Allen M. Stegman
General Director Environmental

BNSF Railway Company
2600 Lou Menk Drive
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16 January 2014

Aimee Reynolds
Project Manager
Montana Department of Environmental Quality
Remediation Division
1100 North Last Chance Gulch
Helena, MT 59620-0901

Re: ***Joint Livingston Remediation Group (LRG) and BNSF Railway Company (BNSF) Work Plan Submittal – Revised Sub-Slab Depressurization and Expansion of Soil Vapor Extraction – Electric Shop***

Dear Aimee,

BNSF Railway Company (BNSF) joins the Livingston Remediation Group (LRG) in seeking the Montana Department of Environmental Quality's (DEQ's) approval to implement work specified in the Revised Sub-Slab Depressurization and Expansion of Soil Vapor Extraction – Electric Shop Work Plan prepared by Water & Environmental Technologies, Inc. (WET) and approved by the LRG. The Work Plan has been revised to address comments in DEQ's letter to BNSF dated 31 December 2013. The revised Work Plan also includes construction of an additional sub-slab depressurization point based on a conference call between parties on 13 January 2014.

Upon receipt of DEQ's acceptance of the above-mentioned Work Plan, BNSF and its consultant (KJ) will proceed to provide oversight and support to the LRG's consultant (WET) and contractors with coordination and implementation of the specified scope of work. Please feel free to contact me with any questions.

Sincerely,

Allen Stegman

ENCLOSURE

cc: David Erickson/WET
Levi Fernandes, Kennedy/Jenks Consultants
Courtney Lawellin
Lezlie Nelson/LRG

WATER & ENVIRONMENTAL TECHNOLOGIES

Consulting Scientists and Engineers
480 East Park, Suite 200
Butte, Montana

Phone: (406) 782-5220
Fax: (406) 723-1527

January 16, 2014

Ms. Aimee Reynolds
Project Officer
Remediation Division
Montana Department of Environmental Quality
1100 North Last Chance Gulch
Helena, Montana 59601

Subject: Revised Sub-Slab Depressurization and Expansion Soil Vapor Extraction – Electric Shop Burlington Northern Livingston Shop Complex – Livingston, Montana

Dear Ms. Reynolds:

On Behalf of the Livingston Restoration Group in cooperation with BNSF Railway Company (BNSF), Water & Environmental Technologies (WET) is pleased to submit this letter and the enclosed Revised Sub-Slab Depressurization and Expansion Soil Vapor Extraction – Electric Shop. The Revised Sub-Slab Depressurization and Expansion Soil Vapor Extraction work plan, originally dated October 11, 2013, has been revised to address the comments presented in the Montana Department of Environmental Quality (DEQ) letter to BNSF dated December 31, 2013. All strike-out edits are accepted in context and proper referencing cited and compiled. Also, all additions/comments to the ERCLs table are accepted and incorporated.

In addition to the DEQ revisions, per the telephone conference with BNSF, WET, and DEQ conducted on January 13, 2014, one additional sub-slab depressurization point will be added to the system in the vicinity of wells 89-3 and 90-2. This point has been added to Figure 1 of the revised work plan.

Please contact me at (406) 782-5220 if you have any questions or comments regarding this submittal.

Sincerely,

Patrick Thomson, P.G.
Project Manager

cc: Leslie Nelson, Livingston Restoration Group
Courtney Lewellin
Allen Stegman, BNSF

REVISED SUB-SLAB DEPRESSURIZATON AND EXPANSION OF SOIL VAPOR EXTRACTION – ELECTRIC SHOP

BNSF Livingston Shop Complex Facility,
Livingston, Montana

Prepared for:

Livingston Restoration Group

Livingston, MT

Prepared by:

Water & Environmental Technologies, PC

Moonlight Professional Building
480 East Park Street, Suite 200
Butte, MT 59701

January 2014

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List of Figures

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List of Acronyms

ARM	Administrative Rules of Montana
BNSF	BNSF Railway Company
COC	chemical of concern
CVOC	chlorinated volatile organic compound
DEQ	Montana Department of Environmental Quality
DNAPL	dense non-aqueous phase liquid
EPA	United States Environmental Protection Agency
ERCL	Environmental Requirements, Criteria, and Limitations
ES	Electric Shop
HASP	Health and Safety Plan
IDW	investigation-derived waste
ISCO	in situ chemical oxidation
LRG	Livingston Restoration Group
mg/kg	milligrams per kilogram.
MRL	Montana Rail Link
NAVD88	North American Vertical Datum 1988
OSS	OILSCREENSOIL™
PCE	tetrachloroethene
PID	photoionization detector
PVC	poly vinyl chloride
QAPP	Quality Assurance Project Plan
ROI	radius of influence
ROD	Record of Decision
RD/RA	Remedial Design/Remedial Action
SAP	Sampling and Analysis Plan
SCFM	standard cubic feet per minute
SSD	Sub-Slab Depressurization
SOG	Standard Operating Guideline

SVE	soil vapor extraction
THASP	Task-Specific Health and Safety Plan
VOC	volatile organic compound
WET	Water and Environmental Technologies, PC

1.0 INTRODUCTION

Water and Environmental Technologies, PC (WET) has prepared this Work Plan on behalf of the Livingston Restoration Group (LRG) for the expansion of the existing soil vapor extraction (SVE) system housed in the former Electric Shop located on the Burlington Northern Livingston Shop Complex Facility (Facility) in Livingston, Montana. In addition, it includes the scope for installing a bedrock interface well to determine if a potential bedrock source exists beneath the Electric Shop.

This work plan is being submitted in response to the verbal request of the Montana Department of Environmental Quality (DEQ) during a conference call on August 23, 2013 and documented in meeting minutes distributed by DEQ on September 18, 2013, to expand the existing Soil Vapor Extraction (SVE) system at the Electric Shop (ES) building located at the Burlington Northern Livingston Shop Complex. The field procedures and well construction methods associated with the SVE system expansion described herein will be in accordance with the *Addendum No. 1 to Final Task F Stage I – Part 2 Pilot Test Work Plan for Volatile Organic Compound-Containing Alluvial Aquifer Groundwater* dated November 25, 2009 (Kennedy/Jenks Consultants 2009) and Standard Operating Guidelines (SOGs) provided in the DEQ-approved *Facility-Wide Sampling and Analysis Plan* (Facility-Wide SAP; Kennedy/Jenks Consultants 2006) .

1.1 BACKGROUND

The former Electric Shop has a floor drain sewer system that was used to collect fluids generated during repair operations (Figure 1). Historically, fluids entering the drain conveyed chlorinated volatile organic compounds (CVOCs) and hydrocarbons originating from repair/maintenance operations. Also, operations at the structure included a degreaser pit located at the northwestern corner of the structure.

Previous investigations at the Facility confirmed past leakage from the manways. Soil vapor extraction (SVE) has been used to treat vadose zone soils in the manways areas along the northern end of the structure and in-situ chemical oxidation (ISCO) has been used to treat manway area saturated zone soils.

A soil vapor survey conducted using Gore Module sorbents identified elevated tetrachloroethene (PCE) concentrations beneath the northern portion of the ES. Results of the Gore Module survey indicate a potential source beneath the ES structure.

1.2 OBJECTIVES

The objectives of this work plan are to examine the nature and extent of vapors beneath the Electric Shop slab and to expand the existing SVE system to include SVE wells within the Electric Shop footprint. In addition, DEQ has requested a single bedrock interface well be installed in the area to determine the potential for a dense non-aqueous phase liquid (DNAPL) source in bedrock.

1.3 HEALTH AND SAFETY PLAN

A task-specific health and safety plan (THASP) has been prepared and is included in Appendix A. In addition to the THASP, work will be conducted in conjunction with the *Facility-Wide Health and Safety Plan (Revision No. 3)* (Facility-Wide HASP) (Kennedy/Jenks Consultants 2008). Daily safety briefings will be conducted to discuss scope of work and health and safety considerations.

1.4 ACCESS

Site access will be coordinated with Montana Rail Link (MRL) and BNSF Railway Company (BNSF).

1.5 ERCLs

Environmental requirements, criteria, and limitations (ERCLs) have been developed by DEQ for the Facility and are included in Attachment B of the ROD (DEQ 2001). WET completed an analysis of the implementation of the activities included in this work plan for compliance with the ERCLs for the Facility (Appendix B). The activities included in this work plan comply with ERCLs for the Facility.

2.0 SUB-SURFACE DEPRESSURIZATION AND SOIL VAPOR EXTRACTION

2.1 PROPOSED SCOPE OF WORK

This work plan incorporates by reference applicable field protocols and procedures contained in Task F work plans previously approved by DEQ as well as the Facility-Wide SAP. The Facility-Wide SAP addresses general protocols and procedures to be followed during implementation of supplemental investigations and remedial design/remedial action (RD/RA) tasks at the Facility. The Facility-Wide SAP addresses (1) health and safety considerations (including location of underground utilities); (2) personnel and equipment decontamination; (3) calibration and use of field measuring devices and instrumentation; (4) sample collection, preservation, packaging, and shipping; (5) borehole logging; (6) well construction and development; and (7) handling and disposal of Investigation Derived Waste (IDW). Field activities will be performed in a manner consistent with the Standard Operating Guidelines (SOGs) identified in the Facility-Wide SAP, unless otherwise stated.

Field protocols/procedures for well construction-related activities and soil and groundwater sampling that were described in previously approved Task F work plans are not repeated in this work plan addendum unless a modification is proposed.

Field protocols/procedures for any activities not included in previously approved Task F work plan and/or Facility-Wide SAP are presented in this letter work plan.

2.2 OBJECTIVES

Shallow vadose zone soil samples collected beneath the northern portion of the ES contained concentrations of PCE exceeding the Facility cleanup level of 4 milligrams per kilogram (mg/kg). In addition, recent soil gas sampling using Gore Modules identified an area in the northern portion of the ES with vadose zone PCE and trichloroethene (TCE) soil gas concentrations that are elevated with respect to those detected on surrounding parts of the Facility (Sample ELS-1E; AGI, 2013). The objective of this task is to assess vapors present beneath the slab and expand the existing SVE system at the ES to remove PCE and TCE mass from vadose zone soil to achieve the Record of Decision (ROD) cleanup levels for these chemicals of concern (COCs) in soils beneath the ES.

Sub-Slab Depressurization (SSD) wells will be installed at select locations across the northern portion of the ES. The purpose of the SSD system installation is to assess whether vapors detected beneath the slab are due to the effect of the slab or if a source of PCE exists beneath the ES.

Should VOC concentrations observed in the exhaust generated during testing of the SSD points remain elevated or not exhibit a linear downward trend in concentration the SVE system will be expanded. Based on the effective radius of influence (ROI) of the existing SVE wells, the addition and operation of two SVE wells, of similar design to those already in operation at the ES, through the floor of the ES building is expected to be adequate to treat vadose zone soils to the ROD cleanup levels and to reduce the potential for any appreciable partitioning of PCE or TCE from soil-gas-to-groundwater in this area.

2.3 SUB-SLAB DEPRESSURIZATION AND VAPOR EXTRACTION WELL LOCATIONS

The SSD system will incorporate 5 suction points completed at a depth of approximately one-foot below the floor slab. General locations for the suction points are shown on Figure 1. However, actual locations will be determined in the field based on locations of any floor cracks or seams that may inhibit the affect of the system.

The ES building and existing SVE system wells and piping are shown in Figure 1. The expanded SVE layout planned includes the addition of two new SVE wells constructed along a perpendicular alignment to the existing east-west SVE well line (north of the ES building). As shown on Figure 1, the new SVE wells will be constructed conservatively on 100-foot centers, with the expectation that this spacing will provide the capability to induce an adequate negative pressure field throughout the target vadose zone treatment area. This expectation is based upon the 100-foot radius of influence (ROI) reportedly attained in prior testing of similar SVE wells at the Facility (Kennedy/Jenks, 2011a; 2011b). The northernmost SVE well will be completed in the location of the center SSD well, and will depend on results of initial testing as described below.

2.4 SVE WELL AND SSD POINT CONSTRUCTION

2.4.1 SSD Points

Construction of SSD points will follow protocol outlined in Task I Indoor Air Mitigation Plan for Residential and Commercial Properties – DEQ Version No. 2. May 2011. Suction points will be set at a depth of approximately one foot below the slab and completed with 4-inch diameter Schedule 40 poly vinyl chloride (PVC) suction pipes and equipped with a shut-off valve, sample port, and vacuum gauge. A typical suction point completion diagram is presented in Figure 2.

2.4.2 SVE Wells

The SVE well borings will be drilled using sonic drilling techniques. Well drilling and construction including field screening and soil sampling, will be conducted in accordance with the procedures described in *Addendum No. 1 to Final Task F Stage I – Part 2 Pilot Test Work Plan for Volatile Organic Compound-Containing Alluvial Aquifer Groundwater* (Kennedy/Jenks Consultants 2009). Field screening will be performed for both unsaturated and saturated zone soils at each boring location. Where field screening suggests that VOCs may be present at appreciable concentrations within the vadose zone, the unsaturated soil sample with the highest headspace photoionization detector (PID) measurement will be submitted for laboratory analysis. The soil samples selected for analysis will be shipped to Energy Analytical Laboratories in Billings, Montana (Energy) under standard chain-of-custody protocol. Soil samples will be analyzed for VOC using United States Environmental Protection Agency (EPA) Method 8260.

Consistent with the construction of the existing SVE wells, four-inch diameter Schedule 40 PVC casing and screen will be used and discrete screened intervals will be provided in upper and lower portions of the vadose zone. It is anticipated the wells will be screened from immediately beneath the ES floor slab to about 12 feet below ground surface (bgs) and about 13 to 18 feet bgs. Similar to the existing SVE wells, each well will be completed with two screened intervals separated by a blank section of casing surround by an annular space bentonite seal to allow the upper and lower screened intervals to be isolated from one another. A typical well completion diagram is presented in Appendix C (Kennedy/Jenks 2010). Surface completion details for the SVE wells if presented in Figure 3.

2.5 SUB-SLAB DEPRESSURIZATION SYSTEM

The SSD system will incorporate vacuum generated from the existing SVE system to induce vacuum beneath the slab. The vacuum and flow rate will be regulated with a valve at the manifold of the existing system and with individual valves at the SSDs allowing testing of full system or individual suction points. The individual piping legs from each SSD point will be manifolded to the primary SVE lines to be installed for the SVE wells. The two westerly SSD points will be connected to the southern SVE piping, while the two easterly SSD points will be connected to the northern SVE piping. The center SSD point shown on Figure 1 will initially be used as a primary extraction point to assess potential vapor pathways or obstructions beneath the slab and subsequently be converted to an SVE well. Pressure and vapor readings will be measured in each of the SSD points during initial testing. Following baseline monitoring of the network, each SSD will be connected to the vacuum system and again monitored for flow, concentration, and vacuum. All data collected during testing will be collected on field forms as described in Section 3.0.

2.6 SOIL VAPOR EXTRACTION SYSTEM

Each new SVE well will be completed above grade with valves and couplers to facilitate connection to the existing ES SVE system. A typical diagram showing wellhead construction is presented in Attachment A. The existing ES SVE uses a blower with a capacity of 86 inches H2O and 800 standard cubic feet per minute (SCFM). By using the existing SVE wellhead valves to adjust the extracted soil gas flows from the existing SVE well line, the new SVE wells can be added to the system operation without any modification to the existing SVE blower and soil gas treatment system. The new wells will be routed to the existing extraction manifold using 4-inch Schedule 40 PVC. Pipe ramps will be utilized in anticipated traffic areas to allow traffic to move through the building while protecting the piping. Piping routes and pipe ramp locations are included in Figure 1.

2.7 SYSTEM STARTUP AND MONITORING

The SSD points will be monitored prior to installation of SVE wells. As discussed in Section 2.5, individual sampling ports will be in each new SSD point and the SVE lines as shown on the schematic presented in Attachment A. These ports will allow distinct assessment of individual points/wells. Initial testing will involve the operation of SSD components of the extraction system to evaluate if elevated vapor concentrations are due to accumulation of vapors beneath the concrete slab as a result of volatilization from groundwater or source areas in near building soil.

Initial monitoring will be conducted on the SSD network at regular intervals for the first 8 hours of operation following connection and initiation of vapor extraction from the central SSD point. A field form will be utilized to document individual zones and associated measurements of vacuum, flow, temperature and PID readings. Hourly readings will be collected from each SSD point for the first 8 hours, followed by hourly measurements during the second day of monitoring. Finally, field measurements will be collected at the end of 48 hours of operation at steady state. Laboratory samples will be collected in 1-liter Summa canisters after initial readings and at the start of each monitoring day for a total of three samples. The samples will be run for VOCs analysis using EPA Method TO-15 analysis.

Results of the system testing will be reviewed to further focus on possible sub-slab vadose zone source areas. Also, the initial testing will provide data regarding potential preferential pathways or obstructions that may inhibit flow beneath the slab.

Following testing of the SSD point system, the center SSD point will be replaced with an SVE well and a second SVE well installed to the south as described in Section 2.4.2 and 2.6. Following installation, the SVE wells will be tested following the same schedule described above.

Subsequent monitoring will be conducted periodically based on concentrations observed over the test period and the necessity of operation. Currently the in-place system is being operated on a cyclical basis to monitor the effectiveness of cycling. Following testing of the SSD/SVE additions and the cyclical testing, data will be reviewed and an operations and maintenance plan will be established for each component. Monitoring will follow protocols described in Section 4.6 of *Addendum No. 1 to Final Task F Stage I – Part 2 Pilot Test Work Plan for Volatile Organic Compound-Containing Alluvial Aquifer Groundwater* (Kennedy/Jenks Consultants 2009).

3.0 BEDROCK INTERFACE WELL

One new alluvial aquifer monitoring well will be sited based on discussion with DEQ and CDM Smith. The proposed well location may be adjusted slightly in the field to accommodate access and to avoid underground utilities. A Montana-licensed well driller will be used and monitoring well construction will be in compliance with Title 36, Chapter 21, Sub-chapter 8, Administrative Rules of Montana (ARM).

The new alluvial aquifer monitoring well will be designated 13-12 following in sequence to existing and proposed 2013 wells and as outlined in Section B2.3.3 of the Facility-Wide QAPP (provided in Appendix A of the Facility-Wide SAP). The new alluvial aquifer monitoring well will be constructed using the procedures and protocols outlined in *Task F Stage I – Part 1 Remedial Action Plan for VOC-Containing Alluvial Aquifer Groundwater* (DEQ Version) dated April 2007 (DEQ 2007). Field personnel will perform soil sampling and borehole logging using the procedures described in SOG-7 and SOG-13 (Appendix A of the Facility-Wide SAP). General procedures to be followed for well construction and development are described in SOG-14 and SOG-15 (Appendix A of the Facility-Wide SAP). Data collected during borehole advancement and well construction (e.g., depth to groundwater, depth to bedrock, soil/bedrock conditions, etc.) and the specific well construction details will be documented on appropriate field forms (i.e., boring/well construction log).

The alluvial well will be drilled using Sonic drilling methods to the base of the alluvium (approximately 31 feet based on the depth encountered in vicinity wells). Continuous cores of the recovered soils will be examined and logged during drilling. The well will be constructed using a short (3-foot long) screened interval. The bottom of the screened interval will be positioned at the alluvium/bedrock contact, or just slightly penetrating the top of the bedrock (e.g., approximately 6 inches) depending on field conditions. Subsequent to well installation, the well will be developed using surging/bailing and overpumping per guidelines outlined in the Facility-Wide SAP.

At least one soil sample will be collected from the alluvial well boring at the alluvium/bedrock contact for chemical analysis. In addition to field iridescent sheen testing, the soil sample collected at the base of alluvium will also be field screened using a hydrophobic field screening method [i.e., Red Oil O dye, OILSCREENSOIL™ (OSS), or other suitable dye] to test for the presence of DNAPL. Additional soil samples may be collected for chemical analysis based on PID field screening measurements and/or field observations during borehole advancement.

If DNAPL is encountered during well construction, additional alluvial aquifer wells may be constructed in consultation with and with DEQ approval, in a step-out manner. A groundwater sample will be collected from the newly constructed alluvial well immediately after well completion and development. The initial groundwater samples will be analyzed for VOCs using EPA Method 8260. This data will also be used to evaluate whether additional step-out alluvial aquifer wells are required.

Following completion of the new alluvial aquifer monitoring well, the well will be developed as appropriate by surging and over-pumping and/or hand-bailing to remove fine-grained particles that might have entered the well and filter pack during construction. Well development will typically be performed until the groundwater is relatively sediment free. General well development procedures to be followed are identified in SOG-15 (Appendix A of the Facility-Wide SAP).

Soil and groundwater samples will be labeled and packaged in accordance with the Facility-Wide SAP and transported under chain-of-custody protocol to Energy for analysis of VOCs using EPA Method 8260.

A Montana State registered land surveyor will survey the new wellhead to determine the northing/easting and vertical elevation with respect to the North American Vertical Datum 1988 (NAVD88).

Quarterly sampling of the new alluvial aquifer monitoring well for VOCs will be incorporated into groundwater sampling Directive No. 1. Upon completion of four quarters of groundwater monitoring for VOCs, BNSF will consult with DEQ and seek DEQ approval regarding a possible reduction in sampling frequency to a semiannual basis.

4.0 SCHEDULE

Scheduling of field work for the ES SSD/SVE system expansion will begin immediately following approval of this work plan work will commence within 30 working days after receipt of DEQ approval. It is anticipated that field work excluding IDW management, can be completed within two weeks of commencement of the field work. T he schedule is subject to contractor availability, weather conditions, and other unforeseen field conditions that could affect completion of work in accordance with this

preliminary schedule. The DEQ will be notified prior to start of field activities and of any potential schedule delays. Access for all field activities will be coordinated with MRL and BNSF.

5.0 REFERENCES

Amplified Geochemical Imaging, LLC, 2013. Laboratory Report, Livingston Shop Complex. Prepared for Kennedy/Jenks Consultants, August 9, 2013.

DEQ 2007. Task F Stage 1-Part 1 Remedial Action Plan Burlington Northern Livingston Shop Complex Facility, Livingston, Montana. April 2007. Kennedy/Jenks Consultants, Federal Way, Washington.

Kennedy/Jenks Consultants. 2006. Final Facility-Wide Sampling and Analysis Plan, Burlington Northern Livingston Shop Complex Facility, Livingston, Montana. March 2006. Kennedy/Jenks Consultants, Federal Way, Washington.

Kennedy/Jenks Consultants, 2008. Final Task F Stage I – Part 2 Pilot Test Work Plan for Volatile Organic Compound-Containing Alluvial Aquifer Groundwater, Burlington Northern Livingston Shop Complex Facility, Livingston, Montana. July 2008. Kennedy/Jenks Consultants, Federal Way, Washington.

Kennedy/Jenks Consultants. 2008. 2008 Facility-Wide Health and Safety Plan (Revision No. 3). Burlington Northern Livingston Shop Complex Facility, Livingston, Montana. May 2008. Kennedy/Jenks Consultants, Federal Way, Washington.

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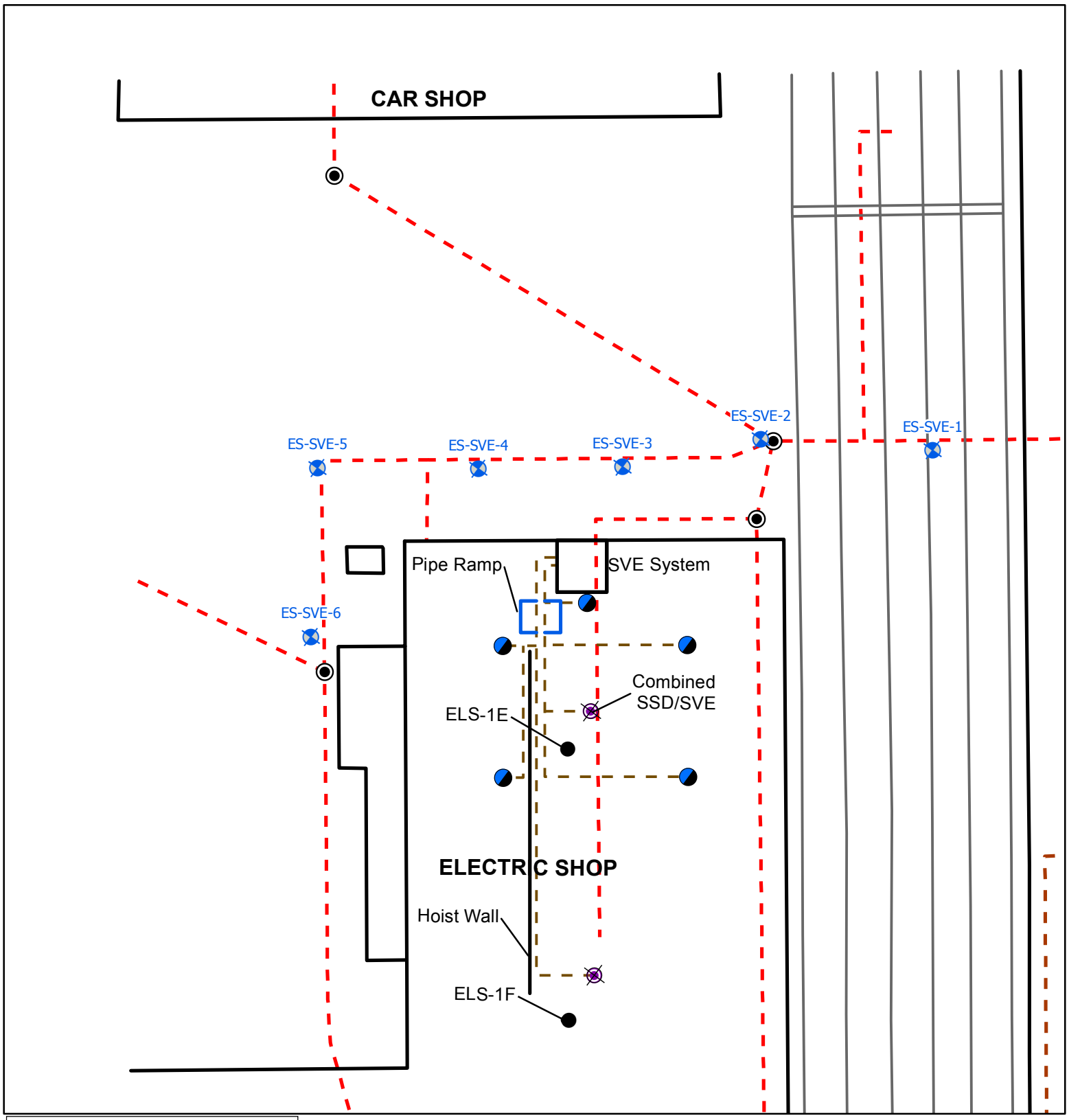
Kennedy/Jenks Consultants. 2011a. Revised Task F Stage I – Part 2: Soil Vapor Extraction (SVE) Report, Burlington Northern Livingston Shop Complex Facility, Livingston, Montana. June 2011. Kennedy/Jenks Consultants, Federal Way, Washington.

Kennedy/Jenks Consultants. 2011b. 2nd Revised Bioventing Extraction/Injection Design Study Comprehensive Report, Burlington Northern Livingston Shop Complex Facility, Livingston, Montana. July 2011. Kennedy/Jenks Consultants, Federal Way, Washington.

Kennedy/Jenks Consultants. 2013. Addendum No. 2 to DEQ Version of Task L Supplemental Investigation Work Plan for Bedrock Aquifer(s) (Addendum No.2), Burlington Northern Livingston Shop Complex Facility, Livingston, Montana. May 2013. Kennedy/Jenks Consultants, Federal Way, WA.

FIGURES



Legend

- Gore Module Sample Location
- Proposed Sub-Slab Depressurization Pit
- Proposed Soil Vapor Extraction Well
- Manway
- Soil Vapor Extraction Well
- Vent Piping
- Hoist Wall
- Original/Replaced Industrial Wastewater Sewer Line
- Sleeved Industrial Wastewater Sewer Line
- Old Industrial Wastewater Sewer Line

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WATER & ENVIRONMENTAL TECHNOLOGIES, PC

ELECTRIC SHOP
SVE WELL LOCATIONS

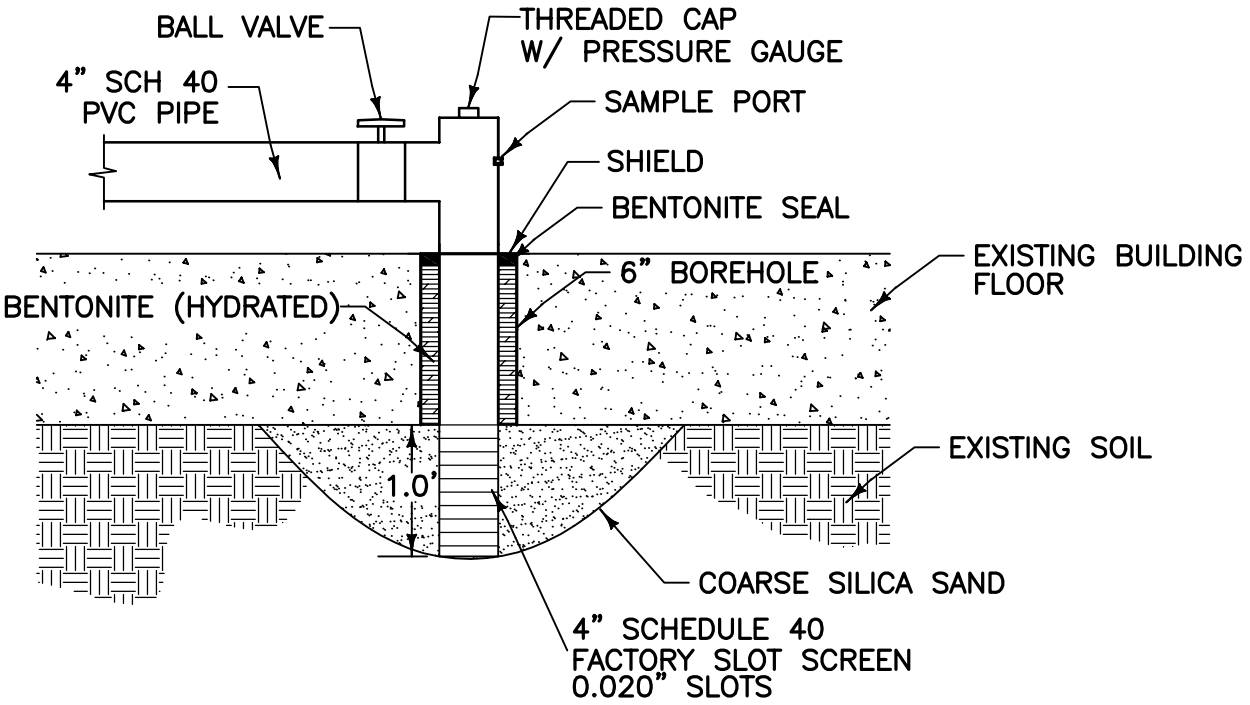
BNSF Livinston Shop Complex

Job#: LRGM01 Task 5

Date: 1/15/2014

FIGURE 1

Path: M:\LRGM01\Task5\Figure1.mxd, Author: jleprowse



WATER & ENVIRONMENTAL TECHNOLOGIES, PC

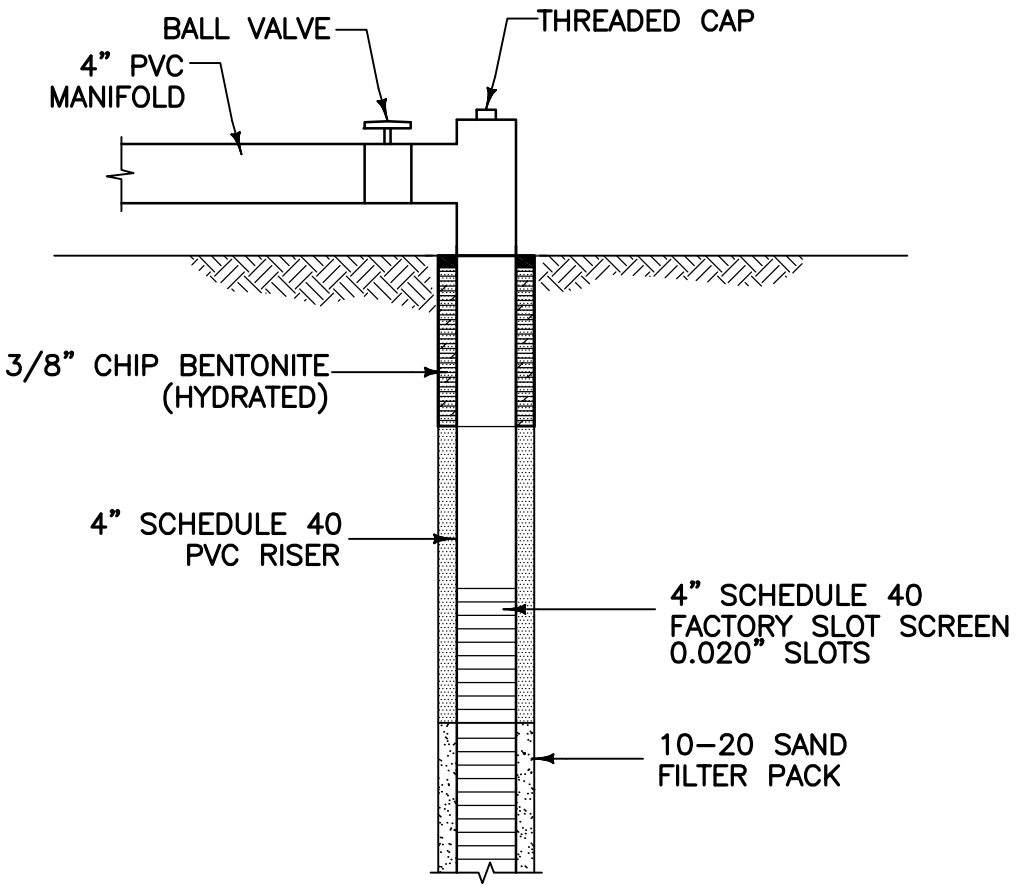
BNSF LIVINGSTON
SHOP COMPLEX

SUB-SLAB DEPRESSURIZATION
POINT TYPICAL
CONSTRUCTION DETAIL

LRGM01 T5

DATE: 10/10/2013

FIGURE 2



WATER & ENVIRONMENTAL TECHNOLOGIES, PC

BNSF LIVINGSTON
SHOP COMPLEX

SOIL VAPOR EXTRACTION
TYPICAL SURFACE
CONSTRUCTION DETAIL

LRGM01 T5

DATE: 10/10/2013

FIGURE 3

APPENDIX A

Task Health and Safety Plan

Date Approved by Kennedy/Jenks Consultants Regional Safety Supervisor:

Task Site Safety Officer: Patrick Thomson Phone: 406-782-5220

Task Field Site Safety Officer: Patrick Thomson Phone: 406-490-0329 (cell)

Task Description:
The Electric Shop SVE expansion and installation of a bedrock interface well addresses monitoring and cleanup of chlorinated volatile organic compounds (CVOCs) in vadose and saturated zone sediments around and beneath the Electric Shop and the underlying alluvial aquifer. New boreholes will be advanced across the northern end of the Electric Shop.

The Task involves advancing borings using conventional drilling techniques and completing borings as SVE wells including shallow sub-slab depressurization points, and collecting soil samples from the borings for characterization of CVOCs in soils and groundwater.

Additional health and safety procedures are explained herein. Field work performed during the Task will adhere to safety protocols specified in the *Facility-Wide Health and Safety Plan (Revision No. 3)* (HASP) dated May 2008.

Task-specific health and safety protocols, and additional health and safety protocols and/or deviations from the *Facility-Wide Health and Safety Plan (Revision No. 3)*, if applicable, are outlined in this task-specific HASP.

Summary Inf **Summary Information**

Activity	Approx. Start Date	Approx. Duration (Days)	Field Personnel	CPR	First Aid
Oversee advancement of soil borings and SVE well/system install	TBD	1 week	Patrick Thomson Steve Nichols John Babcock	X X X	X X X
Overseeing advancement of soil borings and completion of bedrock interface well.	TBD	1 days	Patrick Thomson Steve Nichols John Babcock TBD	X X X	X X X

HAZWOPER and BNSF Safety Training:

___No _x_Yes Field personnel 40-hour and 8-hour HAZWOPER trained.

Field personnel to wear a photographic identification badge and carry proof of current BNSF training when working at the Livingston railyard.

Applicable Sampling and Analysis Plan (SAP) and Standard Operating Guidelines (SOGs):

1. *Final Facility-Wide Sampling and Analysis Plan*

2. SOG-1, -2, -3, -4A, -4B, -5, -7, -8, -12, -13, -14, -15, -16 (Appendix A of *Final Facility-Wide Sampling and Analysis Plan*)

3. Task-specific SAP in *Task F Stage 1 – Part 2 Pilot Test Work Plan for VOC-Containing Alluvial Aquifer Groundwater*, Section 6.0.

Study Area:

The work area includes the area in the vicinity of the former Electric Shop.

Locations of new wells to be constructed and sampled are shown on Figure 2

Task involves work within 25 feet of track:

_**X**__No __Yes If yes, describe means of work clearance and track control:

If work is to be performed within 25 feet of track, Montana Rail Link (MRL) will be notified that a flagger will need to be present at the work area. The flagger will oversee worker safety at the work area.

Health and Safety Risks: Potential exposure to VOCs in soils and groundwater during drilling (boring advancement) and sampling procedures. Use caution for potential presence of black widow spiders in wellhead enclosures.

Physical Hazards:

Hazards associated with operating a drilling rig (noise, dust, overhead equipment falling, high-pressure pneumatic lines), underground utilities, equipment hauling, traffic control, and slip and trip. Potential electric hazards associated with operating SVE system.

Potential Chemical Hazards:

Chemicals of Concern	**TWA-PEL/TLV in parts per million (ppm)**
Tetrachloroethene	100 ppm / 25 ppm
Trichloroethene	100 ppm / 25 ppm
Cis-1,2-Dichloroethene	200 ppm / 25 ppm
Vinyl chloride	1 ppm / 1 ppm
Chlorobenzene	75 ppm / 75 ppm
1,4-Dichlorobenzene	75 ppm / 10 ppm
Sodium Permanganate	Not established

Personal Protective Equipment (PPE):

_**X**_Initial–Level D: Hard hat, boots (steel-toe and shank), safety glasses (with side shields), orange-reflective vest, and hearing protection as needed when at Livingston railyard and during investigation activities.

List additional equipment (e.g., boot covers, Tyvek® coveralls, etc.): Coveralls and latex/chemical resistant gloves, as necessary.

___Upgrade-Level C: All of above plus half-face respirator with _____ cartridges

Personal Protective Equipment (PPE) continued: Other: (describe): Wear chemical resistant overalls, nitrile gloves. Provide an eye wash kit with two bottles, 1-liter each of buffered eyewash solution at chemical feed/mixing tank area.

Safety Measures and Monitoring:

Follow *Facility-Wide Health and Safety Plan (Revision No. 3)* guidance. Do not enter any areas not intended for normal occupancy (e.g., confined spaces).

Criteria for upgrading PPE *(list threshold values in breathing zones, or other triggers for upgrading PPE)*: Withdraw from area and re-assess PPE requirements if there are noticeable odors in work area.

Work Zones:

Work zones will be established during construction of groundwater monitoring wells and advancement of soil boring. No special work zones will be established around the wellhead for groundwater sampling. All field personnel (including subcontractors) must check in/check out with site safety officer (SSO) or field site safety officer (FSSO) on a daily basis.

Other Work Requirements:

Work only in areas with proper illumination or bring sufficient lighting to assess area for hazards.

Community Protection Measures:

Activities associated with drilling/well installation will be conducted on the railroad property. Therefore, no community protection measures are warranted. If necessary, access to the area will be cordoned off with flagging and/or fences/barricades. Assure that field activities do not present a hazard to traffic movement.

Task-Specific Training or Medical Surveillance Requirements:

Task-Specific Hazardous Materials: Chlorinated volatile organic compounds present and adhered to vadose zone and saturated zone sediments.

Task-Specific Decontamination Procedures:

If accidentally exposed to chemicals, flush skin with water for 5 minutes. If chemicals get in eyes, flush with eyewash, then water, and seek medical attention.

Task-Specific Contact Telephone Numbers:

1. Patrick Thomson (406) 782-5220

2. See *Facility-Wide Health and Safety Plan (Revision No. 3)* (Table 3) for additional emergency contact information

Task-Specific Coordination Requirements with BNSF and MRL:

Schedule drilling activities with MRL prior to beginning activity.

Task-Specific Requirements from the Facility-Wide HASP:

Follow all applicable requirements of *Facility-Wide Health and Safety Plan (Revision No. 3)*.

Task-Specific Deviations from Facility-Wide HASP:

None

Emergency Response (Contingency) Plan:

See *Facility-Wide Health and Safety Plan (Revision No. 3)* (Section 7.0)

Hazardous Material Used for Task (Attach MSDSs and Submit to BNSF and MRL): See *Facility-Wide Health and Safety Plan (Revision No. 3)* (Appendix A – Hazard Communication and Material Safety Data Sheets. Sampling/field screening solutions
Map and Directions to Hospital: See attached figure.
SIGNATURES
Task Manager: Patrick Thomson (406) 782-5220
Project Manager: Dave Erickson (406) 782-5220 Cell (406) 490-2915
Site Safety Officer: Patrick Thomson (406) 490-0329

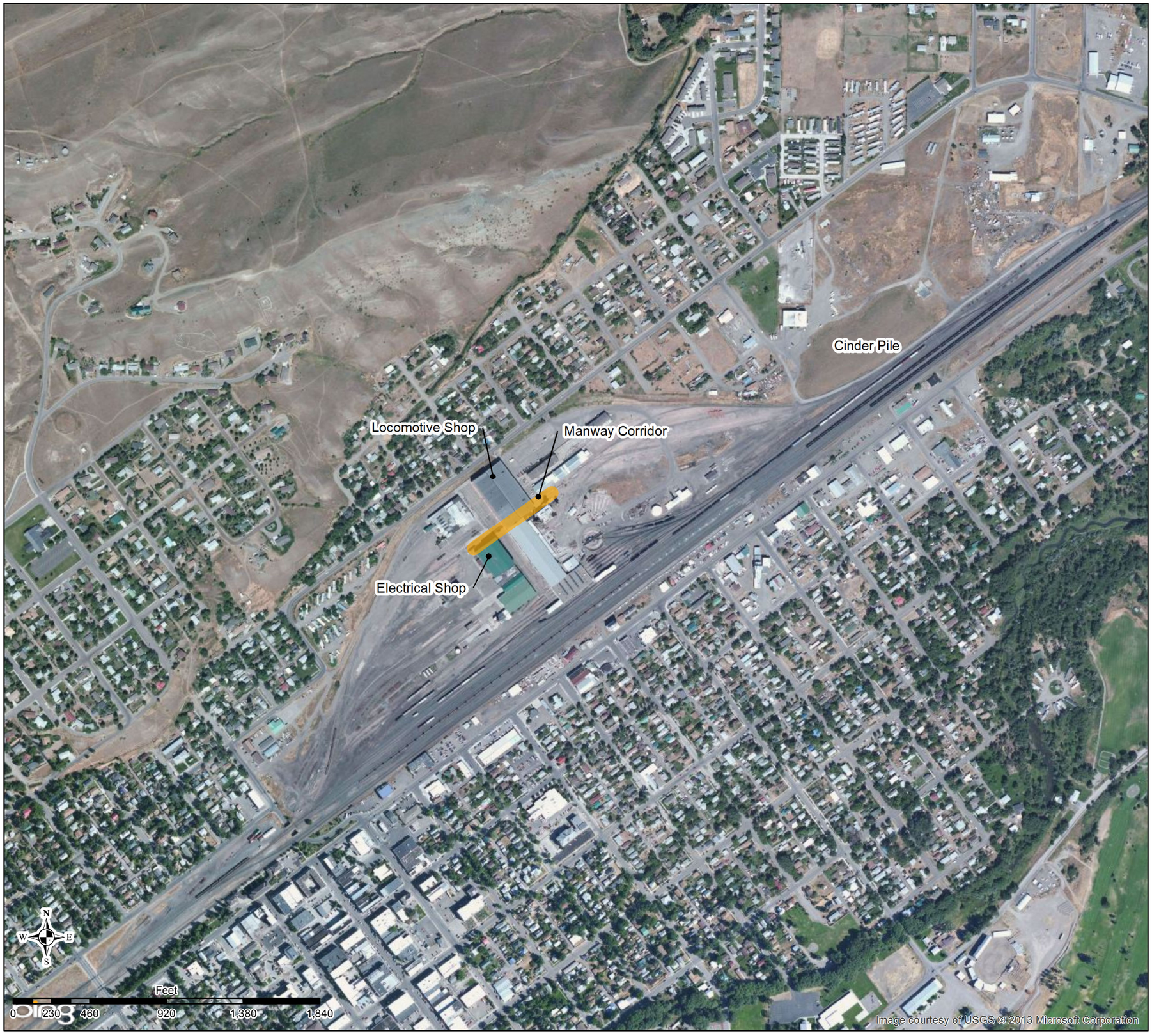
ATTACHMENTS

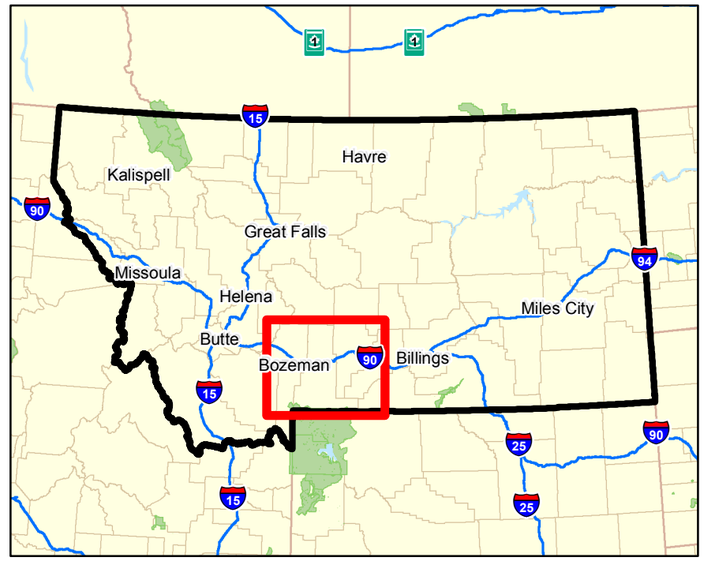
Attachment 1 – Locations of Field Activities
• Figure 2 from LRG *Sub-Slab Depressurization and Soil Vapor Expansion Work Plan for VOC-Containing Alluvial Aquifer Groundwater*

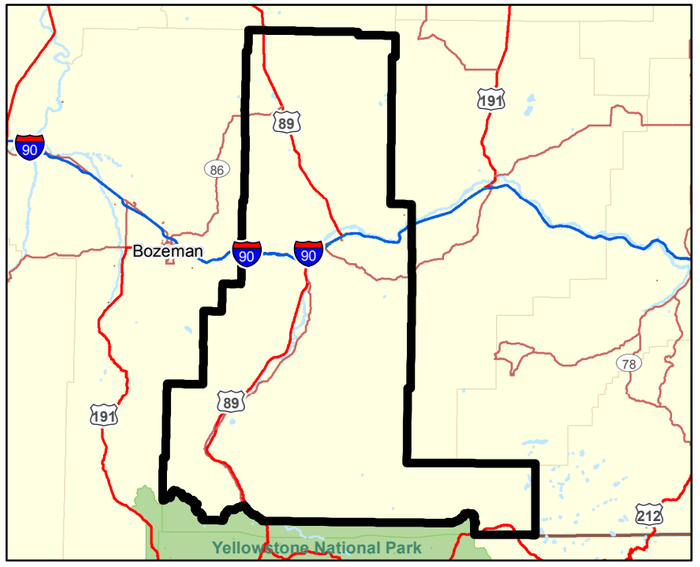
Attachment 2 – Route to Hospital
• Hospital Location and Route Map – Figure 3 from *Facility-Wide Health and Safety Plan Revision No. 3)*

Attachment 1

Locations of Field Activities







WATER & ENVIRONMENTAL TECHNOLOGIES, PC

SITE LOCATION

Burlington Northern Livingston Shop Complex

Job#: LRGM01 Task 3

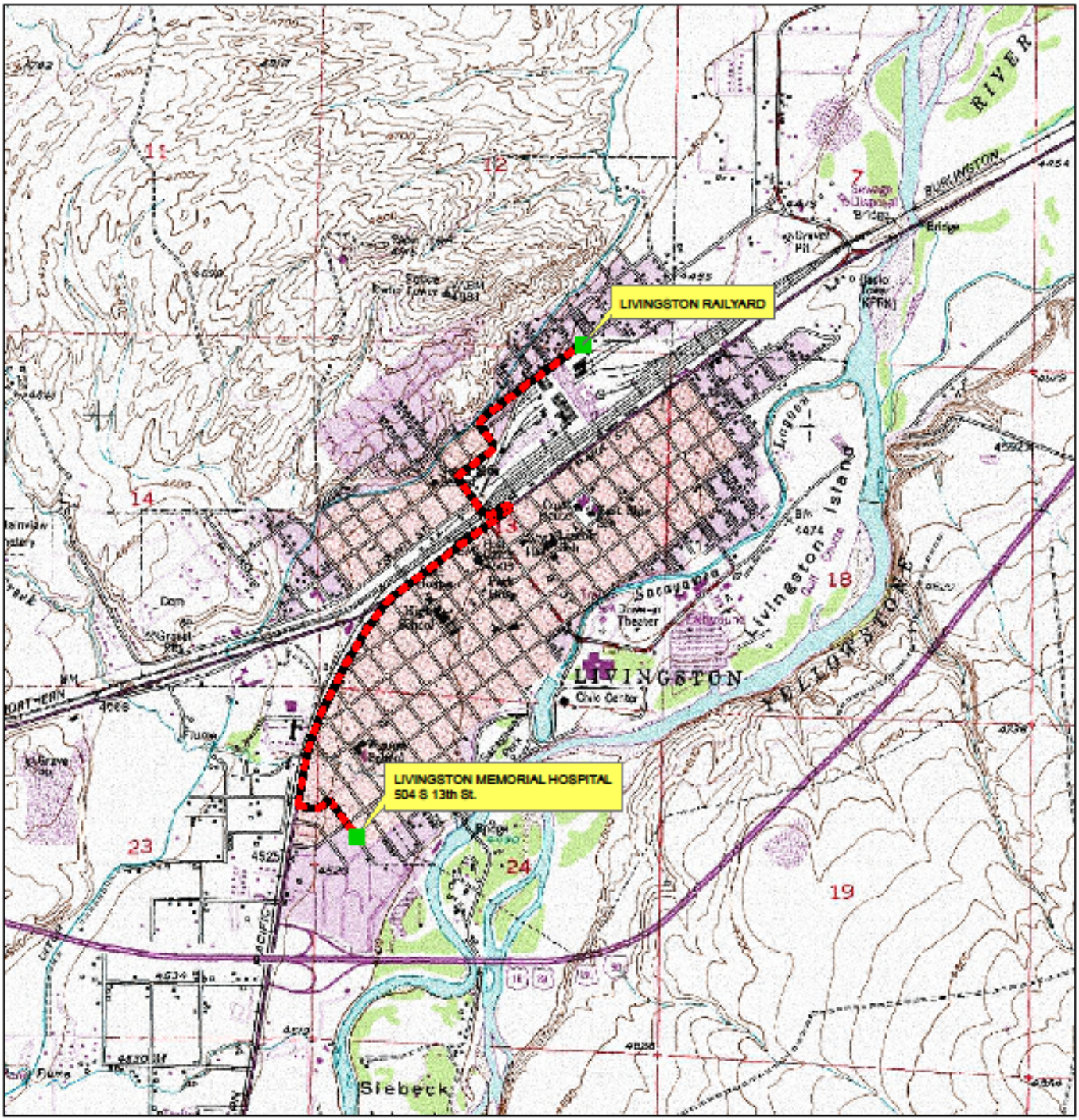
Date: 9/23/2013

FIGURE 1

Path: M:\LRGM01\Task4\Figure1.mxd, Author: jlsprowse

Attachment 2

Route to Hospital



Directions to Hospital

Proceed Southwest on E. Gallatin St.

Turn LEFT onto N. Main St.

Turn RIGHT onto Park St. (US-89)

Turn LEFT onto S. 13th St.

Hospital is on LEFT at 504 S. 13th St.

0 90 180 360 540 720 Miles

WATER & ENVIRONMENTAL TECHNOLOGIES, PC

DRIVING DIRECTIONS TO HOSPITAL

Livingston Montana

Job#: LRGM01

Date: 8/14/2013

FIGURE 2

APPENDIX B

Analysis of Environmental Requirements, Criteria, and Limitations

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
FEDERAL AND STATE CONTAMINANT SPECIFIC ERCLS		
Surface and Groundwater Quality Standards (Applicable)		
Section 75-5-605, Montana Code Annotated (MCA)	Causing of Pollution Section 75-5-605 of the Montana Water Quality Act prohibits the causing of pollution of any state waters. Section 75-5-103(21)(a)(i) defines pollution as contamination or other alteration of physical, chemical, or biological properties of state waters which exceeds that permitted by the water quality standards.	Activities proposed in the work plan will not impact surface water. To ensure the aquifer is not degraded/polluted, IDW generated during field activities associated with this task will be managed as outlined in the Facility-Wide SAP. A portion of this task is being conducted to evaluate the concentrations of volatile organic compounds (VOCs) in groundwater at the bedrock/alluvial interface. Groundwater results from this task will be compared to the groundwater cleanup levels presented in the Record of Decision (ROD) (DEQ 2001). All purge water will be treated to the groundwater cleanup levels presented in the ROD and will meet all applicable permit requirements as specified in Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to the hazardous and solid waste procedures specified in the Final Facility-Wide Sampling and Analysis Plan and the SAP Addendum (Facility-Wide SAP) (see in particular, Section 8.4 and Appendices 1 and 2). Bedrock interface wells will be drilled through the vadose zone and alluvial aquifer to the depth bedrock is encountered. The well will be constructed with a three-foot well screen resting on the alluvium/bedrock contact as described in Section 3.0 of the work plan. This will prevent the creation of a conduit from the contaminated alluvial aquifer into the potentially uncontaminated bedrock aquifer(s). Activities proposed in the this task SI Work Plan will not degrade water quality.
	Placement of Wastes Section 75-5-605, MCA states that it is unlawful to place or cause to be placed any wastes where they will cause pollution of any state waters. Any permitted placement of waste is not placement if the agency's permitting authority contains provisions for review of the placement of materials to ensure it will not cause pollution to state waters.	Investigation-derived waste (IDW) generated during field activities associated with this task will be managed as outlined in the Facility-Wide Sampling and Analysis Plan (Facility-Wide SAP). Management of IDW will not cause pollution of any state waters.
Section 75-5-303, MCA	Nondegradation Section 75-5-303, MCA states that existing uses of state waters and the level of water quality necessary to protect the uses must be maintained and protected, with certain limited exceptions. .	To ensure the aquifer is not degraded/polluted, IDW generated during field activities associated with this task will be managed as outlined in the Facility-Wide SAP. A portion of this task is being conducted to evaluate the concentrations of volatile organic compounds (VOCs) in groundwater at the bedrock/alluvial interface. Groundwater results from this task will be compared to the groundwater cleanup levels presented in the Record of Decision (ROD) (DEQ 2001). Bedrock interface wells will be drilled through the vadose zone and alluvial aquifer to the depth bedrock is encountered. The well will be constructed with a three-foot well screen resting on the alluvium/bedrock contact as described in Section 3.0 of the work plan. This will prevent the creation of a conduit from the contaminated alluvial aquifer into the potentially uncontaminated bedrock aquifer(s). Activities proposed in the this task SI Work Plan will not degrade water quality.
Groundwater Quality Standards		
40 Code of Federal Regulations (CFR) 141	Maximum Contaminant Levels and Maximum Contaminant Level Goals (Well-Suited) Because the aquifer affected by the site is currently and has been used as a drinking water source, the MCLs and non-zero MCLGs specified in 40 CFR Part 141 (Primary Drinking Water Standards) are well-suited requirements which are ultimately to be attained by the remedy for the site[1]. Because many of the MCLs are equivalent with the State groundwater standards, the Primary Drinking Water Standards are listed below with the State groundwater standards.	this task is being conducted to identify the presence, if any, and concentrations of VOCs in the alluvial aquifer groundwater. Groundwater results from this task will be compared to the groundwater cleanup levels presented in the ROD (DEQ 2001). All purge water will be treated to the groundwater cleanup levels presented in the ROD and will meet all applicable permit requirements as specified in Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to the hazardous and solid waste procedures specified in the Final Facility-Wide Sampling and Analysis Plan and the SAP Addendum (Facility-Wide SAP) (see in particular, Section 8.4 and Appendices 1 and 2). Bedrock interface wells will be drilled through the vadose zone and alluvial aquifer to the depth bedrock is encountered. The well will be constructed with a three-foot well screen resting on the alluvium/bedrock contact as described in Section 5.4 of the work plan. This will prevent the creation of a conduit from the contaminated alluvial aquifer into the potentially uncontaminated bedrock aquifer(s). Activities proposed in the this task SI Work Plan will not degrade water quality.
40 CFR 143.3	Secondary Maximum Contaminant Levels (Well-Suited) Because the aquifer affected by the site is currently and has been used as a drinking water source, the Secondary Maximum Contaminant Levels (SMCLs) specified in 40 CFR Part 143.3 are well-suited requirements which are ultimately to be attained by the remedy for the site. 40 CFR 143.3 contains standards for color, odor (3 threshold odor number) and corrosivity which are well-suited to the remedial action.	
Administrative Rules of Montana (ARM) 17.30.1006	Montana Groundwater Pollution Control System (Applicable) ARM 17.30.1006 classifies groundwater into Classes I through IV based upon its specific conductance and establishes the groundwater quality standards applicable with respect to each groundwater classification. Based upon its specific conductance, the groundwater at the site must meet the standards for Class I groundwater. These standards are applicable. Concentrations of substances in Class I may not exceed the human health standards for groundwater listed in department Circular WQB-7.[2] For the primary contaminants of concern, the Circular WQB-7 standards and MCLs are listed below. For all contaminants of concern except vinyl chloride, the MCLs and Circular WQB-7 standards are equivalent.[3] All levels are ug/l and are dissolved phase. VOCs: Tetrachloroethene - 5.0; Trichloroethene - 5.0; Cis-1,2-Dichloroethene - 70; Vinyl chloride - 0.15; Chlorobenzene - 100; 1,4-Dichlorobenzene - 75 PAHs (SVOCs): Acenaphthene - 420; Anthracene - 2,100; Benzo(a)anthracene - 0.48; Benzo(a)pyrene - 0.048; Benzo(b)fluoranthene - 0.48; Benzo(k)fluoranthene - 4.79; Chrysene - 48; Dibenzo(a,h)anthracene - 0.048; Fluoranthene - 280; Fluorene - 280; Indeno(1,2,3-cd)pyrene - 0.48; Naphthalene - 28; Pyrene - 210 Lead - 15	To ensure the aquifer is not degraded/polluted, IDW generated during field activities associated with this task will be managed as outlined in the Facility-Wide SAP. A portion of this task is being conducted to evaluate the concentrations of volatile organic compounds (VOCs) in groundwater at the bedrock/alluvial interface. Groundwater results from this task will be compared to the groundwater cleanup levels presented in the Record of Decision (ROD) (DEQ 2001). All purge water will be treated to the groundwater cleanup levels presented in the ROD and will meet all applicable permit requirements as specified in Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to the hazardous and solid waste procedures specified in the Final Facility-Wide Sampling and Analysis Plan and the SAP Addendum (Facility-Wide SAP) (see in particular, Section 8.4 and Appendices 1 and 2). Bedrock interface wells will be drilled through the vadose zone and alluvial aquifer to the depth bedrock is encountered. The well will be constructed with a three-foot well screen resting on the alluvium/bedrock contact as described in Section 5.4 of the work plan. This will prevent the creation of a conduit from the contaminated alluvial aquifer into the potentially uncontaminated bedrock aquifer(s). Activities proposed in the this task SI Work Plan will not degrade water quality.
ARM 17.30.1011	ARM 17.30.1011 provides that any groundwater whose existing quality is higher than the standard for its classification must be maintained at that high quality unless degradation may be allowed under the principles established in Section 75-5-303, MCA, and the nondegradation rules at ARM Title 17,chapter 30, subchapter 7.	
Surface Water Quality Standards (Applicable)		

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
Montana Water Quality Act, Section 75-5-101, et seq., MCA Federal Clean Water Act, 33 U.S.C. §§ 1251, et seq.	The Montana Water Quality Act, Sections 75-5-101 et seq., establishes requirements for restoring and maintaining the quality of surface and ground waters and the federal Clean Water Act, 33 U.S.C. Sections 1251 et seq., establishes requirements for restoring and maintaining the quality of surface waters. Under these Acts the state has authority to adopt water quality standards designed to protect beneficial uses of each water body and to designate uses for each water body. Montana's regulations classify state waters according to quality, place restrictions on the discharge of pollutants to state waters and prohibit the degradation of state waters.	To ensure state waters are not degraded/polluted, IDW generated during field activities associated with this task will be managed as outlined in the Facility-Wide SAP. All purge water will be treated to the groundwater cleanup levels presented in the ROD and will meet all applicable permit requirements as specified in Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or disposed of according to the hazardous and solid waste procedures specified in the Facility-Wide SAP.
ARM 17.30.611	ARM 17.30.611(1) (Applicable) provides that the waters of the Yellowstone River drainage upstream of the Laurel water supply intake, which includes the Livingston area, are classified "B-1" for water use.	
ARM 17.30.623	ARM 17.30.623 provides that concentrations of carcinogenic, bioconcentrating, toxic or harmful parameters which would remain in the water after conventional water treatment may not exceed the applicable standards set forth in department Circular WQB-7.	
WQB-7 standards	WQB-7 provides that "For surface waters the Standard is the more restrictive of either the Aquatic Life Standard or the Human Health Standard." For the primary Contaminants of Concern the Circular WQB-7 standards are the same as listed above in groundwater.	
ARM 17.30.623	The B-1 classification standards at ARM 17.30.623 also include the following criteria: 1) Dissolved oxygen concentration must not be reduced below the levels given in department Circular WQB-7; 2) Hydrogen ion concentration (pH) must be maintained within the range of 6.5 to 9.5; 3) the maximum allowable increase above naturally occurring turbidity is 5 nephelometric turbidity units; 4) Temperature increases must be kept within prescribed limits; 5) No increase are allowed above naturally occurring concentrations of sediment, settleable solids, oils, floating solids, which will or is likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish or other wildlife. 6) True color must be kept within specified limits.	
ARM 17.30.637	ARM 17.30.637 which prohibits discharges containing substances that will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; (e) create conditions which produce undesirable aquatic life.	
ARM 17.30.705	ARM 17.30.705 provides that for any surface water, existing and anticipated uses and the water quality necessary to protect these uses must be maintained and protected unless degradation is allowed under the nondegradation rules at ARM 17.30.708.	
Water Quality Act, Title 17, Chapter 30, Sub-Chapters 6 and 13 and ARM 17.30.1332	Stormwater Runoff (Applicable) Pursuant to authority under the Water Quality Act, Title 17, Chapter 30, Sub-Chapter 6, and Title 17, Chapter 30, Sub-Chapter 13, including ARM 17.30.1332, the Water Quality Division issues general stormwater permits for certain activities. For construction activities, the following permit must be obtained: General Discharge Permit for Storm Water Associated with Construction Activity, Permit No. MTR100000 (May 19, 1997). Generally, the permits require the permittee to implement Best Management Practices (BMP) and to take all reasonable steps to minimize or prevent any discharge which has a reasonable likelihood of adversely affecting human health or the environment. However, if there is evidence indicating potential or realized impacts on water quality due to any storm water discharge associated with the activity, an individual MPDES permit or alternative general permit may be required.	Activities proposed in the this task work plan will not impact surface water runoff at the Facility.
Ambient Air Quality Standards (Applicable)		
	The following standards are applicable at the site[4]:	Although particulates may be generated during well installation, activities proposed in this task are not expected to result in exceedances of ambient air quality standards. Well installation will include wetting and other best management practices related to fugitive dust control. Remedial actions will be halted if significant dust is generated and will not resume until adequate dust control measures are in place. These dust control measures will ensure that ambient air standards will not be exceeded during the proposed remedial action.

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
40 CFR 50.12 and ARM 17.8.222	40 CFR 50.12 and ARM 17.8.222. Ambient air quality standard for lead. Lead concentrations in the ambient air shall not exceed the following 90-day average: 1.5 micrograms lead per cubic meter of air.	
40 CFR 50.9 and ARM 17.8.213 40 CFR 50.10	40 CFR 50.9 and ARM 17.8.213. Ambient air quality standard for ozone. No person shall cause or contribute to concentrations of ozone in the ambient air exceeding: 0.10 ppm 1-hour average (0.12 ppm federal standard). 40 CFR 50.10 establishes a daily	
ARM 17.8.220	ARM 17.8.220. Ambient air quality standard for settled particulate matter. Particulate matter concentrations in the ambient air shall not exceed the following 30-day average: 10 grams per square meter.	
40 CFR 50.6 and ARM 17.8.223	40 CFR 50.6 and ARM 17.8.223. Ambient air quality standards for PM-10. PM-10 concentrations in the ambient air shall not exceed the following standards: 150 micrograms/cubic meter of air, 24-hour average; and 50 micrograms/cubic meter of air, expected annual average.	Although particulates may be generated during well installation, activities proposed in the this task are not expected to result in exceedances of ambient air quality standards.
40 CFR 50.8 and ARM 17.8.212	40 CFR 50.8 and ARM 17.8.212. Ambient air quality standards for carbon monoxide. Carbon monoxide concentrations in the	
Emission Standards (Applicable)		
Sections 75-2-101, et seq., MCA,	Montana has promulgated standards to regulate emissions of certain contaminants into the air. The state emission standards are enforceable under the Montana Clean Air Act, Sections 75-2-101 et seq., MCA.	Although particulates may be generated during well installation, activities proposed in the this task are not expected to result in exceedances of ambient air quality standards.
ARM 17.8.304	ARM 17.8.304. Visible Air Contaminants. No source may discharge emissions into the atmosphere that exhibit an opacity of 20 percent or greater, averaged over six consecutive minutes. This standard is limited to point sources, but excludes wood waste burners, incinerators, and motor vehicles.	
ARM 17.8.308	ARM 17.8.308. Airborne Particulate Matter. Emissions of airborne particulate matter from any stationary source shall not exhibit an opacity of 20 percent or greater, averaged over six consecutive minutes. This standard applies to the production, handling,	
ARM 17.8.315	ARM 17.8.315. Odors. If a business or other activity will create odors, those odors must be controlled, and no business or activity may cause a public nuisance.	Activities proposed in the this task work plan will not generate odors. No open burning will be conducted during implementation of this task.
ARM 17.8.604	ARM 17.8.604. Prohibited open burning. Open burning of numerous specific materials, including but not limited to oil and petroleum products and hazardous wastes, is prohibited.	
ARM 17.8.705	ARM 17.8.705 requires that permits be obtained for the construction, installation, alteration, or use of specified air contaminant sources. All air permits required for remedial actions must be obtained.	Activities proposed in the this task work plan do not require air permits.
ARM 17.8.715	ARM 17.8.715 requires sources for which air quality permits are required to use best available control technology (BACT) or to meet the lowest achievable emission rate (LAER), as applicable.	
FEDERAL LOCATION SPECIFIC ERCLS		
Criteria Classification of Solid Waste Disposal Facilities and Practices (Applicable and Well-Suited)		
40 CFR 257	Under the selected remedy, no solid or hazardous waste (other than media treated to cleanup levels) may be disposed on-site. The standards therefore are pertinent to the cinder pile (well-suited) and placement of ex situ soils treated to cleanup levels (applicable) and post-jurisdictional wastes (applicable). The criteria contained in 40 CFR Part 257, establish standards with which solid waste disposal must comply to avoid possible adverse effects on health or the environment. 40 CFR Part 257 includes the following standards: Section 257.3-1(a) requires that facilities or practices in the floodplain not result in the washout of solid waste so as to pose a hazard to human life, wildlife, or land or water resources. Section 257.3-2 provides for the protection of threatened or endangered species. Section 257.3-3 provides that a facility shall not cause the discharge of pollutants into waters of the United States. Section 257.3-4 states that a facility or practice shall not contaminate underground drinking water.	IDW (i.e., soil, water) will be generated during implementation of this task. Depending on the constituents and concentrations present and upon approval from the Montana Department of Environmental Quality (DEQ), this soil or water may be landspread at the Livingston railyard, or treated, if feasible, and landspread at the Livingston railyard. Alternatively, non-hazardous IDW will be disposed off of the Facility at an appropriate permitted disposal facility. See the Facility-Wide SAP for additional information on how non-hazardous IDW will be managed to comply with these ERCLs. Landspreading of soil and water, if approved by DEQ, will not occur in areas of a floodplain, will not be conducted in a manner to cause discharge of pollutants into water, and will not be conducted in a manner that contaminates underground drinking water sources or impacts endangered or threatened species. Other IDW or solid waste generated during implementation of this task will be disposed off of the Facility at an appropriate permitted disposal facility.
The Endangered Species Act (Well-Suited)		
16 U.S.C. §§ 1531 – 1544, 50 CFR Part 402, 40 CFR 6.302(h), 40 CFR 257.3-2	This statute and implementing regulations (16 U.S.C. § 1531 et seq., 50 CFR Part 402, 40 CFR 6.302(h), and 40 CFR 257.3-2) require that any federal activity or federally authorized activity may not jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify a critical habitat. Compliance with this requirement involves consultation with the U.S. Fish and Wildlife Service (USFWS) and a determination of whether there are listed or proposed species or critical habitats present at the Site, and, if so, whether any proposed activities will impact such wildlife or habitat. No endangered or threatened species was identified onsite although the Yellowstone Trout is treated as a species of special concern by the State. Any action affecting federal or State endangered or threatened species must comply with all listed requirements.	Activities proposed in the this task work plan will not impact endangered species. According to the ROD, no endangered species or threatened species were identified at the Facility, although the Yellowstone Trout is treated as a species of special concern by the State.

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
Sections 87-5-106, -107, -111, and -201, MCA ARM 12.5.201	Sections 87-5-106, 107, and 111, MCA (Applicable): Endangered species should be protected in order to maintain and to the extent possible enhance their numbers. These sections list endangered species, prohibited acts and penalties. See also, §§ 87-5-106 and 87-5-201, MCA, (Applicable) concerning protection of wild birds, nests and eggs. ARM 12.5.201 (Applicable). Certain activities are prohibited with respect to specified endangered species.	
Migratory Bird Treaty Act (Well-Suited)		
16 U.S.C. §§ 703, et seq.	This requirement (16 U.S.C. § 703 et seq.) establishes a federal responsibility for the protection of the international migratory bird resource and requires continued consultation with the USFWS during remedial design and remedial action to ensure that the cleanup of the site does not unnecessarily impact migratory birds.	Activities proposed in the this task work plan will not impact migratory birds. Migratory birds may be present near the Facility. However, the Livingston railyard does not provide the majority of habitat for these species relative to the surrounding area, and no features exist that are particularly attractive to these species.
Bald Eagle Protection Act (Well-Suited)		
16 U.S.C. §§ 668, et seq.	This requirement (16 U.S.C. § 668 et seq.) establishes a federal responsibility for protection of bald and golden eagles, and requires continued consultation with the USFWS during remedial design and remedial action to ensure that any cleanup of the site does not unnecessarily adversely affect the bald and golden eagle.	Activities proposed in the this task work plan will not impact bald eagles. Bald eagles may be present near the Facility. However, the Livingston railyard does not provide the majority of habitat for these species relative to the surrounding area, and no features exist that are particularly attractive to these species.
Historic Sites, Buildings, Objects, and Antiquities Act (Well-Suited)		
16 U.S.C. 461, et seq.	These requirements, found at 16 U.S.C. 461 et seq., provide that, in conducting an environmental review of a proposed action, the responsible official shall consider the existence and location of natural landmarks using information provided by the National Park Service pursuant to 36 CFR 62.6(d) to avoid undesirable impacts upon such landmarks. No historic sites were identified.	Activities proposed in the this task work plan will not impact historic sites. According to the ROD, no historic sites were identified at the Livingston railyard.
Fish and Wildlife Coordination Act (Well-Suited)		
16 U.S.C. 661, et seq. and 40 CFR 6.302(g)	These standards are found at 16 U.S.C. § 661 et seq. and 40 CFR 6.302(g) and require that federally funded or authorized projects ensure that any modification of any stream or other water body affected by a funded or authorized action provide for adequate protection of fish and wildlife resources.	Activities proposed in the this task work plan do not involve the modification of any stream or other water body.
Floodplain Management Order (Well-Suited)		
40 CFR Part 6, Appendix A, Executive Order No. 11,988	This requirement (40 CFR Part 6, Appendix A, Executive Order No. 11,988) mandates that federally funded or authorized actions within the 100 year floodplain avoid, to the maximum extent possible, adverse impacts associated with development of a floodplain.	Activities proposed in the this task work plan do not involve any work in the floodway or floodplain and are not anticipated to impact the floodway or floodplain.
Protection of Wetlands Order (Well-Suited)		
40 CFR Part 6, Appendix A, Executive Order No. 11,990 Section 404(b)(1), 33 U.S.C. Section 1344(b)(1)	This requirement (40 CFR Part 6, Appendix A, Executive Order No. 11,990) mandates that federal agencies and potentially responsible parties avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if a practicable alternative exists. Section 404(b)(1), 33 U.S.C. § 1344(b)(1), also prohibits the discharge of dredged or fill material into waters of the United States. Together, these requirements create a "no net loss" of wetlands standard.	According to Montana's Natural Resource Information System (NRIS), no wetlands have been identified in the Livingston area. Activities proposed in the this task work plan will not impact wetlands.
STATE LOCATION SPECIFIC ERCLS		
Solid Waste Management Regulations (Applicable and Well-Suited)		
Solid Waste Management Act, Sections 75-10-201 et seq., MCA	Regulations promulgated under the Solid Waste Management Act, Sections 75-10-201 et seq., MCA, specify requirements that apply to the location of any solid waste management facility. Under the selected remedy, no solid or hazardous waste (other than media treated to cleanup levels) may be disposed on-site. The standards therefore are pertinent to the cinder pile (well-suited) and placement of ex situ soils treated to cleanup levels (applicable) and post-jurisdictional wastes (applicable).	Non-hazardous IDW such as personal protective equipment (PPE) and IDW (i.e., soil, water) that has determined to be nonhazardous through analytical testing and receipt of a "no longer contained-in" determination from DEQ, if applicable, will be contained in 55-gallon drums or other appropriate containers and temporarily stored in a centralized storage area pending characterization and final disposition. If investigation-derived soil or water cannot be landspread at the Livingston railyard, it will be disposed off of the Facility along with other non-hazardous IDW at an appropriate permitted disposal facility. Any other solid waste (i.e., plastic wrapping, cardboard, non-indigenous waste, etc.) will be contained in a plastic bag (if necessary) [double-bagged (if necessary)], and placed in a garbage can for collection and appropriate disposal as solid waste. Activities proposed in the this task work plan do not involve the cinder pile or propose treatment of soil. If treatment of soil is proposed, a SAP addendum containing a treatment plan will be submitted to DEQ as discussed in Section 8.4.2 of the Facility-Wide SAP. See Section 8.4 of the Facility-Wide SAP for additional information regarding the management of IDW.

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
ARM 17.50.505(1)	Under ARM 17.50.505(1), a facility for the treatment, storage or disposal of solid wastes: (a) must be located where a sufficient acreage of suitable land is available for solid waste management; (b) may not be located in a 100-year floodplain; (c) may be located only in areas which will prevent the pollution of ground and surface waters and public and private water supply systems; (d) must be located to allow for reclamation and reuse of the land; (e) drainage structures must be installed where necessary to prevent surface runoff from entering waste management areas; and (f) where underlying geological formations contain rock fractures or fissures which may lead to pollution of the ground water or areas in which springs exist that are hydraulically connected to a proposed disposal facility, only Class III disposal facilities may be approved.	IDW (i.e., soil, water) generated during implementation of this task will be contained in 55-gallon drums or other appropriate containers and stored inside/near the Forest Products Building and/or the Former C&P Packing Building (see Section 8.4.4.1 of Facility-Wide SAP). The Forest Products Building and/or Former C&P Packing Building and surrounding areas represent sufficient acreage for IDW management. These buildings are not located in the 100-year floodplain. IDW will be stored in appropriate containers to prevent pollution of groundwater, surface water, and public and private water supply systems. See Section 8.4 of the Facility-Wide SAP for additional information regarding the management of IDW.
Floodplain and Floodway Management Act and Regulations (Applicable)		
	A portion of the site is in a designated floodplain. The following standards are included here to indicate the restrictions on any related activities that might occur in or affect the floodway or floodplain.	Activities proposed in the this task work plan do not involve any work in the floodway or floodplain and are not anticipated to impact the floodway or floodplain.
Section 76-5-401, MCA and ARM 36.15.601	Residential, certain agricultural, industrial-commercial, recreational and other uses are permissible within the designated floodway, provided they do not require structures other than portable structures, fill or permanent storage of materials or equipment. Section 76-5-401, MCA; ARM 36.15.601.	
Section 76-5-402, MCA and ARM 36.15.701	In the flood fringe (i.e., within the floodplain but outside the floodway), residential, commercial, industrial, and other structures may be permitted subject to certain conditions relating to placement of fill, roads, and floodproofing. Section 76-5-402, MCA; ARM 36.15.701.	
ARM 36.15.602(6)	Domestic water supply wells may be permitted, even within the floodway, provided the well casing and well meets certain conditions. ARM 36.15.602(6).	
ARM 36.15.602(5), 36.15.605, and 36.15.703	Solid and hazardous waste disposal and storage of toxic, flammable, hazardous, or explosive materials are prohibited anywhere in floodways or floodplains. ARM 36.15.602(5), 36.15.605, and 36.15.703.	
Section 76-5-402, MCA	The following are prohibited in a floodway: buildings for living purposes or place of assembly or permanent use by human beings; any structure or excavation that will cause water to be diverted from the established floodway, cause erosion, obstruct the natural	
Section 76-5-406, MCA and ARM 36.15.216	Section 76-5-406, MCA and ARM 36.15.216 contain substantive factors which address obstruction or use within the floodway or floodplain.	
ARM 36.15.604, ARM 36.15.602(1), and ARM 36.15.603	Further conditions or restrictions that generally apply to specific activities within the floodway or floodplain can be found at ARM 36.15.604 (increase in upstream elevation or significantly increase flood velocities); ARM 36.15.602(1) (excavation of material from pits or pools); ARM 36.15.603 (water diversions or changes in place of diversion).	
ARM 36.15.701(3)(c)	ARM 36.15.701(3)(c) requires that roads, streets, highways and rail lines must be designed to minimize increases in flood heights.	
ARM 36.15.701(3)(d)	Structures and facilities for liquid or solid waste treatment and disposal must be floodproofed to ensure that no pollutants enter	
ARM 36.15.702(2)	Standards applied to residential, commercial or industrial structures are found at ARM 36.15.702(2).	
ARM 36.15.606	Flood control works are subject to ARM 36.15.606, which requires compliance with safety standards for levees, floodwalls, and	
ARM 36.15.901	ARM 36.15.901 requires electrical systems to be flood-proofed.	
FEDERAL AND STATE ACTION SPECIFIC ERCLS		
Federal Hazardous Waste Management Regulations (Applicable)		

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Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
42 U.S.C. §§ 6901 et seq., and Montana Hazardous Waste Act, Sections 75-10-401 et seq., MCA	The Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sections 6901 et seq., and the Montana Hazardous Waste Act, Sections 75-10-401 et seq., MCA, and regulations under these acts establish a regulatory structure for the generation, transportation, treatment, storage and disposal of hazardous wastes. These requirements are applicable to substances and actions at the site which involve the active management of hazardous wastes. Burlington Northern operated the site and generated waste through 1986-7. Therefore, in certain instances, disposal was not pre-jurisdictional and the hazardous waste requirements are applicable now. However, DEQ does not have the documentation showing the dates of individual discharges, and therefore has, for purposes of this ROD, made a determination to treat all historic waste and media containing waste as pre-jurisdictional (in accord with the NCP and EPA guidance). Therefore, under this ROD, the historic waste which is characteristic or listed becomes hazardous upon excavation (generation).	These activities are being conducted in the area containing F-listed constituents, IDW generated during the pilot test will be suspected of containing F-listed constituents and will be managed as a hazardous waste unless analytical testing shows otherwise (i.e., no detections of PCE, or detections of PCE below the relevant ROD cleanup levels and receipt of a "no longer contained-in" determination from DEQ under RCRA). Any hazardous IDW (i.e., soil, water) generated during implementation of this task will be managed as outlined in the Facility-Wide SAP, in accordance with the applicable requirements of these ERCLs. While DEQ has the authority to waive non-substantive permit requirements for remedial actions conducted entirely at the Facility, that authority does not extend to permitted activities such as transporting and disposing of hazardous waste off of the Facility. DEQ has determined that a hazardous waste transporter is not required to transport hazardous waste from a work area to the centralized storage area, provided transportation remains within the Facility. If hazardous waste needs to be transported outside the Facility, a hazardous waste transporter will be used and the hazardous waste will be manifested, labelled and containerized. Any hazardous IDW generated during implementation of this task will be contained in 55-gallon drums or tank(s) and stored inside/near the Forest Products Building and/or the Former C&P Packing Building (see Section 8.4.4 of Facility-Wide SAP). Figures 4, 5, and 6 in the Facility-Wide SAP depict how IDW generated during implementation of this task will be disposed of in accordance with these ERCLs.
		Environmental samples containing RCRA-regulated constituents submitted to the analytical laboratory are exempt from RCRA; however, they become subject to RCRA again when they are disposed of by the analytical laboratory. Analytical laboratory will dispose of environmental samples in accordance with state and federal regulations.
Identification and Listing of Hazardous Waste		
40 CFR 261 ARM 17.54.501-502	Wastes may be designated as hazardous by either of two methods: listing or demonstration of a hazardous characteristic. Listed wastes are the specific types of wastes determined by EPA to be hazardous as identified in 40 CFR Part 261, Subpart D (40 CFR 261.30 - 261.33). Listed wastes are designated hazardous by virtue of their origin or source, and must be managed as hazardous wastes regardless of the concentration of hazardous constituents. Characteristic wastes are those that by virtue of concentrations of hazardous constituents demonstrate the characteristic of ignitability, corrosivity, reactivity or toxicity, as described at 40 CFR Part 261, Subpart C. Certain of the wastes at the site demonstrate the characteristic of toxicity, and are therefore characteristic hazardous wastes upon excavation. The site also contains F001 and F002 which are listed hazardous wastes for chlorinated solvents. The various media and wastes at the site contaminated by the F001 and F002 wastes are also hazardous wastes pursuant to 40 CFR Part 261 upon excavation. The RCRA requirements specified below are applicable requirements for the treatment, storage and disposal of these wastes. See 40 CFR 261.31 (Hazardous Waste Numbers F001 and F002) and ARM 17.54.501. These ERCLs apply to remedial activities; on-going operations must comply with State and federal requirements and permits. EPA has advised EPA Regions and States that conservative, health-based levels derived from direct exposure pathways would clearly be acceptable as "contained-in" levels. [See memorandum from Sylvia K. Lowrance to Jeff Zelikson, Region IX, (January 24, 1989)]. EPA and many States specify conservative, risk-based levels calculated with standard conservative exposure assumptions (usually based on unrestricted access), or site-specific risk assessments. 61 FR at 18795 (April 29, 1996); 63 FR 28556 (May 26, 1998) [Part I of II]. For the BN Livingston Shop Complex, soils treated to below cleanup levels will be allowed to return to the site (from, for example, the electric shop) to an approved location in compliance with RCRA. For media which contain hazardous waste, all standards are applicable except for disposal requirements for "contained-out" soils. For all non-media wastes, the standards are applicable. However, no on-site disposal of hazardous waste is allowed under the selected remedy. Therefore, all hazardous wastes, including all media not treated to cleanup levels must be disposed off-site at a regulated subtitle C facility. These standards specifically apply to free product removed from within the solvent plume. For free product removed from outside the solvent plume 40 CFR Part 279 is applicable.	These activities are being conducted in the area containing F-listed constituents, IDW generated during the pilot test will be suspected of containing F-listed constituents and will be managed as a hazardous waste unless analytical testing shows otherwise (i.e., no detections of PCE, or detections of PCE below the relevant ROD cleanup levels and receipt of a "no longer contained-in" determination from DEQ under RCRA). IDW (i.e., soil, water) generated during implementation of this task will be designated hazardous or non-hazardous based on analytical testing and will be managed accordingly as outlined in the Facility-Wide SAP in accordance with these ERCLs. Any IDW that contains a listed waste will be managed as a hazardous waste until BNSF seeks and obtains a "no longer contained in" determination from DEQ, as appropriate.
ARM 17.53.111 and 112, MCA	Because of the presence of listed and characteristic hazardous waste, the permit requirements specified in ARM 17.53.112 are applicable. However, DEQ is exempting remedial actions involving hazardous waste from RCRA permit requirements pursuant to 75-10-721(3), MCA (1993) as long as substantive requirements are met. This does not, however, affect the requirement to comply with ARM 17.53.111, Registration and EPA Identification Numbers for Generators and Transporters. Workplans will require detailed information on compliance with all procedural and substantive standards (as well as all ERCLs).	BNSF has obtained a hazardous waste identification number for the Livingston railyard (EPA ID No. MTT310010087).

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ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
Standards for Transporters of Hazardous Waste		
40 CFR Part 263	The RCRA regulations at 40 CFR Part 263, establish standards that apply to transporters of hazardous waste. These standards include requirements for immediate action for hazardous waste discharges. These standards are applicable for any on-site transportation. These standards are independently applicable (see Other Laws section) for any off-site transportation.	Any hazardous IDW (i.e., soil, water) generated during implementation of this task will be managed/transported in accordance with the Facility-Wide SAP. DEQ has determined that a hazardous waste transporter is not required to transport hazardous waste from a work area to the centralized storage area, provided transportation remains within the Facility. If hazardous waste needs to be transported outside the Facility, a hazardous waste transporter will be used and the hazardous waste will be manifested, labelled and containerized. Hazardous waste that is disposed off of the Facility at a permitted hazardous waste (Subtitle C) disposal facility will be transported by a hazardous waste transporter and will be manifested.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities		
40 CFR 264, Subpart B	General Facility Standards The regulations at 40 CFR 264, Subpart B, establish general facility requirements. These standards include requirements for general waste analysis, security and location standards.	Any hazardous IDW (i.e., soil, water) generated during implementation of this task will be managed in accordance with the Facility-Wide SAP.
40 CFR 264, Subpart F	Releases from Solid Waste Management Units The regulations at 40 CFR 264, Subpart F, establish requirements for groundwater protection for RCRA-regulated solid waste management units (i.e., waste piles, surface impoundments, land treatment units, and landfills). The regulations at Subpart F establish monitoring requirements for RCRA-regulated solid waste management units (i.e., waste piles, surface impoundments, land treatment units, and landfills). Subpart F provides for three general types of groundwater monitoring: detection monitoring (40 CFR 264.98); compliance monitoring (40 CFR 264.99); and corrective action monitoring (40 CFR 264.100). Monitoring wells must be cased according to 264.97(c). Monitoring is required during the active life of a hazardous waste management unit. If hazardous waste remains, monitoring is required for a period necessary to protect human health and the environment.	IDW (i.e., soil, water) generated during implementation of this task will be appropriately containerized and stored in drums, tanks or other appropriate containers, as described in Section 8.4.4 of the Facility-Wide SAP.
40 CFR Part 264, Subpart G	Closure and Post-Closure Monitoring and Maintenance of Waste Management or Disposal Facilities 40 CFR Part 264, Subpart G, establishes that hazardous waste management facilities must be closed in such a manner as to (a) minimize the need for further maintenance and (b) control, minimize or eliminate, to the extent necessary to protect public health and the environment, post-closure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff or hazardous waste decomposition products to the ground or surface waters or to the atmosphere. Requirements for facilities requiring post-closure care include the following: the facilities must undertake appropriate monitoring and maintenance actions, control public access, and control postclosure use of the property to ensure that the integrity of the final cover, liner, or containment system is not disturbed. In addition, all contaminated equipment, structures and soil must be properly disposed of or decontaminated unless exempt and free liquids must be removed or solidified, the wastes stabilized, and the waste management unit covered.	IDW (i.e., soil, water) generated during implementation of this task will be either landspread at the Livingston railyard (with DEQ approval), incorporated into the final remedy (with DEQ approval), or removed from the Facility and disposed of at a permitted disposal facility (hazardous or non-hazardous, as appropriate). IDW generated during the this task SI Work Plan will not be stored in soil waste management or disposal facilities.
40 CFR Part 264, Subparts I and J 40 CFR 261.7	Waste Containers and Tanks 40 CFR Part 264, Subparts I and J apply to owners and operators of facilities that store hazardous waste in containers, and store or treat hazardous waste in tanks, respectively. These regulations are applicable to any storage or treatment in these units at the site. The related provisions of 40 CFR 261.7, residues of hazardous waste in empty containers, are also applicable.	Any hazardous IDW (i.e., soil, water) generated during implementation of this task will be contained in either 55-gallon drums or tank(s) and stored in a centralized storage area (Forest Products Building and/or Former C&P Packing Building) as outlined in Section 8.4.4 of the Facility-Wide SAP.
40 CFR Part 264, Subpart L	Waste Piles 40 CFR Part 264, Subpart L, applies to owners and operators of facilities that store or treat hazardous waste in piles. The regulations include requirements for the use of run-on and run-off control systems and collection and holding systems to prevent the release of contaminants from waste piles. These regulations are applicable to any storage in waste piles at the site.	Any hazardous IDW (i.e., soil, water) generated during implementation of this task will be stored in 55-gallons drums or tanks(s) not in waste piles or staging piles. If treatment of soil is proposed, a SAP addendum containing a treatment plan will be submitted to DEQ as discussed in Section 8.4.2 of the Facility-Wide SAP.

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Electric Shop SVE Expansion
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Federal or State ERCL Citation	Description	Compliance
40 CFR 264.554	Staging Piles 40 CFR 264.554 sets forth a new storage unit called the staging pile. A staging pile must be located within the contiguous property under the control of the owner/operator where the wastes to be managed in the staging pile originated. The staging pile must be designed so as to prevent or minimize releases of hazardous wastes and hazardous constituents into the environment, and minimize or adequately control cross-media transfer, as necessary to protect human health and the environment (for example, through the use of liners, covers, run-off/run-on controls, as appropriate). The staging pile must not operate for more than two years and cannot be used for treatment.	
40 CFR Part 268	RCRA Land Disposal Restrictions Since the wastes to be treated are listed and characteristic wastes, the RCRA Land Disposal Restrictions (LDRs) treatment levels set forth in 40 CFR Part 268 are applicable requirements including the treatment levels for F001 and F002 listed wastes for the disposal of hazardous wastes generated at the site. With the exception of treated soils, hazardous wastes are prohibited from disposal on-site.	Any hazardous IDW (i.e., soil, water) generated during implementation of this task will be managed in accordance with the Facility-Wide SAP. Figures 4, 5, and 6 in the Facility-Wide SAP depict how IDW generated during implementation of this task will be disposed of in accordance with these ERCLs. If investigation-derived soil or water is proposed for landspreading, documentation showing that concentrations are below relevant ROD cleanup levels and LDR standards will be included in the request to DEQ.
40 CFR 268.45	Hazardous debris Since on-site disposal of solid and hazardous wastes is prohibited at the site, any hazardous debris remaining on-site must comply with 40 CFR 268.45 prior to off-site disposal as a solid waste (all off-site disposal must also comply with LDR certification requirements, which apply to these wastes). If the debris does not fully comply with 40 CFR 268.45, it must be disposed off-site at a regulated subtitle C facility.	If any hazardous debris is generated during implementation of this task, it will be managed as hazardous waste as outlined in the Facility-Wide SAP.
40 CFR Part 270	Substantive Permit Requirements 40 CFR Part 270 sets forth the hazardous waste permit program. The substantive requirements set forth in 40 CFR Part 270, Subpart C (permit conditions), including the requirement to properly operate and maintain all facilities and systems of treatment	Substantive requirements of RCRA will be met as described in Section 8.4 of the Facility-Wide SAP, including generation, storage, and disposal.
40 CFR Part 279	Used Oil 40 CFR Part 279 sets forth the standards for the management of used oil. For product removed from outside the solvent plume, 40 CFR Part 279 is applicable.	Activities proposed in the this task work plan will not result in the generation of used oil.
State Hazardous Waste Management Regulations (Applicable)		
Sections 75-10-401 et seq., MCA ARM 17.53.501-502 ARM 17.53.601-604 ARM 17.53.701-708 ARM 17.53.801-803 ARM 17.53.1101-1102 Section 75-10-422 MCA ARM 17.53.1101-1102	The Montana Hazardous Waste Act, Sections 75-10-401 et seq., MCA, and regulations under this act establishes a regulatory structure for the generation, transportation, treatment, storage and disposal of hazardous wastes. These requirements are applicable to substances and actions at the site which involve listed and characteristic hazardous wastes. ARM 17.53.501-502 adopts the equivalent of RCRA regulations at 40 CFR Part 261, establishing standards for the identification and listing of hazardous wastes, including standards for recyclable materials and standards for empty containers, with certain State exceptions and additions. ARM 17.53.601-604, adopts the equivalent to RCRA regulations at 40 CFR Part 262, establishing standards that apply to generators of hazardous waste, including standards pertaining to the accumulation of hazardous wastes, with certain State exceptions and additions. ARM 17.53.701-708, adopts the equivalent to RCRA regulations at 40 CFR Part 263, establishing standards that apply to transporters of hazardous waste, with certain State exceptions and additions. ARM 17.53.801-803, adopts the equivalent to RCRA regulations at 40 CFR Part 264, establishing standards that apply to hazardous waste treatment, storage and disposal facilities, with certain State exceptions and additions. ARM 17.53.1101-1102, adopts the equivalent to RCRA regulations at 40 CFR Part 268, establishing land disposal restrictions, with certain State exceptions and additions. Section 75-10-422 MCA prohibits the unlawful disposal of hazardous wastes. ARM 17.53.1101-1102, adopts the equivalent to RCRA regulations at 40 CFR Part 270, which establish standards for permitted facilities, with certain State exceptions and additions.	These activities are being conducted in the area containing F-listed constituents, IDW generated during the pilot test will be suspected of containing F-listed constituents and will be managed as a hazardous waste unless analytical testing shows otherwise (i.e., no detections of PCE, or detections of PCE below the relevant ROD cleanup levels and receipt of a "no longer contained-in" determination from DEQ under RCRA). Any hazardous IDW (i.e., soil, water) generated during implementation of this task will be managed as outlined in the Facility-Wide SAP, in accordance with the applicable requirements of these ERCLs. While DEQ has the authority to waive non-substantive permit requirements for remedial actions conducted entirely at the Facility, that authority does not extend to permitted activities such as transporting and disposing of hazardous waste off of the Facility. DEQ has determined that a hazardous waste transporter is not required to transport hazardous waste from a work area to the centralized storage area, provided transportation remains within the Facility. If hazardous waste needs to be transported outside the Facility, a hazardous waste transporter will be used and the hazardous waste will be manifested, labelled and containerized. Any hazardous IDW generated during implementation of this task will be contained in 55-gallon drums or tank(s) and stored inside/near the Forest Products Building and/or the Former C&P Packing Building (see Section 8.4.4 of Facility-Wide SAP). Figures 4, 5, and 6 in the Facility-Wide SAP depict how IDW generated during implementation of this task will be disposed of in accordance with these ERCLs.
ARM 17.53.1401	ARM 17.53.1401, adopts the equivalent of RCRA regulations at 40 CFR Part 279 which set forth the standards for the management of used oil.	Activities proposed in the this task work plan will not result in the generation of used oil.
National Emission Standards for Hazardous Air Pollutants (NESHAPs)		
ARM 17.8.341 (Incorporates by reference 40 CFR Part 61)	Asbestos (Well-Suited) The federal Clean Air Act requires the EPA to set emission standards for hazardous air pollutants. 42 U.S.C Section 7412. Implementation and enforcement of these standards in Montana has been delegated to the State. See 40 CFR 61.04(b)(BB). Federal standards for hazardous air pollutants (NESHAPs) at 40 CFR Part 61, are incorporated by reference by ARM 17.8.341. The NESHAPs for asbestos are well-suited to the cinder pile and are discussed in the Asbestos section below; however, the solid waste requirements are the more stringent of the ERCLs that must be complied with with respect to covering of the cinder pile.	Activities proposed in this task work plan will not result in air emissions of asbestos or vinyl chloride.

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Federal or State ERCL Citation	Description	Compliance
40 CFR 61.145	40 CFR 61.145. (well-suited). Standard for demolition and renovation. This section contains standards for demolition or renovation of a facility. The standards are designed to reduce or eliminate asbestos emissions from such operations, and include provisions for notification regarding intended project, wetting of asbestos materials, use of exhaust systems, careful movement of asbestos materials, and presence on site of a trained asbestos removal person. This section applies to any demolition or renovation of a structure, installation, building, or waste disposal area at the site containing asbestos materials. 40 CFR 61.151. (well-suited). Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations. There must either be no discharge of visible emissions from the site to the outside air, or the specified covering or treatment methods must be followed. Warning signs must be posted and prior notice must be given to EPA or the State before the waste material is excavated or disturbed.	
40 CFR Part 61, Subpart F	Vinyl Chloride (Applicable) 40 CFR Part 61, Subpart F contains the national emission standard for vinyl chloride. 40 CFR 61.64(b) requires concentrations from vinyl chloride in each exhaust gas stream from each stripper not exceed 10 ppm.	
National Pollutant Discharge Elimination System (NPDES) and the Montana Pollutant Discharge Elimination System (MPDES) (Applicable)		
40 CFR Part 122, Subpart C and ARM 17.30.1342 -.1344	40 CFR Part 122, Subpart C and ARM 17.30.1342-1344 set forth the substantive requirements applicable to all MPDES and NPDES permits. Permits must be obtained for all surface and groundwater systems that are part of remedial actions, including proper operation and maintenance of all facilities and systems of treatment and control.	To ensure state waters are not degraded/polluted, any purge water will be treated to the groundwater cleanup levels presented in the Record of Decision (ROD) (DEQ 2001) and will meet all applicable permit requirements as specified in Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River.
Technology-Based Treatment (Applicable)		
40 CFR Part 125 and ARM 17.30.1344	40 CFR Part 125 and ARM 17.30.1344 set forth criteria and standards for dischargers. Based on the source, the technology-based treatment standards include the best practicable control technology (BPT), best conventional pollutant control technology (BCT), or Best Available Technology Economically Achievable (BAT).	To ensure state waters are not degraded/polluted, any purge water will be treated to the groundwater cleanup levels presented in the Record of Decision (ROD) (DEQ 2001) and will meet all applicable permit requirements as specified in Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River.
Underground Injection Control Program (Well-Suited)		
40 CFR 146	The Underground Injection Control Program set forth at 40 CFR 146, sets forth the standards and criteria for the injection of substances into aquifers. Wells are classified as Class I through V, depending on the location and the type of substance injected. For all classes, no owner may construct, operate or maintain an injection well in a manner that results in the contamination of an underground source of drinking water at levels that violate MCLs or otherwise adversely affect the health of persons. Each classification may also contain further specific standards, depending on the classification.	Activities proposed in the this task work plan do not involve the construction/operation of underground injection control wells.
Solid Waste Management Regulation (Applicable and Well-Suited)		
ARM 17.50.505	ARM 17.50.505(2) specifies standards for solid waste management facilities, including the requirements that: 1. Class II landfills must confine solid waste and leachate to the disposal facility. If there is the potential for leachate migration, it must be demonstrated that leachate will only migrate to underlying formations which have no hydraulic continuity with any state waters; 2. adequate separation of group II wastes from underlying or adjacent water must be provided; and 3. no new disposal units or lateral expansions may be located in wetlands.	Activities proposed in the this task work plan do not involve siting, construction, operation/maintenance, and closure of a solid waste management facility. IDW generated during implementation of this task will be managed as outlined in the Facility-Wide SAP.
ARM 17.50.530	ARM 17.50.530 sets forth the closure requirements for landfills. Class II landfills must meet the following criteria: 1. install a final cover that is designed to minimize infiltration and erosion. 2. design and construct the final cover system to minimize infiltration through the closed unit by the use of an infiltration layer that contains a minimum 18 inches of earthen material and has a permeability less than or equal to the permeability of any bottom liner, barrier layer, or natural subsoils or a permeability no greater than 1 X 10-5 cm/sec, whichever is less; 3. minimize erosion of the final cover by the use of a seed bed layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth and protecting the infiltration layer from frost effects and rooting damage;	
ARM 17.50.531	ARM 17.50.531 sets forth post closure care requirements for Class II landfills. Post closure care must be conducted for a period sufficient to protect human health and the environment. Post closure care requires maintenance of the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the cover and comply with the groundwater monitoring requirements found at ARM Title 17, chapter 14, subchapter 7.	

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Federal or State ERCL Citation	Description	Compliance
Transportation of Solid Waste (Applicable)		
Section 75-10-212 ARM 17.50.523	For solid wastes, Section 75-10-212 prohibits dumping or leaving any debris or refuse upon or within 200 yards of any highway, road, street, or alley of the State or other public property, or on privately owned property where hunting, fishing, or other recreation is permitted. ARM 17.50.523 requires that such waste must be transported in such a manner as to prevent its discharge, dumping, spilling, or leaking from the transport vehicle.	Solid waste (i.e., plastic wrapping, cardboard, non-indigenous waste, etc.) generated during implementation of this task will be contained in a plastic bag (if necessary) [double-bagged (if necessary)], and placed in a garbage can for collection and appropriate disposal as solid waste. IDW generated during implementation of Task F will be managed as outlined in the Facility-Wide SAP. Solid waste generated during implementation of pilot test will be transported in a manner to prevent discharge, dumping, spilling, and leaking.
Underground Storage Tank (USTs) Regulations (Applicable)		
	These standards are applicable. To the extent certain UST systems were removed prior to the effective date of the regulations, diesel is found separate and distinct from an UST system, or UST regulations are not applicable, the UST requirements remain well-suited since they address situations or problems sufficiently similar to those at the site.	Activities proposed in the this task work plan do not involve USTs.
40 CFR Part 280, Subpart F	40 CFR Part 280, Subpart F sets forth requirements for Release Response and Corrective Action for UST Systems Containing Petroleum or Hazardous Substances. These include initial response, initial abatement measures, site characterization, free product removal, and investigations for soil and groundwater cleanup.	
40 CFR 280.64	40 CFR 280.64 provides that where investigations in connection with leaking underground storage tanks reveal the presence of free product, owners and operators must remove free product to the maximum extent practicable as determined by the implementing agency. This regulation also requires that the free product removal be conducted in a manner that minimizes the spread of contamination into previously uncontaminated zones by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site, and that properly treats, discharges or disposes of recovery byproducts in compliance with applicable local, State and Federal regulations. 40 CFR 280.64 provides that abatement of free product migration is a minimum objective for the design of the free product removal system provides that any flammable products must be handled in a safe and competent manner to prevent fires or explosions.	
40 CFR Part 280, Subpart D	40 CFR Part 280, Subpart D sets forth requirements for release detection.	
40 CFR 280.43	40 CFR 280.43 (well-suited) specifies groundwater monitoring requirements for underground storage tanks and requires continuous monitoring devices or manual methods used to detect the presence of at least 1/8 of an inch of free product on top of the groundwater in the monitoring wells.	
Title 17, Chapter 56, Sub-Chapter 4	The Montana regulations regarding underground storage tanks include similar requirements. Title 17, Chapter 56, Sub-Chapter 4 specifies release detection.	
ARM 17.56.407	ARM 17.56.407 specifies groundwater monitoring requirements for underground storage tanks and requires continuous monitoring devices or manual methods used to detect the presence of at least 1/8 of an inch of free product on top of the groundwater in the monitoring wells.	
Title 17, Chapter 56, Sub-Chapter 6	Title 17, Chapter 56, Sub-Chapter 6 specifies release response and corrective action for tanks containing petroleum or hazardous substances.	
ARM 17.56.602 - 605	ARM 17.56.602 through 605 requires certain mitigation measures including removal of as much of the regulated substance from	
Asbestos Regulation in Building Construction and Demolition (Well-Suited)		
Sections 50-64-101, et seq., MCA 50-64-104, MCA	Sections 50-64-101 et seq., MCA, regulate construction and demolition of structures that contain asbestos. Section 50-64-104, MCA. provides for various safeguards to prevent release of asbestos into the air. The prescribed safeguards include notification of the local fire department, posting of warning signs, wetting of surfaces, dust emission control, covering and wetting during transport, and deposition at a landfill where materials are unlikely to be disturbed and where signs warn that asbestos-containing material is buried in the landfill. The listed safeguards are well-suited to the covering of the cinder pile.	Activities proposed in the this task work plan do not involve construction or demolition of any asbestos-containing structures.
Well Drilling (Applicable)		
Section 85-2-505, MCA Section 85-2-516, MCA	Section 85-2-505, MCA, precludes the wasting of groundwater. Any well producing waters that contaminate other waters must be plugged or capped, and wells must be constructed and maintained so as to prevent waste, contamination, or pollution of groundwater. Section 85-2-516, MCA states that within 60 days after any well is completed a well log report must be filed by the driller with the Montana Department of Natural Resources and Conservation and the appropriate county clerk and recorder.	New wells will be constructed and maintained so as to prevent waste, contamination, or pollution of groundwater. Wells will be constructed and sampled in accordance with Section 4.0 of the Facility-Wide SAP and Standard Operating Guideline (SOG)-13, SOG-14, and SOG-15 in Appendix A of the Facility-Wide SAP. Drillers will be required to file a well log report within 60 days after completion of the well. The statute now requires that the well logs be filed with the Montana Bureau of Mines and Geology, which will be done.

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
Electric Shop SVE Expansion
Burlington Northern Livingston Shop Complex

Federal or State ERCL Citation	Description	Compliance
ARM 17.30.641	ARM 17.30.641 provides standards for sampling and analysis of water to determine quality.	
ARM 17.30.646	ARM 17.30.646 requires that bioassay tolerance concentrations be determined in a specified manner.	Bioassays will not be performed during implementation of this task.
ARM 36.21.670-678 and 810	ARM 36.21.670-678 and 810 specifies certain requirements that must be fulfilled when abandoning monitoring wells.	No monitoring wells will be abandoned during implementation of this task.
Reclamation Requirements (Well-Suited)		
	Certain portions of the Montana Strip and Underground Mining Reclamation Act and Montana Metal Mining Act are well-suited requirements for certain revegetation and construction activities at the site.	Activities proposed in the this task work plan do not involve any land disturbances that would trigger these requirements.
Section 82-4-231, MCA	Section 82-4-231, MCA: Requires operators to reclaim and revegetate affected lands using most modern technology available.	
Section 82-4-233, MCA	Section 82-4-233, MCA: Operators must plant vegetation that will yield a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area and capable of self-regeneration.	
Section 82-4-336, MCA	Section 82-4-336, MCA: Disturbed areas must be reclaimed to utility and stability comparable to areas adjacent.	
ARM 17.24.501	ARM 17.24.501: Provides general backfilling and grading requirements.	
ARM 17.24.519	ARM 17.24.519: Pertinent areas where excavation will occur will be regraded to minimize settlement.	
ARM 17.24.631	ARM 17.24.631: Disturbances to the prevailing hydrologic balance will be minimized. Changes in water quality and quantity, in the depth to groundwater and in the location of surface water drainage channels will be minimized, to the extent consistent with the selected response alternatives. Other pollution minimization devices must be used if appropriate, including stabilizing disturbed areas through land shaping, diverting runoff, planting quickly germinating and growing stands of temporary vegetation, mulching, and control of toxic-forming waste materials.	
ARM 17.24.633	ARM 17.24.633: Surface drainage from a disturbed area must be treated by the best technology currently available (BTCA). Treatment must continue until the area is stabilized.	
ARM 17.24.634	ARM 17.24.634: Disturbed drainages will be restored to the approximate pre-disturbance configuration, to the extent consistent with the selected response alternatives.	
ARM 17.24.638	ARM 17.24.638: Sediment control measures must be implemented during operations.	
ARM 17.24.639	ARM 17.24.639: Sets forth requirements for construction and maintenance of sedimentation ponds.	
ARM 17.24.640	ARM 17.24.640: Discharges from sedimentation ponds, permanent and temporary impoundments, must be controlled to reduce erosion and enlargement of stream channels, and to minimize disturbance of the hydrologic balance.	
ARM 17.24.643 - 646	ARM 17.24.643 through 17.24.646: Provisions for groundwater protection, groundwater recharge protection, and groundwater and surface water monitoring.	
ARM 17.24.701 and 702	ARM 17.24.701 and 702: Requirements for redistributing and stockpiling of soil for reclamation. Also outline practices to prevent compaction, slippage, erosion, and deterioration of biological properties of soil will be employed.	
ARM 17.24.711	ARM 17.24.711: Requires that a diverse, effective and permanent vegetative cover of the same seasonal variety and utility as the vegetation native to the area of land to be affected must be established. This provision would not be well-suited in certain instances, for example, where there is dedicated development.	
ARM 17.24.713	ARM 17.24.713: Seeding and planting of disturbed areas must be conducted during the first appropriate period for favorable planting after final seedbed.	
ARM 17.24.714	ARM 17.24.714: Mulch or cover crop or both must be used until adequate permanent cover can be established.	
ARM 17.24.716	ARM 17.24.716: Establishes method of revegetation.	
ARM 17.24.718	ARM 17.24.718: Requires soil amendments, irrigation, management, fencing, or other measures, if necessary to establish a diverse and permanent vegetative cover.	
ARM 17.24.723	ARM 17.24.723: States that operators shall conduct approved periodic measurements of vegetation, soils, and water.	
ARM 17.24.724	ARM 17.24.724: Specifies that revegetation success must be measured by approved unmined reference areas. Required management for these reference areas is set forth.	
ARM 17.24.726	ARM 17.24.726: Sets the required methods for measuring productivity.	
ARM 17.24.728	ARM 17.24.728: Sets requirements for measurements of the composition of vegetation on reclaimed areas.	
ARM 17.24.761	ARM 17.24.761: This specifies fugitive dust control measures which will be employed during excavation and construction	
Noxious Weeds (Applicable)		

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
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Federal or State ERCL Citation	Description	Compliance
ARM 4.5.201 through .204 Section 7-22-2109(2)(b) Section 7-22-2152 Section 7-22-2101(7)(a), MCA	§ 7-22-2101(7)(a), MCA defines "noxious weeds" as any exotic plant species established or that may be introduced in the state which may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses or that may harm native plant communities and that is designated: (i) as a statewide noxious weed by rule of the department; or (ii) as a district noxious weed by a board, following public notice of intent and a public hearing. Designated noxious weeds are listed in ARM 4.5.201 through 4.5.204 and must be managed consistent with weed management criteria developed under MCA § 7-22-2109(2)(b). Notification and plan must occur as set forth in § 7-22-2152, MCA, as amended.	Activities proposed in the this task work plan do not involve the introduction or planting of plants, nor will land disturbance occur which would trigger these requirements..
OTHER LAWS		
	These laws are laws which are independently applicable rather than ERCLs for the site.	
Section 85-2-101, MCA	Surface Water and Groundwater Act Section 85-2-101, MCA, declares that all waters within the state are the state's property, and may be appropriated for beneficial uses. The wise use of water resources is encouraged for the maximum benefit to the people and with minimum degradation of natural aquatic ecosystems.	Activities proposed in the this task work plan will not require any surface water or groundwater to be appropriated.
Parts 3 and 4 of Title 85, Chapter 2, MCA	Groundwater and Surface Water Appropriation Parts 3 and 4 of Title 85, Chapter 2, MCA, set out requirements for obtaining water rights and appropriating and utilizing water. All requirements of these parts are laws which must be complied with in any action using or affecting waters of the state.	Activities proposed in the this task work plan will not require any water rights to be obtained.
Section 85-2-507, MCA Section 85-2-506, MCA	Controlled Ground Water Area Pursuant to Section 85-2-507 MCA, the Department of Natural Resources and Conservation may grant either a permanent or a temporary controlled ground water area. The maximum allowable time for a temporary area is four years.[6] Pursuant to 85-2-506 MCA, designation of a controlled groundwater area may be proposed if (a) that ground water withdrawals are in excess of recharge to the aquifer or aquifers within the ground water area; (b) that excessive ground water withdrawals are very likely to occur in the near future because of consistent and significant increases in withdrawals from within the ground water area; (c) that significant disputes regarding priority of rights, amounts of ground water in use by appropriators, or priority of type of use are in progress within the ground water area; (d) that ground water levels or pressures in the area in question are declining or have declined excessively; (e) that excessive ground water withdrawals would cause contaminant migration; (f) that ground water withdrawals adversely affecting ground water quality within the ground water area are occurring or are likely to occur; or (g) that water quality within the ground water area is not suited for a specific beneficial use defined by 85-2-102(2)(a).	Activities proposed in the this task work plan will not require a controlled groundwater area.
29 CFR Part 1910	Occupational Safety and Health Act The federal Occupational Safety and Health Act regulations found at 29 CFR 1910 are applicable to worker protection during conduct of RI/FS or remedial activities.	Field activities associated with this task will be conducted in accordance with the Facility-Wide Health and Safety Plan (HASP) and the task-specific HASP addendum.
ARM 17.74.101 ARM 17.74.102	Montana Occupational Health Act ARM Section 17.74.101, along with the similar federal standard in 29 CFR 1910.95, addresses occupational noise. ARM Section 17.74.102, along with the similar federal standard in 29 CFR 1910.1000 addresses occupational air contaminants.	
Sections 50-71-201, 202, and 203, MCA	Montana Safety Act Sections 50-71-201, 202 and 203, MCA, state that every employer must provide and maintain a safe place of employment, provide and require use of safety devices and safeguards, and ensure that operations and processes are reasonably adequate to render the place of employment safe.	Water & Environmental Technologies has a comprehensive Injury and Illness Prevention Program designed to help ensure the health and safety of its employees and provide a safe and healthful work environment. In addition, Water & Environmental Technologies has a Corporate Health and Safety Program and Hazardous Communication Program.
Section 50-78-201, 202, and 204, MCA	Employee and Community Hazardous Chemical Information Act Sections 50-78-201, 202, and 204, MCA, state that each employer must post notice of employee rights, maintain at the work place a list of chemical names of each chemical in the work place, and indicate the work area where the chemical is stored or used. Employees must be informed of the chemicals at the work place and trained in the proper handling of the chemicals.	
40 CFR Part 262 and ARM 17.53.601-604	Standards for Generators of Hazardous Waste The RCRA regulations at 40 CFR Part 262 and ARM 17.53.601-604 establish standards that apply to generators of hazardous waste. These standards include requirements for obtaining an EPA identification number and maintaining certain records and filing certain reports. These standards are applicable for any waste which will transported off-site.	

APPENDIX B

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR
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Federal or State ERCL Citation	Description	Compliance
40 CFR Part 263 and ARM 17.53.701-708	Standards for Transporters of Hazardous Waste The RCRA regulations at 40 CFR Part 263 and ARM 17.53.701-708 establish standards that apply to transporters of hazardous waste. These standards include requirements for immediate action for hazardous waste discharges. These standards are applicable for any off-site transportation.	Hazardous IDW (i.e., soil, water) generated during implementation of this task will be managed in accordance with Section 8.4 of the Facility-Wide SAP and comply with these requirements.
40 CFR 268 and ARM 17.53.1101-1102	RCRA Land Disposal Restrictions Since the wastes to be treated are listed and characteristic wastes, the RCRA Land Disposal Restrictions (LDRs) treatment levels set forth in 40 CFR Part 268 and ARM 17.53.1101-1102 are applicable requirements including the treatment levels for F001 and F002 listed wastes for the disposal of hazardous wastes generated at the site.	Hazardous IDW (i.e., soil, water) generated during implementation of this task will be managed in accordance with Section 8.4 of the Facility-Wide SAP and comply with these requirements.
49 CFR Chapter I, Subchapters B and C and ARM 23.5.101	Oil Transportation 49 CFR Chapter I, Subchapter B (Oil Transportation) and Subchapter C (Hazardous Materials) and ARM. 23.5.101 apply to transporters of oil and hazardous materials. These standards are applicable for any off-site transportation of oil meeting the quantity requirements set forth in Subchapter B or for the transportation of hazardous materials such as the transportation of asbestos-containing waste material.	Activities proposed in the this task work plan do not involve the use of oil and will not generate used oil.
Sections 75-2-501 et seq., MCA Sections 75-2-502(4) and -511, MCA, and ARM 17.74.302(3) ARM 17.74.314 ARM 17.74.335 29 CFR 1926.58 40 CFR 763.120-121 ARM 17.74.338 ARM 17.74.341	Montana Asbestos Control Act The Montana Asbestos Control Act, Sections 75-2-501 et seq., MCA, and implementing rules establish standards and procedures for accreditation of asbestos-related occupations and control of the work performed by persons in asbestos-related occupations. A permit from DEQ is required before any person can conduct an asbestos project. The definition of "asbestos project" includes the encapsulation, enclosure, removal, transportation, or disposal of asbestos-containing waste. Section 75-2-502(4), MCA; ARM 17.74.302(3). In addition, a person who inspects, plans, designs, supervises, contracts for or works on an asbestos project must ARM 17.74.314 states that no person may engage in an asbestos-type occupation unless accredited in that occupation or may employ or subcontract with nonaccredited individuals or contractors. No person may conduct an asbestos abatement project without a permit. ARM 17.74.335 states that asbestos abatement projects require a DEQ permit. The permit conditions include but are not limited to: a. a requirement that all work performed be in accordance with 29 CFR 1926.58 (asbestos standards for the construction ARM 17.74.338 requires an accredited asbestos abatement supervisor be physically present at all times at the work-site where a permitted asbestos abatement project is being performed and must be accessible to all workers. On-site air monitoring must be ARM 17.74.341 requires records of each asbestos abatement project be retained for a minimum of 30 years and must be made available to DEQ at any reasonable time. This section provides a noninclusive list of the records to be retained.	Activities proposed in the this task work plan do not involve asbestos work.
40 CFR Part 92	Locomotive Emissions 40 CFR Part 92 establishes control of air pollution from locomotives and locomotive engines.	Activities proposed in the this task work plan do not involve the use of locomotives.

Notes:

(a) These ERCLs were developed by the Montana Department of Environmental Quality and were included in Appendix A of the *Record of Decision* (ROD) (DEQ 2001). ERCLs pertinent to this task Supplemental Investigation Work Plan for Bedrock Aquifer(s) are shaded in yellow.

[1] *Montana Maximum Contaminant Levels:*
Pursuant to the Public Water Safety Act, 75-6-101 et. seq., MCA and ARM 17.38.204, the MCLs specified in 40 CFR Part 141 (Primary Drinking Water Standards) are incorporated.

[2] *Montana Department of Environmental Quality, Planning, Prevention and Assistance Division, Circular WQB-7, Montana Numeric Water Quality Standards (September, 1999).*

[3] *For vinyl chloride, the WQB-7 standard is 0.15 µg/L.*

[4] *Each of the ambient air quality standards includes in its terms specific requirements and methodologies for monitoring and determining levels. Such requirements are also applicable requirements. In addition, ARM 17.8.204 and 17.8.206, Ambient Air Monitoring; Methods and Data,*

[5] *ARM 17.50.530(1)(b) allows the department to approve an alternative final cover design if it achieves the reduction in infiltration and protection from erosion to a level at least as equivalent as the stated criteria.*

[6] *If a temporary controlled ground water area is granted, the statute requires DNRC to commence studies to determine the designation or modification of a permanent controlled ground water area.*

APPENDIX C

Typical SVE Well Completion Detail

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION: Near manhole W of Electric Shop, near Transfer Pit		**Well Name**	ES-SVE-2
DRILLING COMPANY: Boart Longyear	DRILLER: Jeff Karcher	**Project Name**	BNSF Livingston
DRILLING METHOD(S): Sonic	DRILL BIT(S) SIZE: 8 inch	**Project Number**	1096021.16
ISOLATION CASING: N/A	FROM N/A TO N/A FT.	ELEVATION AND DATUM	TOTAL DEPTH: 18.7 ft. bgs
BLANK CASING: 4-inch diameter Schedule 40 PVC	FROM 0-3 TO 12-13 FT.	DATE STARTED: 2/24/10	DATE COMPLETED: 2/24/10
SLOTTED CASING: 0.010-inch slot, 4-inch diameter Sch. 40 PVC	FROM 3-12 TO 13-18 FT.	INITIAL WATER DEPTH (FT): N/A	
SIZE AND TYPE OF FILTER PACK: 10-20 silica sand	FROM 3-12 TO 13-18.7 FT.	LOGGED BY: C. McWilliams	
SEAL: Medium bentonite chips	FROM 1-3 TO 12-13 FT.	SAMPLING METHODS: 7-inch diameter core barrel	WELL COMPLETION: ■ SURFACE HOUSING ☐ STAND PIPE _____ FT.
GROUT: Cement	FROM 0 TO 1 FT.		

SAMPLES TYPE	SAMPLES RECOV. (FEET)	SAMPLES PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID (11.7 ev bulb) / ST	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
									Air vac utility clear to 7 feet bgs
			5						
	4			ES-SVE-2-SB-8		50.3 / wt shn		SM	**Silty SAND with gravel** black, few cobbles, moist, petroleum-like odor
			10						**Well-graded GRAVEL with sand** light brown to brown, fine to coarse sand, some cobbles (up to 4"), subangular to angular, moist
	5.5					6.6 / sheen			
						0.2 / wt shn		GW	From 14' bgs, increased coarse sand
			15						From 15' bgs, subangular to subrounded
	5					0.2 / wt shn			From 16' bgs, light brown to dark olive brown

NOTES

1. bgs = below ground surface
2. ST = sheen test (NS: no iridescent or cloudy-white sheen observed; sheen: petroleum-like iridescent sheen observed; wt shn: non petroleum-like cloudy-white sheen observed)
3. LOG CORRECTED 10/14/2010.

KJ PNW TASK F 2010 STG 1 PT 2 ISCO-SVE.REVISION 1.GPJ KJ PNW.GDT 10/14/10

F-40.1
(6-87) (3-88) (8-90)