-W-52-0309	2	3/24/09	1605 PM			
9						
10						
11						
12						
13						
14						
15						

Relinquished By: A. Tolstman, Sub. M
 Date/Time: 3/26/09 9:45
 Relinquished By: _____
 Date/Time: _____
 Relinquished By: _____
 Date/Time: _____
 Received By: _____
 Date/Time: _____
 Lab Remarks: _____

LABORATORY INFORMATION
 Laboratory: West America
 Address: 1720 North Creek Pkwy N, Ste. 400 (425) 420-9200
 City/State/ZIP: Bothell, WA 98011
 Project Manager: _____
 Phone: _____
 Fax: _____

CONSULTANT INFORMATION
 Company: AECOM
 Address: 710 2nd Ave, Ste. 1000
 City/State/ZIP: Seattle, WA 98011
 Project Manager: Halah Voges
 Email: halah.voges@aecom.com
 Phone: (206) 624-9349
 Fax: _____

LAB WORK ORDER:
 Shipment Method: _____
 Tracking Number: _____
 Project Number: 01140-204-0840

SHIPMENT INFORMATION
 Project Manager: _____
 Phone: _____
 Fax: _____

METHODS FOR ANALYSIS

Method	W/O SGCU	NMTPH-DX	W/ SGCU	NMTPH-DX	Comments	LAB USE
1	X	X	X	X		
2	X	X	X	X		
3	X	X	X	X		
4	X	X	X	X		
5	X	X	X	X		
6	X	X	X	X		
7	X	X	X	X		
8	X	X	X	X		
9						
10						
11						
12						
13						
14						
15						

Comments and Special Analytical Requirements:
 SGCU - Silica gel cleanup
 Date/Time: 05-26-09 10:45
 Date/Time: _____
 Date/Time: _____
 Lab: Custody Intact? Yes No
 Custody Seal No.: _____
 BNSF COC No.: _____



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: _____
 BNSF Project Name: Skykomish
 BNSF Contact: Bruce Sheppard

TURNAROUND TIME
 1-day Rush
 2-day Rush
 3-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other _____

LABORATORY INFORMATION

Laboratory: Post Anonka
 Address: 1720 North Creek Parkway, Ste 400
 City/State/Zip: Bellingham, WA 98201

CONSULTANT INFORMATION

Company: AECOM
 Address: 710 2nd Ave Ste 1000
 City/State/Zip: Seattle, WA 98104

LABOR WORK ORDER:

Project Manager: _____
 Project Number: 11140-004-0320
 Project Manager: Halah Voges
 Email: halah.voges@aecom.com
 Phone: (206) 624-9349
 Fax: _____

SHIPMENT INFORMATION

Shipment Method: Hand delivered
 Tracking Number: _____

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables? _____

EDD Req. Format?
 RETC - EQUIS

METHODS FOR ANALYSIS

NMTPH-DX	W/D SGCU	
X	NMTPH-DX	W/S GCU

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix
		Date	Time			
ZB-W-4-0309	2	3/23/09	1620	DWKN		W
IA-W-3-	2	11	1740	65		
IA-W-38R-	2	3/24/09	0900			
IA-W-5-	2		1005			
IA-W-4-	2		1055			
IA-W-1-	2		1155			
IB-W-3-	2		1300			
IB-W-2-	2		1405			
S-W-55-	2		0915	FM		
IC-W-3-	2		1100			
IC-W-4-	2		1145			
2A-W-10-	2		1255			
ZB-W-46-	2		1435			
ZB-W-45-	2		1515			
S-W-53-	2		0950			

Comments and Special Analytical Requirements:
 SGCU = silica gel cleanup

Date/Time: 3/23/09 1740
 Received By: [Signature]
 Date/Time: 3/23/09 1740
 Received By: [Signature]

Date/Time: _____
 Received By: _____

Date/Time: _____
 Received By: _____

Date/Time: _____
 Received By: _____

Lab Custody Inact? Yes No

Custody Seal No.: _____



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: Project City: WA
 BNSF Project Name: Skykomish Project Manager: AFCOM
 BNSF Contact: Bruce Sheppard Address: 710 2nd Ave, Ste 1000
 City/State/Zip: Bothell, WA 98011 City/State/Zip: Bothell, WA 98011
 Project State of Origin: WA Other Deliverables?

TURNAROUND TIME
 1-day Rush 5- to 8-day Rush
 2-day Rush Standard 10-Day
 3-day Rush Other

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 EDD Req. Format?
RETEC-EQUIS

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection			Type (Comp/Grab)	Matrix
		Date	Time	Sampler		
1) MW-500 - 0309	4	3/24/09	1415	DX	W	NMTPL-DX w/ SGCN
2) ZA-W-11-	2		1440			X
3) MW-39 -	2		1500			X
4) S-W-51 -	2		1520			X
5)						
6)						
7)						
8)						
9)						
10)						
11)						
12)						
13)						
14)						
15)						

LABORATORY INFORMATION
 Laboratory: Test America
 Address: 11730 North Creek Pkwy N, Ste 400 (425) 470-9200
 City/State/Zip: Bothell, WA 98011
 Project Manager:
 Date/Time: 3/24/09 1740
 Received By:
 Date/Time:

SHIPMENT INFORMATION
 Shipment Method:
 Tracking Number:
 Project Number: 01140-204-0340
 Project Manager: Haluk Vegg
 Email:
 Phone: Haluk.Vegg@afcom.com
 Fax: (206) 674-9249

COMMENTS AND SPECIAL ANALYTICAL REQUIREMENTS:
SGCN - silica gel clean

RECEIVED BY:
 Received By:
 Date/Time:
 Lab: Custody Intact? Yes No
 Custody Seal No.:
 BNSF COC No.:

BNSF - Skykomish

March 2009 Lab QC

ZA-W-9	duplicate	ZA-W-90-0309
S-W-16	- MS/MSD	
S-W-18	duplicate	S-W-180-0309
MW-4	"	MW-400-0309
S-W-56	"	S-W-500-0309
S1-BD	"	S10-BD-0309
S3-AU	"	S30-AU-0309
S3-CU	---	Lab QC (MS/MSD)
MW-500	-	Equip. Blank

FIELD ACTIVITY LOG

AECOM

PROJECT NAME: BNSF-Skykonich
 PROJECT NO: 01140-204-0340
 DAY & DATE: 3/24/09

COMPLETED BY: D. Kinney
 APPROVED BY: _____
 SHEET 1 OF _____

FIELD ACTIVITY SUBJECT: Groundwater Sampling
 DESCRIPTION OF DAILY ACTIVITIES & EVENTS:

TIME	DESCRIPTION OF DAILY ACTIVITIES & EVENTS
0730	Safety meeting w/ DWK & GS
0745	Calibrating meter (PSI - model 556) & setting up to sample, FM on site
0840	Started sampling on west vault (S1), put tubing into stainless steel riser (2")
0905	Finished sampling S1 locations (S1-AU, -AD, -BU & -BD) (took duplicate on S1-BD (S10-BD-0309)) - NWTPH-DX
0930	Started on S2
1015	Finished w/ the 4 locations at S2 (S2-AU, -AD, -BU & -BD) - NWTPH-DX
1105	Started on S3
1210	Finished w/ 6 locations at S3 (S3-AU, -AD, -BU, -BD, -CU & -CD) (took duplicate at S3-AU (S30-AU-0309)) - NWTPH-DX
1225	Lunch
1250	Returned & setup on S4
1255	Started sampling at S4 - NWTPH-DX
1355	Finished w/ 6 locations at S4 (S4-AU, -AD, -BU, -BD, -CU & -CD) - NWTPH-DX
1415	Setup to logw sampling
1426	Started purging 2A-W-11 (see gw sampling form)
1440	Sampled 2A-W-11 for NWTPH-DX
1450	Started purging MW-39
1500	Sampling MW-39 for NWTPH-DX
1510	Started purging S-W-51
1520	Sampled S-W-51 for NWTPH-DX
1535	Putting equipment away & dumping purge water
1600	Loading sample coolers from FM & GS
1635	Left site for lab

VISITORS ONSITE:
None

CHANGES FROM PLANS OR IMPORTANT DECISIONS:
None

WEATHER CONDITIONS:
Snow to Rain, 30-40°F

IMPORTANT TELEPHONE CALLS:
None

PERSONNEL ONSITE: Dean Kinney, Fred Merrill, Ghazi Sabbane & Matthew Sanchez (MP) (GS)

Field Activity Log

Page: 1 of 5

AECOM

Project Name: Skykomish

Completed By: Ghani, Sebano

Project Number:

Date: 03/23/09

Field Activity: semi-annual

Weather: Cloudy 47° F

GW - Sampling

Personnel on site: Ghani, Sebano, Dean, K., Fred, M., Melvin.

- 0750: Arrived to the site.
- 0800: Had safety meeting with Dean, Fred and Melvin and we discussed work plan.
- 0830: Started gauging product wells with Melvin
- 1330: Finished gauging and had a lunch.
- 1400: Started surveying Sky River with Melvin
- 1530: Finished surveying, Melvin left site went to pick up equipment
- 1600: started calibrating equipment
- 1630: Began setting up on 1A-W-3
- 1647: Started purging, water very turbid with Iron stain
- 1704: Began recording parameters, turbidity very high 84, also DO unstable.
- 1740: started collecting samples, cleaned up, dumped purge water into drum.
- 1830: left site to the house.

Ghani

Field Activity Log

Page: 2 of 5

AECOM

Project Name: SKY	Completed By: Ghanis
Project Number:	Date: 03/24/09
Field Activity: Semi-Annual GW-Sampling.	Weather: Snow. 31°F.
	Personnel on site: Ghanis

0730: on site had safety meeting with Dean.
0745: began calibrating equip
0810: started setting up on MW-39A.
0829: began purging.
0839: started recording parameters.
0900: began collecting samples.
0925: started setting up on 1A-W-5.
0940: began purging.
0950: started recording parameters.
1005: began sampling.
1025: started setting up on 1A-W-4.
1035: began purging.
1045: started recording parameters.
1055: began sampling.
1115: started setting up on 1AW-1.
1130: began purging.
1140: started recording parameters.
1155: began collecting samples.
1217: started setting up on 1B-W-3.
1230: began purging. Few sediment came out.
1240: started recording parameters. DO and Turbidity unstable.
1300: began sampling.
1316: started setting up on 1B-W-2.
1332: began purging.
1342: started recording parameters. turbidity unstable.
1405: began collecting samples.

Field Activity Log

Page: 3 of 5

AECOM

Project Name: _____ Completed By: Ghani, S
Project Number: _____ Date: 03/24/09
Field Activity: GW-sampling Weather: rain 34° F
Personnel on site: Ghani, S, Fred, M.

1420 : Took lunch. and dumped purge water into drum.

1510 : Began setting up on MW-3

1525 : started purging.

1535 : Began recording parameters.

1600 : started collecting samples.

Dean took all samples and left site to the Lab

1623 : Began setting up on MW-4. straining tubing

1640 : started purging.

1650 : Began recording parameters.

1705 : started collecting samples.

1710 : collected Duplicate MW-400-0309.

1730 : cleaned up dumped purge water.

1800 : left site. to the house.

Ghani

Field Activity Log

Page: 4 of 5

AECOM

Project Name: Sky
Project Number:
Field Activity: ~~semi-annual~~
AW-Sampling.
Completed By: Ghani, Sellman
Date: 03/25/09
Weather: Snow
Personnel on site: Ghani, Fred M.

- 0700: on site Began calibrating equipment.
0730: Had safety meeting, discussed work plan.
loaded a car with coolers and equipment needed.
0825: started setting up on 2A-W-9
0845: Began purging, water is cloudy yellowish.
0855: started recording parameters
0910: Began collecting samples.
0920: collected duplicate 2AW-90.
0935: went to get gas and bought ice
1000: started setting up on MW-10.
1022: Began purging, water is clear.
1032: started recording parameters
1045: Began collecting samples.
1110: started setting up on 1C-W-2.
1123: Began purging, water is clear.
1133: started recording parameters.
1140: Began collecting samples.
1210: started setting up on 1C-W-1 after talking
to house owner to get permission.
1224: Began purging, water started with some iron stain
1234: started recording parameters.
1245: Began collecting samples.
1310: started setting up on S-W-4.
1319: Began purging.
1329: started recording parameters.
1345: Began collecting samples.

Field Activity Log

Project Name: Sky
Project Number:
Field Activity: semi-annual
GW-sampling.

Completed By: Ghanis
Date: 03/25/09.
Weather: cloudy 35°F.
Personnel on site: Ghanis, Fred, M

1430: started setting up on S-W-20

1442: Began purging.

1452: started recording parameters.

1520: Began collecting samples.

1545: started setting up on S-W-42.

1606: Began purging.

1616: started recording parameters.

1630: Began collecting samples.

1700: started cleaning up. dumped purge water into drum, loaded van with cooler, gave Fred equipment.

1800: left a site.

Ghanis

Fluid Level Gauging Form

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)	Sign Off	Comments
n 1A-W-1	3/23/09	1609		13.75								GS	
n 1A-W-4		0951		8.63								FM	
n 1A-W-5		1250		9.21								FM	
n 1A-W-38		—		NM								—	Not Installed
n 1B-W-2		0927		13.11								FM	
n 1B-W-3		0922		14.68								—	
n 1C-W-1		0849		13.19								—	
n 1C-W-2		0914		9.61								—	
n 1C-W-3		1235		10.70								—	
n 1C-W-4		1233		10.74								—	
n 1C-W-7		0901		10.95								—	
n 1C-W-8		—		NM								—	Not Installed
s 2A-W-8		0939		14.60								DWK	
s 2A-W-9		0924		8.56								—	
s 2A-W-10		1129		8.77								—	
s 2B-W-4		1156		2.11								—	
s 5-W-4		1145		5.65								FM	
n 5-W-14		1006		9.26								—	
n 5-W-15		1011		7.75								—	
n 5-W-16		1020		8.13								—	
n 5-W-17		1016		7.45								—	
n 5-W-18		1024		7.61								—	
n 5-W-19		1029		7.55								—	
n 5-W-20		1032		7.13								—	
n 5-W-42		1040		6.65								—	
n 5-W-43		—		NM								—	Not Installed
n 5-W-44		—		NM								—	↓
n 5-W-45		—		NM								—	↓

Project Name: BNSF Skykomish Project Number: 01140-204-0340 Collected by:



Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	03/23/09	1215		8.49				8.80		9.50		GS	
P-2U		1220		5.78				6.67		6.88			
P-2D		1219		8.54				8.91		10.02			
P-3U		1222		6.09	TR		TAP	6.52	TR	6.96	TR		7-021'
P-3D		1225		9.15				9.80		10.37			
P-4U		1233		7.64				8.18		8.30			
P-4D		1232		18.44				17.16		16.78			
P-5U		1237		9.39				10.82		9.69			
P-5D		1236		13.18				13.87		13.49			
P-6U		1251		8.09				8.73		8.30			
P-6D		1252		12.31				13.00		12.72			
P-7U		1306		7.67				7.86		7.76			
P-7D		1304		11.20				11.23		12.58			
P-8		1302		9.65				9.89		10.41			
HCC-RW-01		1240		10.72				NM		11.04			
HCC-RW-02		1243		11.74				NM		NM			
HCC-RW-03		1244		11.69				NM		NM			
HCC-RW-04		1256		6.03				NM		NM			
HCC-RW-05		1312		6.53				NM		NM			
HCC-RW-06		1222		6.48				7.13		6.77			
HCC-IW-01		1303		9.68				9.22		9.30			
HCC-IW-02		1284		8.03				8.43		8.17			

FWV
 WV
 CV
 EV
 PW 01
 PW 02
 PW 03

1217
 1224
 1239
 1300
 1221
 1238
 1303

9.11
 9.79
 14.00
 10.48
 8.52
 13.54
 14.60

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	Prod. Thick. (ft)		DTW (ft)	Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)			
1A-W-3	3/23/09	0945		8.02	None		T&P					X
2A-W-3		-		NM								Management Covered
2A-W-11		0850		6.09	None		T&P					7-0.91'
MW-28		0922		13.17								14-0.83'
MW-39		0837		7.57	None		T&P					8-0.43'
2A-W-4		1154		9.00	Hvy TR		T&P					10-1.0'
5-W-1		-		NM								Well Abandoned
5-W-2		1117		6.87	Hvy TR							8-1.13'
5-W-3		1136		6.87	TR							8-1.13'
MW-22		1024		7.45	Hvy TR		T&P					8-0.55'
MW-36		0936		7.30	TR		T&P					8-0.70'

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well

- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

total wells: 91

DTW(ft)

5-W-51 3/23/09

6.85

Hvy Trace Product



River Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0340
 Measured by: G. Sebbano

stake ID	date	time	backsight	foresight	water level	comments
SK-1	3/23/2009	1528	4.72	16.07		backsight SW-17 back sight
SK-2	"	1510	4.35	21.84		Nail
SK-3	"	1448	9.65	16.23		SW-17
SK-4	"	1440	9.65	16.62		"
SK-5	"	1430	9.65	18.05		back sight SW-17
ML-1						
ML-2						
ML-3						
ML-4						

1C-W-2.

stake ID: SK# = Skykomish River gauging locations, ML# = Former Maloney Creek channel gauging locations
 all measurements in feet
 backsight: height of level above surveyed point (staff placed at PK nail)
 foresight: height of level above gauging point (staff placed in stream bed at SKx, MLx)
 water level: depth of water at gauging point

Fluid Level Gauging Form

Project Name: BNSF Skykomish

Project Number: 01140-204-0340

Collected by: D. Kinney

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	03/23/09	1007		11.92				12.65		11.55		DNK	
2A-W-7		1059		11.27				11.54		NM			
2A-W-9		0924		8.56				9.01		8.22			
2A-W-10		1129		8.77				9.05		8.36			
2B-W-4		1156		2.11				2.45		NM			
2B-W-11		1226		1.11	0.66			3.45		3.33			
2B-W-12		1223		4.33				4.55		3.97			
2B-W-13		1233		3.62				3.73		5.54			
2B-W-14		1230		2.31				2.40		3.32			
2B-W-15		1024		6.42	2.55			Dry		Dry			
2B-W-19		1141		6.06				NM		NM			
2B-W-21		1049		3.81				8.29		NM			
2B-W-30		1010		9.77				10.67		9.67			
2B-W-32		1143		6.67				NM		6.21			
2B-W-33		1122		7.87				8.39		9.68			
2B-B-21		1200		7.75				NM		NM			
2B-W-45		1206		9.97				10.24		9.71			
2B-W-46		1203		9.40				10.14		NM			

Staff Gauges:

North 0.71'
 Mid 1.21'
 South 0.97'

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	03/23/09	0944		17.24				12.67		11.73		DWK	
MW-2		0934		11.85				12.31		NM			
MW-3		0927		8.47				8.51		NM			
MW-4		0931		7.32				7.25		7.00			
MW-5		0928		5.53				NM		NM			
MW-9		0958		11.05				11.90		11.01			
MW-10		0950		11.34				12.08		11.11			
MW-11		0950		NM				NM		NM			Buried under snow
MW-12		1023		4.00				4.40		3.71			
MW-13		0906		8.19				8.59		NM			
MW-14		0911	13.5	10.12				10.69		NM			
MW-15		0913		11.15				11.95		11.13			
MW-16		1016		12.46				12.90		NM			
MW-18		0947		13.49				14.16		13.19			
MW-26				NM				9.79		NM		↓	Abandoned
MW-38 R		0956		4.26				NM		NM		EM	
MW-40		0915		10.70				11.45		10.68		DWK	
1B-W-2		0927		13.11				12.72		13.40		EM	
1B-W-3		0922		14.68				14.60		14.90		↓	
1C-W-2		0914		9.61				9.75		9.01		↓	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	03/23/09	0828	1	10.75	None		TAP	11.18	None	NM		GS	12-1.25'
MW-17		0903		8.69	Hvy TR		TAP	NM		NM			9-0.31'
2A-W-3		-		NM			-	NM		NM			Buried under stone plate
2A-W-11		0852		6.09	None		TAP	6.12	Tr	5.77	Hvy Tr		7-0.91'
MW-39		0837		7.57	None			7.65	None	7.42	Tr		8-0.43'
1A-W-2		0954		13.11	Hvy TR			NM		NM			14-0.89'
5-W-2		1117		6.87	Hvy TR			NM		NM			8-1.13'
5-W-3		1136		6.87	TR			NM		NM			8-1.13'
2A-W-4		1154		9.00	Hvy TR		↓	NM		NM		↓	10-1.00

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Fluid Level Gauging Form

Project Name: BNSF Skykomish

Project Number: 01140-204-0340

Collected by: D. Kinney

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	03/23/09	1007		11.92	2.5			12.65		11.55			
2A-W-7		1059		11.27				11.54		NM			
2A-W-9		0974		0.56				9.01		8.22			
2A-W-10		1129		3.77				9.05		8.36			
2B-W-4		1156		2.11				2.45		NM			
2B-W-11		1226		1.11	0.66			3.45		3.33			Had to dig out well
2B-W-12		1223		4.33	3.55			4.55		3.97			
2B-W-13		1233		3.62	3.18			3.73		5.54			
2B-W-14		1230		2.51	2.10			2.40		3.32			
2B-W-15		1024		Dry 0.47'	2.55			Dry		Dry			
2B-W-19		1141		6.06				NM		NM			
2B-W-21		1049		3.81				8.29		NM			
2B-W-30		1010		9.77				10.67		9.67			Had to dig out well
2B-W-32		1143		6.67				NM		6.21			
2B-W-33		1122		7.87				8.39		9.68			
2B-B-21		1200		7.75				NM		NM			
2B-W-45		1206		9.97				10.24		9.71			
2B-W-46		1203		9.40				10.14		NM			

Staff gauges:
 North 0.71'
 Mid 1.21'
 South 0.97'

P. King

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
							DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	03/23/09	0944		12.24			12.67		11.73			
MW-2		0921		11.55			12.31		NM			
MW-3		0927		8.47			8.51		NM			
MW-4		0931		7.32			7.25		7.00			
MW-5		0921		5.53			NM		NM			
MW-9		0958		11.05			11.90		11.01			
MW-10		0950		11.34			12.08		11.11			
MW-11				NM			NM		NM			
MW-12		1023		4.00			4.40		3.71			Buried under sand
MW-13		0906		8.19			8.59		NM			
MW-14		0911	13.5	10.12			10.69		NM			
MW-15		0913		11.15			11.95		11.13			
MW-16		1010		12.46			12.90		NM			
MW-18		0947		13.49			14.16		13.19			
MW-26							9.79		NM			
MW-38							NM		NM			
MW-40		0915		10.70			11.45		10.68			
1B-W-2							12.72		13.40			
1B-W-3							14.60		14.90			
1C-W-2							9.75		9.01			

G. Sebbine / M. Ranches

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	1/22/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	03/23/09	1215		8.49				8.80		9.50			
P-2U		1220		5.78				6.67		6.88			
P-2D		1219		8.54				8.91		10.02			
P-3U		1227		6.09	Trace		TP	6.52	TR	6.96	TR		7 - 0.91 = 6.09
P-3D		1225		9.15				9.80		10.37			
P-4U		1233		7.64				8.18		8.30			
P-4D		1232		7.44				17.16		16.78			
P-5U		1237		9.39				10.82		9.69			
P-5D		1236		13.18				13.87		13.49			
P-6U		1254		8.09				8.73		8.30			
P-6D		1252		12.31				13.00		12.72			
P-7U		1306		7.67				7.86		7.76			
P-7D		1304		11.20				11.23		12.58			
P-8 = P-31		1302		9.65				9.89		10.41			
HCC-RW-01		1240		10.72				NM		11.04			
HCC-RW-02		1243		11.74				NM		NM			
HCC-RW-03		1244		11.69				NM		NM			
HCC-RW-04		1256		6.03				NM		NM			
HCC-RW-05		1312		6.53				NM		NM			
HCC-RW-06		1222		6.48				7.13		6.77			
HCC-IW-01		1303		9.68				9.22		9.30			
HCC-IW-02		1234		8.03				8.43		8.17			

FWV 1217 9.11
 WV 1224 9.79
 CV 1239 14.00
 EV 1300 10.48'
 PW01 1221 8.52'
 PW02 1238 13.54'
 PW03 1303 14.60'

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	03/23/09	8:28		10.75	NONE	NONE	TP	11.18	None	NM		12 - 1.25	
MW-17		9:03			HV.TR		TP	NM		NM		9 - 0.31	
2A-W-3				NM				NM		NM		minimum cover broken	
2A-W-11					NONE			6.12	Tr	5.77	Hvy Tr	7 - 0.91	
MW-39		8:50		7.57	NONE		TP	7.65	None	7.42	Tr	8 - 0.43	
1A-W-2		8:37			HV.TR		TP	NM		NM		7 - 0.91	
5-W-2		09:54			HV.TR		TP	NM		NM		14 - 0.91	
5-W-3		11:17			Trace		TP	NM		NM		14 - 0.91	
2A-W-4		11:36		9.00	HV.Trad		TP	NM		NM		8 - 1.13	
		11:54						NM		NM		10 - 1.00	

Other Notes:

- clean well - north ("town") half
- clean well - south ("railroad") half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

- 1A-W-1 = DTW - 13.75 @ 1609.

Prod MW-11

PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	Prod. Thick. (ft)		DTW (ft)	Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)			
MW-1												
S MW-2												
S MW-3												
S MW-4												
S MW-12												
S MW-14			13.5									
S MW-16												
S MW-18												
MW-20												
S MW-32	3/23/09	10:47		5.82								Abandoned
MW-38												
S MW-38 R	3/23/09	12:56		4.26								
S W-42	3/23/09	10:40		6.65								
S W-50	3/23/09	11:55		7.35								
S W-51	3/23/09	13:04		6.85								
S W-52	3/23/09	11:11		5.89								
S W-53	3/23/09	11:07		6.34								
S W-54	3/23/09	11:15		6.23								
S W-55	3/23/09	11:29		6.09								
S W-56	3/23/09	11:25		6.72								
S W-2	3/23/09	10:50		8.52								
MW 6 W-3	2/23/09	09:48		13.53								
6 W-4	3/23/09	07:06		10.80								
6 W-7	3/23/09	01:11		10.15								
6 W-23	3/23/09	04:35		13.81								

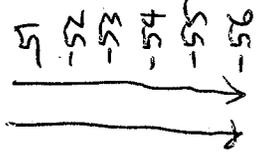
Product - Hwy trace

D. LANCAR

PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	Prod. Thick. (ft)		DTW (ft)		Sign Off	Comments
								Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)	DTW (ft)		
1 MW-1	3/23/09	0944		12.24									
S MW-2		0934		11.85									
S MW-3		0927		8.47									
S MW-4		0931		7.32									
S MW-12		1023		4.00									
S MW-14		0911	13.5	10.12									
S MW-16		1016		12.46									
S MW-18		0947		13.49									
S MW-26													
S MW-32													
0 MW-36													
S MW-38													
S 5-W-42													

F 5-W-50



GW-2

-3
-4

1C-W-7

1B-W-23

G. Slobone

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	Prod. Thick. (ft)		DTW (ft)	Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)			
1A-W-3	03/23/09	0445		0.02	NONE		TP					9 - 0.98 Abandoned
1B-W-4				NM								Exc. 124
2A-W-1				NM								Abandoned
2A-W-3				NM								14 - 0.83
2A-W-TT												Abandoned
MW-27												Abandoned
MW-28	"	08.22			NONE		TP					Abandoned
MW-39												Abandoned
1A-W-2												Abandoned
2A-W-4												Abandoned
5-W-1				NM								Abandoned
5-W-2												Abandoned
5-W-3												Abandoned
MW-22		1024			HV. TR		TP					8 - 0.55
MW-36	"	0736		7.30	TR. G. U.		TP					8 - 0.70

Other Notes:

- clean well - north (town) half
- clean well - south (railyard) half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

total wells:

**BNSF - Skykomish
Sentry Well Sampling Log**

Well No.	Sampler	Sample Date	Sample Time
S1-AU	DWL	3/24/09	0840
S1-AD			0850
S1-BU			0900
S1-BD			0905
S2-AU			0930
S2-AD			0940
S2-BU			1005
S2-BD			1015
S3-AU			1105
S3-AD			1125
S3-BU			1140
S3-BD			1150
S3-CU			1200
S3-CD			1210
S4-AU			1255
S4-AD			1305
S4-BU			1315
S4-BD			1330
S4-CU			1345
S4-CD			1355

Duplicate:
S10-AD-0309
(0910)

Duplicate:
S30-AU-0309
(1115)

Lab QC

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. 1A-W-1
 Sampled By G. Harris
 weather Mix Snow 33 °F

WELL INFORMATION	
Depth to water	13.76 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	No beds. HV + D

COMMENTS
Inlet tubing ~ 15 Ft
purge water started with some iron staining later on was clear.

PURGE DATA							
start purge time	1130						
time		1140	1143	1146	1149	1152	
volume purged (gal)		13.83	13.84	13.84	13.84	13.84	
purge rate (L/min)		290	290	290	290	290	
pH (Units)		5.75	5.69	5.67	5.68	5.67	
conductivity (umhos/cm)		0.077	0.080	0.081	0.081	0.081	
temperature (deg C)		6.08	6.11	6.17	6.20	6.21	
D.O. (mg/L)		4.66	4.43	4.26	4.27	4.21	
ORP (mv)		153.9	154.9	155.8	156.7	157.4	
turbidity (NTU)		6.01	3.57	3.06	3.31	2.98	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1A-W-1-0209	1155	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/23/09

Well No. 1A-W-3
 Sampled By Bhoni S
 weather cloudy 43 °F

WELL INFORMATION	
Depth to water	<u>8.02</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>no holds</u>

COMMENTS
<u>purge water started</u>
<u>Very turbid with</u>
<u>Iron stain.</u>
<u>Inlet tubing 9.50 FT</u>

PURGE DATA								
start purge time	<u>1647</u>							
time		<u>1704</u>	<u>1707</u>	<u>1710</u>	<u>1713</u>	<u>1716</u>	<u>1719</u>	<u>1722</u>
volume purged	(gal)							
purge rate	(L/min)	<u>250</u>						
pH	(Units)	<u>6.17</u>	<u>6.19</u>	<u>6.17</u>	<u>6.18</u>	<u>6.19</u>	<u>6.18</u>	<u>6.16</u>
conductivity	(umhos/cm)	<u>0.082</u>	<u>0.084</u>	<u>0.085</u>	<u>0.087</u>	<u>0.088</u>	<u>0.092</u>	<u>0.094</u>
temperature	(deg C)	<u>6.20</u>	<u>6.20</u>	<u>6.11</u>	<u>6.12</u>	<u>6.09</u>	<u>6.02</u>	<u>6.03</u>
D.O.	(mg/L)	<u>3.81</u>	<u>3.56</u>	<u>3.08</u>	<u>3.02</u>	<u>2.70</u>	<u>2.57</u>	<u>2.47</u>
ORP	(mv)	<u>104.7</u>	<u>99.6</u>	<u>100.6</u>	<u>97.7</u>	<u>95.3</u>	<u>94.7</u>	<u>93.4</u>
turbidity	(NTU)	<u>61.80</u>	<u>24.5</u>	<u>22.4</u>	<u>22.5</u>	<u>17.18</u>	<u>13.90</u>	<u>17.96</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1A-W-3-0309</u>	<u>1740</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. 1A-W-4
 Sampled By Chari, S
 weather snow 33 °F

WELL INFORMATION	
Depth to water	8.60 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	no holds

COMMENTS
Inlet tubing ~ 10.00ft
purge water is clear.

PURGE DATA							
start purge time	time						
		1035					
		1045	1048	1051			
volume purged	(gal)	8.69	8.69	8.69			
purge rate	(L/min)	270	270	270			
pH	(Units)	6.37	6.40	6.40			
conductivity	(umhos/cm)	0.061	0.062	0.062			
temperature	(deg C)	5.79	5.81	5.90			
D.O.	(mg/L)	6.05	6.03	6.07			
ORP	(mv)	138.1	137.1	136.8			
turbidity	(NTU)	1.52	1.36	1.39			
purge and sample equip.		Peristaltic pump and silicone/polyethylene tubing					

DTW

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1A-W-4-1309	1055	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. 1A-W-5
 Sampled By Shanika S
 weather snow 31 °F

WELL INFORMATION	
Depth to water	9.65 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good

COMMENTS
Inlet tubing @ 11.00
purge water is clear

PURGE DATA

start purge time		0940			
time		0950	0953	0956	0959
DTW volume purged- (gal)		9.65	9.65	9.65	NM
purge rate (L/min)		2.90	2.90	2.90	2.90
pH (Units)		6.30	6.28	6.30	6.39
conductivity (umhos/cm)		0.058	0.058	0.058	0.058
temperature (deg C)		3.74	3.70	3.60	3.56
D.O. (mg/L)		5.92	6.05	6.08	6.10
ORP (mv)		142.2	148.9	143.2	143.8
turbidity (NTU)		1.47	1.38	1.37	1.42
purge and sample equip.		Peristaltic pump and silicone/polyethylene tubing			

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
1A-W-5-0309	1005	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. 1B-W-2
 Sampled By Glacini, S
 weather Mix snow 33 °F

WELL INFORMATION	
Depth to water	<u>13.09</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>missing bolts, other are loose.</u>

COMMENTS
<u>Inlet tubing ~ 15.00</u>
<u>purge water is clear.</u>

PURGE DATA								
start purge time	<u>1332</u>							
time		<u>1342</u>	<u>1345</u>	<u>1348</u>	<u>1351</u>	<u>1354</u>	<u>1357</u>	<u>1400</u>
DTW volume purged	(gal)	<u>13.68</u>	<u>13.64</u>	<u>13.62</u>	<u>13.62</u>	<u>13.62</u>	<u>13.62</u>	<u>13.62</u>
purge rate	(L/min)	<u>150</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
pH	(Units)	<u>5.23</u>	<u>5.21</u>	<u>5.22</u>	<u>5.24</u>	<u>5.25</u>	<u>5.25</u>	<u>5.25</u>
conductivity	(umhos/cm)	<u>0.384</u>	<u>0.386</u>	<u>0.389</u>	<u>0.390</u>	<u>0.390</u>	<u>0.384</u>	<u>0.376</u>
temperature	(deg C)	<u>5.63</u>	<u>5.47</u>	<u>5.36</u>	<u>5.30</u>	<u>5.44</u>	<u>5.47</u>	<u>5.44</u>
D.O.	(mg/L)	<u>5.21</u>	<u>4.90</u>	<u>4.89</u>	<u>4.65</u>	<u>4.68</u>	<u>5.01</u>	<u>4.93</u>
ORP	(mv)	<u>167.7</u>	<u>172.3</u>	<u>173.5</u>	<u>175.1</u>	<u>177.6</u>	<u>178.5</u>	<u>179.1</u>
turbidity	(NTU)	<u>5.96</u>	<u>3.86</u>	<u>3.44</u>	<u>2.83</u>	<u>2.18</u>	<u>2.14</u>	<u>1.98</u>
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1B-W-2-0309</u>	<u>1405</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. 1B-W-3
 Sampled By Ghami.S
 weather Mix Snow 33°F

WELL INFORMATION	
Depth to water	14.67 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	No boils Hv-D.

COMMENTS
Inlet tubing ~ 16.00ft
purge water is clear.
Few sediment came out at initial purge.
Do unstable

PURGE DATA

start purge time	1230						
time		1240	1243	1247	1250	1253	1256
DTW volume purged (gal)		14.68	14.68	14.68	14.68	NM	NM
purge rate (L/min)		250	250	250	250	250	250
pH (Units)		6.20	6.23	6.31	6.31	6.28	6.25
conductivity (umhos/cm)		0.092	0.088	0.085	0.084	0.083	0.083
temperature (deg C)		5.95	5.94	5.94	5.94	5.90	5.89
D.O. (mg/L)		1.10	1.99	2.61	2.76	2.94	3.05
ORP (mv)		112.10	110.5	109.4	109.5	110.50	112.5
turbidity (NTU)		9.63	7.02	3.71	3.52	3.22	3.01
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
1B-W-3-0309	1300	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/25/09

Well No. 1C-W-1
 Sampled By Glanville
 weather snow 31 °F

WELL INFORMATION	
Depth to water	12.70 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	None (ft)
Screen interval:	
well condition:	no holds

COMMENTS
Inlet tubing: 14.50 ft
purge water started with Iron stain, became clear later.

PURGE DATA

start purge time	1224			
time	1234	1237	1240	1243
DTW volume purged (gal)	12.70	12.70	12.70	12.70
purge rate (L/min)	200	200	200	200
pH (Units)	5.67	5.69	5.69	5.69
conductivity (umhos/cm)	0.044	0.044	0.044	0.043
temperature (deg C)	4.45	4.61	4.72	4.71
D.O. (mg/L)	7.20	7.44	7.29	7.23
ORP (mv)	178.2	178.2	178.2	178.8
turbidity (NTU)	4.77	2.81	2.82	2.59
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing			

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
1C-W-1-0309	1245	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/25/09

Well No. 11-W-2
 Sampled By Ghani S
 weather Snow 31 °F

WELL INFORMATION	
Depth to water	9.21 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	no birds HV-D

COMMENTS
Inlet tubing 10.50ft
purge water is clear.

PURGE DATA							
start purge time	1123						
time		1133	1135	1138			
DTW volume purged- (gal)		9.21	9.21	9.21			
purge rate (L/min)		250	250	250			
pH (Units)		5.58	5.55	5.55			
conductivity (umhos/cm)		0.043	0.046	0.047			
temperature (deg C)		3.53	3.68	3.83			
D.O. (mg/L)		6.44	6.30	6.27			
ORP (mv)		171.7	171.9	172.9			
turbidity (NTU)		2.27	2.08	2.09			
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
11-W-2-0309	1140	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/25/09

Well No. 2A-W-9
 Sampled By Ghani, S
 weather snow 31 °F

WELL INFORMATION	
Depth to water	8.03 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good

COMMENTS
Inlet tubing 9.50 ft
purge water is cloudy yellowish
Duplicate sample collected

PURGE DATA

start purge time	0845				
time		0855	0858	0901	0900
DTW volume purged (gal)		8.12	8.12	8.12	NM
purge rate (L/min)		200	200	200	200
pH (Units)		5.67	5.65	5.65	5.65
conductivity (umhos/cm)		0.113	0.114	0.114	0.111
temperature (deg C)		1.75	1.77	1.77	1.76
D.O. (mg/L)		0.60	0.64	0.52	0.50
ORP (mv)		129.7	125.2	127.1	126.7
turbidity (NTU)		3.20	2.14	2.32	2.31
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing				

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
2A-W-9-0309	0910	NWTPH-Dx	1L Gl. Amber	2	HCl
2A-W-9-0309 (duplicate)	0920				

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/23/09

Well No. ZB-W-4
 Sampled By DWL
 weather cloudy, 40 °F

WELL INFORMATION	
Depth to water	<u>2.11</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>—</u> (ft)
Screen interval:	
well condition:	<u>ok</u>

COMMENTS
<u>Tubing inlet at ~3.0'</u>

PURGE DATA						
start purge time	<u>1558</u>					
time	<u>1</u>	<u>1608</u>	<u>1611</u>	<u>1614</u>	<u>1617</u>	
volume purged	(gal) <u>DTW</u> (ft)	<u>2.18</u>	<u>2.19</u>	<u>2.19</u>	<u>2.19</u>	
purge rate	(L/min)	<u>0.30</u>				
pH	(Units)	<u>5.98</u>	<u>5.98</u>	<u>5.98</u>	<u>5.98</u>	
conductivity	(umhos/cm)	<u>0.071</u>	<u>0.075</u>	<u>0.074</u>	<u>0.074</u>	
temperature	(deg C)	<u>3.6</u>	<u>3.6</u>	<u>3.6</u>	<u>3.5</u>	
D.O.	(mg/L)	<u>0.75</u>	<u>0.59</u>	<u>0.60</u>	<u>0.61</u>	
ORP	(mv)	<u>164</u>	<u>159</u>	<u>156</u>	<u>153</u>	
turbidity	(NTU)	<u>1.79</u>	<u>0.01</u>	<u>0.87</u>	<u>0.85</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>ZB-W-4-0309</u>	<u>1620</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/25/09

Well No. 5-W-4
 Sampled By Rhiani S
 weather cloudy 34 °F

WELL INFORMATION	
Depth to water	5.05 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	No bolts HV-D.

COMMENTS
Inlet tubing 2 to 50ft
purge water is clear

PURGE DATA							
start purge time	1319						
time		1329	1332	1335	1338	1341	1344
volume purged (gal)		5.06	5.06	5.06	5.06	NM	NM
purge rate (L/min)		280	280	280	280	280	280
pH (Units)		6.24	6.30	6.32	6.31	6.32	6.33
conductivity (umhos/cm)		0.080	0.086	0.090	0.092	0.092	0.093
temperature (deg C)		4.70	4.70	4.71	4.71	4.72	4.71
D.O. (mg/L)		2.75	2.43	2.18	2.08	2.06	2.04
ORP (mv)		165.4	160.8	157.0	152.3	149.4	146.4
turbidity (NTU)		1.54	1.35	1.41	1.21	1.25	1.25
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

DTW

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-4-0309	1345	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/24/09

Well No. S-W-1A
 Sampled By F. Merz
 weather _____ °F

WELL INFORMATION	
Depth to water	9.00 (ft)
Depth of well:	(ft)
Well diameter:	2" (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	NEEDS 1 BOCT

COMMENTS

PURGE DATA							
start purge time	0557						
time		0907	0910	0913	0917		
volume purged	(gal) - DTW	9.00	9.00	9.00	9.00		
purge rate	(L/min)	300	300	300	300		
pH	(Units)	6.45	6.24	6.22	6.21		
conductivity	(umhos/cm)	0.044	0.049	0.053	0.053		
temperature	(deg C)	6.15	6.18	6.26	6.26		
D.O.	(mg/L)	5.30	5.88	5.70	5.46		
ORP	(mv)	171.1	187.2	185.3	185.1		
turbidity	(NTU)	2.09	1.58	2.19	1.11		
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-1A-0309	0920	NWTPH-Dx w/o SGCU	1L Gl. Amber	2	HCl
	0920	NWTPH-Dx w/SGCU	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/25/09

Well No. S-W-15
 Sampled By F. M. Zwick
 weather Snowy/RAINY 35 °F

WELL INFORMATION	
Depth to water	7.45 (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA								
start purge time	1137							
time		1147	1150	1153	1156	1159	1202	1205
volume purged	(gal) DTW	7.65	7.65	7.65	7.65	7.65	7.65	7.65
purge rate	(L/min) m ³ /hour	300	300	300	300	300	300	300
pH	(Units)	6.45	6.51	6.53	6.56	6.57	6.59	6.61
conductivity	(umhos/cm)	0.069	0.070	0.070	0.070	0.071	0.071	0.072
temperature	(deg C)	5.68	5.72	5.79	5.84	5.87	5.88	5.87
D.O.	(mg/L)	0.66	0.39	0.35	0.34	0.19	0.18	0.18
ORP	(mv)	74.3	56.6	29.7	16.0	10.0	5.2	5.1
turbidity	(NTU)	28.1	40.2	33.0	31.8	17.80	18.0	17.0
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-15-0309	1210	NWTPH-Dx w/o SGCU	1L Gl. Amber	2	HCl
	1210	NWTPH-Dx w/SGCU	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/24/09^{AM} 3/25/09

Well No. 5-W-16
 Sampled By GS
 weather _____ °F

WELL INFORMATION	
Depth to water	<u>7.90</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>Extra sample for Lab QC</u>

PURGE DATA							
start purge time	<u>0944</u>						
time		<u>0956</u>	<u>0959</u>	<u>1002</u>			
volume purged (gal)	<u>DTW</u>	<u>7.90</u>	<u>7.90</u>	<u>7.90</u>			
purge rate (L/min)							
pH (Units)		<u>6.72</u>	<u>6.74</u>	<u>6.75</u>			
conductivity (umhos/cm)		<u>0.035</u>	<u>0.036</u>	<u>0.035</u>			
temperature (deg C)		<u>3.39</u>	<u>3.31</u>	<u>3.29</u>			
D.O. (mg/L)		<u>10.67</u>	<u>10.45</u>	<u>10.33</u>			
ORP (mv)		<u>182.1</u>	<u>183.2</u>	<u>183.9</u>			
turbidity (NTU)		<u>7.29</u>	<u>7.98</u>	<u>7.65</u>			
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-16-0309</u>	<u>1005</u>	<u>NWTPH-Dx w/o SGCU</u>	<u>1L Gl. Amber</u>	<u>6</u>	<u>HCl</u>
		<u>NWTPH-Dx w/SGCU</u>	<u>1L Gl. Amber</u>	<u>6</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/25/09

Well No. 5-W-17
 Sampled By F. Merrill
 weather Snowy ~35 °F

WELL INFORMATION	
Depth to water	<u>7.21</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>* COULD NOT CONTINUE W/SAMPLE</u>
<u>DUE TO HIGH VOLUME OF WATER</u>
<u>COMING INTO WELL MOVEMENT</u>
<u>Duplicate sample collected</u>

PURGE DATA								
start purge time	<u>1104</u>	<u>RESTART @ 1600</u>						
time		<u>1113</u>	<u>1116</u>	<u>1119</u>	<u>1610</u>	<u>1613</u>	<u>1616</u>	<u>1619</u>
volume purged	<u>(gal) [⊕] DTW</u>	<u>7.21</u>	<u>7.21</u>	<u>7.21</u>				
purge rate	<u>(L/min)</u>	<u>300</u>	<u>300</u>	<u>300</u>				
pH	<u>(Units)</u>	<u>6.18</u>	<u>6.16</u>	<u>6.15</u>	<u>5.99</u>	<u>6.08</u>	<u>6.12</u>	<u>6.14</u>
conductivity	<u>(umhos/cm)</u>	<u>0.046</u>	<u>0.047</u>	<u>0.048</u>	<u>0.045</u>	<u>0.047</u>	<u>0.048</u>	<u>0.048</u>
temperature	<u>(deg C)</u>	<u>5.93</u>	<u>6.00</u>	<u>5.73</u>	<u>6.52</u>	<u>6.63</u>	<u>6.67</u>	<u>6.62</u>
D.O.	<u>(mg/L)</u>	<u>5.28</u>	<u>5.14</u>	<u>5.23</u>	<u>4.69</u>	<u>4.87</u>	<u>4.88</u>	<u>4.87</u>
ORP	<u>(mv)</u>	<u>192.7</u>	<u>193.0</u>	<u>193.6</u>	<u>105.0</u>	<u>100.6</u>	<u>99.8</u>	<u>102.7</u>
turbidity	<u>(NTU)</u>	<u>1.76</u>	<u>1.41</u>	<u>0.67</u>	<u>0.84</u>	<u>1.60</u>	<u>0.91</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-17-0309</u>	<u>1120 AM</u>	<u>NWTPH-Dx w/o SGCU</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
	<u>1620</u>	<u>NWTPH-Dx w/SGCU</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>5-W-17-0309</u>	<u>1020</u>	<u>NWTPH-Dx w/o</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>(Duplicate)</u>		<u>w/</u>		<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/25/09

Well No. 5-W-19
 Sampled By F. MERRILL
 weather Mostly cloudy ~37 °F

WELL INFORMATION	
Depth to water	7.36 (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA							
start purge time	1340						
time		1349	1352	1355	1358	1401	
volume purged	(gal) DTW	7.36	7.36	7.36	7.36	7.36	
purge rate	(L/min)	300	300	300	300	300	
pH	(Units)	6.25	6.24	6.24	6.24	6.24	
conductivity	(umhos/cm)	0.046	0.043	0.042	0.042	0.041	
temperature	(deg C)	5.91	5.91	5.91	5.96	5.96	
D.O.	(mg/L)	6.26	6.49	6.37	6.36	6.36	
ORP	(mv)	10.2	21.4	36.9	38.4	30 40.4	
turbidity	(NTU)	2.55	0.99	0.89	0.87	0.45	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-19-0309	1405	NWTPH-Dx w/o SGCU	1L Gl. Amber	2	HCl
		NWTPH-Dx w/SGCU	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/25/09

Well No. S-W-20
 Sampled By Ghani S
 weather cloudy 35 °F

WELL INFORMATION	
Depth to water	<u>6.89</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>missing bolts</u>

COMMENTS
<u>inlet tub, 8.00 ft</u>

PURGE DATA									
start purge time	<u>1442</u>								
time		<u>1452</u>	<u>1455</u>	<u>1458</u>	<u>1501</u>	<u>1504</u>	<u>1507</u>	<u>1510</u>	
DTW volume purged	(gal)	<u>6.90</u>	<u>6.90</u>	<u>6.90</u>	<u>6.90</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	
pH	(Units)	<u>6.32</u>	<u>6.34</u>	<u>6.34</u>	<u>6.34</u>	<u>6.35</u>	<u>6.36</u>	<u>6.36</u>	
conductivity	(umhos/cm)	<u>0.101</u>	<u>0.101</u>	<u>0.103</u>	<u>0.104</u>	<u>0.105</u>	<u>0.106</u>	<u>0.107</u>	
temperature	(deg C)	<u>6.09</u>	<u>5.91</u>	<u>5.91</u>	<u>5.89</u>	<u>5.93</u>	<u>5.88</u>	<u>5.79</u>	
D.O.	(mg/L)	<u>1.15</u>	<u>0.75</u>	<u>0.42</u>	<u>0.40</u>	<u>0.33</u>	<u>0.30</u>	<u>0.31</u>	
ORP	(mv)	<u>89.9</u>	<u>86.7</u>	<u>83.1</u>	<u>82.6</u>	<u>88.6</u>	<u>88.3</u>	<u>85.8</u>	
turbidity	(NTU)	<u>7.35</u>	<u>6.07</u>	<u>4.94</u>	<u>4.30</u>	<u>3.31</u>	<u>2.77</u>	<u>2.39</u>	
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>S-W-20-0309</u>	<u>1520</u>	<u>NWTPH-Dx w/o SGCU</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
		<u>NWTPH-Dx w/SGCU</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/25/09

Well No. 5-W-20
 Sampled By Ghanis
 weather cloudy 35 °F

WELL INFORMATION	
Depth to water	<u>6.89</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>missing 3 bolts</u>

COMMENTS

PURGE DATA

start purge time	<u>1442</u>						
time		<u>1513</u>	<u>1516</u>				
volume purged (gal)		<u>6.90</u>	<u>NM</u>				
purge rate (L/min)		<u>250</u>	<u>250</u>				
pH (Units)		<u>6.37</u>	<u>6.36</u>				
conductivity (umhos/cm)		<u>0,106</u>	<u>0,107</u>				
temperature (deg C)		<u>5.82</u>	<u>5.86</u>				
D.O. (mg/L)		<u>0.29</u>	<u>0.28</u>				
ORP (mv)		<u>82.2</u>	<u>78.8</u>				
turbidity (NTU)		<u>2.26</u>	<u>2.31</u>				
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>5-W-20-0309</u>	<u>1520</u>	<u>NWTPH-DxW10SG</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
		<u>NWTPH-DxW1SG</u>	<u>1L Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 03/25/09

Well No. 5-W-42
 Sampled By Colman Sellman
 weather cloudy 35 °F

WELL INFORMATION	
Depth to water	<u>6.36</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>None</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing = 8.00 ft</u>
<u>purge water is clear</u>

PURGE DATA						
start purge time	<u>1600</u>					
time		<u>1616</u>	<u>1619</u>	<u>1622</u>	<u>1625</u>	
DTW	(ft)	<u>6.41</u>	<u>6.41</u>	<u>6.41</u>	<u>6.41</u>	
purge rate	(L/min)	<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>	
pH	(Units)	<u>6.37</u>	<u>6.36</u>	<u>6.34</u>	<u>6.33</u>	
conductivity	(umhos/cm)	<u>0.054</u>	<u>0.054</u>	<u>0.053</u>	<u>0.054</u>	
temperature	(deg C)	<u>5.57</u>	<u>5.51</u>	<u>5.36</u>	<u>5.40</u>	
D.O.	(mg/L)	<u>4.34</u>	<u>4.51</u>	<u>4.65</u>	<u>4.63</u>	
ORP	(mv)	<u>65.30</u>	<u>70.2</u>	<u>76.4</u>	<u>80.7</u>	
turbidity	(NTU)	<u>2.75</u>	<u>2.07</u>	<u>1.94</u>	<u>1.95</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-42-0309</u>	<u>1630</u>	<u>NWTPH-Dx (w/SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
		<u>NWTPH-Dx (w/o SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 3/25/09

Well No. ~~5-W-54~~ 5-W-50
 Sampled By P. MEDZIK
 weather PARTLY SUNNY ~ 37 °F

WELL INFORMATION	
Depth to water	<u>6.71</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA							
start purge time	<u>1520</u>						
time		<u>1530</u>	<u>1533</u>	<u>1536</u>	<u>1539</u>		
DTW	(ft)	<u>6.71</u>	<u>6.71</u>	<u>6.71</u>	<u>6.71</u>		
purge rate	(L/min)	<u>300</u>	<u>300</u>	<u>300</u>	<u>300</u>		
pH	(Units)	<u>5.54</u>	<u>5.49</u>	<u>5.46</u>	<u>5.46</u>		
conductivity	(umhos/cm)	<u>0.035</u>	<u>0.033</u>	<u>0.032</u>	<u>0.032</u>		
temperature	(deg C)	<u>3.81</u>	<u>3.79</u>	<u>3.80</u>	<u>3.81</u>		
D.O.	(mg/L)	<u>0.58</u>	<u>0.48</u>	<u>0.44</u>	<u>0.44</u>		
ORP	(mv)	<u>106.8</u>	<u>106.9</u>	<u>106.4</u>	<u>106.0</u>		
turbidity	(NTU)	<u>3.78</u>	<u>3.37</u>	<u>3.38</u>	<u>3.09</u>		
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-54-0370</u>	<u>1540</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>5-W-50-0309</u>					

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 3/24/09

Well No. ~~S-W-50~~ S-W-56
 Sampled By F. Merrill
 weather _____ °F

WELL INFORMATION	
Depth to water	<u>5.53</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA

start purge time	time	DTW	purge rate	pH	conductivity	temperature	D.O.	ORP	turbidity	purge and sample equip.
<u>1623</u>	<u>1620</u>									
	<u>1641</u>	<u>6.55</u>	<u>2.00</u>	<u>6.05</u>	<u>0.028</u>	<u>4.19</u>	<u>9.33</u>	<u>62</u>	<u>9.48</u>	Peristaltic pump and silicone/polyethylene tubing
	<u>1644</u>	<u>6.55</u>	<u>2.00</u>	<u>5.98</u>	<u>0.022</u>	<u>4.19</u>	<u>10.00</u>	<u>18.7</u>	<u>7.37</u>	
	<u>1647</u>	<u>6.51</u>	<u>2.00</u>	<u>6.03</u>	<u>0.020</u>	<u>4.23</u>	<u>9.98</u>	<u>28.0</u>	<u>5.95</u>	
	<u>1650</u>	<u>6.56</u>	<u>2.00</u>	<u>6.03</u>	<u>0.018</u>	<u>4.40</u>	<u>9.79</u>	<u>30.5</u>	<u>4.22</u>	
	<u>1653</u>	<u>6.56</u>	<u>2.00</u>	<u>6.01</u>	<u>0.014</u>	<u>4.31</u>	<u>10.12</u>	<u>30.9</u>	<u>4.38</u>	
	<u>1656</u>	<u>6.56</u>	<u>2.00</u>	<u>6.06</u>	<u>0.014</u>	<u>4.33</u>	<u>10.66</u>	<u>33.6</u>	<u>3.92</u>	

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>S-W-50-0309</u>	<u>17:00</u>	<u>NWTPH-DX</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>S-W-56-0309</u>					
<u>S-W-500-0309</u>	<u>16:00</u>	<u>NWTPH-DX</u>	<u>1L Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. MW-3
 Sampled By Ghani S
 weather rain 34 °F

WELL INFORMATION	
Depth to water	<u>7.72</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing is 9.0 ft</u>
<u>purge water is clear</u>
<u>water level draw down</u>
<u>1.72 Ft. reduced</u>
<u>flow rate to 200.</u>

PURGE DATA								
start purge time	<u>1525</u>							
time		<u>1535</u>	<u>1538</u>	<u>1541</u>	<u>1544</u>	<u>1547</u>	<u>1551</u>	<u>1554</u>
DTW volume purged-	(gal)	<u>9.00</u>	<u>8.95</u>	<u>8.90</u>	<u>8.88</u>	<u>8.81</u>	<u>8.74</u>	<u>8.73</u>
purge rate	(L/min)	<u>300</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>
pH	(Units)	<u>5.68</u>	<u>5.66</u>	<u>5.67</u>	<u>5.67</u>	<u>5.67</u>	<u>5.66</u>	<u>5.68</u>
conductivity	(umhos/cm)	<u>0.029</u>	<u>0.025</u>	<u>0.025</u>	<u>0.024</u>	<u>0.024</u>	<u>0.023</u>	<u>0.023</u>
temperature	(deg C)	<u>1.91</u>	<u>1.94</u>	<u>1.98</u>	<u>2.02</u>	<u>1.99</u>	<u>1.85</u>	<u>1.81</u>
D.O.	(mg/L)	<u>8.11</u>	<u>7.81</u>	<u>7.73</u>	<u>7.61</u>	<u>7.67</u>	<u>8.02</u>	<u>8.03</u>
ORP	(mv)	<u>171.0</u>	<u>171.1</u>	<u>170.1</u>	<u>169.7</u>	<u>170.6</u>	<u>170.6</u>	<u>171.1</u>
turbidity	(NTU)	<u>2.17</u>	<u>1.78</u>	<u>1.94</u>	<u>1.09</u>	<u>1.23</u>	<u>0.77</u>	<u>0.62</u>
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>MW-3-0309</u>	<u>1600</u>	<u>NWTPH-Dx w/o SGCU</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
		<u>NWTPH-Dx w/SGCU</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. MW-4
 Sampled By Ghani, S
 weather Rain 34 °F

WELL INFORMATION		
Depth to water	7.23	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	NONE	(ft)
Screen interval:		
well condition:	Good.	

COMMENTS
inlet tubing = 8.50ft.
purge water is clear.
duplicate sample collected

PURGE DATA

start purge time	1640					
time		1650	1653	1656	1659	1702
volume purged (gal)		7.24	7.24	7.24	NM	NM
purge rate (L/min)		200	200	200	200	200
pH (Units)		5.71	5.69	5.67	5.66	5.65
conductivity (umhos/cm)		0.020	0.020	0.020	0.020	0.020
temperature (deg C)		1.93	1.88	1.89	1.89	1.82
D.O. (mg/L)		7.20	7.11	7.10	7.14	7.15
ORP (mv)		172.6	174.5	175.5	176.6	177.4
turbidity (NTU)		2.14	1.90	2.14	2.18	2.19
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
MW-4-0309	1705	NWTPH-Dx	1L Gl. Amber	2	HCl
MW-400-0309 (duplicate)	1710	NWTPH-Dx	1L Gl. Amber	2	HCl

JTW

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/25/09

Well No. MW-16
 Sampled By Ghani.S
 weather Snow 30 °F

WELL INFORMATION		
Depth to water	11.93	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	NONE	(ft)
Screen interval:		
well condition:	Good.	

COMMENTS
Inlet tubing 13.50
purge water is clear.

PURGE DATA

		10 22	10 32	10 35	10 38	10 41		
start purge time								
time								
volume purged	(gal)		12.94	12.94	12.94	NM		
purge rate	(L/min)		200	200	200	200		
pH	(Units)		5.54	5.53	5.52	5.48		
conductivity	(umhos/cm)		0.056	0.048	0.044	0.043		
temperature	(deg C)		2.36	2.37	2.44	2.46		
D.O.	(mg/L)		6.37	6.65	6.82	6.89		
ORP	(mv)		156.4	158.2	157.7	158.2		
turbidity	(NTU)		1.49	1.20	1.19	1.31		
purge and sample equip.		Peristaltic pump and silicone/polyethylene tubing						

DTW

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
MW-16-0309	10 45	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/23/09

Well No. MW-35
 Sampled By Dark
 weather _____ °F

WELL INFORMATION	
Depth to water	(ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>Well destroyed</u>
<u>during construction</u>

PURGE DATA

start purge time							
time							
volume purged (gal)							
purge rate (L/min)							
pH (Units)							
conductivity (umhos/cm)							
temperature (deg C)							
D.O. (mg/L)							
ORP (mv)							
turbidity (NTU)							
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>MW-35</u>	<u>No</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
	<u>sample</u>				

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 03/24/09

Well No. MW-38R
 Sampled By Glenn S
 weather snow 31 °F

WELL INFORMATION	
Depth to water	<u>4.25</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>None</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing is 6.00ft</u>
<u>purge water is clear.</u>

PURGE DATA

start purge time	<u>0829</u>						
time		<u>0839</u>	<u>0842</u>	<u>0845</u>	<u>0849</u>	<u>0851</u>	<u>0854</u>
DTW volume purged- (gal)		<u>4.26</u>	<u>4.26</u>	<u>4.26</u>	<u>4.26</u>	<u>4.26</u>	<u>4.26</u>
purge rate (L/min)		<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>
pH (Units)		<u>6.04</u>	<u>6.05</u>	<u>6.07</u>	<u>6.09</u>	<u>6.12</u>	<u>6.12</u>
conductivity (umhos/cm)		<u>0.041</u>	<u>0.045</u>	<u>0.047</u>	<u>0.048</u>	<u>0.049</u>	<u>0.049</u>
temperature (deg C)		<u>4.56</u>	<u>4.68</u>	<u>4.96</u>	<u>5.08</u>	<u>5.11</u>	<u>5.09</u>
D.O. (mg/L)		<u>2.47</u>	<u>1.91</u>	<u>1.51</u>	<u>1.30</u>	<u>1.22</u>	<u>1.22</u>
ORP (mv)		<u>148.2</u>	<u>147.2</u>	<u>148.4</u>	<u>148.5</u>	<u>148.2</u>	<u>148.00</u>
turbidity (NTU)		<u>1.90</u>	<u>2.03</u>	<u>1.86</u>	<u>1.44</u>	<u>1.71</u>	<u>1.65</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>MW-38R-0309</u>	<u>0900</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 3/24/09

Well No. Equip Blank
 Sampled By DWK
 weather Rainy, 35°F

WELL INFORMATION	
Depth to water	(ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA							
start purge time							
time							
volume purged	(gal)						
purge rate	(L/min)						
pH	(Units)						
conductivity	(umhos/cm)						
temperature	(deg C)						
D.O.	(mg/L)						
ORP	(mv)						
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
MW-500-0309	1415	NWTPH-Dx w/o SGCU	1L Gl. Amber	2	HCl
		NWTPH-Dx w/SGCU	1L Gl. Amber	2	HCl

ENSR | AECOM **Field Activity Log**

Page: 1 of 2

Project Name: SKYKOMISH Completed By: Polhan;
 Project Number: _____ Date: 03/24/08
 Field Activity: BW-Sampling Weather: mostly Sunny
 Personnel on site: Ehoni; Aaron; Eric; Fred; Dean

- 7:00: Drove to SKYKOMISH site.
- 9:00: Safety meeting was conducted by Dean, Talked about Traffic Hazards; railroad Hazards, Chemical Hazards; Cold stress. Also had work plan.
- 10:00: Aaron and I started gauging well products.
- 10:20: set up on MW-36. we used TP & Paste and also a pump Because product was very thick.
- (10:30) see gauging sheet For details. DTW: 6.16, DIP: 6.34
- 10:30: set up on well 1A-W-3 we used only tape & paste. DTW: 7.52 Ft. no product.
- 10:42: set up on well 1B-W-1 used TP. DTW: 9.36 Ft. Trace of product.
- 10:54: set up on well 2A-W-1 used TP. DTW: 8.60 Ft. Trace of product.
- 11:05: set up on MW-22 we used TP. DTW: 6.90 Ft. Heavy Trace
- 11:30: set up on well 5-W-3 used TP. DTW: 5.69 Ft. Heavy Trace.
- 12:15: set up on well 5-W-2 used TP and pump. DTW: 5.62 Ft. very heavy Trace.
- 12:28: set up on well 5-W-1 used TP. DTW: 5.93 Ft. Trace.
- 12:42: set up on MW-27 used TP. DTW: 10.37 Ft. no product.
- 13:00: set up on well 1A-W-2 used TP. DTW: 9.88 Ft. very heavy Trace.
- 13:07: set up on MW-21 used TP. DTW: 12.82 Ft. very heavy Trace.

ENSR | AECOM **Field Activity Log**

Project Name: SKYKOMISH. Completed By: Bhiani
Project Number: _____ Date: 03/24/08
Field Activity: BW. Sampling. Weather: mostly sunny.
Personnel on site: _____

- 13:20 : set up on well 2A-W-11 used TP . DTW: 5.75 Ft.
no product.
- 13:43 : set up on well 2A-W-4: we used TP DTW: 9.13 Ft.
Heavy trace.
- 14:00 : set up on well 1C-W-3 For sampling.
- 15:30 : Dean ; Aaron ; Fred ; Cassie and I started
surveying skykomish river water level. we read
backsight and foresight of 5 stations SK-1 → SK-5.
- 17:30 : Dean ; Fred and Aaron took off a site.
Cassie and I stayed overnight.

ENSR | AECOM **Field Activity Log**

Page: 1 of 2

Project Name: <u>Skykomish</u>	Completed By: <u>Ghani</u>
Project Number: _____	Date: <u>03/25/08</u>
Field Activity: <u>GW-Sampling</u>	Weather: <u>mostly sunny</u>
_____	Personnel on site: <u>Ghani, Casie & Dean</u>

- 7:00 : started calibrating equipment y/s and turbidity meter.
- 7:45: Dean on site and we had safety meeting.
- 8:20 : set up on MW-1A-W-1
- 8:50 : started purging F.R. 300 ml/min.
- 9:08 : started reading parameters; turbidity and ORP.
not stable till 9:30.
- 9:40 : started sampling & Filled 2 Bottles.
- 10:00 : set up on MW-1A-W-4.
- 10:20 : started purging F.R. 300 ml/min
- 10:30 : started reading parameters ORP and DO.
not stable till 10:45.
- 10:50 : sampled well.
- 11:25 : set up on MW-1B-W-2.
- 11:45 : started purging
- 12:00 : started reading parameters
- 12:20 : started sampling a well.
- 12:45 : Had a lunch.
- 13:30 : set up on MW-2B-W-4.
- 13:55 : started purging.
- 14:05 : started reading parameters. DO & ORP unstable.
- 14:45 : started sampling a well.
- 15:05 : set up on MW-35.
- 15:17 : started purging.
- 15:29 : started reading parameters DO & ORP unstable.
- 16:05 : started sampling 4 Bottles the 2 for Lab & c.

ENSR | AECOM **Field Activity Log**

Page: 1 of 1

Project Name: SKYKOMISH Completed By: Bhauri
 Project Number: _____ Date: 03/26/08
 Field Activity: GW - sampling Weather: snow
 Personnel on site: Bhauri, Cassie & Dean

- 7:00: started calibrating YIS & turbidity meters.
- 8:15: set up on MW-037.
- 8:50: started purging.
- 9:03: started reading parameters ORP unstable.
- 9:30: started sampling anyway.
- 9:45: picked up Cassie's YIS meter.
- 10:00: set up on MW-2A-W-6.
- 10:16: started purging.
- 10:29: started reading parameters.
- 10:45: started sampling.
- sampled Dup. ID 2A-W-60-0308 at 10:30
- 10:50: pack up staff.
- 11:10: Helped Cassie sampling last well.
- 11:30: Dumped water purge into Drum.
- 12:00: Clean up. Dean had coolers to take to the lab. Test America Bethell. Cassie had equipments to take to the office. I have to stay to watch. For the 2 ~~new~~ casing wells.
- 12:30: I checked out for Hotel.
- 12:45: had lunch and stayed on site till ~~14~~ 1:30
- picked up traffic cones.
- 14:30: out of site.

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
1A-W-3	3/24/08	10:30		7.52		none	TP	8.84	none	6.27	none	AJ	9.0 - 1.48
1B-W-1	3/24/08	10:42		9.36		trace	TP	11.89	hvy trace	8.70	none	AJ	10.0 - 0.64
2A-W-1	3/24/08	10:54		8.60		none	TP	11.51	trace	8.10	none	AJ	9.0 - 0.40
2A-W-3								11.84	hvy trace	8.38	none		
2A-W-11	3/24/08	13:20		5.75				9.69	hvy trace	5.14	trace		(6.5 - 0.75)
MW-27	3/24/08	12:42		10.37		none	TP	13.19	none	9.64	none	AJ	(7.0 - 0.63)
MW-28								15.00	none	11.86	none		
MW-39								10.12	none	6.80	none		
1A-W-2	3/24/08	13:00		9.88		very heavy trace	TP	13.24	0.37	9.11	0.01	AJ	(11.0 - 1.12)
2A-W-4	3/24/08	13:43		9.13		heavy trace	TP	12.28	0.28	8.82	0.11	AJ	(10.0 - 0.87)
5-W-1	3/24/08	12:26		5.93		trace	TP	8.40	trace	5.12	none	AJ	(7.0 - 1.07)
5-W-2	3/24/08	12:15		5.62		very heavy trace	TP + PUMP	7.59	hvy trace	4.75	trace	AJ	6.0 - 0.38
5-W-3	3/24/08	11:30		5.69		heavy trace	TP	7.49	none	4.77	trace	AJ	6.0 - 0.31
MW-21	3/24/08	13:07		12.82		hvy trace	TP	15.52	0.62	12.06	hvy trace	AJ	(14.0 - 1.18)
MW-22	3/24/08	11:05		6.90		heavy trace	TP	8.60	0.4	5.85	hvy trace	AJ	(7.5 - 0.60)
MW-36	3/24/08	10:20		7.16	6.34		TP + PUMP	8.30	hvy trace	5.09	hvy trace	AJ	7.0 - 0.66
- MW-17													

NOTES:

5-W-2 attempted grouting by pump method but was not a measurable amount of product to measure by this method, but trace was observed with product and a lot of product was introduced with the tubing during pumping.

MW-27 - need new cap, screen on cap especially, entire cap and stands came off well could not remove any other way so new screen point will be slightly lower than survey elevation

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
							DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
n 1A-W-1							14.53		11.94			
n 1A-W-4							9.16		6.86			
n 1A-W-5							10.07		7.66			
n 1B-W-2							13.55		10.46			
n 1B-W-3							14.91		12.16			
n 1C-W-1							13.20		10.49			
n 1C-W-2							10.27		7.49			
n 1C-W-3							10.93		8.72			
n 1C-W-4							10.28		8.42			
n 2A-W-6							11.90		9.30			
s 2A-W-8	3/24/08	1023		13.74			15.82		12.18			
s 2A-W-9	3/24/08	10118		8.02			10.99		7.38			
s 2A-W-10	3/24/08	1112		8.19			11.51		7.79			
s 2B-W-4							4.02		0.80			
s 5-W-4	3/24/08	1250		5.63			6.75		4.03			
n 5-W-13							NI		NI			
n 5-W-14							9.44		NI			
n 5-W-15							8.02		NI			
n 5-W-16							8.27		NI			

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0340 Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	12/13/2007		11/15/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-2	3/24/08	1242		9.49	LNAPL (1.72 ft)			10.29		9.75		DWK	
2A-W-5		1144		11.50				10.63		11.80			
2A-W-7		1036		10.79				10.89		9.77			
2A-W-9				offset list				8.69		7.93			
2A-W-10								8.83		8.28			
2A-W-22								9.81		9.69			
2B-W-4								1.91		1.70			
2B-W-11		1124		0.80	0.75			1.24		0.99			
2B-W-12		1126		3.82	3.60			4.34		3.93			
2B-W-13		1215		3.42	3.14			3.81		3.41			
2B-W-14		1212		2.14	1.96			2.78		3.35			
2B-W-15		1155		3.95	2.51			Dry		3.54			
2B-W-19		1104		5.36				5.49		5.36			
2B-W-21		1132		7.27				7.87		7.31			
2B-W-30		1138		9.56				10.19		9.81			
2B-W-32		1108		6.05				6.29		6.12			
2B-W-33		1059		7.41				8.24		8.01			2B-W-33 only exists.
2B-B-21				NM				NM		3.33			NOT able to reach accept to reach SNOW GICE

1 MW-39
 1 ZA-W-3
 1 MW-28
 1 MW-17
 1 MW-7
 Trace TAP
 Trace TAP #5
 None TAP
 Time TAP
 Trace TAP

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	12/13/2007		11/15/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1													
MW-2													
MW-3													
MW-4													
/ MW-5	02/24/08	1203		5.04				11.67		11.91			
/ MW-9	03/24/08	0955		11.91				11.14		11.06			
/ MW-10	03/27/08	1001		11.35				8.73		8.23			
/ MW-11	03/27/08	1005		12.79				7.58		7.11			
MW-12								5.74		4.97			
MW-13								11.77		11.27			
MW-14								11.82		11.57			
MW-15	3/24/08	1140	13.5					12.74		12.67			HC product on probe 2/1/08
MW-17								4.95		3.30			
MW-18								9.19		7.86			
MW-19								11.12		10.01			
/ MW-40	3/24/08	1146		10.75				12.34		11.45			
								10.79	Hwy Tr	10.63			TRK ? GATE
								13.67		13.45			
								10.72		10.11			
								11.79		10.89			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
n 5-W-17	3/23	1110		7.00				7.60		NI			
n 5-W-18	3/23	1133		7.28				7.78		NI			
n 5-W-19	3/23	1133		7.33				7.72		NI			
n 5-W-20	3/23	1140		9.94				7.32		NI			
s MW-1								13.25		10.29			
s MW-2								12.93		9.38			
s MW-3								11.32		6.80			
s MW-4								10.28		6.62			
s MW-12								6.90		3.03			
s MW-14	3/23	1337	13.32	10.00				12.87		9.59			(well cap not on casing - per casing work finished)
s MW-16	3/23	1350		13.54				15.62		12.75			
s MW-18								15.49		12.55			
s MW-19								12.22		9.32			
s MW-26								9.58		6.12			
s MW-32	3/23							9.48		8.10			
n MW-34	3/23	1317		10.44				11.60		9.37			
n MW-35	3/23	1310	10.92	10.91				12.94		10.30			
s MW-37								10.31		7.05			
s MW-38	3/23							5.25		NM			Well Damaged
n 2A-W-22	3/23	1310		9.07				10.60		NI			
s MW-13	3/23	1342		8.02									

mm

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
n 5W-17	3/24/08	1110		7.06				7.60		NI		CS	
n 5W-18		1123		7.78				7.78		NI		↓	
n 5W-19		1137		7.33				7.72		NI		↓	
n 5W-20		1140		6.94				7.32		NI		↓	
s MW-1		1031		11.59				13.25		10.29		FM	
s MW-2		1136		11.06				12.93		9.38		↓	
s MW-3		1042		7.45				11.32		6.80		↓	
s MW-4		1048		6.80				10.28		6.62		↓	
s MW-12		1131		3.65				6.90		3.03		↓	
s MW-14		1237	13.5	10.06				12.87		9.59		CS	
s MW-16		1250		13.54				15.62		12.75		CS	
s MW-18		1100		13.27				15.49		12.55		FM	
s MW-19		1233		9.94				12.22		9.32		↓	
s MW-26		1256		6.79				9.58		6.12		↓	
s MW-32		1307		8.73				9.48		8.10		↓	
n MW-34		1217		10.44				11.60		9.37		CS	
n MW-35		1016		10.91				12.94		10.30		CS	
s MW-37				7.63				10.31		7.05		FM	
s MW-38				4.34				5.25		NM		↓	Well-Damaged
n 2A-W-22		1210		9.67				10.60		NI		CS	

x
*
x
x
/

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
n 1A-W-1	2/24/08	1035		12.67				14.53		11.94		CS	
n 1A-W-4		1041		8.21				9.16		6.86			
n 1A-W-5		1050		9.34				10.07		7.66			
n 1B-W-2		1070		11.55				13.55		10.46			
n 1B-W-3		100		13.21				14.91		12.16			
n 1C-W-1		1005		11.82				13.20		10.49			
n 1C-W-2		0950		9.02				10.27		7.49			
n 1C-W-3				9.84				10.93		8.72		AT	
n 1C-W-4		1010		9.19				10.28		8.42		CS	
n 2A-W-6		1010		10.14				11.90		9.30		CS	
s 2A-W-8		1023		13.74				15.82		12.18		FM	
s 2A-W-9		1118		8.02				10.99		7.38			
s 2A-W-10		1112		8.19				11.51		7.79			
s 2B-W-4		1255		1.62				4.02		0.80		CS	
s 5-W-4		1250		4.63				6.75		4.03		FM	
n 5-W-13				-				NI		NI			Not Installed
n 5-W-14		1146		8.79				9.44		NI		CS	
n 5-W-15		1105		7.37				8.02		NI			
n 5-W-16		1120		7.76				8.27		NI			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
1A-W-3	3/24/08	1030		7.52		None	TAP	8.84	none	6.27	none	AJ	
1B-W-1		1042		9.36		Trace	TAP	11.89	hvy trace	8.70	none	↓	
2A-W-1		1054		8.60		None	TAP	11.51	trace	8.10	none	↓	
2A-W-3		1259		8.86		Trace	TAP	11.84	hvy trace	8.38	none	DK	
2A-W-11		1320		5.75		Trace	TAP	9.69	hvy trace	5.14	trace	AJ	
MW-27		1242		10.37		None	TAP	13.19	none	9.64	none	↓	
MW-28		1307		11.81		None	TAP	15.00	none	11.86	none	DK	
MW-39		1252		7.32		Trace	TAP	10.12	none	6.80	none	↓	
1A-W-2		1302		9.88		Very Hvy Trace	TAP	13.24	0.37	9.11	0.01	AJ	
2A-W-4		1343		9.13		Hvy Trace	TAP	12.28	0.28	8.82	0.11		
5-W-1		1228		5.93		Trace	TAP	8.40	trace	5.12	none		
5-W-2		1215		5.62		Very Hvy Trace	TAP; Pump	7.59	hvy trace	4.75	trace		
5-W-3		1130		5.69		Hvy Trace	TAP	7.49	none	4.77	trace		
MW-21		1307		12.82		Very Hvy Trace	TAP	15.52	0.62	12.06	hvy trace		
MW-22		11:05		6.90		Hvy Trace	TAP	8.60	0.4	5.85	hvy trace		
MW-36		10:20		7.16	6.34		TAP; Pump	8.30	hvy trace	5.09	hvy trace	↓	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
S MW-17								7.60		NI			
S MW-18								7.78		NI			
S MW-19								7.72		NI			
S MW-20								7.32		NI			
S MW-1	3/24/06	1031		11.59				13.25		10.29			
S MW-2	3/24/06	1030		11.06				12.93		9.38			
S MW-3	3/24/06	1042		7.45				11.32		6.80			
S MW-4	3/24/06	1048		6.80				10.28		6.62			
S MW-12	3/24/06	1131		3.65				6.90		3.03			
S MW-14			13.5					12.87		9.59			
S MW-16								15.62		12.75			
S MW-18	3/24/06	1100		13.27				15.49		12.55			
S MW-19	3/24/06	1233		9.94				12.22		9.32			
S MW-26	3/24/06	1256		6.79				9.58		6.12			
S MW-32	3/24/06	1207		8.73				9.48		8.10			
S MW-34								11.60		9.37			
S MW-35								12.94		10.30			
S MW-37	3/24/06	1209		7.63				10.31		7.05			
S MW-38	3/24/06	1216		4.34				5.25		NM			Well-Damaged-
S 2A/W-27								10.60		NI			

Newel MW-17 ✓ AS
 MW-13
 MW-14
 MW-19
 MW-26
 MW-32
 MW-37
 MW-38
 2B-W-4
 MW-4
 MW-5
 MW-17



River Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204 Measured by: Aaron Jacobson / Fred Merrill / Cassie Smith
 Stake ID: SK-1 Foresight: 14.48 Backsight: 4.72 Water Level: Comments:
 Stake ID: SK-2 Foresight: 20.55 Backsight: 3.10 Water Level: Comments:
 Stake ID: SK-3 Foresight: 15.13 Backsight: 6.56 Water Level: Comments:
 Stake ID: SK-4 Foresight: 15.47 Backsight: 6.56 Water Level: Comments:
 Stake ID: SK-5 Foresight: 17.40 Backsight: 6.56 Water Level: Comments:
 Stake ID: ML-1 Foresight: Backsight: Water Level: Comments:
 Stake ID: ML-2 Foresight: Backsight: Water Level: Comments:
 Stake ID: ML-3 Foresight: Backsight: Water Level: Comments:
 Stake ID: ML-4 Foresight: Backsight: Water Level: Comments:

stake ID: SK# = Skykomish River gauging locations, ML# = Former Maloney Creek channel gauging locations
 all measurements in feet
 backsight: height of level above surveyed point (staff placed at PK nail)
 foresight: height of level above gauging point (staff placed in stream bed at SKx, MLx)
 water level: depth of water at gauging point

Fluid Level Gauging Form

Project Name: BNSF Skykomish

Project Number: 01140-204-0340

Collected by: C. SMITH

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	LNAPL Thickness	Method	7/30/2007		2/16/2007		Sign Off	Comments
							DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
n 1A-W-1	2/23	1035		12.07			14.53		11.94			Well Cap Not on Casing -Put caps in when finished
n 1A-W-4	2/23	1041		8.21			9.16		6.86			
n 1A-W-5	2/23	1050		9.34			10.07		7.66			
n 1B-W-2	3/23	1020		11.55			13.55		10.46			
n 1B-W-3	3/23	1030		13.21			14.91		12.16			
n 1C-W-1	3/23	0905		11.83			13.20		10.49			
n 1C-W-2	3/23	0915		9.02			10.27		7.49			
n 1C-W-3							10.93		8.72			
n 1C-W-4							10.28		8.42			
n 2A-W-6	3/23	1010		10.14			11.90		9.30			
s 2A-W-8							15.82		12.18			
s 2A-W-9							10.99		7.38			
s 2A-W-10							11.51		7.79			
s 2B-W-4	3/23	1255		1.62			4.02		0.80			
s 5-W-4							6.75		4.03			
n 5-W-13							NI		NI			Not Existant
n 5-W-14	3/23	1140		8.79			9.44		NI			
n 5-W-15	3/23	1105		7.37			8.02		NI			
n 5-W-16	3/23	1120		7.76			8.27		NI			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	12/13/2007		11/15/2007		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	3/24/08	1330		10.87		Trace	TGF	12.10	None	11.08	None	DK	
MW-4								10.09	Tr	9.69	None		
MW-3								9.75	Tr	9.04	None		
MW-4								7.86	Tr	5.53	None		
MW-50								7.98	None	7.38	None		
MW-4								10.04	None	9.42	None		

Other Notes:

- clean well - north ('town') half
- clean well - south ('rallyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

FIELD ACTIVITY LOG

AECOM

PROJECT NAME: BNSF-Skykomish
 PROJECT NO: 01140-204-0340
 DAY & DATE: Thurs June 11th 2009

COMPLETED BY: D. Kinney
 APPROVED BY: _____
 SHEET 1 OF 1

FIELD ACTIVITY SUBJECT: GW Sampling
 DESCRIPTION OF DAILY ACTIVITIES & EVENTS:

TIME	DESCRIPTION OF DAILY ACTIVITIES & EVENTS
0820	D. Kinney onsite
0825	Safety meeting
0835	Relevant coolers & calibrated meters Horiba (u-22) & Oatton (T-100)
0858	Started purging 2B-W-45
0930	Sampled 2B-W-45 for NNTPH-DX
0944	Started purging 2B-W-46
1010	Sampled 2B-W-46 for NNTPH-DX
1025	Dumped purge water
1055	loading Ghani's Van for taking coolers to lab & office equip. storage
1145	Went to find Greg C.
1200	moving material from stove shop to Bookhouse
1355	Completed the moving & setting up to pump PIZOS → P7U
1410	DTW = 9.90' (from crossbar (+1.52' above PVC casing))
1418	Pumping P7U @ 1.6 L/min (w/ peristaltic pumps (2))
1423	DTW (from crossbar) = 13.19'
1428	DTW (" " ") = 13.60'
1433	DTW (" " ") = 14.03' & shut down pumps
1438	DTW (" " ") = 12.31'
1443	DTW (" " ") = 11.52'
1535	WL at original (9.90') & started pumping @ 0.30 L/min
1550	DTW (from crossbar) = 11.15'
1555	pumping purge water & cleaning up
1630	Left site

VISITORS ONSITE: <u>None</u>	CHANGES FROM PLANS OR IMPORTANT DECISIONS: <u>None</u>
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WEATHER CONDITIONS: <u>cloudy, 50 - 65°F</u>	IMPORTANT TELEPHONE CALLS: <u>None</u>
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PERSONNEL ONSITE: Dean Kinney, Ghani Sebbane

FIELD ACTIVITY LOG

AECOM

PROJECT NAME: BNSF - Skykomish
 PROJECT NO: 01140-204-0340
 DAY & DATE: Wed. June 10th, 2009

COMPLETED BY: D. Kinney
 APPROVED BY: _____
 SHEET 1 OF _____

FIELD ACTIVITY SUBJECT: GW Sampling
 DESCRIPTION OF DAILY ACTIVITIES & EVENTS:

TIME	DESCRIPTION
0725	D. Kinney onsite & setting up to sample
0730	Calibrated Horiba (U-22) & Oakton (T-100) meters
0745	Safety meeting
0810	Setup to sample
0904	Started purging 5-W-14
0925	Sampled 5-W-14 for NH4-N (w/w/o still got clean)
0953	Started purging 5-W-16
1015	Sampled 5-W-16 (same as 5-W-14)
1045	Started purging 5-W-15
1110	Sampled 5-W-15 (same as 5-W-14); took duplicate, labeled 5-W-15D-0609
1130	Lunch
1150	Took equipment blank (labeled 5-MW-500-0609)
1205	Want to get more bottles
1244	Started purging 5-W-17
1270	Sampled 5-W-17 (took lab AC sample volume)
1422	Started purging 5-W-18
1450	Sampled 5-W-18
1514	Started purging 1C-W-7
1540	Sampled 1C-W-7
1608	Started purging 5-W-19
1630	Sampled 5-W-19
1728	Started purging 5-W-20
1750	Sampled 5-W-20

VISITORS ONSITE:
None

CHANGES FROM PLANS OR IMPORTANT DECISIONS:
None

WEATHER CONDITIONS:
Clear to P. Cloudy, 60-70°F

IMPORTANT TELEPHONE CALLS:
None

PERSONNEL ONSITE: Dean Kinney, Ghani Sebbane

FIELD ACTIVITY LOG

AECOM

PROJECT NAME: BNSF-Skykomish
 PROJECT NO: 01140-204-0340
 DAY & DATE: Tues, June 9th 2009

COMPLETED BY: D. Kinney
 APPROVED BY: _____
 SHEET | OF |

FIELD ACTIVITY SUBJECT: Groundwater gauging & sampling
 DESCRIPTION OF DAILY ACTIVITIES & EVENTS:

TIME	DESCRIPTION OF DAILY ACTIVITIES & EVENTS:
0750	D. Kinney onsite, Eric already here
0800	Ghani onsite, just waiting for Fred to do Safety Mtg.
0810	Fred onsite & started safety mtg
0845	Setting up to gauge
0905	Went to start gauging, Ghani & Eric doing product gauging @ HCE wells, Fred doing town wells & Dean doing FMC well list
1210	Finished w/my list & went to lunch
1310	Returned & started helping Fred complete his list; Ghani & Eric pumping 2 wells for product thicknesses
1400	Done w/ gauging @ looking to locate well IC-W-7 & well 2A-W-42
1520	Didn't locate IC-W-7 but gauged 2A-W-42; strider will jackhammer out walkway to get access to IC-W-7
1535	Looking at supplies in stove shop that need to be moved & Ghani working on starting gw sampling
1605	Setting up to sample; calibrated Horiba (U-23) & Oyster (T-100) meters
1637	Started purging IC-W-8
1700	sampled IC-W-8 for TPH-DX (NWTPH-Dx)
1720	Pumped purge water & put equipment away
1750	left site

VISITORS ONSITE:
None

CHANGES FROM PLANS OR IMPORTANT DECISIONS:
 Well IC-W-7 has been asphalted over strider constr. will jackhammer out on Weds.

WEATHER CONDITIONS:
P. Cloudy, 65-75°F

IMPORTANT TELEPHONE CALLS:
 Called Sarah about situation w/IC-W-7

PERSONNEL ONSITE: Dean Kinney, Fred Merrill, Ghani Sebbane & Eric Starkerson

03.00

Field Activity Log

Page: 1 of 1

AECOM

Project Name: BNSF Skykomish

Completed By: Ghani. Sebana

Project Number:

Date: 06/09/09

Field Activity: Quarterly GW

Weather: Sunny 70°F.

Sampling

Personnel on site: Ghani, S., Dean, K., Fred, M., Eric.

0745: Arrived to the site, put on PPE, organized equipment in van.

0800: met with crew, and had safety meeting, and discussed scope of work.

0805: started setting up, and began gauging product wells, and HCC wells, with Eric.

1200: Had a lunch

1250: back to the site. Finished gauging product wells.

1420: finished gauging, clean up, Decon.

1430: Helped Fred locating wells. 2AW-42. 2A-W-7.

1515: started packing up and organized equipment.

1530: Began calibrating equipment.

1600: started setting up on 1C-W-1.

1618: Began purging.

1628: started recording parameters.

1640: Began collecting samples.

1700: packed up, Decon and cleanup.

1715: left site.

Ghani S.

Field Activity Log

Page: 1 of 2

AECOM

Project Name: SKY
Project Number: _____
Field Activity: Quarterly GW Sampling
Completed By: Ghani S
Date: 06/10/09
Weather: Sunny 69°F
Personnel on site: Ghani S

- 0740: Arrived to the site, put on PPE.
- 0800: Had ~~meet~~ safety meeting with Dean and discussed scope of work.
- 0845: Calibrated equipment YSI and turbidity meter.
- 0905: started setting up on EW-1.
- 0923: Began purging. Water is clear.
- 0933: started recording parameters. DO unstable. kept dropping.
- 1000: Began collecting samples.
- 1015: Started setting up on SA-W-43.
- 1021: Began purging.
- 1031: started recording parameters.
- 1045: Began sampling.
- 1100: Dumped purge water into Drain.
- 1110: started setting up on GW-4.
- 1120: Began purging. Water is clear.
- 1130: recorded parameters. ORP unstable.
- 1205: Began collecting samples.
- 1220: started setting up on 2A-W-42.
- 1238: Began purging. water is clear.
- 1248: started recording parameters.
- 1255: Began collecting samples.
- 1310: Started setting up on GW-2.
- 1319: Began purging.
- 1329: started recording parameters. DO unstable.
- 1345: Began collecting samples.

Field Activity Log

Page: 2 of 2

AECOM

Project Name: BNSF Skykomish Completed By: Ghani, S
Project Number: _____ Date: 06/10/09
Field Activity: Quarterly GW Sampling Weather: Sunny 75°F
Personnel on site: Ghani, S, Deans, J, Fed. M.

- 1400: Began setting up on 2A-W-40.
- 1413: Started purging.
- 1423: Began recording parameters.
- 1430: started sampling also 2 collected.
Duplicate 2A-W-400.
- 1450: Took break for lunch and prayer.
- 1515: back to site and started setting up on GW-1.
- 1522: began purging.
- 1532: started recording parameters.
- 1555: Began collecting samples.
- 1610: Disposed purge water.
- 1618: Began setting up on 2A-W-41.
- 1624: started purging.
- 1634: Began recording parameters.
- 1700: started sampling.
- 1718: Began setting up on 5-W-42.
- 1723: started purging.
- 1733: Began recording parameters.
- 1800: started collecting samples.
clean up, packed cables, disposed purge water.
- 1830: left a site.

~~Ghani, S~~

Field Activity Log

Project Name: Bas SF Skykomish
Project Number: 01140-204-0340
Field Activity: Quarterly GW
Sampling.

Completed By: Ghani S.
Date: 06/11/09
Weather: cloudy 60°F
Personnel on site: Ghani S; Dean K.

- 0800: Arrived to the site put on PPE and started calibrating equipment YSI and turbidity meter. packed cooler with fresh ice.
- 0835: met with Dean and had safety meeting.
- 0840: started setting up on GW-3.
- 0855: Began purging.
- 0905: started recording parameters. ORP unstable.
- 0930: Began sampling also I collected duplicate. GW-30-0609.
- 1000: started setting up on IB-W-23.
- 1007: Began purging, water is clear.
- 1017: started recording parameters.
- 1030: Began collecting samples.
- 1100 finished sampling, disposed purge water. packed up samples in cooler, cleanup, Dean.
- 1200: left site to the Lab.

Ghani S.

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-204-0340
 Collected by: D. Kinney

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	06/09/09	1143		12.31	OUTSIDE			11.63		11.79		DWK	
2A-W-7		1135		10.63	LNAPL			10.29		10.61		DWK	
2A-W-9		1117		9.76	LNAPL			8.53		8.65		DWK	
2A-W-10		0935		9.87	LNAPL			8.48		8.71		DWK	
2B-W-4		0946		2.70	LNAPL			1.62		1.82		DWK	
2B-W-11		0941		2.06	1.10			3.41		3.43		DWK	
2B-W-12		0938		5.42	5.73			4.07		4.28		DWK	
2B-W-13		1003		5.19	dry			5.50		5.52		DWK	
2B-W-14		1001		3.94	dry			2.28		2.43		DWK	
2B-W-15		1006		5.98	dry			Dry		Dry		DWK	
2B-W-19		0952		6.41				5.20		5.50		DWK	
2B-W-21		0957		8.51				7.38		7.56		DWK	
2B-W-30		1147		10.69				9.66		9.88		DWK	
2B-W-32		0949		7.11				6.04		6.25		DWK	
2B-W-33		0928		9.37				8.05		8.37		DWK	
2B-B-21		1010		5.39				3.80		4.05		DWK	
2B-W-45		1017		10.96				9.74		9.90		DWK	
2B-W-46		1014		10.93				9.57		9.77		DWK	

EW-1 6/9/09 1337 8.16
 GW-1 1322 6.75
 -2 1341 8.17
 -3 1349 13.42
 -4 1355 9.80
 5-W-43 1334 5.80

AECOM

D. K. Haney

PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	06/09/09	1132		11.61				11.35		11.47		DWK	
MW-2		1129		11.11				10.55		10.86		DWK	
MW-3		1124		9.41				7.50		8.54		DWK	
MW-4		1121		8.49				7.08		7.47		DWK	
MW-5		1114		6.67				5.53		5.70		DWK	
MW-9		1158		12.00				10.75		11.25		DWK	
MW-10		1158		11.08				10.95		11.28		DWK	
MW-11		1158		12.16				11.58		12.16		DWK	
MW-12	06/10/08	1158		5.66				4.12		4.32		DWK	
MW-13		1107		9.71				8.22		8.43		DWK	
MW-14		1110	13.5	11.51				10.11		10.34		DWK	
MW-15		1104		12.43				11.10		11.35		DWK	
MW-16		1203		12.65				11.98		12.32		DWK	
MW-18		1139		13.60				13.00		13.27		DWK	
MW-38R								3.50		3.85			
MW-40		1101		11.98				10.62		10.89		DWK	
1B-W-2								12.92		13.60			
1B-W-3								14.15		14.75			
1C-W-2								8.20		8.58			

AECOM

F. Merrill

PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	06/09/09							11.35		11.47			
MW-2								10.55		10.96			
MW-3								7.50		8.54			
MW-4								7.08		7.47			
MW-5								5.53		5.70			
MW-9								10.75		11.25			
MW-10								10.95		11.28			
MW-11								11.58		12.16			
MW-12								4.12		4.32			
MW-13								8.22		8.43			
MW-14			13.5					10.11		10.34			
MW-15								11.10		11.35			
MW-16								11.98		12.32			
MW-18								13.00		13.27			
MW-38R		1406		3.93				3.50		3.85			
MW-40								10.62		10.89			
1B-W-2		0949		13.41				12.92		13.60			
1B-W-3		0941		14.46				14.15		14.75			
1C-W-2		0950		5.18				8.20		8.58			

FRES

FRES

AECOM

6. Sebban, E. Sebban

PAGE 3

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	06/09/09	0907		8.68									
X P-2U		0905		6.80									
P-2D		906		8.36									
X P-3U		0915		7.11				TR		TR			Product
P-3D		0919		9.00									
X P-4U		0921		8.90									
P-4D		0923		11.08									
X P-5U		0925		10.47									
P-5D		0926		13.02									
X P-6U		0930		8.85									
P-6D		0932		12.15									
X P-7U		0934		8.13									
P-7D		0935		10.86									
P-8		0940		9.12									
X HCC-RW-01		0929		10.49									
X HCC-RW-02		0944		11.52									
X HCC-RW-03		0917		11.46									
X HCC-RW-04		0958		7.24									
X HCC-RW-05		0950		6.37									
X HCC-RW-06		0911		6.32									
X HCC-IW-01		0937		8.28									
X HCC-IW-02		0924		9.20									

FW = 9.15 @ 0905.
 PW-1 = 8.24 @ 0909.
 WF = 9.65 @ 0910.
 CV = 14.80 @ 0927
 PW-3 = 13.30 @ 0928
 PW-4 = 13.18 @ 0936.
 E.V = 9.09 @ 0938

G. Sabbone, E. Storkersen

PAGE 4

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	06/09/09	1009		12.13		NONE	TP	10.66	None	11.04	TR		13.-0.87
MW-17		1015		8.95		H.T.	TP	8.20	Hvy TR	8.58	Hvy TR		10-1.09
2A-W-3		1035		9.80		TRCQ	TP	8.44	Hvy TR	8.87	Hvy TR		
2A-W-11		1020		7.47		TRCQ	TP	6.08	TR	6.28	TR		8.0.54
MW-39		1051		8.89		TRCQ NONE	TP	7.64	None	7.59	None		10.529 - 0.11
5-W-2		1417		6.62	6.38	0.24	Pump	5.89	Hvy TR	6.30	Hvy TR		7.0.62
5-W-3		1105		5.87		H.17	TP	5.45	TR	5.86	TR		6.5-0.63
2A-W-4		1338		10.19	10.03	0.16	Pump	8.90	0.22	9.35	0.91		10.25

Other Notes:

- clean well - north (town) half
- clean well - south (rallyard) half
- dirty casing, possible trace product
- dirty well

- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

7.00
0.62
6.78

total wells:

Maloney Creek Staff Gauging:

Location	Date	Water Level	Water Level (5/12/09)
North Staff Gauge	6/9/2009	7.65	0.85
Mid Staff Gauge		1.19	1.32
South Staff Gauge		0.57	1.05

DWK ↓

AECOM

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by: *M. Meehan*

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
X 1A-W-5	06/09/09	1013		8.40				9.21			STANDARD 11.0 6.5
X 1B-W-23		1431		13.62				NM			
1C-W-1		0730	16.68	12.65				13.19			
X 1C-W-7 ^{VAUC?}			16.68	12.65				10.95			NEED NEW BOLTS
1C-W-8		1001		10.00				NM			
2A-W-40		1056		10.96				NM			
2A-W-41		1047		12.83				NM			
2A-W-42		1520		11.99				NM			
5-W-14		1104		8.06				9.26			NEED NEW BOLTS
5-W-15		1116		6.50				7.75			NEED NEW BOLTS
5-W-16		1322		6.82				8.13			
5-W-17		1111		6.16				7.45			NEED NEW BOLTS
5-W-18		1120		6.26				7.61			NEED NEW BOLTS
5-W-19		1126		6.14				7.55			NEED NEW BOLTS
5-W-20		1131		5.71				7.13			
5-W-42		1136		7.30				6.65			
5-W-50		1346		6.34				7.35			
5-W-52		1353		5.61				5.89			
5-W-53		1356		6.02				6.34			
5-W-54		1359		5.95				6.23			
5-W-55		1335		5.67				6.09			
5-W-56		1328		6.06				6.72			
EW-1								10.70			
EW-2								NM			
GW-1								NM			
GW-2								8.52			
GW-3								13.53			
GW-4								10.81			
HCC-RW-01								10.72			
HCC-RW-02								11.74			
HCC-RW-03								11.69			
HCC-RW-04								6.03			
HCC-RW-05								6.53			
HCC-RW-06								6.48			
HCC-IW-01								9.68			
HCC-IW-02								8.03			
X 5-W-51								6.85	Hvy TR		
5-W-3								6.87	TR		
MW-22								7.45	Hvy TR		

Other Notes:

dirty casing, possible trace product
 dirty well

use tape and paste (TP)
 use tape & paste (TP) + peristaltic pump (PP)

AECOM

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0340 Collected by: G. Sebbane, E. Storkorson

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Method	3/23/2009				Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
1A-W-5	06/09/09							9.21					
1B-W-23								NM					
1C-W-1								13.19					
1C-W-7								10.95					
1C-W-8								NM					
2A-W-40								NM					
2A-W-41								NM					
2A-W-42								NM					
5-W-14								9.26					
5-W-15								7.75					
5-W-16								8.13					
5-W-17								7.45					
5-W-18								7.61					
5-W-19								7.55					
5-W-20								7.13					
5-W-42								6.65					
5-W-50								7.35					
5-W-52								5.89					
5-W-53								6.34					
5-W-54								6.23					
5-W-55								6.09					
5-W-56								6.72					
EW-1								10.70					
EW-2								NM					
GW-1								NM					
GW-2								8.52					
GW-3								13.53					
GW-4								10.81					
HCC-RW-01								10.72					
HCC-RW-02								11.74					
HCC-RW-03								11.69					
HCC-RW-04								6.03					
HCC-RW-05								6.53					
HCC-RW-06								6.48					
HCC-IW-01								9.68					
HCC-IW-02								8.03					
<input checked="" type="checkbox"/> 5-W-51		1136		5.70		Trace		6.85	Hvy TR				6-0.3
<input checked="" type="checkbox"/> 5-W-3								6.87	TR				
<input checked="" type="checkbox"/> MW-22		1126		6.39		Trace		7.45	Hvy TR				7-0.61

Other Notes:

- dirty casing, possible trace product use tape and paste (TP)
- dirty well use tape & paste (TP) + peristaltic pump (PP)

7.90'
 0.61'

 6.39'

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. EW-1
 Sampled By Ghahani, S
 weather Sunny 72 °F

WELL INFORMATION	
Depth to water	8.17 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good

COMMENTS
Inlet tubing ~ 10 ft.
purge water is clear.
Do unstable.

PURGE DATA

start purge time	0923							
time	0933	0936	0939	0942	0945	0948	0951	
DTW (ft)	8.18	8.18	8.18	NM	NM	NM	8.18	
purge rate (L/min)	230	230	230	230	230	230	230	
pH (Units)	5.65	5.63	5.66	5.65	5.70	5.70	5.70	
conductivity (umhos/cm)	0.044	0.046	0.045	0.043	0.044	0.047	0.048	
temperature (deg C)	10.55	10.71	11.08	10.56	10.57	11.53	11.41	
D.O. (mg/L)	2.55	2.26	2.07	1.95	1.79	1.66	1.57	
ORP (mv)	196.3	193.4	192.6	193.0	190.0	190.3	190.1	
turbidity (NTU)	1.20	1.26	1.21	1.23	1.20	1.23	1.23	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
EW-1-0609	1000	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/9/09

Well No. EW-Z
 Sampled By DWR
 weather _____ °F

WELL INFORMATION	
Depth to water	(ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>Well not installed</u>

PURGE DATA							
start purge time							
time							
DTW	(ft)						
purge rate	(L/min)						
pH	(Units)						
conductivity	(umhos/cm)						
temperature	(deg C)						
D.O.	(mg/L)						
ORP	(mv)						
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>EW-Z-0609</u>	<u>Not</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
	<u>sampled</u>				

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. S-W-14
 Sampled By DWK
 weather clear, 60 °F

WELL INFORMATION	
Depth to water	<u>8.02</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>Tubing inlet at ~ 8.75'</u>

PURGE DATA					
start purge time	<u>0904</u>				
time		<u>0914</u>	<u>0917</u>	<u>0920</u>	<u>0922</u>
DTW (ft)		<u>8.05</u>	<u>8.05</u>	<u>8.05</u>	<u>8.05</u>
purge rate (L/min)		<u>0.30</u>			
pH (Units)		<u>6.05</u>	<u>6.07</u>	<u>6.08</u>	<u>6.09</u>
conductivity (umhos/cm)		<u>9.9</u>	<u>10.0</u>	<u>10.0</u>	<u>10.0</u>
temperature (deg C)		<u>12.3</u>	<u>11.1</u>	<u>10.8</u>	<u>10.7</u>
D.O. (mg/L)		<u>1.46</u>	<u>1.71</u>	<u>1.75</u>	<u>1.73</u>
ORP (mv)		<u>113</u>	<u>116</u>	<u>120</u>	<u>122</u>
turbidity (NTU)		<u>1.16</u>	<u>0.86</u>	<u>0.81</u>	<u>0.79</u>
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing				

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>S-W-14-0609</u>	<u>0925</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. S-W-15
 Sampled By DW/C
 weather clear, 65 °F

WELL INFORMATION	
Depth to water	6.51 (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
Tubing latched at ~ 7:25
Duplicate sample collected (S-W-150-0609)
Purge water appears to have some iron flow in it

PURGE DATA	
start purge time	1045
time	1055 1058 1101 1104
DTW (ft)	6.54 6.61 6.61 6.62
purge rate (L/min)	0.30
pH (Units)	6.27 6.28 6.28 6.28
conductivity (umhos/cm)	10.8 11.2 11.5 11.4
temperature (deg C)	12.4 11.9 11.8 11.7
D.O. (mg/L)	0.0 0.0 0.0 0.0
ORP (mv)	-28 -37 -22 -34
turbidity (NTU)	57.6 55.9 54.7 49.7
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-15-0609	11:10	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl
S-W-150-0609 (dup)	11:20	// w/SGCU)	"	"	"
		// w/o SGCU)	"	"	"

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. S-W-16
 Sampled By DWIK
 weather Clear, 65 °F

WELL INFORMATION	
Depth to water	6.77 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	- (ft)
Screen interval:	
well condition:	ok

COMMENTS
Tubing Inlet at ~ 7.5

PURGE DATA	
start purge time	0953
time	1003 1006 1009 1012
DTW (ft)	6.82 6.82 6.82 6.82
purge rate (L/min)	0.30
pH (Units)	6.33 6.32 6.33 6.32
conductivity (umhos/cm)	6.1 6.1 6.1 6.1
temperature (deg C)	11.3 11.3 11.3 11.3
D.O. (mg/L)	3.66 3.54 3.51 3.47
ORP (mv)	112 112 112 112
turbidity (NTU)	5.96 4.10 4.01 3.83
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-16-0609	1015	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. 5-W-17
 Sampled By DWK
 weather Clear, 70 °F

WELL INFORMATION		
Depth to water	6.17	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	-	(ft)
Screen interval:		
well condition:	ok	

COMMENTS
Tubing met at ~70'
Extra sample volume for Lab QC

PURGE DATA							
start purge time	1254						
time		1304	1307	1310	1313	1316	1319
DTW	(ft)	6.17	6.17				
purge rate	(L/min)	0.30					
pH	(Units)	6.27	6.24	6.20	6.15	6.13	6.11
conductivity	(umhos/cm)	7.5	7.5	7.6	7.6	7.6	7.6
temperature	(deg C)	12.5	12.0	11.5	11.4	11.3	11.3
D.O.	(mg/L)	1.54	1.30	1.25	1.20	1.20	1.18
ORP	(mv)	22	23	25	36	39	40
turbidity	(NTU)	8.18	6.10	5.03	4.51	4.72	4.47
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-17-0609	1320	NWTPH-Dx (w/SGCU)	1L Gl. Amber	6	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	6	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. 5-W-18
 Sampled By PWK
 weather P. Cloudy, 70°F

WELL INFORMATION	
Depth to water	<u>6.76</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>-</u> (ft)
Screen interval:	
well condition:	<u>ok</u>

COMMENTS
<u>Tubing inlet @ ~ 7.0'</u>

PURGE DATA	
start purge time	<u>1423</u>
time	<u>1433</u> <u>1436</u> <u>1439</u> <u>1442</u> <u>1445</u>
DTW (ft)	<u>6.26</u> <u>6.26</u> <u>6.26</u> <u>6.26</u> <u>6.26</u>
purge rate (L/min)	<u>0.30</u> <u>0.30</u> <u>0.30</u> <u>0.30</u> <u>0.30</u>
pH (Units)	<u>6.00</u> <u>5.97</u> <u>5.99</u> <u>5.98</u> <u>5.97</u>
conductivity ($\mu\text{mhos/cm}$)	<u>8.8</u> <u>8.8</u> <u>8.9</u> <u>9.1</u> <u>9.2</u>
temperature (deg C)	<u>12.8</u> <u>12.7</u> <u>12.6</u> <u>12.5</u> <u>12.5</u>
D.O. (mg/L)	<u>0.0</u> <u>0.0</u> <u>0.0</u> <u>0.0</u> <u>0.0</u>
ORP (mv)	<u>28</u> <u>25</u> <u>20</u> <u>18</u> <u>17</u>
turbidity (NTU)	<u>15.5</u> <u>16.1</u> <u>13.6</u> <u>12.8</u> <u>12.4</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-18</u>	<u>1450</u>	<u>NWTPH-Dx (w/SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
		<u>NWTPH-Dx (w/o SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. S-W-19
 Sampled By DWK
 weather P. Cloudy, 70°F

WELL INFORMATION	
Depth to water	6.11 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	— (ft)
Screen interval:	
well condition:	ok

COMMENTS
Tubing inlet @ ~7'

PURGE DATA	
start purge time	1608
time	1618 1621 1624 1627
DTW (ft)	6.11 6.11 6.11 6.11
purge rate (L/min)	0.30 → → → →
pH (Units)	6.08 6.09 6.09 6.09
conductivity (umhos/cm)	6.9 6.8 6.8 6.8
temperature (deg C)	12.3 12.3 12.3 12.3
D.O. (mg/L)	1.43 1.43 1.42 1.41
ORP (mv)	61 61 62 62
turbidity (NTU)	8.91 5.44 5.22 5.01
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-19-0609	1630	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. 5-W-20
 Sampled By DWR
 weather Cloudy, 70 °F

WELL INFORMATION	
Depth to water	<u>5.62</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>—</u> (ft)
Screen interval:	
well condition:	<u>OK</u>

COMMENTS
<u>Tubing inlet at ~6.5'</u>

PURGE DATA	
start purge time	<u>1723</u>
time	<u>1733 1736 1739 1747 1745</u>
DTW (ft)	<u>5.62 5.62 5.62 5.62 5.62</u>
purge rate (L/min)	<u>0.30</u>
pH (Units)	<u>6.3 6.4 6.5 6.4 6.4</u>
conductivity (µmhos/cm)	<u>15.1 15.1 15.2 15.2 15.3</u>
temperature (deg C)	<u>11.8 11.7 11.7 11.6 11.5</u>
D.O. (mg/L)	<u>0.0 0.0 0.0 0.0 0.0</u>
ORP (mv)	<u>38 38 37 37 36</u>
turbidity (NTU)	<u>13.9 7.40 5.90 5.70 5.31</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-20-0609</u>	<u>1750</u>	<u>NWTPH-Dx (w/SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
		<u>NWTPH-Dx (w/o SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. 5-W-42
 Sampled By Ghan...s
 weather cloudy 69 °F

WELL INFORMATION	
Depth to water	5.77 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good

COMMENTS
Pilot tubing 2 8.0ft
purge water with some Iron black
DO and ORP unstable

PURGE DATA								
start purge time		1723						
time		1733	1735	1738	1741	1744	1747	1750
DTW	(ft)	5.79	5.79	5.79	5.79	NM	NM	NM
purge rate	(L/min)	250	250	250	250	250	250	250
pH	(Units)	6.23	6.28	6.29	6.27	6.30	6.32	6.30
conductivity	(umhos/cm)	0.094	0.097	0.096	0.097	0.103	0.100	0.103
temperature	(deg C)	10.76	10.65	10.58	10.52	10.62	10.77	10.93
D.O.	(mg/L)	2.40	2.16	2.02	1.88	1.73	1.63	1.49
ORP	(mv)	-19.3	-27.3	-31.4	-35.3	-38.7	-41.7	-44.4
turbidity	(NTU)	2.79	2.92	2.52	2.29	1.78	1.51	1.68
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-42-0609	1800	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

AS

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/16/09

Well No. ~~5-W-43~~ 5-W-43
 Sampled By G. Harris
 weather Sunny 74 °F

WELL INFORMATION	
Depth to water	5.82 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good

COMMENTS
Inlet tubing is 7.00 Ft.
purge water is clear.

PURGE DATA							
start purge time		1021					
time		1031	1034	1037	1040		
DTW	(ft)	5.83	5.83	5.83	5.83		
purge rate	(L/min)	240	240	240	240		
pH	(Units)	6.27	6.28	6.29	6.		
conductivity	(umhos/cm)	0.099	0.101	0.100	0.101		
temperature	(deg C)	11.18	11.02	10.98	11.05		
D.O.	(mg/L)	1.02	0.95	0.95	0.96		
ORP	(mv)	174.7	172.2	171.6	168.1		
turbidity	(NTU)	1.80	1.66	1.65	1.61		
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-43-0689		NWTPH-Dx	1L Gl. Amber	2	HCl
5-W-43-0689	1045				

AS

06/10/09.

well# 5-W-42. 2 of 2.

Time	1753	1756
DTW	5.79	MM.
Flow rate	250	250
PH	6.30	6.30
cond	0.103	0.105
Temp	10.40	10.32
DO	1.42	1.35
ORP	-45.3	-47.1
Turb.	1.87	1.72

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/11/09

Well No. 1B-W-23
 Sampled By Ghanim S
 weather cloudy 58 °F

WELL INFORMATION	
Depth to water	<u>13.81</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good.</u>

COMMENTS
<u>Inlet tubing @ 16 ft.</u>
<u>purge water is clear.</u>

PURGE DATA							
start purge time		<u>1007</u>					
time		<u>1017</u>	<u>1020</u>	<u>1023</u>	<u>1026</u>	<u>1029</u>	
DTW	(ft)	<u>13.81</u>	<u>13.81</u>	<u>13.81</u>	<u>NM</u>	<u>NM</u>	
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	
pH	(Units)	<u>5.99</u>	<u>5.99</u>	<u>5.99</u>	<u>6.02</u>	<u>6.00</u>	
conductivity	(umhos/cm)	<u>0.067</u>	<u>0.066</u>	<u>0.067</u>	<u>0.067</u>	<u>0.068</u>	
temperature	(deg C)	<u>9.53</u>	<u>9.39</u>	<u>9.33</u>	<u>9.19</u>	<u>9.27</u>	
D.O.	(mg/L)	<u>4.24</u>	<u>4.30</u>	<u>4.34</u>	<u>4.35</u>	<u>4.31</u>	
ORP	(mv)	<u>92.4</u>	<u>99.5</u>	<u>105.8</u>	<u>111.2</u>	<u>114.3</u>	
turbidity	(NTU)	<u>2.48</u>	<u>2.38</u>	<u>2.10</u>	<u>2.13</u>	<u>1.97</u>	
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1B-W-23-0609</u>	<u>1030</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. 2A-W-40
 Sampled By Glanville S
 weather sunny 75 °F

WELL INFORMATION	
Depth to water	<u>10.95</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Duplicate sample collected</u>
<u>Inlet tubing is 13 Ft. purge water is clear.</u>

PURGE DATA							
start purge time		<u>1413</u>					
time		<u>1423</u>	<u>1426</u>	<u>1429</u>			
DTW	(ft)	<u>10.98</u>	<u>10.98</u>	<u>10.98</u>			
purge rate	(L/min)	<u>230</u>	<u>230</u>	<u>230</u>			
pH	(Units)	<u>6.54</u>	<u>6.52</u>	<u>6.50</u>			
conductivity	(umhos/cm)	<u>0.067</u>	<u>0.067</u>	<u>0.066</u>			
temperature	(deg C)	<u>13.45</u>	<u>13.14</u>	<u>13.02</u>			
D.O.	(mg/L)	<u>3.91</u>	<u>3.81</u>	<u>3.80</u>			
ORP	(mv)	<u>118.3</u>	<u>118.0</u>	<u>119.0</u>			
turbidity	(NTU)	<u>1.80</u>	<u>1.96</u>	<u>1.84</u>			
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>2A-W-40-0609</u>	<u>1430</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>2A-W-400-0609</u> <u>(dup)</u>	<u>1440</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>"</u>

10F2

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. ZA-W-41
 Sampled By Ghanis
 weather cloudy 72 °F

WELL INFORMATION	
Depth to water	<u>13.00</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing is 15 ft.</u>
<u>purge water is clear.</u>

PURGE DATA

start purge time								
time	<u>16 24</u>							
DTW (ft)	<u>13.00</u>	<u>13.00</u>	<u>13.01</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate (L/min)	<u>230</u>	<u>230</u>	<u>230</u>	<u>230</u>	<u>230</u>	<u>230</u>	<u>230</u>	<u>230</u>
pH (Units)	<u>6.27</u>	<u>6.25</u>	<u>6.25</u>	<u>6.25</u>	<u>6.24</u>	<u>6.23</u>	<u>6.23</u>	<u>6.23</u>
conductivity (umhos/cm)	<u>0.082</u>	<u>0.080</u>	<u>0.078</u>	<u>0.079</u>	<u>0.078</u>	<u>0.079</u>	<u>0.079</u>	<u>0.079</u>
temperature (deg C)	<u>12.66</u>	<u>12.37</u>	<u>12.00</u>	<u>12.09</u>	<u>11.86</u>	<u>11.95</u>	<u>11.79</u>	<u>11.79</u>
D.O. (mg/L)	<u>3.91</u>	<u>3.95</u>	<u>4.01</u>	<u>3.95</u>	<u>3.96</u>	<u>4.18</u>	<u>4.19</u>	<u>4.19</u>
ORP (mv)	<u>99.4</u>	<u>59.1</u>	<u>65.4</u>	<u>70.4</u>	<u>75.5</u>	<u>80.6</u>	<u>85.0</u>	<u>85.0</u>
turbidity (NTU)	<u>0.90</u>	<u>0.64</u>	<u>0.74</u>	<u>0.66</u>	<u>0.80</u>	<u>0.98</u>	<u>0.99</u>	<u>0.99</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>ZA-W-41-0609</u>	<u>1700</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. ZA-W-42
 Sampled By Ghani, S
 weather Sunny 74 °F

WELL INFORMATION	
Depth to water	11.61 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good Need to elevate monitoring.

COMMENTS
Inlet tubing is 13 ft.
purge water is clear.

PURGE DATA							
start purge time	1238						
time		1248	1251	1254			
DTW	(ft)	11.62	11.62	11.62			
purge rate	(L/min)	240	240	240			
pH	(Units)	6.22	6.22	6.22			
conductivity	(umhos/cm)	0.122	0.119	0.117			
temperature	(deg C)	11.26	11.25	11.19			
D.O.	(mg/L)	2.19	2.15	2.04			
ORP	(mv)	95.8	99.6	103.5			
turbidity	(NTU)	1.92	1.89	1.78			
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
ZA-W-42-0609	1255	NWTPH-Dx	1L Gl. Amber	2	HCl

06/10/09

well #ZA-W-41 2 of 2

Time	1656
DTW	13.01
purgerate	230
pH	6.24
cond	0.079
Temp	11.70
D ₅	4.14
ORP	87.4
Turbidity	0.96.

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/9/09

Well No. 1C-W-8
 Sampled By DWK
 weather clear, 75°F

WELL INFORMATION	
Depth to water	12.18 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	— (ft)
Screen interval:	
well condition:	OK

COMMENTS
Turbidity Inlet @ ~ 13' bgs

PURGE DATA	
start purge time	1637
time	1647 1650 1653 1656
DTW (ft)	12.18 12.18 12.18 12.18
purge rate (L/min)	0.30
pH (Units)	5.29 5.27 5.27 5.26
conductivity (µmhos/cm)	8.3 7.8 7.3 7.4
temperature (deg C)	19.6 16.3 16.3 16.3
D.O. (mg/L)	2.32 2.45 2.51 2.59
ORP (mv)	96 94 92 90
turbidity (NTU)	2.80 1.15 1.09 1.06
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1C-W-1-0609	1700	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. 1C-W-7
 Sampled By DWK
 weather P. Cloudy, 70 °F

WELL INFORMATION	
Depth to water	<u>10.80</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>OK</u>

COMMENTS
<u>Tubing inlet @ ~11.5'</u>

Need to raise monument to grade (~3" below grade)

PURGE DATA						
start purge time	<u>1514</u>					
time		<u>1524</u>	<u>1527</u>	<u>1530</u>	<u>1532</u>	<u>1536</u>
DTW (ft)		<u>10.81</u>	<u>10.81</u>	<u>10.81</u>	<u>10.81</u>	<u>10.81</u>
purge rate (L/min)		<u>0.30</u>	→			
pH (Units)		<u>5.97</u>	<u>5.96</u>	<u>5.95</u>	<u>5.94</u>	<u>5.94</u>
conductivity (µmhos/cm)		<u>8.0</u>	<u>8.5</u>	<u>8.4</u>	<u>8.3</u>	<u>8.3</u>
temperature (deg C)		<u>13.3</u>	<u>13.2</u>	<u>13.2</u>	<u>13.1</u>	<u>13.1</u>
D.O. (mg/L)		<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
ORP (mv)		<u>-3</u>	<u>-3</u>	<u>-2</u>	<u>-2</u>	<u>-1</u>
turbidity (NTU)		<u>4.63</u>	<u>5.91</u>	<u>3.68</u>	<u>3.82</u>	<u>3.51</u>
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1C-W-7-0609</u>	<u>1540</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/09/09

Well No. 1C-W-1 #5
~~1C-W-8~~
 Sampled By Ghani S
 weather sunny 76 °F

WELL INFORMATION		
Depth to water	12.71	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:		(ft)
Screen interval:		
well condition:	no bs/ds	

COMMENTS
Inlet tubing ~ 14.50ft
purge water is clear.

PURGE DATA							
start purge time	1618						
time		1628	1631	1634			
DTW	(ft)	12.74	12.74	12.74			
purge rate	(L/min)	220	220	220			
pH	(Units)	5.67	5.67	5.67			
conductivity	(umhos/cm)	0.053	0.053	0.053			
temperature	(deg C)	11.21	11.04	11.17			
D.O.	(mg/L)	6.85	6.86	6.80			
ORP	(mv)	168.2	164.6	164.4			
turbidity	(NTU)	3.23	2.77	2.59			
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1C-W-1-0609	1640	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. GW-1
 Sampled By Ghanias
 weather Sunny 75 °F

WELL INFORMATION	
Depth to water	<u>6.81</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing is 9 Ft</u>
<u>purge water is clear.</u>

PURGE DATA								
start purge time	<u>1522</u>							
time		<u>1532</u>	<u>1535</u>	<u>1538</u>	<u>1541</u>	<u>1544</u>	<u>1547</u>	<u>1550</u>
DTW	(ft)	<u>6.85</u>	<u>6.85</u>	<u>6.85</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate	(L/min)	<u>220</u>						
pH	(Units)	<u>6.63</u>	<u>6.66</u>	<u>6.65</u>	<u>6.64</u>	<u>6.61</u>	<u>6.64</u>	<u>6.64</u>
conductivity	(umhos/cm)	<u>0.107</u>	<u>0.106</u>	<u>0.106</u>	<u>0.105</u>	<u>0.105</u>	<u>0.105</u>	<u>0.106</u>
temperature	(deg C)	<u>11.20</u>	<u>11.29</u>	<u>11.23</u>	<u>11.14</u>	<u>11.17</u>	<u>11.15</u>	<u>11.00</u>
D.O.	(mg/L)	<u>1.14</u>	<u>0.95</u>	<u>0.85</u>	<u>0.76</u>	<u>0.73</u>	<u>0.69</u>	<u>0.66</u>
ORP	(mv)	<u>15.4</u>	<u>-8.9</u>	<u>-19.9</u>	<u>-26.5</u>	<u>-29.9</u>	<u>-30.7</u>	<u>-33.1</u>
turbidity	(NTU)	<u>1.59</u>	<u>1.88</u>	<u>1.77</u>	<u>1.70</u>	<u>1.62</u>	<u>1.69</u>	<u>1.61</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-1-0609</u>	<u>1555</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. GW-2
 Sampled By Ghani S
 weather Sunny 75 °F

WELL INFORMATION		
Depth to water	8.25	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:		(ft)
Screen interval:		
well condition:	Good.	

COMMENTS
inlet tubing is 10 ft.
purge water is clear.

PURGE DATA								
start purge time	1319							
time		1329	1332	1335	1338	1341	1344	
DTW	(ft)	8.25	8.25	8.25	NM	NM	NM	
purge rate	(L/min)	220	220	220	220	220	220	
pH	(Units)	6.21	6.20	6.20	6.19	6.18	6.18	
conductivity	(umhos/cm)	0.112	0.110	0.110	0.109	0.109	0.108	
temperature	(deg C)	12.93	12.63	12.65	12.44	12.59	12.51	
D.O.	(mg/L)	1.56	1.45	1.33	1.25	1.18	1.17	
ORP	(mv)	120.0	118.9	119.1	119.5	120.4	120.8	
turbidity	(NTU)	1.41	1.47	1.58	1.66	1.53	1.63	
purge and sample equip.		Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-2-0609</u>	<u>1345</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/11/09

Well No. GW-3
 Sampled By Ghani, S
 weather cloudy 58 °F

WELL INFORMATION	
Depth to water	<u>13.56</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Missing one bld.</u>

COMMENTS
<u>Inlet tubing ~ 15 Ft.</u>
<u>Purge water is clear.</u>
<u>ORP unstable.</u>
<u>Duplicate collected.</u>
<u>GW-30-0609.</u>

PURGE DATA

start purge time	<u>0855</u>							
time		<u>0905</u>	<u>0908</u>	<u>0911</u>	<u>0914</u>	<u>0917</u>	<u>0920</u>	<u>0923</u>
DTW	(ft)	<u>13.56</u>	<u>13.56</u>	<u>13.56</u>	<u>13.56</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate	(L/min)	<u>250</u>						
pH	(Units)	<u>5.97</u>	<u>5.97</u>	<u>5.98</u>	<u>5.98</u>	<u>5.99</u>	<u>5.99</u>	<u>5.99</u>
conductivity	(umhos/cm)	<u>0.073</u>	<u>0.069</u>	<u>0.069</u>	<u>0.068</u>	<u>0.067</u>	<u>0.067</u>	<u>0.066</u>
temperature	(deg C)	<u>8.87</u>	<u>8.70</u>	<u>8.71</u>	<u>8.66</u>	<u>8.65</u>	<u>8.59</u>	<u>8.61</u>
D.O.	(mg/L)	<u>2.77</u>	<u>3.21</u>	<u>3.32</u>	<u>3.45</u>	<u>3.58</u>	<u>3.61</u>	<u>3.60</u>
ORP	(mv)	<u>1.6</u>	<u>16.3</u>	<u>24.4</u>	<u>30.8</u>	<u>35.8</u>	<u>38.7</u>	<u>42.1</u>
turbidity	(NTU)	<u>8.34</u>	<u>4.29</u>	<u>4.05</u>	<u>3.66</u>	<u>2.56</u>	<u>2.10</u>	<u>1.97</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>GW-3-0609</u>	<u>0930</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>GW-30-0609</u>	<u>0940</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>"</u>
<u>(dup)</u>					

06/11/09

well # GW-3

2 of 2

Time	0926	0929
DTW	13.56	MM
Pump rate	250	250
PH	5.99	5.97
Cond	0.066	0.066
Temp	8.60	8.72
DO	3.73	3.80
ORP	43.7	45.4
Turb	1.82	1.87

1 of 2

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/10/09

Well No. GW-4
 Sampled By Ghanc. S
 weather sunny 74 °F

WELL INFORMATION	
Depth to water	<u>10.24</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good.</u>

COMMENTS
<u>Inlet tubing 2 11.50ft</u>
<u>purge water is clear.</u>
<u>ORP unstable.</u>

PURGE DATA								
start purge time	<u>1120</u>							
time		<u>1130</u>	<u>1133</u>	<u>1136</u>	<u>1139</u>	<u>1142</u>	<u>1145</u>	<u>1148</u>
DTW	(ft)	<u>10.60</u>	<u>10.64</u>	<u>10.58</u>	<u>10.57</u>	<u>10.57</u>	<u>10.57</u>	<u>10.57</u>
purge rate	(L/min)	<u>220</u>	<u>220</u>	<u>180</u>	<u>180</u>	<u>180</u>	<u>180</u>	<u>180</u>
pH	(Units)	<u>7.00</u>	<u>7.02</u>	<u>7.04</u>	<u>7.03</u>	<u>7.03</u>	<u>7.00</u>	<u>6.94</u>
conductivity	(umhos/cm)	<u>0.157</u>	<u>0.156</u>	<u>0.151</u>	<u>0.157</u>	<u>0.155</u>	<u>0.154</u>	<u>0.155</u>
temperature	(deg C)	<u>11.79</u>	<u>11.67</u>	<u>11.86</u>	<u>12.12</u>	<u>12.33</u>	<u>12.33</u>	<u>12.45</u>
D.O.	(mg/L)	<u>0.89</u>	<u>0.85</u>	<u>0.81</u>	<u>0.84</u>	<u>0.82</u>	<u>0.84</u>	<u>0.88</u>
ORP	(mv)	<u>142.9</u>	<u>136.1</u>	<u>126.1</u>	<u>117.3</u>	<u>108.5</u>	<u>93.2</u>	<u>78.6</u>
turbidity	(NTU)	<u>2.26</u>	<u>2.00</u>	<u>2.23</u>	<u>1.97</u>	<u>2.18</u>	<u>2.21</u>	<u>2.22</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-4-0609</u>	<u>1205</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

06/10/09.

Well # GW-4 20F2

Time	1151	1154	1157	1200	1203
DTW	1057	NM	NM	NM	NM
Depth feet	180	180	180	180	180
PH	6.94	6.92	6.88	6.87	6.
Conduct	0.150	0.149	0.148	0.147	0.147
T _c	12.33	12.34	12.32	12.07	11.88
DO	0.92	0.93	0.98	0.99	1.03
ORP	74.3	66.4	60.6	58.2	58.6
Turbid.	2.14	2.16	2.00	1.97	1.90

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/11/09

Well No. ZB-W-46
 Sampled By DWL
 weather Cloudy, 60 °F

WELL INFORMATION	
Depth to water	<u>11.06</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>-</u> (ft)
Screen interval:	
well condition:	<u>ok</u>

COMMENTS
<u>Tubing inlet at ~12'</u>

PURGE DATA							
start purge time	<u>0944</u>						
time		<u>0954</u>	<u>0957</u>	<u>1000</u>	<u>1003</u>	<u>1006</u>	
DTW	(ft)	<u>11.09</u>	<u>11.09</u>	<u>11.09</u>	<u>11.09</u>	<u>11.09</u>	
purge rate	(L/min)	<u>0.30</u>					
pH	(Units)	<u>5.68</u>	<u>5.68</u>	<u>5.69</u>	<u>5.70</u>	<u>5.70</u>	
conductivity	(umhos/cm)	<u>5.1</u>	<u>5.1</u>	<u>5.2</u>	<u>5.2</u>	<u>5.2</u>	
temperature	(deg C)	<u>8.9</u>	<u>8.8</u>	<u>8.6</u>	<u>8.5</u>	<u>8.4</u>	
D.O.	(mg/L)	<u>1.19</u>	<u>1.21</u>	<u>1.20</u>	<u>1.22</u>	<u>1.23</u>	
ORP	(mv)	<u>180</u>	<u>180</u>	<u>181</u>	<u>181</u>	<u>182</u>	
turbidity	(NTU)	<u>8.07</u>	<u>7.32</u>	<u>4.30</u>	<u>4.09</u>	<u>3.97</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>ZB-W-46-0609</u>	<u>1010</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 6/11/09

Well No. ZB-W-45
 Sampled By DWLK
 weather Cloudy, 60 °F

WELL INFORMATION	
Depth to water	<u>11.11</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>-</u> (ft)
Screen interval:	
well condition:	<u>ok</u>

COMMENTS
<u>Tubing inlet at ~ 12:00</u>

PURGE DATA								
start purge time	<u>0858</u>							
time		<u>0908</u>	<u>0911</u>	<u>0914</u>	<u>0917</u>	<u>0920</u>	<u>0923</u>	<u>0926</u>
DTW (ft)		<u>11.11</u>						
purge rate (L/min)		<u>0.30</u>						
pH (Units)		<u>5.95</u>	<u>5.83</u>	<u>5.80</u>	<u>5.75</u>	<u>5.70</u>	<u>5.64</u>	<u>5.61</u>
conductivity (umhos/cm)		<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.4</u>	<u>5.4</u>	<u>5.4</u>
temperature (deg C)		<u>12.0</u>	<u>11.4</u>	<u>10.8</u>	<u>10.1</u>	<u>9.7</u>	<u>9.5</u>	<u>9.2</u>
D.O. (mg/L)		<u>0.88</u>	<u>0.92</u>	<u>0.93</u>	<u>0.95</u>	<u>0.97</u>	<u>0.99</u>	<u>1.02</u>
ORP (mv)		<u>166</u>	<u>167</u>	<u>170</u>	<u>173</u>	<u>174</u>	<u>176</u>	<u>179</u>
turbidity (NTU)		<u>17.6</u>	<u>11.3</u>	<u>7.53</u>	<u>7.01</u>	<u>6.55</u>	<u>6.13</u>	<u>5.94</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>ZB-W-45-0609</u>	<u>0930</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-204-0340
 Collected by: D. Kinney, F. Merrill, G. Sabano & F. Starkerson

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	06/09/09	1143		12.31	6.00			11.63		11.79		DWK	
2A-W-7		1135		10.63				10.29		10.61			
2A-W-9		1117		9.76				8.53		8.65			
2A-W-10		0935		9.87				8.48		8.71			
2B-W-4		0946		2.70				1.62		1.82			
2B-W-11		0941		2.06	1.10			3.41		3.43			
2B-W-12		0938		5.42	5.73			4.07		4.28			
2B-W-13		1003		5.19	dry			5.50		5.52			
2B-W-14		1001		3.94	dry			2.28		2.43			
2B-W-15		1006		5.98	dry			Dru		Dry			
2B-W-19		0952		6.41				5.20		5.50			
2B-W-21		0957		8.51				7.38		7.56			
2B-W-30		1147		10.69				9.66		9.88			
2B-W-32		0949		7.11				6.04		6.25			
2B-W-33		0928		9.37				8.05		8.37			
2B-B-21		1010		5.39				3.80		4.05			
2B-W-45		1017		10.96				9.74		9.90			
2B-W-46		1014		10.93				9.57		9.77			

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PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	06/09/09	1132		11.61				11.35		11.47		DWK	
MW-2		1129		11.11				10.55		10.86			
MW-3		1124		9.41				7.50		8.54			
MW-4		1121		8.49				7.08		7.47			
MW-5		1114		6.67				5.53		5.70			
MW-9		1152		17.00				10.75		11.25			
MW-10		1155		11.68				10.95		11.28			
MW-11		1158		12.16				11.58		12.16			
MW-12		1008		5.66				4.12		4.32			
MW-13		1107		9.71				8.22		8.43			
MW-14		1110	13.5	11.51				10.11		10.34			
MW-15		1104		12.43				11.10		11.35			
MW-16		1203		12.65				11.98		12.32			
MW-18		1139		13.60				13.00		13.27			
MW-38R		1406		3.93				3.50		3.85			FM need to be added
MW-40		1101		11.98				10.62		10.89			DWK
1B-W-2		0949		13.41				12.92		13.60			FM
1B-W-3		0941		14.46				14.15		14.75			
1C-W-2		0956		8.48				8.20		8.58			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	06/09/09	1009		12.13		None	TP	10.66	None	11.04	TR	GS	13-0.87
MW-17		1015		8.95		Hwy TR		8.20	Hwy TR	8.58	Hwy TR		10-1.05
2A-W-3		1035		9.80		TR		8.44	Hwy TR	8.87	Hvy TR		
2A-W-11		1020		7.46		TR		6.08	TR	6.28	TR		8-0.54
MW-39		1051		8.89		None	↓	7.64	None	7.59	None		9-0.11
5-W-2		1417		6.62	6.38	0.24	PUMP	5.89	Hwy TR	6.30	Hvy TR		7-0.62
5-W-3		1105		5.87		Hvy TR	TP	5.45	TR	5.86	TR		6,5-0.63
2A-W-4		1335		10.19	10.03	0.16	PUMP	8.90	0.22	9.35	0.91	U	

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well

- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

total wells:

Maloney Creek Staff Gauging:

Location	Date	Water Level	Water Level (5/12/09)
North Staff Gauge	6/9/2009	0.65	0.85
Mid Staff Gauge		1.19	1.32
South Staff Gauge		0.97	1.05

DWIR ↓

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Fluid Level Gauging Form

Project Name: **BNSF Skykomish**

Project Number: **01140-204-0340**

Collected by: **D. Kinney, F. Merrill, G. Sabbana & E. Storkson**

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Method	DTW		Prod. Thick.		Sign Off	Comments
								(ft)	(ft)	(ft)	(ft)		
1A-W-5	06/09/09	1013		8.40								FM	
1B-W-23		1431		13.62								↓	No elevation
1C-W-1		0930		12.65								↓	
1C-W-7	06/10/09	10.80		NM								↓	Asphalted over
1C-W-8		1004		12.00								FM	need to be added
2A-W-40		1056		10.96									add
2A-W-41		1047		12.83									add
2A-W-42		1520		11.49									add
5-W-14		1104		8.06									
5-W-15		1116		6.50									
5-W-16		1322		6.82									
5-W-17		1111		6.16									
5-W-18		1122		6.76									
5-W-19		1126		6.14									
5-W-20		1131		5.71									check, production not.
5-W-42		1136		7.80									No elevation.
5-W-50		1346		6.34									No elevation.
5-W-52		1353		5.61									No elevation.
5-W-53		1356		6.02									No elevation.
5-W-54		1359		5.95									"
5-W-55		1355		5.67									"
5-W-56		1328		6.06									"
EW-1		1337		8.16								DWK	"
EW-2		-		NM									= Not Installed
GW-1		1322		6.75								DWK	not added
GW-2		1341		8.17									No elevation.
GW-3		1349		13.42									No elevation.
GW-4		1357		9.89									No elevation.
HCC-RW-01		0929		10.49									GS
HCC-RW-02		0944		11.52									
HCC-RW-03		0947		11.46									
HCC-RW-04		0958		7.24									
HCC-RW-05		0950		6.37									
HCC-RW-06		0911		6.32									
HCC-IW-01		0937		8.28									
HCC-IW-02		0924		9.20									
5-W-51		1136		5.70		TR	TP						GS 6-0.3 not added
5-W-3		1105		5.87		TR	TP						6.5-0.63
MW-22		1126		6.39		TR	TP						7-0.61

Other Notes:

- dirty casing, possible trace product
- dirty well

- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

5-W-43 6/9/09 1334 5.80

DWK not added.

Skykomish Monitoring Wells

4/29/2009

Pl.#	Northing	Easting	Case Elev.	North Rim, 2" PVC Elev.	Desc.
9344	259071.089	1510078.017	922.59	922.39	MW-38R
9345	259071.593	1510259.672	928.35	928.10	EW-1
9346	259091.984	1510273.712	926.04	925.77	5A-W-43
9347	259101.697	1510326.403	928.09	927.84	GW-1
9348	259110.534	1510419.401	930.47	940.24	GW-2
9349	259111.087	1510524.621	933.66	933.32	2A-W-40
9350	259144.802	1510748.885	935.39	935.05	2A-W-41
9351	259230.748	1510894.706	936.10	935.81	1B-W-23
9352	259195.860	1510936.470	935.79	935.54	GW-3
9411	259292.968	1511271.395	934.76	934.30	1C-W-7
10803	259396.085	1511278.749	934.39	934.18	1C-W-8

✓ not found in spreadsheet
 — PVC elev higher than casing.

5-W-50
 5-W-56
 5-W-42
 5-W-51
 2A-W-42

140 elevation



Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-284-0540
 Collected by: D. Klancy, G. Sebbane, F. Merrill

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments	
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)			
2A-W-5	09/21/09	1755		14.96				15.01		14.28		DJK		
2A-W-7		1813		12.82				12.86		12.27				
2A-W-9		1135		12.19				12.23		11.42				
2A-W-10		1216		12.68				12.89		12.03				
2B-W-4		1209		5.24				5.58		4.62				
2B-W-11		1214		5.12				5.41		4.51				
2B-W-12		1212		8.45				8.68		7.80				
2B-W-13		1217		7.95				8.05		7.14				
2B-W-14		1218		6.44				6.60		7.71				
2B-W-15		1152		Dry @ 4.2				Dry @ 4.2		7.22				
2B-W-19		1159		9.20				9.58		8.53				
2B-W-21		1223		10.66				10.95		10.10				
2B-W-30		1101		13.17				13.10		12.38				
2B-W-32		1205		9.60				9.95		8.98				
2B-W-33		1157		12.58				12.84		11.90				
2B-B-21		1150		7.34				7.38		6.77				
2B-W-45		1230		12.80				12.91		12.26				
2B-W-46		1233		12.94				13.10		12.35				
3-W-41		1004		5.79				6.91		NM				
3-W-42		1000		9.79				10.01		NM				
3-W-43		1010		6.36				6.11		NM				

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PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	09/21/09	10:50		14.10				14.21		13.49		DWK	
MW-2		10:45		13.85				13.99		13.19		DWK	
MW-3		11:38		12.30				12.59		11.63		DWK	
MW-4		11:42		11.40				11.63		10.82		DWK	
MW-5		11:32		9.07				9.13		8.33		DWK	
MW-9		10:31		14.78				14.51		13.75		DWK	
MW-10		10:35		14.27				14.28		13.6		DWK	
MW-11		10:39		14.74				14.79		14.14		DWK	
MW-12		11:46		7.58				7.63		7.01		DWK	
MW-13		11:26		11.51				11.55		11.02		DWK	
MW-14		11:29	13.5	13.46				13.43		12.93		DWK	
MW-15		09:47		15.20				14.82		14.11		DWK	
MW-16		10:20		14.54				14.43		13.80		DWK	
MW-18		10:57		16.19				16.23		15.54		DWK	
MW-38R		10:50		5.82				5.71		5.05		GS	
MW-40		09:57		14.65				14.35		13.64		DWK	
1B-W-2		12:44		14.25				14.27		14.29		GS	
1B-W-3		12:38		15.55				15.52		15.44		GS	
1C-W-2		13:25		11.11				11.02		10.43		GS	

PAGE 4

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	09/21/09	1051		14.88		None	TQF	14.51	None	13.85	None		
MW-17				NM				NM		NM			
2A-W-3		1040		13.07		Hwy TR	TQF	12.36	Hwy TR	11.60	Hwy TR		
2A-W-11		1112		9.57		TR		9.62	Hwy TR	8.95	TR		
MW-39		1170		11.04		None		11.19	TR	10.5	None		
5-W-2		1132		10.04		Hwy TR		NM		8.37	TR		
5-W-3		1350		9.70	8.62	0.88	PP	NM		7.74	TR		
2A-W-4		1320	16.0	NW	13.53	2.47	PP	12.63	0.31	12.35	0.35		Buried under soil pile

Other Notes: NW - No water, only product in well

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

total wells:

Maloney Creek Staff Gauging:

Location	Date	Water Level	Water Level (8/25/09)
North Staff Gauge	9/21/2009	Dry	Dry
Mid Staff Gauge			Dry
South Staff Gauge			Dry

DWK

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-284-0540
 Collected by: D. Kinney / G. Sabbane / F. Merrill

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
1A-W-5	09/21/09	1408		11.09				9.21		GS	
1A-W-38				NM				NM		-	Not Installed
1B-W-2		1244		14.25				13.11		GS	
1B-W-3		1238		15.55				14.68		GS	
1C-W-1		1256		14.19				13.19		GS	
1C-W-2		1325		11.11				9.61		GS	
1C-W-3		1315		11.78				10.70		GS	
1C-W-4		1319		10.89				10.24		GS	
1C-W-7		1251		12.12				10.95		GS	
1C-W-8		1300		13.58				NM		GS	
2A-W-8		1042		16.45				14.60		DWK	
2A-W-9		1135		17.19				8.56		DWK	
2A-W-10		1246		17.68				8.77		DWK	
2B-W-4		1209		5.24				2.11		DWK	
5-W-4		1145		8.91				5.65		GS	
5-W-14		1036		10.32				9.26		GS	
5-W-15		1044		8.80				7.75		GS	
5-W-16		1026		9.00				8.13		GS	
5-W-17		1031		8.39				7.45		GS	
5-W-18		1022		8.46				7.61		GS	
5-W-19		1017		8.28				7.55		GS	
5-W-20		1008		7.79				7.13		GS	
5-W-42		1000		7.58				6.65		GS	
5-W-43		1748		8.23				NM		DWK	Not Installed
5-W-44				NM				NM		-	Not Installed
5-W-45				NM				NM		-	Not Installed
1A-W-4		1310		10.55						DWK	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
5-W-50	09/21/09	1110		8,80				7.35		GS	
5-W-52		1136		8,64				5.89		GS	
5-W-53		1133		8,78				6.34		GS	
5-W-54		1128		7,81				6.23		GS	
5-W-55		1121		7,56				6.09		GS	
5-W-56		1115		8,41				6.72		GS	
MW-1		1050		14,10				12.24		DWK	
MW-2		1045		13,85				11.85		DWK	
MW-3		1138		12,30				8.47		DWK	
MW-4		1142		11,40				7.32		DWK	
MW-12		1146		7,58				4.00		DWK	
MW-14		1129	13.5	13,46				10.12		DWK	
MW-16		1070		14,54				12.46		DWK	
MW-18		1058		16,19				13.49		DWK	
MW-32		1346		10,28				5.82		GS	
MW-38R		1050		5,82				4.28		GS	
1A-W-36		-		NM				NM		-	Not Installed
1A-W-37		-		NM				NM		-	Not Installed
1B-W-23		1727		17,43						GS	
2A-W-40		1710		13,71						GS	
2A-W-41		1220		18,68						GS	
2A-W-42		1233		12,94						GS	
2B-W-45		1730		12,80						DWK	
2B-W-46		1233		12,94						DWK	
3-W-43		1004		5,79						DWK	
3-W-42		1000		9,79						DWK	
3-W-40		1010		6,36						DWK	
EW-1		1157		10,43						GS	
EW-2		-		NM						-	Not Installed
GW-1		-		10,78						GS	
GW-2		-		13,82						GS	
GW-3		-		16,03						GS	
GW-4		1330		11,15						GS	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
2A-W-3	09/21/09	1040		13.07		Hvy TR	TOP	NM		FM	
2A-W-11		1112		9.57		TR		6.09	None		
MW-28		1025		15.66		None		13.17			
MW-39		1170		11.04		None		7.57	None		
5-W-51		1143		8.48		TR	↓	6.85	Hvy TR		
1A-W-2		-		NM		-	-	NM			Not located -- in construction zone
2A-W-4		1307		NW	13.53	2.47	PP	9.00	Hvy TR		
5-W-2		1132		10.04		Hvy TR	T&P	6.87	Hvy TR		
5-W-3		1350		9.70	8.82	0.88	PP	6.87	TR		
MW-22		1320		9.10		TR	T&P	7.45	Hvy TR	↓	

Other Notes:

- dirty casing, possible trace product
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)
- dirty well

NW - No water in well, only product

9/21/09

E. Starkerson field notes

	ID	Depth
70's	PZ-8	11.18
	FWV	11.80
	PZ-7S	11.16
	PZ-7N	13.46
	WV	15.17
setting	RW-6	11.86
	PZ-6S	11.90
setting	PZ-6N	14.52
	PZ-5S	11.80 12.22
DL Sampling	PZ-5N	15.60
ing	IW-02	10.18
	PZ-4S	13.41
date + time OFF	PZ-4N	14.70
red on	CV	17.45
	RW-1	13.27
red on	PZ-3S	11.75
	PZ-3N	14.08
S	PZ-2S	10.84
	PZ-2N	12.20
	IW-01	9.76
	EV	10.68
	PZ-1	11.27
	GW-1	10.78
M. ndg onsite	GW-2	13.82
1/2 performed	GW-3	16.03
	GW-4	11.15

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-284-0540 Collected by: *D. Kennedy*

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
1A-W-5	09/21/09	—	—	—	—	—	—	9.21	—	—	—
1A-W-38	—	—	—	NM	—	—	—	NM	—	—	Not Installed
1B-W-2	—	—	—	—	—	—	—	13.11	—	—	—
1B-W-3	—	—	—	—	—	—	—	14.68	—	—	—
1C-W-1	—	—	—	—	—	—	—	13.19	—	—	—
1C-W-2	—	—	—	—	—	—	—	9.61	—	—	—
1C-W-3	—	—	—	—	—	—	—	10.70	—	—	—
1C-W-4	—	—	—	—	—	—	—	10.24	—	—	—
1C-W-7	—	—	—	—	—	—	—	10.95	—	—	—
1C-W-8	—	—	—	—	—	—	—	NM	—	—	—
2A-W-8	10/17	—	—	16.45	—	—	—	14.60	—	DWK	—
2A-W-9	11/35	—	—	12.19	—	—	—	8.56	—	DWK	—
2A-W-10	12/16	—	—	17.68	—	—	—	8.77	—	DWK	—
2B-W-4	12/29	—	—	5.24	—	—	—	2.11	—	DWK	—
5-W-4	—	—	—	—	—	—	—	5.65	—	—	—
5-W-14	—	—	—	—	—	—	—	9.26	—	—	—
5-W-15	—	—	—	—	—	—	—	7.75	—	—	—
5-W-16	—	—	—	—	—	—	—	8.13	—	—	—
5-W-17	—	—	—	—	—	—	—	7.45	—	—	—
5-W-18	—	—	—	—	—	—	—	7.61	—	—	—
5-W-19	—	—	—	—	—	—	—	7.55	—	—	—
5-W-20	—	—	—	—	—	—	—	7.13	—	—	—
5-W-42	—	—	—	—	—	—	—	6.65	—	—	—
5-W-43	—	—	—	—	—	—	—	NM	—	DWK	Not Installed
5-W-44	—	—	—	NM	—	—	—	NM	—	—	Not Installed
5-W-45	—	—	—	NM	—	—	—	NM	—	—	Not Installed

8.23

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-284-0540** Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
1A-W-5	09/21/09	1408		11.09				9.21			
1A-W-38				NM							Not Installed
1B-W-2		1244		14.25				13.11			
1B-W-3		1238		15.55				14.68			
1C-W-1		1256		14.19				13.19			
1C-W-2		1325		11.11				9.61			
1C-W-3		1315		11.78				10.70			
1C-W-4		1319		10.89				10.24			
1C-W-7		1251		12.12				10.95			
1C-W-8		1300		13.58				NM			
2A-W-8								14.60			
2A-W-9								8.56			
2A-W-10								8.77			
2B-W-4								2.11			
5-W-4		1145		8.91				5.65			
5-W-14		1036		10.32				9.26			
5-W-15		1044		8.80				7.75			
5-W-16		1026		9.00				8.13			No bolds
5-W-17		1031		8.39				7.45			
5-W-18		1022		8.46				7.61			missing 2 bolds
5-W-19		1017		8.28				7.55			" 1 bold
5-W-20		1008		7.79				7.13			no bolds.
5-W-42		1400		7.58				6.65			
5-W-43				NM				NM			Not Installed
5-W-44				NM				NM			Not Installed
5-W-45				NM				NM			Not Installed

1A-W-4 1310 10.55 DMK

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
5-W-50	09/21/09	1110		8.80				7.35			
5-W-52		1136		8.64				5.89			
5-W-53		1133		8.28				6.34			
5-W-54		1128		7.81				6.23			
5-W-55		1121		7.56				6.09			
5-W-56		1115		8.41				6.72			
MW-1								12.24			
MW-2								11.85			
MW-3								8.47			
MW-4								7.32			
MW-12								4.00			
MW-14			13.5					10.12			
MW-16								12.46			
MW-18								13.49			
MW-32		1346		10.28				5.82			
MW-38R		1050		5.82				4.26			
1A-W-36				NM				NM			Not Installed
1A-W-37				NM				NM			Not Installed
1B-W-23		1221		17.43							
2A-W-40		1210		13.71							
2A-W-41		1229		18.68							
2A-W-42		1233		12.94							
2B-W-45											
2B-W-46											
3-W-41								NM			
3-W-42								NM			
3-W-43								NM			
EW-1		1157		10.43							
EW-2				NM							
GW-1				10.78							
GW-2				13.82							
GW-3				16.03							
GW-4		1330		11.12							

ES
↓

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009			Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)		
2A-W-3	09/21/09	1040		13.07			TAP	NM				15.5 - 2.13 needs heavy product source
2A-W-11		1112		9.57			TAP	6.09	None			10' D. 43 Trace product
MW-28		1025		15.66			TAP	13.17				16.34
MW-39		1100		11.04			TAP	7.57	None			12.086
5-W-51		1143		8.48			TAP	6.85	Hvy TR			9-0.42
1A-W-2				NM				NM				A construction zone
2A-W-4		1307		*NW	13.53	2.47	PP	9.00	Hvy TR			
5-W-2		1132		10.04			TP	6.87	Hvy TR			
5-W-3		1350		9.70	8.8		PP	6.87	TR			
MW-22		1320		9.10	9.10	Trace	TP	7.45	Hvy TR			

Other Notes:

- dirty casing, possible trace product
- dirty well

use tape and paste (TP)
 use tape & paste (TP) + peristaltic pump (PP)

13.50
 - 4.20

 9.30

16.26
 - 1.18

 15.08

* NW: NOT MEASURED NO WATER IN WELL - ONLY PRODUCT



Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-284-0540
 Collected by: D. Kinley

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
X 2A-W-5	09/21/09	1755		14.96				15.01		14.28		DNK	
X 2A-W-7		1813		12.82				12.86		12.27		DNK	
X 2A-W-9		1135		12.19				12.23		11.42		DNK	
X 2A-W-10		1216		12.68				12.89		12.03		DNK	
X 2B-W-4		1200		5.24	*			5.58		4.62		DNK	
X 2B-W-11		1214		5.12	*			5.41		4.51		DNK	
X 2B-W-12		1212		8.45	*			8.68		7.80		DNK	
X 2B-W-13		1217		7.95	*			8.05		7.14		DNK	
X 2B-W-14		1218		6.44	*			6.60		7.71		DNK	
X 2B-W-15		1157		0.04	2*			Dry @ 4.2		7.22		DNK	
X 2B-W-19		1159		9.70				9.58		8.53		DNK	
X 2B-W-21		1223		10.66				10.95		10.10		DNK	
X 2B-W-30		1101		13.17				13.10		12.38		DNK	
X 2B-W-32		1205		9.60				9.95		8.98		DNK	
X 2B-W-33		1157		12.58				12.84		11.90		DNK	
X 2B-B-21		1150		7.34				7.38		6.77		DNK	
X 2B-W-45		1230		12.80				12.91		12.26		DNK	
X 2B-W-46		1232		12.94				13.10		12.35		DNK	
X 3-W-41		1004		5.79				6.91		NM		DNK	By Trailer
X 3-W-42		1000		9.79				10.01		NM		DNK	Behind Fire House
X 3-W-48 A		1010		6.36				6.11		NM		DNK	In Back yard

* creek is dry at all locations

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	09/21/09	10:50	14.10	→				14.21		13.49		DNK	
MW-2		10:45	13.85	→				13.99		13.19		DNK	
MW-3		11:38		12.30				12.59		11.63		DNK	
MW-4		11:42		11.40				11.63		10.82		DNK	
MW-5		11:32	9.07					9.13		8.33		DNK	
MW-9		10:31	14.78	→				14.51		13.75		DNK	
MW-10		10:35	14.27	→				14.28		13.6		DNK	
MW-11		10:39	14.74	→				14.79		14.14		DNK	
MW-12		11:46		7.58				7.63		7.01		DNK	
MW-13		11:26		11.57				11.55		11.02		DNK	
MW-14		11:29	13.5	13.46				13.43		12.93		DNK	
MW-15		09:47	15.20	→				14.82		14.11		DNK	
MW-16		10:20	14.54	→				14.43		13.80		DNK	
MW-18		10:57	16.10	→				16.23		15.54		DNK	
6 MW-38R								5.71		5.05			
MW-40		09:51	14.65	→				14.35		13.64		DNK	
6 1B-W-2								14.27		14.29			
6 1B-W-3								15.52		15.44			
6 1C-W-2								11.02		10.43			

AECOM

PAGE 3

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	09/21/09												
P-2U													
P-2D													
P-3U													
P-3D													
P-4U													
P-4D													
P-5U													
P-5D													
P-6U													
P-6D													
P-7U													
P-7D													
P-8													
HCC-RW-01													
HCC-RW-02		1222		14.22									15-0.78
HCC-RW-03		1218		14.00									15-1.0
HCC-RW-04		1215		10.55									12-1.45
HCC-RW-05		1200		11.90									13-1.1
HCC-RW-06													
HCC-IW-01													
HCC-IW-02													

Done

DO THESE

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	09/21/09	10:51		14.88				14.51	None	13.85	None		16-1.17
MW-17				NM				NM		NM			Buried under soil pile
2A-W-3								12.36	Hwy TR	11.60	Hwy TR		
2A-W-11								9.62	Hwy TR	8.95	TR		
MW-39								11.19	TR	10.5	None		
5-W-2								NM		8.37	TR		
5-W-3								NM		7.74	TR		
2A-W-4								12.63	0.31	12.35	0.35		

Other Notes:

- clean well - north ('town') half
- clean well - south ('rallyard') half
- dirty casing, possible trace product
- dirty well

- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

total wells:

Malbone Creek Staff Gauging:

Location	Date	Water Level	Water Level (8/25/09)
North Staff Gauge	9/21/2009		Dry
Mid Staff Gauge			Dry
South Staff Gauge			Dry

**BNSF - Skykomish
Sentry Well Sampling Log**

Well No.	Sampler	Sample Date	Sample Time
S1-AU	D. Kirney	9/27/09	0910
S1-AD			0855
S1-BU			0935
S1-BD			0925
S2-AU			1015
S2-AD			1005
S2-BU			1045
S2-BD			1035
S3-AU			1135
S3-AD			1125
S3-BU			1230
S3-BD			1250
S3-CU			1205
S3-CD			1355
S4-AU			1455
S4-AD			1430
S4-BU			1525
S4-BD			1515
S4-CU			1555
S4-CD			1540

Duplicate →
S20-BU-0909
(10:55)

Lab QC

Duplicate →
S40-AD-0909
(14:40)

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. Equipment Blank (mw-500)
 Sampled By DWL
 weather Pt Cloudy, 50°F

WELL INFORMATION	
Depth to water	(ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA							
start purge time							
time							
DTW	(ft)						
purge rate	(L/min)						
pH	(Units)						
conductivity	(umhos/cm)						
temperature	(deg C)						
D.O.	(mg/L)						
ORP	(mv)						
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
MW-500-0909	0825	NWTPH-Dx ^{w/o} _{SCREEN}	1L Gl. Amber	2	HCl
		" ^{w/SCREEN}	"	"	"

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. ZB-W-46
 Sampled By EWK
 weather P. Cloudy, 55°F

WELL INFORMATION	
Depth to water	<u>13.18</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>—</u> (ft)
Screen interval:	
well condition:	<u>needs</u>

COMMENTS
<u>Inlet tubing set at ~14'</u>

PURGE DATA						
start purge time	<u>0911</u>					
time	<u>0921</u> →	<u>0924</u>	<u>0927</u>	<u>0930</u>		
DTW (ft)	<u>13.19</u>	<u>13.19</u>	<u>13.19</u>	<u>13.19</u>		
purge rate (L/min)	<u>0.30</u>					
pH (Units) _{ms/m}	<u>5.54</u>	<u>5.57</u>	<u>5.58</u>	<u>5.58</u>		
conductivity (<u>umhos/cm</u>)	<u>7.9</u>	<u>7.4</u>	<u>7.2</u>	<u>6.9</u>		
temperature (deg C)	<u>10.9</u>	<u>10.7</u>	<u>10.6</u>	<u>10.6</u>		
D.O. (mg/L)	<u>2.65</u>	<u>2.52</u>	<u>2.52</u>	<u>2.50</u>		
ORP (mv)	<u>201</u>	<u>197</u>	<u>196</u>	<u>193</u>		
turbidity (NTU)	<u>1.27</u>	<u>1.11</u>	<u>1.06</u>	<u>1.00</u>		
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>ZB-W-46-0928</u>	<u>0935</u>	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. ZB-W-45
 Sampled By DWK
 weather P. Cloudy, 55°F

WELL INFORMATION	
Depth to water	<u>12.98</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>-</u> (ft)
Screen interval:	
well condition:	

COMMENTS
<u>tubing inlet set at</u>
<u>✓</u>
<u>collected duplicate</u>
<u>sample</u>

PURGE DATA							
start purge time	<u>0955</u>						
time		<u>1005</u>	<u>1008</u>	<u>1011</u>			
DTW	(ft)	<u>12.99</u>					
purge rate	(L/min)	<u>0.30</u>	<u>→</u>				
pH	(Units)	<u>5.62</u>	<u>5.63</u>	<u>5.63</u>			
conductivity	(umhos/cm)	<u>10.8</u>	<u>6.1</u>	<u>6.1</u>			
temperature	(deg C)	<u>6.1</u>	<u>10.9</u>	<u>10.9</u>			
D.O.	(mg/L)	<u>1.72</u>	<u>1.68</u>	<u>1.67</u>			
ORP	(mv)	<u>149</u>	<u>149</u>	<u>148</u>			
turbidity	(NTU)	<u>2.45</u>	<u>2.60</u>	<u>2.49</u>			
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>ZB-W-45-0909</u>	<u>1015</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>ZB-W-45D-0909</u>	<u>1030</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>"</u>
<u>(Duplicate)</u>					

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 2A-W-9
 Sampled By DWK
 weather P, Cloudy, 60°F

WELL INFORMATION

Depth to water 12.36 (ft)
 Depth of well: (ft)
 Well diameter: 2 (in)
 Feet of water: (ft)
 Product thickness: - (ft)
 Screen interval:
 well condition: OK

COMMENTS

Tubing Inlet at ~13'

PURGE DATA

start purge time	<u>1102</u>					
time		<u>1113</u>	<u>1116</u>	<u>1119</u>	<u>1122</u>	<u>1125</u>
DTW	(ft)	<u>12.54</u>	<u>12.55</u>	<u>12.55</u>	<u>12.55</u>	<u>12.55</u>
purge rate	(L/min)	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>
pH	(Units)	<u>5.63</u>	<u>5.63</u>	<u>5.62</u>	<u>5.64</u>	<u>5.65</u>
conductivity	(umhos/cm)	<u>9.3</u>	<u>9.3</u>	<u>9.3</u>	<u>9.1</u>	<u>8.8</u>
temperature	(deg C)	<u>12.7</u>	<u>12.6</u>	<u>12.4</u>	<u>12.4</u>	<u>12.3</u>
D.O.	(mg/L)	<u>0.08</u>	<u>0.07</u>	<u>0.04</u>	<u>0.03</u>	<u>0.03</u>
ORP	(mv)	<u>16</u>	<u>16</u>	<u>18</u>	<u>16</u>	<u>17</u>
turbidity	(NTU)	<u>7.29</u>	<u>6.15</u>	<u>3.64</u>	<u>3.28</u>	<u>3.39</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>					

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>2A-W-9-0920</u>	<u>1130</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. mw-3
 Sampled By DWL
 weather P Cloudy, 65°F

WELL INFORMATION	
Depth to water	<u>12.58</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>-</u> (ft)
Screen interval:	
well condition:	<u>OK</u>

COMMENTS
<u>Tubing inlet at ~13.5'</u>

PURGE DATA							
start purge time	<u>1302</u>						
time		<u>1312</u>	<u>1315</u>	<u>1318</u>			
DTW	(ft)	<u>12.83</u>	<u>12.84</u>	<u>12.84</u>			
purge rate	(L/min)	<u>0.50</u>					
pH	(Units)	<u>6.63</u>	<u>6.62</u>	<u>6.64</u>			
conductivity	(umhos/cm)	<u>18.4</u>	<u>17.3</u>	<u>17.0</u>			
temperature	(deg C)	<u>17.6</u>	<u>17.4</u>	<u>17.3</u>			
D.O.	(mg/L)	<u>0.06</u>	<u>0.05</u>	<u>0.05</u>			
ORP	(mv)	<u>65</u>	<u>68</u>	<u>69</u>			
turbidity	(NTU)	<u>4</u>	<u>38</u>	<u>27</u>			
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>mw-3-0909</u>	<u>1320</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. MW-4
 Sampled By DWK
 weather Partly cloudy, 70°F

WELL INFORMATION		
Depth to water	11.4	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	-	(ft)
Screen interval:		
well condition:	OK	

COMMENTS
Tubing inlet set at ~12.5

PURGE DATA

start purge time	time	DTW	purge rate	pH	conductivity	temperature	D.O.	ORP	turbidity	purge and sample equip.
	1339									
	1349	11.44	0.30	5.39	5.3	16.0	0.10	-6	9.8	Peristaltic pump and silicone/polyethylene tubing
	1352	11.44	0.30	5.80	5.2	15.9	0.11	-5	10.1	
	1355	11.44	0.30	5.00	5.3	15.9	0.10	-4	9.5	

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
MW-4-0909	1400	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 3-W-41
 Sampled By DWK
 weather P. Cloudy, 70°F

WELL INFORMATION

Depth to water	<u>6.95</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>—</u>	(ft)
Screen interval:		
well condition:	<u>ok</u>	

COMMENTS

<u>Tubing Inlet at ~ 7.75'</u>

PURGE DATA

start purge time	<u>1447</u>				
time	<u>1507</u>	<u>1500</u>	<u>1503</u>		
DTW	(ft)	<u>6.97</u>	<u>—</u>	<u>5</u>	
purge rate	(L/min)	<u>0.30</u>	<u>—</u>	<u>—</u>	
pH	(Units)	<u>6.17</u>	<u>6.18</u>	<u>6.19</u>	
conductivity	(umhos/cm)	<u>9.3</u>	<u>9.8</u>	<u>9.9</u>	
temperature	(deg C)	<u>15.6</u>	<u>15.5</u>	<u>15.4</u>	
D.O.	(mg/L)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	
ORP	(mv)	<u>-24</u>	<u>-25</u>	<u>-27</u>	
turbidity	(NTU)	<u>8.51</u>	<u>8.29</u>	<u>8.03</u>	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing				

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>3-W-41-0909</u>	<u>1515</u>	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 3-W-42
 Sampled By DWR
 weather Clear, 25°F

WELL INFORMATION	
Depth to water	<u>10.02</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>—</u> (ft)
Screen interval:	
well condition:	<u>ok</u>

COMMENTS
<u>Tubing wet at ~1075'</u>

PURGE DATA							
start purge time	<u>1535</u>						
time		<u>1545</u>	<u>1548</u>	<u>1551</u>	<u>1554</u>	<u>1557</u>	
DTW	(ft)	<u>10.03</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	
purge rate	(L/min)	<u>0.30</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	
pH	(Units)	<u>6.60</u>	<u>6.61</u>	<u>6.63</u>	<u>6.68</u>	<u>6.70</u>	
conductivity	(umhos/cm)	<u>15.7</u>	<u>15.0</u>	<u>14.1</u>	<u>10.9</u>	<u>10.8</u>	
temperature	(deg C)	<u>16.2</u>	<u>16.0</u>	<u>15.9</u>	<u>15.9</u>	<u>15.8</u>	
D.O.	(mg/L)	<u>0.73</u>	<u>0.85</u>	<u>0.88</u>	<u>0.89</u>	<u>0.89</u>	
ORP	(mv)	<u>-19</u>	<u>-19</u>	<u>-16</u>	<u>-15</u>	<u>-15</u>	
turbidity	(NTU)	<u>9.99</u>	<u>7.10</u>	<u>4.32</u>	<u>4.01</u>	<u>4.4</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>3-W-42-0909</u>	<u>1600</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/13/09

Well No. 3-W-43
 Sampled By DMR
 weather Clear, 73 °F

WELL INFORMATION	
Depth to water	<u>6.10</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>—</u> (ft)
Screen interval:	
well condition:	<u>OK</u>

COMMENTS
<u>Tubing inlet at ~ 7.0'</u>

PURGE DATA							
start purge time	<u>1623</u>						
time		<u>1633</u>	<u>1636</u>	<u>1639</u>	<u>1642</u>		
DTW	(ft)	<u>6.10</u>	<u>6.10</u>	<u>6.10</u>	<u>6.10</u>		
purge rate	(L/min)	<u>0.30</u>	<u>—</u>	<u>—</u>	<u>—</u>		
pH	(Units)	<u>6.47</u>	<u>6.44</u>	<u>6.41</u>	<u>6.40</u>		
conductivity	(µmhos/cm)	<u>6.8</u>	<u>6.8</u>	<u>6.8</u>	<u>6.7</u>		
temperature	(deg C)	<u>15.2</u>	<u>15.1</u>	<u>15.0</u>	<u>15.0</u>		
D.O.	(mg/L)	<u>0.70</u>	<u>0.65</u>	<u>0.63</u>	<u>0.60</u>		
ORP	(mv)	<u>19</u>	<u>21</u>	<u>22</u>	<u>23</u>		
turbidity	(NTU)	<u>1.92</u>	<u>1.86</u>	<u>1.79</u>	<u>1.72</u>		
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>3-W-43-0909</u>	<u>1645</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. MW-16
 Sampled By DWIK
 weather clear, 70°F

WELL INFORMATION

Depth to water	<u>14.69</u>	(ft)
Depth of well:		(ft)
Well diameter:		(in)
Feet of water:		(ft)
Product thickness:		(ft)
Screen interval:		
well condition:	<u>ok</u>	

COMMENTS

<u>Tubing Inlet at ~15.5'</u>

PURGE DATA

start purge time	<u>1722</u>				
time		<u>1732</u>	<u>1735</u>	<u>1738</u>	<u>1741</u>
DTW	(ft)	<u>14.70</u>	<u>14.70</u>	<u>14.70</u>	<u>14.70</u>
purge rate	(L/min)	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>	<u>0.30</u>
pH	(Units)	<u>5.77</u>	<u>5.70</u>	<u>5.69</u>	<u>5.68</u>
conductivity	(umhos/cm)	<u>6.7</u>	<u>6.7</u>	<u>6.7</u>	<u>6.7</u>
temperature	(deg C)	<u>15.4</u>	<u>15.1</u>	<u>15.1</u>	<u>15.0</u>
D.O.	(mg/L)	<u>0.87</u>	<u>0.82</u>	<u>0.82</u>	<u>0.81</u>
ORP	(mv)	<u>96</u>	<u>102</u>	<u>104</u>	<u>105</u>
turbidity	(NTU)	<u>34.8</u>	<u>17.2</u>	<u>15.5</u>	<u>15.3</u>
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing				

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>MW-16-0909</u>	<u>1745</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>MW-160-0909</u> <u>(Duplicate)</u>	<u>1755</u>	<u>11</u>	<u>11</u>	<u>11</u>	<u>11</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/21/09

Well No. 1A-W-1
 Sampled By DWK
 weather _____ °F

WELL INFORMATION	
Depth to water	(ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>Well not located</u>

PURGE DATA							
start purge time							
time							
DTW	(ft)						
purge rate	(L/min)						
pH	(Units)						
conductivity	(umhos/cm)						
temperature	(deg C)						
D.O.	(mg/L)						
ORP	(mv)						
turbidity	(NTU)						
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1A-W-1-0909</u>		NWTPH-Dx	1L Gl. Amber	2	HCl

8
 & BOTTLES

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. ~~S-W-43~~ S-W-17
 Sampled By F.M.
 weather 70 °F

WELL INFORMATION	
Depth to water	<u>8.52</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>ORGANIC DECAYS SMELL</u>

PURGE DATA								
start purge time	<u>0906</u>							
time		<u>0916</u>	<u>0919</u>	<u>0922</u>				
DTW	(ft)	<u>8.70</u>	<u>8.70</u>	<u>8.70</u>				
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>				
pH	(Units)	<u>6.27</u>	<u>6.28</u>	<u>6.30</u>				
conductivity	(umhos/cm)	<u>0.056</u>	<u>0.056</u>	<u>0.056</u>				
temperature	(deg C)	<u>9.25</u>	<u>9.17</u>	<u>9.15</u>				
D.O.	(mg/L)	<u>5.51</u>	<u>5.64</u>	<u>5.64</u>				
ORP	(mv)	<u>66.8</u>	<u>68.3</u>	<u>69.8</u>				
turbidity	(NTU)	<u>1.39</u>	<u>1.07</u>	<u>0.71</u>				
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-43-0917	<u>0925</u>	<u>NWTPH-DX w/SECW</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>S-W-17-0909</u>	<u>0925</u>	<u>NWTPH-DX w/SECW</u>	<u>1L GL AMBER</u>	<u>2</u>	<u>HCl</u>
<u>S-W-170-0909</u>	<u>0825</u>	<u>NWTPH-DX w/SECW</u>	<u>1L GL AMB</u>	<u>2</u>	
	<u>0825</u>	<u>NWTPH-DX w/SECW</u>	<u>1L GL AMB</u>	<u>2</u>	

12

MS/MSD 6 BOT. w/SGCU
6 BOT w/o SGCU

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 5-W-14
 Sampled By Am
 weather 75° °F
Sunny CLEAR

WELL INFORMATION	
Depth to water	<u>10.41</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2"</u> (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>Extra sample for Lab QC</u>

PURGE DATA						
start purge time	<u>1100</u>					
time		<u>1110</u>	<u>1113</u>	<u>1116</u>		
DTW	(ft)	<u>10.41</u>	<u>10.41</u>	<u>10.41</u>		
purge rate	(L/min)	<u>280</u>	<u>280</u>	<u>280</u>		
pH	(Units)	<u>6.54</u>	<u>6.50</u>	<u>6.50</u>		
conductivity	(umhos/cm)	<u>0.061</u>	<u>0.061</u>	<u>0.060</u>		
temperature	(deg C)	<u>9.41</u>	<u>9.34</u>	<u>9.32</u>		
D.O.	(mg/L)	<u>5.47</u>	<u>5.92</u>	<u>5.89</u>		
ORP	(mv)	<u>68.5</u>	<u>70.6</u>	<u>71.1</u>		
turbidity	(NTU)	<u>1.07</u>	<u>0.76</u>	<u>0.88</u>		
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>					

ms/cm

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-14-0909</u>	<u>1120</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	<u>6</u>	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	<u>6</u>	HCl

4 BOTTLES

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 5-W-15
 Sampled By fm
 weather 70 °F

WELL INFORMATION	
Depth to water	10.4 ^(w) 8.88 (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA								
start purge time		1300 ^(w) 1303						
time		1315	1318	1321	1324	1327	1330	1333
DTW	(ft)	9.06	9.06	9.06	9.06	9.06	9.06	9.06
purge rate	(L/min)	270	270	270	270	270	270	270
pH	(Units)	6.78	6.75	6.74	6.75	6.74	6.76	6.76
conductivity	(umhos/cm)	0.097	0.098	0.099	0.099	0.099	0.100	0.100
temperature	(deg C)	13.47	13.21	13.05	12.89	12.85	12.77	12.71
D.O.	(mg/L)	0.48	0.40	0.30	0.28	0.23	0.21	0.21
ORP	(mv)	61.9	59.0	55.4	52.2	48.1	44.9	42.5
turbidity	(NTU)	9.99	9.24	8.92	10.44	11.79	11.11	10.70
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

m/s/cm

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-15-0909	1355	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
	1355	NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

4 BOTTLES

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. ~~S-W-42~~ S-W-42
 Sampled By FM
 weather 79 °F
Sunny

WELL INFORMATION	
Depth to water	<u>7.70</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA								
start purge time	<u>1402</u>							
time		<u>1413</u>	<u>1416</u>	<u>1419</u>	<u>1422</u>	<u>1425</u>	<u>1428</u>	<u>1431</u>
DTW	(ft)	<u>7.75</u>	<u>7.75</u>	<u>7.75</u>	<u>7.75</u>	<u>7.75</u>	<u>7.75</u>	<u>7.75</u>
purge rate	(L/min)	<u>2.75</u>	<u>2.75</u>	<u>2.75</u>	<u>2.75</u>	<u>2.75</u>	<u>2.75</u>	<u>2.75</u>
pH	(Units)	<u>6.44</u>	<u>6.43</u>	<u>6.43</u>	<u>6.45</u>	<u>6.47</u>	<u>6.45</u>	<u>6.49</u>
conductivity	(umhos/cm)	<u>0.102</u>	<u>0.101</u>	<u>0.104</u>	<u>0.106</u>	<u>0.104</u>	<u>0.108</u>	<u>0.109</u>
temperature	(deg C)	<u>13.32</u>	<u>13.19</u>	<u>13.24</u>	<u>13.19</u>	<u>13.24</u>	<u>13.31</u>	<u>13.24</u>
D.O.	(mg/L)	<u>0.63</u>	<u>0.51</u>	<u>0.43</u>	<u>0.42</u>	<u>0.35</u>	<u>0.36</u>	<u>0.36</u>
ORP	(mv)	<u>32.4</u>	<u>31.4</u>	<u>29.6</u>	<u>27.1</u>	<u>25.0</u>	<u>23.4</u>	<u>23.0</u>
turbidity	(NTU)	<u>1.62</u>	<u>1.07</u>	<u>1.05</u>	<u>1.55</u>	<u>4.28</u>	<u>4.14</u>	<u>5.0</u>
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-42-0909	<u>1435</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
S-W-42-0909		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

4 BOTTLES

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. S-W-19
~~5-W-42~~ (w)
 Sampled By _____
 weather 79 °F

WELL INFORMATION	
Depth to water	<u>8.40</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS

PURGE DATA							
start purge time	<u>1502</u>						
time		<u>1512</u>	<u>1515</u>	<u>1517</u>	<u>1520</u>		
DTW	(ft)						
purge rate	(L/min)	<u>275</u>	<u>275</u>	<u>275</u>	<u>275</u>		
pH	(Units)	<u>6.45</u>	<u>6.47</u>	<u>6.47</u>			
conductivity	(umhos/cm)	<u>0.051</u>	<u>0.050</u>	<u>0.1</u>			
temperature	(deg C)	<u>10.98</u>	<u>10.85</u>	<u>10.99</u>			
D.O.	(mg/L)	<u>5.33</u>	<u>5.59</u>	<u>5.71</u>			
ORP	(mv)	<u>30.5</u>	<u>31.0</u>	<u>32.3</u>			
turbidity	(NTU)	<u>0.84</u>	<u>0.48</u>	<u>0.39</u>			
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

ms/cv

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
S-W-42-0909		NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
<u>S-W-19-0909</u>	<u>1520</u>	NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

4 BOTTLES

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 5-W-20
 Sampled By FM
 weather 79 °F

WELL INFORMATION	
Depth to water	<u>7.92</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA								
start purge time	<u>1541</u>							
time		<u>1551</u>	<u>1554</u>	<u>1557</u>	<u>1600</u>	<u>1603</u>	<u>1606</u>	<u>1609</u>
DTW	(ft)	<u>7.92</u>	<u>7.92</u>	<u>7.92</u>	<u>7.92</u>	<u>7.92</u>	<u>7.92</u>	<u>7.92</u>
purge rate	(L/min)	<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>	<u>280</u>
pH	(Units)	<u>6.67</u>	<u>6.68</u>	<u>6.68</u>	<u>6.68</u>	<u>6.68</u>	<u>6.67</u>	<u>6.69</u>
conductivity	(umhos/cm)	<u>0.085</u>	<u>0.087</u>	<u>0.087</u>	<u>0.087</u>	<u>0.088</u>	<u>0.088</u>	<u>0.088</u>
temperature	(deg C)	<u>13.23</u>	<u>13.10</u>	<u>13.02</u>	<u>12.94</u>	<u>12.91</u>	<u>12.99</u>	<u>13.10</u>
D.O.	(mg/L)	<u>0.60</u>	<u>0.43</u>	<u>0.32</u>	<u>0.29</u>	<u>0.23</u>	<u>0.22</u>	<u>0.22</u>
ORP	(mv)	<u>21.3</u>	<u>19.0</u>	<u>17.7</u>	<u>16.4</u>	<u>15.5</u>	<u>14.9</u>	<u>14.1</u>
turbidity	(NTU)	<u>1.71</u>	<u>1.38</u>	<u>1.29</u>	<u>1.10</u>	<u>1.11</u>	<u>0.87</u>	<u>0.93</u>
purge and sample equip.		Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-20-0902</u>	<u>1610</u>	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
		NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl

2
4 BOTTLES

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. ~~5-W-75-W-43~~
 Sampled By AW
 weather Sunny 70° °F

WELL INFORMATION	
Depth to water	8.20 (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
BIO FLOC IN WELL
- ERRATIC TURB. READINGS
- REDDISH ORANGE COLOR

PURGE DATA								
start purge time	1700							
time		1710	1713	1716	1719	1722	1725	
DTW	(ft)							
purge rate	(L/min)	275	275	275	275	275	275	
pH	(Units)	6.08	6.14	6.04	6.00	5.97	5.96	
conductivity	(umhos/cm)	0.051	0.050	0.050	0.047	0.048	0.049	
temperature	(deg C)	12.09	12.29	11.46	11.20	11.04	11.05	
D.O.	(mg/L)	1.36	1.56	1.58	1.35	1.30	1.27	
ORP	(mv)	38.0	37.4	46.0	46.4	47.7	48.8	
turbidity	(NTU)	328	7.18	4.31	4.10	20.7	6.81	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
5-W-75-W-43	1730	NWTPH-Dx (w/SGCU)	1L Gl. Amber	2	HCl
5-W-43	1730	NWTPH-Dx (w/o SGCU)	1L Gl. Amber	2	HCl (AW)

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 09/23/09

Well No. 1B-W-23
 Sampled By Chharris
 weather clear, 62 °F

WELL INFORMATION		
Depth to water	17.50	(ft)
Depth of well:	20.30	(ft)
Well diameter:	2	(in)
Feet of water:	2.80	(ft)
Product thickness:	NONE	(ft)
Screen interval:	5-21'	
well condition:	good.	

COMMENTS
Inlet tubing is 19'
purge water is clear becoming turbid.
Water level is dropping down. Turned pump off @ 0955.
Water level: 19.35.

PURGE DATA

start purge time	0931						
time		0941	0944	0947	0950	0953	0955
DTW (ft)		18.61	18.79	18.90	19.04	19.30	
purge rate (L/min)		150	120	120	120	120	Pump
pH (Units)		6.21	6.23	6.25	6.24	6.28	shut off
conductivity (umhos/cm)		0.200	0.197	0.193	0.197	0.200	due to
temperature (deg C)		10.75	10.24	10.43	10.88	11.63	excess
D.O. (mg/L)		1.32	1.28	0.78	1.32	1.55	draw down
ORP (mv)		-145.2	-147.9	-149.3	-147.7	-147.7	
turbidity (NTU)		High	High	High	High	High	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
1B-W-23-0909	1040	NWTPH-DX	1L Gl. Amber	2	HCl
Grab sample. No stability of parameters reached					

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 09/23/09

Well No. 1B-W-3
 Sampled By Cahani, S
 weather sunny 78 °F

WELL INFORMATION		
Depth to water	<u>15.58</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>NONE</u>	(ft)
Screen interval:		
well condition:	<u>No holes.</u>	

COMMENTS
<u>Drilled tubing ≈ 17'</u>
<u>purge water is cloudy.</u>

PURGE DATA										
start purge time	<u>1406</u>									
time		<u>1416</u>	<u>1419</u>	<u>1422</u>	<u>1425</u>	<u>1428</u>	<u>1431</u>	<u>1434</u>	<u>1437</u>	
DTW	(ft)	<u>15.61</u>	<u>15.61</u>	<u>15.61</u>	<u>15.61</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>
pH	(Units)	<u>6.78</u>	<u>6.72</u>	<u>6.63</u>	<u>6.57</u>	<u>6.51</u>	<u>6.46</u>	<u>6.42</u>	<u>6.37</u>	<u>6.37</u>
conductivity	(umhos/cm)	<u>0.102</u>	<u>0.099</u>	<u>0.095</u>	<u>0.094</u>	<u>0.092</u>	<u>0.090</u>	<u>0.088</u>	<u>0.088</u>	<u>0.088</u>
temperature	(deg C)	<u>13.36</u>	<u>13.34</u>	<u>13.27</u>	<u>13.32</u>	<u>13.32</u>	<u>13.37</u>	<u>13.19</u>	<u>13.39</u>	<u>13.39</u>
D.O.	(mg/L)	<u>0.66</u>	<u>0.78</u>	<u>0.90</u>	<u>0.95</u>	<u>1.07</u>	<u>1.12</u>	<u>1.17</u>	<u>1.17</u>	<u>1.17</u>
ORP	(mv)	<u>-160.5</u>	<u>-161.2</u>	<u>-162.3</u>	<u>-162.4</u>	<u>-162.1</u>	<u>-162.2</u>	<u>-162.2</u>	<u>-161.8</u>	<u>-161.8</u>
turbidity	(NTU)	<u>6.71</u>	<u>9.22</u>	<u>8.20</u>	<u>6.65</u>	<u>4.23</u>	<u>2.20</u>	<u>2.29</u>	<u>2.35</u>	<u>2.35</u>
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>								

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1B-W-3-0902</u>	<u>1440</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. GW-3
 Sampled By Gharis
 weather sunny 68 °F

WELL INFORMATION		
Depth to water	16.08	(ft)
Depth of well:	22	(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	NONE	(ft)
Screen interval:		
well condition:		

COMMENTS
inlet tubing ≈ 17.5'
purge water is clear cloudy to turbid.

PURGE DATA								
start purge time		1133						
time		1043	1046	1049	1052	1055	1058	1201
DTW	(ft)	16.66	16.57	16.55	16.55	16.56	16.53	16.51
purge rate	(L/min)	250	200	200	200	200	180	180
pH	(Units)	6.58	6.59	6.60	6.60	6.55	6.48	6.43
conductivity	(umhos/cm)	0.280	0.277	0.276	0.262	0.190	0.161	0.148
temperature	(deg C)	11.24	11.70	12.10	12.08	11.85	11.74	12.56
D.O.	(mg/L)	0.75	0.50	0.36	0.32	0.24	0.16	0.15
ORP	(mv)	-150.5	-151.7	-153.3	-156.4	-158.2	-158.7	-158.6
turbidity	(NTU)	811	324	319	388	587	551	806
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
GW-3-0909	1255	NWTPH-Dx	1L Gl. Amber	2	HCl

GW-3

Time:	1224	1227	1230	1233	1236	1239	1242	1245	1248	1251	1254
DTW	16.50	16.50	NM.	NM.	NM	NM	16.50	NM	NM	NM.	NM
Flow rate	180	180	180	180	180	180	180	180	180	180	180
PA	6.27	6.26	6.26	6.26	6.25	6.25	6.25	6.25	6.26	6.26	6.26
Cond.	0.096	0.095	0.093	0.093	0.091	0.089	0.087	0.086	0.084	0.083	0.082
Temp.	12.85	12.97	13.09	13.18	13.14	13.04	13.04	13.04	13.12	13.20	13.20
DO	0.10	0.10	0.10	0.10	0.08	0.09	0.07	0.08	0.09	0.08	0.08
ORP	-165.6	-166.2	-166.7	-167.5	-168.0	-168.7	-168.9	-169.5	-169.9	-169.1	-169.7
Turb.	197.	176	156.	114	86.5	76.2	58.4	51.6	38.8	37.1	35.7

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 09/23/09

Well No. GW-3
 Sampled By C. Harris
 weather Sunny 72 °F

WELL INFORMATION	
Depth to water	<u>16.08</u> (ft)
Depth of well:	<u>22</u> (ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS
<u>turbidity is very high and unstable.</u>

PURGE DATA								
start purge time								
time		<u>1204</u>	<u>1207</u>	<u>1210</u>	<u>1213</u>	<u>1215</u>	<u>1218</u>	<u>1221</u>
DTW	(ft)	<u>16.50</u>	<u>16.50</u>	<u>16.50</u>	<u>16.50</u>	<u>16.50</u>	<u>NM</u>	<u>NM</u>
purge rate	(L/min)	<u>180</u>						
pH	(Units)	<u>6.42</u>	<u>6.41</u>	<u>6.37</u>	<u>6.33</u>	<u>6.32</u>	<u>6.30</u>	<u>6.28</u>
conductivity	(umhos/cm)	<u>0.144</u>	<u>0.140</u>	<u>0.118</u>	<u>0.110</u>	<u>0.107</u>	<u>0.104</u>	<u>0.099</u>
temperature	(deg C)	<u>12.75</u>	<u>12.91</u>	<u>12.48</u>	<u>12.53</u>	<u>12.74</u>	<u>12.90</u>	<u>12.95</u>
D.O.	(mg/L)	<u>0.19</u>	<u>0.15</u>	<u>0.13</u>	<u>0.12</u>	<u>0.11</u>	<u>0.11</u>	<u>0.10</u>
ORP	(mv)	<u>-159.8</u>	<u>-160.3</u>	<u>-161.3</u>	<u>-161.8</u>	<u>-163.1</u>	<u>-163.8</u>	<u>-164.9</u>
turbidity	(NTU)	<u>6x97</u>	<u>6x40</u>	<u>5x13</u>	<u>422</u>	<u>370</u>	<u>303</u>	<u>256</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-3-0909</u>	<u>1255</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

1 of 2

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 1B-W-2
 Sampled By Ghani, S
 weather Sunny 81 °F

WELL INFORMATION		
Depth to water	<u>14.30</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>None</u>	(ft)
Screen interval:		
well condition:	<u>No holds</u>	

COMMENTS
<u>Inlet Tubing 16"</u>
<u>purge water is cloudy.</u>
<u>Some Iron Flakes</u>
<u>turbidity unstable.</u>
<u>Fluctuating.</u>

PURGE DATA								
start purge time		<u>1510</u>						
time		<u>1520</u>	<u>1523</u>	<u>1526</u>	<u>1529</u>	<u>1532</u>	<u>1537</u>	<u>1540</u>
DTW	(ft)	<u>15.51</u>	<u>15.60</u>	<u>15.74</u>	<u>15.76</u>	<u>15.84</u>	<u>15.91</u>	<u>15.95</u>
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>280</u>	<u>180</u>	<u>150</u>	<u>150</u>	<u>150</u>
pH	(Units)	<u>5.68</u>	<u>5.69</u>	<u>5.71</u>	<u>5.74</u>	<u>5.77</u>	<u>5.75</u>	<u>5.77</u>
conductivity	(umhos/cm)	<u>0.353</u>	<u>0.352</u>	<u>0.353</u>	<u>0.360</u>	<u>0.360</u>	<u>0.360</u>	<u>0.354</u>
temperature	(deg C)	<u>15.37</u>	<u>15.24</u>	<u>15.43</u>	<u>16.30</u>	<u>17.03</u>	<u>16.68</u>	<u>16.25</u>
D.O.	(mg/L)	<u>0.69</u>	<u>0.51</u>	<u>0.37</u>	<u>0.29</u>	<u>0.77</u>	<u>0.67</u>	<u>0.54</u>
ORP	(mv)	<u>-148.8</u>	<u>-148.5</u>	<u>-150.4</u>	<u>-153.6</u>	<u>-148.6</u>	<u>-150.5</u>	<u>-151.5</u>
turbidity	(NTU)	<u>12.55</u>	<u>13.3</u>	<u>8.28</u>	<u>10.04</u>	<u>47.2</u>	<u>27.3</u>	<u>7.93</u>
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1B-W-2-0909</u>	<u>1555</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

All parameters stabilized except turbidity. Kept Fluctuating: When I started sampling @ 1555. the well dried out. turned off pump @ 1605. Resumed pumping after 15 min and well recovered.

2 of 2

1B-W-2

Time	1543	1546	1549	1552
DTW	16.00	16.06	16.14	16.22
Flow rate	150	150	150	150
PH	5.79	5.81	5.81	5.82
Cond	0.353	0.349	0.346	0.342
Temp	16.47	16.26	16.26	16.26
Do	0.39	0.35	0.36	0.37
ORP	-152.3	-152.0	-150.9	-150.9
Turbi	5.20	3.29	6.63	5.26

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/23/09

Well No. 1A-W-4
 Sampled By Cahani, S
 weather Sunny 84 °F

WELL INFORMATION	
Depth to water	10.30 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	No holds

COMMENTS
Inlet tubing is 12"
purge water is clear.

PURGE DATA						
start purge time	1716					
time		1726	1729	1732	1735	
DTW	(ft)	10.39	10.39	10.39	10.39	
purge rate	(L/min)	250	220	220	220	
pH	(Units)	6.48	6.46	6.45	6.44	
conductivity	(umhos/cm)	0.069	0.068	0.067	0.066	
temperature	(deg C)	12.26	12.10	12.94	11.73	
D.O.	(mg/L)	5.94	6.35	6.46	6.53	
ORP	(mv)	-135.5	-140.5	-140.8	-140.7	
turbidity	(NTU)	1.48	1.51	0.58	0.51	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1A-W-4-0909	1740	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/24/09

Well No. MW-39
 Sampled By DWRC
 weather clear, 80 °F

WELL INFORMATION		
Depth to water	<u>11.04</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>None</u>	(ft)
Screen interval:		
well condition:	<u>ok</u>	

COMMENTS
<u>Tubing inlet placed at ~12'</u>

PURGE DATA							
start purge time	<u>1628</u>						
time		<u>1638</u>					
DTW	(ft)						
purge rate	(L/min)						
pH	(Units)						
conductivity	(umhos/cm)						
temperature	(deg C)						
D.O.	(mg/L)						
ORP	(mv)						
turbidity	(NTU)						
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>MW-39-0909</u>	<u>1640</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/27/09

Well No. 2A-W-11
 Sampled By DWJ
 weather Clear, 80 °F

WELL INFORMATION		
Depth to water	<u>9.57</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>TR</u>	(ft)
Screen interval:		
well condition:	<u>OK</u>	

COMMENTS
<u>Tubing inlet placed at ~ 10,25'</u>

PURGE DATA	
start purge time	<u>1707</u>
time	
DTW	(ft) <u>No Parameters -</u>
purge rate	(L/min)
pH	(Units) <u>product in discharge</u>
conductivity	(umhos/cm)
temperature	(deg C) <u>line</u>
D.O.	(mg/L)
ORP	(mv)
turbidity	(NTU)
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>2A-W-11-0909</u>	<u>1715</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/27/09

Well No. 5-W-51
 Sampled By DWR
 weather clear, 80 °F

WELL INFORMATION

Depth to water	<u>8.48</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>TR</u>	(ft)
Screen interval:		
well condition:	<u>OK</u>	

COMMENTS

Tubing inlet placed at ~ 9,251

PURGE DATA

start purge time	<u>1:38</u>					
time						
DTW	(ft)	No parameters				
purge rate	(L/min)					
pH	(Units)	product in discharge				
conductivity	(umhos/cm)					
temperature	(deg C)					
D.O.	(mg/L)	line				
ORP	(mv)					
turbidity	(NTU)					
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>5-W-51-0909</u>	<u>1750</u>	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. IC-W-1
 Sampled By Ghani, S
 weather sunny 58 °F

WELL INFORMATION	
Depth to water	<u>14.23</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>No birds.</u>

COMMENTS
<u>purge water is clear.</u>
<u>Inlet tubing is 16"</u>

PURGE DATA

start purge time	<u>0855</u>					
time		<u>0905</u>	<u>0908</u>	<u>0911</u>	<u>0914</u>	
DTW	(ft)	<u>14.25</u>	<u>14.25</u>	<u>14.25</u>	<u>14.25</u>	
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	
pH	(Units)	<u>5.67</u>	<u>5.76</u>	<u>5.71</u>	<u>5.74</u>	
conductivity	(umhos/cm)	<u>0.057</u>	<u>0.057</u>	<u>0.056</u>	<u>0.054</u>	
temperature	(deg C)	<u>11.52</u>	<u>11.45</u>	<u>11.49</u>	<u>11.57</u>	
D.O.	(mg/L)	<u>5.99</u>	<u>5.57</u>	<u>5.38</u>	<u>5.22</u>	
ORP	(mv)	<u>-108.6</u>	<u>-110.4</u>	<u>-110.6</u>	<u>-112.1</u>	
turbidity	(NTU)	<u>1.49</u>	<u>1.37</u>	<u>1.18</u>	<u>0.95</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>					

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>IC-W-1-0909</u>	<u>0915</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 1C-W-8
 Sampled By C. Lani, S.
 weather sunny 61 °F

WELL INFORMATION	
Depth to water	<u>13.61</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good.</u>

COMMENTS
<u>purge water is clear.</u>
<u>Inlet tubing is 15'</u>

PURGE DATA

start purge time	<u>0935</u>				
time		<u>0945</u>	<u>0948</u>	<u>0951</u>	<u>0954</u>
DTW (ft)		<u>13.64</u>	<u>13.64</u>	<u>13.64</u>	<u>13.6</u>
purge rate (L/min)		<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>
pH (Units)		<u>5.92</u>	<u>5.92</u>	<u>5.92</u>	<u>5.93</u>
conductivity (umhos/cm)		<u>0.062</u>	<u>0.062</u>	<u>0.060</u>	<u>0.060</u>
temperature (deg C)		<u>14.56</u>	<u>14.56</u>	<u>14.64</u>	<u>14.49</u>
D.O. (mg/L)		<u>0.57</u>	<u>0.44</u>	<u>0.41</u>	<u>0.42</u>
ORP (mv)		<u>-124.5</u>	<u>-126.5</u>	<u>-125.1</u>	<u>-129.2</u>
turbidity (NTU)		<u>1.40</u>	<u>1.30</u>	<u>1.39</u>	<u>0.95</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>				

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>1C-W-8-0929</u>	<u>0955</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 1C-W-7
 Sampled By Ghani, S
 weather Sunny 80 °F

WELL INFORMATION

Depth to water	<u>12.14</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>NONE</u>	(ft)
Screen interval:		
well condition:	<u>Good.</u>	

COMMENTS

<u>purge water is cloudy</u>
<u>Inlet tubing \approx 14'</u>

PURGE DATA

start purge time	<u>1427</u>							
time		<u>1437</u>	<u>1440</u>	<u>1443</u>	<u>1446</u>	<u>1449</u>	<u>1452</u>	<u>1455</u>
DTW	(ft)	<u>12.15</u>	<u>12.15</u>	<u>12.15</u>	<u>12.15</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate	(L/min)	<u>250</u>						
pH	(Units)	<u>6.73</u>	<u>6.83</u>	<u>6.86</u>	<u>6.87</u>	<u>6.87</u>	<u>6.89</u>	<u>6.88</u>
conductivity	(umhos/cm)	<u>0.104</u>	<u>0.105</u>	<u>0.109</u>	<u>0.109</u>	<u>0.113</u>	<u>0.114</u>	<u>0.114</u>
temperature	(deg C)	<u>14.59</u>	<u>14.52</u>	<u>14.54</u>	<u>14.69</u>	<u>14.43</u>	<u>14.59</u>	<u>14.57</u>
D.O.	(mg/L)	<u>7.70</u>	<u>7.70</u>	<u>7.78</u>	<u>7.78</u>	<u>7.80</u>	<u>7.69</u>	<u>7.73</u>
ORP	(mv)	<u>-123.7</u>	<u>-123.1</u>	<u>-122.5</u>	<u>-121.4</u>	<u>-120.5</u>	<u>-120.5</u>	<u>-120.1</u>
turbidity	(NTU)	<u>6.06</u>	<u>5.84</u>	<u>4.77</u>	<u>3.18</u>	<u>1.78</u>	<u>1.93</u>	<u>1.80</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>1C-W-7-0909</u>	<u>1500</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>1C-W-7-0909</u>	<u>1520</u>	<u>n</u>	<u>n</u>	<u>n</u>	<u>n</u>
<u>Diphosphate</u>					

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 1C-W-4
 Sampled By Ghani, S
 weather Sunny 78 °F

WELL INFORMATION

Depth to water	<u>10.90</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>NONE</u>	(ft)
Screen interval:		
well condition:	<u>Good</u>	

COMMENTS

<u>purge water is clear</u>
<u>inlet tubing is 13'</u>
<u>Do unstable</u>

PURGE DATA

start purge time	<u>1326</u>							
time		<u>1336</u>	<u>1339</u>	<u>1342</u>	<u>1345</u>	<u>1348</u>	<u>1351</u>	<u>1354</u>
DTW	(ft)	<u>11.25</u>	<u>11.27</u>	<u>11.20</u>	<u>11.19</u>	<u>11.18</u>	<u>11.18</u>	<u>11.18</u>
purge rate	(L/min)	<u>250</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>
pH	(Units)	<u>5.57</u>	<u>5.62</u>	<u>5.68</u>	<u>5.72</u>	<u>5.71</u>	<u>5.69</u>	<u>5.70</u>
conductivity	(umhos/cm)	<u>0.056</u>	<u>0.056</u>	<u>0.056</u>	<u>0.055</u>	<u>0.054</u>	<u>0.054</u>	<u>0.054</u>
temperature	(deg C)	<u>11.37</u>	<u>11.24</u>	<u>11.63</u>	<u>11.60</u>	<u>11.36</u>	<u>11.30</u>	<u>11.40</u>
D.O.	(mg/L)	<u>1.10</u>	<u>0.91</u>	<u>0.67</u>	<u>0.60</u>	<u>0.54</u>	<u>0.50</u>	<u>0.50</u>
ORP	(mv)	<u>-140.3</u>	<u>-140.3</u>	<u>-140.5</u>	<u>-141.7</u>	<u>-143.5</u>	<u>-144.3</u>	<u>-145.5</u>
turbidity	(NTU)	<u>1.99</u>	<u>1.32</u>	<u>1.05</u>	<u>0.77</u>	<u>0.94</u>	<u>0.93</u>	<u>1.03</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>1C-W-4-0909</u>	<u>1355</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 1C-W-3
 Sampled By C. Harris
 weather Sunny 67 °F

WELL INFORMATION		
Depth to water	11.83	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	NONE	(ft)
Screen interval:		
well condition:	No holds	

COMMENTS
purge water is clear cloudy.
inlet tubing is 14'
water becoming more turbid.
water level drawdown.
reduced flow rate.

PURGE DATA								
start purge time	1030							
time	1040	1042	1045	1048	1051	1054	1057	1102
DTW	(ft)	12.98	12.95	12.95	12.98	13.03	13.04	13.06
purge rate	(L/min)	250	180	180	180	150	150	140
pH	(Units)	5.88	5.90	5.91	5.93	5.92	5.92	5.91
conductivity	(umhos/cm)	0.066	0.068	0.068	0.068	0.067	0.068	0.067
temperature	(deg C)	16.00	17.12	17.59	17.63	17.38	16.82	17.67
D.O.	(mg/L)	6.03	5.58	5.59	5.68	5.87	5.88	5.46
ORP	(mv)	-109.3	-108.6	-104.5	-101.5	-100.1	-99.3	-100.7
turbidity	(NTU)	High	High	High	821	584	432	351
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1C-W-3-0909</u>	<u>1145</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 09/22/09

Well No. 1C-W-3
 Sampled By Ghanis
 weather sunny 69 °F

WELL INFORMATION	
Depth to water	<u>11.83</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>No bolts</u>

COMMENTS
<u>Turbidity very High</u>

PURGE DATA									
start purge time	<u>1030</u>								
time		<u>1107</u>	<u>1112</u>	<u>1117</u>	<u>1122</u>	<u>1127</u>	<u>1132</u>	<u>1138</u>	<u>1142</u>
DTW	(ft)	<u>13.07</u>	<u>13.06</u>	<u>13.03</u>	<u>13.03</u>	<u>13.04</u>	<u>13.04</u>	<u>13.05</u>	<u>13.06</u>
purge rate	(L/min)	<u>140</u>							
pH	(Units)	<u>5.92</u>	<u>5.93</u>	<u>5.92</u>	<u>5.93</u>	<u>5.95</u>	<u>5.93</u>	<u>5.94</u>	<u>5.94</u>
conductivity	(umhos/cm)	<u>0.068</u>	<u>0.069</u>	<u>0.070</u>	<u>0.071</u>	<u>0.072</u>	<u>0.071</u>	<u>0.072</u>	<u>0.072</u>
temperature	(deg C)	<u>18.12</u>	<u>18.53</u>	<u>19.21</u>	<u>19.73</u>	<u>19.61</u>	<u>19.14</u>	<u>19.83</u>	<u>20.73</u>
D.O.	(mg/L)	<u>5.24</u>	<u>5.21</u>	<u>5.10</u>	<u>5.24</u>	<u>5.21</u>	<u>5.33</u>	<u>4.98</u>	<u>4.96</u>
ORP	(mv)	<u>-99.0</u>	<u>-96.9</u>	<u>-89.1</u>	<u>-89.4</u>	<u>-88.0</u>	<u>-84.6</u>	<u>-88.3</u>	<u>-88.8</u>
turbidity	(NTU)	<u>268</u>	<u>230</u>	<u>182</u>	<u>140</u>	<u>90.2</u>	<u>68.9</u>	<u>68.0</u>	<u>71.4</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>								

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1C-W-3-0909</u>	<u>1145</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 1C-W-2
 Sampled By Glenn S
 weather Sunny 82 °F

WELL INFORMATION	
Depth to water	<u>11.18</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>No bolts.</u>

COMMENTS
<u>purge water is clear.</u>
<u>ET inlet tubing is 1/2"</u>

PURGE DATA							
start purge time	<u>1611</u>						
time		<u>1621</u>	<u>1624</u>	<u>1627</u>	<u>1630</u>		
DTW	(ft)	<u>11.18</u>	<u>11.18</u>	<u>11.18</u>	<u>NM</u>		
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>		
pH	(Units)	<u>5.70</u>	<u>5.68</u>	<u>5.67</u>	<u>5.67</u>		
conductivity	(umhos/cm)	<u>0.074</u>	<u>0.073</u>	<u>0.073</u>	<u>0.071</u>		
temperature	(deg C)	<u>12.57</u>	<u>12.44</u>	<u>12.75</u>	<u>12.56</u>		
D.O.	(mg/L)	<u>3.93</u>	<u>3.75</u>	<u>3.67</u>	<u>3.67</u>		
ORP	(mv)	<u>-123.3</u>	<u>-125.9</u>	<u>-127.1</u>	<u>-127.0</u>		
turbidity	(NTU)	<u>1.15</u>	<u>0.49</u>	<u>0.25</u>	<u>0.04</u>		
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1C-W-2-0909</u>	<u>1635</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. GW-4
 Sampled By Ghani, S
 weather Sunny 84 °F

WELL INFORMATION

Depth to water	<u>11.22.</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>NONE</u>	(ft)
Screen interval:		
well condition:	<u>Good.</u>	

COMMENTS

<u>Inlet tubing ~ 13'</u>
<u>purge water is clear</u>

PURGE DATA

start purge time							
time	<u>1654</u>	<u>1704</u>	<u>1707</u>	<u>1710</u>	<u>1713</u>		
DTW	(ft)	<u>11.73</u>	<u>11.72</u>	<u>11.72</u>	<u>11.</u>		
purge rate	(L/min)	<u>280</u>	<u>250</u>	<u>250</u>	<u>250</u>		
pH	(Units)	<u>6.12</u>	<u>6.13</u>	<u>6.12</u>	<u>6.13</u>		
conductivity	(umhos/cm)	<u>0.093</u>	<u>0.094</u>	<u>0.094</u>	<u>0.095</u>		
temperature	(deg C)	<u>12.57</u>	<u>12.54</u>	<u>12.33</u>	<u>12.60</u>		
D.O.	(mg/L)	<u>0.99</u>	<u>0.82</u>	<u>0.76</u>	<u>0.82</u>		
ORP	(mv)	<u>-134.4</u>	<u>-135.8</u>	<u>-136.7</u>	<u>-137.4</u>		
turbidity	(NTU)	<u>0.93</u>	<u>2.44</u>	<u>2.28</u>	<u>2.46</u>		
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>GW-4-0909</u>	<u>1715</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 5-W-53
 Sampled By fm
 weather 76° sunny °F
E. Slight Breeze

WELL INFORMATION	
Depth to water	<u>830</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA

start purge time	<u>1024</u>							
time		<u>1034</u>	<u>1037</u>	<u>1040</u>	<u>1043</u>	<u>1046</u>	<u>1049</u>	<u>1052</u>
DTW	(ft)	<u>8.49</u>						
purge rate	(L/min)	<u>300</u>						
pH	(Units)	<u>6.30</u>	<u>6.29</u>	<u>6.35</u>	<u>6.33</u>	<u>6.34</u>	<u>6.35</u>	<u>6.33</u>
conductivity	(umhos/cm)	<u>93.30</u>	<u>0.096</u>	<u>0.090</u>	<u>0.096</u>	<u>0.090</u>	<u>0.091</u>	<u>0.093</u>
temperature	(deg C)	<u>16.42</u>	<u>16.83</u>	<u>17.02</u>	<u>17.16</u>	<u>17.26</u>	<u>17.29</u>	<u>17.23</u>
D.O.	(mg/L)	<u>0.42</u>	<u>0.38</u>	<u>0.38</u>	<u>0.37</u>	<u>0.35</u>	<u>0.33</u>	<u>0.34</u>
ORP	(mv)	<u>93.1</u>	<u>92.9</u>	<u>90.3</u>	<u>88.1</u>	<u>86.8</u>	<u>85.2</u>	<u>83.7</u>
turbidity	(NTU)	<u>2.17</u>	<u>10.25</u>	<u>9.14</u>	<u>6.51</u>	<u>4.56</u>	<u>2.98</u>	<u>2.69</u>
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>5-W-53-0909</u>	<u>1055</u>	NWTPH-Dx	1L Gl. Amber	2	HCl
<u>5-W-530-0909</u> (Duplicate)	<u>0955</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 5-W-18
 Sampled By FM
 weather 75 °F

WELL INFORMATION	
Depth to water	<u>9.52</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	(ft)
Screen interval:	
well condition:	<u>GOOD</u>

COMMENTS

PURGE DATA							
start purge time	<u>1430</u>						
time		<u>1440</u>	<u>1443</u>	<u>1446</u>	<u>1449</u>	<u>1452</u>	
DTW	(ft)						
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	
pH	(Units)	<u>6.58</u>	<u>6.57</u>	<u>6.56</u>	<u>6.56</u>	<u>6.56</u>	
conductivity	(umhos/cm)	<u>0.073</u>	<u>0.073</u>	<u>0.074</u>	<u>0.074</u>	<u>0.074</u>	
temperature	(deg C)	<u>13.82</u>	<u>13.86</u>	<u>13.94</u>	<u>14.00</u>	<u>13.90</u>	
D.O.	(mg/L)	<u>0.28</u>	<u>0.21</u>	<u>0.18</u>	<u>0.17</u>	<u>0.17</u>	
ORP	(mv)	<u>47.9</u>	<u>46.4</u>	<u>46.1</u>	<u>44.3</u>	<u>42.5</u>	
turbidity	(NTU)	<u>10.55</u>	<u>6.32</u>	<u>4.45</u>	<u>3.98</u>	<u>3.29</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

ms/cm

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-18-0909</u>	<u>1455</u>	<u>NWTPH-Dx (w/SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
		<u>NWTPH-Dx (w/o SGCU)</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>5-W-18-0909</u>	<u>1355</u>	<u>" "</u>	<u>" "</u>	<u>" "</u>	<u>" "</u>
<u>(duplicate)</u>		<u>" "</u>	<u>" "</u>	<u>" "</u>	<u>" "</u>
					<u>No duplicate taken</u>

(Signature)
 No duplicate taken

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/22/09

Well No. 5-W-55
 Sampled By RM
 weather 85° °F

WELL INFORMATION

Depth to water	<u>7.60</u>	(ft)
Depth of well:		(ft)
Well diameter:		(in)
Feet of water:		(ft)
Product thickness:		(ft)
Screen interval:		
well condition:		

COMMENTS

Sunny

<i>INITIAL y VERY TURBID WILL WAIT FOR TURB. TO DECREASE</i>

PURGE DATA

start purge time	<u>1614</u>						
time		<u>1624</u>	<u>1627</u>	<u>1630</u>	<u>1633</u>	<u>1636</u>	
DTW	(ft)	<u>7.72</u>	<u>7.72</u>	<u>7.72</u>	<u>7.72</u>	<u>7.72</u>	
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	
pH	(Units)	<u>6.08</u>	<u>6.01</u>	<u>5.98</u>	<u>5.99</u>	<u>5.99</u>	
conductivity	(umhos/cm)	<u>0.065</u>	<u>0.064</u>	<u>0.063</u>	<u>0.064</u>	<u>0.064</u>	
temperature	(deg C)	<u>14.73</u>	<u>14.54</u>	<u>14.36</u>	<u>14.21</u>	<u>14.22</u>	
D.O.	(mg/L)	<u>0.21</u>	<u>0.29</u>	<u>0.24</u>	<u>0.23</u>	<u>0.22</u>	
ORP	(mv)	<u>33.5</u>	<u>38.4</u>	<u>39.8</u>	<u>40.1</u>	<u>40.0</u>	
turbidity	(NTU)	<u>9.41</u>	<u>6.86</u>	<u>3.95</u>	<u>3.82</u>	<u>3.46</u>	
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>5-W-55-0909</u>	<u>1640</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

ms/cm

20F 2

2A-W-10

Time	1624
DTU	12.92
Purge Rate	0.250
pH	5.10
Conductivity	0.042
Temp	11.40
DO	0.50
ORP	157.4
Turbidity	3.44



River Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-284 Measured by: G. Sabban / F. Marshall
 Date: 9/21/09

stake ID	date	time	backsight	foresight	water level	comments
SK-1	9/21/09	1835	5.19	17.17		1C-W-2 (Toc PVC)
SK-2		1820	3.72	22.61		18-W-3 (Toc PVC)
SK-3		1722	10.82	18.18		5-W-17 (Toc PVC)
SK-4		1715		18.88		
SK-5		1758	↓	19.69		↓
ML-1	9/21/09				Dry	
ML-2						
ML-3					↓	
ML-4						

stake ID: SK# = Skykomish River gauging locations, ML# = Former Maloney Creek channel gauging locations
 all measurements in feet
 backsight: height of level above surveyed point (staff placed at PK nail)
 foresight: height of level above gauging point (staff placed in stream bed at SKx, MLx)
 water level: depth of water at gauging point

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/24/09

Well No. GW-1
 Sampled By Glenn S
 weather Sunny 67 °F

WELL INFORMATION	
Depth to water	<u>10.30</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing 2 12'</u>
<u>purge water is clear.</u>
<u>turbidity unstable.</u>

PURGE DATA

start purge time	<u>0950</u>									
time		1000	1003	1006	1009	1012	1015	1018	1021	
DTW	(ft)	<u>10.56</u>	<u>10.56</u>	<u>10.56</u>	<u>10.56</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	
pH	(Units)	<u>6.28</u>	<u>6.27</u>	<u>6.25</u>	<u>6.25</u>	<u>6.23</u>	<u>6.23</u>	<u>6.22</u>	<u>6.22</u>	
conductivity	(umhos/cm)	<u>0.104</u>	<u>0.108</u>	<u>0.110</u>	<u>0.112</u>	<u>0.112</u>	<u>0.114</u>	<u>0.117</u>	<u>0.118</u>	
temperature	(deg C)	<u>12.56</u>	<u>12.37</u>	<u>12.23</u>	<u>12.28</u>	<u>12.30</u>	<u>12.21</u>	<u>12.26</u>	<u>12.22</u>	
D.O.	(mg/L)	<u>0.27</u>	<u>0.25</u>	<u>0.24</u>	<u>0.23</u>	<u>0.26</u>	<u>0.23</u>	<u>0.26</u>	<u>0.24</u>	
ORP	(mv)	<u>-182.3</u>	<u>-182.8</u>	<u>-183.7</u>	<u>-184.3</u>	<u>-184.7</u>	<u>-184.7</u>	<u>-184.9</u>	<u>-185.1</u>	
turbidity	(NTU)	<u>8.65</u>	<u>7.51</u>	<u>4.49</u>	<u>3.02</u>	<u>2.17</u>	<u>1.59</u>	<u>1.48</u>	<u>1.54</u>	
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>								

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>GW-1-0909</u>	<u>1025</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-284-0540
 Date 9/24/09

Well No. GW-2
 Sampled By Ghani, S
 weather Sunny 61 °F

WELL INFORMATION	
Depth to water	12.65 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good.

COMMENTS
Inlet tubing ~ 14'
purge water is clear.
Collected Duplicate.
GW-20-0909.

PURGE DATA									
start purge time	0844								
time		0854	0857	0900	0903	0906	0909	0912	0915
DTW	(ft)	12.64	12.62	12.62	12.62	NM	NM	NM	NM
purge rate	(L/min)	250	250	250	250	250	250	250	250
pH	(Units)	6.34	6.28	6.25	6.25	6.24	6.24	6.24	6.23
conductivity	(umhos/cm)	0.066	0.067	0.069	0.071	0.071	0.071	0.075	0.078
temperature	(deg C)	11.01	11.02	10.94	10.85	10.79	10.78	10.81	10.83
D.O.	(mg/L)	1.72	1.20	0.99	0.86	0.94	0.99	1.05	1.09
ORP	(mv)	-140.9	-150.4	-155.0	-158.3	-160.7	-162.8	-164.2	-165.6
turbidity	(NTU)	2.11	2.23	1.98	1.39	1.16	0.98	0.81	0.73
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing								

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
GW-2-0909	0920	NWTPH-Dx	1L Gl. Amber	2	HCl
GW-20-0909 (Duplicate)	0930	''	''	2	''

Field Activity Log

Page: 1 of 1

AECOM

Project Name: Skykomish

Completed By: Ghani, S

Project Number: 01140-284-0540

Date: 07/21/09

Field Activity: Semi-annual

Weather: sunny 58°F

GW Sampling

Personnel on site: Ghani, S; Dean, Mindy, G. Fred, M.

- 0815: Arrived to the site met with Dean and waited for Fred and Mindy to join us.
- 0830: Mindy and Fred arrived and had safety meeting meeting. With warrant discussed Traffic, and sub-construction activities hazards.
- 0900: started talking about scope of work, and split tasks.
- 0945: Began setting up, and moved toward School zone to gauge.
- 1420: Finished gauging my share of wells.
- 1430: had lunch.
- 1510: back to the site (picked up cooler) from a Home.
- 1520: started calibrating equipment.
- 1545: Began setting up on 2B-W-4.
- 1600: started purging, water is clear.
- 1610: Began recording parameters.
- 1625: started collecting samples.
- 1645: Dean back from Seattle with survey equipment.
- 1715: Began surveying Sky River.
- 1830: Finished surveying river.
- 1900: left a site to Monroe Hotel.

Ghani, S

Field Activity Log

Page: 1 of 2

AECOM

Project Name: Sky
Project Number:
Field Activity: Semi-Annual
ICW Sampling
Completed By: Q. Harv. S
Date: 09/22/09
Weather: Sunny 57°F - 78°F
Personnel on site: Q. Harv. S; Dean K. Fred. M.

- 0725: Arrived to the site, and attended safety meeting conducted by warrant.
- 0745: Had meeting with Dean and Fred discussed scope of work. organized equipment, in van.
- 0820: started calibrating equipment.
- 0840: Began setting up on IC-W-1.
- 0855: started purging, water is clear.
- 0905: Began recording parameters.
- 0915: started collecting samples.
- 0925: Began setting up on IC-W-8.
- 0935: started purging, purge water is clear, started with few iron flakes.
- 0945: Began recording parameters.
- 0955: started collecting samples.
- 1005: Began setting up on IC-W-3.
- 1030: started purging, water started clear and became very turbid.
- 1040: Began recording parameters. turbidity very High.
- 1145: started sampling.
- 1220: Finished sampling, packed up, and took lunch.
- 1250: Dumped purge water into drum by Itcc building.
- 1310: started setting up on IC-W-4.
- 1326: Began purging, water is clear.
- 1336: started recording parameters. DO unstable.
- 1355: Began sampling.
- 1415: started setting up on IC-W-7.
- 1427: Began purging, water is cloudy.
- 1437: started recording parameters. turbidity unstable.
- 1500: Began sampling, also I collected Dip.
- IC-W-70-0900r @ 1520

Field Activity Log

Page: 2 of 2

AECOM

Project Name: Sky Completed By: Ghani, S
Project Number: _____ Date: 09/22/09
Field Activity: GW Sampling Weather: Sunny 82°F
Personnel on site: Ghani, S.; Deanck; Fred. H.

- 1535 : Finished sampling, went to ~~get~~ get ~~the~~ the trailer.
1600 : back to site and started setting up on LC-W-2.
1611 : Began purging, water is, after 10 min started recording parameters
1635 : Began sampling.
1650 : started setting up on GW-4.
1654 : Began purging, water is clear.
1704 : started recording parameters.
1715 : Began sampling.
1730 : Finished, packed up. Dumped purge water. helped Dean to pump purge water into tank in the building.
1800 : left a site.

~~Ghani, S~~

Field Activity Log

Page: 1 of 2

AECOM

Project Name: Sky Completed By: Ghani, S
Project Number: 01140-284-0540 Date: 09/23/09
Field Activity: GW Sampling Weather: cloudy, 58°F
Personnel on site: Ghani, S; Dean, Fred, M.

- 0715: Arrived to the site, attended AECOM meeting, conducted with log and warrant.
- 0735: organized samples in coolers, added Eco
- 0800: Began calibrating equipment.
- 0820: started setting up on 2A-W-42.
- 0831: Began purging, water is clear, started with some iron flakes.
- 0841: started recording parameters, DO unstable.
- 0900: Began collecting samples.
- 0920: started setting up on ~~2A-W-23~~ 2B-W-23.
- 0931: Began purging, water is cloudy to turbid after 10 min started recording parameters, water level dropped down 1.50'.
- 0955: ~~Began sampling~~ turned off pump at water level 19.35' to check if it recover or not.
- 1015: well recovered about 0.95' water level: 18.40', called Dean for help.
- 1035: Dean arrived to check on purge water color, which was not normal silt, not Bentonite.
- 1040: Water level reached 17.80'. started collecting grab samples without stabilizing parameters.
- 1110: Started setting up on GW-3.
- 1133: Began purging, water is clear cloudy becoming very turbid.
- 1143: started recording parameters; turbidity is high and unstable.
- 1255: Began sampling.
- 1320: Finished sampling, packed up, took lunch.
- 1345: back to site. started setting up on 4B-W-3.
- 1406: Began purging, water is cloudy.

Field Activity Log

Page: 2 of 2

AECOM

Project Name: sky

Completed By: Ghani, S

Project Number:

Date: 09/23/09

Field Activity: GW Sampling

Weather: Sunny 85°F

Personnel on site: Ghani, S, Deak, K, Fred, M.

- 1416: started recording parameters. turbidity unstable.
- 1440: Began sampling.
- 1500: started setting up on 1B-W-2.
- 1510: Began purging, water is cloudy.
- 1520: started recording parameters.
- 1555: Began sampling, after 5 min a well dried out silt came out.
- 1605: stopped a pump. a let well recover.
- 1620: resumed pumping and let all silt out from tubing and start continued sampling at lower rate 120 ml/min.
- 1645: Finished sampling, went to dump purge water.
- 1700: started setting up on 4A-W-4.
- 1716: Began purging water is clear.
- 1726: started recording parameters.
- 1740: Began sampling.
- 1800: Finished sampling, and went to dump purge water, and helped Fred sampling EW-1. cleaned up.
- 1830: Wft a site to hotel. morroe.

~~Ghani, S~~

Field Activity Log

Page: 1 of 1

AECOM

Project Name: Sky
Project Number: _____
Field Activity: Cgw - Sampling
Completed By: Ghani, S
Date: 09/24/09
Weather: sunny, 60° F.
Personnel on site: Ghani, S, Fred, M.

- 0705: Arrived to the site, Attended AECOM ~~pre~~ safety meeting.
- 0725: packed up coolers with ^{fresh} ~~new~~ ice.
- 0810: started calibrating equipment
- 0830: Began setting up on GW-2.
- 0844: started purging, water is clear.
- 0854: Began recording parameters.
- 0920: started sampling, also I collected duplicate GW-20-0909 at 0930.
- 0940: started setting up on GW-1
- 0950: Began purging, water is
- 1000: started recording parameters, turbidity unstable.
- 1025: Began sampling.
- 1045: started setting up on AA-W-5 together with Fred, carried equipment and battery back to the well location
- 1058: Began purging, water is clear.
- 1108: started recording parameters.
- 1120: Started collecting samples.
- 1200: backed up coolers in Fred's van and I packed my van with equipment, pumped purge water into AEC Tank. cleaned up
- 1300: left a site.

Ghani, S

FIELD ACTIVITY LOG

AECOM

PROJECT NAME: BNSF-Skykomish
 PROJECT NO: 01140-284
 DAY & DATE: Weds. Sept 23rd 2009

COMPLETED BY: D. Kinney
 APPROVED BY: _____
 SHEET 1 OF 2

FIELD ACTIVITY SUBJECT: Groundwater Sampling
 DESCRIPTION OF DAILY ACTIVITIES & EVENTS:

TIME	DESCRIPTION OF DAILY ACTIVITIES & EVENTS:
0650	Arrived onsite & went to site safety mtg
0700	Aecom safety mtg
0720	Talked to Fred & Ghani about days activities & then we went to FS compound to re-ice samples from yesterday and setup for this morning
0805	Calibrated Horiba meter
0825	Took equipment blank - labeled: MW-500-0909
0911	started purging 2B-W-46
0935	Sampled 2B-W-46
0955	Started purging 2B-W-45
1015	Sampled 2B-W-45 took duplicate, labeled: 2B-W-45-0909
1102	started purging 2A-W-9
1130	sampled 2A-W-9
1145	Dumped purge water & went to lunch
1235	Returned & setup on MW-3
1302	started purging MW-3
1320	sampled MW-3
1339	started purging MW-4
1400	sampled MW-4
1430	Dumped purge water & picked up bottles
1447	started purging 3-W-41
1515	sampled 3-W-41
1535	started purging 3-W-42
1600	sampled 3-W-42
1623	started purging 3-W-43
1648	sampled 3-W-43
1722	started purging MW-16

VISITORS ONSITE:

CHANGES FROM PLANS OR IMPORTANT DECISIONS:
None

WEATHER CONDITIONS:
P. Cloudy, 55-75°F

IMPORTANT TELEPHONE CALLS:
None

PERSONNEL ONSITE: Dean Kinney, Fred Merrill & Ghani Sebbane



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: 101

BNSF Project Name: Skykowlsh

BNSF Contact: Bruce Sheppard

Project State of Origin: WA

Project City: Skykowlsh

Company: AECON

Address: 710 2nd Ave, Ste 1000

City/State/ZIP: Seattle, WA 98124

Project Manager: Kate Haney

Phone: (253) 922-2310

Project Number: 01140-784-0540

Project Manager: Sarah Albano

Email: sarah.albano@aecom.com

Phone: (206) 674-9349

DELIVERABLES

BNSF Standard (Level II)

Level III

Level IV

Other Deliverables?

EDD Req. Format?

AECON

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix	LAB USE
		Date	Time				
1 ZA-W-42 - 0909	2	9/23/09	0900 GS N	N	W		
2 IB-W-23 -	2	1040					
3 IB-W-3 -	2	1440					
4 GW-3 -	2	1255					
5 IB-W-2 -	2	1555					
6 HA-W-4 -	2	1740					
7 EW-1 -	2	? PM					
8 ZA-W-40 -	2	9/24/09	0915				
9 2A-W-41 -	2	1025					
10 1A-W-5 -	2	1120					
11 GW-2 -	2	0920 GS					
12 GW-20 -	2	0930					
13 GW-1 -	2	1025					
14							
15							

LABORATORY INFORMATION

Laboratory: Test America

Address: (253) 922-2310

City/State/ZIP: Seattle, WA 98124

Project Manager: Kate Haney

Phone: (253) 922-2310

Fax:

SHIPMENT INFORMATION

Shipment Method:

Tracking Number:

Project Number: 01140-784-0540

Project Manager: Sarah Albano

Email: sarah.albano@aecom.com

Phone: (206) 674-9349

METHODS FOR ANALYSIS

NUTRI-DX W/0 SGA

Added by DINK on 9/28/09

Date/Time: 9/24/09 1420

Received By: [Signature]

Date/Time:

Received By:

Date/Time:

Received By:

Lab Remarks:

Lab: Custody Intact? Yes No

Custody Seal No.:

BNSF COC No.:

Comments and Special Analytical Requirements: [Signature]



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: Skykomish
BNSF Project Name: Skykomish
BNSF Contact: Bruce Shepard

TURNAROUND TIME
 1-day Rush
 2-day Rush
 3-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other

Laboratory: Test America
Address: (253) 922-2310
City/State/Zip: WA

Project State of Origin: WA
Project City: skykomish
Company: AECOM
Address: 710 2nd Ave, Ste 1000
City/State/Zip: Seattle, WA 98104

LAB WORK ORDER:
Project Manager: Kate Haney
Shipment Method: (253) 922-2310
Tracking Number:

SHIPMENT INFORMATION
Project Number: 01140-284-0540
Project Manager: Sarah Albano
Email: sarah.albano@aecom.com
Phone: (206) 624-9349
Fax:

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?
 EDD Req. Format?
AECOM

METHODS FOR ANALYSIS

Sample ID	Container	Date	Time	Sampler	Filtered Y/N	Type (Comp/Grab)	Mainx	Comments	Lab Use
1C-W-4	Z	9/22/09	1355	GS	N	W			
1C-W-3	Z		1145						
1C-W-2	Z		1635						
GW-4	Z		1715						
MW-30	Z		1640	DWK					
2A-W-11	Z		1715						
5-W-51	Z		1750						
2B-W-46	Z	9/23/09	0935						
2B-W-45	Z		1015						
2B-W-45D	Z		1030						
MW-5DD	Z		0825						
2A-W-9	Z		1130						
MW-3	Z		1320						
MW-4	Z		1400						
3AN-4A	Z		1515						

SAMPLE INFORMATION

Sample Identification	Containers	Date	Time	Sampler	Filtered Y/N	Type (Comp/Grab)	Mainx
1C-W-4	Z	9/22/09	1355	GS	N	W	
1C-W-3	Z		1145				
1C-W-2	Z		1635				
GW-4	Z		1715				
MW-30	Z		1640	DWK			
2A-W-11	Z		1715				
5-W-51	Z		1750				
2B-W-46	Z	9/23/09	0935				
2B-W-45	Z		1015				
2B-W-45D	Z		1030				
MW-5DD	Z		0825				
2A-W-9	Z		1130				
MW-3	Z		1320				
MW-4	Z		1400				
3AN-4A	Z		1515				

Comments and Special Analytical Requirements:

Received by: [Signature] Date/Time: 9/26/09 1420

Retinquished by: [Signature] Date/Time:

Retinquished by: [Signature] Date/Time:

Retinquished by: [Signature] Date/Time:

Lab Remarks: [Signature]

Lab: Custody Intact? Yes No

Custody Seal No. [Blank]

BNSF COC No. [Blank]



CHAIN OF CUSTODY
BNSF PROJECT INFORMATION

BNSF Project Number: skykomish
 BNSF Project Name: skykomish
 BNSF Contact: Bruce Sheppard
 Project State of Origin: WA
 Project City: skykomish
 BNSF Work Order No.: _____

TURNAROUND TIME
 1-day Rush
 2-day Rush
 Standard 10-Day
 3-day Rush
 5- to 8-day Rush
 Level III
 Level IV
 EDD Req. Format?
 Company: AECOM
 Address: 710 2nd AVE, Ste 1000
 City/State/ZIP: Seattle, WA 98104
 Project Manager: Kate Hannay
 Phone: (206) 624-9249
 Email: Sarah Albano
 Project Number: 01140-284-0540
 Tracking Number: _____
 Shipment Method: _____
 Shipment Information: _____

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix	LAB USE
		Date	Time				
S1-AD -0909	Z	9/2/09	0855	N	Dnk	W	
S1-AU -	Z		0910				
S1-BD -	Z		0925				
S1-BU -	Z		0935				
S2-BD -	Z		1035				
S2-BU -	Z		1045				
S2-AD -	Z		1005				
S2-AU -	Z		1015				
S2-BU -	Z		1055				
S3-AD -	Z		1225				
S3-AU -	Z		1235				
S3-BD -	Z		1250				
S3-BU -	Z		1330				
S3-CD -	Z		1355				
S3-CW	Z		1405				

METHODS FOR ANALYSIS
 NMTPH-DX
 W/D SCU

DELIVERABLES
 Other Deliverables?
 BNSF Standard (Level II)
 Level III
 Level IV
 Company: AECOM

Comments and Special Analytical Requirements:
Extra Sample for Lab Use

Relinquished By: [Signature]
 Date/Time: September 14 2009
 Received By: _____
 Date/Time: _____
 Relinquished By: _____
 Date/Time: _____
 Received By: _____
 Date/Time: _____
 Lab Remarks: _____
 Lab Custody Intact? Yes No
 Custody/Seal No.: _____
 BNSF COC No.: _____

ENSR | AECOM Field Activity Log

Page: of

Project Name: SKY M. G.W. G. Completed By: Ghani

Project Number: Date: 10/14/08

Field Activity: Monthly G.W. gauging Weather: cloudy

Personnel on site: Ghani & Fred M

6:50: Arrived to the site. attended. strider.
 safety meeting
 7:15: Had ENSR. safety meeting with Aaron A. Gray
 Clark L.
 7:45: Discussed with Fred work plan.
 8:15: started gauging wells, Fred and I separately
 10:45: started gauging product wells together.
 with Fred. 2A-W-4. was heavy product
 and we pumped it to get the water level.
 2A-W-3 not located. buried under gravel pad.
 13:00: cleaned up and left a site.

Ghani

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	DTW (TOC-PVC) Creek	LNAPL Thickness	Method	9/22/2008		8/27/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	10/14/08	0902		12.95				13.59		13.02			
MW-2	10/14/08	0854		12.56				13.28		12.65			
MW-3	10/14/08	0851		9.63				11.19		8.27			
MW-4	10/14/08	0933		9.38				10.72		9.48			
MW-5	10/14/08	0843		7.25				8.25		7.47			
MW-9	10/14/08	0921		12.78				13.49		12.49			
MW-10	10/14/08	0916		12.93				13.65		12.9			
MW-11	10/14/08	0907		13.80				14.46		13.84			Strong smell on prob. (sketch)
MW-12	10/14/08	0930		6.25				6.95		6.26			
MW-13	10/14/08	0836		10.28				10.99		10.3			
MW-14	10/14/08	0833	13.5	12.15				12.95		12.27			
MW-15	10/14/08	0830		13.19				14.19		13.34			
MW-18	10/14/08	0927		14.90				15.63		14.91			
MW-40	10/14/08	0825		12.72				13.71		12.9			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	9/22/2008		8/27/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	10/14/08	11:55		12.91	None	None	T&P	13.88	None	12.87	None		14-1.09
MW-17	10/14/08			NM			T&P	NM	NM	NM	NM		Casing adjusted to Flush-mount
2A-W-3	10/14/08			NM			T&P	11.68	Trace	10.55	Trace		Not located.
2A-W-11	10/14/08	10:30		8.10		Trace	T&P	8.79	Trace	8.07	H-Trace		9.0 - 2.90
MW-39	10/14/08	9:46		9.61	None	None	T&P	10.33	None	9.63	None		11.00 - 1.39
2A-W-4	10/14/08	11:45		11.75	10.82	0.93	T&P Pump	11.55	H-Trace	10.85	H-Trace		Pump

Other Notes: 11:45

P = 11 - 0.18

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well

- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	DTW (TOC-PVC) Creek	LNAPL Thickness	Method	9/22/2008		8/27/2008		Sign Off	Comments
								DTW (ft)	DTW PVC	DTW (ft)	DTW PVC		
2A-W-5	10/14/08	9:35		13.45				14.3		13.55			
2A-W-7	10/14/08	11:45		11.83				12.39		11.87			Well Located
2A-W-9	10/14/08	09:12		10.28				11.39		10.52			
2A-W-10	10/14/08	08:02		10.46				11.96		10.3			
2B-W-4	10/14/08	08:34		3.51				4.49		3.52			
2B-W-11	10/14/08	08:49		2.89	Dry			4.39	Dry	2.83			
2B-W-12	10/14/08	08:38		6.00	Dry			7.7	Dry	5.8			
2B-W-13	10/14/08	09:06		5.68	Dry			7.04	Dry	5.97			
2B-W-14	10/14/08	09:03		4.63	Dry			5.7	Dry	4.8			
2B-W-15	10/14/08	09:21		6.49	Dry			7.21	Dry	NM			Meter Stuck in the PVC
2B-W-19	10/14/08	08:25		7.36				8.32		7.35			
2B-W-21	10/14/08	08:15		9.25				10		9.22			
2B-W-30	10/14/08	9:58		11.56				12.26		11.51			
2B-W-32	10/14/08	08:21		7.94				8.82		7.93			
2B-W-33	10/14/08	08:53		10.31				11.81		10.12			
2B-B-21	10/14/08	09:26		6.01				6.8		6.12			

ENSR | AECOM Field Activity Log

Page: of

Project Name: Skykomish Completed By: Bhan
Project Number: _____ Date: 11/10/08
Field Activity: GW. monthly Weather: Rain, 48°F
Gauging Personnel on site: Bhan's, Jesse-K.

7:30 : Arrived to sky. Waited for jesse

8:00 : jesse on site conducted safety meeting.
With jesse and Aaron-H.

8:30 : Gathered all equipment we need from store room.
split job between jesse and started
gauging.

11 : started gauging product wells together with
jesse and I.

12:30 : Done gauging. returned equipment. cleaned
up.

13:00 : I took off, jesse stayed there for drilling.

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-204-0340
 Collected by: Jesse Waknitz and Abel Ighani Setbani
 Date: 11/10/08

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	DTW (TOC-PVC) Creek	LNAPL Thickness	Method	10/14/2008		9/22/2008		Sign Off	Comments
								DTW (ft)	DTW/PVC	DTW (ft)	DTW/PVC		
2A-W-5	11/10/08	1006		10.25				13.45		14.3			
2A-W-7	11/10/08	1030		9.90				11.83		12.39			Well Located
2A-W-9	11/10/08	711		7.59				10.28		11.39			
2A-W-10	11/10/08	930		7.91				10.46		11.96			
2B-W-4	11/10/08	905		0.91				3.51		4.49			
2B-W-11	11/10/08	940		0.45	0.45			2.89	Dry	4.39	Dry		
2B-W-12	11/10/08	935		3.47	3.47			6	Dry	7.7	Dry		
2B-W-13	11/10/08	920		3.22	2.90			5.68	Dry	7.04	Dry		
2B-W-14	11/10/08	910		2.12	1.97			4.63	Dry	5.7	Dry		
2B-W-15	11/10/08	1020		3.42				6.49	Dry	7.21	Dry		
2B-W-19	11/10/08	950		4.16				7.36		8.32			
2B-W-21	11/10/08	849	-	6.57				9.25		10			
2B-W-30	11/10/08	1015		8.53				11.56		12.26			
2B-W-32	11/10/08	855		5.15				7.94		8.82			
2B-W-33	11/10/08	1000		7.17				10.31		11.81			
2B-B-21	11/10/08	1015		3.02				6.01		6.8			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	DTW (TOC-PVC) Creek	LNAPL Thickness	Method	10/14/2008		9/22/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	11/10/08	0948		10.44				12.95		13.59			big head for ground
MW-2	11/10/08	0943		9.62				12.56		13.28			
MW-3	11/10/08	0939		6.70				9.63		11.19			
MW-4	11/10/08	0935		6.62				9.38		10.72			
MW-5	11/10/08	0928		4.47				7.25		8.25			
MW-9	11/10/08	1011		9.82				12.78		13.49			
MW-11	11/10/08	0952		10.50				12.93		13.65			product smell on probe
MW-10	11/10/08	1003		9.74				13.8		14.46			
MW-12	11/10/08	0918		3.06				6.25		6.95			
MW-13	11/10/08	0913		7.53				10.28		10.99			iron stain on probe
MW-14	11/10/08	0910	13.5	9.50				12.15		12.95			
MW-15	11/10/08	0903		10.60				13.19		14.19			
MW-18	11/10/08	1000		11.79				14.9		15.63			
MW-40	11/10/08	0858		10.15				12.72		13.71			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	10/14/2008		9/22/2008		Sign Off	Comments
								DTW (ft)	Prod Thick (ft)	DTW (ft)	Prod Thick (ft)		
MW-7	11/10/08	1101		10.10		NONE	TP	12.91	None	13.88	None		11 - 0.9
MW-17	11/10/08			NM				NM	NM	NM	NM		burled.
2A-W-3	11/10/08	1220		7.95		Heavy Trace	TP	NM	NM	11.68	Trace		9 - 10.5
2A-W-11	11/10/08	1105		4.99		L. Trace	TP	8.1	Trace	8.79	Trace		6 - 1.61
MW-39	11/10/08	1051		6.89		NONE	TP	9.61	None	10.33	None		7 - 0.11
2A-W-4	11/10/08	1145		8.09 8.09		Heavy Trace	TP	11.75	0.93	11.55	H-Trace		9 - 0.91

Other Notes:

- clean well - north (town) half
- clean well - south (railyard) half
- dirty casing, possible trace product
- dirty well

- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

FA
plenty

Fluid Level Gauging Form

Project Name: BNSF Skykomish Number: 01140-204-0340 Project Number: 01140-204-0340 Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	9/15/2008		6/23/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
1A-W-5	12/16/08	1455		9.65				10.22		7.98		GS	
5-W-13				NI				NI		NI			
5-W-14		1418		9.21				9.66		7.60		DWR	
5-W-15		1338		7.70				8.15		6.19		GS	
5-W-16		1440		8.00				8.43		6.45		DWK	
5-W-17		1439		7.38				7.79		5.77		GS	
5-W-18		1407		7.52				7.91		5.92			
5-W-19		1432		7.45				7.82		5.82			
5-W-20		1415		7.02				7.41		5.44			
5-W42		1421		6.70				NM		NM			
5-W-1		1420		7.76		None	TAP	9.63	Tr	6.48	Trace	FM	10-2,24
5-W-3		1340		6.95		Hvy Tr		7.95	Hvy Tr	5.26	Trace		8-105
MW-22		1231		5.43		TR		8.22	Hvy Tr	6.46	Hvy Tr		6-0,57
MW-36		1434		7.36		TR		8.52	Tr	6.45	Hvy Tr		8-0,64

Other Notes:

- dirty casing, possible trace product
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)
- dirty well

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0340 Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	12/16/2008	1107		11.92				10.25		13.45		GS	
2A-W-7		1325		NM				9.92		11.83		DWC	Couldn't get cover off
2A-W-9		0950		8.57				7.59		10.28			
2A-W-10		0936		8.66		DTW (Crack)		7.91		10.46			
2B-W-4		1215		1.93		(G+)		0.91		3.51			
2B-W-11		1339		NM		0.88		0.45		2.89			Ice in casing @ 2.8'
2B-W-12		1324		4.21		3.55		3.47		6.00			
2B-W-13		1349		NM		3.22		3.22		5.68			Ice in casing @ 2.8'
2B-W-14		1341		NM		~2.2		2.12		4.63			" " " " " 1.7'
2B-W-15		1248		NM		~2.6		3.42		6.49			Dry at 4.2'
2B-W-19		1200		5.63				4.16		7.36			
2B-W-21		1220		7.71				6.57		9.25			
2B-W-30		1307		9.85				8.53		11.56			
2B-W-32		1205		6.37				5.15		7.94			
2B-W-33		0923		8.06				7.17		10.31			
2B-B-21		1245		4.11				3.02		6.01			
2B-W-45		1235		9.95				NM		NM			
2B-W-46		1228		9.87				NM		NM			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	12/16/2008	1145		12.07				10.44		12.95		GS	
MW-2		1138		11.59				9.62		12.56			
MW-3		1132		9.15				6.70		9.63			
MW-4		1123		7.44				6.62		9.38			
MW-5		1053		5.61				4.47		7.25			
MW-9		1201		11.35				9.82		12.78			
MW-10		1155		11.48				9.74		12.93			
MW-11		1209		12.75		TR		10.50		13.80			
MW-12		1041		4.29				3.06		6.25			
MW-13		1028		8.51				7.53		10.28			
MW-14		1021	13.5	10.43				9.50		12.15			
MW-15		1003		11.44				10.60		13.19			
MW-16		1232		12.65				NM		NM			
MW-18		1115		13.53				11.79		14.90			
MW-26		1244		9.32				NM		NM			
MW-38		-		NM				NM		NM			Well destroyed
MW-40		1014		11.02				10.15		12.72			
1A-W-2		1449		13.17		Hvy Tr	TAP	NM		NM		FM	14-0.83
1B-W-2		1513		13.53				NM		NM		FM	
1B-W-3		1457		14.92				NM		NM		FM	
1C-W-2		1511		9.48				NM		NM		GS	
1C-W-2		-		-				NM		NM		-	
5-W-2		1340		6.22		Hvy Tr	TAP	NM		NM		FM	20-1.08
5-W-3		1340		6.25		Hvy Tr	TAP	NM		NM		FM	8-1.05

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	11/10/2008		10/14/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	12/16/2008			9.56				NM		NM		AH	
P-2U				9.80				NM		NM			
P-2D				7.09				NM		NM			
P-3U				7.14				NM		NM			
P-3D				10.71				NM		NM			
P-4U				8.50				NM		NM			
P-4D				16.59				NM		NM			
P-5U				9.85				NM		NM			
P-5D				13.30				NM		NM			
P-6U				8.54				NM		NM			
P-6D				12.52				NM		NM			
P-7U				7.98				NM		NM			
P-7D				12.50				NM		NM			
P-8				10.58				NM		NM			
HCC-RW-01				10.81				NM		NM			
HCC-RW-02								NM		NM			
HCC-RW-03								NM		NM			
HCC-RW-04								NM		NM			
HCC-RW-05								NM		NM			
HCC-RW-06								NM		NM			
HCC-IW-01								NM		NM			
HCC-IW-02								NM		NM			
MW-7		1020		6.58				NM		NM			
MW-17		1134		9.34				10.10	None	12.91	None	FM	12-0.95
2A-W-3		1003		8.93				NM		NM			10-1.07
2A-W-11		1034		8.83				7.95	Tr	NM			10-1.17
MW-39		1155		6.29				4.99	Hwy Tr	2.89	Hwy Tr		7-0.21
2A-W-4		1546		7.73				6.89	Tr	9.61	Tr		5-1.27
				10.34				8.09	Hwy Tr	11.75	Hwy Tr		10-0.68

Other Notes:

- clean well - north ('town') half
- clean well - south ('rallyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)



River Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0350 Measured by: G. Sabban/D. Kinney

stake ID	date	time	backsight	foresight	water level	comments
SK-1	17/10/08	1619	4.38	15.08		Used IC-W-2 for backsight
SK-2		1608	3.91	21.31		
SK-3		1555	10.30	16.52		Used SK-17 for backsight
SK-4		1545		16.93		
SK-5		1541	↓	18.83		
ML-1						
ML-2						
ML-3						
ML-4						

stake ID: SK# = Skykomish River gauging locations, ML# = Former Maloney Creek channel gauging locations

all measurements in feet

backsight: height of level above surveyed point (staff placed at PK nail)

foresight: height of level above gauging point (staff placed in stream bed at SKx, MLx)

water level: depth of water at gauging point

SK-17 = 10.30 at 1530

IC-W-2 =

ENSR ~~REGION~~ Field Activity Log

Project Name: SKYKOMISH Completed By: Ghani
Project Number: _____ Date: 12/16/08
Field Activity: Gauging and GW sampling Weather: Clear icy 29° F
Personnel on site: Ghani, S; Dean, K; Fred, M. Aron, H; Greg, B.

- 7:50 : Arrived to the site, met with Fred and Greg.
- 8:20 : Dean arrived and had safety meeting, discussed hazards may face, could, ice. Discussed also scope of work
- 9:00 : put on PPE, prepared equipment
- 9:15 : started gauging. Due to cold weather, the locks of stick up wells were frozen, and flash mount wells as well frozen water inside the space between PVC, still carrying, we spent lot of time to take ice off the wells.
- 15:00 : Finished gauging all well, except product wells. Fred and Greg, were still gauging.
- 15:30 : Started surveying Sky river, and took measurement of Sky SK-1, 2, 3, 4, 5.
- 16:30 : finished survey, packed up
- 17:00 : Fred and Greg, took off, Dean and I went to the House and had dinner at a hist liq post.

Ghani

ENSR ~~ARCON~~ Field Activity Log

Page: 2 of 3

Project Name: SKY Completed By: Ghanis
Project Number: _____ Date: 12/17/08
Field Activity: GW. Sampling Weather: snow 19 F°
Personnel on site: Ghanis; Dean.K.

- 06:30: Started setting recording equipment.
07:15: Began calibrating equip.
08:00: started setting up on SW-42.
08:20: started purging.
08:30: Began recording parameters.
08:55: started collecting samples also I collected blind dup SW-420-120.
09:35: started setting up on SW-20.
09:48: Began purging.
09:59: started recording parameters.
10:25: Began collecting samples.
10:45: finished sampling.
10:50: started setting up on SW-19.
11:00: Began purging.
11:10: started recording parameters.
11:25: Began collecting samples.
11:40: finished sampling. and went to dump a purge water into a drum. also I took dean's purge water as well.
12:10: started setting up on SW-14.
12:25: Began purging.
12:35: started recording parameters.
12:50: Began collecting samples.
13:05: Done sampling. went to store sleep to bring more bottles.
13:30: Began setting up on SW-16.
13:50: started purging.
14:00: Began recording parameters.

ENSR ~~ALCOHOL~~ Field Activity Log

Project Name: Sky
Project Number:
Field Activity: GW-Sampling

Completed By: Ghani
Date: 12/17/08
Weather: Snow - 19°F.
Personnel on site: Ghani, Dean, K.

1410: started collecting samples.
1430: Done sampling.
1445: Started setting up on MW-18.
1510: started purging.
1520: Began recording parameters.
1545: started collecting samples, also
we collected Dup: MW-180-1208 @ 1550.
16:10: Finished sampling, and started packing
up, and cleaning up. Dumped purge
water into drum.
17:25: Took off. From sky.

Ghani

Fluid Level Gauging Form

Project Name: BNSF Skykomish

Project Number: 01140-204-0340

Collected by:

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	12/16/2008		11/10/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	01/22/09	1345		11.55				11.92		10.25		DNK	
2A-W-7				NM				NM		9.92		DNK	Buried under snow
2A-W-9		1015		8.22				8.57		7.59		DNK	
2A-W-10		1012		8.36				8.66		7.91		DNK	
2B-W-4				NM				1.93		0.91		DNK	Buried under snow
2B-W-11		1240		3.45				NM		0.45		DNK	
2B-W-12		1237		3.97				4.21		3.47		DNK	
2B-W-13		1219		5.54				NM		3.22		DNK	
2B-W-14		1217		3.32				NM		2.12		DNK	
2B-W-15		1020		by 6.1'				NM		3.42		DNK	
2B-W-19				NM				5.63		4.16		DNK	Buried under snow
2B-W-21				NM				7.71		6.57		DNK	Buried under snow
2B-W-30		1349		9.67				9.85		8.53		DNK	
2B-W-32		1149		6.21				6.37		5.15		DNK	Chipped ice from inside
2B-W-33		1005		9.68				8.06		7.17		DNK	Buried under snow
2B-B-21				NM				4.11		3.02		DNK	
2B-W-45		1204		9.71				9.95		NM		DNK	
2B-W-46				NM				9.87		NM		DNK	Buried under snow

① 1245 North Staff gauge 0.80 for Elevation 922.24
 ② ↗ 1247 Mid 1.32 921.68
 ③ ↘ 1249 South 1.05 922.04

MRS. W. W. W.

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	12/16/2008		11/10/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	01/22/09	1341		11.73				12.07		10.44		DWK	
MW-2		-		NM				11.59		9.62		DWK	Buried under snow
MW-3		-		NM				9.15		6.70		DWK	Buried under snow
MW-4		1407		3.00				7.44		6.62		DWK	
MW-5		-		NM				5.61		4.47		DWK	Buried under snow
MW-9		1326		11.01				11.35		9.82		DWK	
MW-10		1330		11.11				11.48		9.74		DWK	
MW-11		-		NM				12.25		10.50		DWK	Buried under snow
MW-12		1018		3.71				4.29		3.06		DWK	Buried under snow
MW-13		-		NM				8.51		7.53		DWK	Buried under snow
MW-14		-	13.5	NM				10.43		9.50		DWK	
MW-15		1412		11.13				11.44		10.60		DWK	
MW-16		-		NM				12.65		NM		DWK	Buried under snow
MW-18		1333		13.19				13.53		11.79		DWK	
MW-26		-		NM				9.32		NM		DWK	Buried under snow
MW-38		-		NM				NM		NM		DWK	
MW-40		1471		10.68				11.02		10.15		DWK	
1B-W-2		1440		13.40				13.53		NM		DWK	
1B-W-3		1451		14.90				14.92		NM		DWK	
1C-W-2		1424		9.01				9.48		NM		DWK	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	12/16/2008		11/10/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	01/22/09							9.56		NM			
P-2U								7.09		NM			
P-2D								9.80		NM			
P-3U								7.14		NM			
P-3D								10.21		NM			
P-4U								8.50		NM			
P-4D								16.59		NM			
P-5U								9.85		NM			
P-5D								13.30		NM			
P-6U								8.54		NM			
P-6D								12.52		NM			
P-7U								7.98		NM			
P-7D								12.56		NM			
P-8								10.58		NM			
HCC-RW-01								10.81		NM			
HCC-RW-02								NM		NM			
HCC-RW-03								NM		NM			
HCC-RW-04								NM		NM			
HCC-RW-05								NM		NM			
HCC-RW-06								6.58		NM			
HCC-IW-01								9.34		NM			
HCC-IW-02								8.38		NM			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	12/16/2008		11/10/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	1/22/09			NM			-	11.05	None	10.10	None	DNK	Buried under snow
MW-17		1332		NM			-	8.93	Tr	NM		DNK	Buried under snow
2A-W-3				NM			-	8.83	Hvy Tr	7.95	Tr	DNK	Buried under snow
2A-W-11		1224		59.25"	TR	TR	T&P	6.29	Tr	4.99	Hvy Tr	DNK	Buried under snow
MW-39		1229		7.5"	N/A	N/A	T&P	7.73	None	6.89	Tr	DNK	
1A-W-2				NM			-	13.17	Hvy Tr	NM		DNK	Buried under snow
5-W-2				NM			-	6.92	Hvy Tr	NM		DNK	Buried under snow
5-W-3				NM			-	6.95	Hvy Tr	NM		DNK	Buried under snow
2A-W-4				NM			-	10.32	Tr	8.09	Hvy Tr	DNK	Buried under snow

7.5' x 7.5'

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Ghani:

Please enter into
Skykomish database

1308 JAN 22, 2009
 4113 GPM
 294290
 When you have
 time,
 Dear:

P-1 9.50
 FWJ 9.18
 P-20 10.02
 P-20 6.88
 PW-01 8.83
 WV 10.11
 RW-06 6.77
 P-30 6.96 product T&P.
 P-3D 10.37
 P-4U 8.30
 P-41D 16.78
 IW-02 8.17
 P-5D 13.49
 P-5U 9.69
 PW-03 13.85
 CV 14.32
 RW-01 11.04
 P-6D 12.72
 P-6U 8.30
 P-7U 7.76
 P-7D 12.58
 PW-04 14.20
 IW-01 9.30
 EV 9.62
 P-8 10.41

JUST TURNED
 OFF WITH
 I WAS HERE

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0340 Collected by: Chan, Sebene and Melver

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	1/22/2009		12/16/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	02/17/09	12:02		12.65				11.55		11.92			
2A-W-7	02/20/09	15:12		11.54				NM		NM			
2A-W-9		10:02		9.01*				8.22		8.57			
2A-W-10		10:07		9.05				8.36		8.66			
2B-W-4		10:55		2.45				NM		1.93			under snow
2B-W-11		10:12		3.33	0.55			3.45	0.52	NM			
2B-W-12		10:10		4.53	3.83			3.97	3.61	4.21			
2B-W-13		09:58		3.73	3.20			5.54	3.13	NM			
2B-W-14		09:52		2.40	2.10			3.32	2.02	NM			
2B-W-17				NM				NM		NM			ice in tube
2B-W-18		11:25		4.71	DRY			NM		5.63			
2B-W-21		10:37		8.19				NM		7.71			
2B-W-30		12:14		10.67				9.67		9.85			
2B-W-32				14M				6.21		6.37			ice in tube
2B-W-33		10:25		8.59				9.68		8.06			
2B-B-21				NM				NM		4.11			buried under snow
2B-W-45		11:15		10.04				9.71		9.95			
2B-W-46		11:07		10.14				NM		9.87			

10/14/09 - 11:05

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	1/22/2009		12/16/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	02/27/09	11:47		12.47				11.73		12.07			
MW-2	02/24/09	11:43		12.31				NM		11.59			
MW-3		11:37		8.51				NM		9.15			
MW-4		11:33		7.25				7		7.44			
MW-5				NM				NM		5.61			Buried under snow
MW-9		12:08		11.90				11.01		11.35			
MW-10		11:58		12.08				11.11		11.48			
MW-11				NM				NM		12.25			Buried under snow
MW-12		11:23		4.40				3.71		4.29			
MW-13		12:38		8.59				NM		8.51			
MW-14		12:36	13.5	10.67				NM		10.43			
MW-15		12:28		11.95				11.13		11.44			
MW-16		12:50		12.90				NM		12.65			
MW-18		11:51		14.16				13.19		13.53			NO CAP
MW-26		12:58		9.75				NM		9.32			
MW-38				NM				NM		NM			well destroyed
MW-40		12:33		11.45				10.68		11.02			
1B-W-2		14:48		12.72				13.40		13.53			
1B-W-3		14:42		14.60				14.90		14.92			
1C-W-2		15:20		9.75				9.01		9.48			

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	1/22/2009		12/16/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	02/27/09	16:26		8.80				9.5		9.56			
P-2U		16:50		6.67				6.88		7.09			
P-2D		16:40		8.91				10.02		9.80			
P-3U		17:10		6.52		H.T.	TT	6.96	Trace	7.14	Trace		7-0-48
P-3D		16:53		16.63	9.8			10.37		10.21			
P-4U		17:10		8.12				8.30		8.50			
P-4D		17:15		17.16				16.78		16.59			
P-5U		17:24		10.82				9.69		9.85			
P-5D		17:22		13.87				13.49		13.30			
P-6U		17:32		8.73				8.3		8.54			
P-6D		17:30		13.00				12.72		12.52			
P-7U		17:39		7.86				7.76		7.98			
P-7D		17:57		11.23				12.58		12.56			
P-8		17:44		9.89				10.41		10.58			
HCC-RW-01				NM				11.04		10.81			
HCC-RW-02				NM				NM		NM			
HCC-RW-03				NM				NM		NM			
HCC-RW-04				NM				NM		NM			
HCC-RW-05				NM				NM		NM			
HCC-RW-06		17:18		3.13				NM		NM			
HCC-IW-01		16:15		9.22				6.77		6.58			
HCC-IW-02		17:40		8.43				9.3		9.34			
HCC-IW-02				8.43				8.17		8.38			

I.W.V.E. = 9.22
 VE pump = 9.08
 I.W.V.W. = 8.43
 C. Pump P3 = 14.24
 C.V. = 15.74
 EV = 11.08 From Gate Vault.
 E Pump H = 14.20
 W.V. = 10.48 at 1756.

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	1/22/2009		12/16/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	02/27/09	15:41		11.18		NONE		NM		11.05	None		12-0-02
MW-17				NM				NM		8.93	Tr		buried under I.C.
2A-W-3				NM				NM		8.83	Hwy Tr		snow
2A-W-11		15:34		6.12		1-Track	TP	5.77		6.29	Tr		7-0-08
MW-39		15:30		7.65		ALAN/E	TP	7.42		7.73	None		8-0-05
1A-W-2				NM				NM		13.17	Hwy Tr		snow
5-W-2				NM				NM		6.92	Hwy Tr		snow
5-W-3				NM				NM		6.95	Hwy Tr		snow
2A-W-4				NM				NM		10.32	Tr		buried under gravel

Other Notes:

- clean well - north ('town') half
- clean well - south ('rallyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	03/23/09	1215		8.49				8.80		9.50		GS	
P-2U		1220		5.78				6.67		6.88			
P-2D		1219		8.54				8.91		10.02			
P-3U		1227		6.09	TR		TOP	6.52	TR	6.96	TR		7-091'
P-3D		1225		9.15				9.80		10.37			
P-4U		1233		7.64				8.18		8.30			
P-4D		1232		18.44				17.16		16.78			
P-5U		1237		9.39				10.82		9.69			
P-5D		1236		13.18				13.87		13.49			
P-6U		1254		8.09				8.73		8.30			
P-6D		1252		12.31				13.00		12.72			
P-7U		1306		7.67				7.86		7.76			
P-7D		1304		11.20				11.23		12.58			
P-8	PZ1	1302		9.65				9.89		10.41			
HCC-RW-01		1240		10.72				NM		11.04			
HCC-RW-02		1243		11.74				NM		NM			
HCC-RW-03		1244		11.69				NM		NM			
HCC-RW-04		1256		6.03				NM		NM			
HCC-RW-05		1317		6.53				NM		NM			
HCC-RW-06		1222		6.48				7.13		6.77			
HCC-IW-01		1303		9.68				9.22		9.30			
HCC-IW-02		134		8.03				8.43		8.17			

FWV
 WV
 CV
 EV
 PW01
 PW02
 PW03

1217
 1224
 1239
 1300
 1221
 1238
 1303

9.11
 9.79
 14.00
 10.48
 8.52
 13.54
 14.60

8.49
 5.78
 8.54
 6.09
 9.15
 7.64
 18.44
 9.39
 13.18
 8.09
 12.31
 7.67
 11.20
 9.65
 10.72
 11.74
 11.69
 6.03
 6.53
 6.48
 9.68
 8.03

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	Prod. Thick. (ft)		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
1A-W-3	3/23/09	0945		8.02	None		T&P				1
2A-W-3				NM							Measurement covered
2A-W-11		0850		6.09	None		T&P				7-0.91'
MW-28		0922		13.17							14-0.83'
MW-39		0837		7.57	None		T&P				8-0.43'
2A-W-4		1154		9.00	Hvy TR		T&P				10-1.0'
5-W-1				NM							Well Abandoned
5-W-2		1117		6.87	Hvy TR						8-1.13'
5-W-3		1136		6.87	TR						8-1.13'
MW-22		1024		7.45	Hvy TR		T&P				8-0.55'
MW-36		0936		7.30	TR		T&P				8-0.70'

Other Notes:

- clean well - north ('town') half
- clean well - south ('railroad') half
- dirty casing, possible trace product
- dirty well

use water level meter (WL)
 use water level meter (WL)
 use tape and paste (TP)
 use tape & paste (TP) + peristaltic pump (PP)

DTW(ft) 91
 5-W-51 3/23/09 6.85 Hvy Trace Product

Fluid Level Gauging Form

Project Name: BNSF Skykomish

Project Number: 01140-204-0340

Collected by: D. Kinney

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
							DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	03/23/09	1007		11.92			12.65		11.55		DNK	
2A-W-7		1059		11.27			11.54		NM			
2A-W-9		0924		8.56			9.01		8.22			
2A-W-10		1129		8.77			9.05		8.36			
2B-W-4		1156		2.11			2.45		NM			
2B-W-11		1226		1.11	0.66		3.45		3.33			
2B-W-12		1223		4.33			4.55		3.97			
2B-W-13		1233		3.62			3.73		5.54			
2B-W-14		1230		2.31			2.40		3.32			
2B-W-15		1024		4.22			Dry		Dry			
2B-W-19		1141		6.06			NM		NM			
2B-W-21		1049		3.81			8.29		NM			
2B-W-30		1010		9.77			10.67		9.67			
2B-W-32		1143		6.67			NM		6.21			
2B-W-33		1122		7.87			8.39		9.68			
2B-B-21		1200		7.75			NM		NM			
2B-W-45		1206		9.97			10.24		9.71			
2B-W-46		1203		9.40			10.14		NM			

Staff Gauges:

North 0.71'
 Mid 1.21'
 South 0.97'

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	03/23/09	0944		17.24				12.67		11.73		DWK	
MW-2		0934		11.85				12.31		NM			
MW-3		0927		8.47				8.51		NM			
MW-4		0931		7.32				7.25		7.00			
MW-5		0928		5.53				NM		NM			
MW-9		0959		11.05				11.90		11.01			
MW-10		0950		11.34				12.08		11.11			
MW-11		0950		NM				NM		NM			Buried under snow
MW-12		1023		4.00				4.40		3.71			
MW-13		0906		8.19				8.59		NM			
MW-14		0911	13.5	10.12				10.69		NM			
MW-15		0913		11.15				11.95		11.13			
MW-16		1016		12.46				12.90		NM			
MW-18		0947		13.49				14.16		13.19			
MW-26				NM				9.79		NM		↓	Abandoned
MW-38 R		0956		4.26				NM		NM		FM	
MW-40		0915		10.70				11.45		10.68		DWK	
1B-W-2		0929		13.11				12.72		13.40		FM	
1B-W-3		0920		14.68				14.60		14.90		↓	
1C-W-2		0914		9.61				9.75		9.01		↓	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		1/22/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	03/23/09	0828	1	10.75	None		TAP	11.18	None	NM		GS	12-1.25'
MW-17		0903		8.69	Hvy TR		TAP	NM		NM			9-0.31'
2A-W-3		-		NM			-	NM		NM			Buried under steel plate
2A-W-11		0852		6.09	None		TAP	6.12	Tr	5.77	Hvy Tr		7-0.91'
MW-39		0837		7.57	None			7.65	None	7.42	Tr		8-0.43'
1A-W-2		0954		13.11	Hvy TR			NM		NM			14-0.80'
5-W-2		1117		6.87	Hvy TR			NM		NM			8-1.13'
5-W-3		1136		6.87	TR			NM		NM			8-1.13'
2A-W-4		1154		9.00	Hvy TR		↓	NM		NM		↓	10-1.00

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Field Activity Log

Page: of

AECOM

Project Name: Skykomish Completed By: Ghani Seltane
Project Number: _____ Date: 04/21/09
Field Activity: Monthly GW gauging and sampling Weather: Sunny. 49°F
Personnel on site: Ghani S. Miller, R.

0745: Arrived to the site, had safety meeting with Melvin put on PPE. discussed scope of work and split tasks.

0805: started gauging clean wells.

1120: Began gauging product wells.

1255: gauged staff gages by the creek.

1315: cleaned up product equipment decon.

1330: Began calibrating equipment, prepared bottles bought ice.

1345: Started setting up on IC-W-7.

1418: Began purging water is clear.

1428: started recording parameters. conductivity DO and ORP unstable.

1500: started collecting samples.

1515: started setting up on IC-W-1.

1523: Began purging water is clear.

1533: started recording parameters. ORP, cond.

unstable. House owner by IC-W-7 was verbally harassing us.

1605: Began collecting. (from distance but we ignored him.)

1615: started setting up on IC-W-8.

1623: Began purging

1633: started recording parameters, ORP, cond unstable.

1705: Began collecting samples

1730: cleaned up packed up equip. dumped purge water.

1810: left a site.

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-204-0340
 Collected by: Ghani Sebana & Melvin R.

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft) <i>0.45 ft PVC</i>	LNAPL Thickness	Method	3/23/2009		2/24/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	4/21/2009	1000		11.79				11.92		12.65			
2A-W-7		1045		10.61				11.27		11.54			
2A-W-9		0848		8.65				8.56		9.01			Needs cap, lock
2A-W-10		0855		8.71				8.77		9.05			
2B-W-4		0815		1.82				2.11		2.45			
2B-W-11		0858		3.43	0.86			1.11		3.45			
2B-W-12		0852		4.28	4.05			4.33		4.55			
2B-W-13		0845		5.52	3.30			3.62		3.73			
2B-W-14		0840		8.43	Dry			2.31		2.40			
2B-W-15		0929		NM	Dry			Dry		Dru			Stock @ 4.17
2B-W-19		0825		5.50				6.06		NM			Missing bolds
2B-W-21		0834		7.56				3.81		8.29			Missing 2 bolds
2B-W-30		1113		9.88				9.77		10.67			Missing 2 bolds
2B-W-32		0819		6.25				6.67		NM			Missing 2 bolds
2B-W-33		0905		8.37	Dry			7.87		8.39			Low PVC, 0.45 ft
2B-B-21		0931		4.05	dry			7.75		NM			Missing 2 bolds
2B-W-45		0916		9.90				9.97		10.24			Missing 2 bolds
2B-W-46		0913		9.77				9.40		10.14			Missing 3 bolds



Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		2/24/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	4/21/2009	0948		11.47				12.24		12.67			
MW-2		0955		10.86				11.85		12.31			
MW-3		1000		9.54	0.51			8.47		8.51			
MW-4		1017		7.47	7.47			7.32		7.25			
MW-5		1008		5.7				5.53		NM			
MW-9		0938		7.25				11.05		11.90			
MW-10		0932		11.28				11.34		12.08			
MW-11		0955		12.16				NM		NM			
MW-12		0926		4.32				4.00		4.40			
MW-13		0915		8.43				8.19		8.59			
MW-14		0925	13.5	10.34				10.12		10.69			
MW-15		0900		11.35				11.15		11.95			
MW-16		1000		12.32				12.46		12.90			
MW-18		0940		13.27				13.49		14.16			
MW-38R		1008		3.85				4.26		NM			
MW-40		0909		10.89				10.70		11.45			
1B-W-2		1021		13.60				13.11		12.72			
1B-W-3		1025		14.75				14.68		14.60			
1C-W-2		1028		8.58				9.61		9.75			

Diesel
 REPORT 13-0.84
 GHANI



Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	LNAPL Thickness	Method	2/24/2009		2/24/2009		Sign Off	Comments
							DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	4/21/2009	0803		8.46			8.49		8.80			
P-2U		0808		5.92			5.78		6.67			
P-2D		0806		8.51			8.54		8.91			
P-3U		0815		6.29			6.09	TR	6.52	TR		7-0.71 = 6.28
P-3D		0814		9.15			9.15		9.80			
P-4U		0816		7.95			7.64		8.18			
P-4D		0819		11.22			18.44		17.16			
P-5U		0823		9.78			9.39		10.82			NEN 929.59 P120
P-5D		0825		13.19			13.18		13.87			
P-6U		0837		8.27			8.09		8.73			
P-6D		0838		12.33			12.31		13.00			
P-7U		0842		7.86			7.67		7.86			
P-7D		0840		11.40			11.20		11.23			
P-8		0843		9.43			9.65		9.89			
HCC-RW-01		0835		10.71			10.72		NM			
HCC-RW-02		0833		11.71			11.74		NM			
HCC-RW-03		0829		11.64			11.69		NM			
HCC-RW-04		0849		6.45			6.03		NM			No elevation
HCC-RW-05		0813		6.47			6.53		NM			
HCC-RW-06		0812		6.45			6.48		7.13			
HCC-IW-01		0840		9.41			9.68		9.22			
HCC-IW-02		0871		8.42			8.03		8.43			

- FWV 9.13
 - PW1 8.60
 - IWV 9.76
 - PW3 13.53
 - CV 14.00
 - PW4 14.35
 - EV 10.21'

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	2/24/2009		2/24/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	4/21/2009	1119		11.04		Trace	TP	10.75	None	11.18	None		12-0.96
MW-17		1165		8.58		Hvy TR	TP	8.89	Hvy TR	NM			9-0.42 broken FM. Lid.
2A-W-3		1224		8.97		Hvy TR	TP	NM		NM			not tested 9-0.13
2A-W-11		1124		6.28		Trace	TP	6.09	None	6.12	TR		7-0.79
MW-39		1145		7.59		NONE	TP	7.57	None	7.65	None		8-0.41
1A-W-2		1155		NM				13.11	Hvy TR	NM			Abandoned.
5-W-2		1201		6.30		Hvy TR	TP	6.87	Hvy TR	NM			7-0.70
5-W-3		1207		5.86		Trace	TP	6.87	TR	NM			7-1.14
2A-W-4		1230		9.35	8.44	Hvy Product Pump		9.00	Hvy TR	NM	0.91		9-0.56 product level

Other Notes:

- clean well - north (town) half
- clean well - south (railyard) half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

gauging staff... 12:55

North G.S.1: 0.78 Ft.

Mid G.S.2: 1.32 Ft.

South G.S.3: 1.06 Ft.

PASSWORD = ENSR9349

Field Activity Log

Page: of

AECOM

Project Name: Sky
Project Number: _____
Field Activity: Monthly gauging
3 wells sampling
Completed By: Ghani Sebane
Date: 05/12/09
Weather: rain 49°F
Personnel on site: Ghani S. Melvin R.

- 0745: Arrived to the site, put on PPE.
0800: Had safety meeting discussed track and Hazards and weather hazards, also discussed scope of work and split tasks. prepared forms and equipment
0830: started gauging clean wells.
1120: Began gauging product wells.
1315: Had a lunch.
1330: started preparing for sampling sparge wells picked bottles; buckets; bought ice.
1345: started calibrating equipment.
1410: Began setting up on IC-W-7.
1435: started purging.
1440: Began recording parameters. ORP unstable
1520: started collecting samples.
1535: Began setting up on IC-W-1
1544: started purging.
1554: Began recording parameters. turbidity unstable.
1620: started collecting samples.
1630: Began setting up on IC-W-8.
1641: started purging.
1651: Began recording parameters.
started collecting samples.
1715: Finished sampling, cleaned up, dumped purge water into drum. Decom. equip.
1740: left a site.

Fluid Level Gauging Form

Project Name: BNSF Skykomish

Project Number: 01140-204-0340

Collected by: Ghani S. Melvin R.

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	DTW Depth to LNAPL (ft) <i>outside PVC</i>	LNAPL Thickness	Method	1/22/2009		12/16/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	05/12/09	1046		11.63				11.55		11.92		AS	
2A-W-7		1030		10.29				NM		NM		AS	
2A-W-9		0918		8.53				8.22		8.57		AS	
2A-W-10		0917		8.48				8.36		8.66		AS	
2B-W-4		0840		1.62				NM		1.93		AS	
2B-W-11		0925		3.41	0.61			3.45	0.52	NM		AS	
2B-W-12		0920		4.07	3.84			3.97	3.61	4.21		AS	
2B-W-13		0911		5.50	3.21			5.54	3.13	NM		AS	
2B-W-14		0908		2.28	2.10			3.32	2.02	NM		AS	
2B-W-15		1000		4.45	dry			NM		NM		AS	
2B-W-19		0850		5.20				NM		5.63		AS	
2B-W-21		0858		7.38				NM		7.71		AS	
2B-W-30		1036		9.66				9.67		9.85		AS	
2B-W-32		0846		6.04				6.21		6.37		AS	
2B-W-33		0930		8.05				9.68		8.06		AS	
2B-B-21		1003		3.80				NM		4.11		AS	
2B-W-45		0951		9.74				9.71		9.95		AS	
2B-W-46		0947		9.57				NM		9.87		AS	

MW-12 = 4.12 @ 0958

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	1/22/2009		12/16/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	05/12/09			16.35'				11.73		12.07		MR	
MW-2		0947		10.55'				NM		11.59		MR	
MW-3		0940		7.5'				NM		9.15		MR	
MW-4		1020		7.08'				7		7.44		MR	
MW-5		1005		5.53'				NM		5.61		MR	
MW-9		0955		10.35'				11.01		11.35		MR	
MW-10		0850		10.45'				11.11		11.48		MR	
MW-11		1201		11.58'				NM		12.25	HEAVY	MR	AND 12-0.42 TD PNESE
MW-12		0958		4.12'				3.71		4.29		AS	
MW-13		0947		8.22'				NM		8.51		MR	
MW-14		0840	13.5	10.11'				NM		10.43		MR	
MW-15		0830		11.1'				11.13		11.44		MR	
MW-16		1045		11.98'				NM		12.65		MR	
MW-18		0906		13.00'				13.19		13.53		MR	
MW-26				ABANDONED				NM		9.32		-	Abandoned.
MW-38 R		1105		3.50'				NM		NM		AS	
MW-40		0835		10.64'				10.68		11.02		MR	
1B-W-2		1058		12.92'				13.40		13.53		AS	
1B-W-3		1055		14.15'				14.90		14.92		MR	
1C-W-2		1103		8.2'				9.01		9.48		AS	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	1/22/2009		12/16/2008		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	05/12/09	1120		10.66		NONE	TP	NM		11.05	None	AS/MP	11 - 0.34
MW-17		1137		8.20		HEAVY TRACE	TP	NM		8.93	Tr	AS/MP	9 - 0.80
2A-W-3		1154		8.44		Trace	TP	NM		8.83	Hwy Tr	AS/MP	9 - 0.56
2A-W-11		1130		6.08		Trace	TP	5.77		6.29	Tr	AS/MP	7 - 0.92
MW-39		1210		7.64	NONE	Trace	TP	7.42		7.73	None	AS/MP	8 - 0.36
1A-W-2				NM				NM		13.17	Hwy Tr	AS/MP	ABANDONED
5-W-2		1235		5.89		HEAVY	TP	NM		6.92	Hwy Tr	AS/MP	6.5 - 0.61
5-W-3		1220		5.45		LIGHT	TP	NM		6.95	Hwy Tr	AS/MP	6 - 0.55
2A-W-4		1300		8.90	8.68	0.22	PUMP	NM		10.32	Tr	AS/MP	9 - 0.32 = 8.68

Other Notes:

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well

- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Maloney Creek Staff Gauging

1310

Location	Date	Water Level	Water level 01/22/09
North Staff Gauge	05/12/09	0.85	0.8
Mid Staff Gauge		1.38	1.32
South Staff Gauge		1.08	1.05

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0340 Collected by: D. Kinney, F. Merrill, G. Sabone & F. Storkarson

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	06/09/09	1143		12.31	Corrected (PUC)			11.63		11.79			
2A-W-7		1135		10.63	Correct			10.29		10.61			
2A-W-9		1117		9.76				8.53		8.65			
2A-W-10		0935		9.87				8.48		8.71			
2B-W-4		0946		2.70				1.62		1.82			
2B-W-11		0941		2.06				3.41		3.43			
2B-W-12		0938		5.42	1.10			4.07		4.28			
2B-W-13		1003		5.19	5.73			5.50		5.52			
2B-W-14		1001		3.94	dry			2.28		2.43			
2B-W-15		1006		5.98	dry			Dru		Dry			
2B-W-19		0952		6.41	dry			5.20		5.50			
2B-W-21		0957		8.51				7.38		7.56			
2B-W-30		1147		10.69				9.66		9.88			
2B-W-32		0949		7.11				6.04		6.25			
2B-W-33		0978		9.37				8.05		8.37			
2B-B-21		1010		5.39				3.80		4.05			
2B-W-45		1017		10.96				9.74		9.90			
2B-W-46		1014		10.93				9.57		9.77			

AECOM

PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	06/09/09	1137		11.61				11.35		11.47		DWK	
MW-2		1129		11.11				10.55		10.86			
MW-3		1124		9.41				7.50		8.54			
MW-4		1121		8.49				7.08		7.47			
MW-5		1114		6.67				5.53		5.70			
MW-9		1152		12.00				10.75		11.25			
MW-10		1155		11.68				10.95		11.28			
MW-11		1158		12.16				11.58		12.16			
MW-12		1008		5.66				4.12		4.32			
MW-13		1107		9.71				8.22		8.43			
MW-14		1110	13.5	11.51				10.11		10.34			
MW-15		1104		12.43				11.10		11.35			
MW-16		1203		12.65				11.98		12.32			
MW-18		1139		13.60				13.00		13.27			
MW-38R		1406		3.93				3.50		3.85			FM need to be added
MW-40		1101		11.98				10.62		10.89			DWK
1B-W-2		0949		13.41				12.92		13.60			FM
1B-W-3		0941		14.46				14.15		14.75			
1C-W-2		0956		8.48				8.20		8.58			

PAGE 4

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	5/12/2009		4/21/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	06/09/09	1009		12.13		None	TP	10.66	None	11.04	TR	GS	13-0.87
MW-17		1015		8.95		Hwy TR		8.20	Hwy TR	8.58	Hwy TR		10-1.05
2A-W-3		1035		9.80		TR		8.44	Hwy TR	8.87	Hwy TR		
2A-W-11		1020		7.46		TR		6.08	TR	6.28	TR		8-0.54
MW-39		1057		8.89		None	↓	7.64	None	7.59	None		9-0.11
5-W-2		1417		6.62	6.38	0.24	PUMP	5.89	Hwy TR	6.30	Hwy TR		7-0.62
5-W-3		1105		5.87		Hwy TR	TP	5.45	TR	5.86	TR		6.5-0.63
2A-W-4		1335		10.19	10.03	0.16	PUMP	8.90	0.22	9.35	0.91	↓	

Other Notes:

- clean well - north ('town') half use water level meter (WL)
- clean well - south ('railyard') half use water level meter (WL)
- dirty casing, possible trace product use tape and paste (TP)
- dirty well use tape & paste (TP) + peristaltic pump (PP)

total wells:

Maloney Creek Staff Gauging:

Location	Date	Water Level	Water Level (5/12/09)
North Staff Gauge	6/9/2009	0.65	0.85
Mid Staff Gauge	↓	1.19	1.32
South Staff Gauge	↓	0.97	1.05

DWIR ↓

AECOM

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-204-0340 Collected by: D. Kinney, F. Merrill, G. Sabbana & E. Storkerson

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Method	DTW		Prod. Thick.		Sign Off	Comments
								(ft)	(ft)	(ft)	(ft)		
1A-W-5	06/09/09	1013		8.40								FM	
1B-W-23		1431		13.62								↓	No elevation
1C-W-1		0930		12.65								↓	
1C-W-7	06/10/09	1030		NM								FM	Asphalted over need to be added
1C-W-8		1007		12.00									add.
2A-W-40		1056		10.96									add
2A-W-41		1047		12.83									add
2A-W-42		1520		11.49									add
5-W-14		1104		8.06									
5-W-15		1116		6.50									
5-W-16		1322		6.82									
5-W-17		1111		6.16									
5-W-18		1822		6.76									
5-W-19		1126		6.14									
5-W-20		1131		5.71									check, product or not.
5-W-42		1136		7.80									No elevation.
5-W-50		1346		6.34									No elevation.
5-W-52		1353		5.61									No elevation.
5-W-53		1356		6.02									No elevation.
5-W-54		1359		5.95									"
5-W-55		1335		5.67									"
5-W-56		1328		6.06									"
EW-1		1337		8.16								DWK	"
EW-2		-		NM									= Not Installed
GW-1		1322		6.75								DWK	not added
GW-2		1341		8.17									No elevation.
GW-3		1349		13.42									No elevation.
GW-4		1359		9.89									No elevation.
HCC-RW-01		0929		10.49									GS
HCC-RW-02		0944		11.52									
HCC-RW-03		0947		11.46									
HCC-RW-04		0958		7.24									
HCC-RW-05		0950		6.37									
HCC-RW-06		0911		6.32									
HCC-IW-01		0937		8.28									
HCC-IW-02		0924		9.20									
5-W-51		1136		5.70		TR	TP						GS 6-0.3 not added
5-W-3		1105		5.87		TR	TP						6.5-0.63
MW-22		1126		6.39		TR	TP						7-0.61

Other Notes:

- dirty casing, possible trace product
- dirty well
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

5-W-43 6/9/09 1334 5.80

DWK not added.

Fluid Level Gauging Form

Project Name: **BNSF Skykomish** Project Number: **01140-204-0340** Collected by: **Charis; Fred, M.**

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	6/9/2009		5/12/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
2A-W-5	07/28/09	1119		14.28	Out Side			12.31		11.63		GS	
2A-W-7		1255		12.27				10.63		10.29			
2A-W-9		0942		11.42				9.76		8.53			
2A-W-10		0950		12.03				9.87		8.48			
2B-W-4		0915	4.62	4.62				2.70		1.62			
2B-W-11		0954		4.51	Dry			2.06		3.41			
2B-W-12		0947		7.80	Dry			5.42		4.07			
2B-W-13		0940		7.14	Dry			5.19		5.50			
2B-W-14		0936		7.76	Dry			3.94		2.28			
2B-W-15	1043	0936	7.76	7.76	Dry			5.98		Dru			
2B-W-19		0926	8.53	8.53				6.41		5.20			
2B-W-21		0930	10.10	10.10				8.51		7.38			
2B-W-30		1123		12.38				10.69		9.66			
2B-W-32		0921	8.98	8.98				7.11		6.04			
2B-W-33		0959		11.90	Dry			9.37		8.05			
2B-B-21		1046		6.77				5.39		3.80			
2B-W-45		1015		12.26				10.96		9.74			
2B-W-46		1011		12.35				10.93		9.57		V	

h covered under gravel

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PAGE 2

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	6/9/2009		5/12/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	07/28/09	1111		13.49				11.61		11.35		GS	
MW-2		1107		13.19				11.11		10.55			
MW-3		1104		11.63				9.41		7.50			
MW-4		1058		10.82				8.49		7.08			
MW-5		1050		8.33				6.67		5.53			
MW-9		1129		13.75				12.00		10.75			
MW-10		1133		13.60				11.68		10.95			
MW-11		1304		14.14				12.16		11.58			Trace product diesel
MW-12		1040		7.01				5.86		4.12			
MW-13		1031		11.02				9.71		8.22			
MW-14		1028	13.5	12.93				11.51		10.11			
MW-15		1020		14.11				12.43		11.10			
MW-16		1147		13.80				12.65		11.98			
MW-18		1115		15.54				13.60		13.00			
MW-38R		1153		5.05				3.93		3.50			
MW-40		1023		13.64				11.98		10.62			
1B-W-2		1214		14.29				13.41		12.92			
1B-W-3		1203		15.44				14.46		14.15			
1C-W-2		1225		10.43				8.48		8.20		V	

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PAGE 3

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	6/9/2009		5/12/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
P-1	07/28/09			11.03								ES	
P-2U S	07/29/09			10.25									
P-2D N				12.40									
P-3U S				10.92									
P-3D N				13.81				TR		TR			
P-4U S				12.37									
P-4D N				14.61									
P-5U S				10.73									
P-5D N				12.60									
P-6U S				N.M.									
P-6D N				10.73									
P-7U S				8.99									
P-7D N				10.22									
P-8				9.91									
HCC-RW-01				12.31									
HCC-RW-02				N.M.									
HCC-RW-03				N.M.									
HCC-RW-04				N.M.									
HCC-RW-05				N.M.									
HCC-RW-06				N.M.									
HCC-IW-01				10.32									
HCC-IW-02				11.07									

H64 product unable to gauge water

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	6/9/2009		5/12/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	07/28/09	1405		13.85		NONE	TP	12.13	None	10.66	None	GS	14 - 0.15
MW-17		NM		NM		NM		8.95	Hwy TR	8.20	Hwy TR	GS	purged under soil stock pile
2A-W-3		1445		11.60		Hwy Trace	TP	9.80	TR	8.44	Hwy TR	GS	
2A-W-11		1415		8.95		Trace	TP	7.46	TR	6.08	TR	GS	12 - 0.4
MW-39		1425		10.50		NONE	TP	8.89	None	7.64	None	GS	11 - 0.50
5-W-2		1515		8.37		Trace	TP	6.62	0.24	5.89	Hwy TR	GS	8.5 - 0.13
5-W-3		1522		7.74		1. Trace	TP	5.87	TR	5.45	TR	GS	8.5 - 0.76
2A-W-4	N	1500		12.35	12.00	0.35	PUMP	10.19	0.16	8.90	0.22	GS	13.0 - 1.0

Other Notes:

- clean well - north (town) half use water level meter (WL)
- clean well - south ('railyard') half use water level meter (WL)
- dirty casing, possible trace product use tape and paste (TP)
- dirty well use tape & paste (TP) + peristaltic pump (PP)

total wells:

Maloney Creek Staff Gauging:

Location	Date	Water Level	Water Level (6/9/09)
North Staff Gauge	7/28/2009	0.24	0.65
Mid Staff Gauge		0.81	1.19
South Staff Gauge		0.62	0.97

Field Activity Log

Page: of

AECOM

Project Name: SKYKOMISH

Completed By: Ghani, Selam

Project Number:

Date: 07/28/09

Field Activity: monthly GW gauging and sampling

Weather: sunny 75-97°F

Personnel on site: Ghani, S; Fred, M.

- 0830: Arrived to the site, signed in at Strider office, met with Eric, and had a safety meeting. discussed Traffic, construction, track, heat stress hazards, also discussed scope of work and split tasks.
- 0910: started gauging and Fred sampling 4 wells.
- 1300: Finished gauging all clean wells, Took lunch break.
- 1330: back to site and started gauging product wells. ~~at~~ 6 wells gauged with Tape and paste. only 2 A-W-4 was pumped to get measurement.
- 1530: Finished gauging wells, took reading of maloney. ~~to~~ creek staff gauging.
- 1545: cleaned up and began equipment, left a purge water to Eric to pump it the HCC system 2 buckets.
- 1630: left a site.

~~Ghani~~

Fluid Level Gauging Form

Project Name: BNSF Skykomish

Project Number: 01140-284-0540

Collected by: D. Kinney

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	LNAPL Thickness	Method	7/28/2009		6/9/2009		Sign Off	Comments
							DTW (ft)	Outside PVC. (ft)	DTW (ft)	Outside PVC. (ft)		
2A-W-5	08/25/09	1207		15.01			14.28		12.31		DNK	
2A-W-7		1222		12.86			12.27		10.63		DNK	
2A-W-9		1008		12.23			11.42		9.76		DNK	
2A-W-10		1012		12.84			12.03		9.87		DNK	
2B-W-4		0955		5.58			4.62		2.70		DNK	
2B-W-11		0952		5.41			4.51	Dry	2.06		DNK	
2B-W-12		0950		8.68			7.80	Dry	5.42		DNK	
2B-W-13		1005		8.05			7.14	Dry	5.19		DNK	
2B-W-14		1003		6.60			7.76	Dry	3.94		DNK	
2B-W-15		1016		9.42			7.22	Dry	5.98		DNK	
2B-W-19		1050		9.58			8.53		6.41		DNK	
2B-W-21		1032		10.95			10.10		8.51		DNK	
2B-W-30		1202		13.10			12.38		10.96		DNK	
2B-W-32		0959		9.95			8.98		7.11		DNK	
2B-W-33		1004		12.84			11.90		9.37		DNK	
2B-B-21		1021		7.38			6.77		5.39		DNK	
2B-W-45		1130		12.91			12.26		10.96		DNK	
2B-W-46		1127		13.10			12.35		10.93		DNK	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/28/2009		6/9/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	08/25/09	1353		14.51		NONE	TAP	13.85	None	12.13	None	DNR	15' - 5.15"
MW-17				NM				NM	NM	8.95	Hvy Trace	DNR	CONDUCTED BY S&B P/O
2A-W-3		1357		12.36		Hvy TR	TAP	11.60	Hvy Trace	9.80	Trace	DNR	13' - 7.58"
2A-W-11		14		9.62		Hvy TR	TAP	8.95	Trace	7.46	Trace	DNR	10' - 4.915"
MW-39		1018		11.19		Trace	TAP	10.5	None	8.89	None	DNR	12' - 9.75"
5-W-2				NM				8.37	Trace	6.62	0.24	DNR	
5-W-3				NM				7.47	L. Trace	5.87	Trace	DNR	
2A-W-4		1746		12.94	12.63'	0.31	pump	12.35	0.35	10.19	0.16	DNR	13' - 0.75" DTP 12.63' DTP 12.94'

Other Notes:

- Clean well - north (town) half
- Clean well - south ('railyard') half
- Dirty casing, possible trace product
- Dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

Maloney Creek Staff Gauging

Location	Time	Water Level 8/25/09	Water level 07/28/09	Water level 06/09/09
North Staff Gauge	11:02	Dry	0.24	0.65
Mid Staff Gauge			0.81	1.19
South Staff Gauge			0.62	0.97

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	7/28/2009		6/9/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	08/25/09	1230		14.21				13.49		11.61		DNK	
MW-2		1200		13.99				13.19		11.11		DNK	
MW-3		1157		12.59				11.63		9.41		DNK	
MW-4		1156		11.63				10.82		8.49		DNK	
MW-5		1149		9.13				8.33		6.67		DNK	
MW-9		1242		14.51				13.75		12		DNK	
MW-10		1240		14.78				13.6		11.68		DNK	
MW-11		1338		14.79				14.14	Trace	12.16	Trace	DNK	stren
MW-12		1010		7.03				7.01		5.66		DNK	
MW-13		1144		11.55				11.02		9.71		DNK	
MW-14		1141		13.43				12.93		11.51		DNK	
MW-15		1135		14.82				14.11		12.43		DNK	
MW-16		1259		14.43				13.80		12.65		DNK	
MW-18		1233		16.23				15.54		13.6		DNK	
MW-38R		1301		5.71				5.05		3.93		DNK	
MW-40		1138		14.35				13.64		11.98		DNK	
1B-W-2		1315		14.27				14.29		13.41		DNK	
1B-W-3		1310		15.52				15.44		14.46		DNK	
1C-W-2		1328		11.02				10.43		8.48		DNK	

Fluid Level Gauging Form

Project Name: BNSF Skykomish Project Number: 01140-284-0540 Collected by: D. Klancy, G. Sebbane, F. Merrill

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments	
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)			
2A-W-5	09/21/09	1755		14.96				15.01		14.28		DWK		
2A-W-7		1813		12.82				12.86		12.27				
2A-W-9		1135		12.19				12.23		11.42				
2A-W-10		1216		12.68				12.89		12.03				
2B-W-4		1209		5.24				5.58		4.62				
2B-W-11		1214		5.12				5.41		4.51				
2B-W-12		1212		8.45				8.68		7.80				
2B-W-13		1217		7.95				8.05		7.14				
2B-W-14		1218		6.44				6.60		7.71				
2B-W-15		1152		Dry @ 4.2				Dry @ 4.2		7.22				
2B-W-19		1159		9.20				9.58		8.53				
2B-W-21		1223		10.66				10.95		10.10				
2B-W-30		1101		13.17				13.10		12.38				
2B-W-32		1205		9.60				9.95		8.98				
2B-W-33		1157		12.58				12.84		11.90				
2B-B-21		1150		7.34				7.38		6.77				
2B-W-45		1230		12.80				12.91		12.26				
2B-W-46		1233		12.94				13.10		12.35				
3-W-41		1004		5.79				6.91		NM				
3-W-42		1000		9.79				10.01		NM				
3-W-43		1010		6.36				6.11		NM				

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-1	09/21/09	1050		14.10				14.21		13.49		DWK	
MW-2		1045		13.85				13.99		13.19		DWK	
MW-3		1138		12.30				12.59		11.63		DWK	
MW-4		1142		11.40				11.63		10.82		DWK	
MW-5		1132		9.07				9.13		8.33		DWK	
MW-9		1031		14.78				14.51		13.75		DWK	
MW-10		1035		14.27				14.28		13.6		DWK	
MW-11		1039		14.74				14.79		14.14		DWK	
MW-12		1146		7.58				7.63		7.01		DWK	
MW-13		1126		11.51				11.55		11.02		DWK	
MW-14		1129	13.5	13.46				13.43		12.93		DWK	
MW-15		0947		15.20				14.82		14.11		DWK	
MW-16		1020		14.54				14.43		13.80		DWK	
MW-18		1057		16.19				16.23		15.54		DWK	
MW-38R		1050		5.82				5.71		5.05		GS	
MW-40		0957		14.65				14.35		13.64		DWK	
1B-W-2		1244		14.25				14.27		14.29		GS	
1B-W-3		1238		15.55				15.52		15.44		GS	
1C-W-2		1325		11.11				11.02		10.43		GS	

PAGE 4

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	8/25/2009		7/28/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)	Prod. Thick. (ft)		
MW-7	09/21/09	1051		14.88		None	TAP	14.51	None	13.85	None		
MW-17				NM				NM		NM			
2A-W-3		1040		13.07		Hwy TR	TAP	12.36	Hwy TR	11.60	Hwy TR		
2A-W-11		1112		9.57		TR		9.62	Hwy TR	8.95	TR		
MW-39		1170		11.04		None		11.19	TR	10.5	None		
5-W-2		1132		10.04		Hwy TR		NM		8.37	TR		
5-W-3		1350		9.70	8.82	0.88	PP	NM		7.74	TR		
2A-W-4		1320	16.0	NW	13.53	2.47	PP	12.63	0.31	12.35	0.35		

Barred under soil pile

Other Notes: NW - No water, only product in well

- clean well - north ('town') half
- clean well - south ('railyard') half
- dirty casing, possible trace product
- dirty well
- use water level meter (WL)
- use water level meter (WL)
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

total wells:

Maloney Creek Staff Gauging:

Location	Date	Water Level	Water Level (8/25/09)
North Staff Gauge	9/21/2009	Dry	Dry
Mid Staff Gauge			Dry
South Staff Gauge			Dry

DWK

Fluid Level Gauging Form

Project Name: BNSF Skykomish
 Project Number: 01140-284-0540
 Collected by: D. Kinney / G. Sebbane / F. Merrill
 Date: 3/23/2009

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
1A-W-5	09/21/09	1408		11.09				9.21		GS	
1A-W-38				NM				NM		—	Not Installed
1B-W-2		1244		14.25				13.11		GS	
1B-W-3		1238		15.55				14.68		GS	
1C-W-1		1256		14.19				13.19		GS	
1C-W-2		1325		11.11				9.61		GS	
1C-W-3		1315		11.78				10.70		GS	
1C-W-4		1319		10.89				10.24		GS	
1C-W-7		1251		12.12				10.95		GS	
1C-W-8		1300		13.58				NM		GS	
2A-W-8		1042		16.45				14.60		DWK	
2A-W-9		1135		12.19				8.56		DWK	
2A-W-10		1246		12.68				8.77		DWK	
2B-W-4		1209		5.24				2.11		DWK	
5-W-4		1145		8.91				5.65		GS	
5-W-14		1036		10.32				9.26		GS	
5-W-15		1044		8.80				7.75		GS	
5-W-16		1026		9.00				8.13		GS	
5-W-17		1031		8.39				7.45		GS	
5-W-18		1022		8.46				7.61		GS	
5-W-19		1017		8.28				7.55		GS	
5-W-20		1008		7.79				7.13		GS	
5-W-42		1000		7.58				6.65		GS	
5-W-43		1748		NM				NM		DWK	Not Installed
5-W-44				NM				NM		—	Not Installed
5-W-45				NM				NM		—	Not Installed

1A-W-4 1310 10.55

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009		Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)		
5-W-50	09/21/09	1110		8,80				7.35		GS	
5-W-52		1136		8,64				5.89		GS	
5-W-53		1133		8,78				6.34		GS	
5-W-54		1128		7,81				6.23		GS	
5-W-55		1121		7,56				6.09		GS	
5-W-56		1115		8,41				6.72		GS	
MW-1		1050		14,10				12.24		DWK	
MW-2		1045		13,85				11.85		DWK	
MW-3		1138		12,30				8.47		DWK	
MW-4		1142		11,40				7.32		DWK	
MW-12		1146		7,52				4.00		DWK	
MW-14		1129	13.5	13,46				10.12		DWK	
MW-16		1070		14,54				12.46		DWK	
MW-18		1058		16,19				13.49		DWK	
MW-32		1346		10,28				5.82		GS	
MW-38R		1050		5,82				4.26		GS	
1A-W-36		-		NM				NM		-	Not Installed
1A-W-37		-		NM				NM		-	Not Installed
1B-W-23		1727		17,43						GS	
2A-W-40		1710		13,71						GS	
2A-W-41		1720		18,68						GS	
2A-W-42		1733		12,94						GS	
2B-W-45		1730		17,80						DWK	
2B-W-46		1733		12,94						DWK	
3-W-41 43		1804		5,79						DWK	
3-W-42		1000		9,79						DWK	
3-W-43 41		1810		6,36						DWK	
EW-1		1157		10,43						GS	
EW-2		-		NM						-	Not Installed
GW-1		-		10,78						GS	
GW-2		-		13,82						GS	
GW-3		-		16,03						GS	
GW-4		1330		11,15						GS	

Well Number	Date	Time	Total Casing Depth	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness	Method	3/23/2009			Sign Off	Comments
								DTW (ft)	Prod. Thick. (ft)	DTW (ft)		
2A-W-3	09/21/09	1040		13.07		Hvy TR	TOP	NM			FM	
2A-W-11		1112		9.57		TR		6.09	None			
MW-28		1025		15.66		None		13.17				
MW-39		1120		11.04		None		7.57	None			
5-W-51		1143		6.48		TR		6.85	Hvy TR			
1A-W-2		-		NM		-		NM				
2A-W-4		1307		NW	13.53	2.47	PP	9.00	Hvy TR			
5-W-2		1132		10.04		Hvy TR	TOP	6.87	Hvy TR			
5-W-3		1350		9.70	8.82	0.88	PP	6.87	TR			
MW-22		1320		9.10		TR	TOP	7.45	Hvy TR			

Not located - in construction zone

Other Notes:

- dirty casing, possible trace product
- dirty well
- use tape and paste (TP)
- use tape & paste (TP) + peristaltic pump (PP)

NW - No water in well, only product

9/21/09

E. Starterson field notes

	ID	Depth
70's	PZ-8	11.18
	FWV	11.80
	PZ-7S	11.16
	PZ-7N	13.46
	WV	15.17
ceating	RW-6	11.86
	PZ-6S	11.90
ceating	PZ-6N	14.52
	PZ-5S	11.70 12.22
DL Sampling	PZ-5N	15.60
ing	IW-02	10.18
	PZ-4S	13.41
date + time OFF	PZ-4N	14.70
ed on	CV	17.45
	RW-1	13.27
ned on	PZ-3S	11.75
	PZ-3N	14.08
s	PZ-2S	10.84
	PZ-2N	12.20
	IW-01	9.76
	EV	10.88
	PZ-1	11.27
	GW-1	10.78
M. ndg onsite	GW-2	13.82
1/2 performed	GW-3	16.03
	GW-4	11.15

Well Development

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/02/09

Well No. 12-W-8
 Sampled By [Signature]
 weather rain °F

WELL INFORMATION	
Depth to water	<u>12.01</u> (ft)
Depth of well:	<u>16.75 / 20' + 10' to hole</u> (ft)
Well diameter:	<u>8"</u> (in)
Feet of water:	<u>8' (1.36 gal)</u> (ft)
Product thickness:	— (ft)
Screen interval:	<u>5-20</u>
well condition:	<u>good</u>

COMMENTS
<u>50 ft. below</u>
<u>3.25' of soil</u>

PURGE DATA								
start purge time	<u>1330</u>							
time		<u>1312</u>	<u>1319</u>	<u>1321</u>	<u>1324</u>	<u>1327</u>	<u>1331</u>	<u>1334</u>
volume purged (gal)		<u>10</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
purge rate (L/min)								
pH <u>Time</u> (Units)		<u>1337</u>	<u>1345</u>	<u>1349</u>				
conductivity ✓ (umhos/cm)		<u>50</u>	<u>53</u>	<u>53</u>	<u>53</u>			
temperature (deg C)		<u>14.1</u>	<u>13.2</u>	<u>13.3</u>	<u>13.4</u>			
D.O. (mg/L)								
ORP (mv)								
turbidity (NTU)		<u>526</u>	<u>527</u>	<u>270</u>	<u>445</u>	<u>302</u>	<u>236</u>	<u>146</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
		NWTPH-Dx	1L Gl. Amber	2	HCl
<u>DTW</u>	<u>1400</u>	<u>1201</u>			
<u>DTB</u>	<u>1400</u>	<u>1835</u>			

0.1140-204-340
1.36 gal

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 09/02/09

Well No. EW-1
 Sampled By G. Harris
 weather light snow 31°F

WELL INFORMATION	
Depth to water	<u>7.54</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing 9.05 ft</u>
<u>purge water is clear</u>
<u>collected MS/MSD</u>

PURGE DATA

start purge time	<u>10 10</u>							
time		<u>1020</u>	<u>1023</u>	<u>1026</u>				
volume purged (gal)		<u>7.54</u>	<u>7.54</u>	<u>7.54</u>				
purge rate (L/min)		<u>250</u>	<u>250</u>	<u>250</u>				
pH (Units)		<u>6.45</u>	<u>6.43</u>	<u>6.33</u>				
conductivity (umhos/cm)		<u>3.7</u>	<u>3.6</u>	<u>3.6</u>				
temperature (deg C)		<u>3.0</u>	<u>3.1</u>	<u>3.1</u>				
D.O. (mg/L)		<u>6.81</u>	<u>6.77</u>	<u>6.72</u>				
ORP (mv)		<u>146</u>	<u>149</u>	<u>152</u>				
turbidity (NTU)		<u>0.10</u>	<u>0.05</u>	<u>0.04</u>				
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>EW-1-0409</u>	<u>1030</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2x3</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. 2A-W-41
 Sampled By Ghani S
 weather Snow 34 °F

WELL INFORMATION	
Depth to water	<u>12.55</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing is 14 ft</u>
<u>purge water is clear.</u>

PURGE DATA							
start purge time	<u>0923</u>						
time		<u>0933</u>	<u>0938</u>	<u>0941</u>	<u>0944</u>		
DTW volume-purged (gal)		<u>12.55</u>	<u>12.55</u>	<u>12.55</u>	<u>NM.</u>		
purge rate (L/min)		<u>230</u>	<u>230</u>	<u>230</u>	<u>230</u>		
pH (Units)		<u>5.75</u>	<u>5.86</u>	<u>5.90</u>	<u>5.95</u>		
conductivity (umhos/cm)		<u>11.2</u>	<u>11.2</u>	<u>11.2</u>	<u>11.1</u>		
temperature (deg C)		<u>5.8</u>	<u>5.8</u>	<u>5.7</u>	<u>5.7</u>		
D.O. (mg/L)		<u>5.98</u>	<u>6.18</u>	<u>6.21</u>	<u>6.24</u>		
ORP (mv)		<u>190</u>	<u>187</u>	<u>185</u>	<u>183</u>		
turbidity (NTU)		<u>3.71</u>	<u>3.18</u>	<u>3.30</u>	<u>3.18</u>		
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>2A-W-41-0409</u>	<u>0950</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. 1B-W-23
 Sampled By Glanville S
 weather snow, 33 °F

WELL INFORMATION		
Depth to water	13.30	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	NONE	(ft)
Screen interval:		
well condition:	Good.	

COMMENTS
Inlet tubing @ 15 Ft.
purge water is clear.
collected Duplicate
1B-W-123-0409.

PURGE DATA

start purge time	time						
	1023						
time		1033	1036	1039			
DTW volume purged (gal)		13.31	13.31	13.30			
purge rate (L/min)		200	200	200			
pH (Units)		6.27	6.30	6.35			
conductivity (umhos/cm)		15.9	15.6	15.9			
temperature (deg C)		5.4	5.3	5.2			
D.O. (mg/L)		7.75	7.74	7.76			
ORP (mv)		172	171	170			
turbidity (NTU)		1.83	1.69	1.71			
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
1B-W-23-0409	1045	NWTPH-Dx	1L Gl. Amber	2	HCl
1B-W-123-0409	1105	NWTPH-Dx	1L Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. GW-3
 Sampled By Ghani, S
 weather light snow 34 °F

WELL INFORMATION		
Depth to water	<u>13.04</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>NONE</u>	(ft)
Screen interval:		
well condition:	<u>Missing air hold</u>	

COMMENTS
<u>Inlet tubing @ 14.50</u>
<u>purge water is clear.</u>

PURGE DATA								
start purge time	<u>1126</u>							
time		<u>1136</u>	<u>1139</u>	<u>1142</u>	<u>1145</u>	<u>1148</u>	<u>1151</u>	
volume purged (gal)		<u>13.04</u>	<u>13.04</u>	<u>13.04</u>	<u>NM</u>	<u>NM</u>	<u>13.04</u>	
purge rate (L/min)		<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	
pH (Units)		<u>6.60</u>	<u>6.59</u>	<u>6.55</u>	<u>6.51</u>	<u>6.48</u>	<u>6.45</u>	
conductivity (umhos/cm)		<u>10.7</u>	<u>10.2</u>	<u>10.0</u>	<u>10.1</u>	<u>9.8</u>	<u>9.6</u>	
temperature (deg C)		<u>6.4</u>	<u>6.5</u>	<u>6.5</u>	<u>6.6</u>	<u>6.70</u>	<u>6.7</u>	
D.O. (mg/L)		<u>6.41</u>	<u>6.10</u>	<u>6.08</u>	<u>6.05</u>	<u>6.02</u>	<u>6.03</u>	
ORP (mv)		<u>86</u>	<u>90</u>	<u>95</u>	<u>103</u>	<u>103</u>	<u>103</u>	
turbidity (NTU)		<u>2.24</u>	<u>3.33</u>	<u>2.20</u>	<u>1.82</u>	<u>1.22</u>	<u>1.28</u>	
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

DTW

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-3-0409</u>	<u>1155</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. 2A-W-42
 Sampled By Byham, S
 weather cloudy 36 °F

WELL INFORMATION		
Depth to water	<u>11.15</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>NONE</u>	(ft)
Screen interval:		
well condition:	<u>Good.</u>	

COMMENTS
<u>Inlet tubing @ 12.50 ft.</u>
<u>purge water is clear.</u>

PURGE DATA

DIW
 a s/m

start purge time	time					
<u>1237</u>		<u>1247</u>	<u>1250</u>	<u>1253</u>	<u>1256</u>	
volume purged (gal)	<u>11.16</u>	<u>11.16</u>	<u>11.16</u>	<u>11.16</u>		
purge rate (L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>		
pH (Units)	<u>6.41</u>	<u>6.46</u>	<u>6.51</u>	<u>6.55</u>		
conductivity (umhos/cm)	<u>14.2</u>	<u>13.6</u>	<u>13.4</u>	<u>13.2</u>		
temperature (deg C)	<u>6.1</u>	<u>5.7</u>	<u>5.5</u>	<u>5.4</u>		
D.O. (mg/L)	<u>8.80</u>	<u>8.84</u>	<u>8.88</u>	<u>8.89</u>		
ORP (mv)	<u>112</u>	<u>114</u>	<u>116</u>	<u>119</u>		
turbidity (NTU)	<u>2.96</u>	<u>2.41</u>	<u>2.35</u>	<u>2.23</u>		
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>					

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>2A-W-42-0409</u>	<u>1300</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. GW-4
 Sampled By Ghanis
 weather rain 36 °F

WELL INFORMATION	
Depth to water	<u>10.38</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>inlet tubing ~ 12 Ft.</u>
<u>purge water is clear.</u>
<u>water level draw down</u>
<u>reduced flow rate</u>
<u>ORP and turbidity</u>
<u>unstable.</u>

PURGE DATA								
start purge time	<u>1341</u>							
time		<u>1351</u>	<u>1354</u>	<u>1357</u>	<u>1400</u>	<u>1403</u>	<u>1406</u>	<u>1409</u>
volume purged (gal)		<u>11.19</u>	<u>11.25</u>	<u>11.21</u>	<u>11.19</u>	<u>11.19</u>	<u>11.19</u>	<u>11.19</u>
purge rate (L/min)		<u>250</u>	<u>190</u>	<u>150</u>	<u>150</u>	<u>150</u>	<u>150</u>	<u>150</u>
pH (Units)		<u>6.78</u>	<u>6.84</u>	<u>6.90</u>	<u>6.95</u>	<u>6.99</u>	<u>7.00</u>	<u>7.02</u>
conductivity (umhos/cm)		<u>18.7</u>	<u>19.8</u>	<u>20.1</u>	<u>19.6</u>	<u>19.9</u>	<u>19.60</u>	<u>19.5</u>
temperature (deg C)		<u>6.6</u>	<u>6.6</u>	<u>6.6</u>	<u>6.6</u>	<u>6.6</u>	<u>6.6</u>	<u>6.7</u>
D.O. (mg/L)		<u>4.81</u>	<u>4.70</u>	<u>4.54</u>	<u>4.58</u>	<u>4.58</u>	<u>4.49</u>	<u>4.42</u>
ORP (mv)		<u>33</u>	<u>16</u>	<u>-5</u>	<u>-19</u>	<u>-27</u>	<u>-33</u>	<u>-38</u>
turbidity (NTU)		<u>5.08</u>	<u>9.56</u>	<u>10.41</u>	<u>10.56</u>	<u>11.62</u>	<u>11.55</u>	<u>12.30</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

DTW

m s/m

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-4-0409</u>	<u>14.20</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. GW-4
 Sampled By Ghans
 weather Rain 37 °F

WELL INFORMATION	
Depth to water	<u>10.38</u> (ft)
Depth of well:	(ft)
Well diameter:	(in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	

COMMENTS

PURGE DATA							
start purge time	<u>1341</u>						
time		<u>1412</u>	<u>1415</u>	<u>1418</u>			
PTW volume purged	(gal)	<u>11.19</u>	<u>11.19</u>	<u>NM</u>			
purge rate	(L/min)	<u>150</u>	<u>150</u>	<u>150</u>			
pH	(Units)	<u>7.03</u>	<u>7.04</u>	<u>7.04</u>			
conductivity	(umhos/cm)	<u>19.2</u>	<u>19.2</u>	<u>19.4</u>			
temperature	(deg C)	<u>8.6</u>	<u>8.6</u>	<u>8.6</u>			
D.O.	(mg/L)	<u>4.40</u>	<u>4.40</u>	<u>4.41</u>			
ORP	(mv)	<u>-43</u>	<u>-45</u>	<u>-47</u>			
turbidity	(NTU)	<u>1236</u>	<u>12.00</u>	<u>11.76</u>			
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-4-0409</u>	<u>1420</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. GW-2
 Sampled By Ghiani, S
 weather rain 36 °F

WELL INFORMATION		
Depth to water	<u>7.78</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>NONE</u>	(ft)
Screen interval:		
well condition:	<u>Good</u>	

COMMENTS
<u>Inlet tubing ~ 9.0 ft.</u>
<u>ORP unstable.</u>
<u>purge water is clear.</u>

PURGE DATA								
start purge time	<u>1539</u>							
time	<u>1549</u>	<u>1549</u>	<u>1552</u>	<u>1555</u>	<u>1558</u>	<u>1603</u>	<u>1606</u>	<u>1609</u>
volume purged (gal)		<u>7.78</u>	<u>7.78</u>	<u>7.78</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate (L/min)		<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>
pH (Units)		<u>6.93</u>	<u>6.94</u>	<u>6.89</u>	<u>6.86</u>	<u>6.80</u>	<u>6.78</u>	<u>6.77</u>
conductivity (umhos/cm)		<u>17.9</u>	<u>17.9</u>	<u>17.7</u>	<u>18.0</u>	<u>17.8</u>	<u>18.50</u>	<u>18.0</u>
temperature (deg C)		<u>5.3</u>	<u>5.0</u>	<u>4.7</u>	<u>4.5</u>	<u>4.2</u>	<u>4.2</u>	<u>4.2</u>
D.O. (mg/L)		<u>4.32</u>	<u>4.33</u>	<u>4.27</u>	<u>4.26</u>	<u>4.28</u>	<u>4.24</u>	<u>4.25</u>
ORP (mv)		<u>10</u>	<u>13</u>	<u>21</u>	<u>26</u>	<u>34</u>	<u>38</u>	<u>40</u>
turbidity (NTU)		<u>7.21</u>	<u>3.60</u>	<u>3.28</u>	<u>3.08</u>	<u>2.94</u>	<u>2.75</u>	<u>2.73</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

DW
 W S/m

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>GW-2-0409</u>	<u>1610</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/01/09

Well No. 2A-W-40
 Sampled By Ghanis
 weather rain 37 °F

WELL INFORMATION		
Depth to water	<u>11.35</u>	(ft)
Depth of well:		(ft)
Well diameter:	<u>2</u>	(in)
Feet of water:		(ft)
Product thickness:	<u>None</u>	(ft)
Screen interval:		
well condition:	<u>Good</u>	

COMMENTS
<u>Inlet tubing @ 12.50ft</u>
<u>purge water is clear.</u>
<u>collected Duplicate</u>
<u>2A-W-400</u>

PURGE DATA

start purge time	<u>1703</u>						
time		<u>1713</u>	<u>1716</u>	<u>1719</u>	<u>1722</u>	<u>1725</u>	<u>1728</u>
DTW volume-purged. (gal)		<u>11.36</u>	<u>11.36</u>	<u>11.36</u>	<u>11.37</u>	<u>11.37</u>	<u>NM</u>
purge rate (L/min)		<u>240</u>	<u>240</u>	<u>240</u>	<u>240</u>	<u>240</u>	<u>240</u>
pH (Units)		<u>6.79</u>	<u>6.82</u>	<u>6.84</u>	<u>6.88</u>	<u>6.92</u>	<u>6.95</u>
conductivity (umhos/cm)		<u>12.4</u>	<u>12.3</u>	<u>12.3</u>	<u>12.3</u>	<u>12.2</u>	<u>12.2</u>
temperature (deg C)		<u>4.0</u>	<u>3.8</u>	<u>3.7</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>
D.O. (mg/L)		<u>4.51</u>	<u>4.50</u>	<u>4.54</u>	<u>4.56</u>	<u>4.53</u>	<u>4.52</u>
ORP (mv)		<u>66</u>	<u>66</u>	<u>65</u>	<u>65</u>	<u>65</u>	<u>64</u>
turbidity (NTU)		<u>3.12</u>	<u>3.51</u>	<u>3.96</u>	<u>5.06</u>	<u>5.26</u>	<u>5.31</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>2A-W-40-0401</u>	<u>1730</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>2A-W-400-0401</u>	<u>1800</u>	<u>NWTPH-Dx</u>	<u>1L Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/02/09

Well No. GW-1
 Sampled By C. Harris
 weather Snow 31 °F

WELL INFORMATION	
Depth to water	<u>6.16</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing ~ 7.50 Ft</u>
<u>purge water is clear.</u>

PURGE DATA

start purge time		<u>0815</u>					
time		<u>0825</u>	<u>0828</u>	<u>0831</u>	<u>0834</u>	<u>0837</u>	<u>0840</u>
DTW volume purged	(gal)	<u>6.17</u>	<u>6.17</u>	<u>6.17</u>	<u>6.17</u>	<u>6.17</u>	<u>NM</u>
purge rate	(L/min)	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>
pH	(Units)	<u>5.94</u>	<u>6.02</u>	<u>6.07</u>	<u>6.13</u>	<u>6.17</u>	<u>6.19</u>
conductivity	(umhos/cm)	<u>13.6</u>	<u>13.6</u>	<u>13.5</u>	<u>13.5</u>	<u>13.5</u>	<u>13.6</u>
temperature	(deg C)	<u>3.4</u>	<u>3.4</u>	<u>3.4</u>	<u>3.4</u>	<u>3.3</u>	<u>3.3</u>
D.O.	(mg/L)	<u>4.34</u>	<u>4.20</u>	<u>4.20</u>	<u>4.21</u>	<u>4.22</u>	<u>4.21</u>
ORP	(mv)	<u>166</u>	<u>161</u>	<u>158</u>	<u>156</u>	<u>152</u>	<u>148</u>
turbidity	(NTU)	<u>3.52</u>	<u>1.76</u>	<u>1.61</u>	<u>1.11</u>	<u>1.02</u>	<u>1.09</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>GW-1-0409</u>	<u>0845</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/02/09

Well No. 5-W-43
 Sampled By Ghan, S
 weather snow 30 °F

WELL INFORMATION	
Depth to water	<u>5.21</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>Good</u>

COMMENTS
<u>Inlet tubing is 6.50ft.</u>
<u>purge water is clear.</u>

PURGE DATA							
start purge time		<u>0912</u>					
time		<u>0922</u>	<u>0925</u>	<u>0928</u>	<u>0931</u>	<u>0934</u>	<u>0937</u>
volume purged (gal)		<u>5.22</u>	<u>5.22</u>	<u>5.22</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate (L/min)		<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>	<u>250</u>
pH (Units)		<u>6.48</u>	<u>6.48</u>	<u>6.48</u>	<u>6.49</u>	<u>6.49</u>	<u>6.47</u>
conductivity (umhos/cm)		<u>12.2</u>	<u>12.1</u>	<u>12.2</u>	<u>12.1</u>	<u>12.2</u>	<u>12.1</u>
temperature (deg C)		<u>3.3</u>	<u>3.2</u>	<u>3.3</u>	<u>3.2</u>	<u>3.2</u>	<u>3.3</u>
D.O. (mg/L)		<u>5.96</u>	<u>6.19</u>	<u>6.12</u>	<u>6.14</u>	<u>6.18</u>	<u>6.18</u>
ORP (mv)		<u>132</u>	<u>131</u>	<u>130</u>	<u>130</u>	<u>130</u>	<u>130</u>
turbidity (NTU)		<u>6.35</u>	<u>5.54</u>	<u>4.77</u>	<u>4.18</u>	<u>3.95</u>	<u>3.81</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>						

DTW
 in s/m

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>5-W-43-0409</u>	<u>0940</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

Field Activity Log

Page: 1 of 4

AECOM

Project Name: SKY

Completed By: Ghani, S

Project Number:

Date: 07/01/09

Field Activity: GW sampling
new wells

Weather: snow 35°F

Personnel on site: Ghani, Seban, Renee, K.

0750: Arrived to the site. picked up coolers and bottles from trailer.

0810: started calibrating equipment Horiba and turbidity meter

0855: Began setting up on 2A-W-41.
met with Renee at 0900. discussed work plan.

0923: started purging

0933: Began recording parameters. Horiba battery died.
I replace it with metal detector battery.

0950: started collecting samples.

1012: Began setting up on 1B-W-23

1023: started purging water is clear.

1033: Began recording parameters.

1045: started collecting samples. also collected duplicate 1B-W-123-0409.

1115: Began setting up on GW-3.

1126: started purging water is clear.

1136: Began recording parameters.

1155: started collecting samples.

1215: went to buy ILE

1225: started setting up on 2A-W-42

1237: Began purging water is clear.

1247: started recording parameters.

1300: Began collecting samples.

1325: started setting up on GW-4.

1341: Began purging.

1351: started recording ORP and turbidity unstable.

1420: Began collecting samples

Field Activity Log

Project Name: Sky
Project Number:
Field Activity: GW sampling
new wells

Completed By:
Date: 04/01/09.
Weather: snow 34°F.
Personnel on site: Ghani, S. Renee-K.

1435: Had lunch and dumped purge water into drum

1520: started setting up on GW-2.

1539: Began purging.

1549: started recording parameters.

1600: Began collecting samples

1620: started setting up on 1C-W-7. There was a puddle of water around a well. I tried to evacuate it but still water coming into around a well. I postponed it till tomorrow.

1650: Began setting up on 2A-W-40. there is a trace of power line

1703: started purging. (beside well)

1713: Began recording parameters. turbidity unstable.

1730: started collecting samples also collected duplicate 2A-W-400.

1800: cleaned and dumped purge water, and left site.

Ghani

Field Activity Log

Page: 3 of 4

AECOM

Project Name: SKY
Project Number: _____
Field Activity: GW sampling
new wells

Completed By: Ghanis
Date: 04/02/09
Weather: Snow 31F
Personnel on site: Ghanis, Renee, K.

- 0700: on site. started calibrating equipment
loaded equipment in van. added EA to cookers.
- 0730: started setting up on IC-W-7. tried
to evacuate a pool of water around a well
was about 3 inches of water, but couldn't. stopped
met with Renee.
- 0800: started setting up on GW-1.
- 0815: Began purging
- 0825: started recording parameters.
- 0845: Began collecting samples.
- 0900: started setting up on S-W-43
- 0912: Began purging, water is clear.
- 0922: started recording parameters. turbidity unstable.
- 0945: Began sampling
- 1000: started setting up on GW-1.
- 1010: Began purging, water is clear
- 1020: started recording parameters
i Began collecting samples. also I collected
MS / MSD.
- 1100: went back to IC-W-7. I managed to evacuate
water ~~from~~ around a well
- 1300: started developing IC-W-8. pumped
water out well into drum. started silt coming
out.
surge after every 15 gal water became more
turbid.

Field Activity Log

Project Name: SKY Completed By: Ghani, S
Project Number: _____ Date: 04/02/09
Field Activity: GW sampling Weather: rain 34°F
near wells Personnel on site: Ghani, S Renee, K.

1100 : Finished developing 1C-W-8 well.
took measurement.

1410 : Began setting up on 1C-W-7. pumped
water out of around well. the Horiba meter
didn't work because of rain got wet.
I tried to dry it out but couldn't help.

1530 : packed coolers with ICE. cleaned up.
trailer office broke down. all empty
boxes. took them to recycling.

1630 : left a site. to the lab.

1750 : Arrived to lab dropped off samples.

1800 : left Home.

Ghani

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
 509-924-9200 FAX 924-9290
 503-906-9200 FAX 906-9210
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: AECOM-ENVIRONMENT		INVOICE TO: BNSF			
REPORT TO: HALAH VOIGES		P.O. NUMBER:			
ADDRESS: 710 2ND AVE #1000		PRESERVATIVE			
PHONE: (206) 624-9349 FAX:		REQUESTED ANALYSES			
PROJECT NAME: SKYKOMISH		OTHER: Specify:			
PROJECT NUMBER: 01146-222-0200		* Turnaround Requests less than standard may incur Rush Charges.			
SAMPLED BY: GHANI SEBBANE		<input type="checkbox"/> Organic & Inorganic Analyses <input type="checkbox"/> Petroleum Hydrocarbon Analyses <input type="checkbox"/> STD.			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1. IC-W-7-042109	4/21/09 1500	W	2		
2. IC-W-1-042109	4/21/09 1606	W	2		
3. IC-W-8-042109	4/21/09 1705	W	2		
4					
5					
6					
7					
8					
9					
10					

RELEASED BY: Abdulhameed S. Al-Sayid	DATE: 04/21/09	RECEIVED BY: Sonya Peimyer	DATE: 04/21/09
PRINT NAME: Abdulhameed S. Al-Sayid	TIME: 1855	PRINT NAME: Sonya Peimyer	TIME: 1855
RELEASED BY: Abdulhameed S. Al-Sayid	DATE: _____	RECEIVED BY: _____	DATE: _____
PRINT NAME: _____	TIME: _____	PRINT NAME: _____	TIME: _____
FIRM: AECOM		FIRM: TA Seidha	
FIRM: _____		FIRM: _____	
ADDITIONAL REMARKS:		TEMP: _____	
		PAGE _____ OF _____	

Field Activity Log

Page: of

AECOM

Project Name: Skykomish Completed By: Ghani Selmane
Project Number: _____ Date: 04/21/09
Field Activity: Monthly GW gauging and sampling. Weather: Sunny. 49°F
Personnel on site: Ghani S. Miller, R.

0745: Arrived to the site, had safety meeting with Melvin put on PPE. discussed scope of work and split tasks.

0805: started gauging clean wells.

1120: Began gauging product wells.

1255: gauged staff gauger by the creek.

1315: cleaned up product equipment recon.

1330: Began calibrating equipment, prepared bottles brought ice.

1345: Started setting up on IC-W-7.

1418: Began purging. water is clear.

1428: started recording parameters. conductivity DO and ORP unstable.

1500: started collecting samples.

1515: started setting up on IC-W-1.

1523: Began purging water is clear.

1533: started recording parameters. ORP. cond. unstable. House owner by IC-W-7 was verbally harassing us.

1605: Began collecting. (From distance but we ignored him.)

1615: started setting up on IC-W-8.

1623: Began purging.

1633: started recording parameters, ORP. cond unstable.

1705: Began collecting samples.

1730: cleaned up packed up equip. dumped purge water.

1810: left a site.

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/21/09

Well No. 1C-W-8
 Sampled By Ghauri, S. Melvin
 weather Sunny 72°F

WELL INFORMATION		
Depth to water	12.49	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:	NONE	(ft)
Screen interval:		
well condition:	Good.	

COMMENTS
Fault tubing is 14 ft.
purge water is clear.

PURGE DATA										
start purge time	1623									
time		1633	1636	1639	1642	1645	1648	1651	1654	1657
DTW volume purged (gal)		12.49	12.49	12.49	12.49	12.49	12.49	12.49	12.49	12.49
purge rate (L/min)		2.00								
pH (Units)		5.39	5.41	5.41	5.48	5.47	5.46	5.42	5.37	5.3
conductivity (umhos/cm)		0.082	0.140	0.060	0.062	0.072	0.061	0.068	0.090	0.0
temperature (deg C)		15.15	15.14	15.32	15.20	14.93	15.11	14.96	14.69	14.1
D.O. (mg/L)		0.95	0.73	0.63	0.63	0.62	0.61	0.64	0.56	0.5
ORP (mv)		-214.4	-252.9	-240	-254.9	-362.2	-246	-217.0	-210.5	-216
turbidity (NTU)		2.23	1.60	1.50	1.68	2.07	1.60	1.63	1.11	1.5
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing									

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1C-W-8-042	09 1705	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 04/21/09

Well No. 1C-W-1
 Sampled By Ghanis
 weather Sunny 72 °F

WELL INFORMATION	
Depth to water	<u>13.02</u> (ft)
Depth of well:	(ft)
Well diameter:	<u>2</u> (in)
Feet of water:	(ft)
Product thickness:	<u>NONE</u> (ft)
Screen interval:	
well condition:	<u>No boldc.</u>

COMMENTS
<u>purge water is clear.</u>
<u>cond ; ORP.</u>
<u>unstable.</u>
<u>Cond fluctuating between</u>
<u>-0.06 to 0.125</u>
<u>Inlet tubing ≈ 14.50ft.</u>

DTW

PURGE DATA								
start purge time	<u>1523</u>							
time		<u>1533</u>	<u>1536</u>	<u>1539</u>	<u>1542</u>	<u>1545</u>	<u>1548</u>	<u>1551</u>
volume purged (gal)		<u>13.04</u>	<u>13.04</u>	<u>13.04</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
purge rate (L/min)		<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>	<u>200</u>
pH (Units)		<u>5.23</u>	<u>5.26</u>	<u>5.26</u>	<u>5.25</u>	<u>5.26</u>	<u>5.25</u>	<u>5.23</u>
conductivity (umhos/cm)		<u>0.057</u>	<u>0.064</u>	<u>0.063</u>	<u>0.064</u>	<u>0.065</u>	<u>0.064</u>	<u>0.062</u>
temperature (deg C)		<u>10.15</u>	<u>9.87</u>	<u>9.88</u>	<u>9.88</u>	<u>9.90</u>	<u>9.71</u>	<u>9.63</u>
D.O. (mg/L)		<u>5.30</u>	<u>5.49</u>	<u>5.51</u>	<u>5.65</u>	<u>5.59</u>	<u>5.61</u>	<u>5.59</u>
ORP (mv)		<u>-105.1</u>	<u>-65.9</u>	<u>-20.1</u>	<u>-2.8</u>	<u>4.7</u>	<u>7.4</u>	<u>75.1</u>
turbidity (NTU)		<u>0.09</u>	<u>0.08</u>	<u>0.15</u>	<u>0.12</u>	<u>0.11</u>	<u>0.11</u>	<u>0.14</u>
purge and sample equip.	<u>Peristaltic pump and silicone/polyethylene tubing</u>							

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
<u>1C-W-1-042109</u>	<u>1606</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
 509-924-9200 FAX 924-9290
 503-906-9200 FAX 906-9210
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT: AECOM - ENVIRONMENT		INVOICE TO: BNST			
REPORT TO: HALAH VOGES		PRESERVATIVE			
ADDRESS: 710 2ND AVE #1000		REQUESTED ANALYSES			
PHONE: (206) 624-9214 FAX: (206) 624-9214		SEMI-QUANTITATIVE ANALYSES			
PROJECT NAME: SKYKOMISH		OTHER: <input type="checkbox"/> Specify: * Turnaround Requests less than standard may incur Rush Charges.			
PROJECT NUMBER: 01140-222-0200		TURNAROUND REQUEST			
SAMPLED BY: MIAMI SEBANE		in Business Days * Organic & Inorganic Analyses Petroleum Hydrocarbon Analyses			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1C-W-1-051209	5/12/09 1520	W	2		
1C-W-2-051209	5/12/09 1620	W	2		
1C-W-3-051209	5/12/09 1705	W	2		
4					
5					
6					
7					
8					
9					
10					

RELEASED BY: *Abdelghani Sebane*
 PRINT NAME: Abdelghani Sebane
 FIRM: AECOM
 DATE: 05/12/09
 TIME: 1845

RECEIVED BY: *Abdelghani Sebane*
 PRINT NAME: Abdelghani Sebane
 FIRM: AECOM
 DATE: 05/12/09
 TIME: 1845

RECEIVED BY: *Abdelghani Sebane*
 PRINT NAME: Abdelghani Sebane
 FIRM: AECOM
 DATE: 05/12/09
 TIME: 1845

RECEIVED BY: *Abdelghani Sebane*
 PRINT NAME: Abdelghani Sebane
 FIRM: AECOM
 DATE: 05/12/09
 TIME: 1845

Field Activity Log

Page: of

AECOM

Project Name: SKY

Completed By: Ghani Sebani

Project Number:

Date: 05/12/09

Field Activity: Monthly gauging

Weather: rain 49°F

3 wells sampling

Personnel on site: Ghani S. Sebani, R.

- 0745: Arrived to the site, put on PPE.
- 0800: Had safety meeting discussed track and hazards and weather hazards, also discussed scope of work and split tasks, prepared forms and equipment.
- 0830: started gauging clean wells.
- 1120: Began gauging product wells.
- 1315: Had a lunch.
- 1330: started preparing for sampling sparge wells picked bottles, buckets, bought ice.
- 1345: started calibrating equipment.
- 1410: Began setting up on IC-W-7.
- 1435: started purging.
- 1440: Began recording parameters. ORP unstable.
- 1520: started collecting samples.
- 1535: Began setting up on IC-W-1.
- 1544: started purging.
- 1554: Began recording parameters. turbidity unstable.
- 1620: started collecting samples.
- 1630: Began setting up on IC-W-8.
- 1641: started purging.
- 1651: Began recording parameters.
started collecting samples.
- 1715: Finished sampling, cleaned up, dumped purge water into drum. Decan equip.
- 1740: left a site.

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 05/12/09

Well No. 1C-W-8
 Sampled By Ghannis - Melvin R.
 weather rain 49 °F

WELL INFORMATION		
Depth to water	12.00	(ft)
Depth of well:		(ft)
Well diameter:	2	(in)
Feet of water:		(ft)
Product thickness:		(ft)
Screen interval:		
well condition:	Good	

COMMENTS
Inlet tubing ~ 13.50
purge water is clear.

DTW

PURGE DATA							
start purge time		1641					
time		1651	1654	1657	1700	1703	
volume purged	(gal)	12.02	12.02	12.02	NM	NM	
purge rate	(L/min)	230	230	230	230	230	
pH	(Units)	5.37	5.36	5.35	5.32	5.31	
conductivity	(umhos/cm)	0.064	0.041	0.039	0.038	0.040	
temperature	(deg C)	6.87	6.85	6.85	6.83	6.86	
D.O.	(mg/L)	2.68	2.23	2.02	1.91	1.84	
ORP	(mv)	-109.9	-114.6	-122.9	-119.5	-120.7	
turbidity	(NTU)	3.77	3.04	2.36	2.20	2.31	
purge and sample equip.		Peristaltic pump and silicone/polyethylene tubing					

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1C-W-8-051209	1705	NWTPH-Dx	1L Gl. Amber	2	HCl

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 05/12/09

Well No. 1C-W-1
 Sampled By Lyhania S. Melvin, P.
 weather Rain, 47 °F

WELL INFORMATION	
Depth to water	12.58 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	missing 3 bolts

COMMENTS
Inlet tubing is 15.00 ft
purge water in flask

JTW

PURGE DATA									
start purge time		1544							
time		1554	1557	1600	1603	1606	1612	1615	1618
volume purged (gal)		12.60	12.60	12.60	NM	NM	NM	NW	NW
purge rate (L/min)		200	200	200	200	200	200	200	200
pH (Units)		5.29	5.28	5.29	5.29	5.30	5.31	5.30	5.30
conductivity (umhos/cm)		0.058	0.055	0.049	0.057	0.052	0.058	0.059	0.056
temperature (deg C)		6.91	7.00	7.02	7.09	7.04	6.69	6.71	6.71
D.O. (mg/L)		7.66	7.15	6.76	6.56	6.51	6.75	6.77	6.74
ORP (mv)		-55.2	-52.8	-52.2	-51.0	-50.9	-48.8	-46.7	-44.6
turbidity (NTU)		1.70	4.16	3.32	3.25	1.96	0.57	0.95	0.96
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing								

SAMPLE INFORMATION					
sample number	time	analysis	container	# bottles	preservative
1C-W-1-051209	1620	NWTPH-Dx	1L Gl. Amber	2	HCl

10F2

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-340
 Date 05/12/09

Well No. 1C-W-7
 Sampled By Ghania S. Helmy, G
 weather Rain °F

WELL INFORMATION	
Depth to water	10.55 (ft)
Depth of well:	(ft)
Well diameter:	2 (in)
Feet of water:	(ft)
Product thickness:	NONE (ft)
Screen interval:	
well condition:	Good.

COMMENTS
Inlet tubing 313.00
purge water is clear.
ORP unstable.

DTW

PURGE DATA

start purge time	1435							
time		1445	1448	1451	1454	1457	1500	1503
volume purged (gal)		10.55	10.55	10.55	10.55	NM	NM	NM
purge rate (L/min)		200	200	200	200	200	200	200
pH (Units)		5.54	5.53	5.54	5.57	5.55	5.56	5.57
conductivity (umhos/cm)		0.077	0.071	0.070	0.077	0.072	0.069	0.076
temperature (deg C)		7.65	7.65	7.60	7.66	7.69	7.73	7.79
D.O. (mg/L)		0.64	0.66	0.50	0.51	0.40	0.54	0.45
ORP (mv)		-29	-10.2	-21.6	-36.7	-46.1	-56.4	-66.8
turbidity (NTU)		1.37	0.94	1.14	1.03	0.86	1.05	1.06
purge and sample equip.	Peristaltic pump and silicone/polyethylene tubing							

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
1C-W-7-051209	1520	NWTPH-Dx	1L Gl. Amber	2	HCl

Field Activity Log

Page: of

AECOM

Project Name: SKyKomish Completed By: Ghani, Sebbane
Project Number: 01140-284-0540 Date: 07/07/09
Field Activity: GW Sampling Weather: cloudy 67°F
Personnel on site: Ghani, S

- 0935: Arrived to the site, checked in at Trailer with Greg and Eric. put on PPE.
- 0945: started calibrating equipment.
- 1030: Began setting up on GW-2.
- 1051: started purging, water is clear.
- 1101: Began recording parameters.
- 1115: started collecting samples.
- 1130: went to buy IC.
- 1145: started setting up on S-W-43.
- 1154: Began purging, water is clear.
- 1204: started recording parameters.
- 1220: Began collecting samples.
- 1230: Finished sampling cleaned up. went to dump purge water.
- 1250: left a site.

Ghani, S

Client AECOM		Project Manager <i>Sarah Albano</i>		Date 07/28/09	Chain of Custody Number 4976		
Address 710 2nd Ave, Suite 1000		Telephone Number (Area Code)/Fax Number 253-922-4144		Lab Number	Page <u>1</u> of <u>1</u>		
City Seattle	State WA	Zip Code 98104	Site Contact Don K	Lab Contact Katie H	Analysis (Attach list if more space is needed)		
Project Name and Location (State) SIC/Komish WA			Carrier/Waybill Number				
Contract/Purchase Order/Quote No. project # 0140-284-0540							
Sample I.D. and Location/Description (Containers for each sample may be combined on one line)							
IC-W-1-0709	Date 07/28/09	Time 1050	Aqueous	Soil	Matrix	Containers & Preservatives	Special Instructions/ Conditions of Receipt
IC-W-8-0709	07/28/09	1145	X			Unpres.	
IC-W-7-0709	07/28/09	1230	X			H2SO4	
GW-2-0709	07/28/09	1430	X			HNO3	
GW-20-0709	07/28/09	1330	X			HCl	
						NaOH	
						ZnAc/NaOH	

Cooler
 Yes No Cooler Temp: _____

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Months

Turn Around Time Required (business days)
 24 Hours 48 Hours 5 Days 10 Days 15 Days Other _____

Sample Disposal
 Return To Client Archive For _____

(A fee may be assessed if samples are retained longer than 1 month)

QC Requirements (Specify)

1. Relinquished By
Abdelhakii Selbani Date *07/29/09* Time *0830*

2. Relinquished By
Mickelle Dudd Date *7/29/09* Time *8:30 AM*

3. Relinquished By
Date _____ Time _____

Comments



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: _____
 BNSF Project Name: Skykomish
 BNSF Contact: Bruce Sheppard
 BNSF Work Order No: T1010V-107
 Project State of Origin: _____
 Project City: Lykanish, WA
 Company: AECOM Environment
 Address: 710 2nd Ave
 City/State/Zip: Seattle, WA 98104
 Project Manager: Kate Hanes
 Phone: (753) 972-2310
 Fax: _____
 Project Number: 01140
 Project Manager: Sarah Allgood
 Email: sarah.allgood@aecom.com
 Phone: (206) 624-9399
 Fax: _____

LABORATORY INFORMATION
 Laboratory: Test America
 Address: 5755 8th St E
 City/State/Zip: Everett, WA 98204-1317
 Project Manager: Kate Hanes
 Phone: (753) 972-2310
 Fax: _____

SHIPMENT INFORMATION
 Shipment Method: Direct Delivery to Lab
 Tracking Number: _____
 Project Number: 01140

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?
 EDD Req. Format?
 EDD Req. Format: EQUS

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix
		Date	Time			
1 C-W-1-0809	2	8/25/09	1000 JS	N	W	
2 C-W-7-0809	2	8/25/09	1157 JS	N	W	
3 C-W-8-0809	2	8/25/09	1056 JS	N	W	
4 3-W-43-0809	2	8/25/09	1521 JS	N	W	
5 3-W-42-0809	2	8/25/09	1433 JS	N	W	
6 3-W-41-0809	2	8/25/09	1330 JS	N	W	
7 3-W-410-0809	2	8/25/09	1400 JS	N	W	
8 6W-2-0809	2	8/25/09	1640 JS	N	W	
9						
10						
11						
12						
13						
14						
15						

METHODS FOR ANALYSIS
 W/0 SGCU

Comments and Special Analytical Requirements:
 SGCU - Storage Cleanup

Relinquished By: [Signature]
 Relinquished By: [Signature]
 Relinquished By: [Signature]
 Received by Laboratory: [Signature]

Date/Time: 8/26/09 11:00
 Date/Time: _____
 Date/Time: _____
 Date/Time: _____

Received By: [Signature]
 Received By: [Signature]
 Received By: [Signature]

Lab Remarks: _____
 Lab: Custody Intact? Yes No
 Custody Seal No.: _____
 BNSF COC No.: _____

GROUNDWATER SAMPLING LOG

Project name BNSF-Skykomish
 Project No. 01140-204-0340
 Date 8/25/09

Well No. 3-W-41
 Sampled By Jim Schmidt
 weather Mostly cloudy 65 °F

WELL INFORMATION

Depth to water 0.91 (ft)
 Depth of well: (ft)
 Well diameter: 2" (in)
 Feet of water: (ft)
 Product thickness: (ft)
 Screen interval:
 well condition: No leak on j-plug
good cond.

COMMENTS

PURGE DATA

start purge time	<u>1303</u>						
time		<u>1303</u>	<u>1306</u>	<u>1309</u>	<u>1312</u>	<u>1325</u>	<u>1328</u>
DTW	(ft)	<u>6.92</u>	<u>6.92</u>	<u>6.92</u>	<u>6.92</u>	<u>6.92</u>	<u>6.92</u>
purge rate	(L/min)	<u>.25</u>	<u>.25</u>	<u>.25</u>	<u>.25</u>	<u>.25</u>	<u>.25</u>
pH	(Units)	<u>6.09</u>	<u>6.13</u>	<u>6.15</u>	<u>6.16</u>	<u>6.17</u>	<u>6.17</u>
conductivity	(umhos/cm)	<u>0.086</u>	<u>0.094</u>	<u>0.048</u>	<u>0.100</u>	<u>0.101</u>	<u>0.102</u>
temperature	(deg C)	<u>12.03</u>	<u>11.81</u>	<u>11.71</u>	<u>11.62</u>	<u>11.58</u>	<u>11.55</u>
D.O.	(mg/L)	<u>6.10</u>	<u>6.15</u>	<u>0.84</u>	<u>0.73</u>	<u>0.67</u>	<u>0.64</u>
ORP	(mv)	<u>97.3</u>	<u>67.6</u>	<u>60.0</u>	<u>51.2</u>	<u>45.3</u>	<u>43.2</u>
turbidity	(NTU)	<u>3.71</u>	<u>2.76</u>	<u>2.49</u>	<u>2.55</u>	<u>1.85</u>	<u>1.75</u>
purge and sample equip.		<u>Peristaltic pump and silicone/polyethylene tubing</u>					

SAMPLE INFORMATION

sample number	time	analysis	container	# bottles	preservative
<u>3-W-41</u>	<u>1330</u>	<u>NWTPH-Dx</u>	<u>1L Gl. Amber</u>	<u>2</u>	<u>HCl</u>
<u>3-W-41</u> <u>(Duplicate)</u>	<u>1400</u>	<u>-</u>	<u>"</u>	<u>2</u>	<u>"</u>

Appendix D

Laboratory and Data Validation Reports

December 31, 2008

Halah Voges
AECOM - Seattle
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 12/18/08 10:50.
The following list is a summary of the Work Orders contained in this report, generated on 12/31/08
13:32.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BRL0207	BNSF-Skykomish	01140-204-0340

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

1011 SW Klickitat Way, Suite 207
 Seattle, WA 98134

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

12/31/08 13:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
5-W-42-1208	BRL0207-01	Water	12/17/08 08:55	12/18/08 10:50
5-W-420-1208	BRL0207-02	Water	12/17/08 08:50	12/18/08 10:50
5-W-20-1208	BRL0207-03	Water	12/17/08 10:25	12/18/08 10:50
5-W-19-1208	BRL0207-04	Water	12/17/08 11:25	12/18/08 10:50
5-W-14-1208	BRL0207-05	Water	12/17/08 12:50	12/18/08 10:50
5-W-16-1208	BRL0207-06	Water	12/17/08 14:10	12/18/08 10:50
5-W-18-1208	BRL0207-07	Water	12/17/08 15:45	12/18/08 10:50
5-W-180-1208	BRL0207-08	Water	12/17/08 15:50	12/18/08 10:50
5-W-17-1208	BRL0207-09	Water	12/17/08 13:25	12/18/08 10:50
5-W-15-1208	BRL0207-10	Water	12/17/08 14:40	12/18/08 10:50
MW-500-1208	BRL0207-11	Water	12/17/08 13:45	12/18/08 10:50
S1-1208	BRL0207-12	Water	12/17/08 10:00	12/18/08 10:50
S2-1208	BRL0207-13	Water	12/17/08 11:00	12/18/08 10:50
S3-1208	BRL0207-14	Water	12/17/08 11:45	12/18/08 10:50

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

1011 SW Klickitat Way, Suite 207
Seattle, WA 98134

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

12/31/08 13:32

Analytical Case Narrative

TestAmerica - Seattle, WA

BRL0207

SAMPLE RECEIPT

The samples were received December 18th, 2008 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 2.7 degrees Celsius.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 1011 SW Klickitat Way, Suite 207 Seattle, WA 98134	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 12/31/08 13:32
---	---	-----------------------------------

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0207-01 (5-W-42-1208)		Water			Sampled: 12/17/08 08:55					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 17:56	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				66.8%		53 - 125 %	"			"
<i>Octacosane</i>				98.1%		68 - 125 %	"			"
BRL0207-02 (5-W-420-1208)		Water			Sampled: 12/17/08 08:50					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 19:44	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				91.2%		53 - 125 %	"			"
<i>Octacosane</i>				93.5%		68 - 125 %	"			"
BRL0207-03 (5-W-20-1208)		Water			Sampled: 12/17/08 10:25					
Diesel Range Hydrocarbons	NWTPH-Dx	1.58	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 20:26	Q12
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				87.9%		53 - 125 %	"			"
<i>Octacosane</i>				95.2%		68 - 125 %	"			"
BRL0207-04 (5-W-19-1208)		Water			Sampled: 12/17/08 11:25					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 21:09	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				93.4%		53 - 125 %	"			"
<i>Octacosane</i>				98.6%		68 - 125 %	"			"
BRL0207-05 (5-W-14-1208)		Water			Sampled: 12/17/08 12:50					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 21:52	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				79.5%		53 - 125 %	"			"
<i>Octacosane</i>				89.2%		68 - 125 %	"			"
BRL0207-06 (5-W-16-1208)		Water			Sampled: 12/17/08 14:10					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 22:34	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				92.2%		53 - 125 %	"			"
<i>Octacosane</i>				96.1%		68 - 125 %	"			"

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Kate Haney, Project Manager

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AECOM - Seattle 1011 SW Klickitat Way, Suite 207 Seattle, WA 98134	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 12/31/08 13:32
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0207-07 (5-W-18-1208)		Water			Sampled: 12/17/08 15:45					
Diesel Range Hydrocarbons	NWTPH-Dx	1.94	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 00:22	Q12
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
Surrogate(s):	2-FBP		96.8%		53 - 125 %	"				"
	Octacosane		95.7%		68 - 125 %	"				"
BRL0207-08 (5-W-180-1208)		Water			Sampled: 12/17/08 15:50					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.472	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 01:04	
Surrogate(s):	Octacosane		76.5%		68 - 125 %	"				"
BRL0207-08RE1 (5-W-180-1208)		Water			Sampled: 12/17/08 15:50					
Diesel Range Hydrocarbons	NWTPH-Dx	1.58	----	0.236	mg/l	1x	8L29024	12/29/08 13:15	12/30/08 19:14	Q12
Surrogate(s):	2-FBP		86.9%		53 - 125 %	"				"
BRL0207-09 (5-W-17-1208)		Water			Sampled: 12/17/08 13:25					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 01:47	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
Surrogate(s):	2-FBP		89.6%		53 - 125 %	"				"
	Octacosane		97.5%		68 - 125 %	"				"
BRL0207-10 (5-W-15-1208)		Water			Sampled: 12/17/08 14:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 02:30	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
Surrogate(s):	2-FBP		91.4%		53 - 125 %	"				"
	Octacosane		93.3%		68 - 125 %	"				"
BRL0207-11 (MW-500-1208)		Water			Sampled: 12/17/08 13:45					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 03:13	
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
Surrogate(s):	2-FBP		86.3%		53 - 125 %	"				"
	Octacosane		96.1%		68 - 125 %	"				"

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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0207-12 (S1-1208)	Water			Sampled: 12/17/08 10:00						
Diesel Range Hydrocarbons	NWTPH-Dx	0.310	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 05:00	Q12
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP		93.6%		53 - 125 %	"				"	
Octacosane		94.7%		68 - 125 %	"				"	
BRL0207-13 (S2-1208)	Water			Sampled: 12/17/08 11:00						
Diesel Range Hydrocarbons	NWTPH-Dx	1.02	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 05:43	Q12
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP		102%		53 - 125 %	"				"	
Octacosane		102%		68 - 125 %	"				"	
BRL0207-14 (S3-1208)	Water			Sampled: 12/17/08 11:45						
Diesel Range Hydrocarbons	NWTPH-Dx	0.913	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 06:26	Q12
Lube Oil Range Hydrocarbons	"	ND	----	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP		91.1%		53 - 125 %	"				"	
Octacosane		90.0%		68 - 125 %	"				"	

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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0207-01 (5-W-42-1208)		Water			Sampled: 12/17/08 08:55					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 18:17	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>				62.6%		53 - 125 %	"			"
<i>Octacosane (SGCU)</i>				93.3%		68 - 125 %	"			"
BRL0207-02 (5-W-420-1208)		Water			Sampled: 12/17/08 08:50					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 20:05	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>				83.8%		53 - 125 %	"			"
<i>Octacosane (SGCU)</i>				88.7%		68 - 125 %	"			"
BRL0207-03 (5-W-20-1208)		Water			Sampled: 12/17/08 10:25					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 20:47	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>				84.5%		53 - 125 %	"			"
<i>Octacosane (SGCU)</i>				97.3%		68 - 125 %	"			"
BRL0207-04 (5-W-19-1208)		Water			Sampled: 12/17/08 11:25					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 21:31	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>				86.8%		53 - 125 %	"			"
<i>Octacosane (SGCU)</i>				94.5%		68 - 125 %	"			"
BRL0207-05 (5-W-14-1208)		Water			Sampled: 12/17/08 12:50					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 22:13	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>				76.5%		53 - 125 %	"			"
<i>Octacosane (SGCU)</i>				89.7%		68 - 125 %	"			"
BRL0207-06 (5-W-16-1208)		Water			Sampled: 12/17/08 14:10					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/29/08 22:56	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>				88.2%		53 - 125 %	"			"
<i>Octacosane (SGCU)</i>				96.9%		68 - 125 %	"			"

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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0207-07 (5-W-18-1208)		Water			Sampled: 12/17/08 15:45					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 00:43	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			87.7%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			92.5%		68 - 125 %	"				"
BRL0207-08 (5-W-180-1208)		Water			Sampled: 12/17/08 15:50					
Lube Oil Range (SGCU)	NWTPH-Dx	ND	----	0.472	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 01:25	
<i>Surrogate(s): Octacosane (SGCU)</i>			78.4%		68 - 125 %	"				"
BRL0207-08RE1 (5-W-180-1208)		Water			Sampled: 12/17/08 15:50					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L29024	12/29/08 13:15	12/30/08 19:37	
<i>Surrogate(s): 2-FBP (SGCU)</i>			82.6%		53 - 125 %	"				"
BRL0207-09 (5-W-17-1208)		Water			Sampled: 12/17/08 13:25					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 02:08	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			90.6%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			100%		68 - 125 %	"				"
BRL0207-10 (5-W-15-1208)		Water			Sampled: 12/17/08 14:40					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 02:51	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			83.3%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			91.4%		68 - 125 %	"				"
BRL0207-11 (MW-500-1208)		Water			Sampled: 12/17/08 13:45					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 03:34	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			82.0%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			93.1%		68 - 125 %	"				"

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1011 SW Klickitat Way, Suite 207
 Seattle, WA 98134

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

12/31/08 13:32

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0207-12 (S1-1208)		Water			Sampled: 12/17/08 10:00					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 05:22	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			86.4%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			92.9%		68 - 125 %	"				"
BRL0207-13 (S2-1208)		Water			Sampled: 12/17/08 11:00					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 06:05	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			91.7%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			99.0%		68 - 125 %	"				"
BRL0207-14 (S3-1208)		Water			Sampled: 12/17/08 11:45					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.236	mg/l	1x	8L26010	12/26/08 09:46	12/30/08 06:47	
Lube Oil Range (SGCU)	"	ND	----	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			86.5%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			91.5%		68 - 125 %	"				"

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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 8L26010 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8L26010-BLK1)													Extracted: 12/26/08 09:46	
Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	0.250	mg/l	1x	--	--	--	--	--	--	12/29/08 15:04	
Lube Oil Range Hydrocarbons	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 86.1%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/29/08 15:04</i>		
<i>Octacosane</i>		<i>89.0%</i>		<i>68-125%</i>		<i>"</i>						<i>"</i>		

LCS (8L26010-BS1)													Extracted: 12/26/08 09:46	
Diesel Range Hydrocarbons	NWTPH-Dx	1.52	---	0.250	mg/l	1x	--	2.00	76.1%	(61-132)	--	--	12/29/08 15:47	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 84.6%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/29/08 15:47</i>		
<i>Octacosane</i>		<i>96.2%</i>		<i>68-125%</i>		<i>"</i>						<i>"</i>		

Matrix Spike (8L26010-MS1)													QC Source: BRL0207-10		Extracted: 12/26/08 09:46	
Diesel Range Hydrocarbons	NWTPH-Dx	1.80	---	0.236	mg/l	1x	0.202	1.89	84.6%	(32-143)	--	--	12/29/08 16:30			
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 87.0%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/29/08 16:30</i>				
<i>Octacosane</i>		<i>100%</i>		<i>68-125%</i>		<i>"</i>						<i>"</i>				

Matrix Spike Dup (8L26010-MSD1)													QC Source: BRL0207-10		Extracted: 12/26/08 09:46	
Diesel Range Hydrocarbons	NWTPH-Dx	1.76	---	0.236	mg/l	1x	0.202	1.89	82.4%	(32-143)	2.38%	(40)	12/29/08 17:12			
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 87.3%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/29/08 17:12</i>				
<i>Octacosane</i>		<i>92.8%</i>		<i>68-125%</i>		<i>"</i>						<i>"</i>				

QC Batch: 8L29024 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8L29024-BLK1)													Extracted: 12/29/08 13:15	
Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	0.250	mg/l	1x	--	--	--	--	--	--	12/30/08 17:02	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 82.1%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/30/08 17:02</i>		

LCS (8L29024-BS1)													Extracted: 12/29/08 13:15	
Diesel Range Hydrocarbons	NWTPH-Dx	1.64	---	0.250	mg/l	1x	--	2.00	81.8%	(61-132)	--	--	12/30/08 17:46	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 74.0%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/30/08 17:46</i>		

LCS Dup (8L29024-BSD1)													Extracted: 12/29/08 13:15	
Diesel Range Hydrocarbons	NWTPH-Dx	1.66	---	0.250	mg/l	1x	--	2.00	83.0%	(61-132)	1.47%	(40)	12/30/08 18:30	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 76.2%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/30/08 18:30</i>		

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Kate Haney, Project Manager

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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 8L26010 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8L26010-BLK1)													Extracted: 12/26/08 09:46	
Diesel Range (SGCU)	NWTPH-Dx	ND	---	0.250	mg/l	1x	--	--	--	--	--	--	12/29/08 15:24	
Lube Oil Range (SGCU)	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>83.6%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>12/29/08 15:24</i>	
<i>Octacosane (SGCU)</i>		<i>Recovery:</i>	<i>90.2%</i>	<i>Limits: 68-125%</i>		<i>"</i>							<i>"</i>	

LCS (8L26010-BS1)													Extracted: 12/26/08 09:46	
Diesel Range (SGCU)	NWTPH-Dx	1.47	---	0.250	mg/l	1x	--	2.00	73.3%	(61-132)	--	--	12/29/08 16:08	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>80.1%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>12/29/08 16:08</i>	
<i>Octacosane (SGCU)</i>		<i>Recovery:</i>	<i>94.8%</i>	<i>Limits: 68-125%</i>		<i>"</i>							<i>"</i>	

Matrix Spike (8L26010-MS1)													QC Source: BRL0207-10		Extracted: 12/26/08 09:46	
Diesel Range (SGCU)	NWTPH-Dx	1.55	---	0.236	mg/l	1x	ND	1.89	81.9%	(32-143)	--	--	12/29/08 16:51			
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>85.5%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>12/29/08 16:51</i>			
<i>Octacosane (SGCU)</i>		<i>Recovery:</i>	<i>101%</i>	<i>Limits: 68-125%</i>		<i>"</i>							<i>"</i>			

Matrix Spike Dup (8L26010-MSD1)													QC Source: BRL0207-10		Extracted: 12/26/08 09:46	
Diesel Range (SGCU)	NWTPH-Dx	1.46	---	0.236	mg/l	1x	ND	1.89	77.5%	(32-143)	5.50%	(40)	12/29/08 17:34			
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>79.5%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>12/29/08 17:34</i>			
<i>Octacosane (SGCU)</i>		<i>Recovery:</i>	<i>89.9%</i>	<i>Limits: 68-125%</i>		<i>"</i>							<i>"</i>			

QC Batch: 8L29024 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8L29024-BLK1)													Extracted: 12/29/08 13:15	
Diesel Range (SGCU)	NWTPH-Dx	ND	---	0.250	mg/l	1x	--	--	--	--	--	--	12/30/08 17:24	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>77.3%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>12/30/08 17:24</i>	
LCS (8L29024-BS1)													Extracted: 12/29/08 13:15	
Diesel Range (SGCU)	NWTPH-Dx	1.57	---	0.250	mg/l	1x	--	2.00	78.5%	(61-132)	--	--	12/30/08 18:08	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>68.4%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>12/30/08 18:08</i>	
LCS Dup (8L29024-BSD1)													Extracted: 12/29/08 13:15	
Diesel Range (SGCU)	NWTPH-Dx	1.57	---	0.250	mg/l	1x	--	2.00	78.7%	(61-132)	0.190%	(35)	12/30/08 18:52	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>69.7%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>12/30/08 18:52</i>	

TestAmerica Seattle

Kate Haney

Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

1011 SW Klickitat Way, Suite 207
Seattle, WA 98134

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

12/31/08 13:32

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle	Project Name: BNSF-Skykomish	
1011 SW Klickitat Way, Suite 207	Project Number: 01140-204-0340	Report Created:
Seattle, WA 98134	Project Manager: Halah Voges	12/31/08 13:32

Notes and Definitions

Report Specific Notes:

- Q12 - Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



CHAIN OF CUSTODY BNSF PROJECT INFORMATION	LABORATORY INFORMATION				LAB WORK ORDER: ERL0207						
	Laboratory: Test America		Project Manager:		SHIPMENT INFORMATION						
	Address: 11720 North Creek Pkwy, Ste 400		Phone: (206) 472-9700		Shipment Method: Hand delivered						
City/State/Zip: Bothell, WA 98011		Fax:		Tracking Number:							
Project State of Origin: WA		CONSULTANT INFORMATION				Project Number: 01140-204-0340					
BNSF Project Number:		Project City: skykomish		Company: ENSR/AECOM		Project Manager: Haluk Voges					
BNSF Project Name: Skykomish		Address: 1011 SW Klickitat Way, Ste 207		Email:							
BNSF Contact: Bruce Sheppard		BNSF Work Order No.: TTO100-1108		City/State/Zip: Seattle, WA 98134		Phone: (206) 674-9349 Fax: (206) 674-7833					
TURNAROUND TIME		DELIVERABLES		METHODS FOR ANALYSIS							
<input type="checkbox"/> 1-day Rush <input type="checkbox"/> 5- to 8-day Rush <input type="checkbox"/> 2-day Rush <input checked="" type="checkbox"/> Standard 10-Day <input type="checkbox"/> 3-day Rush <input type="checkbox"/> Other _____		<input type="checkbox"/> Other Deliverables? <input checked="" type="checkbox"/> BNSF Standard (Level II) <input type="checkbox"/> Level III <input type="checkbox"/> Level IV		<input checked="" type="checkbox"/> EDD Req. Format? RETEC-EDMS							
SAMPLE INFORMATION											
Sample identification	Containers	Sample Collection			Filtered Y/N	Type (Comp/Grab)	Matrix			COMMENTS	LAB USE
		Date	Time	Sampler							
1 S-W-42-1208	4	12/17/08	0855	GS	N	W	X	X			
2 - -420 -	4		0850				X	X			
3 - -20 -	4		1025				X	X			
4 - -19 -	4		1125				X	X			
5 - -14 -	4		1250				X	X			
6 - -16 -	4		1410				X	X			
7 - -18 -	4		1505				X	X			
8 - -180 -	4		1550	↓			X	X			
9 - -17 -	4		1325	DNK			X	X			
10 ↓ - -15 -	12		1440				X	X		Extra sample volume for labok	
11 MW-500 -	4		1345				X	X			
12 S1 - -	4		1000				X	X			
13 S2 - -	4		1100				X	X			
14 S3 - - ↓	4	↓	1145	↓ ↓		↓	X	X			
15											
Relinquished By:		Date/Time: 12/15/08/1050		Received By:		Date/Time: 12/18/08/1050		Comments and Special Analytical Requirements: SGCU - silica gel cleanup			
Relinquished By:		Date/Time:		Received By:		Date/Time:					
Relinquished By:		Date/Time:		Received By:		Date/Time:					
Received by Laboratory:		Date/Time:		Lab Remarks:		Lab: Custody Intact? <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		BNSF COC No.:	

TAT: _____

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?

Page Time & Initials: _____

Received 4 coolers, not 5 *CL*
12/13

Circle Y or N

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By:
(applies to temp at receipt)

Logged-in By:

Unpacked/Labeled By:

Cooler ID: BR20207

Date: 12-18-08

Date: 12-19-08

Date: 12-19-08

finished filling out by CW on 12-26-08

Work Order No. _____

Time: 1050

Time: 10:57

Time: 15:00

Client: _____

Initials: DSA

Initials: CMS

Initials: CMS

Project: _____

Container Type:

COC Seals:

Packing Material:

Cooler _____ Ship Container _____ Sign By _____
 Box _____ On Bottles _____ Date _____
 None/Other _____ None _____

Bubble Bags _____ Styrofoam _____
 Foam Packs _____
 None/Other _____

Refrigerant:

Received Via: Bill#

Gel Ice Pack _____
 Loose Ice _____
 None/Other _____

Fed Ex Client _____
 UPS _____ TA Courier _____
 DHL _____ Mid Valley _____
 Senvoy _____ TDP _____
 GS _____ Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)

Temperature Blank? 2.7 °C of NA *1.9, 0.8, 0.3* (circle one)
2.13, 0.1, 0.5

Trip Blank? Y or N or NA

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

Intact?	<input checked="" type="radio"/> Y or N	_____	Metals Preserved?	Y or N or <input checked="" type="radio"/> NA	_____
Provided by TA?	<input checked="" type="radio"/> Y or N	_____	Client QAPP Preserved?	Y or N or <input checked="" type="radio"/> NA	_____
Correct Type?	<input checked="" type="radio"/> Y or N	_____	Adequate Volume?	<input checked="" type="radio"/> Y or N	_____
#Containers match COC?	<input checked="" type="radio"/> Y or N	_____	(for tests requested)		
IDs/time/date match COC?	<input checked="" type="radio"/> Y or N	_____	Water VOAs: Headspace?	Y or N or <input checked="" type="radio"/> NA	_____
Hold Times in hold?	<input checked="" type="radio"/> Y or N	_____	Comments:	_____	_____

PROJECT MANAGEMENT

Is the Chain of Custody complete? _____ Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up? _____
Has client been contacted regarding non-conformances? _____

Y or N
Y or N If Y, _____ / _____
Date Time

PM Initials: _____ Date: _____ Time: _____

March 10, 2009

Jennifer Wald
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 03/05/09 17:25.
The following list is a summary of the Work Orders contained in this report, generated on 03/10/09
12:49.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSC0054	BNSF-Skykomish	01140-222-0230

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0230

Project Manager: Jennifer Wald

Report Created:

03/10/09 12:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1C-W-1-0309	BSC0054-01	Water	03/05/09 13:10	03/05/09 17:25
1B-W-3-030509	BSC0054-02	Water	03/05/09 14:10	03/05/09 17:25

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0230

Project Manager: Jennifer Wald

Report Created:

03/10/09 12:49

Analytical Case Narrative

TestAmerica - Seattle, WA

BSC0054

SAMPLE RECEIPT

The samples were received 03/05/2009 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 5.7 degrees Celsius.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0230 Project Manager: Jennifer Wald	Report Created: 03/10/09 12:49
---	---	-----------------------------------

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0054-01 (1C-W-1-0309)		Water			Sampled: 03/05/09 13:10					
Diesel Range Hydrocarbons	NWTPH-Dx	0.120	0.0943	0.236	mg/l	1x	9C06014	03/06/09 10:53	03/09/09 20:23	J, Q12
Lube Oil Range Hydrocarbons	"	0.159	0.142	0.472	"	"	"	"	"	J, Q13
<i>Surrogate(s): 2-FBP</i>			79.5%		53 - 120 %	"			"	
<i>Octacosane</i>			96.9%		68 - 123 %	"			"	
BSC0054-02 (1B-W-3-030509)		Water			Sampled: 03/05/09 14:10					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C06014	03/06/09 10:53	03/09/09 20:45	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			79.5%		53 - 120 %	"			"	
<i>Octacosane</i>			96.4%		68 - 123 %	"			"	

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0230 Project Manager: Jennifer Wald	Report Created: 03/10/09 12:49
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C06014 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes	
Blank (9C06014-BLK1)										Extracted: 03/06/09 10:53					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/09/09 17:27		
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 78.9%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/09/09 17:27</i>			
<i>Octacosane</i>		<i>95.7%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			
LCS (9C06014-BS1)										Extracted: 03/06/09 10:53					
Diesel Range Hydrocarbons	NWTPH-Dx	1.98	0.100	0.250	mg/l	1x	--	2.00	99.2%	(65-120)	--	--	03/09/09 17:49		
Lube Oil Range Hydrocarbons	"	2.32	0.150	0.500	"	"	--	"	116%	(70-120)	--	--	"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 78.0%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/09/09 17:49</i>			
<i>Octacosane</i>		<i>95.2%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			
LCS Dup (9C06014-BSD1)										Extracted: 03/06/09 10:53					MNR1
Diesel Range Hydrocarbons	NWTPH-Dx	1.94	0.100	0.250	mg/l	1x	--	2.00	97.1%	(65-120)	2.14% (25)		03/09/09 18:11		
Lube Oil Range Hydrocarbons	"	2.40	0.150	0.500	"	"	--	"	120%	(70-120)	3.33% (40)		"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 75.7%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/09/09 18:11</i>			
<i>Octacosane</i>		<i>93.1%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0230

Project Manager: Jennifer Wald

Report Created:

03/10/09 12:49

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle	Project Name: BNSF-Skykomish	
710 2nd Ave. Ste. 1000	Project Number: 01140-222-0230	Report Created:
Seattle, WA 98104	Project Manager: Jennifer Wald	03/10/09 12:49

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- MNR1 - There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- Q12 - Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
- Q13 - Detected hydrocarbons do not have pattern and range consistent with typical petroleum products and may be due to biogenic interference.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



TAT: _____

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?

Page Time & Initials: _____

Rush

Circle Y or **(N)**

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By:
(applies to temp at receipt)

Logged-in By:

Unpacked/Labeled By:

Cooler ID: _____

Date: 3/5/09

Date: 3/5/09

Date: 3/5/09

Work Order No. BSC 0054

Time: 1725

Time: 1734

Time: 1739

Client: _____

Initials: FL

Initials: FL

Initials: FL

Project: _____

Container Type:

COC Seals:

Packing Material _____:

Cooler

____ Ship Container _____ Sign By

Bubble Bags _____ Styrofoam

____ Box

____ On Bottles _____ Date

____ Foam Packs

____ None/Other _____

None

____ None/Other _____

Refrigerant:

Received Via: Bill#

____ Gel Ice Pack _____

____ Fed Ex Client

Loose Ice _____

____ UPS _____ TA Courier

____ None/Other _____

____ DHL _____ Mid Valley

____ Senvoy _____ TDP

____ GS _____ Other _____

Cooler Temperature (IR): 5.7 °C Plastic **(Glass)** (Frozen filters, Tedlars and aqueous Metals exempt)
(circle one)

Temperature Blank? _____ °C or **(NA)**

Trip Blank? Y or N or **(NA)**

BP, OPLC, ARCO - Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

ID

ID

Intact? or N _____

Metals Preserved? Y or N or **(NA)**

Provided by TA? or N _____

Client QAPP Preserved? Y or N or **(NA)**

Correct Type? or N _____

Adequate Volume? or N _____

#Containers match COC? or N _____

(for tests requested)

Water VOAs: Headspace? Y or N or **(NA)**

IDs/time/date match COC? or N _____

Comments: _____

Hold Times in hold? or N _____

PROJECT MANAGEMENT

Is the Chain of Custody complete?

Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up?

Y or N

Has client been contacted regarding non-conformances?

Y or N

If Y, _____ / _____
Date Time

PM Initials: _____ Date: _____ Time: _____

March 31, 2009

Halah Voges
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 03/24/09 17:40.
The following list is a summary of the Work Orders contained in this report, generated on 03/31/09
15:53.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSC0252	BNSF-Skykomish	01140-204-0340

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 03/31/09 15:53
---	---	-----------------------------------

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2B-W-4-0309	BSC0252-01	Water	03/23/09 16:20	03/24/09 17:40
1A-W-3-0309	BSC0252-02	Water	03/23/09 17:40	03/24/09 17:40
MW-38R-0309	BSC0252-03	Water	03/24/09 09:00	03/24/09 17:40
1A-W-5-0309	BSC0252-04	Water	03/24/09 10:05	03/24/09 17:40
1A-W-4-0309	BSC0252-05	Water	03/24/09 10:55	03/24/09 17:40
1A-W-1-0309	BSC0252-06	Water	03/24/09 11:55	03/24/09 17:40
1B-W-3-0309	BSC0252-07	Water	03/24/09 13:00	03/24/09 17:40
1B-W-2-0309	BSC0252-08	Water	03/24/09 14:05	03/24/09 17:40
5-W-55-0309	BSC0252-09	Water	03/24/09 09:15	03/24/09 17:40
1C-W-3-0309	BSC0252-10	Water	03/24/09 11:00	03/24/09 17:40
1C-W-4-0309	BSC0252-11	Water	03/24/09 11:45	03/24/09 17:40
2A-W-10-0309	BSC0252-12	Water	03/24/09 12:55	03/24/09 17:40
2B-W-46-0309	BSC0252-13	Water	03/24/09 14:35	03/24/09 17:40
2B-W-45-0309	BSC0252-14	Water	03/24/09 15:15	03/24/09 17:40
5-W-53-0309	BSC0252-15	Water	03/24/09 09:50	03/24/09 17:40
MW-500-0309	BSC0252-16	Water	03/24/09 14:15	03/24/09 17:40
2A-W-11-0309	BSC0252-17	Water	03/24/09 14:40	03/24/09 17:40
MW-39-0309	BSC0252-18	Water	03/24/09 15:00	03/24/09 17:40
5-W-51-0309	BSC0252-19	Water	03/24/09 15:20	03/24/09 17:40

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

03/31/09 15:53

Analytical Case Narrative

TestAmerica - Seattle, WA

BSC0252

SAMPLE RECEIPT

The samples were received 03/24/09 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 10.1 degrees Celsius.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 03/31/09 15:53
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0252-01 (2B-W-4-0309)		Water			Sampled: 03/23/09 16:20					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/27/09 20:51	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			74.9%		53 - 120 %	"				"
<i>Octacosane</i>			101%		68 - 123 %	"				"
BSC0252-02 (1A-W-3-0309)		Water			Sampled: 03/23/09 17:40					
Diesel Range Hydrocarbons	NWTPH-Dx	0.818	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/27/09 21:14	Q4
Lube Oil Range Hydrocarbons	"	1.54	0.142	0.472	"	"	"	"	"	Q4
<i>Surrogate(s): 2-FBP</i>			86.9%		53 - 120 %	"				"
<i>Octacosane</i>			105%		68 - 123 %	"				"
BSC0252-03 (MW-38R-0309)		Water			Sampled: 03/24/09 09:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/27/09 21:36	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			74.3%		53 - 120 %	"				"
<i>Octacosane</i>			95.3%		68 - 123 %	"				"
BSC0252-04 (1A-W-5-0309)		Water			Sampled: 03/24/09 10:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/27/09 21:58	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			71.7%		53 - 120 %	"				"
<i>Octacosane</i>			95.5%		68 - 123 %	"				"
BSC0252-05 (1A-W-4-0309)		Water			Sampled: 03/24/09 10:55					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/27/09 22:20	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			79.0%		53 - 120 %	"				"
<i>Octacosane</i>			96.9%		68 - 123 %	"				"
BSC0252-06 (1A-W-1-0309)		Water			Sampled: 03/24/09 11:55					
Diesel Range Hydrocarbons	NWTPH-Dx	0.137	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/27/09 22:41	Q3, J
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			74.0%		53 - 120 %	"				"
<i>Octacosane</i>			99.2%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 03/31/09 15:53
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0252-07 (1B-W-3-0309)		Water			Sampled: 03/24/09 13:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/27/09 23:03	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			76.7%		53 - 120 %	"				"
<i>Octacosane</i>			99.6%		68 - 123 %	"				"
BSC0252-08 (1B-W-2-0309)		Water			Sampled: 03/24/09 14:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 00:32	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			78.5%		53 - 120 %	"				"
<i>Octacosane</i>			101%		68 - 123 %	"				"
BSC0252-09 (5-W-55-0309)		Water			Sampled: 03/24/09 09:15					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 00:54	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			74.6%		53 - 120 %	"				"
<i>Octacosane</i>			96.7%		68 - 123 %	"				"
BSC0252-10 (1C-W-3-0309)		Water			Sampled: 03/24/09 11:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 01:16	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			73.5%		53 - 120 %	"				"
<i>Octacosane</i>			95.6%		68 - 123 %	"				"
BSC0252-11 (1C-W-4-0309)		Water			Sampled: 03/24/09 11:45					
Diesel Range Hydrocarbons	NWTPH-Dx	0.359	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 01:37	Q3
Lube Oil Range Hydrocarbons	"	0.143	0.142	0.472	"	"	"	"	"	Q1, J
<i>Surrogate(s): 2-FBP</i>			83.3%		53 - 120 %	"				"
<i>Octacosane</i>			105%		68 - 123 %	"				"
BSC0252-12 (2A-W-10-0309)		Water			Sampled: 03/24/09 12:55					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0962	0.240	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 01:59	
Lube Oil Range Hydrocarbons	"	0.192	0.144	0.481	"	"	"	"	"	J
<i>Surrogate(s): 2-FBP</i>			81.6%		53 - 120 %	"				"
<i>Octacosane</i>			105%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 03/31/09 15:53
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0252-13 (2B-W-46-0309)		Water			Sampled: 03/24/09 14:35					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 02:22	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			76.3%		53 - 120 %	"				"
Octacosane			98.8%		68 - 123 %	"				"
BSC0252-14 (2B-W-45-0309)		Water			Sampled: 03/24/09 15:15					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 02:44	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			76.5%		53 - 120 %	"				"
Octacosane			103%		68 - 123 %	"				"
BSC0252-15 (5-W-53-0309)		Water			Sampled: 03/24/09 09:50					
Diesel Range Hydrocarbons	NWTPH-Dx	0.119	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 03:06	Q3, J
Lube Oil Range Hydrocarbons	"	0.144	0.142	0.472	"	"	"	"	"	Q1, J
Surrogate(s): 2-FBP			87.2%		53 - 120 %	"				"
Octacosane			105%		68 - 123 %	"				"
BSC0252-16 (MW-500-0309)		Water			Sampled: 03/24/09 14:15					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 03:27	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			72.7%		53 - 120 %	"				"
Octacosane			97.7%		68 - 123 %	"				"
BSC0252-17 (2A-W-11-0309)		Water			Sampled: 03/24/09 14:40					
Diesel Range Hydrocarbons	NWTPH-Dx	0.686	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 03:49	Q4
Lube Oil Range Hydrocarbons	"	0.727	0.142	0.472	"	"	"	"	"	Q4
Surrogate(s): 2-FBP			82.9%		53 - 120 %	"				"
Octacosane			100%		68 - 123 %	"				"
BSC0252-18 (MW-39-0309)		Water			Sampled: 03/24/09 15:00					
Diesel Range Hydrocarbons	NWTPH-Dx	0.894	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 05:17	Q4
Lube Oil Range Hydrocarbons	"	1.13	0.142	0.472	"	"	"	"	"	Q4
Surrogate(s): 2-FBP			88.0%		53 - 120 %	"				"
Octacosane			104%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 03/31/09 15:53
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0252-19 (5-W-51-0309)	Water		Sampled: 03/24/09 15:20							
Diesel Range Hydrocarbons	NWTPH-Dx	4.31	0.0943	0.236	mg/l	1x	9C27008	03/27/09 11:37	03/28/09 05:39	Q4
Lube Oil Range Hydrocarbons	"	3.43	0.142	0.472	"	"	"	"	"	Q4
Surrogate(s): 2-FBP			84.2%		53 - 120 %	"			"	
Octacosane			105%		68 - 123 %	"			"	

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
 Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

03/31/09 15:53

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0252-16 (MW-500-0309)		Water			Sampled: 03/24/09 14:15					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0377	0.236	mg/l	1x	9C26013	03/26/09 10:16	03/27/09 21:28	
Lube Oil Range (SGCU)	"	ND	0.151	0.472	"	"	"	"	"	"
<i>Surrogate(s): 2-FBP (SGCU)</i>			67.7%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			90.3%		68 - 125 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle	Project Name: BNSF-Skykomish	Report Created:
710 2nd Ave. Ste. 1000	Project Number: 01140-204-0340	03/31/09 15:53
Seattle, WA 98104	Project Manager: Halah Voges	

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C27008 Water Preparation Method: EPA 3510C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9C27008-BLK1)										Extracted: 03/27/09 11:37				
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/27/09 19:46	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>82.9%</i>							<i>Limits: 53-120%</i>			<i>03/27/09 19:46</i>	
<i>Octacosane</i>			<i>99.5%</i>							<i>68-123%</i>			<i>"</i>	
LCS (9C27008-BS1)										Extracted: 03/27/09 11:37				
Diesel Range Hydrocarbons	NWTPH-Dx	1.96	0.100	0.250	mg/l	1x	--	2.00	97.9%	(65-120)	--	--	03/27/09 20:08	
Lube Oil Range Hydrocarbons	"	2.08	0.150	0.500	"	"	--	"	104%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>80.9%</i>							<i>Limits: 53-120%</i>			<i>03/27/09 20:08</i>	
<i>Octacosane</i>			<i>103%</i>							<i>68-123%</i>			<i>"</i>	
LCS Dup (9C27008-BSD1)										Extracted: 03/27/09 11:37				
Diesel Range Hydrocarbons	NWTPH-Dx	1.98	0.100	0.250	mg/l	1x	--	2.00	98.8%	(65-120)	0.933% (25)		03/27/09 20:30	
Lube Oil Range Hydrocarbons	"	2.03	0.150	0.500	"	"	--	"	101%	(70-120)	2.70% (40)		"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>80.4%</i>							<i>Limits: 53-120%</i>			<i>03/27/09 20:30</i>	
<i>Octacosane</i>			<i>101%</i>							<i>68-123%</i>			<i>"</i>	

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 03/31/09 15:53
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C26013 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9C26013-BLK1)										Extracted: 03/26/09 10:16				
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0400	0.250	mg/l	1x	--	--	--	--	--	--	03/27/09 18:56	
Lube Oil Range (SGCU)	"	ND	0.160	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>86.0%</i>										<i>03/27/09 18:56</i>	
<i>Octacosane (SGCU)</i>			<i>103%</i>										<i>"</i>	
LCS (9C26013-BS1)										Extracted: 03/26/09 10:16				
Diesel Range (SGCU)	NWTPH-Dx	1.90	0.0400	0.250	mg/l	1x	--	2.00	94.9%	(61-132)	--	--	03/27/09 19:18	
Lube Oil Range (SGCU)	"	1.79	0.160	0.500	"	"	--	"	89.5%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>81.4%</i>										<i>03/27/09 19:18</i>	
<i>Octacosane (SGCU)</i>			<i>95.3%</i>										<i>"</i>	
LCS Dup (9C26013-BSD1)										Extracted: 03/26/09 10:16				
Diesel Range (SGCU)	NWTPH-Dx	2.16	0.0400	0.250	mg/l	1x	--	2.00	108%	(61-132)	13.1%	(35)	03/27/09 19:40	
Lube Oil Range (SGCU)	"	1.97	0.160	0.500	"	"	--	"	98.3%	(50-150)	9.32%	(50)	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>92.9%</i>										<i>03/27/09 19:40</i>	
<i>Octacosane (SGCU)</i>			<i>101%</i>										<i>"</i>	

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

03/31/09 15:53

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

03/31/09 15:53

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- Q1 - Does not match typical pattern
- Q3 - The chromatographic pattern is not consistent with diesel fuel.
- Q4 - The hydrocarbons present are a complex mixture of diesel range and heavy oil range organics.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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TAT: _____

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?

Page Time & Initials: _____

Circle **Y** or N

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By:
(applies to temp at receipt)

Logged-in By:

Unpacked/Labeled By:

Cooler ID: 302, 357, 397, 341
400, 335, 330, 322

Date: 3/24

Date: 3/25

Date: 3/25/9

Work Order No. 0210252

Time: 7:40

Time: 8:12

Time: 1445

Client: _____

Initials: CL

Initials: CL

Initials: AO

Project: _____

Container Type:

COC Seals:

Packing Material:

Cooler
 Box
 None/Other _____

Ship Container
 On Bottles
 None
Sign By _____
Date _____

Bubble Bags
 Styrofoam
 Foam Packs
 None/Other _____

Refrigerant:

Soil Stir Bars/Encores:

Received Via: Bill#:

Gel Ice Pack
 Loose Ice
 None/Other _____

Placed in freezer #46:
Y or N or **NA**
Initial/date/time _____

Fed Ex
 Client
 UPS
 TA Courier
 DHL
 Mid Valley
 Senvoy
 TDP
 GS
 Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)
(circle one)

Temperature Blank? _____ °C or NA comments _____ Trip Blank? Y or N or **NA**

7.0, 7.3, 7.0, 9.3, 7.2, 10.7, 10.1, 5.6

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

ID

ID

Intact? or N _____ Metals Preserved? Y or N or **NA** _____

Provided by TA? or N _____ Client QAPP Preserved? or N or NA _____

Correct Type? or N _____ Adequate Volume? or N _____
(for tests requested)

#Containers match COC? or N _____ Water VOAs: Headspace? Y or N or **NA** _____

IDs/time/date match COC? Y or **NA** 8500252-09 _____ Comments: _____

Hold Times in hold? or N _____

PROJECT MANAGEMENT

Is the Chain of Custody complete? Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up? Y or N
Has client been contacted regarding non-conformances? Y or N If Y, _____ / _____
Date Time

PM Initials: _____ Date: _____ Time: _____

April 07, 2009

Halah Voges
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 03/24/09 17:40.
The following list is a summary of the Work Orders contained in this report, generated on 04/07/09
16:37.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSC0255	BNSF-Skykomish	01140-222-0100

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
 Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0100

Project Manager: Halah Voges

Report Created:

04/07/09 16:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S1-AU-0309	BSC0255-01	Water	03/24/09 08:40	03/24/09 17:40
S1-AD-0309	BSC0255-02	Water	03/24/09 08:50	03/24/09 17:40
S1-BU-0309	BSC0255-03	Water	03/24/09 09:00	03/24/09 17:40
S1-BD-0309	BSC0255-04	Water	03/24/09 09:05	03/24/09 17:40
S2-AU-0309	BSC0255-05	Water	03/24/09 09:30	03/24/09 17:40
S2-AD-0309	BSC0255-06	Water	03/24/09 09:40	03/24/09 17:40
S2-BU-0309	BSC0255-07	Water	03/24/09 10:05	03/24/09 17:40
S2-BD-0309	BSC0255-08	Water	03/24/09 10:15	03/24/09 17:40
S3-AU-0309	BSC0255-09	Water	03/24/09 11:05	03/24/09 17:40
S10-BD-0309	BSC0255-10	Water	03/24/09 09:10	03/24/09 17:40
S30-AU-0309	BSC0255-11	Water	03/24/09 11:15	03/24/09 17:40
S3-AD-0309	BSC0255-12	Water	03/24/09 11:25	03/24/09 17:40
S3-BU-0309	BSC0255-13	Water	03/24/09 11:40	03/24/09 17:40
S3-BD-0309	BSC0255-14	Water	03/24/09 11:50	03/24/09 17:40
S3-CU-0309	BSC0255-15	Water	03/24/09 12:00	03/24/09 17:40
S3-CD-0309	BSC0255-16	Water	03/24/09 12:10	03/24/09 17:40
S4-AU-0309	BSC0255-17	Water	03/24/09 12:55	03/24/09 17:40
S4-AD-0309	BSC0255-18	Water	03/24/09 13:05	03/24/09 17:40
S4-BU-0309	BSC0255-19	Water	03/24/09 13:15	03/24/09 17:40
S4-BD-0309	BSC0255-20	Water	03/24/09 13:30	03/24/09 17:40
S4-CU-0309	BSC0255-21	Water	03/24/09 13:45	03/24/09 17:40
S4-CD-0309	BSC0255-22	Water	03/24/09 13:55	03/24/09 17:40

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0100

Project Manager: Halah Voges

Report Created:

04/07/09 16:37

Analytical Case Narrative

TestAmerica - Seattle, WA

BSC0255

SAMPLE RECEIPT

The samples were received 03/24/09 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 10.1 degrees Celsius.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Halah Voges	Report Created: 04/07/09 16:37
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0255-01 (S1-AU-0309)		Water			Sampled: 03/24/09 08:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 17:08	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			80.2%		53 - 120 %	"				"
<i>Octacosane</i>			93.3%		68 - 123 %	"				"
BSC0255-02 (S1-AD-0309)		Water			Sampled: 03/24/09 08:50					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 17:30	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			79.8%		53 - 120 %	"				"
<i>Octacosane</i>			89.1%		68 - 123 %	"				"
BSC0255-03 (S1-BU-0309)		Water			Sampled: 03/24/09 09:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 17:52	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			83.0%		53 - 120 %	"				"
<i>Octacosane</i>			96.7%		68 - 123 %	"				"
BSC0255-04 (S1-BD-0309)		Water			Sampled: 03/24/09 09:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 18:15	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			83.7%		53 - 120 %	"				"
<i>Octacosane</i>			98.6%		68 - 123 %	"				"
BSC0255-05 (S2-AU-0309)		Water			Sampled: 03/24/09 09:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 18:37	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			79.7%		53 - 120 %	"				"
<i>Octacosane</i>			90.3%		68 - 123 %	"				"
BSC0255-06 (S2-AD-0309)		Water			Sampled: 03/24/09 09:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 18:59	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			79.6%		53 - 120 %	"				"
<i>Octacosane</i>			90.0%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Halah Voges	Report Created: 04/07/09 16:37
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0255-07 (S2-BU-0309)		Water			Sampled: 03/24/09 10:05					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	0.142	0.472	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 20:28	
Surrogate(s): 2-FBP			41.1%		53 - 120 %	"				Z6
Octacosane			79.8%		68 - 123 %	"				
BSC0255-07RE2 (S2-BU-0309)		Water			Sampled: 03/24/09 10:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C30018	03/30/09 10:29	03/31/09 12:47	
Surrogate(s): 2-FBP			96.9%		53 - 120 %	"				
Octacosane			105%		68 - 123 %	"				
BSC0255-08 (S2-BD-0309)		Water			Sampled: 03/24/09 10:15					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 20:51	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			78.1%		53 - 120 %	"				
Octacosane			85.4%		68 - 123 %	"				
BSC0255-09 (S3-AU-0309)		Water			Sampled: 03/24/09 11:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 21:13	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			77.4%		53 - 120 %	"				
Octacosane			85.6%		68 - 123 %	"				
BSC0255-10 (S10-BD-0309)		Water			Sampled: 03/24/09 09:10					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 21:35	
Lube Oil Range Hydrocarbons	"	0.162	0.142	0.472	"	"	"	"	"	J
Surrogate(s): 2-FBP			77.2%		53 - 120 %	"				
Octacosane			87.8%		68 - 123 %	"				
BSC0255-11 (S30-AU-0309)		Water			Sampled: 03/24/09 11:15					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 21:57	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			78.3%		53 - 120 %	"				
Octacosane			90.3%		68 - 123 %	"				

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Halah Voges	Report Created: 04/07/09 16:37
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0255-12 (S3-AD-0309)		Water			Sampled: 03/24/09 11:25					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 22:19	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			79.6%		53 - 120 %	"				"
<i>Octacosane</i>			86.9%		68 - 123 %	"				"
BSC0255-13 (S3-BU-0309)		Water			Sampled: 03/24/09 11:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 22:41	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			82.1%		53 - 120 %	"				"
<i>Octacosane</i>			97.2%		68 - 123 %	"				"
BSC0255-14 (S3-BD-0309)		Water			Sampled: 03/24/09 11:50					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 23:03	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			82.2%		53 - 120 %	"				"
<i>Octacosane</i>			101%		68 - 123 %	"				"
BSC0255-15 (S3-CU-0309)		Water			Sampled: 03/24/09 12:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 23:24	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			82.6%		53 - 120 %	"				"
<i>Octacosane</i>			101%		68 - 123 %	"				"
BSC0255-16 (S3-CD-0309)		Water			Sampled: 03/24/09 12:10					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/26/09 23:46	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			78.5%		53 - 120 %	"				"
<i>Octacosane</i>			89.6%		68 - 123 %	"				"
BSC0255-17 (S4-AU-0309)		Water			Sampled: 03/24/09 12:55					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/27/09 01:15	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			76.7%		53 - 120 %	"				"
<i>Octacosane</i>			87.8%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Halah Voges	Report Created: 04/07/09 16:37
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0255-18 (S4-AD-0309)		Water			Sampled: 03/24/09 13:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/27/09 01:37	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			80.9%		53 - 120 %	"				"
<i>Octacosane</i>			93.9%		68 - 123 %	"				"
BSC0255-19 (S4-BU-0309)		Water			Sampled: 03/24/09 13:15					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/27/09 01:59	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			80.6%		53 - 120 %	"				"
<i>Octacosane</i>			96.1%		68 - 123 %	"				"
BSC0255-20 (S4-BD-0309)		Water			Sampled: 03/24/09 13:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25027	03/25/09 12:33	03/27/09 02:21	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			74.0%		53 - 120 %	"				"
<i>Octacosane</i>			95.4%		68 - 123 %	"				"
BSC0255-21 (S4-CU-0309)		Water			Sampled: 03/24/09 13:45					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25028	03/25/09 12:36	03/26/09 16:45	
Lube Oil Range Hydrocarbons	"	0.173	0.142	0.472	"	"	"	"	"	J
<i>Surrogate(s): 2-FBP</i>			87.6%		53 - 120 %	"				"
<i>Octacosane</i>			95.5%		68 - 123 %	"				"
BSC0255-22 (S4-CD-0309)		Water			Sampled: 03/24/09 13:55					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C25028	03/25/09 12:36	03/26/09 17:08	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			92.6%		53 - 120 %	"				"
<i>Octacosane</i>			104%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Halah Voges	Report Created: 04/07/09 16:37
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C25027 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9C25027-BLK1)

Extracted: 03/25/09 12:33

Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/26/09 15:38	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>77.4%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>03/26/09 15:38</i>	
<i>Octacosane</i>		<i>Recovery:</i>	<i>93.3%</i>	<i>Limits: 68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

LCS (9C25027-BS1)

Extracted: 03/25/09 12:33

Diesel Range Hydrocarbons	NWTPH-Dx	1.91	0.100	0.250	mg/l	1x	--	2.00	95.5%	(65-120)	--	--	03/26/09 16:00	
Lube Oil Range Hydrocarbons	"	1.93	0.150	0.500	"	"	--	"	96.6%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>80.8%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>03/26/09 16:00</i>	
<i>Octacosane</i>		<i>Recovery:</i>	<i>95.8%</i>	<i>Limits: 68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

Duplicate (9C25027-DUP1)

QC Source: BSC0255-15

Extracted: 03/25/09 12:33

Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	ND	--	--	--	NR (40)		03/26/09 16:23	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	ND	--	--	--	NR	"	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>81.2%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>03/26/09 16:23</i>	
<i>Octacosane</i>		<i>Recovery:</i>	<i>92.4%</i>	<i>Limits: 68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

Matrix Spike (9C25027-MS1)

QC Source: BSC0255-15

Extracted: 03/25/09 12:33

Diesel Range Hydrocarbons	NWTPH-Dx	1.83	0.100	0.250	mg/l	1x	ND	2.00	91.5%	(32-143)	--	--	03/26/09 16:45	
Lube Oil Range Hydrocarbons	"	1.87	0.150	0.500	"	"	ND	"	93.4%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>77.1%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>03/26/09 16:45</i>	
<i>Octacosane</i>		<i>Recovery:</i>	<i>89.9%</i>	<i>Limits: 68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Halah Voges	Report Created: 04/07/09 16:37
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C25028 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9C25028-BLK1)										Extracted: 03/25/09 12:36				
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/26/09 15:38	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 97.8%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/26/09 15:38</i>		
<i>Octacosane</i>		<i>108%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
LCS (9C25028-BS1)										Extracted: 03/25/09 12:36				
Diesel Range Hydrocarbons	NWTPH-Dx	1.93	0.100	0.250	mg/l	1x	--	2.00	96.6%	(65-120)	--	--	03/26/09 16:00	
Lube Oil Range Hydrocarbons	"	2.11	0.150	0.500	"	"	--	"	106%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 94.3%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/26/09 16:00</i>		
<i>Octacosane</i>		<i>98.3%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
LCS Dup (9C25028-BSD1)										Extracted: 03/25/09 12:36				
Diesel Range Hydrocarbons	NWTPH-Dx	1.90	0.100	0.250	mg/l	1x	--	2.00	95.2%	(65-120)	1.44% (25)		03/26/09 16:23	
Lube Oil Range Hydrocarbons	"	2.22	0.150	0.500	"	"	--	"	111%	(70-120)	4.88% (40)		"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 92.5%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/26/09 16:23</i>		
<i>Octacosane</i>		<i>99.3%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

QC Batch: 9C30018 Water Preparation Method: EPA 3510C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9C30018-BLK1)										Extracted: 03/30/09 10:29				
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/31/09 11:38	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 100%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 11:38</i>		
<i>Octacosane</i>		<i>102%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
LCS (9C30018-BS1)										Extracted: 03/30/09 10:29				
Diesel Range Hydrocarbons	NWTPH-Dx	2.28	0.100	0.250	mg/l	1x	--	2.00	114%	(65-120)	--	--	03/31/09 12:01	
Lube Oil Range Hydrocarbons	"	2.13	0.150	0.500	"	"	--	"	107%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 111%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 12:01</i>		
<i>Octacosane</i>		<i>115%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
LCS Dup (9C30018-BSD1)										Extracted: 03/30/09 10:29				
Diesel Range Hydrocarbons	NWTPH-Dx	2.10	0.100	0.250	mg/l	1x	--	2.00	105%	(65-120)	8.24% (25)		03/31/09 12:24	
Lube Oil Range Hydrocarbons	"	1.99	0.150	0.500	"	"	--	"	99.6%	(70-120)	6.71% (40)		"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 98.6%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 12:24</i>		
<i>Octacosane</i>		<i>101%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0100

Project Manager: Halah Voges

Report Created:

04/07/09 16:37

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle	Project Name: BNSF-Skykomish	
710 2nd Ave. Ste. 1000	Project Number: 01140-222-0100	Report Created:
Seattle, WA 98104	Project Manager: Halah Voges	04/07/09 16:37

Notes and Definitions

Report Specific Notes:

- A-01 - Over Dilution
- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- MHA - Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.
- Z6 - Surrogate recovery was below acceptance limits.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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BNSF RAILWAY
CHAIN OF CUSTODY
 BNSF Project Number:
 BNSF Project Name: **SKYKOMISH**
 BNSF Contact: **Bruce Sheppard**

Laboratory: **Test America**
 Address: **11720 North Creek Pkwy N, Ste 400 (425) 470-9200**
 City/State/Zip: **Bothell, WA 98011**

LABORATORY INFORMATION
 Project Manager:
 Project Manager:
 Phone:
 Fax:

METHODS FOR ANALYSIS

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?
 EDO Req. Format?
RETREC-ERLWS

SAMPLE INFORMATION

Containers	Sample Identification	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix	LAB USE
		Date	Time				
2	S3-CA - 0309	3/24/09	1210	DWEN	W		16
2	S4-AM -	1255					17
2	S4-AD -	1305					18
2	S4-BU -	1315					19
2	S4-BD -	1330					20
2	S4-CN -	1345					21
2	S4-CD -	1355					22

Comments and Special Analytical Requirements:
SGCW - Silica gel cleanup

Received By: **Patricia Campbell**
 Date/Time: **3/24/09 17:40**

Received By:
 Date/Time:

Received By:
 Date/Time:

Received By:
 Date/Time:

Lab: Custody Intact? Yes No

Custody Seal No.:
 BNSF COC No.:

TAT: _____

Paperwork to PM - Date: _____ Time: _____

Non-Conformances? 1

Page Time & Initials: _____

Circle Y or N

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By:
(applies to temp at receipt)

Logged-in By:

Unpacked/Labeled By:

Cooler ID: 307, 357, 387, 341

Date: 3/24

Date: 3/25

Date: 3/25/9

Work Order No. 400, 335, 330, 322

Time: 11:40

Time: 12:02

Time: 1445

Client: 13010255

Initials: CL

Initials: [Signature]

Initials: AD

Project: _____

Container Type:

COC Seals:

Packing Material:

Cooler
 Box
 None/Other _____

Ship Container Sign By
 On Bottles Date
 None

Bubble Bags Styrofoam
 Foam Packs
 None/Other _____

Refrigerant:

Soil Stir Bars/Encores:

Received Via: Bill#:

Gel Ice Pack
 Loose Ice
 None/Other _____

Placed in freezer #46:
Y or N or NA
Initial/date/time _____

Fed Ex Client
 UPS TA Courier
 DHL Mid Valley
 Senvoy TDP
 GS Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)
(circle one)

Temperature Blank? 10.1 °C or NA comments 7.0, 7.3, 7.0, 9.3, 7.2, 6.7, 10.1, 5.6

Trip Blank? Y or N or NA

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

ID

ID

Intact? or N _____
Provided by TA? or N _____
Correct Type? or N _____
#Containers match COC? or N _____
IDs/time/date match COC? or N _____
Hold Times in hold? or N _____

Metals Preserved? Y or N or NA
Client QAPP Preserved? or N or NA
Adequate Volume? or N
(for tests requested)
Water VOAs: Headspace? Y or N or NA
Comments: _____

PROJECT MANAGEMENT

Is the Chain of Custody complete?

Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up?

Has client been contacted regarding non-conformances?

Y or N

Y or N

If Y, _____ / _____
Date Time

PM Initials: _____ Date: _____ Time: _____

April 09, 2009

Halah Voges
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 03/26/09 09:45.
The following list is a summary of the Work Orders contained in this report, generated on 04/09/09
17:14.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSC0267	BNSF-Skykomish	01140-204-0340

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle	Project Name: BNSF-Skykomish	Report Created:
710 2nd Ave. Ste. 1000	Project Number: 01140-204-0340	04/09/09 17:14
Seattle, WA 98104	Project Manager: Halah Voges	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2A-W-9-0309	BSC0267-01	Water	03/25/09 09:10	03/26/09 09:45
2A-W-90-0309	BSC0267-02	Water	03/25/09 09:20	03/26/09 09:45
1C-W-2-0309	BSC0267-03	Water	03/25/09 11:40	03/26/09 09:45
1C-W-1-0309	BSC0267-04	Water	03/25/09 12:45	03/26/09 09:45
MW-16-0309	BSC0267-05	Water	03/25/09 10:45	03/26/09 09:45
MW-4-0309	BSC0267-06	Water	03/24/09 17:05	03/26/09 09:45
MW-3-0309	BSC0267-07	Water	03/24/09 16:00	03/26/09 09:45
MW-400-0309	BSC0267-08	Water	03/24/09 17:10	03/26/09 09:45
5-W-4-0309	BSC0267-09	Water	03/25/09 13:45	03/26/09 09:45
5-W-20-0309	BSC0267-10	Water	03/25/09 15:20	03/26/09 09:45
5-W-42-0309	BSC0267-11	Water	03/25/09 16:30	03/26/09 09:45
5-W-16-0309	BSC0267-12	Water	03/25/09 10:05	03/26/09 09:45
5-W-17-0309	BSC0267-13	Water	03/25/09 16:20	03/26/09 09:45
5-W-50-0309	BSC0267-14	Water	03/25/09 15:40	03/26/09 09:45
5-W-54-0309	BSC0267-15	Water	03/25/09 14:50	03/26/09 09:45
5-W-56-0309	BSC0267-16	Water	03/24/09 17:00	03/26/09 09:45
5-W-500-0309	BSC0267-17	Water	03/24/09 16:00	03/26/09 09:45
5-W-18-0309	BSC0267-18	Water	03/25/09 13:05	03/26/09 09:45
5-W-180-0309	BSC0267-19	Water	03/25/09 12:05	03/26/09 09:45
5-W-15-0309	BSC0267-20	Water	03/25/09 12:10	03/26/09 09:45
5-W-14-0309	BSC0267-21	Water	03/24/09 09:20	03/26/09 09:45
5-W-19-0309	BSC0267-22	Water	03/25/09 14:05	03/26/09 09:45
5-W-52-0309	BSC0267-23	Water	03/24/09 16:05	03/26/09 09:45

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/09/09 17:14

Analytical Case Narrative

TestAmerica - Seattle, WA

BSC0267

SAMPLE RECEIPT

The samples were received 03/26/2009 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 4.0 degrees Celsius. For samples 5-W-16-0309 and 5-W-15-0309, the COC lists the sampled date as 03/25/2009, however the containers list the sampled date of 03/24/2009. The samples were logged in with the sampled date on the COC.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/09/09 17:14
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0267-01 (2A-W-9-0309)		Water			Sampled: 03/25/09 09:10					
Diesel Range Hydrocarbons	NWTPH-Dx	0.927	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 13:58	Q3
Lube Oil Range Hydrocarbons	"	0.799	0.142	0.472	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			87.0%		53 - 120 %	"			"	
<i>Octacosane</i>			96.5%		68 - 123 %	"			"	
BSC0267-02 (2A-W-90-0309)		Water			Sampled: 03/25/09 09:20					
Diesel Range Hydrocarbons	NWTPH-Dx	0.902	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 14:21	Q3
Lube Oil Range Hydrocarbons	"	0.772	0.142	0.472	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			89.2%		53 - 120 %	"			"	
<i>Octacosane</i>			99.6%		68 - 123 %	"			"	
BSC0267-03 (1C-W-2-0309)		Water			Sampled: 03/25/09 11:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 14:44	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			82.9%		53 - 120 %	"			"	
<i>Octacosane</i>			104%		68 - 123 %	"			"	
BSC0267-04 (1C-W-1-0309)		Water			Sampled: 03/25/09 12:45					
Diesel Range Hydrocarbons	NWTPH-Dx	0.273	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 15:07	Q3
Lube Oil Range Hydrocarbons	"	0.162	0.142	0.472	"	"	"	"	"	J, Q1
<i>Surrogate(s): 2-FBP</i>			92.3%		53 - 120 %	"			"	
<i>Octacosane</i>			109%		68 - 123 %	"			"	
BSC0267-05 (MW-16-0309)		Water			Sampled: 03/25/09 10:45					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 17:29	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			87.2%		53 - 120 %	"			"	
<i>Octacosane</i>			104%		68 - 123 %	"			"	
BSC0267-06 (MW-4-0309)		Water			Sampled: 03/24/09 17:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 17:53	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			68.7%		53 - 120 %	"			"	
<i>Octacosane</i>			74.2%		68 - 123 %	"			"	

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/09/09 17:14
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0267-07 (MW-3-0309)		Water			Sampled: 03/24/09 16:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 18:16	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			83.3%		53 - 120 %	"				"
Octacosane			95.2%		68 - 123 %	"				"
BSC0267-08 (MW-400-0309)		Water			Sampled: 03/24/09 17:10					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 18:39	
Lube Oil Range Hydrocarbons	"	0.186	0.142	0.472	"	"	"	"	"	J, Q1
Surrogate(s): 2-FBP			86.0%		53 - 120 %	"				"
Octacosane			104%		68 - 123 %	"				"
BSC0267-09 (5-W-4-0309)		Water			Sampled: 03/25/09 13:45					
Diesel Range Hydrocarbons	NWTPH-Dx	0.485	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 19:02	Q3
Lube Oil Range Hydrocarbons	"	0.596	0.142	0.472	"	"	"	"	"	Q1
Surrogate(s): 2-FBP			91.6%		53 - 120 %	"				"
Octacosane			106%		68 - 123 %	"				"
BSC0267-10RE2 (5-W-20-0309)		Water			Sampled: 03/25/09 15:20					
Diesel Range Hydrocarbons	NWTPH-Dx	0.811	0.0943	0.236	mg/l	1x	9D01044	04/01/09 17:04	04/02/09 23:14	Q12
Lube Oil Range Hydrocarbons	"	0.229	0.142	0.472	"	"	"	"	"	J
Surrogate(s): 2-FBP			75.9%		53 - 120 %	"				"
Octacosane			95.5%		68 - 123 %	"				"
BSC0267-11 (5-W-42-0309)		Water			Sampled: 03/25/09 16:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	03/31/09 23:20	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	C
Surrogate(s): 2-FBP			73.7%		53 - 120 %	"				"
Octacosane			98.6%		68 - 123 %	"				"
BSC0267-12 (5-W-16-0309)		Water			Sampled: 03/25/09 10:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 00:04	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	C
Surrogate(s): 2-FBP			82.8%		53 - 120 %	"				"
Octacosane			97.8%		68 - 123 %	"				"

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Kate Haney

Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/09/09 17:14
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0267-13 (5-W-17-0309)		Water			Sampled: 03/25/09 16:20					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 00:49	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP</i>			82.7%		53 - 120 %	"			"	
<i>Octacosane</i>			95.0%		68 - 123 %	"			"	
BSC0267-14 (5-W-50-0309)		Water			Sampled: 03/25/09 15:40					
Diesel Range Hydrocarbons	NWTPH-Dx	3.57	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 19:25	Q3
Lube Oil Range Hydrocarbons	"	1.51	0.142	0.472	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			89.2%		53 - 120 %	"			"	
<i>Octacosane</i>			99.2%		68 - 123 %	"			"	
BSC0267-15 (5-W-54-0309)		Water			Sampled: 03/25/09 14:50					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	03/31/09 19:48	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			83.1%		53 - 120 %	"			"	
<i>Octacosane</i>			99.3%		68 - 123 %	"			"	
BSC0267-16 (5-W-56-0309)		Water			Sampled: 03/24/09 17:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	04/01/09 10:32	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			80.4%		53 - 120 %	"			"	
<i>Octacosane</i>			101%		68 - 123 %	"			"	
BSC0267-17 (5-W-500-0309)		Water			Sampled: 03/24/09 16:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	04/01/09 10:54	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			79.3%		53 - 120 %	"			"	
<i>Octacosane</i>			82.9%		68 - 123 %	"			"	
BSC0267-18 (5-W-18-0309)		Water			Sampled: 03/25/09 13:05					
Diesel Range Hydrocarbons	NWTPH-Dx	1.54	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 01:33	Q13
<i>Surrogate(s): 2-FBP</i>			89.3%		53 - 120 %	"			"	
<i>Octacosane</i>			93.7%		68 - 123 %	"			"	

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Kate Haney, Project Manager

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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0267-18RE1 (5-W-18-0309)		Water			Sampled: 03/25/09 13:05					
Lube Oil Range Hydrocarbons	NWTPH-Dx	0.452	0.142	0.472	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 15:44	J
Surrogate(s): 2-FBP			83.6%		53 - 120 %	"				"
Octacosane			99.3%		68 - 123 %	"				"
BSC0267-19 (5-W-180-0309)		Water			Sampled: 03/25/09 12:05					
Diesel Range Hydrocarbons	NWTPH-Dx	1.57	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 02:17	Q13
Surrogate(s): 2-FBP			91.4%		53 - 120 %	"				"
Octacosane			94.2%		68 - 123 %	"				"
BSC0267-19RE1 (5-W-180-0309)		Water			Sampled: 03/25/09 12:05					
Lube Oil Range Hydrocarbons	NWTPH-Dx	0.487	0.142	0.472	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 16:06	Q13
Surrogate(s): 2-FBP			83.3%		53 - 120 %	"				"
Octacosane			97.9%		68 - 123 %	"				"
BSC0267-20 (5-W-15-0309)		Water			Sampled: 03/25/09 12:10					
Diesel Range Hydrocarbons	NWTPH-Dx	0.183	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 04:06	J, Q13
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	C
Surrogate(s): 2-FBP			84.4%		53 - 120 %	"				"
Octacosane			104%		68 - 123 %	"				"
BSC0267-21 (5-W-14-0309)		Water			Sampled: 03/24/09 09:20					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 04:50	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	C
Surrogate(s): 2-FBP			81.3%		53 - 120 %	"				"
Octacosane			96.7%		68 - 123 %	"				"
BSC0267-22 (5-W-19-0309)		Water			Sampled: 03/25/09 14:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 05:34	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	C
Surrogate(s): 2-FBP			82.8%		53 - 120 %	"				"
Octacosane			99.7%		68 - 123 %	"				"

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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0267-23 (5-W-52-0309)		Water			Sampled: 03/24/09 16:05					
Diesel Range Hydrocarbons	NWTPH-Dx	0.982	0.0943	0.236	mg/l	1x	9C27009	03/27/09 11:39	04/01/09 11:16	Q3
Lube Oil Range Hydrocarbons	"	0.455	0.142	0.472	"	"	"	"	"	Q1, J
Surrogate(s): 2-FBP			86.7%		53 - 120 %	"			"	
Octacosane			98.1%		68 - 123 %	"			"	

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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0267-10RE2 (5-W-20-0309)		Water			Sampled: 03/25/09 15:20					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9D01044	04/01/09 17:04	04/03/09 16:55	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			68.4%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			86.9%		68 - 125 %	"				"
BSC0267-11 (5-W-42-0309)		Water			Sampled: 03/25/09 16:30					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	03/31/09 23:42	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			68.6%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			93.2%		68 - 125 %	"				"
BSC0267-12 (5-W-16-0309)		Water			Sampled: 03/25/09 10:05					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 00:26	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			71.0%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			86.2%		68 - 125 %	"				"
BSC0267-13 (5-W-17-0309)		Water			Sampled: 03/25/09 16:20					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 01:11	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			70.8%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			84.5%		68 - 125 %	"				"
BSC0267-18 (5-W-18-0309)		Water			Sampled: 03/25/09 13:05					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 01:55	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			76.4%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			91.7%		68 - 125 %	"				"
BSC0267-19 (5-W-180-0309)		Water			Sampled: 03/25/09 12:05					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 02:39	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			74.8%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			87.9%		68 - 125 %	"				"

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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSC0267-20 (5-W-15-0309)		Water			Sampled: 03/25/09 12:10					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 04:28	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			72.9%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			90.1%		68 - 125 %	"			"	
BSC0267-21 (5-W-14-0309)		Water			Sampled: 03/24/09 09:20					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 05:12	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			72.9%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			89.5%		68 - 125 %	"			"	
BSC0267-22 (5-W-19-0309)		Water			Sampled: 03/25/09 14:05					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9C27010	03/30/09 11:40	04/01/09 05:56	
Lube Oil Range (SGCU)	"	ND	0.142	0.472	"	"	"	"	"	C
<i>Surrogate(s): 2-FBP (SGCU)</i>			75.5%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			95.2%		68 - 125 %	"			"	

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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C27009 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes	
Blank (9C27009-BLK1)													Extracted: 03/27/09 11:39		
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/31/09 16:18		
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 85.3%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 16:18</i>			
<i>Octacosane</i>		<i>96.3%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			
LCS (9C27009-BS1)													Extracted: 03/27/09 11:39		
Diesel Range Hydrocarbons	NWTPH-Dx	1.96	0.100	0.250	mg/l	1x	--	2.00	98.0%	(65-120)	--	--	03/31/09 16:42		
Lube Oil Range Hydrocarbons	"	1.93	0.150	0.500	"	"	--	"	96.7%	(70-120)	--	--	"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 89.2%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 16:42</i>			
<i>Octacosane</i>		<i>99.3%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			
LCS Dup (9C27009-BSD1)													Extracted: 03/27/09 11:39		MNR1
Diesel Range Hydrocarbons	NWTPH-Dx	1.75	0.100	0.250	mg/l	1x	--	2.00	87.7%	(65-120)	11.1% (25)		03/31/09 17:05		
Lube Oil Range Hydrocarbons	"	1.68	0.150	0.500	"	"	--	"	83.9%	(70-120)	14.2% (40)		"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 85.4%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 17:05</i>			
<i>Octacosane</i>		<i>84.5%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			

QC Batch: 9C27010 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9C27010-BLK1)													Extracted: 03/27/09 11:40	
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/31/09 18:32	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 80.4%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 18:32</i>		
<i>Octacosane</i>		<i>95.3%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
Blank (9C27010-BLK2)													Extracted: 03/27/09 11:40	
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	04/01/09 13:36	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 79.5%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/01/09 13:36</i>		
<i>Octacosane</i>		<i>97.2%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
LCS (9C27010-BS1)													Extracted: 03/27/09 11:40	
Diesel Range Hydrocarbons	NWTPH-Dx	1.80	0.100	0.250	mg/l	1x	--	2.00	89.8%	(65-120)	--	--	03/31/09 19:17	
Lube Oil Range Hydrocarbons	"	2.11	0.150	0.500	"	"	--	"	105%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 80.7%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 19:17</i>		
<i>Octacosane</i>		<i>91.7%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

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Kate Haney, Project Manager

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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C27010 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (9C27010-BS2)										Extracted: 03/27/09 11:40				
Diesel Range Hydrocarbons	NWTPH-Dx	2.00	0.100	0.250	mg/l	1x	--	2.00	100%	(65-120)	--	--	04/01/09 14:19	
Lube Oil Range Hydrocarbons	"	1.90	0.150	0.500	"	"	--	"	95.1%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 83.8%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/01/09 14:19</i>		
<i>Octacosane</i>		<i>97.5%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

Matrix Spike (9C27010-MS1)										QC Source: BSC0267-12					Extracted: 03/27/09 11:40				
Diesel Range Hydrocarbons	NWTPH-Dx	1.74	0.0943	0.236	mg/l	1x	ND	1.89	92.3%	(32-143)	--	--	03/31/09 20:01						
Lube Oil Range Hydrocarbons	"	2.03	0.142	0.472	"	"	ND	"	107%	(50-150)	--	--	"						
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 80.7%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 20:01</i>							
<i>Octacosane</i>		<i>89.7%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>							

Matrix Spike Dup (9C27010-MSD1)										QC Source: BSC0267-12					Extracted: 03/27/09 11:40				
Diesel Range Hydrocarbons	NWTPH-Dx	1.78	0.0943	0.236	mg/l	1x	ND	1.89	94.1%	(32-143)	1.90%	(40)	03/31/09 20:46						
Lube Oil Range Hydrocarbons	"	2.16	0.142	0.472	"	"	ND	"	115%	(50-150)	6.49%	"	"						
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 78.6%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>03/31/09 20:46</i>							
<i>Octacosane</i>		<i>94.1%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>							

QC Batch: 9D01044 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9D01044-BLK1)										Extracted: 04/01/09 17:04				
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	04/03/09 05:20	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 77.4%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/03/09 05:20</i>		
<i>Octacosane</i>		<i>94.7%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

LCS (9D01044-BS1)										Extracted: 04/01/09 17:04				
Diesel Range Hydrocarbons	NWTPH-Dx	1.95	0.100	0.250	mg/l	1x	--	2.00	97.3%	(65-120)	--	--	04/03/09 05:41	
Lube Oil Range Hydrocarbons	"	1.85	0.150	0.500	"	"	--	"	92.4%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 85.9%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/03/09 05:41</i>		
<i>Octacosane</i>		<i>96.7%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

LCS Dup (9D01044-BSD1)										Extracted: 04/01/09 17:04				
Diesel Range Hydrocarbons	NWTPH-Dx	2.09	0.100	0.250	mg/l	1x	--	2.00	104%	(65-120)	7.07%	(25)	04/03/09 06:02	
Lube Oil Range Hydrocarbons	"	1.99	0.150	0.500	"	"	--	"	99.7%	(70-120)	7.55%	(40)	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 86.3%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/03/09 06:02</i>		
<i>Octacosane</i>		<i>100%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/09/09 17:14
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9C27010 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9C27010-BLK1)

Extracted: 03/27/09 11:40

Diesel Range (SGCU)	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	03/31/09 18:55	
Lube Oil Range (SGCU)	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>72.4%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>03/31/09 18:55</i>	
<i>Octacosane (SGCU)</i>			<i>88.9%</i>	<i>68-125%</i>		<i>"</i>							<i>"</i>	

Blank (9C27010-BLK2)

Extracted: 03/27/09 11:40

Diesel Range (SGCU)	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	04/01/09 13:57	
Lube Oil Range (SGCU)	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>72.9%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>04/01/09 13:57</i>	
<i>Octacosane (SGCU)</i>			<i>93.0%</i>	<i>68-125%</i>		<i>"</i>							<i>"</i>	

LCS (9C27010-BS1)

Extracted: 03/27/09 11:40

Diesel Range (SGCU)	NWTPH-Dx	1.63	0.100	0.250	mg/l	1x	--	2.00	81.6%	(61-132)	--	--	03/31/09 19:39	
Lube Oil Range (SGCU)	"	1.95	0.150	0.500	"	"	--	"	97.4%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>72.1%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>03/31/09 19:39</i>	
<i>Octacosane (SGCU)</i>			<i>85.2%</i>	<i>68-125%</i>		<i>"</i>							<i>"</i>	

LCS (9C27010-BS2)

Extracted: 03/27/09 11:40

Diesel Range (SGCU)	NWTPH-Dx	1.84	0.100	0.250	mg/l	1x	--	2.00	91.9%	(61-132)	--	--	04/01/09 14:40	
Lube Oil Range (SGCU)	"	1.76	0.150	0.500	"	"	--	"	87.9%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>75.4%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>04/01/09 14:40</i>	
<i>Octacosane (SGCU)</i>			<i>91.5%</i>	<i>68-125%</i>		<i>"</i>							<i>"</i>	

Matrix Spike (9C27010-MS1)

QC Source: BSC0267-12

Extracted: 03/27/09 11:40

Diesel Range (SGCU)	NWTPH-Dx	1.55	0.0943	0.236	mg/l	1x	ND	1.89	82.0%	(32-143)	--	--	03/31/09 20:24	
Lube Oil Range (SGCU)	"	1.87	0.142	0.472	"	"	ND	"	98.9%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>70.8%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>03/31/09 20:24</i>	
<i>Octacosane (SGCU)</i>			<i>83.6%</i>	<i>68-125%</i>		<i>"</i>							<i>"</i>	

Matrix Spike Dup (9C27010-MSD1)

QC Source: BSC0267-12

Extracted: 03/27/09 11:40

Diesel Range (SGCU)	NWTPH-Dx	1.55	0.0943	0.236	mg/l	1x	ND	1.89	82.0%	(32-143)	0.0799% (40)		03/31/09 21:08	
Lube Oil Range (SGCU)	"	1.95	0.142	0.472	"	"	ND	"	103%	(50-150)	4.22% (50)		"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>67.8%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>03/31/09 21:08</i>	
<i>Octacosane (SGCU)</i>			<i>85.2%</i>	<i>68-125%</i>		<i>"</i>							<i>"</i>	

TestAmerica Seattle

Kate Haney

Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/09/09 17:14
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9D01044 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9D01044-BLK2)										Extracted: 04/01/09 17:04				
Diesel Range (SGCU)	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	04/03/09 15:48	
Lube Oil Range (SGCU)	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>61.1%</i>							<i>Limits: 53-125%</i>			<i>04/03/09 15:48</i>	
<i>Octacosane (SGCU)</i>			<i>76.8%</i>							<i>68-125%</i>			<i>"</i>	
LCS (9D01044-BS2)										Extracted: 04/01/09 17:04				
Diesel Range (SGCU)	NWTPH-Dx	1.79	0.100	0.250	mg/l	1x	--	2.00	89.3%	(61-132)	--	--	04/03/09 16:11	
Lube Oil Range (SGCU)	"	1.72	0.150	0.500	"	"	--	"	85.9%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>77.5%</i>							<i>Limits: 53-125%</i>			<i>04/03/09 16:11</i>	
<i>Octacosane (SGCU)</i>			<i>90.3%</i>							<i>68-125%</i>			<i>"</i>	
LCS Dup (9D01044-BSD2)										Extracted: 04/01/09 17:04				
Diesel Range (SGCU)	NWTPH-Dx	1.64	0.100	0.250	mg/l	1x	--	2.00	81.8%	(61-132)	8.82% (35)		04/03/09 16:33	
Lube Oil Range (SGCU)	"	1.56	0.150	0.500	"	"	--	"	77.8%	(50-150)	9.87% (50)		"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>70.3%</i>							<i>Limits: 53-125%</i>			<i>04/03/09 16:33</i>	
<i>Octacosane (SGCU)</i>			<i>82.9%</i>							<i>68-125%</i>			<i>"</i>	

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/09/09 17:14

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle	Project Name: BNSF-Skykomish	
710 2nd Ave. Ste. 1000	Project Number: 01140-204-0340	Report Created:
Seattle, WA 98104	Project Manager: Halah Voges	04/09/09 17:14

Notes and Definitions

Report Specific Notes:

- C - Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- MNR1 - There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- Q1 - Does not match typical pattern
- Q12 - Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
- Q13 - Detected hydrocarbons do not have pattern and range consistent with typical petroleum products and may be due to biogenic interference.
- Q3 - The chromatographic pattern is not consistent with diesel fuel.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Kate Haney, Project Manager

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CHAIN OF CUSTODY

BNSF Project Number: **01140-204-0340**

BNSF Project Name: **skykomish**

BNSF Contact: **Bruce Shepard**

Project State of Origin: **WA**

Project City: **skykomish**

BNSF Work Order No.: **TI100-108**

Company: **AECOM**

Address: **710 2nd Ave, Ste. 1000**

City/State/Zip: **Seattle, WA 98104**

Project Manager: **Haluk Vages**

Email: **haluk.vages@aecom.com**

Phone: **(206) 624-9349**

Fax:

Tracking Number:

Shipment Method:

LAB WORK ORDER: **BSL0267**

SHIPMENT INFORMATION

Project Manager:

Project Number:

Project Name:

Address:

City/State/Zip:

Company:

Address:

City/State/Zip:

TURNAROUND TIME

1-day Rush

2-day Rush

3-day Rush

5- to 8-day Rush

Standard 10-Day

Other

DELIVERABLES

BNSF Standard (Level II)

Level III

Level IV

Other Deliverables?

EDD Req. Format?

RETEC-ERMS

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix
		Date	Time			
2A-W-9-0309	2	3/25/09	0910	G.S N	W	W
2A-W-90-0309	2	3/25/09	0920	G.S N	W	W
1C-W-2-0309	2	3/25/09	1140	G.S N	W	W
1C-W-1-0309	2	3/25/09	1245	G.S N	W	W
MW-16-0309	2	3/25/09	1045	G.S N	W	W
MW-4-0309	2	3/24/09	1705	G.S N	W	W
MW-3-0309	2	3/24/09	1600	G.S N	W	W
MW-400-0309	2	3/24/09	1710	G.S N	W	W
5-W-4-0309	2	3/25/09	1345	G.S N	W	W
5-W-20-0309	4	3/25/09	1520	G.S N	W	W
5-W-42-0309	4	3/25/09	1630	G.S N	W	W
5-W-16-0309	12	3/25/09	1005	FM N	W	W
5-W-17-0309	4	3/25/09	1620	FM N	W	W
5-W-50-0309	2	3/25/09	1540	FM N	W	W
5-W-54-0309	2	3/25/09	1450	FM N	W	W

Relinquished By: **Abdelghani xbtane**

Relinquished By: **Abdelghani xbtane**

Relinquished By: **Abdelghani xbtane**

Relinquished By: **Abdelghani xbtane**

Date/Time: **3/26/09 0945**

Date/Time: **3/26/09 0945**

Date/Time: **3/26/09 0945**

Date/Time: **3/26/09 0945**

Received By: **Abdelghani xbtane**

Received By: **Abdelghani xbtane**

Received By: **Abdelghani xbtane**

Received By: **Abdelghani xbtane**

Lab Remarks:

Lab: Custody Intact? Yes No

Custody Seal No.:

BNSF COC No.:

Comments and Special Analytical Requirements:

SGCU - silica gel cleanup

DATE/TIME: **03/26/09/0945**

DATE/TIME: **03/26/09/0945**

DATE/TIME: **03/26/09/0945**

DATE/TIME: **03/26/09/0945**



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION
 BNSF Project Number:
 BNSF Project Name: Skykonish
 BNSF Contact: Bruce Sheppard

TURNAROUND TIME
 1-day Rush
 2-day Rush
 3-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?

LABORATORY INFORMATION
 Laboratory: Test America
 Address: 11720 North Creek Pkwy N, Ste. 400
 City/State/ZIP: Bothell, WA 98011
 Project State of Origin:

CONSULTANT INFORMATION
 Company: AECOM
 Address: 710 2nd Ave, Ste. 1000
 City/State/ZIP: Seattle, WA 98101
 Project Manager: Halah Voges
 Email: halah.voges@aecom.com
 Phone: (206) 624-9349
 Fax:

SHIPMENT INFORMATION
 Shipment Method:
 Tracking Number:
 Project Number: 01140-204-0340

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix	LAB USE
		Date	Time				
1 5-W-56-0309	2	3/24/09	1700 FM	N		W	-16
2 5-W-500-0309	2	3/24/09	1600 FM				-17
3 5-W-18-0309	4	3/25/09	1305 FM				-18
4 5-W-180-0309	4	3/25/09	1205 FM				-19
5 5-W-15-0309	4	3/25/09	1210 FM				-20
6 5-W-14-0309	4	3/24/09	0920 FM				-21
7 5-W-19-0309	4	3/25/09	1405 FM				-22
8 5-W-52-0309	2	3/24/09	1605 FM				-23
9							
10							
11							
12							
13							
14							
15							

RECEIVED INFORMATION
 Relinquished By: Abdelghani Selhane
 Date/Time: 3/26/09/945
 Received By: Christie Wagner
 Date/Time: 03/24/09/0945
 Relinquished By:
 Date/Time:
 Received By:
 Date/Time:
 Lab Remarks:
 BNSF COC No.:

COMMENTS AND SPECIAL ANALYTICAL REQUIREMENTS:
SGCW - Silica gel cleanup

TAT: _____

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?

Page Time & Initials: _____

Circle Y or N

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By:
(applies to temp at receipt)

Logged-in By:

Unpacked/Labeled By:

Cooler ID: _____

Date: 03-26-09

Date: 03-26

Date: 03-26

Work Order No. BSC0267

Time: 0945

Time: _____

Time: 1200

Client: _____

Initials: CW

Initials: CW

Initials: CW

Project: _____

Container Type:

COC Seals:

Packing Material:

Cooler

____ Ship Container _____ Sign By

Bubble Bags _____ Styrofoam

____ Box

____ On Bottles _____ Date

____ Foam Packs

____ None/Other _____

None

____ None/Other _____

Refrigerant:

Soil Stir Bars/Encores:

Received Via: Bill#:

____ Gel Ice Pack _____

Placed in freezer #46:

____ Fed Ex Client

Loose Ice _____

Y or N or NA

____ UPS _____ TA Courier

____ None/Other _____

Initial/date/time _____

____ DHL _____ Mid Valley

____ Senvoy _____ TDP

____ GS _____ Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)

Temperature Blank? 4.0 °C or NA comments 3.62, 3.42, 3.32, 3.12, 2.52, 1.52 Trip Blank? Y or N or NA

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

ID

ID

Intact? or N _____

Metals Preserved? Y or N or NA _____

Provided by TA? or N _____

Client QAPP Preserved? or N or NA _____

Correct Type? or N _____

Adequate Volume? or N _____

#Containers match COC? or N _____

Water VOAs: Headspace? Y or N or NA _____

IDs/time/date match COC? or N _____

Comments: _____

Hold Times in hold? or N _____

PROJECT MANAGEMENT

Is the Chain of Custody complete?

Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up?

Y or N

Has client been contacted regarding non-conformances?

Y or N

If Y, _____ / _____
Date Time

PM Initials: _____ Date: _____ Time: _____

April 17, 2009

Halah Voges
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 04/02/09 18:20.
The following list is a summary of the Work Orders contained in this report, generated on 04/17/09
16:21.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSD0044	BNSF-Skykomish	01140-204-0340

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
 Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/17/09 16:21

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2A-W-41-0409	BSD0044-01	Water	04/01/09 09:50	04/02/09 18:20
1B-W-23-0409	BSD0044-02	Water	04/01/09 10:45	04/02/09 18:20
1B-W-123-0409	BSD0044-03	Water	04/01/09 11:05	04/02/09 18:20
GW-3-0409	BSD0044-04	Water	04/01/09 11:55	04/02/09 18:20
2A-W-42-0409	BSD0044-05	Water	04/01/09 13:00	04/02/09 18:20
GW-4-0409	BSD0044-06	Water	04/01/09 14:20	04/02/09 18:20
GW-2-0409	BSD0044-07	Water	04/01/09 16:10	04/02/09 18:20
2A-W-40-0409	BSD0044-08	Water	04/01/09 17:30	04/02/09 18:20
2A-W-400-0409	BSD0044-09	Water	04/01/09 18:00	04/02/09 18:20
GW-1-0409	BSD0044-10	Water	04/02/09 08:45	04/02/09 18:20
5-W-43-0409	BSD0044-11	Water	04/02/09 09:40	04/02/09 18:20
EW-1	BSD0044-12	Water	04/02/09 10:30	04/02/09 18:20

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/17/09 16:21

Analytical Case Narrative

TestAmerica - Seattle, WA

BSD0044

SAMPLE RECEIPT

The samples were received 04/02/09 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 5.5 degrees Celsius.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/17/09 16:21
---	---	-----------------------------------

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSD0044-01 (2A-W-41-0409)		Water			Sampled: 04/01/09 09:50					
Diesel Range Hydrocarbons	NWTPH-Dx	0.438	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 18:28	Q12
Lube Oil Range Hydrocarbons	"	0.183	0.142	0.472	"	"	"	"	"	Q7, J
Surrogate(s): 2-FBP			74.9%		53 - 120 %	"				"
Octacosane			96.7%		68 - 123 %	"				"
BSD0044-02 (1B-W-23-0409)		Water			Sampled: 04/01/09 10:45					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 18:51	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			75.3%		53 - 120 %	"				"
Octacosane			91.0%		68 - 123 %	"				"
BSD0044-03 (1B-W-123-0409)		Water			Sampled: 04/01/09 11:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 19:13	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			75.7%		53 - 120 %	"				"
Octacosane			92.4%		68 - 123 %	"				"
BSD0044-04 (GW-3-0409)		Water			Sampled: 04/01/09 11:55					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 19:36	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			76.4%		53 - 120 %	"				"
Octacosane			92.9%		68 - 123 %	"				"
BSD0044-05 (2A-W-42-0409)		Water			Sampled: 04/01/09 13:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 19:58	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			71.7%		53 - 120 %	"				"
Octacosane			93.6%		68 - 123 %	"				"
BSD0044-06 (GW-4-0409)		Water			Sampled: 04/01/09 14:20					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 20:21	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			76.2%		53 - 120 %	"				"
Octacosane			95.0%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/17/09 16:21
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSD0044-07 (GW-2-0409)		Water			Sampled: 04/01/09 16:10					
Diesel Range Hydrocarbons	NWTPH-Dx	0.499	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 21:51	Q12
Lube Oil Range Hydrocarbons	"	0.363	0.142	0.472	"	"	"	"	"	Q7, J
Surrogate(s): 2-FBP			77.9%		53 - 120 %	"				
Octacosane			99.7%		68 - 123 %	"				
BSD0044-08 (2A-W-40-0409)		Water			Sampled: 04/01/09 17:30					
Diesel Range Hydrocarbons	NWTPH-Dx	0.220	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 22:14	Q12, J
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			75.3%		53 - 120 %	"				
Octacosane			97.8%		68 - 123 %	"				
BSD0044-09 (2A-W-400-0409)		Water			Sampled: 04/01/09 18:00					
Diesel Range Hydrocarbons	NWTPH-Dx	0.191	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 22:36	Q12, J
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			77.0%		53 - 120 %	"				
Octacosane			97.1%		68 - 123 %	"				
BSD0044-10 (GW-1-0409)		Water			Sampled: 04/02/09 08:45					
Diesel Range Hydrocarbons	NWTPH-Dx	0.102	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 22:58	Q12, J
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			72.7%		53 - 120 %	"				
Octacosane			92.7%		68 - 123 %	"				
BSD0044-11 (5-W-43-0409)		Water			Sampled: 04/02/09 09:40					
Diesel Range Hydrocarbons	NWTPH-Dx	0.151	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/06/09 23:21	Q12, J
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			74.7%		53 - 120 %	"				
Octacosane			94.8%		68 - 123 %	"				
BSD0044-12 (EW-1)		Water			Sampled: 04/02/09 10:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0943	0.236	mg/l	1x	9D03012	04/03/09 11:51	04/07/09 07:40	
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
Surrogate(s): 2-FBP			75.5%		53 - 120 %	"				
Octacosane			97.3%		68 - 123 %	"				

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/17/09 16:21
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9D03012 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9D03012-BLK1)

Extracted: 04/03/09 11:51

Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	04/06/09 16:59	
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>77.0%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>04/06/09 16:59</i>	
<i>Octacosane</i>		<i>93.3%</i>		<i>68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

LCS (9D03012-BS1)

Extracted: 04/03/09 11:51

Diesel Range Hydrocarbons	NWTPH-Dx	1.83	0.100	0.250	mg/l	1x	--	2.00	91.3%	(65-120)	--	--	04/06/09 17:21	
Lube Oil Range Hydrocarbons	"	1.93	0.150	0.500	"	"	--	"	96.7%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>67.2%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>04/06/09 17:21</i>	
<i>Octacosane</i>		<i>88.7%</i>		<i>68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

Matrix Spike (9D03012-MS1)

QC Source: BSD0044-12

Extracted: 04/03/09 11:51

Diesel Range Hydrocarbons	NWTPH-Dx	1.83	0.0943	0.236	mg/l	1x	ND	1.89	97.1%	(32-143)	--	--	04/06/09 17:43	
Lube Oil Range Hydrocarbons	"	1.95	0.142	0.472	"	"	ND	"	104%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>72.7%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>04/06/09 17:43</i>	
<i>Octacosane</i>		<i>92.4%</i>		<i>68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

Matrix Spike Dup (9D03012-MSD1)

QC Source: BSD0044-12

Extracted: 04/03/09 11:51

Diesel Range Hydrocarbons	NWTPH-Dx	1.84	0.0943	0.236	mg/l	1x	ND	1.89	97.6%	(32-143)	0.521% (40)	"	04/06/09 18:06	
Lube Oil Range Hydrocarbons	"	1.99	0.142	0.472	"	"	ND	"	106%	(50-150)	2.05%	"	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>74.1%</i>	<i>Limits: 53-120%</i>	<i>"</i>	<i>"</i>							<i>04/06/09 18:06</i>	
<i>Octacosane</i>		<i>93.9%</i>		<i>68-123%</i>	<i>"</i>	<i>"</i>							<i>"</i>	

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/17/09 16:21

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/17/09 16:21

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- Q12 - Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
- Q7 - The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



TAT: _____

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?

Page Time & Initials: _____

Circle Y or N

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By:
(applies to temp/al receipt)

Logged-in By:

Unpacked/Labeled By:

Cooler ID: 346, 217, 395

Date: 4/2

Date: 04-03

Date: 04-03-09

Work Order No. BSD0044

Time: 18:20

Time: 1108

Time: 1100

Client: _____

Initials: CB

Initials: CW

Initials: CW

Project: _____

Container Type:

COC Seals:

Packing Material:

Cooler
 Box
 None/Other _____

Ship Container
 On Bottles
 None
Sign By _____
Date _____

Bubble Bags
 Styrofoam
 Foam Packs
 None/Other _____

Refrigerant:

Soil Stir Bars/Encores:

Received Via: Bill#:

Gel Ice Pack
 Loose Ice
 None/Other _____

Placed in freezer #46:
Y or N or NA
Initial/date/time _____

Fed Ex
 Client
 UPS
 TA Courier
 DHL
 Mid Valley
 Senvoy
 TDP
 GS
 Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)
(circle one)

Temperature Blank? 5.5 °C or NA comments 5.5, 4.0, 4.4

Trip Blank? Y or N or NA

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

ID

ID

Intact? or N _____
Provided by TA? or N _____
Correct Type? or N _____
#Containers match COC? or N _____
IDs/time/date match COC? Y or _____
Hold Times in hold? or N _____

Metals Preserved? Y or N or NA _____
Client QAPP Preserved? or N or NA _____
Adequate Volume? or NA _____
(for tests requested)
Water VOAs: Headspace? Y or N or NA _____
Comments: _____

PROJECT MANAGEMENT

Is the Chain of Custody complete?

Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up?

Y or N

Has client been contacted regarding non-conformances?

Y or N

If Y, _____ / _____
Date Time

PM Initials: _____ Date: _____ Time: _____

April 17, 2009

Sarah Albano
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 04/07/09 15:10.
The following list is a summary of the Work Orders contained in this report, generated on 04/17/09
16:46.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSD0082	BNSF-Skykomish	01140-222-0100

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0100

Project Manager: Sarah Albano

Report Created:

04/17/09 16:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
IC-W-1-040709	BSD0082-01	Water	04/07/09 09:50	04/07/09 15:10
IC-W-8-040709	BSD0082-02	Water	04/07/09 12:23	04/07/09 15:10
IC-W-7-040709	BSD0082-03	Water	04/07/09 13:21	04/07/09 15:10

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0100

Project Manager: Sarah Albano

Report Created:

04/17/09 16:46

Analytical Case Narrative

TestAmerica - Seattle, WA

BSD0082

SAMPLE RECEIPT

The samples were received 04/07/09 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 12.2 degrees Celsius.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Sarah Albano	Report Created: 04/17/09 16:46
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSD0082-01 (IC-W-1-040709)		Water			Sampled: 04/07/09 09:50					
Diesel Range Hydrocarbons	NWTPH-Dx	0.141	0.0943	0.236	mg/l	1x	9D09018	04/09/09 10:59	04/10/09 16:11	Q12, J
Lube Oil Range Hydrocarbons	"	ND	0.142	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			89.1%		53 - 120 %	"				"
<i>Octacosane</i>			107%		68 - 123 %	"				"
BSD0082-02 (IC-W-8-040709)		Water			Sampled: 04/07/09 12:23					
Diesel Range Hydrocarbons	NWTPH-Dx	3.50	0.0943	0.236	mg/l	1x	9D09018	04/09/09 10:59	04/10/09 16:33	Q12
Lube Oil Range Hydrocarbons	"	0.424	0.142	0.472	"	"	"	"	"	Q7, J
<i>Surrogate(s): 2-FBP</i>			92.1%		53 - 120 %	"				"
<i>Octacosane</i>			112%		68 - 123 %	"				"
BSD0082-03 (IC-W-7-040709)		Water			Sampled: 04/07/09 13:21					
Diesel Range Hydrocarbons	NWTPH-Dx	1.45	0.0943	0.236	mg/l	1x	9D09018	04/09/09 10:59	04/10/09 16:54	Q12
Lube Oil Range Hydrocarbons	"	0.227	0.142	0.472	"	"	"	"	"	Q7, J
<i>Surrogate(s): 2-FBP</i>			89.1%		53 - 120 %	"				"
<i>Octacosane</i>			107%		68 - 123 %	"				"

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0100 Project Manager: Sarah Albano	Report Created: 04/17/09 16:46
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9D09018 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes	
Blank (9D09018-BLK1)										Extracted: 04/09/09 10:59					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.100	0.250	mg/l	1x	--	--	--	--	--	--	04/10/09 15:08		
Lube Oil Range Hydrocarbons	"	ND	0.150	0.500	"	"	--	--	--	--	--	--	"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 77.3%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/10/09 15:08</i>			
<i>Octacosane</i>		<i>101%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			
LCS (9D09018-BS1)										Extracted: 04/09/09 10:59					MNR1
Diesel Range Hydrocarbons	NWTPH-Dx	2.08	0.100	0.250	mg/l	1x	--	2.00	104%	(65-120)	--	--	04/10/09 15:29		
Lube Oil Range Hydrocarbons	"	2.06	0.150	0.500	"	"	--	"	103%	(70-120)	--	--	"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 84.1%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/10/09 15:29</i>			
<i>Octacosane</i>		<i>99.9%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			
LCS Dup (9D09018-BSD1)										Extracted: 04/09/09 10:59					
Diesel Range Hydrocarbons	NWTPH-Dx	2.16	0.100	0.250	mg/l	1x	--	2.00	108%	(65-120)	3.47% (25)		04/10/09 15:50		
Lube Oil Range Hydrocarbons	"	2.09	0.150	0.500	"	"	--	"	104%	(70-120)	1.58% (40)		"		
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 85.3%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>04/10/09 15:50</i>			
<i>Octacosane</i>		<i>102%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>			

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0100

Project Manager: Sarah Albano

Report Created:

04/17/09 16:46

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
 Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0100

Project Manager: Sarah Albano

Report Created:

04/17/09 16:46

Notes and Definitions

Report Specific Notes:

- C - Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- MNR1 - There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- Q1 - Does not match typical pattern
- Q12 - Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
- Q3 - The chromatographic pattern is not consistent with diesel fuel.
- Q7 - The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Curtis D. Armstrong For Kate Haney, Project Manager

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Chain of Custody Record

No 3820

The RETEC Group, Inc.
 300 Baker Avenue • Concord, MA 01742
 (978) 371-1422 Phone • (978) 371-1448 Fax
 www.retec.com



Project Name: SKYKOMISH		Project Number: 01140-221-0230						
Send Report To: DENISE WARREN		Sampler (Print Name): A. HUNTINGTON						
Address: 710 2ND AVE #1000		Sampler (Print Name):						
SEATTLE, WA		Shipment Method: HANS DELUEN						
018109		Airbill Number:						
Phone: 206-624-9349		Laboratory Receiving: TA						
Fax:								
Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	Analysis Requested	QA/QC Level	Turnaround	Sample Receipt
IC-W-1-040709	4/7/09	0950	W	2	X	Level I <input type="checkbox"/>	Routine <input checked="" type="checkbox"/>	Total # Containers Received? N/A
IC-W-8-040709	↓	1223	W	2	X	Level II <input type="checkbox"/>	24 Hour <input type="checkbox"/>	COC Seals Present? N/A
IC-W-7-040709		1321	W	2	X	Level III <input type="checkbox"/>	1 Week <input type="checkbox"/>	COC Seals Intact? N/A
						Other <input type="checkbox"/>	Other _____	Received Containers Intact? N/A
								Temperature? 12.2
Relinquished by: (Signature)					Date: 4/7/09		Time: 1510	
Relinquished by: (Signature)					Date: 4/7/09		Time: 1510	
Relinquished by: (Signature)					Date:		Time:	

Analysis Requested
 NINTPH-DX W10 SC

Purchase Order #:

Comments, Special Instructions, etc.

Lab Sample ID (to be completed by lab)

BANDER-01
 02
 03

Received by: (Signature)

Received by: (Signature)

Received by: (Signature)

TAT: 10

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?

Page Time & Initials: _____

Circle or N

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By: _____
(applies to temp at receipt)

Logged-in By: _____

Unpacked/Labeled By: _____

Cooler ID: B41

Date: 4/7

Date: 4/7

Date: 4/7

Work Order No. B000082

Time: 1510

Time: 17:43

Time: 17:50

Client: AECOM-Seattle

Initials: W

Initials: CL

Initials: W

Project: BNSF-Skykomish

Container Type:

COC Seals:

Packing Material:

Cooler
 Box
 None/Other _____

Ship Container Sign By _____
 On Bottles _____ Date _____
 None

Bubble Bags
 Styrofoam
 Foam Packs
 None/Other _____

Refrigerant:

Soil Stir Bars/Encores:

Received Via: Bill#:

Gel Ice Pack _____
 Loose Ice _____
 None/Other _____

Placed in freezer #46:
Y or N or (NA)
Initial/date/time _____

Fed Ex Client
 UPS TA Courier
 DHL Mid Valley
 Senvoy TDP
 GS Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)

Temperature Blank? 12.2 °C or NA comments w/in of hca.

Trip Blank? Y or N or (NA)

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

ID

ID

Intact?	<input checked="" type="radio"/> or N	_____	Metals Preserved?	Y or N or <u>(NA)</u>
Provided by TA?	<input checked="" type="radio"/> or N	_____	Client QAPP Preserved?	<input checked="" type="radio"/> or N or NA
Correct Type?	<input checked="" type="radio"/> or N	_____	Adequate Volume?	<input checked="" type="radio"/> or N
#Containers match COC?	<input checked="" type="radio"/> or N	_____	(for tests requested)	
IDs/time/date match COC?	Y or <u>(N)</u>	_____	Water VOAs: Headspace?	Y or N or <u>(NA)</u>
Hold Times in hold?	<input checked="" type="radio"/> or N	_____	Comments:	_____

PROJECT MANAGEMENT

Is the Chain of Custody complete? Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up? _____
Has client been contacted regarding non-conformances? _____

Y or N
Y or N If Y, _____ / _____
Date Time

PM Initials: _____ Date: _____ Time: _____

April 22, 2009

Halah Voges
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish Remedial Design Investigation

Enclosed are the results of analyses for samples received by the laboratory on 12/18/08 10:50.
The following list is a summary of the Work Orders contained in this report, generated on 04/22/09
10:21.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BRL0202	BNSF-Skykomish Remedial D	01140-204-0340

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish Remedial Design Investigation**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/22/09 10:21

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
2B-W-45-1208	BRL0202-01	Water	12/17/08 08:10	12/18/08 10:50
2B-W-46-1208	BRL0202-02	Water	12/17/08 08:55	12/18/08 10:50

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish Remedial Design Investigation**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/22/09 10:21

Analytical Case Narrative

TestAmerica - Seattle, WA

BRL0202

SAMPLE RECEIPT

The samples were received 12/18/08 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 2.7 degrees Celsius. The sample IDs were updated 04/21/2009 per AECOM.

PREPARATIONS AND ANALYSIS

No anomalies were associated with the sample preparation and analysis. All criteria for acceptable QC measurements were met.

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Remedial Design Investigation Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/22/09 10:21
---	---	-----------------------------------

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0202-01 (2B-W-45-1208)		Water			Sampled: 12/17/08 08:10					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0377	0.236	mg/l	1x	8L18024	12/18/08 14:33	12/19/08 00:28	
Lube Oil Range Hydrocarbons	"	ND	0.0849	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			89.5%		53 - 125 %	"				"
<i>Octacosane</i>			102%		68 - 125 %	"				"
BRL0202-02 (2B-W-46-1208)		Water			Sampled: 12/17/08 08:55					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0377	0.236	mg/l	1x	8L18024	12/18/08 14:33	12/19/08 00:49	
Lube Oil Range Hydrocarbons	"	ND	0.0849	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			85.8%		53 - 125 %	"				"
<i>Octacosane</i>			99.6%		68 - 125 %	"				"

TestAmerica Seattle



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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Remedial Design Investigation Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/22/09 10:21
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BRL0202-01 (2B-W-45-1208)		Water			Sampled: 12/17/08 08:10					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0377	0.236	mg/l	1x	8L18024	12/18/08 14:33	12/19/08 02:57	
Lube Oil Range (SGCU)	"	ND	0.151	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			79.3%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			92.5%		68 - 125 %	"				"
BRL0202-02 (2B-W-46-1208)		Water			Sampled: 12/17/08 08:55					
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0377	0.236	mg/l	1x	8L18024	12/18/08 14:33	12/19/08 03:18	
Lube Oil Range (SGCU)	"	ND	0.151	0.472	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			66.4%		53 - 125 %	"				"
<i>Octacosane (SGCU)</i>			78.7%		68 - 125 %	"				"

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Remedial Design Investigation Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/22/09 10:21
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 8L18024 Water Preparation Method: EPA 3510C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8L18024-BLK1)										Extracted: 12/18/08 14:33				
Diesel Range Hydrocarbons	NWTPH-Dx	ND	0.0400	0.250	mg/l	1x	--	--	--	--	--	--	12/18/08 22:19	
Lube Oil Range Hydrocarbons	"	ND	0.0900	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 93.9%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/18/08 22:19</i>		
<i>Octacosane</i>		<i>97.3%</i>		<i>68-125%</i>		<i>"</i>						<i>"</i>		
LCS (8L18024-BS1)										Extracted: 12/18/08 14:33				
Diesel Range Hydrocarbons	NWTPH-Dx	1.95	0.0400	0.250	mg/l	1x	--	2.00	97.4%	(61-132)	--	--	12/18/08 22:41	
Lube Oil Range Hydrocarbons	"	2.07	0.0900	0.500	"	"	--	"	103%	(60-125)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 98.3%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/18/08 22:41</i>		
<i>Octacosane</i>		<i>101%</i>		<i>68-125%</i>		<i>"</i>						<i>"</i>		
LCS Dup (8L18024-BSD1)										Extracted: 12/18/08 14:33				
Diesel Range Hydrocarbons	NWTPH-Dx	2.01	0.0400	0.250	mg/l	1x	--	2.00	101%	(61-132)	3.26% (40)		12/18/08 23:02	
Lube Oil Range Hydrocarbons	"	2.08	0.0900	0.500	"	"	--	"	104%	(60-125)	0.617%	"	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 100%</i>		<i>Limits: 53-125%</i>		<i>"</i>						<i>12/18/08 23:02</i>		
<i>Octacosane</i>		<i>100%</i>		<i>68-125%</i>		<i>"</i>						<i>"</i>		

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Remedial Design Investigation Project Number: 01140-204-0340 Project Manager: Halah Voges	Report Created: 04/22/09 10:21
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 8L18024 Water Preparation Method: EPA 3510C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8L18024-BLK1)										Extracted: 12/18/08 14:33				
Diesel Range (SGCU)	NWTPH-Dx	ND	0.0400	0.250	mg/l	1x	--	--	--	--	--	--	12/19/08 01:53	
Lube Oil Range (SGCU)	"	ND	0.160	0.500	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>95.2%</i>							<i>Limits: 53-125%</i>			<i>12/19/08 01:53</i>	
<i>Octacosane (SGCU)</i>			<i>98.6%</i>							<i>68-125%</i>			<i>"</i>	
LCS (8L18024-BS1)										Extracted: 12/18/08 14:33				
Diesel Range (SGCU)	NWTPH-Dx	1.98	0.0400	0.250	mg/l	1x	--	2.00	98.9%	(61-132)	--	--	12/19/08 02:15	
Lube Oil Range (SGCU)	"	2.10	0.160	0.500	"	"	--	"	105%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>96.6%</i>							<i>Limits: 53-125%</i>			<i>12/19/08 02:15</i>	
<i>Octacosane (SGCU)</i>			<i>100%</i>							<i>68-125%</i>			<i>"</i>	
LCS Dup (8L18024-BSD1)										Extracted: 12/18/08 14:33				
Diesel Range (SGCU)	NWTPH-Dx	2.04	0.0400	0.250	mg/l	1x	--	2.00	102%	(61-132)	3.17% (35)		12/19/08 02:36	
Lube Oil Range (SGCU)	"	2.10	0.160	0.500	"	"	--	"	105%	(50-150)	0.0826% (50)		"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>99.9%</i>							<i>Limits: 53-125%</i>			<i>12/19/08 02:36</i>	
<i>Octacosane (SGCU)</i>			<i>101%</i>							<i>68-125%</i>			<i>"</i>	

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish Remedial Design Investigation**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/22/09 10:21

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish Remedial Design Investigation**

Project Number: 01140-204-0340

Project Manager: Halah Voges

Report Created:

04/22/09 10:21

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Kate Haney, Project Manager

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June 25, 2009

Sarah Albano
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 06/11/09 13:00.
The following list is a summary of the Work Orders contained in this report, generated on 06/25/09
15:02.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSF0131	BNSF-Skykomish	01140-204-0340

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
 Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Sarah Albano

Report Created:

06/25/09 15:02

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
IC-W-1-0609	BSF0131-01	Water	06/09/09 16:40	06/11/09 13:00
IC-W-8-0609	BSF0131-02	Water	06/09/09 17:00	06/11/09 13:00
5-W-14-0609	BSF0131-03	Water	06/10/09 09:25	06/11/09 13:00
5-W-16-0609	BSF0131-04	Water	06/10/09 10:15	06/11/09 13:00
5-W-15-0609	BSF0131-05	Water	06/10/09 11:10	06/11/09 13:00
5-W-150-0609	BSF0131-06	Water	06/10/09 11:20	06/11/09 13:00
MW-500-0609	BSF0131-07	Water	06/10/09 11:50	06/11/09 13:00
5-W-17-0609	BSF0131-08	Water	06/10/09 13:20	06/11/09 13:00
5-W-18-0609	BSF0131-09	Water	06/10/09 14:50	06/11/09 13:00
IC-W-7-0609	BSF0131-10	Water	06/09/09 15:40	06/11/09 13:00
5-W-19-0609	BSF0131-11	Water	06/10/09 16:30	06/11/09 13:00
5-W-20-0609	BSF0131-12	Water	06/10/09 17:50	06/11/09 13:00
5-W-42-0609	BSF0131-13	Water	06/10/09 18:00	06/11/09 13:00
EW-1-0609	BSF0131-14	Water	06/10/09 10:00	06/11/09 13:00
5-W-43-0609	BSF0131-15	Water	06/10/09 10:45	06/11/09 13:00
GW-4-0609	BSF0131-16	Water	06/10/09 12:05	06/11/09 13:00
2A-W-42-0609	BSF0131-17	Water	06/10/09 12:55	06/11/09 13:00
GW-2-0609	BSF0131-18	Water	06/10/09 13:45	06/11/09 13:00
2A-W-40-0609	BSF0131-19	Water	06/10/09 14:30	06/11/09 13:00
2A-W-400-0609	BSF0131-20	Water	06/10/09 14:40	06/11/09 13:00
GW-1-0609	BSF0131-21	Water	06/10/09 15:55	06/11/09 13:00
2A-W-41-0609	BSF0131-22	Water	06/10/09 17:00	06/11/09 13:00
GW-3-0609	BSF0131-23	Water	06/11/09 09:30	06/11/09 13:00
GW-30-0609	BSF0131-24	Water	06/11/09 09:40	06/11/09 13:00
2B-W-45-0609	BSF0131-25	Water	06/11/09 09:30	06/11/09 13:00
2B-W-46-0609	BSF0131-26	Water	06/11/09 10:10	06/11/09 13:00
1B-W-23-0609	BSF0131-27	Water	06/11/09 10:30	06/11/09 13:00

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Sarah Albano

Report Created:

06/25/09 15:02

Analytical Case Narrative

TestAmerica - Seattle, WA

BSF0131

SAMPLE RECEIPT

The samples were received 06/11/2009 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 9.9 degrees Celsius which is outside the recommended temperature range of 2-6 Degrees Celsius. The samples are considered acceptable as they were received on-ice within four hours of the collection of the last sampled time on the COC.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-01 (IC-W-1-0609)		Water			Sampled: 06/09/09 16:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/17/09 20:21	QP
Surrogate(s): 2-FBP			74.8%		53 - 120 %	"				"
Octacosane			92.2%		68 - 123 %	"				"
BSF0131-01RE1 (IC-W-1-0609)		Water			Sampled: 06/09/09 16:40					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 18:29	Q1
Surrogate(s): 2-FBP			82.7%		53 - 120 %	"				"
Octacosane			93.7%		68 - 123 %	"				"
BSF0131-02 (IC-W-8-0609)		Water			Sampled: 06/09/09 17:00					
Diesel Range Hydrocarbons	NWTPH-Dx	0.434	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/17/09 22:44	Q1
Surrogate(s): 2-FBP			78.0%		53 - 120 %	"				"
Octacosane			94.8%		68 - 123 %	"				"
BSF0131-02RE1 (IC-W-8-0609)		Water			Sampled: 06/09/09 17:00					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 18:51	Q1
Surrogate(s): 2-FBP			81.8%		53 - 120 %	"				"
Octacosane			93.2%		68 - 123 %	"				"
BSF0131-03 (5-W-14-0609)		Water			Sampled: 06/10/09 09:25					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/17/09 19:16	Q1
Lube Oil Range Hydrocarbons	"	ND	----	0.118	"	"	"	"	"	Q1
Surrogate(s): 2-FBP			78.7%		53 - 120 %	"				"
Octacosane			90.9%		68 - 123 %	"				"
BSF0131-04 (5-W-16-0609)		Water			Sampled: 06/10/09 10:15					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/17/09 19:38	
Lube Oil Range Hydrocarbons	"	ND	----	0.118	"	"	"	"	"	Q1
Surrogate(s): 2-FBP			78.8%		53 - 120 %	"				"
Octacosane			90.2%		68 - 123 %	"				"

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-05 (5-W-15-0609)		Water			Sampled: 06/10/09 11:10					
Diesel Range Hydrocarbons	NWTPH-Dx	0.213	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/17/09 20:01	Q1
Lube Oil Range Hydrocarbons	"	0.139	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			76.3%		53 - 120 %	"				"
<i>Octacosane</i>			92.8%		68 - 123 %	"				"
BSF0131-06 (5-W-150-0609)		Water			Sampled: 06/10/09 11:20					
Diesel Range Hydrocarbons	NWTPH-Dx	0.203	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/17/09 20:23	Q1
Lube Oil Range Hydrocarbons	"	0.135	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			73.2%		53 - 120 %	"				"
<i>Octacosane</i>			91.2%		68 - 123 %	"				"
BSF0131-07 (MW-500-0609)		Water			Sampled: 06/10/09 11:50					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/17/09 20:46	
Lube Oil Range Hydrocarbons	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			78.1%		53 - 120 %	"				"
<i>Octacosane</i>			91.8%		68 - 123 %	"				"
BSF0131-08 (5-W-17-0609)		Water			Sampled: 06/10/09 13:20					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 02:43	
Lube Oil Range Hydrocarbons	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			68.3%		53 - 120 %	"				"
<i>Octacosane</i>			88.7%		68 - 123 %	"				"
BSF0131-09 (5-W-18-0609)		Water			Sampled: 06/10/09 14:50					
Diesel Range Hydrocarbons	NWTPH-Dx	0.669	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 03:28	Q1
Lube Oil Range Hydrocarbons	"	0.223	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			89.4%		53 - 120 %	"				"
<i>Octacosane</i>			95.3%		68 - 123 %	"				"
BSF0131-10 (IC-W-7-0609)		Water			Sampled: 06/09/09 15:40					
Diesel Range Hydrocarbons	NWTPH-Dx	0.287	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/17/09 23:08	Q1
<i>Surrogate(s): 2-FBP</i>			74.1%		53 - 120 %	"				"
<i>Octacosane</i>			91.1%		68 - 123 %	"				"

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-10RE1 (IC-W-7-0609)		Water			Sampled: 06/09/09 15:40					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 19:13	Q1
Surrogate(s): 2-FBP			78.5%		53 - 120 %	"				"
Octacosane			89.1%		68 - 123 %	"				"
BSF0131-11 (5-W-19-0609)		Water			Sampled: 06/10/09 16:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 04:13	
Lube Oil Range Hydrocarbons	"	ND	----	0.118	"	"	"	"	"	Q1
Surrogate(s): 2-FBP			71.3%		53 - 120 %	"				"
Octacosane			92.1%		68 - 123 %	"				"
BSF0131-12 (5-W-20-0609)		Water			Sampled: 06/10/09 17:50					
Diesel Range Hydrocarbons	NWTPH-Dx	0.637	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 04:58	Q1
Lube Oil Range Hydrocarbons	"	0.233	----	0.118	"	"	"	"	"	Q1
Surrogate(s): 2-FBP			79.6%		53 - 120 %	"				"
Octacosane			92.0%		68 - 123 %	"				"
BSF0131-13 (5-W-42-0609)		Water			Sampled: 06/10/09 18:00					
Diesel Range Hydrocarbons	NWTPH-Dx	0.599	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 05:42	Q1
Lube Oil Range Hydrocarbons	"	0.258	----	0.118	"	"	"	"	"	Q1
Surrogate(s): 2-FBP			93.5%		53 - 120 %	"				"
Octacosane			114%		68 - 123 %	"				"
BSF0131-14 (EW-1-0609)		Water			Sampled: 06/10/09 10:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/17/09 23:32	QP
Surrogate(s): 2-FBP			67.2%		53 - 120 %	"				"
Octacosane			95.8%		68 - 123 %	"				"
BSF0131-14RE1 (EW-1-0609)		Water			Sampled: 06/10/09 10:00					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 19:35	Q1
Surrogate(s): 2-FBP			74.2%		53 - 120 %	"				"
Octacosane			96.9%		68 - 123 %	"				"

TestAmerica Seattle

Kate Haney

Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-15 (5-W-43-0609)		Water			Sampled: 06/10/09 10:45					
Diesel Range Hydrocarbons	NWTPH-Dx	0.293	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/17/09 23:56	Q1
Surrogate(s): 2-FBP			77.9%		53 - 120 %	"				"
Octacosane			90.1%		68 - 123 %	"				"
BSF0131-15RE1 (5-W-43-0609)		Water			Sampled: 06/10/09 10:45					
Lube Oil Range Hydrocarbons	NWTPH-Dx	0.217	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 19:58	Q1
Surrogate(s): 2-FBP			85.3%		53 - 120 %	"				"
Octacosane			95.8%		68 - 123 %	"				"
BSF0131-16 (GW-4-0609)		Water			Sampled: 06/10/09 12:05					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 00:20	QP
Surrogate(s): 2-FBP			74.5%		53 - 120 %	"				"
Octacosane			92.7%		68 - 123 %	"				"
BSF0131-16RE1 (GW-4-0609)		Water			Sampled: 06/10/09 12:05					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 20:20	Q1
Surrogate(s): 2-FBP			79.7%		53 - 120 %	"				"
Octacosane			91.2%		68 - 123 %	"				"
BSF0131-17 (2A-W-42-0609)		Water			Sampled: 06/10/09 12:55					
Diesel Range Hydrocarbons	NWTPH-Dx	0.202	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 00:43	Q1
Surrogate(s): 2-FBP			72.2%		53 - 120 %	"				"
Octacosane			91.6%		68 - 123 %	"				"
BSF0131-17RE1 (2A-W-42-0609)		Water			Sampled: 06/10/09 12:55					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 20:42	Q1
Surrogate(s): 2-FBP			78.2%		53 - 120 %	"				"
Octacosane			91.8%		68 - 123 %	"				"
BSF0131-18 (GW-2-0609)		Water			Sampled: 06/10/09 13:45					
Diesel Range Hydrocarbons	NWTPH-Dx	0.688	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 01:07	Q1
Surrogate(s): 2-FBP			79.5%		53 - 120 %	"				"
Octacosane			89.0%		68 - 123 %	"				"

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-18RE1 (GW-2-0609)		Water			Sampled: 06/10/09 13:45					
Lube Oil Range Hydrocarbons	NWTPH-Dx	0.360	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 22:12	Q1
Surrogate(s): 2-FBP		88.9%		53 - 120 %	"					"
Octacosane		93.1%		68 - 123 %	"					"
BSF0131-19 (2A-W-40-0609)		Water			Sampled: 06/10/09 14:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 02:43	QP
Surrogate(s): 2-FBP		79.0%		53 - 120 %	"					"
Octacosane		93.5%		68 - 123 %	"					"
BSF0131-19RE1 (2A-W-40-0609)		Water			Sampled: 06/10/09 14:30					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 22:34	Q1
Surrogate(s): 2-FBP		88.7%		53 - 120 %	"					"
Octacosane		95.7%		68 - 123 %	"					"
BSF0131-20 (2A-W-400-0609)		Water			Sampled: 06/10/09 14:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 03:07	QP
Surrogate(s): 2-FBP		81.0%		53 - 120 %	"					"
Octacosane		95.6%		68 - 123 %	"					"
BSF0131-20RE1 (2A-W-400-0609)		Water			Sampled: 06/10/09 14:40					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 22:56	Q1
Surrogate(s): 2-FBP		88.1%		53 - 120 %	"					"
Octacosane		94.3%		68 - 123 %	"					"
BSF0131-21 (GW-1-0609)		Water			Sampled: 06/10/09 15:55					
Diesel Range Hydrocarbons	NWTPH-Dx	0.254	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 03:31	Q1
Surrogate(s): 2-FBP		79.9%		53 - 120 %	"					"
Octacosane		100%		68 - 123 %	"					"
BSF0131-21RE1 (GW-1-0609)		Water			Sampled: 06/10/09 15:55					
Lube Oil Range Hydrocarbons	NWTPH-Dx	0.160	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 23:19	Q1
Surrogate(s): 2-FBP		87.9%		53 - 120 %	"					"
Octacosane		102%		68 - 123 %	"					"

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-22 (2A-W-41-0609)		Water			Sampled: 06/10/09 17:00					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 03:55	QP
Surrogate(s): 2-FBP			76.8%		53 - 120 %	"				"
Octacosane			97.2%		68 - 123 %	"				"
BSF0131-22RE1 (2A-W-41-0609)		Water			Sampled: 06/10/09 17:00					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 23:41	Q1
Surrogate(s): 2-FBP			83.1%		53 - 120 %	"				"
Octacosane			96.5%		68 - 123 %	"				"
BSF0131-23 (GW-3-0609)		Water			Sampled: 06/11/09 09:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 04:19	QP
Surrogate(s): 2-FBP			80.2%		53 - 120 %	"				"
Octacosane			96.9%		68 - 123 %	"				"
BSF0131-23RE1 (GW-3-0609)		Water			Sampled: 06/11/09 09:30					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/19/09 00:04	Q1
Surrogate(s): 2-FBP			88.8%		53 - 120 %	"				"
Octacosane			97.7%		68 - 123 %	"				"
BSF0131-24 (GW-30-0609)		Water			Sampled: 06/11/09 09:40					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 04:43	QP
Surrogate(s): 2-FBP			72.5%		53 - 120 %	"				"
Octacosane			98.5%		68 - 123 %	"				"
BSF0131-24RE1 (GW-30-0609)		Water			Sampled: 06/11/09 09:40					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/19/09 00:26	Q1
Surrogate(s): 2-FBP			80.3%		53 - 120 %	"				"
Octacosane			99.0%		68 - 123 %	"				"
BSF0131-25 (2B-W-45-0609)		Water			Sampled: 06/11/09 09:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 05:07	
Surrogate(s): 2-FBP			75.5%		53 - 120 %	"				"
Octacosane			96.4%		68 - 123 %	"				"

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-25RE1 (2B-W-45-0609)		Water			Sampled: 06/11/09 09:30					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/19/09 00:48	Q1
<i>Surrogate(s): 2-FBP</i>			81.3%		53 - 120 %	"				"
<i>Octacosane</i>			93.5%		68 - 123 %	"				"
BSF0131-26 (2B-W-46-0609)		Water			Sampled: 06/11/09 10:10					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 05:31	
<i>Surrogate(s): 2-FBP</i>			74.9%		53 - 120 %	"				"
<i>Octacosane</i>			98.8%		68 - 123 %	"				"
BSF0131-26RE1 (2B-W-46-0609)		Water			Sampled: 06/11/09 10:10					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/19/09 01:11	Q1
<i>Surrogate(s): 2-FBP</i>			73.1%		53 - 120 %	"				"
<i>Octacosane</i>			86.3%		68 - 123 %	"				"
BSF0131-27 (1B-W-23-0609)		Water			Sampled: 06/11/09 10:30					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16009	06/16/09 09:04	06/18/09 05:54	QP
<i>Surrogate(s): 2-FBP</i>			85.8%		53 - 120 %	"				"
<i>Octacosane</i>			98.1%		68 - 123 %	"				"
BSF0131-27RE1 (1B-W-23-0609)		Water			Sampled: 06/11/09 10:30					
Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	----	0.118	mg/l	1x	9F16009	06/16/09 09:04	06/19/09 01:33	Q1
<i>Surrogate(s): 2-FBP</i>			92.0%		53 - 120 %	"				"
<i>Octacosane</i>			95.3%		68 - 123 %	"				"

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle	Project Name: BNSF-Skykomish	Report Created:
710 2nd Ave. Ste. 1000	Project Number: 01140-204-0340	06/25/09 15:02
Seattle, WA 98104	Project Manager: Sarah Albano	

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-03 (5-W-14-0609)		Water			Sampled: 06/10/09 09:25					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/17/09 23:44	
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			75.4%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			92.0%		68 - 125 %	"			"	
BSF0131-04 (5-W-16-0609)		Water			Sampled: 06/10/09 10:15					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 00:07	
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			74.3%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			88.0%		68 - 125 %	"			"	
BSF0131-05 (5-W-15-0609)		Water			Sampled: 06/10/09 11:10					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 00:29	Q1
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			78.1%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			94.9%		68 - 125 %	"			"	
BSF0131-06 (5-W-150-0609)		Water			Sampled: 06/10/09 11:20					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 00:51	
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			66.5%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			82.3%		68 - 125 %	"			"	
BSF0131-07 (MW-500-0609)		Water			Sampled: 06/10/09 11:50					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 01:14	
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>			69.9%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			83.6%		68 - 125 %	"			"	
BSF0131-08 (5-W-17-0609)		Water			Sampled: 06/10/09 13:20					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 03:05	
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			64.5%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			87.2%		68 - 125 %	"			"	

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Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSF0131-09 (5-W-18-0609)		Water			Sampled: 06/10/09 14:50					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 03:50	Q1
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			83.9%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			88.9%		68 - 125 %	"			"	
BSF0131-11 (5-W-19-0609)		Water			Sampled: 06/10/09 16:30					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 04:35	
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			63.8%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			87.8%		68 - 125 %	"			"	
BSF0131-12 (5-W-20-0609)		Water			Sampled: 06/10/09 17:50					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 05:20	
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			73.8%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			87.7%		68 - 125 %	"			"	
BSF0131-13 (5-W-42-0609)		Water			Sampled: 06/10/09 18:00					
Diesel Range (SGCU)	NWTPH-Dx	ND	----	0.0472	mg/l	1x	9F16008	06/16/09 09:01	06/18/09 06:04	Q1
Lube Oil Range (SGCU)	"	ND	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP (SGCU)</i>			94.6%		53 - 125 %	"			"	
<i>Octacosane (SGCU)</i>			114%		68 - 125 %	"			"	

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Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9F16008 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
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Blank (9F16008-BLK1)

Extracted: 06/16/09 09:01

Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	0.0500	mg/l	1x	--	--	--	--	--	--	06/17/09 17:24	
Lube Oil Range Hydrocarbons	"	ND	---	0.125	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>76.5%</i>	<i>Limits: 53-120%</i>		<i>"</i>							<i>06/17/09 17:24</i>	
<i>Octacosane</i>			<i>87.2%</i>	<i>68-123%</i>		<i>"</i>							<i>"</i>	

LCS (9F16008-BS1)

Extracted: 06/16/09 09:01

Diesel Range Hydrocarbons	NWTPH-Dx	1.92	---	0.0500	mg/l	1x	--	2.00	96.0%	(65-120)	--	--	06/17/09 17:46	
Lube Oil Range Hydrocarbons	"	1.75	---	0.125	"	"	--	"	87.4%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>76.5%</i>	<i>Limits: 53-120%</i>		<i>"</i>							<i>06/17/09 17:46</i>	
<i>Octacosane</i>			<i>90.3%</i>	<i>68-123%</i>		<i>"</i>							<i>"</i>	

Duplicate (9F16008-DUP1)

QC Source: BSF0131-08

Extracted: 06/16/09 09:01

Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	0.0472	mg/l	1x	ND	--	--	--	NR (40)		06/17/09 18:08	
Lube Oil Range Hydrocarbons	"	ND	---	0.118	"	"	ND	--	--	--	50.3%	"	"	R4
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>74.8%</i>	<i>Limits: 53-120%</i>		<i>"</i>							<i>06/17/09 18:08</i>	
<i>Octacosane</i>			<i>87.5%</i>	<i>68-123%</i>		<i>"</i>							<i>"</i>	

Duplicate (9F16008-DUP2)

QC Source: BSF0131-03

Extracted: 06/16/09 09:01

Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	0.0472	mg/l	1x	ND	--	--	--	NR (40)		06/17/09 18:31	
Lube Oil Range Hydrocarbons	"	ND	---	0.118	"	"	ND	--	--	--	54.1%	"	"	R4
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>71.8%</i>	<i>Limits: 53-120%</i>		<i>"</i>							<i>06/17/09 18:31</i>	
<i>Octacosane</i>			<i>93.9%</i>	<i>68-123%</i>		<i>"</i>							<i>"</i>	

Matrix Spike (9F16008-MS1)

QC Source: BSF0131-08

Extracted: 06/16/09 09:01

Diesel Range Hydrocarbons	NWTPH-Dx	1.83	---	0.0472	mg/l	1x	ND	1.89	97.0%	(32-143)	--	--	06/17/09 18:54	
Lube Oil Range Hydrocarbons	"	1.72	---	0.118	"	"	0.0500	"	88.3%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery:</i>	<i>77.9%</i>	<i>Limits: 53-120%</i>		<i>"</i>							<i>06/17/09 18:54</i>	
<i>Octacosane</i>			<i>93.3%</i>	<i>68-123%</i>		<i>"</i>							<i>"</i>	

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Kate Haney

Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9F16009 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
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Blank (9F16009-BLK1)

Extracted: 06/16/09 09:04

Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	0.0500	mg/l	1x	--	--	--	--	--	--	06/17/09 21:33	
Surrogate(s): 2-FBP		Recovery: 76.2%		Limits: 53-120%		"							06/17/09 21:33	
Octacosane		94.2%		68-123%		"							"	

Blank (9F16009-BLK2)

Extracted: 06/16/09 09:04

Lube Oil Range Hydrocarbons	NWTPH-Dx	ND	---	0.125	mg/l	1x	--	--	--	--	--	--	06/18/09 14:22	
Surrogate(s): 2-FBP		Recovery: 77.6%		Limits: 53-120%		"							06/18/09 14:22	
Octacosane		87.8%		68-123%		"							"	

LCS (9F16009-BS1)

Extracted: 06/16/09 09:04

Diesel Range Hydrocarbons	NWTPH-Dx	1.89	---	0.0500	mg/l	1x	--	2.00	94.7%	(65-120)	--	--	06/17/09 21:57	
Surrogate(s): 2-FBP		Recovery: 74.0%		Limits: 53-120%		"							06/17/09 21:57	
Octacosane		91.0%		68-123%		"							"	

LCS (9F16009-BS2)

Extracted: 06/16/09 09:04

Lube Oil Range Hydrocarbons	NWTPH-Dx	1.79	---	0.125	mg/l	1x	--	2.00	89.3%	(70-120)	--	--	06/18/09 17:45	
Surrogate(s): 2-FBP		Recovery: 78.9%		Limits: 53-120%		"							06/18/09 17:45	
Octacosane		93.6%		68-123%		"							"	

LCS Dup (9F16009-BSD1)

Extracted: 06/16/09 09:04

Diesel Range Hydrocarbons	NWTPH-Dx	1.98	---	0.0500	mg/l	1x	--	2.00	98.8%	(65-120)	4.27% (25)		06/17/09 22:21	
Surrogate(s): 2-FBP		Recovery: 82.0%		Limits: 53-120%		"							06/17/09 22:21	
Octacosane		93.1%		68-123%		"							"	

LCS Dup (9F16009-BSD2)

Extracted: 06/16/09 09:04

Lube Oil Range Hydrocarbons	NWTPH-Dx	1.92	---	0.125	mg/l	1x	--	2.00	95.8%	(70-120)	7.02% (40)		06/18/09 18:07	
Surrogate(s): 2-FBP		Recovery: 88.5%		Limits: 53-120%		"							06/18/09 18:07	
Octacosane		97.4%		68-123%		"							"	

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Kate Haney

Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-204-0340 Project Manager: Sarah Albano	Report Created: 06/25/09 15:02
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9F16008 **Water Preparation Method: EPA 3520C**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
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Blank (9F16008-BLK1)

Extracted: 06/16/09 09:01

Diesel Range (SGCU)	NWTPH-Dx	ND	---	0.0500	mg/l	1x	--	--	--	--	--	--	06/17/09 21:53	
Lube Oil Range (SGCU)	"	ND	---	0.125	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>75.6%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>06/17/09 21:53</i>	
<i>Octacosane (SGCU)</i>		<i>88.8%</i>		<i>68-125%</i>		<i>"</i>							<i>"</i>	

LCS (9F16008-BS1)

Extracted: 06/16/09 09:01

Diesel Range (SGCU)	NWTPH-Dx	1.91	---	0.250	mg/l	1x	--	2.00	95.6%	(61-132)	--	--	06/17/09 22:15	
Lube Oil Range (SGCU)	"	1.81	---	0.500	"	"	--	"	90.5%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>75.6%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>06/17/09 22:15</i>	
<i>Octacosane (SGCU)</i>		<i>90.9%</i>		<i>68-125%</i>		<i>"</i>							<i>"</i>	

Duplicate (9F16008-DUP1)

QC Source: BSF0131-08

Extracted: 06/16/09 09:01

Diesel Range (SGCU)	NWTPH-Dx	ND	---	0.236	mg/l	1x	ND	--	--	--	NR	(50)	06/17/09 22:37	
Lube Oil Range (SGCU)	"	ND	---	0.472	"	"	ND	--	--	--	NR	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>78.3%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>06/17/09 22:37</i>	
<i>Octacosane (SGCU)</i>		<i>96.5%</i>		<i>68-125%</i>		<i>"</i>							<i>"</i>	

Duplicate (9F16008-DUP2)

QC Source: BSF0131-03

Extracted: 06/16/09 09:01

Diesel Range (SGCU)	NWTPH-Dx	ND	---	0.236	mg/l	1x	ND	--	--	--	NR	(50)	06/17/09 23:00	
Lube Oil Range (SGCU)	"	ND	---	0.472	"	"	ND	--	--	--	NR	"	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>67.3%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>06/17/09 23:00</i>	
<i>Octacosane (SGCU)</i>		<i>90.6%</i>		<i>68-125%</i>		<i>"</i>							<i>"</i>	

Matrix Spike (9F16008-MS1)

QC Source: BSF0131-08

Extracted: 06/16/09 09:01

Diesel Range (SGCU)	NWTPH-Dx	1.85	---	0.236	mg/l	1x	ND	1.89	97.8%	(32-143)	--	--	06/17/09 23:22	
Lube Oil Range (SGCU)	"	1.73	---	0.472	"	"	0.0410	"	89.4%	(50-150)	--	--	"	
<i>Surrogate(s): 2-FBP (SGCU)</i>		<i>Recovery:</i>	<i>76.8%</i>	<i>Limits: 53-125%</i>		<i>"</i>							<i>06/17/09 23:22</i>	
<i>Octacosane (SGCU)</i>		<i>93.8%</i>		<i>68-125%</i>		<i>"</i>							<i>"</i>	

TestAmerica Seattle

Kate Haney

Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Sarah Albano

Report Created:

06/25/09 15:02

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-204-0340

Project Manager: Sarah Albano

Report Created:

06/25/09 15:02

Notes and Definitions

Report Specific Notes:

- Q1 - Does not match typical pattern
- QP - Hydrocarbon result partly due to individual peak(s) in quantitation range.
- R4 - Due to the low levels of analyte in the sample, the duplicate RPD calculation does not provide useful information.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Kate Haney, Project Manager

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CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: SKYKOMISH
 BNSF Project Name: BRUCE SHEPPARD
 BNSF Contact: BRUCE SHEPPARD

TURNAROUND TIME
 1-day Rush
 2-day Rush
 3-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other

LABORATORY INFORMATION

Laboratory: Test America
 Address: 11720 North Cok Plakyn, Ste 400 (425) 420-9249
 City/State/ZIP: Bothell, WA 98011

CONSULTANT INFORMATION

Company: AECOM Environment
 Address: 710 2nd Ave
 City/State/ZIP: Bothell, WA 98011

LABORATORY INFORMATION

Project Manager: Kate Haney
 Phone: 206 674-9349
 Fax: 206 674-9349

SHIPMENT INFORMATION

Shipment Method: Hand Delivered
 Tracking Number:
 Project Number: 01140-204-0340
 Project Manager: Sarah Albano
 Email: Sarah.albano@aecom.com
 Phone: 206 674-9349
 Fax:

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV

METHODS FOR ANALYSIS
 Other Deliverables?
 EDD Req. Format?
REFER

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection			Type (Comp/Grab)	Matrix
		Date	Time	Sampler		
1C-W-1 - 0609	2	6/9/09	1640	GS	N	W
1C-W-8	2	"	1700	DMK		
5-W-14	4	6/10/09	0925			
5-W-16	4	"	1015			
5-W-15	4	"	1110			
5-W-15D	4	"	1120			
MW-500	4	"	1150			
5-W-17	12	"	1320			
5-W-18	4	"	1450			
1C-W-7	2	"	1540			
5-W-19	4	"	1630			
5-W-20	4	"	1750			
5-W-42	4	"	1800			
EW-1	2	"	1000			
5-W-43	2	"	1045			

Comments and Special Analytical Requirements:
SGCM - silica gel cleanup
9.9 w/o

Date Time: 06/11/09 1300
 Received By: Patricia Weaver

Date Time: 06/11/09 1300
 Received By:

Date Time:
 Received By:

Date Time:
 Received By:

Date Time:
 Received By:

Lab Remarks:
 BNSF COC No.:



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number:

BNSF Project Name: Skykomish

BNSF Contact: Bruce Sheppard

TURNAROUND TIME

- 1-day Rush
- 2-day Rush
- 3-day Rush
- 5- to 8-day Rush
- Standard 10-Day
- Other

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Type (Comp/Grab)	Matrix
		Date	Time		
GW-4-0609	2	6/10/09	1205-65	N	W
ZA-W-4Z-	2		1255		
GW-Z-	2		1345		
ZA-W-40-	2		1430		
ZA-W-400-	2		1440		
GW-1-	2		1555		
ZA-W-41-	2		1700		
GW-3-	2	6/11/09	0930		
GW-30-	2		0940		
ZB-W-45-	2		0930 DWK		
ZB-W-46-	2		1010 DWK		
IB-W-23-	2		1030 GS		

DELIVERABLES

- BNSF Standard (Level II)
- Level III
- Level IV
- Other Deliverables?
- EDD Req. Format? RETEC

METHODS FOR ANALYSIS

NMTPH-DX
W/O SSCU
NMTPH-DX
W/SSCU

COMMENTS

16
17
18
19
20
21
22
23
24
27

LAB USE

LABORATORY INFORMATION

Laboratory: Test America

Address: 11770 North Creek Pkwy N, Ste 400
City/State/Zip: Bothell, WA 98011

Project State of Origin: WA

Project City: Skykomish

Company: AECOM Environment

Address: 710 2nd AVE

City/State/Zip: Seattle, WA 98104

LAB WORK ORDER: BNF0131

SHIPMENT INFORMATION

Shipment Method: Hand delivered
Tracking Number:

Project Number: 01140-204-0340

Project Manager: Sarah Hand

Email: sarah.hand@aecom.com
Phone: (206) 624-9349
Fax:

Comments and Special Analytical Requirements:

SSCU - silica gel cleanup

Date/Time: 06/11/09/1300

Date/Time:

Date/Time:

Lab Custody Intact? Yes No

BNSF COC No.:

TAT: 10

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?

Page Time & Initials: _____

Circle Y or N

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By: _____
(applies to temp at receipt)

Logged-in By: _____

Unpacked/
Labeled by: _____

Label Review by: _____ Cooler ID: 361, 393, 391, 370,
357, 384, 301

Date: 06.11.09

Date: 06.12

Date: 06.15

Date: _____ Work Order No. BSFO131

Time: 1300

Time: 1417

Time: 1240

Time: _____ Client: _____

Initials: CW

Initials: CW

Initials: CW

Initials: _____ Project: _____

Container Type:

COC Seals:

Packing Material:

Cooler
 Box
 None/Other _____

Ship Container
 On Bottles
 None
Sign By _____
Date _____

Bubble Bags
 Styrofoam
 Foam Packs
 None/Other _____

Refrigerant:

Soil Stir Bars/Encores:

Received Via: Bill#:

Gel Ice Pack
 Loose Ice
 None/Other _____

Placed in freezer #46:
Y or N or NA
Initial/date/time _____

Fed Ex
 Client
 UPS
 TA Courier
 DHL
 Mid Valley
 Senvoy
 TDP
 GS
 Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)

Temperature Blank? 9.9 °C or NA comments 9.5°C, 8.9°C, 8.5°C, 8.4°C, 8.1°C, 8.0°C Trip Blank? Y or N or NA

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:

(initial/date/time): _____

Comments: _____

Sample Containers:

ID

ID

Intact?	<u>Y</u> or N	_____	Metals Preserved?	Y or N or <u>NA</u>	_____
Provided by TA?	<u>Y</u> or N	_____	Client QAPP Preserved?	Y or N or <u>NA</u>	_____
Correct Type?	<u>Y</u> or N	_____	Adequate Volume? (for tests requested)	<u>Y</u> or N	_____
#Containers match COC?	<u>Y</u> or N	_____	Water VOAs: Headspace?	Y or N or <u>NA</u>	_____
IDs/time/date match COC?	<u>Y</u> or N	_____	Comments:	_____	_____
Hold Times in hold?	<u>Y</u> or N	_____			_____

PROJECT MANAGEMENT

Is the Chain of Custody complete? _____ Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up?

Y or N

May 28, 2009

Halah Voges
AECOM - Seattle
710 2nd Ave. Ste. 1000
Seattle, WA 98104

RE: BNSF-Skykomish

Enclosed are the results of analyses for samples received by the laboratory on 05/12/09 18:45.
The following list is a summary of the Work Orders contained in this report, generated on 05/28/09
10:41.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BSE0122	BNSF-Skykomish	01140-222-0200

TestAmerica Seattle



Kate Haney, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0200

Project Manager: Halah Voges

Report Created:

05/28/09 10:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1C-W-7-051209	BSE0122-01	Water	05/12/09 15:20	05/12/09 18:45
1C-W-1-051209	BSE0122-02	Water	05/12/09 16:20	05/12/09 18:45
1C-W-8-051209	BSE0122-03	Water	05/12/09 17:05	05/12/09 18:45

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0200

Project Manager: Halah Voges

Report Created:

05/28/09 10:41

Analytical Case Narrative

TestAmerica - Seattle, WA

BSE0122

SAMPLE RECEIPT

The samples were received 05/12/2009 by TestAmerica - Seattle. The temperature of the samples at the time of receipt was 4.7 degrees Celsius.

PREPARATIONS AND ANALYSIS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of the report.

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0200 Project Manager: Halah Voges	Report Created: 05/28/09 10:41
---	---	-----------------------------------

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
 TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
BSE0122-01 (1C-W-7-051209)		Water			Sampled: 05/12/09 15:20					
Diesel Range Hydrocarbons	NWTPH-Dx	0.578	----	0.0472	mg/l	1x	9E13007	05/13/09 08:05	05/14/09 23:17	Q11
Lube Oil Range Hydrocarbons	"	0.186	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			79.2%		53 - 120 %	"				"
<i>Octacosane</i>			91.5%		68 - 123 %	"				"
BSE0122-02 (1C-W-1-051209)		Water			Sampled: 05/12/09 16:20					
Diesel Range Hydrocarbons	NWTPH-Dx	0.0648	----	0.0472	mg/l	1x	9E13007	05/13/09 08:05	05/14/09 23:39	Q1
Lube Oil Range Hydrocarbons	"	ND	----	0.118	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>			70.5%		53 - 120 %	"				"
<i>Octacosane</i>			91.0%		68 - 123 %	"				"
BSE0122-03 (1C-W-8-051209)		Water			Sampled: 05/12/09 17:05					
Diesel Range Hydrocarbons	NWTPH-Dx	0.901	----	0.0472	mg/l	1x	9E13007	05/13/09 08:05	05/15/09 00:01	Q11
Lube Oil Range Hydrocarbons	"	0.275	----	0.118	"	"	"	"	"	Q1
<i>Surrogate(s): 2-FBP</i>			81.0%		53 - 120 %	"				"
<i>Octacosane</i>			88.2%		68 - 123 %	"				"

TestAmerica Seattle

Kate Haney

Kate Haney, Project Manager

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AECOM - Seattle 710 2nd Ave. Ste. 1000 Seattle, WA 98104	Project Name: BNSF-Skykomish Project Number: 01140-222-0200 Project Manager: Halah Voges	Report Created: 05/28/09 10:41
---	---	-----------------------------------

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up) - Laboratory Quality Control Results
 TestAmerica Seattle

QC Batch: 9E13007 Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9E13007-BLK1)										Extracted: 05/13/09 08:05				
Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	0.0500	mg/l	1x	--	--	--	--	--	--	05/14/09 20:41	
Lube Oil Range Hydrocarbons	"	ND	---	0.125	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 74.6%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>05/14/09 20:41</i>		
<i>Octacosane</i>		<i>92.8%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
LCS (9E13007-BS1)										Extracted: 05/13/09 08:05				
Diesel Range Hydrocarbons	NWTPH-Dx	2.02	---	0.0500	mg/l	1x	--	2.00	101%	(65-120)	--	--	05/14/09 21:03	
Lube Oil Range Hydrocarbons	"	1.99	---	0.125	"	"	--	"	99.4%	(70-120)	--	--	"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 78.7%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>05/14/09 21:03</i>		
<i>Octacosane</i>		<i>89.0%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		
LCS Dup (9E13007-BSD1)										Extracted: 05/13/09 08:05				
Diesel Range Hydrocarbons	NWTPH-Dx	2.08	---	0.0500	mg/l	1x	--	2.00	104%	(65-120)	2.86% (25)		05/14/09 21:25	
Lube Oil Range Hydrocarbons	"	2.02	---	0.125	"	"	--	"	101%	(70-120)	1.43% (40)		"	
<i>Surrogate(s): 2-FBP</i>		<i>Recovery: 82.6%</i>		<i>Limits: 53-120%</i>		<i>"</i>						<i>05/14/09 21:25</i>		
<i>Octacosane</i>		<i>90.1%</i>		<i>68-123%</i>		<i>"</i>						<i>"</i>		

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0200

Project Manager: Halah Voges

Report Created:

05/28/09 10:41

CERTIFICATION SUMMARY

TestAmerica Seattle

Method	Matrix	Nelac	Washington
NWTPH-Dx	Water		X

Any abnormalities or departures from sample acceptance policy shall be documented on the 'Sample Receipt and Temperature Log Form' and 'Sample Non-conformance Form' (if applicable) included with this report.

For information concerning certifications of this facility or another TestAmerica facility, please visit our website at www.TestAmericaInc.com

Samples collected by TestAmerica Field Services personnel are noted on the Chain of Custody (COC) .

TestAmerica Seattle



Kate Haney, Project Manager

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AECOM - Seattle

710 2nd Ave. Ste. 1000
Seattle, WA 98104

Project Name: **BNSF-Skykomish**

Project Number: 01140-222-0200

Project Manager: Halah Voges

Report Created:

05/28/09 10:41

Notes and Definitions

Report Specific Notes:

- Q1 - Does not match typical pattern
- Q11 - Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel.
- Q13 - Detected hydrocarbons do not have pattern and range consistent with typical petroleum products and may be due to biogenic interference.
- Q6 - Results in the diesel organics range are primarily due to overlap from a heavy oil range product.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Seattle



Kate Haney, Project Manager

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
 509-924-9200 FAX 924-9290
 503-906-9200 FAX 906-9210
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: *BAF0112*

CLIENT: AECOM - ENVIRONMENT		INVOICE TO: BNSF			
REPORT TO: HALAH VOGES		P.O. NUMBER:			
ADDRESS: 710 2ND AVE, #1000		PRESERVATIVE			
PHONE: (206) 624-9349 FAX:		REQUESTED ANALYSES			
PROJECT NAME: SKYKOMISH		OTHER: <input type="checkbox"/>			
PROJECT NUMBER: 01140-222-0200		Specify: <input type="checkbox"/> OTHER			
SAMPLED BY: GHANI SEBBANE		* Turnaround Requests less than standard may incur Rush Charges.			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 IC-W-1 1C-051209	5/12/09 1520	W	2		01
2 1C-W-1 1C-051209	5/12/09 1620	W	2		02
3 1C-W-1 1C-051209	5/12/09 1705	W	2		03
4					
5					
6					
7					
8					
9					
10					
RELEASED BY: Abdelghani Sebbane		DATE: 05/12/09		RECEIVED BY: Abdelghani Sebbane	
PRINT NAME: Abdelghani Sebbane		TIME: 1845		DATE: 5/12/09	
FIRM: AECOM		FIRM: A Sea		TIME: 1845	
RECEIVED BY: Abdelghani Sebbane		DATE: 05/12/09		RECEIVED BY: Abdelghani Sebbane	
PRINT NAME: Abdelghani Sebbane		TIME: 1845		DATE: 5/12/09	
FIRM: AECOM		FIRM: A Sea		TIME: 1845	
ADDITIONAL REMARKS:		TEMP: 47		PAGE 47 OF 47	

TAT: _____
Page Time & Initials: _____

Paperwork to PM - Date: _____ Time: _____

Non-Conformances?
Circle Y or N
(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By: _____ Logged-in By: _____ Unpacked/ Labeled by: _____ Label Review by: _____ Cooler ID: 309
(applies to temp at receipt)
Date: 5/12 Date: 5/12 Date: 05-13 Date: _____ Work Order No. BDF0122
Time: 18:45 Time: 19:14 Time: 12:15 Time: _____ Client: _____
Initials: CL Initials: CL Initials: CW Initials: _____ Project: _____

Container Type: _____ COC Seals: _____ Packing Material: _____
 Cooler _____ Ship Container _____ Sign By _____ Bubble Bags _____ Styrofoam
_____ Box _____ On Bottles _____ Date _____ _____ Foam Packs _____
_____ None/Other _____ None _____ _____ None/Other _____

Refrigerant: _____ Soil Stir Bars/Encores: _____ Received Via: Bill#: _____
_____ Gel Ice Pack _____ Placed in freezer #46: _____ Fed Ex Client
 Loose Ice _____ Y or N or NA _____ UPS _____ TA Courier
_____ None/Other _____ Initial/date/time _____ _____ DHL _____ Mid Valley
_____ GS _____ Other _____

Cooler Temperature (IR): _____ °C Plastic Glass (Frozen filters, Tedlars and aqueous Metals exempt)
(circle one)
Temperature Blank? 4.7 °C or NA comments _____ Trip Blank? Y or N or NA

BP, OPLC, ARCO-Temperature monitoring every 15 minutes:
(initial/date/time): _____
Comments: _____

Sample Containers:	ID	ID
Intact?	<input checked="" type="radio"/> Y or N _____	Metals Preserved? Y or N or <u>NA</u> _____
Provided by TA?	<input checked="" type="radio"/> Y or N _____	Client QAPP Preserved? Y or N or <u>NA</u> _____
Correct Type?	<input checked="" type="radio"/> Y or N _____	Adequate Volume? <input checked="" type="radio"/> Y or N _____ (for tests requested)
#Containers match COC?	<input checked="" type="radio"/> Y or N _____	Water VOAs: Headspace? Y or N or <u>NA</u> _____
IDs/time/date match COC?	<input checked="" type="radio"/> Y or N _____	Comments: _____
Hold Times in hold?	<input checked="" type="radio"/> Y or N _____	_____

PROJECT MANAGEMENT

Is the Chain of Custody complete? _____ Y or N If N, circle the items that were incomplete

Comments, Problems _____

Total access set up? _____ Y or N

ANALYTICAL REPORT

Job Number: 580-14365-1

Job Description: BNSF-Skykomish Groundwater Monitoring

For:
AECOM, Inc.
710 Second Avenue
Suite 1000
Seattle, WA 98104
Attention: Denell Warren



Approved for release.
Kate Haney
Project Manager II
7/22/2009 2:58 PM

Kate Haney
Project Manager II
kate.haney@testamericainc.com
07/22/2009

cc: Sarah Albano
Mark Havighorst
Aaron Huntington
Karen Kane
Eric Storkerson
Halah Voges

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any

TestAmerica Laboratories, Inc.

TestAmerica Tacoma 5755 8th Street East, Tacoma, WA 98424
Tel (253) 922-2310 Fax (253) 922-5047 www.testamericainc.com



Job Narrative
580-J14365-1

Comments

No additional comments.

Receipt

All samples were received in good condition within temperature requirements.

GC Semi VOA

No analytical or quality issues were noted.

Organic Prep

No analytical or quality issues were noted.

METHOD SUMMARY

Client: AECOM, Inc.

Job Number: 580-14365-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Northwest - Semi-Volatile Petroleum Products (GC)	TAL TAC	NWTPH NWTPH-Dx	
Liquid-Liquid Extraction (Separatory Funnel)	TAL TAC		SW846 3510C

Lab References:

TAL TAC = TestAmerica Tacoma

Method References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: AECOM, Inc.

Job Number: 580-14365-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-14365-1	GW-2-0709	Water	07/07/2009 1115	07/09/2009 0851
580-14365-2	5-W-43-0709	Water	07/07/2009 1220	07/09/2009 0851

Analytical Data

Client: AECOM, Inc.

Job Number: 580-14365-1

Client Sample ID: **GW-2-0709**

Lab Sample ID: 580-14365-1

Date Sampled: 07/07/2009 1115

Client Matrix: Water

Date Received: 07/09/2009 0851

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-46788	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-46857	Lab File ID:	AA000538.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	07/22/2009 0047		Final Weight/Volume:	2 mL
Date Prepared:	07/21/2009 1724		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.65		0.047
Lube Oil	0.41		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	127		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-14365-1

Client Sample ID: 5-W-43-0709

Lab Sample ID: 580-14365-2

Date Sampled: 07/07/2009 1220

Client Matrix: Water

Date Received: 07/09/2009 0851

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-46788	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-46857	Lab File ID:	AA000539.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	07/22/2009 0112		Final Weight/Volume:	2 mL
Date Prepared:	07/21/2009 1724		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.14		0.047
Lube Oil	0.12		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	98		50 - 150

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-14365-1

Method Blank - Batch: 580-46857

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-46857/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 07/21/2009 2332
Date Prepared: 07/21/2009 1724

Analysis Batch: 580-46788
Prep Batch: 580-46857
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA000535.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Diesel Range Organics (C12-C24)	ND		0.050
Lube Oil	ND		0.10
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	106		50 - 150

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-46857**

**Method: NWTPH-Dx
Preparation: 3510C**

LCS Lab Sample ID: LCS 580-46857/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 07/21/2009 2358
Date Prepared: 07/21/2009 1724

Analysis Batch: 580-46788
Prep Batch: 580-46857
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA000536.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 580-46857/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 07/22/2009 0023
Date Prepared: 07/21/2009 1724

Analysis Batch: 580-46788
Prep Batch: 580-46857
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA000537.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Diesel Range Organics (C12-C24)	110	110	70 - 140	1	27		
Lube Oil	100	106	66 - 125	6	27		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
o-Terphenyl	114	114			50 - 150		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Login Sample Receipt Check List

Client: AECOM, Inc.

Job Number: 580-14365-1

Login Number: 14365

List Source: TestAmerica Tacoma

Creator: Blankinship, Tom

List Number: 1

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

ANALYTICAL REPORT

Job Number: 580-14651-1

Job Description: BNSF-Skykomish Groundwater Monitoring

For:
AECOM, Inc.
710 Second Avenue
Suite 1000
Seattle, WA 98104
Attention: Denell Warren



Approved for release.
Kate Haney
Project Manager II
8/6/2009 4:23 PM

Kate Haney
Project Manager II
kate.haney@testamericainc.com
08/06/2009

cc: Sarah Albano
Mark Havighorst
Aaron Huntington
Karen Kane
Eric Storkerson
Halah Voges

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The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any

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Job Narrative
580-J14651-1

Comments

No additional comments.

Receipt

All samples were received in good condition within temperature requirements.

GC Semi VOA

No analytical or quality issues were noted.

Organic Prep

No analytical or quality issues were noted.

METHOD SUMMARY

Client: AECOM, Inc.

Job Number: 580-14651-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Northwest - Semi-Volatile Petroleum Products (GC)	TAL TAC	NWTPH NWTPH-Dx	
Liquid-Liquid Extraction (Separatory Funnel)	TAL TAC		SW846 3510C

Lab References:

TAL TAC = TestAmerica Tacoma

Method References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: AECOM, Inc.

Job Number: 580-14651-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-14651-1	1C-W-1-0709	Water	07/28/2009 1050	07/29/2009 1510
580-14651-2	1C-W-8-0709	Water	07/28/2009 1145	07/29/2009 1510
580-14651-3	1C-W-7-0709	Water	07/28/2009 1230	07/29/2009 1510
580-14651-4	GW-2-0709	Water	07/28/2009 1430	07/29/2009 1510
580-14651-5	GW-20-0709	Water	07/28/2009 1330	07/29/2009 1510

Analytical Data

Client: AECOM, Inc.

Job Number: 580-14651-1

Client Sample ID: 1C-W-1-0709

Lab Sample ID: 580-14651-1

Client Matrix: Water

Date Sampled: 07/28/2009 1050

Date Received: 07/29/2009 1510

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-47638	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-47665	Lab File ID:	FA38581.D
Dilution:	1.0		Initial Weight/Volume:	1050 mL
Date Analyzed:	08/04/2009 2119		Final Weight/Volume:	2 mL
Date Prepared:	08/04/2009 1545		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.048
Lube Oil	ND		0.095

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	87		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-14651-1

Client Sample ID: 1C-W-8-0709

Lab Sample ID: 580-14651-2

Date Sampled: 07/28/2009 1145

Client Matrix: Water

Date Received: 07/29/2009 1510

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-47638	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-47665	Lab File ID:	FA38582.D
Dilution:	1.0		Initial Weight/Volume:	1050 mL
Date Analyzed:	08/04/2009 2139		Final Weight/Volume:	2 mL
Date Prepared:	08/04/2009 1545		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.33		0.048
Lube Oil	ND		0.095

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	91		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-14651-1

Client Sample ID: 1C-W-7-0709

Lab Sample ID: 580-14651-3

Client Matrix: Water

Date Sampled: 07/28/2009 1230

Date Received: 07/29/2009 1510

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-47638	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-47665	Lab File ID:	FA38583.D
Dilution:	1.0		Initial Weight/Volume:	1050 mL
Date Analyzed:	08/04/2009 2159		Final Weight/Volume:	2 mL
Date Prepared:	08/04/2009 1545		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.25		0.048
Lube Oil	ND		0.095

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	88		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-14651-1

Client Sample ID: GW-2-0709

Lab Sample ID: 580-14651-4

Date Sampled: 07/28/2009 1430

Client Matrix: Water

Date Received: 07/29/2009 1510

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-47638	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-47665	Lab File ID:	FA38584.D
Dilution:	1.0		Initial Weight/Volume:	1050 mL
Date Analyzed:	08/04/2009 2220		Final Weight/Volume:	2 mL
Date Prepared:	08/04/2009 1545		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.41		0.048
Lube Oil	0.25		0.095

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	91		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-14651-1

Client Sample ID: GW-20-0709

Lab Sample ID: 580-14651-5

Date Sampled: 07/28/2009 1330

Client Matrix: Water

Date Received: 07/29/2009 1510

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-47638	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-47665	Lab File ID:	FA38585.D
Dilution:	1.0		Initial Weight/Volume:	1050 mL
Date Analyzed:	08/04/2009 2240		Final Weight/Volume:	2 mL
Date Prepared:	08/04/2009 1545		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.43		0.048
Lube Oil	0.29		0.095

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	95		50 - 150

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-14651-1

Method Blank - Batch: 580-47665

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-47665/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 08/04/2009 2018
Date Prepared: 08/04/2009 1545

Analysis Batch: 580-47638
Prep Batch: 580-47665
Units: mg/L

Instrument ID: TAC013
Lab File ID: FA38578.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Diesel Range Organics (C12-C24)	ND		0.050
Lube Oil	ND		0.10
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	97		50 - 150

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-47665**

**Method: NWTPH-Dx
Preparation: 3510C**

LCS Lab Sample ID: LCS 580-47665/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 08/04/2009 2038
Date Prepared: 08/04/2009 1545

Analysis Batch: 580-47638
Prep Batch: 580-47665
Units: mg/L

Instrument ID: TAC013
Lab File ID: FA38579.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 580-47665/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 08/04/2009 2059
Date Prepared: 08/04/2009 1545

Analysis Batch: 580-47638
Prep Batch: 580-47665
Units: mg/L

Instrument ID: TAC013
Lab File ID: FA38580.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Diesel Range Organics (C12-C24)	84	87	70 - 140	4	27		
Lube Oil	101	87	66 - 125	14	27		
Surrogate		LCS % Rec	LCSD % Rec			Acceptance Limits	
o-Terphenyl		97	98			50 - 150	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: AECOM		Project Manager: Sarah Albano		Date: 07/28/09		Chain of Custody Number: 4976	
Address: 710 2nd Ave, Suite 1000		Telephone Number (Area Code)/Fax Number: 206-624-9349		Lab Number: 14651		Page: 1 of 1	
City: Seattle		Site Contact: Dean X		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
State: WA		Lab Contact: Kate #		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
Zip Code: 98104		Carrier/Waybill Number		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
Project Name and Location (State): SKYKOMISH, WA		Matrix		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
Contract/Purchase Order/Quote No.: 01140-284-0540		Containers & Preservatives		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
Sample I.D. and Location/Description (Containers for each sample may be combined on one line)		Matrix		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
Date		Time		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
IC-W-1-0709		07/28/09 1050		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
IC-W-8-0709		07/28/09 1145		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
IC-W-7-0709		07/28/09 1230		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
GW-2-0709		07/28/09 1430		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
GW-20-0709		07/28/09 1330		Analysis (Attach list if more space is needed)		Special Instructions/Conditions of Receipt	
Page 11 of 12							

@ Lab 1510 Temp 5.7°C TB49°C
Cooler Disc Bg Blue/White Gel/Packs
Packing Bubble Wraps

Cooler <input type="checkbox"/> Yes <input type="checkbox"/> No Cooler Temp: _____ Turn Around Time Required (business days) <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 5 Days <input type="checkbox"/> 10 Days <input type="checkbox"/> 15 Days <input type="checkbox"/> Other _____	Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown	Sample Disposal <input type="checkbox"/> Return To Client <input type="checkbox"/> Archive For _____ Months	Disposal By Lab (A fee may be assessed if samples are retained longer than 1 month)
--	--	--	--

QC Requirements (Specify)

1. Relinquished By: Abdelghani Sebmane	Date: 07/29/09	Time: 0830
2. Relinquished By: Michelle Studd	Date: 7/29/09	Time: 8:35
3. Relinquished By: _____	Date: _____	Time: _____

Received By: **Michelle Studd**
Received By: _____
Received By: _____

Login Sample Receipt Check List

Client: AECOM, Inc.

Job Number: 580-14651-1

Login Number: 14651
Creator: Luna, Francisco
List Number: 1

List Source: TestAmerica Tacoma

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	no TAT on COC
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	False	no name
Sample Preservation Verified	True	

ANALYTICAL REPORT

Job Number: 580-15126-1

Job Description: BNSF Skykomish Groundwater Monitoring

For:
AECOM, Inc.
710 Second Avenue
Suite 1000
Seattle, WA 98104
Attention: Denell Warren



Approved for release.
Curtis Armstrong
Project Manager I
9/10/2009 5:40 PM

Designee for
Kate Haney
Project Manager II
kate.haney@testamericainc.com
09/10/2009

cc: Sarah Albano
Mark Havighorst
Aaron Huntington
Karen Kane
Eric Storkerson
Halal Voges

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The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

TestAmerica Laboratories, Inc.

TestAmerica Tacoma 5755 8th Street East, Tacoma, WA 98424
Tel (253) 922-2310 Fax (253) 922-5047 www.testamericainc.com



Table of Contents

Cover Title Page	1
Report Narrative	3
Method Summary	4
Sample Summary	5
Sample Datasheets	6
Qc Reports	14
Client Chain of Custody	15
Sample Receipt Checklist	16

Job Narrative
580-J15126-1

Comments

No additional comments.

Receipt

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): 3-W-43-0809, time is not listed on the label. Sample logged in per COC.

All other samples were received in good condition within temperature requirements.

GC Semi VOA

No analytical or quality issues were noted.

Organic Prep

No analytical or quality issues were noted.

METHOD SUMMARY

Client: AECOM, Inc.

Job Number: 580-15126-1

Description	Lab Location	Method	Preparation Method
Matrix Water			
Northwest - Semi-Volatile Petroleum Products (GC)	TAL TAC	NWTPH NWTPH-Dx	
Liquid-Liquid Extraction (Separatory Funnel)	TAL TAC		SW846 3510C

Lab References:

TAL TAC = TestAmerica Tacoma

Method References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: AECOM, Inc.

Job Number: 580-15126-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-15126-1	1C-W-1-0809	Water	08/25/2009 1000	08/26/2009 1100
580-15126-2	1C-W-7-0809	Water	08/25/2009 1157	08/26/2009 1100
580-15126-3	1C-W-8-0809	Water	08/25/2009 1056	08/26/2009 1100
580-15126-4	3-W-43-0809	Water	08/25/2009 1521	08/26/2009 1100
580-15126-5	3-W-42-0809	Water	08/25/2009 1433	08/26/2009 1100
580-15126-6	3-W-41-0809	Water	08/25/2009 1330	08/26/2009 1100
580-15126-7	3-W-410-0809	Water	08/25/2009 1400	08/26/2009 1100
580-15126-8	GW-2-0809	Water	08/25/2009 1640	08/26/2009 1100

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: 1C-W-1-0809

Lab Sample ID: 580-15126-1

Client Matrix: Water

Date Sampled: 08/25/2009 1000

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39775.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1623		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: 1C-W-7-0809

Lab Sample ID: 580-15126-2

Client Matrix: Water

Date Sampled: 08/25/2009 1157

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39776.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1643		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.30		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	109		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: 1C-W-8-0809

Lab Sample ID: 580-15126-3

Client Matrix: Water

Date Sampled: 08/25/2009 1056

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39777.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1703		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.38		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	105		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: 3-W-43-0809

Lab Sample ID: 580-15126-4

Client Matrix: Water

Date Sampled: 08/25/2009 1521

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39778.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1723		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	102		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: 3-W-42-0809

Lab Sample ID: 580-15126-5

Client Matrix: Water

Date Sampled: 08/25/2009 1433

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39779.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1743		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: 3-W-41-0809

Lab Sample ID: 580-15126-6

Client Matrix: Water

Date Sampled: 08/25/2009 1330

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39780.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1803		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.076		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	102		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: 3-W-410-0809

Lab Sample ID: 580-15126-7

Date Sampled: 08/25/2009 1400

Client Matrix: Water

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39781.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1823		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.077		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	103		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15126-1

Client Sample ID: GW-2-0809

Lab Sample ID: 580-15126-8

Date Sampled: 08/25/2009 1640

Client Matrix: Water

Date Received: 08/26/2009 1100

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-49786	Instrument ID:	TAC013
Preparation:	3510C	Prep Batch: 580-49374	Lab File ID:	FA39783.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	09/07/2009 1908		Final Weight/Volume:	2 mL
Date Prepared:	08/30/2009 1302		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.71		0.047
Lube Oil	0.32		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	96		50 - 150

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15126-1

Method Blank - Batch: 580-49374

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-49374/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/07/2009 1512
Date Prepared: 08/30/2009 1302

Analysis Batch: 580-49786
Prep Batch: 580-49374
Units: mg/L

Instrument ID: TAC013
Lab File ID: FA39772.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Diesel Range Organics (C12-C24)	ND		0.050
Lube Oil	ND		0.10
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	100		50 - 150

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-49374**

**Method: NWTPH-Dx
Preparation: 3510C**

LCS Lab Sample ID: LCS 580-49374/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/07/2009 1532
Date Prepared: 08/30/2009 1302

Analysis Batch: 580-49786
Prep Batch: 580-49374
Units: mg/L

Instrument ID: TAC013
Lab File ID: FA39773.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 580-49374/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 09/07/2009 1557
Date Prepared: 08/30/2009 1302

Analysis Batch: 580-49786
Prep Batch: 580-49374
Units: mg/L

Instrument ID: TAC013
Lab File ID: FA39774.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Diesel Range Organics (C12-C24)	93	98	70 - 140	5	27		
Lube Oil	92	95	66 - 125	3	27		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
o-Terphenyl	104		112		50 - 150		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Login Sample Receipt Check List

Client: AECOM, Inc.

Job Number: 580-15126-1

Login Number: 15126
Creator: Gamble, Cathy
List Number: 1

List Source: TestAmerica Tacoma

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

ANALYTICAL REPORT

Job Number: 580-15702-1

Job Description: BNSF Skykomish Groundwater Monitoring

For:
AECOM, Inc.
710 Second Avenue
Suite 1000
Seattle, WA 98104
Attention: Sarah Albano



Approved for release.
Kate Haney
Project Manager II
10/22/2009 5:14 PM

Kate Haney
Project Manager II
kate.haney@testamericainc.com
10/22/2009

cc: Denell Warren

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

TestAmerica Laboratories, Inc.

TestAmerica Tacoma 5755 8th Street East, Tacoma, WA 98424
Tel (253) 922-2310 Fax (253) 922-5047 www.testamericainc.com



Job Narrative
580-15702-1

Comments

No additional comments.

Receipt

All samples were received in good condition within temperature requirements.

GC Semi VOA

No analytical or quality issues were noted.

Organic Prep

No analytical or quality issues were noted.

METHOD SUMMARY

Client: AECOM, Inc.

Job Number: 580-15702-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Northwest - Semi-Volatile Petroleum Products (GC)	TAL TAC	NWTPH NWTPH-Dx	
Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup	TAL TAC	NWTPH NWTPH-Dx	
Liquid-Liquid Extraction (Separatory Funnel)	TAL TAC		SW846 3510C
Silica Gel Cleanup	TAL TAC		SW846 3630C
Liquid-Liquid Extraction (Separatory Funnel)	TAL TAC		SW846 3510C

Lab References:

TAL TAC = TestAmerica Tacoma

Method References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: AECOM, Inc.

Job Number: 580-15702-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-15702-23	1C-W-4-0909	Water	09/22/2009 1355	09/25/2009 1215
580-15702-24	1C-W-3-0909	Water	09/22/2009 1145	09/25/2009 1215
580-15702-25	1C-W-2-0909	Water	09/22/2009 1635	09/25/2009 1215
580-15702-26	GW-4-0909	Water	09/22/2009 1715	09/25/2009 1215
580-15702-27	MW-39-0909	Water	09/22/2009 1640	09/25/2009 1215
580-15702-28	2A-W-11-0909	Water	09/22/2009 1715	09/25/2009 1215
580-15702-29	5-W-51-0909	Water	09/22/2009 1750	09/25/2009 1215
580-15702-30	2B-W-46-0909	Water	09/23/2009 0935	09/25/2009 1215
580-15702-31	2B-W-45-0909	Water	09/23/2009 1015	09/25/2009 1215
580-15702-32	2B-W-450-0909	Water	09/23/2009 1030	09/25/2009 1215
580-15702-33	MW-500-0909	Water	09/23/2009 0825	09/25/2009 1215
580-15702-34	2A-W-9-0909	Water	09/23/2009 1130	09/25/2009 1215
580-15702-35	MW-3-0909	Water	09/23/2009 1320	09/25/2009 1215
580-15702-36	MW-41-0909	Water	09/23/2009 1400	09/25/2009 1215
580-15702-37	3W-41-0909	Water	09/23/2009 1515	09/25/2009 1215
580-15702-38	2A-W-10-0909	Water	09/21/2009 1630	09/25/2009 1215
580-15702-39	2B-W-4-0909	Water	09/21/2009 1625	09/25/2009 1215
580-15702-40	5-W-52-0909	Water	09/22/2009 1005	09/25/2009 1215
580-15702-41	5-W-53-0909	Water	09/22/2009 1055	09/25/2009 1215
580-15702-42	5-W-530-0909	Water	09/22/2009 0955	09/25/2009 1215
580-15702-43	5-W-54-0909	Water	09/22/2009 1150	09/25/2009 1215
580-15702-44	MW-38R-0909	Water	09/22/2009 1345	09/25/2009 1215
580-15702-45	5-W-18-0909	Water	09/22/2009 1455	09/25/2009 1215
580-15702-46	5-W-55-0909	Water	09/22/2009 1640	09/25/2009 1215
580-15702-47	5-W-56-0909	Water	09/22/2009 1550	09/25/2009 1215
580-15702-48	1C-W-1-0909	Water	09/22/2009 0915	09/25/2009 1215
580-15702-49	1C-W-8-0909	Water	09/22/2009 0955	09/25/2009 1215
580-15702-50	1C-W-7-0909	Water	09/22/2009 1500	09/25/2009 1215
580-15702-51	1C-W-70-0909	Water	09/22/2009 1520	09/25/2009 1215
580-15702-52	3-W-42-0909	Water	09/23/2009 1600	09/25/2009 1215
580-15702-53	3-W-43-0909	Water	09/23/2009 1645	09/25/2009 1215
580-15702-54	MW-16-0909	Water	09/23/2009 1745	09/25/2009 1215
580-15702-55	MW-160-0909	Water	09/23/2009 1755	09/25/2009 1215
580-15702-56	5-W-50-0909	Water	09/23/2009 0850	09/25/2009 1215
580-15702-57	5-W-17-0909	Water	09/23/2009 0925	09/25/2009 1215
580-15702-58	5-W-170-0909	Water	09/23/2009 0825	09/25/2009 1215
580-15702-59	5-W-16-0909	Water	09/23/2009 1025	09/25/2009 1215
580-15702-60	5-W-14-0909	Water	09/23/2009 1120	09/25/2009 1215
580-15702-60MS	5-W-14-0909	Water	09/23/2009 1120	09/25/2009 1215
580-15702-60MSD	5-W-14-0909	Water	09/23/2009 1120	09/25/2009 1215
580-15702-61	5-W-15-0909	Water	09/23/2009 1355	09/25/2009 1215
580-15702-62	5-W-42-0909	Water	09/23/2009 1435	09/25/2009 1215
580-15702-63	5-W-19-0909	Water	09/23/2009 1520	09/25/2009 1215
580-15702-64	5-W-20-0909	Water	09/23/2009 1610	09/25/2009 1215
580-15702-65	5-W-43-0909	Water	09/23/2009 1730	09/25/2009 1215
580-15702-66	5-W-4-0909	Water	09/23/2009 1805	09/25/2009 1215

SAMPLE SUMMARY

Client: AECOM, Inc.

Job Number: 580-15702-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-15702-67	2A-W-42-0909	Water	09/23/2009 0900	09/25/2009 1215
580-15702-68	1B-W-23-0909	Water	09/23/2009 1040	09/25/2009 1215
580-15702-69	1B-W-3-0909	Water	09/23/2009 1440	09/25/2009 1215
580-15702-70	GW-3-0909	Water	09/23/2009 1255	09/25/2009 1215
580-15702-71	1B-W-2-0909	Water	09/23/2009 1555	09/25/2009 1215
580-15702-72	1A-W-4-0909	Water	09/23/2009 1740	09/25/2009 1215
580-15702-73	EW-1-0909	Water	09/23/2009 0000	09/25/2009 1215
580-15702-74	2A-W-40-0909	Water	09/24/2009 0915	09/25/2009 1215
580-15702-75	2A-W-41-0909	Water	09/24/2009 1025	09/25/2009 1215
580-15702-76	1A-W-5-0909	Water	09/24/2009 1120	09/25/2009 1215
580-15702-77	GW-2-0909	Water	09/24/2009 0920	09/25/2009 1215
580-15702-78	GW-20-0909	Water	09/24/2009 0930	09/25/2009 1215
580-15702-79	GW-1-0909	Water	09/24/2009 1025	09/25/2009 1215

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1C-W-4-0909

Lab Sample ID: 580-15702-23

Client Matrix: Water

Date Sampled: 09/22/2009 1355

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01180.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0346		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.12		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1C-W-3-0909

Lab Sample ID: 580-15702-24

Client Matrix: Water

Date Sampled: 09/22/2009 1145

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01181.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0405		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	97		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1C-W-2-0909

Lab Sample ID: 580-15702-25

Date Sampled: 09/22/2009 1635

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01182.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0423		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: GW-4-0909

Lab Sample ID: 580-15702-26

Date Sampled: 09/22/2009 1715

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01183.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0442		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.097		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-39-0909

Lab Sample ID: 580-15702-27

Date Sampled: 09/22/2009 1640

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01184.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0501		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.38		0.047
Lube Oil	0.25		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	98		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2A-W-11-0909

Lab Sample ID: 580-15702-28

Client Matrix: Water

Date Sampled: 09/22/2009 1715

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01185.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0520		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.63		0.047
Lube Oil	0.93		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-51-0909

Lab Sample ID: 580-15702-29

Date Sampled: 09/22/2009 1750

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01186.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0538		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	1.2		0.047
Lube Oil	0.73		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2B-W-46-0909

Lab Sample ID: 580-15702-30

Client Matrix: Water

Date Sampled: 09/23/2009 0935

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01187.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0557		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2B-W-45-0909

Lab Sample ID: 580-15702-31

Client Matrix: Water

Date Sampled: 09/23/2009 1015

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01192.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0731		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2B-W-450-0909

Lab Sample ID: 580-15702-32

Date Sampled: 09/23/2009 1030

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01193.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0750		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-500-0909

Lab Sample ID: 580-15702-33

Date Sampled: 09/23/2009 0825

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01141.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1531		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	83		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-500-0909

Lab Sample ID: 580-15702-33

Date Sampled: 09/23/2009 0825

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01157.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2035		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	ND		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	84		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2A-W-9-0909

Lab Sample ID: 580-15702-34

Client Matrix: Water

Date Sampled: 09/23/2009 1130

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01194.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0808		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.47		0.047
Lube Oil	0.13		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-3-0909

Lab Sample ID: 580-15702-35

Date Sampled: 09/23/2009 1320

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01195.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0827		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.64		0.047
Lube Oil	0.29		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	97		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-41-0909

Lab Sample ID: 580-15702-36

Date Sampled: 09/23/2009 1400

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01196.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0846		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.077		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	102		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 3W-41-0909

Lab Sample ID: 580-15702-37

Date Sampled: 09/23/2009 1515

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01197.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0904		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.056		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2A-W-10-0909

Lab Sample ID: 580-15702-38

Client Matrix: Water

Date Sampled: 09/21/2009 1630

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01198.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0923		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.18		0.047
Lube Oil	0.19		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	103		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2B-W-4-0909

Lab Sample ID: 580-15702-39

Client Matrix: Water

Date Sampled: 09/21/2009 1625

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01200.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1001		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-52-0909

Lab Sample ID: 580-15702-40

Date Sampled: 09/22/2009 1005

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01201.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1020		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.41		0.047
Lube Oil	0.24		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-53-0909

Lab Sample ID: 580-15702-41

Client Matrix: Water

Date Sampled: 09/22/2009 1055

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01202.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1038		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.30		0.047
Lube Oil	0.23		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-530-0909

Lab Sample ID: 580-15702-42

Date Sampled: 09/22/2009 0955

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01203.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1057		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.27		0.047
Lube Oil	0.22		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-54-0909

Lab Sample ID: 580-15702-43

Date Sampled: 09/22/2009 1150

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01204.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1116		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	98		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-38R-0909

Lab Sample ID: 580-15702-44

Date Sampled: 09/22/2009 1345

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01205.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1135		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.079		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-18-0909

Lab Sample ID: 580-15702-45

Date Sampled: 09/22/2009 1455

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01142.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1551		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.25		0.047
Lube Oil	0.12		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	87		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-18-0909

Lab Sample ID: 580-15702-45

Date Sampled: 09/22/2009 1455

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01158.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2054		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	ND		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	84		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-55-0909

Lab Sample ID: 580-15702-46

Date Sampled: 09/22/2009 1640

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01206.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1154		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.27		0.047
Lube Oil	0.23		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	96		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-56-0909

Lab Sample ID: 580-15702-47

Date Sampled: 09/22/2009 1550

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01207.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1213		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	2.7		0.047
Lube Oil	0.79		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1C-W-1-0909

Lab Sample ID: 580-15702-48

Client Matrix: Water

Date Sampled: 09/22/2009 0915

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01208.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1232		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.086		0.047
Lube Oil	0.11		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	131		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1C-W-8-0909

Lab Sample ID: 580-15702-49

Date Sampled: 09/22/2009 0955

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01209.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1251		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.40		0.047
Lube Oil	0.13		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	98		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1C-W-7-0909

Lab Sample ID: 580-15702-50

Date Sampled: 09/22/2009 1500

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01211.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1329		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.24		0.047
Lube Oil	0.13		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1C-W-70-0909

Lab Sample ID: 580-15702-51

Date Sampled: 09/22/2009 1520

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01212.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1348		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.25		0.047
Lube Oil	0.11		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	102		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 3-W-42-0909

Lab Sample ID: 580-15702-52

Date Sampled: 09/23/2009 1600

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01213.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1407		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.74		0.047
Lube Oil	0.19		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	96		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 3-W-43-0909

Lab Sample ID: 580-15702-53

Date Sampled: 09/23/2009 1645

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01214.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1426		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-16-0909

Lab Sample ID: 580-15702-54

Date Sampled: 09/23/2009 1745

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01215.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1445		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	104		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: MW-160-0909

Lab Sample ID: 580-15702-55

Date Sampled: 09/23/2009 1755

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01216.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1504		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-50-0909

Lab Sample ID: 580-15702-56

Client Matrix: Water

Date Sampled: 09/23/2009 0850

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01217.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1523		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	1.8		0.047
Lube Oil	0.84		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	103		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-17-0909

Lab Sample ID: 580-15702-57

Date Sampled: 09/23/2009 0925

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01143.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1609		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-17-0909

Lab Sample ID: 580-15702-57

Date Sampled: 09/23/2009 0925

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01159.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2113		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	ND		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	80		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-170-0909

Lab Sample ID: 580-15702-58

Date Sampled: 09/23/2009 0825

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01147.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1725		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	88		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-170-0909

Lab Sample ID: 580-15702-58

Date Sampled: 09/23/2009 0825

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01160.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2131		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	0.078		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-16-0909

Lab Sample ID: 580-15702-59

Date Sampled: 09/23/2009 1025

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01148.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1744		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	92		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-16-0909

Lab Sample ID: 580-15702-59

Date Sampled: 09/23/2009 1025

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01161.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2150		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	ND		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-14-0909

Lab Sample ID: 580-15702-60

Date Sampled: 09/23/2009 1120

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01149.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1803		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	89		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-14-0909

Lab Sample ID: 580-15702-60

Date Sampled: 09/23/2009 1120

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01162.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2209		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	ND		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	80		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-15-0909

Lab Sample ID: 580-15702-61

Date Sampled: 09/23/2009 1355

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01152.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1900		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.22		0.047
Lube Oil	0.11		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	89		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-15-0909

Lab Sample ID: 580-15702-61

Date Sampled: 09/23/2009 1355

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01165.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2306		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	ND		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-42-0909

Lab Sample ID: 580-15702-62

Date Sampled: 09/23/2009 1435

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01153.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1919		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.44		0.047
Lube Oil	0.56		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-42-0909

Lab Sample ID: 580-15702-62

Date Sampled: 09/23/2009 1435

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01170.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0039		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	0.43		0.094
Diesel Range Organics (C12-C24)	0.21		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-19-0909

Lab Sample ID: 580-15702-63

Date Sampled: 09/23/2009 1520

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01154.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1938		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	89		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-19-0909

Lab Sample ID: 580-15702-63

Date Sampled: 09/23/2009 1520

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01171.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0058		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	ND		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-20-0909

Lab Sample ID: 580-15702-64

Date Sampled: 09/23/2009 1610

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01156.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 2016		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.34		0.047
Lube Oil	0.19		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	91		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-20-0909

Lab Sample ID: 580-15702-64

Date Sampled: 09/23/2009 1610

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51336	Lab File ID:	AA01172.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0117		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1430		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Lube Oil	ND		0.094
Diesel Range Organics (C12-C24)	0.053		0.047

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	90		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-43-0909

Lab Sample ID: 580-15702-65

Date Sampled: 09/23/2009 1730

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01218.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1542		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 5-W-4-0909

Lab Sample ID: 580-15702-66

Date Sampled: 09/23/2009 1805

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51379	Lab File ID:	AA01219.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1601		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0911		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	1.3		0.047
Lube Oil	0.49		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2A-W-42-0909

Lab Sample ID: 580-15702-67

Client Matrix: Water

Date Sampled: 09/23/2009 0900

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01224.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1736		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.28		0.047
Lube Oil	0.14		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	102		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1B-W-23-0909

Lab Sample ID: 580-15702-68

Date Sampled: 09/23/2009 1040

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01225.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1756		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.49		0.047
Lube Oil	0.31		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1B-W-3-0909

Lab Sample ID: 580-15702-69

Date Sampled: 09/23/2009 1440

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01226.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1815		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.090		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	97		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: GW-3-0909

Lab Sample ID: 580-15702-70

Date Sampled: 09/23/2009 1255

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01227.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1834		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.11		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1B-W-2-0909

Lab Sample ID: 580-15702-71

Date Sampled: 09/23/2009 1555

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01228.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1853		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.17		0.047
Lube Oil	0.12		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	105		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1A-W-4-0909

Lab Sample ID: 580-15702-72

Date Sampled: 09/23/2009 1740

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01229.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1912		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: EW-1-0909

Lab Sample ID: 580-15702-73

Date Sampled: 09/23/2009 0000

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01230.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 1931		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2A-W-40-0909

Lab Sample ID: 580-15702-74

Client Matrix: Water

Date Sampled: 09/24/2009 0915

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01232.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 2009		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	98		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 2A-W-41-0909

Lab Sample ID: 580-15702-75

Client Matrix: Water

Date Sampled: 09/24/2009 1025

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01233.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 2028		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.28		0.047
Lube Oil	0.12		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	100		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: 1A-W-5-0909

Lab Sample ID: 580-15702-76

Date Sampled: 09/24/2009 1120

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01234.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 2047		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	102		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: GW-2-0909

Lab Sample ID: 580-15702-77

Date Sampled: 09/24/2009 0920

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01235.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 2105		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.16		0.047
Lube Oil	0.10		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: GW-20-0909

Lab Sample ID: 580-15702-78

Date Sampled: 09/24/2009 0930

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01236.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 2124		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.15		0.047
Lube Oil	0.10		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	96		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-1

Client Sample ID: GW-1-0909

Lab Sample ID: 580-15702-79

Date Sampled: 09/24/2009 1025

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51452	Lab File ID:	AA01237.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 2143		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 1516		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.054		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	94		50 - 150

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-1

Method Blank - Batch: 580-51336

Lab Sample ID: MB 580-51336/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 1318
Date Prepared: 10/02/2009 1430

Analysis Batch: 580-52260
Prep Batch: 580-51336
Units: mg/L

Method: NWTPH-Dx Preparation: 3510C

Instrument ID: SEA011
Lab File ID: AA01134.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Lube Oil	ND		0.10
Diesel Range Organics (C12-C24)	ND		0.050
Surrogate	% Rec	Acceptance Limits	
o-Terphenyl	88	50 - 150	

Method Blank - Batch: 580-51336

Lab Sample ID: MB 580-51336/1-B
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 1646
Date Prepared: 10/02/2009 1430

Analysis Batch: 580-52260
Prep Batch: 580-51336
Units: mg/L

Method: NWTPH-Dx Preparation: 3510C

Instrument ID: SEA011
Lab File ID: AA01145.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Lube Oil	ND		0.10
Diesel Range Organics (C12-C24)	ND		0.050
Surrogate	% Rec	Acceptance Limits	
o-Terphenyl	84	50 - 150	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-1

Lab Control Sample - Batch: 580-51336

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: LCS 580-51336/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 1337
Date Prepared: 10/02/2009 1430

Analysis Batch: 580-52260
Prep Batch: 580-51336
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01135.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Lube Oil	2.00	1.94	97	66 - 125	
Diesel Range Organics (C12-C24)	2.00	1.80	90	70 - 140	
Surrogate		% Rec		Acceptance Limits	
o-Terphenyl		95		50 - 150	

Lab Control Sample - Batch: 580-51336

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: LCS 580-51336/2-B
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 1705
Date Prepared: 10/02/2009 1430

Analysis Batch: 580-52260
Prep Batch: 580-51336
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01146.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Lube Oil	2.00	1.93	97	66 - 125	
Diesel Range Organics (C12-C24)	2.00	1.74	87	70 - 140	
Surrogate		% Rec		Acceptance Limits	
o-Terphenyl		92		50 - 150	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-1

Matrix Spike - Batch: 580-51336

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: 580-15702-60
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 1822
Date Prepared: 10/02/2009 1430

Analysis Batch: 580-52260
Prep Batch: 580-51336
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01150.D
Initial Weight/Volume: 1060 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Diesel Range Organics (C12-C24)	ND	1.89	1.55	82	70 - 140	
Lube Oil	ND	1.89	1.68	88	66 - 125	
Surrogate		% Rec			Acceptance Limits	
o-Terphenyl		90			50 - 150	

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-51336**

**Method: NWTPH-Dx
Preparation: 3510C**

MS Lab Sample ID: 580-15702-60
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 2228
Date Prepared: 10/02/2009 1430

Analysis Batch: 580-52260
Prep Batch: 580-51336

Instrument ID: SEA011
Lab File ID: AA01163.D
Initial Weight/Volume: 1060 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

MSD Lab Sample ID: 580-15702-60
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 1841
Date Prepared: 10/02/2009 1430

Analysis Batch: 580-52260
Prep Batch: 580-51336

Instrument ID: SEA011
Lab File ID: AA01151.D
Initial Weight/Volume: 1060 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Lube Oil	93	92	70 - 130	0	27		
Lube Oil	93	94	70 - 130	2	30		
Diesel Range Organics (C12-C24)	87	85	70 - 130	2	27		
Diesel Range Organics (C12-C24)	87	86	70 - 130	1	30		
Surrogate		MS % Rec	MSD % Rec			Acceptance Limits	
o-Terphenyl		92	94			50 - 150	
o-Terphenyl		92	93			50 - 150	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-1

Method Blank - Batch: 580-51378

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-51378/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 2343
Date Prepared: 10/05/2009 0906

Analysis Batch: 580-52260
Prep Batch: 580-51378
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01167.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Lube Oil	ND		0.10
Diesel Range Organics (C12-C24)	ND		0.050
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	100		50 - 150

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-51378**

**Method: NWTPH-Dx
Preparation: 3510C**

LCS Lab Sample ID: LCS 580-51378/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 0002
Date Prepared: 10/05/2009 0906

Analysis Batch: 580-52260
Prep Batch: 580-51378
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01168.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 580-51378/23-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 0021
Date Prepared: 10/05/2009 0906

Analysis Batch: 580-52260
Prep Batch: 580-51378
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01169.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Lube Oil	101	105	66 - 125	3	27		
Diesel Range Organics (C12-C24)	97	101	70 - 140	4	27		
Surrogate		LCS % Rec	LCSD % Rec			Acceptance Limits	
o-Terphenyl		104	106			50 - 150	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-1

Method Blank - Batch: 580-51379

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-51379/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 0635
Date Prepared: 10/05/2009 0911

Analysis Batch: 580-52260
Prep Batch: 580-51379
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01189.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Lube Oil	ND		0.10
Diesel Range Organics (C12-C24)	ND		0.050
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	106		50 - 150

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-51379**

**Method: NWTPH-Dx
Preparation: 3510C**

LCS Lab Sample ID: LCS 580-51379/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 0653
Date Prepared: 10/05/2009 0911

Analysis Batch: 580-52260
Prep Batch: 580-51379
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01190.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 580-51379/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 0712
Date Prepared: 10/05/2009 0911

Analysis Batch: 580-52260
Prep Batch: 580-51379
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01191.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Lube Oil	101	98	66 - 125	2	27		
Diesel Range Organics (C12-C24)	98	95	70 - 140	4	27		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
o-Terphenyl	107		104		50 - 150		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-1

Method Blank - Batch: 580-51452

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-51452/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 1639
Date Prepared: 10/05/2009 1516

Analysis Batch: 580-52260
Prep Batch: 580-51452
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01221.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Lube Oil	ND		0.10
Diesel Range Organics (C12-C24)	ND		0.050
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	98		50 - 150

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-51452**

**Method: NWTPH-Dx
Preparation: 3510C**

LCS Lab Sample ID: LCS 580-51452/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 1658
Date Prepared: 10/05/2009 1516

Analysis Batch: 580-52260
Prep Batch: 580-51452
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01222.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 580-51452/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 1717
Date Prepared: 10/05/2009 1516

Analysis Batch: 580-52260
Prep Batch: 580-51452
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01223.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Lube Oil	98	104	66 - 125	6	27		
Diesel Range Organics (C12-C24)	97	100	70 - 140	3	27		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
o-Terphenyl	108		109		50 - 150		

Calculations are performed before rounding to avoid round-off errors in calculated results.

LAB WORK ORDER: 15702

SHIPMENT INFORMATION

LABORATORY INFORMATION

Project Manager: Kate Haney
 Phone: (253) 922-2310
 Fax:

Project Number: 01140-284-0546
 Project Manager: Sarah Albano
 Email: sarah.albano@aecom.com
 Phone: (206) 624-9349
 Fax:

CONSULTANT INFORMATION

Company: AECOM
 Address: 710 2nd Ave, Ste 1000
 City/State/Zip: Seattle, WA 98104

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?

TURNAROUND TIME
 1-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix	LAB USE
		Date	Time				
S1-AD-0909	Z	9/22/09	0855	DK	N	W	1
-AU-	Z		0910				2
-BD-	Z		0925				3
-BU-	Z		0935				4
S2-BD-	Z		1035				5
-BU-	Z		1045				6
-AD-	Z		1005				7
-AU-	Z		1015				8
S3-BU-	Z		1055				9
-AD-	Z		1225				10
-AU-	Z		1235				11
-BD-	Z		1250				12
-BU-	Z		1330				13
-CD	Z		1355				14
T-CM	Z		1405				15

Comments and Special Analytical Requirements:
 Date/Time: 9/25/09 12:15
 Date/Time: 9/25/09 12:15
 Date/Time: 9/25/09 12:15
 Lab Custody/Track? Yes No
 Custody Seal No. BNSF COC No.
 Comments: Extra Sample CDC Lab Rec
 Lg Green/blue TB=5.3
 Lg Blue/white TB=1.0
 Lg Red/white TB=6.7
 Lg Green/blue TB=5.5
 Lg Red/white TB=3.5
 Lg Red/white TB=5.3
 Lg Blue/white TB=1.0
 Lg Green/blue wet, bubble TB=3.2
 Lab carrier

ORIGINAL - RETURN TO LABORATORY WITH SAMPLES
 Date/Time: 9/24/09 1420
 Date/Time: 9/24/09 1500
 Date/Time: 9/24/09 1500
 Received By: Tom Blund
 Lab Remarks: Duplicate - CONSULTANT

10/22/2009



CHAIN OF CUSTODY

Laboratory: **Test America**
 Address: **5755 8th St**
 City/State/Zip: **WA**

Project Manager: **Kate Hanes**
 Phone: **(253) 922-7310**
 Fax:

LAB WORK ORDER:
 SHIPMENT INFORMATION

BNSF Project Number:
 BNSF Project Name: **Skykomish**
 BNSF Contact: **Bruce Sheppard**

Project State of Origin: **WA**
 Project City: **Skykomish**

Project Manager: **AECOM**
 Address: **710 2nd Ave, Ste 1000**
 City/State/Zip: **Seattle, WA 98104**
 Email: **Sarah.albano@aecom.com**
 Phone: **(206) 624-2349**
 Fax:

TURNAROUND TIME
 1-day Rush
 5- to 8-day Rush
 2-day Rush
 Standard 10-Day
 3-day Rush
 Other

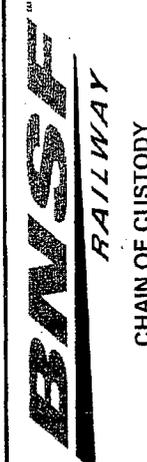
DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?
 EDD Req. Format?
AECOM

CONSULTANT INFORMATION
 Company: **AECOM**
 Project Manager: **Sarah Albano**

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection			Type (Contpl/Grab)	Matrix	LAB USE
		Date	Time	Sampler			
S4-AD-0909	2	9/24/09	1430	DWK-N	W	14	
-AU-	2		1455			17	
-BD-	2		1515			18	
-BM-	2		1525			19	
-CD-	2		1540			20	
-CM-	2		1555			21	
S40-AD-0909	2		1440			22	

REINQUISHED BY: **Ed Mill** Date/Time: **9/24/09 1400**
 REINQUISHED BY: **Michelle** Date/Time: **7/24/09 1500**
 REINQUISHED BY: **Tom Blantz** Date/Time: **9/25/09 12:15**
 Lab Remarks: **Tom Blantz**
 Date/Time: **9/25/09 12:15**
 Comments and Special Analytical Requirements:
John's 9/25
 Custody Sign No. Yes No
 BNSF COC No.



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: **skykomish**
 BNSF Project Name: **skykomish**
 BNSF Contact: **Bruce Shepard**

TURNAROUND TIME
 1-day Rush
 2-day Rush
 3-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other

DELIVERABLES

BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?
 EDD Req. Format?
AECOM

SAMPLE INFORMATION

Containers	Sample Collection		Type (Comp/Grab)	Matrix
	Date	Time		
2	9/22/09	1355 GS	N	W
2		1145		
2		1635		
2		1715		
2		1640 DWK		
2		1715		
2		1750		
2	9/23/09	0935		
2		1015		
2		1030		
2		0825		
2		1130		
2		1320		
2		1400		
2		1515		

Relinquished By: **JAN-AD** Date/Time: **9/26/09 1420**
 Relinquished By: **Michael Adell** Date/Time: **9/24/09 1500**
 Relinquished By: **Tom Blunt** Date/Time: **9/25/09 12:15**
 Lab Remarks: **Tom Blunt**

LABORATORY INFORMATION

Laboratory: **Test America**
 Project Manager: **Kate Haney**
 Address: **(253) 922-2310**
 City/State/ZIP: **WA**

CONSULTANT INFORMATION

Company: **AECOM**
 Address: **710 2nd Ave, Ste 1000**
 City/State/ZIP: **Seattle, WA 98104**

SHIPMENT INFORMATION

Project Number: **01140-284-0540**
 Project Manager: **Sarah Albano**
 Email: **sarah.albano@aecom.com**
 Phone: **(206) 624-9349**
 Fax:

METHODS FOR ANALYSIS

Method	Applied	Comments	Lab Use
NMTH-DX	X		23
W/SGLN	X		24
NMTH-DX	X		25
W/SGLN	X		26
NMTH-DX	X		27
W/SGLN	X		28
NMTH-DX	X		29
W/SGLN	X		30
NMTH-DX	X		31
W/SGLN	X		32
NMTH-DX	X		33
W/SGLN	X		34
NMTH-DX	X		35
W/SGLN	X		36
NMTH-DX	X		37

Comments and Special Analytical Requirements:
 Date/Time: **9/25/09 12:15**
 Lab: Custody Intact? Yes No
 BNSF COC No.:



CHAIN OF CUSTODY

BNSF PROJECT INFORMATION

BNSF Project Number: skykomish
 BNSF Project Name: skykomish
 BNSF Contact: Bruce Sheppard

TURNAROUND TIME
 1-day Rush
 5- to 8-day Rush
 2-day Rush
 Standard 10-Day
 3-day Rush
 Other

DELIVERABLES

BNSF Standard (Level II)
 Level III
 Level IV

Other Deliverables?
 EDD Req. Format?
 AECOM

SAMPLE INFORMATION

Sample Identification	Containers	Sample Collection		Type (Compy/Grab)	Mark
		Date	Time		
2A-W-10-0909	Z	9/21/09	1630 FM	N	W
2B-W-4-	Z	"	1625 GS		
5-W-52-	Z	9/22/09	1005 FM		
5-W-53-	Z		1055		
5-W-53D-	Z		0955		
5-W-54-	Z		1150		
AW-38 R	Z		1345		
5-W-14-	Z		1455		
5-W-55-	Z		1355		
5-W-56-	Z		1640		
5-W-56	Z		1550		
1C-W-1-	Z		0915 GS		
1C-W-8-	Z		0955		
1C-W-7-	Z		1500		
1C-W-709A	Z		1520		

Relinquished By: [Signature]
 Relinquished By: [Signature]
 Relinquished By: [Signature]
 Received By: [Signature]
 Received By: [Signature]
 Received By: [Signature]

Date/Time: 9/26/09 1420

Date/Time: 7/6/09 1500

Date/Time: 7/6/09 1500

Date/Time: 7/6/09 1500

LAB WORK ORDER:
 SHIPMENT INFORMATION
 Shipment Method:
 Tracking Number:

Project Number: 01140-284-0540
 Project Manager: Sarah Albano
 Phone: Sarah.Albano@AECOM.COM
 Fax: (206) 624-9349

LABORATORY INFORMATION
 Project Manager: Kate Haney
 Phone: (253) 922-2310
 Fax:

CONSULTANT INFORMATION
 Company: AECOM
 Address: 710 2nd Ave, Ste 1000
 City/State/Zip: Seattle, WA 98104

METHODS FOR ANALYSIS

LAB USE	COMMENTS
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	

Comments and Special Analytical Requirements:
 W/O SGCU - without silica gel cleanup
 W/SGCU - with silica gel cleanup

Date/Time: 9/25/09 12:15
 Lab Custody Intact? Yes No

Received By: [Signature]
 Lab Remarks: [Signature]

Login Sample Receipt Check List

Client: AECOM, Inc.

Job Number: 580-15702-1

Login Number: 15702

List Source: TestAmerica Tacoma

Creator: Blankinship, Tom

List Number: 1

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

ANALYTICAL REPORT

Job Number: 580-15702-2

Job Description: BNSF Skykomish Groundwater Monitoring

For:
AECOM, Inc.
710 Second Avenue
Suite 1000
Seattle, WA 98104
Attention: Sarah Albano



Approved for release.
Kate Haney
Project Manager II
10/22/2009 5:24 PM

Kate Haney
Project Manager II
kate.haney@testamericainc.com
10/22/2009

cc: Denell Warren

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

TestAmerica Laboratories, Inc.

TestAmerica Tacoma 5755 8th Street East, Tacoma, WA 98424
Tel (253) 922-2310 Fax (253) 922-5047 www.testamericainc.com



Job Narrative
580-15702-2

Comments

No additional comments.

Receipt

All samples were received in good condition within temperature requirements.

GC Semi VOA

No analytical or quality issues were noted.

Organic Prep

No analytical or quality issues were noted.

METHOD SUMMARY

Client: AECOM, Inc.

Job Number: 580-15702-2

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Northwest - Semi-Volatile Petroleum Products (GC)	TAL TAC	NWTPH NWTPH-Dx	
Liquid-Liquid Extraction (Separatory Funnel)	TAL TAC		SW846 3510C

Lab References:

TAL TAC = TestAmerica Tacoma

Method References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: AECOM, Inc.

Job Number: 580-15702-2

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-15702-1	S1-AD-0909	Water	09/22/2009 0855	09/25/2009 1215
580-15702-2	S1-AU-0909	Water	09/22/2009 0910	09/25/2009 1215
580-15702-3	S1-BD-0909	Water	09/22/2009 0925	09/25/2009 1215
580-15702-4	S1-BU-0909	Water	09/22/2009 0935	09/25/2009 1215
580-15702-5	S2-BD-0909	Water	09/22/2009 1035	09/25/2009 1215
580-15702-6	S2-BU-0909	Water	09/22/2009 1045	09/25/2009 1215
580-15702-7	S2-AD-0909	Water	09/22/2009 1005	09/25/2009 1215
580-15702-8	S2-AU-0909	Water	09/22/2009 1015	09/25/2009 1215
580-15702-9	S20-BU-0909	Water	09/22/2009 1055	09/25/2009 1215
580-15702-10	S3-AD-0909	Water	09/22/2009 1225	09/25/2009 1215
580-15702-11	S3-AU-0909	Water	09/22/2009 1235	09/25/2009 1215
580-15702-12	S3-BD-0909	Water	09/22/2009 1250	09/25/2009 1215
580-15702-13	S3-BU-0909	Water	09/22/2009 1330	09/25/2009 1215
580-15702-13MS	S3-BU-0909	Water	09/22/2009 1330	09/25/2009 1215
580-15702-13MSD	S3-BU-0909	Water	09/22/2009 1330	09/25/2009 1215
580-15702-14	S3-CD-0909	Water	09/22/2009 1355	09/25/2009 1215
580-15702-15	S3-CU-0909	Water	09/22/2009 1405	09/25/2009 1215
580-15702-16	S4-AD-0909	Water	09/22/2009 1430	09/25/2009 1215
580-15702-17	S4-AU-0909	Water	09/22/2009 1455	09/25/2009 1215
580-15702-18	S4-BD-0909	Water	09/22/2009 1515	09/25/2009 1215
580-15702-19	S4-BU-0909	Water	09/22/2009 1525	09/25/2009 1215
580-15702-20	S4-CD-0909	Water	09/22/2009 1540	09/25/2009 1215
580-15702-21	S4-CU-0909	Water	09/22/2009 1555	09/25/2009 1215
580-15702-22	S40-AD-0909	Water	09/22/2009 1440	09/25/2009 1215

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S1-AD-0909

Lab Sample ID: 580-15702-1

Date Sampled: 09/22/2009 0855

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01123.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 0948		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S1-AU-0909

Lab Sample ID: 580-15702-2

Date Sampled: 09/22/2009 0910

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01124.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1007		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	91		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S1-BD-0909

Lab Sample ID: 580-15702-3

Date Sampled: 09/22/2009 0925

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01125.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1026		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	0.19		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S1-BU-0909

Lab Sample ID: 580-15702-4

Date Sampled: 09/22/2009 0935

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01126.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1045		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S2-BD-0909

Lab Sample ID: 580-15702-5

Date Sampled: 09/22/2009 1035

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01127.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1104		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	88		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S2-BU-0909

Lab Sample ID: 580-15702-6

Date Sampled: 09/22/2009 1045

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01128.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1123		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	83		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S2-AD-0909

Lab Sample ID: 580-15702-7

Date Sampled: 09/22/2009 1005

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01129.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1142		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.050		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S2-AU-0909

Lab Sample ID: 580-15702-8

Date Sampled: 09/22/2009 1015

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01130.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1201		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.047		0.047
Lube Oil	0.095		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	84		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S20-BU-0909

Lab Sample ID: 580-15702-9

Date Sampled: 09/22/2009 1055

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01131.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1220		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	87		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S3-AD-0909

Lab Sample ID: 580-15702-10

Date Sampled: 09/22/2009 1225

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01132.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1240		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	84		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S3-AU-0909

Lab Sample ID: 580-15702-11

Date Sampled: 09/22/2009 1235

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01136.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1356		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	82		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S3-BD-0909

Lab Sample ID: 580-15702-12

Date Sampled: 09/22/2009 1250

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01137.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1415		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	88		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S3-BU-0909

Lab Sample ID: 580-15702-13

Date Sampled: 09/22/2009 1330

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-51423	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA00799.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/05/2009 1202		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.094		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	104		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S3-CD-0909

Lab Sample ID: 580-15702-14

Date Sampled: 09/22/2009 1355

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01138.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1434		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S3-CU-0909

Lab Sample ID: 580-15702-15

Date Sampled: 09/22/2009 1405

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01139.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1453		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S4-AD-0909

Lab Sample ID: 580-15702-16

Date Sampled: 09/22/2009 1430

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51335	Lab File ID:	AA01140.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/19/2009 1512		Final Weight/Volume:	2 mL
Date Prepared:	10/02/2009 1413		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	87		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S4-AU-0909

Lab Sample ID: 580-15702-17

Date Sampled: 09/22/2009 1455

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01173.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0136		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	99		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S4-BD-0909

Lab Sample ID: 580-15702-18

Date Sampled: 09/22/2009 1515

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01174.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0154		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	0.054		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	102		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S4-BU-0909

Lab Sample ID: 580-15702-19

Date Sampled: 09/22/2009 1525

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01175.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0213		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	71		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S4-CD-0909

Lab Sample ID: 580-15702-20

Date Sampled: 09/22/2009 1540

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01176.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0232		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	97		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S4-CU-0909

Lab Sample ID: 580-15702-21

Date Sampled: 09/22/2009 1555

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01178.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0309		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	101		50 - 150

Analytical Data

Client: AECOM, Inc.

Job Number: 580-15702-2

Client Sample ID: S40-AD-0909

Lab Sample ID: 580-15702-22

Date Sampled: 09/22/2009 1440

Client Matrix: Water

Date Received: 09/25/2009 1215

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Method:	NWTPH-Dx	Analysis Batch: 580-52260	Instrument ID:	SEA011
Preparation:	3510C	Prep Batch: 580-51378	Lab File ID:	AA01179.D
Dilution:	1.0		Initial Weight/Volume:	1060 mL
Date Analyzed:	10/20/2009 0328		Final Weight/Volume:	2 mL
Date Prepared:	10/05/2009 0906		Injection Volume:	1 uL

Analyte	Result (mg/L)	Qualifier	RL
Diesel Range Organics (C12-C24)	ND		0.047
Lube Oil	ND		0.094

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	103		50 - 150

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-2

Method Blank - Batch: 580-51335

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-51335/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/05/2009 1025
Date Prepared: 10/02/2009 1413

Analysis Batch: 580-51423
Prep Batch: 580-51335
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA00795.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Diesel Range Organics (C12-C24)	ND		0.050
Lube Oil	ND		0.10
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	105		50 - 150

Lab Control Sample - Batch: 580-51335

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: LCS 580-51335/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/05/2009 1049
Date Prepared: 10/02/2009 1413

Analysis Batch: 580-51423
Prep Batch: 580-51335
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA00796.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Diesel Range Organics (C12-C24)	2.00	2.28	114	70 - 140	
Lube Oil	2.00	2.50	125	66 - 125	
Surrogate		% Rec		Acceptance Limits	
o-Terphenyl		108		50 - 150	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-2

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-51335**

**Method: NWTPH-Dx
Preparation: 3510C**

MS Lab Sample ID: 580-15702-13
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/05/2009 1226
Date Prepared: 10/02/2009 1413

Analysis Batch: 580-51423
Prep Batch: 580-51335

Instrument ID: SEA011
Lab File ID: AA00800.D
Initial Weight/Volume: 1060 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

MSD Lab Sample ID: 580-15702-13
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/05/2009 1251
Date Prepared: 10/02/2009 1413

Analysis Batch: 580-51423
Prep Batch: 580-51335

Instrument ID: SEA011
Lab File ID: AA00801.D
Initial Weight/Volume: 1060 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	<u>% Rec.</u>		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Diesel Range Organics (C12-C24)	113	106	70 - 140	6	27		
Lube Oil	121	123	66 - 125	1	27		
Surrogate	MS % Rec		MSD % Rec		Acceptance Limits		
o-Terphenyl	106		107		50 - 150		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: AECOM, Inc.

Job Number: 580-15702-2

Method Blank - Batch: 580-51378

**Method: NWTPH-Dx
Preparation: 3510C**

Lab Sample ID: MB 580-51378/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/19/2009 2343
Date Prepared: 10/05/2009 0906

Analysis Batch: 580-52260
Prep Batch: 580-51378
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01167.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	Result	Qual	RL
Diesel Range Organics (C12-C24)	ND		0.050
Lube Oil	ND		0.10
Surrogate	% Rec		Acceptance Limits
o-Terphenyl	100		50 - 150

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 580-51378**

**Method: NWTPH-Dx
Preparation: 3510C**

LCS Lab Sample ID: LCS 580-51378/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 0002
Date Prepared: 10/05/2009 0906

Analysis Batch: 580-52260
Prep Batch: 580-51378
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01168.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 580-51378/23-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/20/2009 0021
Date Prepared: 10/05/2009 0906

Analysis Batch: 580-52260
Prep Batch: 580-51378
Units: mg/L

Instrument ID: SEA011
Lab File ID: AA01169.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 2 mL
Injection Volume: 1 uL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Diesel Range Organics (C12-C24)	97	101	70 - 140	4	27		
Lube Oil	101	105	66 - 125	3	27		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
o-Terphenyl	104		106		50 - 150		

Calculations are performed before rounding to avoid round-off errors in calculated results.

LAB WORK ORDER: 15702

SHIPMENT INFORMATION

LABORATORY INFORMATION

Project Manager: Kate Haney
 Phone: (253) 922-2310
 Fax:

Project Number: 01140-284-0546
 Project Manager: Sarah Albano
 Email: sarah.albano@aecom.com
 Phone: (206) 624-9349
 Fax:

CONSULTANT INFORMATION

Company: AECOM
 Address: 710 2nd Ave, Ste 1000
 City/State/Zip: Seattle, WA 98104

DELIVERABLES
 BNSF Standard (Level II)
 Level III
 Level IV
 Other Deliverables?

TURNAROUND TIME
 1-day Rush
 5- to 8-day Rush
 Standard 10-Day
 Other

Sample Identification	Containers	Sample Collection		Filtered Y/N	Type (Comp/Grab)	Matrix	LAB USE
		Date	Time				
S1-AD-0909	Z	9/22/09	0855	DNK	N	W	1
-AU-	Z		0910				2
-BD-	Z		0925				3
-BU-	Z		0935				4
S2-BD-	Z		1035				5
-BU-	Z		1045				6
-AD-	Z		1005				7
-AU-	Z		1015				8
S3-BU-	Z		1055				9
-AD-	Z		1225				10
-AU-	Z		1235				11
-BD-	Z		1250				12
-BU-	Z		1330				13
-CD	Z		1355				14
T-C-11	Z		1405				15

NMTPH-DX
 W/O SCLL

Extra Sample
 CDC Lab 13

Comments and Special Analytical Requirements:

Signature: [Handwritten Signature]

Date/Time: 9/25/09 12:15
 Lab Custody/Track? Yes No

Received By: Tom [Handwritten Signature]
 Date/Time: 9/24/09 15:00

Received by Laboratory: [Handwritten Signature]

ORIGINAL - RETURN TO LABORATORY WITH SAMPLES
 Lab carrier
 Lg Green/blue wet, bubble TB=3.2
 Lg Red/white TB=3.5
 Lg Red/white TB=5.3
 Lg Blue/white TB=1.0
 Lg Green/blue TB=5.3
 Lg Blue/white TB=1.0
 Lg Green/blue TB=5.3
 Lg Green/blue TB=5.9
 TB=5.9

Login Sample Receipt Check List

Client: AECOM, Inc.

Job Number: 580-15702-2

Login Number: 15702

List Source: TestAmerica Tacoma

Creator: Blankinship, Tom

List Number: 1

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

Prepared for:
BNSF Skykomish

Organic Data Verification Report

BNSF Skykomish

Groundwater Sampling, December 2008

Prepared for:
Sarah Albano
Project Manager

Prepared by:
Robert Davis
Environmental Scientist

Reviewed by:
Greg Malzone
Project Chemist

March 13, 2009
Document No.: 01140-204-0340

Overview

A limited data assessment was performed on two data reports for the groundwater samples collected on December 17, 2008 at the BNSF Skykomish site. The samples submittals are listed in the Table of Samples Analyzed (page 2). Data verification was performed on sixteen groundwater samples.

The samples were analyzed by TestAmerica of Bothell, Washington. The verified analyses were: Diesel Range Hydrocarbons and Lube Oil Range Hydrocarbons by Method NWTPH-Dx and NWTPH-Dx with Acid/Silica Gel Clean-up.

The Analytical Data Verification Checklist is presented as pages 4-8. Data were evaluated based on validation criteria set forth in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review*, document number USEPA-540-R-08-01, June 2008 with additional reference to *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, document number EPA 540/R-99-008 of July 2007, as they applied to the reported methodology. Field duplicate RPD control limits were taken from the *USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, February 1988, upheld in DRAFT 1993.

The following data components were reviewed during the data validation procedure:

Submitted Deliverables
Case Narratives
Chain-of-Custody form(s) and sample integrity
Sample results, reporting detection limits, method detection limits, dilution factors
Holding times
Method blank results
LCS/LCSD (blank spike) results
MS/MSD (matrix spike) results
Laboratory duplicate results
Organic surrogate recoveries
Blind field duplicate results
Electronic data deliverables (EDDs)

Data Validation Qualifiers Assigned During this Review

JN Analyte must be considered presumptively present at an estimated concentration.

Assigned qualifiers are detailed in the Analytical Data Verification Checklist and are summarized in the Table of Qualified Analytical Results (page 3).

Overall Data Assessment

Precision, accuracy, method compliance, and completeness of the data set have been determined to be acceptable, based on the data submitted. The data are suitable for their intended use with some qualification. Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 3).

**Table of Samples Analyzed
BNSF Skykomish
Groundwater Samples
Pace Analytical Services, Inc. Laboratory SDGs BRL0202 and BRL0207
December 17, 2008 Sampling Event**

Matrix	Sample ID	Parent Sample ID	Sample Date and Time		Lab SDG	Lab Sample ID
Groundwater	5-W-45-1208		12/17/2008	08:10	BRL0202	BRL0202-01
Groundwater	5-W-46-1208		12/17/2008	08:55	BRL0202	BRL0202-02
Groundwater	5-W-42-1208	5-W-42-1208	12/17/2008	08:55	BRL0207	BRL0207-01
Groundwater	5-W-420-1208		12/17/2008	08:50	BRL0207	BRL0207-02
Groundwater	5-W-20-1208		12/17/2008	10:25	BRL0207	BRL0207-03
Groundwater	5-W-19-1208		12/17/2008	11:25	BRL0207	BRL0207-04
Groundwater	5-W-14-1208		12/17/2008	12:50	BRL0207	BRL0207-05
Groundwater	5-W-16-1208	5-W-18-1208	12/17/2008	14:10	BRL0207	BRL0207-06
Groundwater	5-W-18-1208		12/17/2008	15:45	BRL0207	BRL0207-07
Groundwater	5-W-180-1208		12/17/2008	15:50	BRL0207	BRL0207-08
Groundwater	5-W-17-1208		12/17/2008	13:25	BRL0207	BRL0207-09
Groundwater	5-W-15-1208		12/17/2008	14:40	BRL0207	BRL0207-10
Groundwater	MW-500-1208		12/17/2008	13:45	BRL0207	BRL0207-11
Groundwater	S1-1208		12/17/2008	10:00	BRL0207	BRL0207-12
Groundwater	S2-1208		12/17/2008	11:00	BRL0207	BRL0207-13
Groundwater	S3-1208	12/17/2008	11:45	BRL0207	BRL0207-14	

**Table of Qualified Analytical Results
BNSF Skykomish
Groundwater Samples
Pace Analytical Services, Inc. Laboratory SDGs BRL0202 and BRL0207
December 17, 2008 Sampling Event**

Lab SDG	Sample ID	Method	Analyte	Concentration	Qualifier	Reason Code
BRL0207	5-W-20-1208	NWTPH-Dx	Diesel Range Hydrocarbons	1.58 mg/L	JN	ID
BRL0207	5-W-18-1208	NWTPH-Dx	Diesel Range Hydrocarbons	1.94 mg/L	JN	ID
BRL0207	5-W-180-1208	NWTPH-Dx	Diesel Range Hydrocarbons	1.58 mg/L	JN	ID
BRL0207	S1-1208	NWTPH-Dx	Diesel Range Hydrocarbons	0.310 mg/L	JN	ID
BRL0207	S2-1208	NWTPH-Dx	Diesel Range Hydrocarbons	1.02 mg/L	JN	ID
BRL0207	S3-1208	NWTPH-Dx	Diesel Range Hydrocarbons	0.913 mg/L	JN	ID

Qualifier Definitions

JN – Analyte must be considered presumptively present at an estimated concentration.

Reason Code Definitions

ID – Detected hydrocarbons in the diesel range do not have a distinct diesel pattern.

ANALYTICAL DATA VERIFICATION CHECKLIST

Project Name: BNSF Skykomish	Laboratory: TestAmerica Analytical Testing Corporation, Bothell, WA					
Project Reference: Site wide Groundwater Monitoring	Sample Matrix: Groundwater					
Project No.: 01140-204-0340	Sample Start Date: 12/17/2008					
Verified By/Date Verified: Robert Davis 03/12/2009	Sample End Date: 12/17/2008					
Samples Analyzed: Refer to the Table of Samples Analyzed (page 2).						
Parameters Verified: Diesel Range Hydrocarbons and Lube Oil Range Hydrocarbons by Method NWTPH-Dx and NWTPH-Dx with Acid/Silica Gel Clean-up.						
Laboratory Sample Delivery Group (SDG) IDs: BRL0202 and BRL0207						
PRECISION, ACCURACY, METHOD COMPLIANCE, AND COMPLETENESS ASSESSMENT						
Precision:	X	Acceptable		Unacceptable	RD	Initials
Comments: Precision is the measure of variability of individual sample measurements. Field precision was determined by comparison of field duplicate sample results. Laboratory precision was determined by examination of laboratory duplicate results. Evaluation of both field and laboratory duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD QC limits were set at 0-30% for water samples. Laboratory RPD limits referenced EPA published QC limits. No data require qualification based on field or laboratory duplicate precision measurements, and overall field and laboratory precision is acceptable. Precision measurements are reviewed in items 17, 20, and 21.						
Accuracy:	X	Acceptable		Unacceptable	RD	Initials
Comments: Field accuracy, a measure of the sampling bias, could not be determined as there were no trip blank, field blank, or equipment rinse blank samples included in this data set. Laboratory accuracy is a measure of the system bias, and was measured by evaluating laboratory control sample/laboratory control sample duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), and organic system monitoring compounds (surrogate) percent recoveries (%Rs). LCS/LCSD %Rs, which demonstrated the overall performance of the analysis, were compared to EPA published QC limits. MS/MSD %Rs, which provided information on sample matrix interferences, were compared to EPA published QC limits or laboratory control charted limits. System monitoring compound or surrogate recoveries, which measured system performance and efficiency during organic analysis, were compared to EPA published QC limits or laboratory control charted limits. No data require qualification based on laboratory accuracy measurements, and overall laboratory accuracy is acceptable. Accuracy measurements are reviewed in items 12, 14, 15 and 16.						
Method Compliance:	X	Acceptable		Unacceptable	RD	Initials
Comments: Method compliance was determined by evaluating sample integrity, holding time, and laboratory blanks while applying EPA data validation guidelines. Although some data require qualification based on analytes detected with concentrations less than the reporting limit (RL) but greater than the method detection limit (MDL) (see item 6), laboratory blank contamination (see item 12), or chromatographic match agreement (see item 22), overall method compliance is acceptable based on the supplied data. Method compliance measurements are reviewed in items 4, 6, 8, 11, 13, 18, 19, 20 and 22.						

ANALYTICAL DATA VERIFICATION CHECKLIST

Completeness:	X	Acceptable		Unacceptable	RD	Initials
<p>Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with verified analyses. Completeness goals are set at 90-100%. Determination of completeness included a review of chain of custody records, laboratory analytical methods and detection limits, laboratory case narratives, and project requirements. Completeness also included 100% review of the laboratory sample data results, QC summary reports, and electronic data deliverables (EDDs). All of the data received from the laboratory are useable with some qualification. Completeness of the data is 100% and is acceptable.</p>						
VERIFICATION CRITERIA CHECK						
<p>Data validation flags used in this review: JN – Analyte must be considered presumptively present at an estimated concentration. The following comments requiring qualification are in bold type. The other comments are of interest, but qualification of the samples was not necessary. Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 3).</p>						
1. Did the laboratory identify any non-conformances related to the analytical results?	X	Yes		No	RD	Initials
<p>Explanation by Laboratory: Laboratory footnotes were considered as part of this data review. Data qualification, if any, related to the laboratory observations are discussed in the following sections.</p>						
2. Were sample Chain-of-Custody forms complete?	X	Yes		No	RD	Initials
<p>Comments: COC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt.</p>						
3. Were all the analyses requested for the samples on the COCs completed by the laboratory?	X	Yes		No	RD	Initials
<p>Comments: All requested analyses as documented on original COC records were completed by the laboratory.</p>						
4. Were samples received in good condition and at the appropriate temperature?	X	Yes		No	RD	Initials
<p>Comments: Samples were received on ice, intact, and in good condition with cooler temperatures within the 4°C ± 2°C acceptance temperature for log numbers BRL0202 and BRL0207 as noted on COCs and Sample Receiving Checklist forms.</p>						
5. Were the requested analytical methods in compliance with WP/QAPP, permit, or COC?	X	Yes		No	RD	Initials
<p>Comments: Reported methods and target analyte lists were in compliance with COC records.</p>						
6. Were detection limits in accordance with WP/QAPP, permit, or method?	X	Yes		No	RD	Initials
<p>Comments: Reported detection limits are achievable by the quoted methods. Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 3).</p>						

ANALYTICAL DATA VERIFICATION CHECKLIST

7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method?	X	Yes		No	RD	Initials
Comments: Reported target analytes were consistent with COC requests.						
8. Were sample holding times met?	X	Yes		No	RD	Initials
Comments: Extraction and analytical holding times were met for all samples and analyses.						
9. Were correct concentration units reported?	X	Yes		No	RD	Initials
Comments: Correct concentration units were reported. All parameters are reported in units of mg/L (ppm).						
10. Were the reporting requirements for flagged data met?	X	Yes		No	RD	Initials
Comments: Data validation qualifiers override assigned laboratory flags.						
11. Were laboratory blank samples free of target analyte contamination?	X	Yes		No	RD	Initials
Comments: All laboratory blanks were free of target analyte contamination.						
12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?	NA	Yes	NA	No	RD	Initials
Comments: There were no trip, field or equipment rinse blank samples included in this data set. Field accuracy could not be evaluated in this data review.						
13. Were instrument calibrations within method control limits?	NA	Yes	NA	No	RD	Initials
<i>Comments: Not applicable for this level of data verification – Instrument calibration data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i>						
14. Were surrogate recoveries within control limits?	X	Yes		No	RD	Initials
Comments: Surrogate percent recoveries (%Rs) for organic analyses were within the laboratory quality control limits for all samples.						
15. Were laboratory control sample recoveries within control limits?	X	Yes		No	RD	Initials
Comments: LCS and LCSD (blank spike) recoveries were within laboratory control-charted QC limits for all target analytes.						
16. Were matrix spike recoveries within control limits?	X	Yes		No	RD	Initials
Comments: Project specific MS and MSD recoveries for target analytes were within data validation QC limits or were not applicable due to required sample dilution, or to sample concentrations which exceeded four times the amount spiked (applicable to inorganic analytical methods only), except as noted below. MS and MSD spike recoveries for non-project samples were not considered since matrix similarity to project samples could not be guaranteed.						
17. Were RPDs within control limits?	X	Yes		No	RD	Initials
Comments: Laboratory RPDs for target analytes in LCS/LCSD and project-specific MS/MSD samples were within data validation control limits. All laboratory duplicate samples met data validation RPD criteria. Laboratory duplicates for non-project samples were not considered since matrix similarity to project samples could not be guaranteed.						

ANALYTICAL DATA VERIFICATION CHECKLIST

18. Were organic system performance criteria met?	NA	Yes	NA	No	RD	Initials																		
<i>Comments: Not applicable for this level of data verification – Organic system performance data were not supplied in the analytical laboratory reports and were therefore not included in this data review.</i>																								
19. Were internal standards within method criteria for GC/MS sample analyses?	NA	Yes	NA	No	RD	Initials																		
<i>Comments: Not applicable for this data set – Internal standard addition is not required for the analyses reported.</i>																								
20. Were inorganic system performance criteria met?	NA	Yes	NA	No	RD	Initials																		
<i>Comments: Not applicable for this data set – There were no inorganic parameters requested for the samples in this data set.</i>																								
21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.	X	Yes		No	RD	Initials																		
Duplicate Sample No.	5-W-420-1208		Primary Sample No.	5-W-42-1208																				
Duplicate Sample No.	5-W-180-1208		Primary Sample No.	5-W-18-1208																				
<p>Comments: The RPDs for the duplicates were within the 0-30% data validation QC limits for water samples, or RPDs were not applicable due to results that were \pm the reporting limit or were undetected in both samples as indicated in the table below. Primary and field duplicate concentrations that were both undetected are not reflected in the table below since RPDs are not applicable.</p> <p>The following RPDs were calculated:</p> <table border="1"> <thead> <tr> <th>Method</th> <th>Analyte</th> <th>5-W-18-1208</th> <th>5-W-180-1208</th> <th>RPD</th> <th>Qualifier</th> <th>Samp RL</th> <th>Dup RL</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td>NWTPH-Dx</td> <td>Diesel Range Hydrocarbons</td> <td>1.94 JN</td> <td>1.58 JN</td> <td>20</td> <td></td> <td>0.236</td> <td>0.236</td> <td>mg/l</td> </tr> </tbody> </table> <p>No data require qualification based on the field duplicate RPDs.</p>							Method	Analyte	5-W-18-1208	5-W-180-1208	RPD	Qualifier	Samp RL	Dup RL	Units	NWTPH-Dx	Diesel Range Hydrocarbons	1.94 JN	1.58 JN	20		0.236	0.236	mg/l
Method	Analyte	5-W-18-1208	5-W-180-1208	RPD	Qualifier	Samp RL	Dup RL	Units																
NWTPH-Dx	Diesel Range Hydrocarbons	1.94 JN	1.58 JN	20		0.236	0.236	mg/l																
22. Were qualitative criteria for organic target analyte identification met?	X	Yes		No	RD	Initials																		
<p><i>Comments: Not applicable for this level of data verification – GC quantitation reports and chromatograms were not supplied in analytical laboratory reports and were therefore not included in this data review. However, retention times and chromatography were reviewed by trained laboratory personnel in accordance with the laboratory's internal QA/QC program. The laboratory notations regarding chromatography were reviewed and considered in the qualification of associated data as detailed below.</i></p> <p>Method NWTPH-Dx: SDG BRL0207: For the diesel range hydrocarbon results in samples 5-W-20-1208, 5-W-18-1208, 5-W-180-1208, S1-1208, S2-1208, and S3-1208; the laboratory noted that the detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference. These positive results have been qualified as JN to indicate the parameter is presumptively present at an estimated concentration.</p> <p>Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 3).</p>																								
23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports?	X	Yes		No	RD	Initials																		
<p>Comments: The EDD entries were resolved with the hardcopy data results and corrected as necessary. According to validation protocol, the hardcopy data report was accepted as the correct reference. The data validator provided corrected EDDs as part of this verification report. The EDD file, with data validation qualifiers and reason codes added was returned to the database manager in Seattle on 03/13/09.</p>																								

ANALYTICAL DATA VERIFICATION CHECKLIST

24. General Comments: Data were evaluated based on validation criteria set forth in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review*, document number USEPA-540-R-08-01, June 2008 with additional reference to *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, document number EPA 540/R-99-008 of October 1999, as they applied to the reported methodology. Field duplicate RPD control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, February 1988, upheld in DRAFT 1993.

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 3).

Prepared for:
BNSF Skykomish – Site-wide Groundwater Monitoring

June 4, 2009

Organic Limited Data Validation Report

**BNSF Skykomish
Site-wide Groundwater Monitoring
TestAmerica, Bothell, WA Laboratory Data
March and April 2009 Sampling**

**Prepared By Ann Biegelsen
Environmental Quality Assurance Chemist**

AECOM Inc.
Document No.: 01140-222-0340

AECOM

Overview

The samples analyzed for the BNSF Skykomish Site-wide Groundwater Monitoring Sampling event from March and April 2009 are listed in the Table of Samples Analyzed (pages 2-3). Limited data validation was performed on eighty groundwater samples and one equipment rinse blank sample.

The samples were analyzed by TestAmerica of Bothell, Washington. Limited data validation was performed for the following analyses: Extractable Total Petroleum Hydrocarbons (TPH), Diesel Range Hydrocarbons, and Lube Oil Range Hydrocarbons by Method NWTPH-Dx and by Method NWTPH-Dx with Silica Gel Clean-up.

The Analytical Limited Data Validation Checklist is presented as pages 6-12. Data were evaluated based on validation criteria set forth in the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review, document number USEPA-540-R-08-01, June 2008 with additional reference to USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, document number EPA 540/R-99-008 of October 1999, as they applied to the reported methodology. Field duplicate RPD control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, February 1988, upheld in DRAFT 1993.

The following data components were reviewed during the data validation procedure:

Submitted Deliverables
Case Narratives
Chain-of-Custody form(s) and sample integrity
Sample results, reporting detection limits, method detection limits, dilution factors
Holding times
Method blank results
Equipment rinse blank results
LCS/LCSD (blank spike) results
MS/MSD (matrix spike) results
Laboratory duplicate results
Organic surrogate recoveries
Electronic data deliverables (EDDs)

Data Validation Qualifiers Assigned During this Review

- J detected result, estimated concentration
- UJ undetected result, reporting limit is estimated

Assigned qualifiers are detailed in the Analytical Limited Data Validation Checklist and are summarized in the Table of Qualified Analytical Results (pages 4-5).

Overall Data Assessment

Precision, accuracy, method compliance, and completeness of the data set have been determined to be acceptable, based on the data submitted. The data are suitable for their intended use with the qualifiers noted.

**Table of Samples Analyzed
BNSF Skykomish
Site-wide Groundwater Monitoring Groundwater with Water QC Samples
TestAmerica SDGs: BSC0054, BSC0252, BSC0255, BSC0267, BSD0044, and BSD0082
March and April 2009 Sampling**

Matrix	Sample ID	Parent Sample ID	Sample Date	Lab SDG	Lab Sample ID
Groundwater	1C-W-1-0309		3/5/2009 13:10	BSC0054	BSC0054-01
Groundwater	1B-W-3-030509		3/5/2009 14:10	BSC0054	BSC0054-02
Groundwater	2B-W-4-0309		3/23/2009 16:20	BSC0252	BSC0252-01
Groundwater	1A-W-3-0309		3/23/2009 17:40	BSC0252	BSC0252-02
Groundwater	MW-38R-0309		3/24/2009 9:00	BSC0252	BSC0252-03
Groundwater	1A-W-5-0309		3/24/2009 10:05	BSC0252	BSC0252-04
Groundwater	1A-W-4-0309		3/24/2009 10:55	BSC0252	BSC0252-05
Groundwater	1A-W-1-0309		3/24/2009 11:55	BSC0252	BSC0252-06
Groundwater	1B-W-3-0309		3/24/2009 13:00	BSC0252	BSC0252-07
Groundwater	1B-W-2-0309		3/24/2009 14:05	BSC0252	BSC0252-08
Groundwater	5-W-55-0309		3/24/2009 9:15	BSC0252	BSC0252-09
Groundwater	1C-W-3-0309		3/24/2009 11:00	BSC0252	BSC0252-10
Groundwater	1C-W-4-0309		3/24/2009 11:45	BSC0252	BSC0252-11
Groundwater	2A-W-10-0309		3/24/2009 12:55	BSC0252	BSC0252-12
Groundwater	2B-W-46-0309		3/24/2009 14:35	BSC0252	BSC0252-13
Groundwater	2B-W-45-0309		3/24/2009 15:15	BSC0252	BSC0252-14
Groundwater	5-W-53-0309		3/24/2009 9:50	BSC0252	BSC0252-15
Water QC	MW-500-0309	Equipment Rinse Blank	3/24/2009 14:15	BSC0252	BSC0252-16
Groundwater	2A-W-11-0309		3/24/2009 14:40	BSC0252	BSC0252-17
Groundwater	MW-39-0309		3/24/2009 15:00	BSC0252	BSC0252-18
Groundwater	5-W-51-0309		3/24/2009 15:20	BSC0252	BSC0252-19
Groundwater	S1-AU-0309		3/24/2009 8:40	BSC0255	BSC0255-01
Groundwater	S1-AD-0309		3/24/2009 8:50	BSC0255	BSC0255-02
Groundwater	S1-BU-0309		3/24/2009 9:00	BSC0255	BSC0255-03
Groundwater	S1-BD-0309		3/24/2009 9:05	BSC0255	BSC0255-04
Groundwater	S2-AU-0309		3/24/2009 9:30	BSC0255	BSC0255-05
Groundwater	S2-AD-0309		3/24/2009 9:40	BSC0255	BSC0255-06
Groundwater	S2-BU-0309		3/24/2009 10:05	BSC0255	BSC0255-07
Groundwater	S2-BD-0309		3/24/2009 10:15	BSC0255	BSC0255-08
Groundwater	S3-AU-0309		3/24/2009 11:05	BSC0255	BSC0255-09
Groundwater	S10-BD-0309	S1-BD-0309	3/24/2009 9:10	BSC0255	BSC0255-10
Groundwater	S30-AU-0309	S3-AU-0309	3/24/2009 11:15	BSC0255	BSC0255-11
Groundwater	S3-AD-0309		3/24/2009 11:25	BSC0255	BSC0255-12
Groundwater	S3-BU-0309		3/24/2009 11:40	BSC0255	BSC0255-13
Groundwater	S3-BD-0309		3/24/2009 11:50	BSC0255	BSC0255-14
Groundwater	S3-CU-0309		3/24/2009 12:00	BSC0255	BSC0255-15
Groundwater	S3-CD-0309		3/24/2009 12:10	BSC0255	BSC0255-16
Groundwater	S4-AU-0309		3/24/2009 12:55	BSC0255	BSC0255-17
Groundwater	S4-AD-0309		3/24/2009 13:05	BSC0255	BSC0255-18
Groundwater	S4-BU-0309		3/24/2009 13:15	BSC0255	BSC0255-19
Groundwater	S4-BD-0309		3/24/2009 13:30	BSC0255	BSC0255-20

Table of Samples Analyzed (continued)
BNSF Skykomish
Site-wide Groundwater Monitoring Groundwater with Water QC Samples
TestAmerica SDGs: BSC0054, BSC0252, BSC0255, BSC0267, BSD0044, and BSD0082
March and April 2009 Sampling

Matrix	Sample ID	Parent Sample ID	Sample Date	Lab SDG	Lab Sample ID
Groundwater	S4-CU-0309		3/24/2009 13:45	BSC0255	BSC0255-21
Groundwater	S4-CD-0309		3/24/2009 13:55	BSC0255	BSC0255-22
Groundwater	2A-W-9-0309	2A-W-9-0309	3/25/2009 9:10	BSC0267	BSC0267-01
Groundwater	2A-W-90-0309		3/25/2009 9:20	BSC0267	BSC0267-02
Groundwater	1C-W-2-0309		3/25/2009 11:40	BSC0267	BSC0267-03
Groundwater	1C-W-1-032509		3/25/2009 12:45	BSC0267	BSC0267-04
Groundwater	MW-16-0309		3/25/2009 10:45	BSC0267	BSC0267-05
Groundwater	MW-4-0309	MW-4-0309	3/24/2009 17:05	BSC0267	BSC0267-06
Groundwater	MW-3-0309		3/24/2009 16:00	BSC0267	BSC0267-07
Groundwater	MW-400-0309		3/24/2009 17:10	BSC0267	BSC0267-08
Groundwater	5-W-4-0309		3/25/2009 13:45	BSC0267	BSC0267-09
Groundwater	5-W-20-0309		3/25/2009 15:20	BSC0267	BSC0267-10
Groundwater	5-W-42-0309		3/25/2009 16:30	BSC0267	BSC0267-11
Groundwater	5-W-16-0309		3/25/2009 16:05	BSC0267	BSC0267-12
Groundwater	5-W-17-0309		3/25/2009 16:20	BSC0267	BSC0267-13
Groundwater	5-W-50-0309		3/25/2009 15:40	BSC0267	BSC0267-14
Groundwater	5-W-54-0309		3/25/2009 14:50	BSC0267	BSC0267-15
Groundwater	5-W-56-0309	5-W-56-0309	3/24/2009 17:00	BSC0267	BSC0267-16
Groundwater	5-W-500-0309		3/24/2009 16:00	BSC0267	BSC0267-17
Groundwater	5-W-18-0309		3/25/2009 13:05	BSC0267	BSC0267-18
Groundwater	5-W-180-0309	5-W-18-0309	3/25/2009 12:05	BSC0267	BSC0267-19
Groundwater	5-W-15-0309		3/25/2009 12:10	BSC0267	BSC0267-20
Groundwater	5-W-14-0309		3/24/2009 9:20	BSC0267	BSC0267-21
Groundwater	5-W-19-0309		3/25/2009 14:05	BSC0267	BSC0267-22
Groundwater	5-W-52-0309		3/24/2009 16:05	BSC0267	BSC0267-23
Groundwater	2A-W-41-0409	1B-W-23-0409	4/1/2009 9:50	BSD0044	BSD0044-01
Groundwater	1B-W-23-0409		4/1/2009 10:45	BSD0044	BSD0044-02
Groundwater	1B-W-123-0409		4/1/2009 11:05	BSD0044	BSD0044-03
Groundwater	GW-3-0409		4/1/2009 11:55	BSD0044	BSD0044-04
Groundwater	2A-W-42-0409		4/1/2009 13:00	BSD0044	BSD0044-05
Groundwater	GW-4-0409		4/1/2009 14:20	BSD0044	BSD0044-06
Groundwater	GW-2-0409		4/1/2009 16:10	BSD0044	BSD0044-07
Groundwater	2A-W-40-0409	2A-W-40-0409	4/1/2009 17:30	BSD0044	BSD0044-08
Groundwater	2A-W-400-0409		4/1/2009 18:00	BSD0044	BSD0044-09
Groundwater	GW-1-0409		4/2/2009 8:45	BSD0044	BSD0044-10
Groundwater	5-W-43-0409		4/2/2009 9:40	BSD0044	BSD0044-11
Groundwater	EW-1		4/2/2009 10:30	BSD0044	BSD0044-12
Groundwater	IC-W-1-040709		4/7/2009 9:50	BSD0082	BSD0082-01
Groundwater	IC-W-8-040709		4/7/2009 12:23	BSD0082	BSD0082-02
Groundwater	IC-W-7-040709		4/7/2009 13:21	BSD0082	BSD0082-03

**Table of Qualified Analytical Results
BNSF Skykomish
Site-wide Groundwater Monitoring with Water QC Samples
TestAmerica, Bothell, WA SDGs (as listed)
March and April 2009 Sampling**

Lab SDG	Sample ID	Method	Analyte	Concentration	Qualifier	Reason Code
BSC0054	1C-W-1-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.159 mg/l	J	BRL, CHRO
BSC0054	1C-W-1-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.120 mg/l	J	BRL, CHRO
BSC0252	1A-W-1-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.137 mg/l	J	BRL, CHRO
BSC0252	1A-W-3-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	1.54 mg/l	J	CHRO
BSC0252	1A-W-3-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.818 mg/l	J	CHRO
BSC0252	1C-W-4-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.143 mg/l	J	BRL, CHRO
BSC0252	1C-W-4-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.359 mg/l	J	CHRO
BSC0252	2A-W-10-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.192 mg/l	J	BRL
BSC0252	2A-W-11-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.727 mg/l	J	CHRO
BSC0252	2A-W-11-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.686 mg/l	J	CHRO
BSC0252	5-W-51-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	3.43 mg/l	J	CHRO
BSC0252	5-W-51-0309	NWTPH-Dx	Diesel Range Hydrocarbons	4.31 mg/l	J	CHRO
BSC0252	5-W-53-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.144 mg/l	J	BRL, CHRO
BSC0252	5-W-53-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.119 mg/l	J	BRL, CHRO
BSC0252	MW-39-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	1.13 mg/l	J	CHRO
BSC0252	MW-39-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.894 mg/l	J	CHRO
BSC0255	S10-BD-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.162 mg/l	J	BRL
BSC0255	S2-BU-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	< 0.472 mg/l	UJ	SUR
BSC0255	S4-CU-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.173 mg/l	J	BRL
BSC0267	1C-W-1-032509	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.162 mg/l	J	BRL, CHRO
BSC0267	1C-W-1-032509	NWTPH-Dx	Diesel Range Hydrocarbons	0.273 mg/l	J	CHRO
BSC0267	2A-W-90-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.772 mg/l	J	CHRO
BSC0267	2A-W-90-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.902 mg/l	J	CHRO
BSC0267	2A-W-9-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.799 mg/l	J	CHRO
BSC0267	2A-W-9-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.927 mg/l	J	CHRO
BSC0267	5-W-15-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.183 mg/l	J	BRL, CHRO
BSC0267	5-W-180-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.487 mg/l	J	CHRO
BSC0267	5-W-180-0309	NWTPH-Dx	Diesel Range Hydrocarbons	1.57 mg/l	J	CHRO
BSC0267	5-W-18-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.452 mg/l	J	BRL
BSC0267	5-W-18-0309	NWTPH-Dx	Diesel Range Hydrocarbons	1.54 mg/l	J	CHRO
BSC0267	5-W-20-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.229 mg/l	J	BRL
BSC0267	5-W-20-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.811 mg/l	J	CHRO
BSC0267	5-W-4-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.596 mg/l	J	CHRO
BSC0267	5-W-4-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.485 mg/l	J	CHRO
BSC0267	5-W-50-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	1.51 mg/l	J	CHRO
BSC0267	5-W-50-0309	NWTPH-Dx	Diesel Range Hydrocarbons	3.57 mg/l	J	CHRO
BSC0267	5-W-52-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.455 mg/l	J	BRL, CHRO
BSC0267	5-W-52-0309	NWTPH-Dx	Diesel Range Hydrocarbons	0.982 mg/l	J	CHRO
BSC0267	MW-400-0309	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.186 mg/l	J	BRL, CHRO
BSD0044	2A-W-400-0409	NWTPH-Dx	Diesel Range Hydrocarbons	0.191 mg/l	J	BRL, CHRO

Table of Qualified Analytical Results (continued)
BNSF Skykomish
Site-wide Groundwater Monitoring with Water QC Samples
TestAmerica, Bothell, WA SDGs (as listed)
March and April 2009 Sampling

Lab SDG	Sample ID	Method	Analyte	Concentration	Qualifier	Reason Code
BSD0044	2A-W-40-0409	NWTPH-Dx	Diesel Range Hydrocarbons	0.220 mg/l	J	BRL, CHRO
BSD0044	2A-W-41-0409	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.183 mg/l	J	BRL, CHRO
BSD0044	2A-W-41-0409	NWTPH-Dx	Diesel Range Hydrocarbons	0.438 mg/l	J	CHRO
BSD0044	5-W-43-0409	NWTPH-Dx	Diesel Range Hydrocarbons	0.151 mg/l	J	BRL, CHRO
BSD0044	GW-1-0409	NWTPH-Dx	Diesel Range Hydrocarbons	0.102 mg/l	J	BRL, CHRO
BSD0044	GW-2-0409	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.363 mg/l	J	BRL, CHRO
BSD0044	GW-2-0409	NWTPH-Dx	Diesel Range Hydrocarbons	0.499 mg/l	J	CHRO
BSD0082	IC-W-1-040709	NWTPH-Dx	Diesel Range Hydrocarbons	0.141 mg/l	J	BRL, CHRO
BSD0082	IC-W-7-040709	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.227 mg/l	J	BRL, CHRO
BSD0082	IC-W-7-040709	NWTPH-Dx	Diesel Range Hydrocarbons	1.45 mg/l	J	CHRO
BSD0082	IC-W-8-040709	NWTPH-Dx	Lube Oil Range Hydrocarbons	0.424 mg/l	J	BRL, CHRO
BSD0082	IC-W-8-040709	NWTPH-Dx	Diesel Range Hydrocarbons	3.50 mg/l	J	CHRO

Qualifier Definitions

J – Estimated concentration

UJ – Undetected result, reporting limit is estimated

Reason Code Definitions

BRL – Reported concentration is greater than the method detection limit (MDL) but less than the reporting limit (RL).

CHRO – Detected response in the fuel range, but the chromatographic pattern does not match the fuel calibration standard utilized.

SUR – Surrogate recovery outside quality control limits.

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Project Name: BNSF Skykomish		Laboratory: TestAmerica of Bothell, Washington (TA)			
Project Reference: Site-wide Groundwater Monitoring		Sample Matrix: Groundwater with Water QC			
AECOM Project No.: 01140-222-0340		Sample Start Date: 03/05/2009			
Validated By/Date Validated: Ann Biegelsen / 06/04/2009		Sample End Date: 04/07/2009			
Samples Analyzed: Refer to the Table of Samples Analyzed (pages 2-3).					
Parameters Validated: Extractable Total Petroleum Hydrocarbons (TPH), Diesel Range Hydrocarbons, and Lube Oil Range Hydrocarbons by Method NWTPH-Dx and by Method NWTPH-Dx with Silica Gel Clean-up. Not all samples were analyzed for every parameter. Refer to individual Chain of Custody reports for the exact analyses requested.					
Laboratory Sample Delivery Group (SDG) IDs: BSC0054, BSC0252, BSC0255, BSC0267, BSD0044, and BSD0082					
PRECISION, ACCURACY, METHOD COMPLIANCE, AND COMPLETENESS ASSESSMENT					
Precision:	X	Acceptable	Unacceptable	AB	Initials
Comments: Precision is the measure of variability of individual sample measurements. Field precision was determined by comparison of field duplicate sample results. Laboratory precision was determined by examination of laboratory duplicate results. Evaluation of both field and laboratory duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD QC limits were set at 0-30% for water samples. Laboratory RPD limits referenced EPA published QC limits. No data require qualification based on field or laboratory duplicate precision measurements, and overall field and laboratory precision is acceptable. Precision measurements are reviewed in items 17, 20, and 21.					
Accuracy:	X	Acceptable	Unacceptable	AB	Initials
Comments: Field accuracy, a measure of the sampling bias, was determined by reviewing equipment rinse blank results for evidence of sample contamination stemming from field activities. Laboratory accuracy is a measure of the system bias, and was measured by evaluating laboratory control sample/laboratory control sample duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), and organic system monitoring compounds (surrogate) percent recoveries (%Rs). LCS/LCSD %Rs, which demonstrated the overall performance of the analysis, were compared to EPA published QC limits. MS/MSD %Rs, which provided information on sample matrix interferences, were compared to EPA published QC limits or laboratory control charted limits. System monitoring compound or surrogate recoveries, which measured system performance and efficiency during organic analysis, were compared to EPA published QC limits or laboratory control charted limits. Although some data require qualification based on surrogate %R outliers (see item 14), overall field and laboratory accuracy is acceptable. Accuracy measurements are reviewed in items 12, 14, 15 and 16.					
Method Compliance:	X	Acceptable	Unacceptable	AB	Initials
Comments: Method compliance was determined by evaluating sample integrity, holding time, and laboratory blanks against method specified requirements, while applying EPA data validation guidelines. Although some data require qualification based on analytes detected with concentrations outside the instrument calibration range (see item 6), or chromatographic pattern match (see item 22), overall method compliance is acceptable based on the supplied data. Method compliance measurements are reviewed in items 4, 6, 8, 11, 13, 18, 19, 20 and 22.					

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Completeness:	X	Acceptable		Unacceptable	AB	Initials
<p>Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with validated analyses. Completeness goals are set at 90-100%. Determination of completeness included a review of chain of custody records, laboratory analytical methods and detection limits, laboratory case narratives, and project requirements. Completeness also included 100% review of the laboratory sample data results, QC summary reports, and electronic data deliverables (EDDs). All of the data received from the laboratory are useable with qualification. Completeness of the data is calculated to be 100% and is acceptable.</p>						
VALIDATION CRITERIA CHECK						
<p>Data validation qualifiers used in this review: J – detected result, estimated concentration UJ – undetected result, reporting limit is estimated</p> <p>The following comments requiring qualification are in bold type. The other comments are of interest, but qualification of the samples was not necessary.</p> <p>Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 4-5).</p>						
1. Did the laboratory identify any non-conformances related to the analytical results?	X	Yes		No	AB	Initials
<p>Explanation by laboratory: The laboratory case narratives noted the date of receipt and the temperature of samples at receipt only. No specific information regarding the analysis of results was addressed in the case narratives.</p> <p><u>Sample Receipt:</u> SDG BSC0267: For samples 5-W-16-0309 and 5-W-15-0309, the COC lists the sampled date as 03/25/2009, however the containers list the sampled date of 03/24/2009. The samples were logged in with the sampled date on the COC.</p> <p>Assigned laboratory flags were considered as part of this data review. Data qualification, if any, related to the laboratory observations are discussed in the following sections.</p>						
2. Were sample Chain-of-Custody forms complete?		Yes	X	No	AB	Initials
<p>Comments: COC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, dates, and times of receipt with the exception noted in item 1 (above). No action is required based on the reported discrepancy.</p>						
3. Were all the analyses requested for the samples on the COCs completed by the laboratory?	X	Yes		No	AB	Initials
<p>Comments: All requested analyses as documented on original COC records were completed by the laboratory.</p>						
4. Were samples received in good condition and at the appropriate temperature?	X	Yes		No	AB	Initials
<p>Comments: Samples were received on ice, intact, and in good condition with cooler temperatures both within and outside the 4°C ± 2°C acceptance range at 1.5°C to 12.2°C. Cooler temperatures that were less than 2°C are judged acceptable as samples were not frozen and the sample containers were intact. Cooler temperatures that were greater than 6°C are judged acceptable as sample temperatures were still well below ambient (~25°C), samples were received within 48 hours of sampling and the sample containers were intact.</p>						
5. Were the requested analytical methods in compliance with WP/QAPP, permit, or COC?	X	Yes		No	AB	Initials
<p>Comments: Reported methods and target analyte lists were in compliance with COC records.</p>						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

6. Were detection limits in accordance with WP/QAPP, permit, or method?	X	Yes		No	AB	Initials
<p>Comments: Reported detection limits are achievable by the quoted methods.</p> <p>Analytes reported with concentrations below the laboratory reporting limits (RLs), but above the laboratory method detection limits (MDLs), were qualified as J to indicate that the concentrations are estimated. The quantitation of analytes with concentrations outside the calibration range of the instrument is inherently less reliable.</p> <p>Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 4-5).</p>						
7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method?	X	Yes		No	AB	Initials
Comments: Only the requested target analytes were reported.						
8. Were sample holding times met?	X	Yes		No	AB	Initials
Comments: Extraction and analytical holding times were met for all samples and analyses.						
9. Were correct concentration units reported?	X	Yes		No	AB	Initials
Comments: Correct concentration units were reported. All results are reported in units of mg/L (ppm).						
10. Were the reporting requirements for flagged data met?	X	Yes		No	AB	Initials
Comments: Data validation qualifiers override assigned laboratory flags.						
11. Were laboratory blank samples free of target analyte contamination?	X	Yes		No	AB	Initials
Comments: All laboratory blanks were free of target analyte contamination.						
12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?	X	Yes		No	AB	Initials
Comments: There were no target analytes detected in equipment rinse blank sample MW-500-0309.						
13. Were instrument calibrations within method control limits?	NA	Yes	NA	No	AB	Initials
<p>Comments: Not applicable for this level of data validation – Instrument calibration data were not supplied in analytical laboratory reports and were therefore not included in this data review. The laboratory does provide footnotes indicating some calibration standards were outside the laboratory QC limits. As there is no specific information supplied regarding these laboratory outliers, it is unknown if data validation calibration criteria is exceeded, and no data were qualified based on the laboratory calibration footnotes.</p>						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

14. Were surrogate recoveries within control limits?		Yes	X	No	AB	Initials
<p>Comments: Surrogate percent recoveries (%Rs) for organic analyses were within data validation QC criteria for all samples with the following exception.</p> <p>Method NWTPH-Dx: In the analysis of sample S2-BU-0309, the %R of surrogate 2-FBP was outside the laboratory QC limits of 53-120% at 41.1%. Results associated with this analysis of this sample require J or UJ qualification to indicate estimated concentrations or undetected results with estimated reporting limits.</p> <p>Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 4-5).</p>						
15. Were laboratory control sample recoveries within control limits?	X	Yes		No	AB	Initials
<p>Comments: LCS and LCSD (blank spike) recoveries were within data validation or laboratory control-charted QC limits for all target analytes.</p>						
16. Were matrix spike recoveries within control limits?	X	Yes		No	AB	Initials
<p>Comments: Project specific MS and MSD recoveries for target analytes were within data validation QC limits. MS and MSD spike recoveries for non-project samples were not considered since matrix similarity to project samples could not be guaranteed.</p>						
17. Were RPDs within control limits?	X	Yes		No	AB	Initials
<p>Comments: Laboratory RPDs for target analytes in LCS/LCSD and project-specific MS/MSD samples were within data validation control limits. All laboratory duplicate samples met data validation RPD criteria. Laboratory duplicates for non-project samples were not considered since matrix similarity to project samples could not be guaranteed.</p> <p><i>Serial Dilution %D data is not applicable for the reported methods – there were no metals parameters requested for the samples in this data set.</i></p>						
18. Were organic system performance criteria met?	NA	Yes	NA	No	AB	Initials
<p><i>Comments: Not applicable for this level of data validation – Organic system performance data were not supplied in the analytical laboratory reports and were therefore not included in this data review.</i></p>						
19. Were internal standards within method criteria for GC/MS sample analyses?	NA	Yes	NA	No	AB	Initials
<p><i>Comments: Not applicable for this data set – Internal standard addition is not required for the reported methods.</i></p>						
20. Were inorganic system performance criteria met?	NA	Yes	NA	No	AB	Initials
<p><i>Comments: Not applicable for this data set – there were no inorganic parameters requested. .</i></p>						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.	X	Yes		No	AB	Initials
Duplicate Sample No.	1B-W-123-0409	Primary Sample No.	1B-W-23-0409			
Duplicate Sample No.	2A-W-400-0409	Primary Sample No.	2A-W-40-0409			
Duplicate Sample No.	2A-W-90-0309	Primary Sample No.	2A-W-9-0309			
Duplicate Sample No.	5-W-180-0309	Primary Sample No.	5-W-18-0309			
Duplicate Sample No.	5-W-180-0309	Primary Sample No.	5-W-18-0309			
Duplicate Sample No.	5-W-500-0309	Primary Sample No.	5-W-56-0309			
Duplicate Sample No.	MW-400-0309	Primary Sample No.	MW-4-0309			
Duplicate Sample No.	S10-BD-0309	Primary Sample No.	S1-BD-0309			
Duplicate Sample No.	S30-AU-0309	Primary Sample No.	S3-AU-0309			

Comments (continued): The RPDs for the duplicates were within the 0-30% data validation QC limits for water samples, or RPDs were not applicable due to results that were \pm the detection limit or were undetected in both samples as indicated in the tables below.

The following RPDs were calculated:

Method	Analyte	1B-W-23-0409	1B-W-123-0409	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	ND	ND	NA		0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	ND	ND	NA		0.236	0.236	mg/l

Method	Analyte	2A-W-40-0409	2A-W-400-0409	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	ND	ND	NA		0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	0.220	0.191	14.11		0.236	0.236	mg/l

Method	Analyte	2A-W-9-0309	2A-W-90-0309	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	0.799	0.772	3.44		0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	0.927	0.902	2.73		0.236	0.236	mg/l

Method	Analyte	5-W-18-0309	5-W-180-0309	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	0.452	0.487	7.45		0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	1.54	1.57	1.93		0.236	0.236	mg/l
NWTPH-Dx SG	Lube Oil Range Hydrocarbons	ND	ND	NA		0.472	0.472	mg/l
NWTPH-Dx SG	Diesel Range Hydrocarbons	ND	ND	NA		0.236	0.236	mg/l

Method	Analyte	5-W-56-0309	5-W-500-0309	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	ND	ND	NA		0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	ND	ND	NA		0.236	0.236	mg/l

Method	Analyte	MW-4-0309	MW-400-0309	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	ND	0.186	200.00	<2XRL	0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	ND	ND	NA		0.236	0.236	mg/l

Method	Analyte	S1-BD-0309	S10-BD-0309	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	ND	0.162	200.00		0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	ND	ND	NA		0.236	0.236	mg/l

Method	Analyte	S3-AU-0309	S30-AU-0309	RPD	Qualifier	Samp RL	Dup RL	Units
NWTPH-Dx	Lube Oil Range Hydrocarbons	ND	ND	NA		0.472	0.472	mg/l
NWTPH-Dx	Diesel Range Hydrocarbons	ND	ND	NA		0.236	0.236	mg/l

No data require qualification based on the field duplicate RPDs.

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

22. Were qualitative criteria for organic target analyte identification met?		Yes	X	No	AB	Initials
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Comments: Not applicable for this level of data verification – GC quantitation reports and chromatograms were not supplied in analytical laboratory reports and were therefore not included in this data review. However, retention times and chromatography were reviewed by trained laboratory personnel in accordance with the laboratory’s internal QA/QC program. The laboratory notations regarding chromatography were reviewed and considered in the qualification of associated data as detailed below.

Method NWTPH-Dx: SDG BSC0054: For the Diesel Range Hydrocarbons result in sample 1C-W-1-0309, the laboratory footnote states, “Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.”

For the Lube Oil Range Hydrocarbons result in sample 1C-W-1-0309, the laboratory footnote states, “Detected hydrocarbons do not have pattern and range consistent with typical petroleum products and may be due to biogenic interference.”

SDG BSC0252: For the Diesel Range Hydrocarbons and the Lube Oil Range Hydrocarbons results in samples 2A-W-11-0309, 2B-W-4-0309, 5-W-51-0309, and MW-39-0309, the laboratory footnote states, “The hydrocarbons present are a complex mixture of diesel range and heavy oil range organics.”

For the Diesel Range Hydrocarbons result in samples 1A-W-1-0309, 1C-W-1-0309, and 5-W-53-0309, the laboratory footnote states, “The chromatographic pattern is not consistent with diesel fuel.”

For the Lube Oil Range Hydrocarbons results in samples 1C-W-4-0309 and 5-W-53-0309, the laboratory footnote states, “Does not match typical pattern.”

SDG BSC0267: For the Lube Oil Range Hydrocarbons results in samples 1C-W-1-032509, 2A-W-90-0309, 2A-W-9-0309, 5-W-4-0309, 5-W-50-0309, 5-W-52-0309, and MW-400-0309, and for the Diesel Range Hydrocarbons in sample 5-W-20-0309, the laboratory footnote states, “Does not match typical pattern.”

For the Diesel Range Hydrocarbons result in samples 1C-W-1-032509, 2A-W-90-0309, 2A-W-9-0309, 5-W-4-0309, 5-W-50-0309, and 5-W-52-0309, the laboratory footnote states, “The chromatographic pattern is not consistent with diesel fuel.”

For the Diesel Range Hydrocarbons result in sample 5-W-20-0309, the laboratory footnote states, “Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.”

SDG BSD0044: For the Lube Oil Range Hydrocarbons result in sample 2A-W-41-0409, the laboratory footnote states, “The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range.”

For the Diesel Range Hydrocarbons result in samples 2A-W-400-0409, 2A-W-40-0409, 2A-W-41-0409, 5-W-43-0409, GW-1-0409, GW-2-0409, the laboratory footnote states, “Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.”

SDG BSD0082: For the Lube Oil Range Hydrocarbons result in samples IC-W-7-040709 and IC-W-8-040709, the laboratory footnote states, “The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range.”

For the Diesel Range Hydrocarbons result in samples IC-W-1-040709, IC-W-7-040709, and IC-W-8-040709, the laboratory footnote states, “Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.”

The results listed above have been qualified as J in the affected sample to indicate the concentrations are estimated.

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 4-5).

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports?	X	Yes		No	AB	Initials
Comments: The EDD entries were resolved with the hardcopy data results and corrected as necessary. According to validation protocol, the hardcopy data report was accepted as the correct reference. The EDD query, with data validation qualifiers and reason codes added was returned with this data validation report to the database manager in Seattle on 06/04/2009.						
24. General Comments: Data were evaluated based on validation criteria set forth in the <i>USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review</i> , document number USEPA-540-R-08-01, June 2008 with additional reference to <i>USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review</i> , document number EPA 540/R-99-008 of October 1999, as they applied to the reported methodology. Field duplicate RPD control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, February 1988, upheld in DRAFT 1993. Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 4-5).						

Prepared for:
BNSF

July 10, 2009

Organic
Limited Data Validation Report

BNSF Skykomish
Sitewide Groundwater Monitoring
Groundwater with Water QC Samples
Test America, Inc. data
June 2009

**Prepared By Sue Milcan
Environmental Scientist/Quality Assurance Manager**

AECOM, Inc.
July 2009
Document No.: 01140-204-0340

Overview

The samples analyzed for the BNSF Skykomish Sitewide Groundwater Monitoring sampling effort from June 2009 are listed in the Table of Samples Analyzed (page 2). Limited data validation was performed on a total of twenty six groundwater samples and one equipment rinse blank water QC sample.

Samples were analyzed by TestAmerica, Inc. of Bothell, WA. The verified analysis was Diesel Range Hydrocarbons (DRH) and Lube Oil Range Hydrocarbons (LORH) by WDOE method NWTPH-Dx (with and without Acid/Silica Gel cleanup).

The Analytical Limited Data Validation Checklist is presented as pages 3-8. Data were evaluated based on validation criteria set forth in the *USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review*, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were also reviewed as per *WDOE Analytical Methods for Petroleum Hydrocarbons*, ECY 97-602 of June 1997. Field duplicate RPD review and applicable control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.

The following data components were reviewed during the limited data validation procedure:

Submitted Deliverables
Case Narratives (including laboratory flags)
Chain-of-Custody form(s) and sample integrity (TestAmerica data only)
Sample results, reporting detection limits, dilution factors
Holding times
Method blank results
Equipment Rinse Blank results
Organic surrogate recoveries
LCS, LCSD (blank spike, blank spike duplicate) results
MS (matrix spike) results
Laboratory duplicate (or spiked duplicate) results
Field duplicate results (calculated RPDs)
Electronic data deliverables (EDDs)

Data Validation Qualifiers Assigned During this Review

J estimated concentration

Assigned qualifiers are detailed in the Analytical Limited Data Validation Checklist and are summarized in the Table of Qualified Analytical Results (page 9).

Overall Data Assessment

Precision, accuracy, method compliance, and completeness of the data set have been determined to be acceptable, based on the data provided. There were no rejected or missing data points associated with this data set. The data are suitable for their intended use with the qualifications and clarifications noted.

Table of Samples Analyzed
BNSF Skykomish – Sitewide Groundwater Monitoring
Groundwater and Water QC Samples
TestAmerica (Bothell, WA) Laboratory Report BSF0131
June 2009

Matrix	Sample ID		Sample Date and Time	Lab SDG	Lab Sample ID
Groundwater	IC-W-1-0609		6/9/2009 16:40	BSF0131	BSF0131-01
Groundwater	IC-W-8-0609		6/9/2009 17:00	BSF0131	BSF0131-02
Groundwater	5-W-14-0609		6/10/2009 09:25	BSF0131	BSF0131-03
Groundwater	5-W-16-0609		6/10/2009 10:15	BSF0131	BSF0131-04
Groundwater	5-W-15-0609		6/10/2009 11:10	BSF0131	BSF0131-05
Groundwater	5-W-150-0609	5-W-15-0609 Dup	6/10/2009 11:20	BSF0131	BSF0131-06
Water QC	MW-500-0609	Equipment Rinse Blank	6/10/2009 11:50	BSF0131	BSF0131-07
Groundwater	5-W-17-0609		6/10/2009 13:20	BSF0131	BSF0131-08
Groundwater	5-W-18-0609		6/10/2009 14:50	BSF0131	BSF0131-09
Groundwater	IC-W-7-0609		6/9/2009 15:40	BSF0131	BSF0131-10
Groundwater	5-W-19-0609		6/10/2009 16:30	BSF0131	BSF0131-11
Groundwater	5-W-20-0609		6/10/2009 17:50	BSF0131	BSF0131-12
Groundwater	5-W-42-0609		6/10/2009 18:00	BSF0131	BSF0131-13
Groundwater	EW-1-0609		6/10/2009 10:00	BSF0131	BSF0131-14
Groundwater	5-W-43-0609		6/10/2009 10:45	BSF0131	BSF0131-15
Groundwater	GW-4-0609		6/10/2009 12:05	BSF0131	BSF0131-16
Groundwater	2A-W-42-0609		6/10/2009 12:55	BSF0131	BSF0131-17
Groundwater	GW-2-0609		6/10/2009 13:45	BSF0131	BSF0131-18
Groundwater	2A-W-40-0609		6/10/2009 14:30	BSF0131	BSF0131-19
Groundwater	2A-W-400-0609	2A-W-40-0609 Dup	6/10/2009 14:40	BSF0131	BSF0131-20
Groundwater	GW-1-0609		6/10/2009 15:55	BSF0131	BSF0131-21
Groundwater	2A-W-41-0609		6/10/2009 17:00	BSF0131	BSF0131-22
Groundwater	GW-3-0609		6/11/2009 09:30	BSF0131	BSF0131-23
Groundwater	GW-30-0609	GW-3-0609 Dup	6/11/2009 09:40	BSF0131	BSF0131-24
Groundwater	2B-W-45-0609		6/11/2009 09:30	BSF0131	BSF0131-25
Groundwater	2B-W-46-0609		6/11/2009 10:10	BSF0131	BSF0131-26
Groundwater	1B-W-23-0609		6/11/2009 10:30	BSF0131	BSF0131-27

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Project Name: BNSF Skykomish	Laboratory: TestAmerica, Inc., Bothell, WA					
Project Reference: Sitewide Groundwater Monitoring	Sample Matrix: Groundwater and Water QC samples					
AECOM Project: 01140-204-0340	Sample Start Date: 06/09/2009					
Validator/Date Validated: Sue Milcan 07/10/2009 (completed)	Sample End Date: 06/11/2009					
Samples Analyzed: see Table of Samples Analyzed, BNSF Skykomish - Sitewide Groundwater Monitoring, Groundwater and Water QC Samples, June 2009 (page 2).						
Parameters Reviewed: Diesel Range Hydrocarbons (DRH) and Lube Oil Range Hydrocarbons (LORH) by WDOE method NWTPH-Dx (with and without Acid/Silica Gel cleanup).						
Laboratory Project ID (SDG): BSF0131						
PRECISION, ACCURACY, METHOD COMPLIANCE, AND COMPLETENESS ASSESSMENT						
Precision:	X	Acceptable		Unacceptable	SM	Initials
Comments: Precision is the measure of variability of individual sample measurements. Field precision was determined by comparison of field duplicate sample results. Laboratory precision was determined by examination of laboratory duplicate results. Evaluation of field and laboratory duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. RPD precision measurements were compared to EPA published and/or laboratory control-charted QC limits. No data require qualification based on these measurements and overall field and laboratory precision is acceptable. Precision measurements are reviewed in items 17 and 21.						
Accuracy:	X	Acceptable		Unacceptable	SM	Initials
Comments: Field accuracy, a measure of the sampling bias, was determined by reviewing equipment rinse blank results for evidence of contamination stemming from field activities. Laboratory accuracy is a measure of the system bias, and was measured by evaluating laboratory control sample and laboratory control sample duplicate (LCS, LCSD), matrix spike (MS), and organic system monitoring compound (surrogate) percent recoveries (%Rs). LCS, LCSD %Rs demonstrated overall analytical performance. MS %Rs provided information on sample matrix interferences. System monitoring compound or surrogate recoveries measured system performance and efficiency during organic analysis. %Rs were compared to EPA published and/or laboratory control charted QC limits. No data require qualification based on these measurements, and overall field and laboratory accuracy is acceptable. Accuracy measurements are reviewed in items 12, 14, 15, 16, and 20.						
Method Compliance:	X	Acceptable		Unacceptable	SM	Initials
Comments: For this data set, method compliance was determined by evaluating sample integrity, holding time, reporting limits, and laboratory blanks against method specified requirements. Laboratory notes and observations were also reviewed although sufficient documentation to fully evaluate laboratory assessments was not provided in this level of data deliverable. Although some data require qualification based on laboratory stated pattern match discrepancies (see item 22), overall method compliance is acceptable, based on the data submitted, since a majority of the data are unqualified and no data points are rejected based on these measurements. Method compliance measurements are reviewed in items 4, 6, 8, 11, 13, 18, 19, 20, and 22.						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Completeness:	X	Acceptable		Unacceptable	SM	Initials
<p>Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with valid analyses. Completeness goals were set at 90-100%. Determination of completeness during this limited data validation procedure included a review of chain of custody records, laboratory analytical methods and detection limits, laboratory case narratives, and project requirements. Completeness also included 100% review of the laboratory sample data results and QC summary reports. The electronic data deliverable file (EDD) was QA'd 100% for positive target analytes and reporting limits. EDD corrections were made by the data validator during this review procedure as outlined in item 23.</p> <p>All of the data received were useable, some with qualification. Since no data points were missing or rejected, completeness of the data set was calculated to be 100% and is compliant.</p>						
VALIDATION CRITERIA CHECK						
Data validation qualifiers assigned during this review:						
J estimated concentration						
The following comments identifying sample results requiring qualification are in bold type. The other comments are of interest, but qualification of the sample results is not necessary.						
Refer to the table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 9).						
1. Did the laboratory identify any non-conformances related to the analytical results?	X	Yes		No	SM	Initials
<p>Comments: There were no problems noted in the provided case narrative. Any assigned laboratory flags were reviewed during the limited data validation procedure.</p> <p>Data qualification, if any, related to the assigned laboratory data flags are discussed in the following sections.</p>						
2. Were sample Chain-of-Custody forms complete?	X	Yes		No	SM	Initials
<p>Comments: The COC record from field to laboratory was complete, and custody was maintained as evidenced by field and laboratory personnel signatures, and laboratory date and time of sample receipt.</p>						
3. Were all the analyses requested for the samples on the COCs completed by the laboratory?	X	Yes		No	SM	Initials
<p>Comments: All requested analyses as documented on the original COCs were completed.</p>						
4. Were samples received in good condition and at the appropriate temperature?	X	Yes		No	SM	Initials
<p>Comments: All samples were received intact and in good condition with cooler temperatures of 8.0°C to 9.9°C as noted in the case narrative comments and Sample Receipt Checklist form. Samples received at greater than 6°C were determined to be in acceptable condition since no other preservation issues were noted, samples were delivered directly from the field, and temperatures were well below 24°C (room temperature). No action is required other than to note this observation.</p>						
5. Were the reported analytical methods in compliance with WP/QAPP, permit, or COC?	X	Yes		No	SM	Initials
<p>Comments: The reported methods met the COC request and is in compliance with the parameters requested and the sample matrix.</p>						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

6. Were detection limits in accordance with WP/QAPP, permit, or method?	X	Yes		No	SM	Initials
<p>Comments: The reporting limits (RLs) are achievable by the quoted method. All samples were reported at undiluted levels.</p> <p>Note that the laboratory did not report any trace analyte concentrations \geq method detection limit (MDL) but < practical quantitation limit/method reporting limit (PQL/MRL) for any methods.</p>						
7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method?	X	Yes		No	SM	Initials
<p>Comments: Only analytes applicable to the requested method were reported.</p>						
8. Were sample holding times met?	X	Yes		No	SM	Initials
<p>Comments: The method-required extraction and analytical holding time was met for all submitted sample data.</p>						
9. Were correct concentration units reported?	X	Yes		No	SM	Initials
<p>Comments: All results were reported as mg/L (ppm).</p>						
10. Were the reporting requirements for flagged data met?	X	Yes		No	SM	Initials
<p>Comments: Data validation qualifiers override any assigned laboratory data flags.</p>						
11. Were laboratory blank samples free of target analyte contamination?	X	Yes		No	SM	Initials
<p>Comments: Supplied laboratory method blanks were free of target analyte contamination.</p>						
12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?	X	Yes		No	SM	Initials
<p>Comments: The submitted equipment rinse blank sample, MW-500-0609, was free of target analyte contamination. Field blank and trip blank samples were not submitted/not required for this data set.</p>						
13. Were instrument calibrations within method or data validation control limits?		Yes		No	SM	Initials
<p><i>Comments: Not applicable for this level of limited data validation – Instrument calibration data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i></p>						
14. Were surrogate recoveries within control limits?	X	Yes		No	SM	Initials
<p>Comments: Reported surrogate %Rs for organic analyses were within laboratory control-charted QC limits for all project samples and associated QC samples.</p>						
15. Were laboratory control sample recoveries within control limits?	X	Yes		No	SM	Initials
<p>Comments: Reported LCS, LCSD recoveries were within data validation QC limits (70-130% for organics) for all target analytes, or were within laboratory control-charted QC limits for organic target analytes as allowed for SW-846 organic methods.</p>						
16. Were matrix spike recoveries within control limits?	X	Yes		No	SM	Initials
<p>Comments: Project specific MS recoveries for target analytes were within laboratory control-charted QC limits.</p>						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

17. Were duplicate RPDs and/or serial dilution %Ds within control limits?	X	Yes		No	SM	Initials																					
<p>Comments: Laboratory RPDs for target analytes in LCS/LCSD and project-specific duplicate samples were within data validation QC limits of 0-20%.</p> <p><i>Serial Dilution %D data for metals analysis is not applicable for this level of limited data validation or for the analytical method reported.</i></p>																											
18. Were organic system performance criteria met?		Yes		No	SM	Initials																					
<p>Comments: <i>Not applicable for this level of limited data validation – Organic system performance data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i></p>																											
19. Were internal standards within method criteria for GC/MS sample analyses?		Yes		No	SM	Initials																					
<p>Comments: <i>Not applicable for this level of limited data validation or for the analytical method reported.</i></p>																											
20. Were inorganic system performance criteria met?		Yes		No	SM	Initials																					
<p>Comments: <i>Not applicable for this level of limited data validation or for the analytical method reported.</i></p>																											
21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.	X	Yes		No	SM	Initials																					
Duplicate Sample No.	2A-W-400-0609		Primary Sample No.	2A-W-40-0609																							
Duplicate Sample No.	5-W-150-0609		Primary Sample No.	5-W-15-0609																							
Duplicate Sample No.	GW-30-0609		Primary Sample No.	GW-3-0609																							
<p>Comments: Field duplicate RPDs were within the 0-30% data validation QC limits for water matrices, or RPDs were not applicable due to results that were undetected in both samples. Field duplicate and native sample concentrations that were both undetected are not reflected in the table below since RPDs are not applicable.</p> <p>The following RPDs were calculated:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>Method</th> <th>Unit</th> <th>Analyte</th> <th>5-W-15-0609</th> <th>5-W-150-0609</th> <th>RPD</th> <th>Qualifiers</th> </tr> </thead> <tbody> <tr> <td>NWTPH-Dx</td> <td>mg/L</td> <td>DRH</td> <td style="text-align: center;">0.213</td> <td style="text-align: center;">0.203</td> <td style="text-align: center;">4.8</td> <td></td> </tr> <tr> <td>NWTPH-Dx</td> <td>mg/L</td> <td>LORH</td> <td style="text-align: center;">0.139</td> <td style="text-align: center;">0.135</td> <td style="text-align: center;">2.9</td> <td></td> </tr> </tbody> </table>							Method	Unit	Analyte	5-W-15-0609	5-W-150-0609	RPD	Qualifiers	NWTPH-Dx	mg/L	DRH	0.213	0.203	4.8		NWTPH-Dx	mg/L	LORH	0.139	0.135	2.9	
Method	Unit	Analyte	5-W-15-0609	5-W-150-0609	RPD	Qualifiers																					
NWTPH-Dx	mg/L	DRH	0.213	0.203	4.8																						
NWTPH-Dx	mg/L	LORH	0.139	0.135	2.9																						
22. Were qualitative criteria for organic target analyte identification met?		Yes	X – lab observation only	No	SM	Initials																					
<p>Comments: <i>Not applicable for this level of limited data validation – Chromatograms, library searches, and quantitation reports were not supplied in analytical laboratory reports and were therefore not included in this data review. However, GC/MS quantitation reports and chromatograms were reviewed by trained laboratory personnel in accordance with the laboratory's internal QA/QC program.</i></p> <p>No identification/quantitation flags were assigned by the laboratory, except as noted.</p> <p>Continued on next page</p>																											

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Method NWTPH-Dx without cleanup -

The laboratory assigned flags to DRH results for samples IC-W-1-0609, EW-1-0609, GW-4-0609, 2A-W-40-0609, 2A-W-400-0609, 2A-W-41-0609, GW-3-0609, GW-30-0609, and 1B-W-23-0609, stating that the hydrocarbon results were partly due to individual peaks in the quantitation range. However, no hydrocarbon results were reported for these samples (both DRH and LORH results for these samples were reported as non-detects). There were no chromatograms or other supporting documentation reported for this data set, and the data validator could not determine the source of this flag. Since laboratory flags are not utilized to qualify validated data, and since the reported results are non-detects, no action is required other than to note this observation.

The laboratory assigned flags to LORH results for samples IC-W-1-0609, IC-W-8-0609, 5-W-14-0609, 5-W-16-0609, MW-500-0609, 5-W-17-0609, IC-W-7-0609, 5-W-19-0609, EW-1-0609, GW-4-0609, 2A-W-42-0609, 2A-W-40-0609, 2A-W-400-0609, 2A-W-41-0609, GW-3-0609, GW-30-0609, 2B-W-45-0609, 2B-W-46-0609, 1B-W-23-0609 and the DRH result for sample 5-W-14-0609 stating that hydrocarbon pattern match was not achieved. The flagged analyte was reported as a non-detect by the laboratory. There were no chromatograms or other supporting documentation reported for this data set, and the data validator could not determine the source of this flag. Since laboratory flags are not utilized to qualify validated data, and since the reported results are non-detects, no action is required other than to note this observation.

The laboratory noted that the chromatographic patterns for LORH results reported for samples 5-W-15-0609, 5-W-150-0609, 5-W-18-0609, 5-W-20-0609, 5-W-42-0609, 5-W-43-0609, GW-2-0609, and GW-1-0609 were not consistent with lube oil. Since the laboratory report and the EDD/database identifies the reported analyte as lube oil range hydrocarbons, and not a single analyte, no action is required.

The laboratory noted that the chromatographic patterns for DRH results reported for samples IC-W-8-0609, 5-W-15-0609, 5-W-150-0609, 5-W-18-0609, IC-W-7-0609, 5-W-20-0609, 5-W-42-0609, 5-W-43-0609, 2A-W-42-0609, GW-2-0609, and GW-1-0609 were not consistent with diesel fuel. The laboratory report identifies the reported analyte as DRH, however, the EDD/database identifies the reported analyte as diesel fuel. Although supporting documentation to fully evaluate the laboratory comments can not be made with this level of report deliverable, professional judgment determines that the reported values require J qualifiers to indicate estimated concentrations since the concentration of diesel fuel is affected by other analytes or interferences within the specified carbon range.

Method NWTPH-Dx with cleanup -

The laboratory assigned flags to LORH results for samples 5-W-14-0609, 5-W-15-0609, 5-W-150-0609, 5-W-17-0609, 5-W-18-0609, 5-W-19-0609, 5-W-20-0609, and 5-W-42-0609 and DRH results for samples 5-W-15-0609, 5-W-18-0609, and 5-W-42-0609 stating that hydrocarbon pattern match was not achieved. The flagged analyte was reported as a non-detect by the laboratory. There were no chromatograms or other supporting documentation reported for this data set, and the data validator could not determine the source of this flag. Since laboratory flags are not utilized to qualify validated data, and since the reported results are non-detects, no action is required other than to note this observation.

Refer to the table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 9).

23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports?	X	Yes		No	SM	Initials
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Comments: 100% EDD QA/QC of positive concentrations and RLs was done as part of this limited data validation procedure. The following changes were made to the EDD file during data validation:

The sample_matrix_code was changed from WG (groundwater) to WQ (water QC) for the equipment rinse blank sample, MW-500-0609, to more accurately reflect the sample matrix.

The AECOM Environment database manager was informed of all changes made to the EDD file via this Checklist. The EDD file, with corrections and data validation qualifiers and reason codes added, was returned to the database manager in Seattle, WA on 07/10/2009.

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

24. General Comments: Data were evaluated based on validation criteria set forth in the *USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review*, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were also reviewed as per *WDOE Analytical Methods for Petroleum Hydrocarbons*, ECY 97-602 of June 1997. Field duplicate RPD review and applicable control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.

Refer to the table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 9).

**Table of Qualified Analytical Results
BNSF Skykomish – Sitewide Groundwater Monitoring
Groundwater and Water QC Samples
TestAmerica (Bothell, WA) Laboratory Report BSF0131
June 2009**

Sample ID	Lab ID	Method	Dilution Factor	QC Batch	Analyte	Concentration	Qualifier	Reason Code
Qualified, Reportable Groundwater data:								
IC-W-8-0609	BSF0131-02	NWTPH-Dx	1	9F16009	Diesel Range Hydrocarbons	0.434	mg/L	J pattern
5-W-15-0609	BSF0131-05	NWTPH-Dx	1	9F16008	Diesel Range Hydrocarbons	0.213	mg/L	J pattern
5-W-150-0609	BSF0131-06	NWTPH-Dx	1	9F16008	Diesel Range Hydrocarbons	0.203	mg/L	J pattern
5-W-18-0609	BSF0131-09	NWTPH-Dx	1	9F16008	Diesel Range Hydrocarbons	0.669	mg/L	J pattern
IC-W-7-0609	BSF0131-10	NWTPH-Dx	1	9F16009	Diesel Range Hydrocarbons	0.287	mg/L	J pattern
5-W-20-0609	BSF0131-12	NWTPH-Dx	1	9F16008	Diesel Range Hydrocarbons	0.637	mg/L	J pattern
5-W-42-0609	BSF0131-13	NWTPH-Dx	1	9F16008	Diesel Range Hydrocarbons	0.599	mg/L	J pattern
5-W-43-0609	BSF0131-15	NWTPH-Dx	1	9F16009	Diesel Range Hydrocarbons	0.293	mg/L	J pattern
2A-W-42-0609	BSF0131-17	NWTPH-Dx	1	9F16009	Diesel Range Hydrocarbons	0.202	mg/L	J pattern
GW-2-0609	BSF0131-18	NWTPH-Dx	1	9F16009	Diesel Range Hydrocarbons	0.688	mg/L	J pattern
GW-1-0609	BSF0131-21	NWTPH-Dx	1	9F16009	Diesel Range Hydrocarbons	0.254	mg/L	J pattern

Reason Codes:

pattern – chromatographic pattern does not match typical diesel pattern; qualifier assigned since result is identified as “Diesel Fuel” rather than Diesel Range Hydrocarbons in the project database.

Prepared for:
BNSF

October 15, 2009

Organic
Limited Data Validation Report

BNSF Skykomish
Sitewide Groundwater Monitoring
Groundwater with Water QC Samples
Test America, Inc. data
May 2009; July – August 2009

**Prepared By Sue Milcan
Environmental Scientist/Quality Assurance Manager**

AECOM, Inc.
October 2009
Document No.: 01140-284-0545

Overview

The samples analyzed for the BNSF Skykomish Sitewide Groundwater Monitoring sampling effort from May 2009 and July – August 2009 are listed in the Table of Samples Analyzed (page 2). Limited data validation was performed on a total of twenty six groundwater samples and one equipment rinse blank water QC sample.

Samples were analyzed by TestAmerica, Inc. of Bothell, WA. The verified analysis was Diesel Range Hydrocarbons (DRH) and Lube Oil Range Hydrocarbons (LORH) by WDOE method NWTPH-Dx (without Acid/Silica Gel cleanup).

The Analytical Limited Data Validation Checklist is presented as pages 3-7. Data were evaluated based on validation criteria set forth in the *USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review*, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were also reviewed as per *WDOE Analytical Methods for Petroleum Hydrocarbons*, ECY 97-602 of June 1997. Field duplicate RPD review and applicable control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.

The following data components were reviewed during the limited data validation procedure:

Submitted Deliverables
Case Narratives (including laboratory flags)
Chain-of-Custody form(s) and sample integrity (TestAmerica data only)
Sample results, reporting detection limits, dilution factors
Holding times
Method blank results
Organic surrogate recoveries
LCS, LCSD (blank spike, blank spike duplicate) results
Laboratory duplicate (or spiked duplicate) results
Field duplicate results (calculated RPDs)
Electronic data deliverable (EDD) query

Data Validation Qualifiers Assigned During this Review

J estimated concentration

Assigned qualifiers are detailed in the Analytical Limited Data Validation Checklist and are summarized in the Table of Qualified Analytical Results (page 8).

Overall Data Assessment

Precision, accuracy, method compliance, and completeness of the data set have been determined to be acceptable, based on the data provided. There were no rejected or missing data points associated with this data set. The data are suitable for their intended use with the qualifications and clarifications noted.

Table of Samples Analyzed
BNSF Skykomish – Sitewide Groundwater Monitoring
Groundwater Samples
TestAmerica (Bothell, WA) Laboratory Reports (as listed)
May 2009, July – August 2009

Matrix	Sample ID		Sample Date and Time	Lab SDG	Lab Sample ID
Groundwater	1C-W-7-051209		5/12/2009 15:20	BSE0122	BSE0122-01
Groundwater	1C-W-1-051209		5/12/2009 16:20	BSE0122	BSE0122-02
Groundwater	1C-W-8-051209		5/12/2009 17:05	BSE0122	BSE0122-03
Groundwater	GW-2-0709		7/7/2009 11:15	580143651	580-14365-1
Groundwater	5-W-43-0709		7/7/2009 12:20	580143651	580-14365-2
Groundwater	1C-W-1-0709		7/28/2009 10:50	580146511	580-14651-1
Groundwater	1C-W-8-0709		7/28/2009 11:45	580146511	580-14651-2
Groundwater	1C-W-7-0709		7/28/2009 12:30	580146511	580-14651-3
Groundwater	GW-2-072809		7/28/2009 14:30	580146511	580-14651-4
Groundwater	GW-20-0709	GW-2-0709	7/28/2009 13:30	580146511	580-14651-5
Groundwater	1C-W-1-0809		8/25/2009 10:00	580151261	580-15126-1
Groundwater	1C-W-7-0809		8/25/2009 11:57	580151261	580-15126-2
Groundwater	1C-W-8-0809		8/25/2009 10:56	580151261	580-15126-3
Groundwater	3-W-43-0809		8/25/2009 15:21	580151261	580-15126-4
Groundwater	3-W-42-0809		8/25/2009 14:33	580151261	580-15126-5
Groundwater	3-W-41-0809		8/25/2009 13:30	580151261	580-15126-6
Groundwater	3-W-410-0809	3-W-41-0809	8/25/2009 14:00	580151261	580-15126-7
Groundwater	GW-2-0809		8/25/2009 16:40	580151261	580-15126-8

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Project Name: BNSF Skykomish	Laboratory: TestAmerica, Inc., Bothell, WA					
Project Reference: Sitewide Groundwater Monitoring	Sample Matrix: Groundwater samples					
AECOM Project: 01140-284-0545	Sample Start Date: 05/12/2009					
Validator/Date Validated: Sue Milcan 10/15/2009 (completed)	Sample End Date: 08/25/2009					
Samples Analyzed: see Table of Samples Analyzed, BNSF Skykomish - Sitewide Groundwater Monitoring, Groundwater Samples, May 2009; July – August 2009 (page 2).						
Parameters Reviewed: Diesel Range Hydrocarbons (DRH) and Lube Oil Range Hydrocarbons (LORH) by WDOE method NWTPH-Dx (without Acid/Silica Gel cleanup).						
Laboratory Project ID (SDG): BSE0122, 580-14365, 580-14651, 580-15126						
PRECISION, ACCURACY, METHOD COMPLIANCE, AND COMPLETENESS ASSESSMENT						
Precision:	X	Acceptable	<input type="checkbox"/>	Unacceptable	SM	Initials
Comments: Precision is the measure of variability of individual sample measurements. Field precision was determined by comparison of field duplicate sample results. Laboratory precision was determined by examination of laboratory duplicate results. Evaluation of field and laboratory duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. RPD precision measurements were compared to EPA published and/or laboratory control-charted QC limits. Although some data require qualification based on field duplicate RPDs (see item 21), overall field and laboratory precision is acceptable since a majority of the data are unqualified and no data are rejected. Precision measurements are reviewed in items 17 and 21.						
Accuracy:	X	Acceptable	<input type="checkbox"/>	Unacceptable	SM	Initials
Comments: Field accuracy, a measure of the sampling bias, was not determined for this data set since field-originating and/or trip blank samples were not required and/or were not submitted for analysis. Laboratory accuracy is a measure of the system bias, and was measured by evaluating laboratory control sample and laboratory control sample duplicate (LCS, LCSD) and organic system monitoring compound (surrogate) percent recoveries (%Rs). LCS, LCSD %Rs demonstrated overall analytical performance. System monitoring compound or surrogate recoveries measured system performance and efficiency during organic analysis. %Rs were compared to EPA published and/or laboratory control charted QC limits. No data require qualification based on these measurements, and overall field and laboratory accuracy is acceptable. Accuracy measurements are reviewed in items 12, 14, 15, 16, and 20.						
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<p>Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with valid analyses. Completeness goals were set at 90-100%. Determination of completeness during this limited data validation procedure included a review of chain of custody records, laboratory analytical methods and detection limits, laboratory case narratives, and project requirements. Completeness also included 100% review of the laboratory sample data results and QC summary reports. The electronic data deliverable file (EDD) was QA'd 100% for positive target analytes and reporting limits. EDD corrections were made by the data validator during this review procedure as outlined in item 23.</p> <p>All of the data received were useable, some with qualification. Since no data points were missing or rejected, completeness of the data set was calculated to be 100% and is compliant.</p>						
VALIDATION CRITERIA CHECK						
Data validation qualifiers assigned during this review:						
J estimated concentration						
The following comments identifying sample results requiring qualification are in bold type. The other comments are of interest, but qualification of the sample results is not necessary.						
Refer to the table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 8).						
1. Did the laboratory identify any non-conformances related to the analytical results?	X	Yes		No	SM	Initials
<p>Comments: There were no problems noted in the provided case narrative. Any assigned laboratory flags were reviewed during the limited data validation procedure.</p> <p>Data qualification, if any, related to the assigned laboratory data flags are discussed in the following sections.</p>						
2. Were sample Chain-of-Custody forms complete?	X	Yes		No	SM	Initials
<p>Comments: The COC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, and laboratory dates and times of sample receipt.</p>						
3. Were all the analyses requested for the samples on the COCs completed by the laboratory?	X	Yes		No	SM	Initials
<p>Comments: All requested analyses as documented on the original COCs were completed.</p>						
4. Were samples received in good condition and at the appropriate temperature?	X	Yes		No	SM	Initials
<p>Comments: All samples were received intact and in good condition with cooler temperatures of 0.9°C to 5.7°C and temperature blanks of 1.7°C to 5.1°C as noted on the COC forms. Samples received below 2°C were determined to be in acceptable condition since sample were not frozen and no other preservation issues were noted. No action is required other than to note this observation.</p>						
5. Were the reported analytical methods in compliance with WP/QAPP, permit, or COC?	X	Yes		No	SM	Initials
<p>Comments: The reported method met the COC requests and is in compliance with the parameters requested and the sample matrix.</p>						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

6. Were detection limits in accordance with WP/QAPP, permit, or method?	X	Yes		No	SM	Initials
<p>Comments: The reporting limits (RLs) are achievable by the quoted method. All samples were reported at undiluted levels.</p> <p>Note that the laboratory did not report any trace analyte concentrations \geq method detection limit (MDL) but < practical quantitation limit/reporting limit (PQL/RL) for any methods.</p>						
7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method?	X	Yes		No	SM	Initials
Comments: Only analytes applicable to the requested method were reported.						
8. Were sample holding times met?	X	Yes		No	SM	Initials
Comments: The method-required extraction and analytical holding times were met for all submitted sample data.						
9. Were correct concentration units reported?	X	Yes		No	SM	Initials
Comments: All results were reported as mg/L (ppm).						
10. Were the reporting requirements for flagged data met?	X	Yes		No	SM	Initials
Comments: Data validation qualifiers override any assigned laboratory data flags.						
11. Were laboratory blank samples free of target analyte contamination?	X	Yes		No	SM	Initials
Comments: Supplied laboratory method blanks were free of target analyte contamination.						
12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?		Yes		No	SM	Initials
Comments: Not applicable - Field blank, equipment rinse blank, and/or trip blank samples were not submitted/not required for this data set.						
13. Were instrument calibrations within method or data validation control limits?		Yes		No	SM	Initials
<i>Comments: Not applicable for this level of limited data validation – Instrument calibration data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i>						
14. Were surrogate recoveries within control limits?	X	Yes		No	SM	Initials
Comments: Reported surrogate %Rs for organic analyses were within laboratory control-charted QC limits for all project samples and associated QC samples.						
15. Were laboratory control sample recoveries within control limits?	X	Yes		No	SM	Initials
Comments: Reported LCS, LCSD recoveries were within data validation QC limits (70-130% for organics) for all target analytes, or were within laboratory control-charted QC limits for organic target analytes as allowed for SW-846 organic methods.						
16. Were matrix spike recoveries within control limits?		Yes		No	SM	Initials
Comments: Not applicable – there were no MS/MSD sample data reported for any of the SDGs. Matrix accuracy cannot be evaluated. See item 15 (LCS/LCSD data) for analytical accuracy assessment.						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

17. Were duplicate RPDs and/or serial dilution %Ds within control limits?	X	Yes		No	SM	Initials																																			
<p>Comments: Laboratory RPDs for target analytes in LCS/LCSD samples were within data validation QC limits of 0-20%.</p> <p><i>Serial Dilution %D data for metals analysis is not applicable for this level of limited data validation or for the analytical method reported.</i></p>																																									
18. Were organic system performance criteria met?		Yes		No	SM	Initials																																			
<p>Comments: <i>Not applicable for this level of limited data validation – Organic system performance data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i></p>																																									
19. Were internal standards within method criteria for GC/MS sample analyses?		Yes		No	SM	Initials																																			
<p>Comments: <i>Not applicable for this level of limited data validation or for the analytical method reported.</i></p>																																									
20. Were inorganic system performance criteria met?		Yes		No	SM	Initials																																			
<p>Comments: <i>Not applicable for this level of limited data validation or for the analytical method reported.</i></p>																																									
21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.	X	Yes		No	SM	Initials																																			
Duplicate Sample No.	3-W-41-0809		Primary Sample No.	3-W-410-0809																																					
Duplicate Sample No.	GW-2-0709		Primary Sample No.	GW-20-0709																																					
<p>Comments: Field duplicate RPDs were within the 0-30% data validation QC limits for water matrices, or RPDs were not applicable due to results that were undetected in both samples, except as noted. Field duplicate and native sample concentrations that were both undetected are not reflected in the table below since RPDs are not applicable.</p> <p>The following RPDs were calculated:</p>																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Method</th> <th>Units</th> <th>Analyte</th> <th>3-W-41-0809</th> <th>3-W-410-0809</th> <th>RPD</th> <th>Qualifiers</th> </tr> </thead> <tbody> <tr> <td>NWTPH-Dx</td> <td>mg/L</td> <td>PHC AS DIESEL FUEL</td> <td style="text-align: center;">0.076</td> <td style="text-align: center;">0.077</td> <td style="text-align: center;">1.3</td> <td></td> </tr> <tr> <th>Method</th> <th>Units</th> <th>Analyte</th> <th>GW-2-0709</th> <th>GW-20-0709</th> <th>RPD</th> <th>Qualifiers</th> </tr> <tr> <td>NWTPH-Dx</td> <td>mg/L</td> <td>Lube Oil</td> <td style="text-align: center;">0.41</td> <td style="text-align: center;">0.29</td> <td style="text-align: center;">34.3</td> <td style="text-align: center;">J/J</td> </tr> <tr> <td>NWTPH-Dx</td> <td>mg/L</td> <td>PHC AS DIESEL FUEL</td> <td style="text-align: center;">0.65</td> <td style="text-align: center;">0.43</td> <td style="text-align: center;">40.7</td> <td style="text-align: center;">J/J</td> </tr> </tbody> </table>							Method	Units	Analyte	3-W-41-0809	3-W-410-0809	RPD	Qualifiers	NWTPH-Dx	mg/L	PHC AS DIESEL FUEL	0.076	0.077	1.3		Method	Units	Analyte	GW-2-0709	GW-20-0709	RPD	Qualifiers	NWTPH-Dx	mg/L	Lube Oil	0.41	0.29	34.3	J/J	NWTPH-Dx	mg/L	PHC AS DIESEL FUEL	0.65	0.43	40.7	J/J
Method	Units	Analyte	3-W-41-0809	3-W-410-0809	RPD	Qualifiers																																			
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<p>The highlighted target analytes require J qualifiers in the native sample and in the field duplicate sample to indicate estimated concentrations due to variability between field duplicate results (RPD exceeded QC limit).</p> <p>Refer to the table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 8).</p>																																									

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

22. Were qualitative criteria for organic target analyte identification met?		Yes	X – lab observation only	No	SM	Initials	
<p><i>Comments: Not applicable for this level of limited data validation – Chromatograms, library searches, and quantitation reports were not supplied in analytical laboratory reports and were therefore not included in this data review. However, GC/MS quantitation reports and chromatograms were reviewed by trained laboratory personnel in accordance with the laboratory's internal QA/QC program.</i></p> <p>No identification/quantitation flags were assigned by the laboratory, except as noted.</p> <p><u>Method NWTPH-Dx without cleanup -</u></p> <p>SDG BSE0122: The laboratory noted that the chromatographic patterns for DRH results reported for samples IC-W-7-051209, IC-W-1-051209, and IC-W-8-051209 were not consistent with diesel fuel. The laboratory noted that the chromatographic patterns for LORH results reported for samples IC-W-7-051209 and IC-W-8-051209 also did not match a typical pattern for LORH.</p> <p>For DRH - The laboratory report identifies the reported analyte as DRH, however, the EDD/database identifies the reported analyte as diesel fuel. Although supporting documentation to fully evaluate the laboratory comments cannot be made with this level of report deliverable, professional judgment determines that the reported values require J qualifiers to indicate estimated concentrations since the concentration of diesel fuel is affected by other analytes or interferences within the specified carbon range.</p> <p>For LORH - The laboratory report and EDD/database identify the reported analyte as LORH, and not as a single component. No action is required since a specific target analyte (like lube oil) is not being reported for this analysis, but rather a total of eluting compounds found within the target range.</p> <p>Refer to the table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 8).</p>							
23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports?		X	Yes		No	SM	Initials
<p><i>Comments: 100% EDD QA/QC of positive concentrations and RLs was done as part of this limited data validation procedure. The following changes were made to the EDD file during data validation:</i></p> <p>The data validator corrected any significant figure discrepancies between hardcopy report and EDD entries. According to validation protocol, the hardcopy data report was accepted as the correct reference.</p> <p>The AECOM Environment database manager was informed of all changes made to the EDD file via this Checklist. The EDD file, with corrections made and data validation qualifiers and reason codes added, was returned to the database manager in Seattle, WA on 10/15/2009.</p>							
<p>24. General Comments: Data were evaluated based on validation criteria set forth in the <i>USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review</i>, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were also reviewed as per <i>WDOE Analytical Methods for Petroleum Hydrocarbons</i>, ECY 97-602 of June 1997. Field duplicate RPD review and applicable control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.</p> <p>Refer to the table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (page 8).</p>							

**Table of Qualified Analytical Results
BNSF Skykomish – Sitewide Groundwater Monitoring
Groundwater Samples
TestAmerica (Bothell, WA) Laboratory Reports/Samples (as listed)
May 2009; July – August 2009**

Sample ID	Lab ID	Method	Analyte	Concentration		Qualifier	Reason Code
GW-2-0709	580-14365-1	NWTPH-Dx	Lube Oil	0.41	mg/L	J	FD
GW-2-0709	580-14365-1	NWTPH-Dx	PHC AS DIESEL FUEL	0.65	mg/L	J	FD
GW-20-0709	580-14651-5	NWTPH-Dx	Lube Oil	0.29	mg/L	J	FD
GW-20-0709	580-14651-5	NWTPH-Dx	PHC AS DIESEL FUEL	0.43	mg/L	J	FD
1C-W-7-051209	BSE0122-01	NWTPH-Dx	PHC AS DIESEL FUEL	0.578	mg/L	J	pattern
1C-W-1-051209	BSE0122-02	NWTPH-Dx	PHC AS DIESEL FUEL	0.0648	mg/L	J	pattern
1C-W-8-051209	BSE0122-03	NWTPH-Dx	PHC AS DIESEL FUEL	0.901	mg/L	J	pattern

Reason Codes:

FD - relative percent difference between field duplicates exceeds QC limits; field precision outlier

pattern – chromatographic pattern does not match typical diesel pattern; qualifier assigned since result is identified as “Diesel Fuel rather than Diesel Range Hydrocarbons in the project database.

Prepared for:
BNSF

November 21, 2009

Organic
Limited Data Validation Report

BNSF Skykomish
Sitewide Groundwater Monitoring
Groundwater with Water QC Samples
Test America, Inc. data
September - October 2009

Prepared By Sue Milcan
Environmental Scientist/Quality Assurance Manager

AECOM, Inc.
November 2009
Document No.: 60136319.0545

Overview

The samples analyzed for the BNSF Skykomish Sitewide Groundwater Monitoring sampling effort from September – October 2009 are listed in the Table of Samples Analyzed (pages 2-3). Limited data validation was performed on a total of seventy nine groundwater samples and one equipment rinse blank water QC sample.

Samples were analyzed by TestAmerica, Inc. of Tacoma, WA. The verified analysis was Diesel Range Organics (DRO) and Lube Oil by WDOE method NWTPH-Dx (with and without Silica Gel cleanup).

The Analytical Limited Data Validation Checklist is presented as pages 4-8. Data were evaluated based on validation criteria set forth in the *USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review*, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were also reviewed as per *WDOE Analytical Methods for Petroleum Hydrocarbons*, ECY 97-602 of June 1997. Field duplicate RPD review and applicable control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.

The following data components were reviewed during the limited data validation procedure:

Submitted Deliverables
Case Narratives (including laboratory flags)
Chain-of-Custody form(s) and sample integrity (TestAmerica data only)
Sample results, reporting detection limits, dilution factors
Holding times
Method blank results
Organic surrogate recoveries
LCS, LCSD (blank spike, blank spike duplicate) results
MS, MSD (matrix spike, matrix spike duplicate) results
Laboratory duplicate (or spiked duplicate) results
Field duplicate results (calculated RPDs)
Electronic data deliverable (EDD) query

Data Validation Qualifiers Assigned During this Review

None required.

Overall Data Assessment

Precision, accuracy, method compliance, and completeness of the data set have been determined to be acceptable, based on the data provided. There were no rejected or missing data points associated with this data set. The data are suitable for their intended use without qualification.

Table of Samples Analyzed
BNSF Skykomish – Sitewide Groundwater Monitoring
Groundwater Samples
TestAmerica (Tacoma, WA) Laboratory Reports (as listed)
September – October 2009

Matrix	Sample ID		Sample Date and Time	Lab SDG	Lab Sample ID
Groundwater	S1-AD-0909		9/22/2009 08:55	580157022	580-15702-01
Groundwater	S1-AU-0909		9/22/2009 09:10	580157022	580-15702-02
Groundwater	S1-BD-0909		9/22/2009 09:25	580157022	580-15702-03
Groundwater	S1-BU-0909		9/22/2009 09:35	580157022	580-15702-04
Groundwater	S2-BD-0909		9/22/2009 10:35	580157022	580-15702-05
Groundwater	S2-BU-0909		9/22/2009 10:45	580157022	580-15702-06
Groundwater	S2-AD-0909		9/22/2009 10:05	580157022	580-15702-07
Groundwater	S2-AU-0909		9/22/2009 10:15	580157022	580-15702-08
Groundwater	S20-BU-0909	S2-BU-0909 Dup	9/22/2009 10:55	580157022	580-15702-09
Groundwater	S3-AD-0909		9/22/2009 12:25	580157022	580-15702-10
Groundwater	S3-AU-0909		9/22/2009 12:35	580157022	580-15702-11
Groundwater	S3-BD-0909		9/22/2009 12:50	580157022	580-15702-12
Groundwater	S3-BU-0909		9/22/2009 13:30	580157022	580-15702-13
Groundwater	S3-CD-0909		9/22/2009 13:55	580157022	580-15702-14
Groundwater	S3-CU-0909		9/22/2009 14:05	580157022	580-15702-15
Groundwater	S4-AD-0909		9/22/2009 14:30	580157022	580-15702-16
Groundwater	S4-AU-0909		9/22/2009 14:55	580157022	580-15702-17
Groundwater	S4-BD-0909		9/22/2009 15:15	580157022	580-15702-18
Groundwater	S4-BU-0909		9/22/2009 15:25	580157022	580-15702-19
Groundwater	S4-CD-0909		9/22/2009 15:40	580157022	580-15702-20
Groundwater	S4-CU-0909		9/22/2009 15:55	580157022	580-15702-21
Groundwater	S40-AD-0909	S4-AD-0909 Dup	9/22/2009 14:40	580157022	580-15702-22
Groundwater	1C-W-4-0909		9/22/2009 13:55	580157021	580-15702-23
Groundwater	1C-W-3-0909		9/22/2009 11:45	580157021	580-15702-24
Groundwater	1C-W-2-0909		9/22/2009 16:35	580157021	580-15702-25
Groundwater	GW-4-0909		9/22/2009 17:15	580157021	580-15702-26
Groundwater	MW-39-0909		9/22/2009 16:40	580157021	580-15702-27
Groundwater	2A-W-11-0909		9/22/2009 17:15	580157021	580-15702-28
Groundwater	5-W-51-0909		9/22/2009 17:50	580157021	580-15702-29
Groundwater	2B-W-46-0909		9/23/2009 09:35	580157021	580-15702-30
Groundwater	2B-W-45-0909		9/23/2009 10:15	580157021	580-15702-31
Groundwater	2B-W-450-0909	2B-W-45-0909 Dup	9/23/2009 10:30	580157021	580-15702-32
Water QC	MW-500-0909	Equipment Rinse Blank	9/23/2009 08:25	580157021	580-15702-33
Groundwater	2A-W-9-0909		9/23/2009 11:30	580157021	580-15702-34
Groundwater	MW-3-0909		9/23/2009 13:20	580157021	580-15702-35
Groundwater	MW-41-0909		9/23/2009 14:00	580157021	580-15702-36
Groundwater	3W-41-0909		9/23/2009 15:15	580157021	580-15702-37
Groundwater	2A-W-10-0909		9/21/2009 16:30	580157021	580-15702-38
Groundwater	2B-W-4-0909		9/21/2009 16:25	580157021	580-15702-39
Groundwater	5-W-52-0909		9/22/2009 10:05	580157021	580-15702-40
Groundwater	5-W-53-0909		9/22/2009 10:55	580157021	580-15702-41
Groundwater	5-W-530-0909	5-W-53-0909 Dup	9/22/2009 09:55	580157021	580-15702-42
Groundwater	5-W-54-0909		9/22/2009 11:50	580157021	580-15702-43
Groundwater	MW-38R-0909		9/22/2009 13:45	580157021	580-15702-44
Groundwater	5-W-18-0909		9/22/2009 14:55	580157021	580-15702-45
Groundwater	5-W-55-0909		9/22/2009 16:40	580157021	580-15702-46

Continued on next page

Table of Samples Analyzed
BNSF Skykomish – Sitewide Groundwater Monitoring
Groundwater Samples
TestAmerica (Tacoma, WA) Laboratory Reports (as listed)
September – October 2009

Matrix	Sample ID		Sample Date and Time	Lab SDG	Lab Sample ID
Groundwater	5-W-56-0909		9/22/2009 15:50	580157021	580-15702-47
Groundwater	1C-W-1-0909		9/22/2009 09:15	580157021	580-15702-48
Groundwater	1C-W-8-0909		9/22/2009 09:55	580157021	580-15702-49
Groundwater	1C-W-7-0909		9/22/2009 15:00	580157021	580-15702-50
Groundwater	1C-W-70-0909	1C-W-7-0909 Dup	9/22/2009 15:20	580157021	580-15702-51
Groundwater	3-W-42-0909		9/23/2009 16:00	580157021	580-15702-52
Groundwater	3-W-43-0909		9/23/2009 16:45	580157021	580-15702-53
Groundwater	MW-16-0909		9/23/2009 17:45	580157021	580-15702-54
Groundwater	MW-160-0909	MW-16-0909 Dup	9/23/2009 17:55	580157021	580-15702-55
Groundwater	5-W-50-0909		9/23/2009 08:50	580157021	580-15702-56
Groundwater	5-W-17-0909		9/23/2009 09:25	580157021	580-15702-57
Groundwater	5-W-170-0909	5-W-17-0909 Dup	9/23/2009 08:25	580157021	580-15702-58
Groundwater	5-W-16-0909		9/23/2009 10:25	580157021	580-15702-59
Groundwater	5-W-14-0909		9/23/2009 11:20	580157021	580-15702-60
Groundwater	5-W-15-0909		9/23/2009 13:55	580157021	580-15702-61
Groundwater	5-W-42-0909		9/23/2009 14:35	580157021	580-15702-62
Groundwater	5-W-19-0909		9/23/2009 15:20	580157021	580-15702-63
Groundwater	5-W-20-0909		9/23/2009 16:10	580157021	580-15702-64
Groundwater	5-W-43-0909		9/23/2009 17:30	580157021	580-15702-65
Groundwater	5-W-4-0909		9/23/2009 18:05	580157021	580-15702-66
Groundwater	2A-W-42-0909		9/23/2009 09:00	580157021	580-15702-67
Groundwater	1B-W-23-0909		9/23/2009 10:40	580157021	580-15702-68
Groundwater	1B-W-3-0909		9/23/2009 14:40	580157021	580-15702-69
Groundwater	GW-3-0909		9/23/2009 12:55	580157021	580-15702-70
Groundwater	1B-W-2-0909		9/23/2009 15:55	580157021	580-15702-71
Groundwater	1A-W-4-0909		9/23/2009 17:40	580157021	580-15702-72
Groundwater	EW-1-0909		9/23/2009 00:00	580157021	580-15702-73
Groundwater	2A-W-40-0909		9/24/2009 09:15	580157021	580-15702-74
Groundwater	2A-W-41-0909		9/24/2009 10:25	580157021	580-15702-75
Groundwater	1A-W-5-0909		9/24/2009 11:20	580157021	580-15702-76
Groundwater	GW-2-0909		9/24/2009 09:20	580157021	580-15702-77
Groundwater	GW-20-0909	GW-2-0909 Dup	9/24/2009 09:30	580157021	580-15702-78
Groundwater	GW-1-0909		9/24/2009 10:25	580157021	580-15702-79
Groundwater	PZ - 1 - 1009		10/8/2009 14:15	580159151	580-15915-1

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Project Name: BNSF Skykomish	Laboratory: TestAmerica, Inc., Bothell, WA					
Project Reference: Sitewide Groundwater Monitoring	Sample Matrix: Groundwater samples					
AECOM Project: 60136319.0545	Sample Start Date: 09/21/2009					
Validator/Date Validated: Sue Milcan 11/21/2009 (completed)	Sample End Date: 10/08/2009					
Samples Analyzed: see Table of Samples Analyzed, BNSF Skykomish - Sitewide Groundwater Monitoring, Groundwater Samples, September - October 2009 (pages 2-3).						
Parameters Reviewed: Diesel Range Hydrocarbons (DRH) and Lube Oil Range Hydrocarbons (LORH) by WDOE method NWTPH-Dx (without Acid/Silica Gel cleanup).						
Laboratory Project IDs (SDGs): 580157021, 580157022, 580159151						
PRECISION, ACCURACY, METHOD COMPLIANCE, AND COMPLETENESS ASSESSMENT						
Precision:	X	Acceptable		Unacceptabl e	SM	Initials
Comments: Precision is the measure of variability of individual sample measurements. Field precision was determined by comparison of field duplicate sample results. Laboratory precision was determined by examination of laboratory duplicate results. Evaluation of field and laboratory duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. RPD precision measurements were compared to EPA published and/or laboratory control-charted QC limits. No data require qualification based on these measurements, and overall field and laboratory precision is acceptable. Precision measurements are reviewed in items 17 and 21.						
Accuracy:	X	Acceptable		Unacceptabl e	SM	Initials
Comments: Field accuracy, a measure of the sampling bias, was determined by reviewing equipment rinse blank results for evidence of sample contamination stemming from field/sampling contamination. Laboratory accuracy is a measure of the system bias, and was measured by evaluating laboratory control sample, laboratory control sample duplicate (LCS, LCSD), matrix spike, matrix spike duplicate (MS, MSD), and organic system monitoring compound (surrogate) percent recoveries (%Rs). LCS, LCSD %Rs demonstrated overall analytical performance. MS, MSD, and ICS %Rs provided information on sample matrix interferences. System monitoring compound or surrogate recoveries measured system performance and efficiency during organic analysis. %Rs were compared to EPA published and/or laboratory control charted QC limits. No data require qualification based on these measurements, and overall field and laboratory accuracy is acceptable. Accuracy measurements are reviewed in items 12, 14, 15, 16, and 20.						
Method Compliance:	X	Acceptable		Unacceptabl e	SM	Initials
Comments: For this data set, method compliance was determined by evaluating sample integrity, holding time, reporting limits, and laboratory blanks against method specified requirements. No data require qualification based on these measurements, and overall method compliance is acceptable, based on the data submitted. Method compliance measurements are reviewed in items 4, 6, 8, 11, 13, 18, 19, 20, and 22.						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

Completeness:	X	Acceptable		Unacceptable	SM	Initials
<p>Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with valid analyses. Completeness goals were set at 90-100%. Determination of completeness during this limited data validation procedure included a review of chain of custody records, laboratory analytical methods and detection limits, laboratory case narratives, and project requirements. Completeness also included 100% review of the laboratory sample data results and QC summary reports. The electronic data deliverable file (EDD) was QA'd 100% for positive target analytes and reporting limits. EDD corrections were made by the data validator during this review procedure as outlined in item 23.</p> <p>All of the data received were useable without qualification. Since no data points were missing or rejected, completeness of the data set was calculated to be 100% and is compliant.</p>						
VALIDATION CRITERIA CHECK						
Data validation qualifiers assigned during this review:						
None required						
1. Did the laboratory identify any non-conformances related to the analytical results?		Yes	X	No	SM	Initials
Comments: There were no problems noted in the provided case narratives, and no laboratory flags were assigned to any data points.						
2. Were sample Chain-of-Custody forms complete?	X	Yes		No	SM	Initials
Comments: The COC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, and laboratory dates and times of sample receipt.						
3. Were all the analyses requested for the samples on the COCs completed by the laboratory?	X	Yes		No	SM	Initials
Comments: All requested analyses as documented on the original COCs were completed.						
4. Were samples received in good condition and at the appropriate temperature?	X	Yes		No	SM	Initials
Comments: All samples were received intact and in good condition with cooler temperatures of 1.0°C to 6.7°C as noted on the COC forms. Samples received at less than 2°C were determined to be in acceptable condition since sample containers were intact and samples themselves were not frozen. Samples received at greater than 6°C were determined to be in acceptable condition since no other preservation issues were noted and temperatures were well below 24°C (room temperature). No action is required other than to note these observations.						
5. Were the reported analytical methods in compliance with WP/QAPP, permit, or COC?	X	Yes		No	SM	Initials
Comments: The reported method met the COC requests and is in compliance with the parameters requested and the sample matrix.						
6. Were detection limits in accordance with WP/QAPP, permit, or method?	X	Yes		No	SM	Initials
Comments: The reporting limits (RLs) are achievable by the quoted method. All samples were reported at undiluted levels.						
Note that the laboratory did not report any trace analyte concentrations \geq method detection limit (MDL) but $<$ practical quantitation limit/reporting limit (PQL/RL) for any methods.						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method?	X	Yes		No	SM	Initials
Comments: Only analytes applicable to the requested method were reported.						
8. Were sample holding times met?	X	Yes		No	SM	Initials
Comments: The method-required extraction and analytical holding times were met for all submitted sample data.						
9. Were correct concentration units reported?	X	Yes		No	SM	Initials
Comments: All results were reported as mg/L (ppm).						
10. Were the reporting requirements for flagged data met?	X	Yes		No	SM	Initials
Comments: No laboratory flags were assigned.						
11. Were laboratory blank samples free of target analyte contamination?	X	Yes		No	SM	Initials
Comments: Supplied laboratory method blanks were free of target analyte contamination.						
12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?	X	Yes		No	SM	Initials
Comments: The equipment rinse blank sample, MW-500-0909, was free of target analyte contamination. Field blank and/or trip blank samples were not submitted/not required for this data set.						
13. Were instrument calibrations within method or data validation control limits?		Yes		No	SM	Initials
<i>Comments: Not applicable for this level of limited data validation – Instrument calibration data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i>						
14. Were surrogate recoveries within control limits?	X	Yes		No	SM	Initials
Comments: Reported surrogate %Rs for organic analyses were within laboratory control-charted QC limits for all project samples and associated QC samples.						
15. Were laboratory control sample recoveries within control limits?	X	Yes		No	SM	Initials
Comments: Reported LCS, LCSD recoveries were within data validation QC limits (70-130% for organics) for all target analytes, or were within laboratory control charted QC limits for organic target analytes as allowed for SW-846 organic methods.						
16. Were matrix spike recoveries within control limits?	X	Yes		No	SM	Initials
Comments: Project-specific MS and MSD recoveries were within laboratory (method) control charted QC limits.						
17. Were duplicate RPDs and/or serial dilution %Ds within control limits?	X	Yes		No	SM	Initials
Comments: Laboratory RPDs for target analytes in LCS/LCSD and MS/MSD samples were within data validation QC limits of 0-20%. <i>Serial Dilution %D data for metals analysis is not applicable for this level of limited data validation or for the analytical method reported.</i>						

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

18. Were organic system performance criteria met?		Yes		No	SM	Initials
<i>Comments: Not applicable for this level of limited data validation – Organic system performance data were not supplied in analytical laboratory reports and were therefore not included in this data review.</i>						
19. Were internal standards within method criteria for GC/MS sample analyses?		Yes		No	SM	Initials
<i>Comments: Not applicable for this level of limited data validation or for the analytical method reported.</i>						
20. Were inorganic system performance criteria met?		Yes		No	SM	Initials
<i>Comments: Not applicable for this level of limited data validation or for the analytical method reported.</i>						
21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.	X	Yes		No	SM	Initials
Duplicate Sample No.	1C-W-70-0909	Primary Sample No.	1C-W-7-0909			
Duplicate Sample No.	2B-W-450-0909	Primary Sample No.	2B-W-45-0909			
Duplicate Sample No.	5-W-170-0909	Primary Sample No.	5-W-17-0909			
Duplicate Sample No.	5-W-530-0909	Primary Sample No.	5-W-53-0909			
Duplicate Sample No.	GW-20-0909	Primary Sample No.	GW-2-0909			
Duplicate Sample No.	MW-160-0909	Primary Sample No.	MW-16-0909			
Duplicate Sample No.	S20-BU-0909	Primary Sample No.	S2-BU-0909			
Duplicate Sample No.	S40-AD-0909	Primary Sample No.	S4-AD-0909			
<p>Comments: Field duplicate RPDs were within the 0-30% data validation QC limits for water matrices, or RPDs were not applicable due to results that were undetected in both samples, or results that were within +/- the RL. Field duplicate and native sample concentrations that were both undetected are not reflected in the table below since RPDs are not applicable.</p> <p>The following RPDs were calculated:</p>						
Method	Units	Analyte	1C-W-70-0909	1C-W-7-0909	RPD	Qualifiers
NWTPH-Dx	mg/L	DRO	0.25	0.24	4.1	
NWTPH-Dx	mg/L	Lube Oil	0.11	0.13	16.7	
Method	Units	Analyte	5-W-170-0909	5-W-17-0909	RPD	Qualifiers
NWTPH-Dx-SG	mg/L	DRO	0.078	< 0.047	+/- RL	
Method	Units	Analyte	5-W-530-0909	5-W-53-0909	RPD	Qualifiers
NWTPH-Dx	mg/L	DRO	0.27	0.30	10.5	
NWTPH-Dx	mg/L	Lube Oil	0.22	0.23	4.4	
Method	Units	Analyte	GW-20-0909	GW-2-0909	RPD	Qualifiers
NWTPH-Dx	mg/L	DRO	0.15	0.16	6.5	
NWTPH-Dx	mg/L	Lube Oil	0.10	0.10	0.0	

ANALYTICAL LIMITED DATA VALIDATION CHECKLIST

22. Were qualitative criteria for organic target analyte identification met?		Yes		No	SM	Initials
<i>Comments: Not applicable for this level of limited data validation – Chromatograms, library searches, and quantitation reports were not supplied in analytical laboratory reports and were therefore not included in this data review. No identification or quantitation outliers were noted by the laboratory.</i>						
23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports?	X	Yes		No	SM	Initials
<p>Comments: 100% EDD QA/QC of positive concentrations and RLs was done as part of this limited data validation procedure. The following changes were made to the EDD file during data validation:</p> <p>The data validator corrected any significant figure discrepancies between hardcopy report and EDD entries. According to validation protocol, the hardcopy data report was accepted as the correct reference.</p> <p>The AECOM Environment database manager was informed of all changes made to the EDD file via this Checklist. The EDD file was returned to the database manager in Seattle, WA on 11/21/2009.</p>						
<p>24. General Comments: Data were evaluated based on validation criteria set forth in the <i>USEPA CLP National Functional Guidelines for Superfund Organic Methods Data Review</i>, document number USEPA-540-R-07-003, July 2007, as they applied to the reported methodology. Washington State Department of Ecology (WDOE) methods were also reviewed as per <i>WDOE Analytical Methods for Petroleum Hydrocarbons</i>, ECY 97-602 of June 1997. Field duplicate RPD review and applicable control limits were taken from the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, December 1996.</p>						