FINAL FORMER STORAGE TANKS AND API SEPARATOR POND AREA SUPPLEMENTAL CONFIRMATION SAMPLING WORK PLAN

Burlington Northern Livingston Shop Complex Facility, Livingston, Montana

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List of Acronyms

API	American Petroleum Institute
ARM	Administrative Rules of Montana
AST	aboveground storage tank
BGS	below ground surface
BNSF	BNSF Railway Company
BTEX	benzene, toluene, ethylbenzene, xylene
CDM	CDM Smith Consultants
DEQ	Montana Department of Environmental Quality
DRO	diesel-range organics
EPA	United States Environmental Protection Agency
EPH	extractable petroleum hydrocarbon
ERCLs	Environmental Requirements, Criteria, and Limitations
GPS	global positioning system
GWTP	groundwater treatment plant
HASP	Health and Safety Plan
IDW	investigation-derived waste
IRMWP	Interim Remedial Measures Work Plan
LCS	laboratory control sample
LRG	Livingston Restoration Group
MADEP	Massachusetts Department of Environmental Protection
mg/kg	milligrams per kilogram
MPDES	Montana Pollutant Discharge Elimination System
MRL	Montana Rail Link
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl-t-butyl-ether
MTBEXN	MTBE, benzene, toluene, ethylbenzene, xylenes, and naphthalene
NAPL	non-aqueous phase liquid
Olympus	Olympus Environmental Inc.
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl

PPE	personal protective equipment
QA/QC	Quality assurance/quality control
QAPP	Quality Assurance Project Plan
RBCA	Risk-Based Corrective Action
RBSL	Risk-Based Screening Level
RI	Remedial Investigation
Re-Tec	Remediation Technologies Inc.
ROD	Record of Decision
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SIM	selective ion monitoring
SOG	Standard Operating Guideline
SSL	Soil Screening Level
SVOC	semi-volatile organic compound
THASP	Task-Specific Health and Safety Plan
TPH	total petroleum hydrocarbons
USPCI	United States Pollution Control Inc.
UST	underground storage tank
VOC	Volatile organic compound
VPH	volatile petroleum hydrocarbons
WET	Water and Environmental Technologies, PC
WWTP	wastewater treatment plant

1.0 INTRODUCTION

Water and Environmental Technologies, PC (WET) on behalf of the Livingston Restoration Group (LRG) and in conjunction with BNSF Railway Company (BNSF) and Kennedy/Jenks Consultants has prepared this Work Plan for Supplemental Confirmation Sampling and Analyses to be conducted in and around former and existing aboveground storage tank (AST) locations, former underground storage tank (UST) locations, and in the former American Petroleum Institute (API) separator ponds area located on the Burlington Northern Livingston Shop Complex Facility (Facility) in Livingston, Montana. The Facility location is shown on Figure 1.

This Work Plan is being submitted in response to a verbal request from the Montana Department of Environmental Quality (DEQ) and subsequent discussions during a conference call on August 28, 2014, to fill data gaps as defined in a CDM Smith Consultants (CDM) preliminary document review for UST closures and API separator ponds closure. The activities proposed herein will be conducted in accordance with the protocols and procedures and Standard Operating Guidelines (SOGs) provided in the DEQ-approved *Facility-Wide Sampling and Analysis Plan* (Facility-Wide SAP) and associated Addendum No. 1 and No. 2 (Kennedy/Jenks Consultants 2006), unless otherwise noted.

2.0 BACKGROUND

Past remedial actions have been conducted by various contractors and consultants in several phases dating back to approximately 1988. They include 1) removing storage tanks, flow-through units (i.e., grit chambers), underground piping, contaminated soils in tank basins, and sludges/contaminated soils in the API separator pond and associated overflow ponds (collectively referred to as the API separator ponds area), and 2) associated sampling and analysis of excavated sludges and soils, and soils left in place.

In 2008, Kennedy/Jenks Consultants, as required by the DEQ, prepared a draft *Tasks A and H: Comprehensive Interim Action and Confirmation Sampling Summary Report* (Comprehensive Report) (Kennedy/Jenks Consultants, 2008a) which summarized the historical remedial activities pertaining to (among other areas) USTs (Section 3.0 of the report) and the API separator ponds area (Section 4.0 of the report). DEQ subsequently performed an informal review of the Comprehensive Report and identified data gaps that could potentially delay or preclude closure of these tank and pond sites in the future.

The review of the Comprehensive Report identified three general areas of storage tanks requiring further characterization including: former oil reclamation area (Figures 2 and 3); former freight train refueling area (Figures 2 and 4); and former depot refueling area (which included two refueling areas; one for passenger trains and one for freight trains) (Figures 2 and 5); as well as the former API separator ponds area (Figures 2 and 6).

The following subsections provide a brief summary of the applicable information from the Comprehensive Report, as well as data gaps identified during DEQ's review. Although historical storage tank and pond remedial activities included several distinct phases (i.e., fuel and sludge disposal, excavation of soils, tank removal/decontamination and salvaging, etc.), the summary below focuses primarily on sampling data that can be used to characterize soils left in place at these locations.

For the three general storage tank areas identified above, this Work Plan focuses on analytical data collected at the time of the tank removals. Other data have been collected from test pits advanced during

the Remedial Investigation (RI) in the former oil reclamation area, former freight train refueling area, and former depot refueling area; however, in most instances, these data were collected too far away from the tanks and associated piping locations (unless otherwise noted) to facilitate current tank closure sampling requirements. The former freight train refueling area and former depot refueling area are both historical petroleum hydrocarbon release areas that were investigated during the RI. Supplemental investigations of these two areas were conducted as part of Task D/E (Free Product Petroleum Recovery/Petroleum-Containing Subsurface Soils Treatment) designed to address petroleum hydrocarbon-impacts at the Facility in accordance with the *Record of Decision* (ROD) (DEQ 2001). Extensive remedial actions have been performed in, and downgradient of, the former freight train refueling area. Bioventing in this area is ongoing. No subsurface soil remedial action has been required by DEQ in the former passenger depot refueling area based on the RI and subsequent Task D/E investigations. Potential for dissolved-phase petroleum hydrocarbons in Facility groundwater are currently being addressed under Task G. The locations of test pits, soil borings, and monitoring wells associated with previous investigations and ongoing remedial actions in these areas are shown on Figures 3 through 5 for reference.

2.1 HISTORICAL TANK CLOSURE ACTIVITIES

2.1.1 Tank Removal Actions

Eleven USTs and two flow-through units (i.e., grit chambers) were removed from the Facility as part of interim actions in 1988 and 1989. In addition, four aboveground storage tanks (ASTs) were closed in place. The removal work was conducted by Remediation Technologies, Inc. (Re-Tec) and Olympus Environmental, Inc. (Olympus) and included cleaning, removing, and salvaging or disposing the 11 tanks, two grit chambers, and associated piping, as well as over-excavating and disposing of visibly contaminated soils and recycling or disposing of tank contents. The four ASTs were isolated from underground piping and cleaned and decontaminated; the ASTs remain in place. Tank removal activities are summarized in *Summary Report for the Removal of Storage Tanks, Piping and Contaminated Soils/Gravels* (Tank Removal Report) prepared by Re-Tec and Olympus (Re Tec/Olympus, 1989).

Three additional USTs were removed between 1990 and 1993: one from the eastern end of Montana Rail Link's (MRL's) Wastewater Treatment Plant (WWTP), one between the Locomotive Shop and the former Talgo warehouse, and one at the northern end of the Former Oil Reclamation Plant building.

An estimated 1,000 to 2,000 linear feet of piping was removed during removal/closure of the tanks and grit chambers discussed above. Some piping was not removed due to proximity to rails or structures and was grouted in place. Tank numbers (or descriptions for tanks with no numbers) and their contents are listed in Table 1. Figures 3 through 5 show the AST locations and the best approximation of the former UST/grit chamber locations based on a review of historical information.

Based on a review of the historical information, and in consultation with DEQ, eleven of the 14 former UST locations, the two former grit chamber locations, and four AST locations along with their associated underground piping have been identified for supplemental confirmation sampling (see Section 4.3) to facilitate closure of these former tank locations.

2.1.2 Tank Removal Soil Sampling Analytical Results

The soil sample analytical results associated with tank removal actions and from RI test pits identified near the former tanks/piping are summarized in Table 2 and shown on Figures 3 through 5. Table 2

includes the ROD cleanup/screening levels (DEQ 2001) and the following additional screening criteria, as applicable based on DEQ's Attachment C – Soil Screening Process dated October 2013:

- DEQ's current 2009 Risk-Based Screening Levels (RBSLs) (DEQ 2009)
- State of Montana background concentrations (Hydrometrics 2013)
- U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) and Soil Screening Levels (SSLs) (EPA 2016).

Using information shown on the figures from the Comprehensive Report (see Appendix A), tanks, piping, historical soil sample locations, and areas of observed soil staining have been transposed onto Figures 3 through 5. It should be noted that the transposed information is considered a best approximation as the maps used to obtain the historical information were not topographic maps or aerial photographs and showed limited physical features. Field notebooks and boring logs were also reviewed to assist in the placement of test pit locations.

2.2 FORMER API SEPARATOR PONDS AREA ACTIVITIES

The former API separator ponds area consists of the main API separator pond and two overflow ponds (referred to as the first overflow pond and relic overflow pond, respectively) (see Figure 6).

2.2.1 Removal and Disposal of Sludges

The Comprehensive Report indicates that Envirocon conducted an interim remedial source control action in 1989 through 1993 as part of the DEQ-approved Interim Remedial Measures Work Plan (IRMWP). The source control action involved sludge stabilization, isolation, and subsequent removal and disposal of the sludge within the API separator pond and the associated overflow ponds as described in the following paragraphs.

In 1989, sludge within the main API separator pond was removed to the depth of native gravel, and transferred to the first overflow pond. The main API separator pond was then retrofitted with a synthetic liner to form a containment cell. Sludge that had been transferred to the first overflow pond (that was not previously buried) was then transferred back into the lined API separator pond containment cell. The containment cell was covered with plastic, and the area was fenced. Buried sludge that historically existed in the two overflow ponds was reportedly not removed or isolated at that time.

In 1992, sludge within the API separator pond containment cell and existing sludge buried in the overflow ponds was removed, stabilized, and transported to the United States Pollution Control, Inc. (USPCI) Grassy Mountain Facility in Utah for disposal.

The Comprehensive Report states that following the removal of sludge from the API separator pond containment cell and overflow ponds, biological land treatment was tested in the API separator ponds area by amending soils with nutrients and tilling once per month throughout the summer and fall of 1993.

Soil samples were collected from the former API separator ponds area in 1989 as part of the RI, in 1992 after sludge removal but before biological land treatment, in 1993 after biological land treatment, and again in 1995 per DEQ's request for additional confirmation sampling.

2.2.2 Former API Separator Ponds Area Analytical Results

Analytical results from the RI sampling, before and after biological land treatment, and from the final confirmation soil sampling conducted at the former API separator ponds area are summarized in Table 3. Figures from the Comprehensive Report depicting the pond locations and sampling locations are provided in Appendix A. Previous sample locations and final (1993 and 1995) confirmation soil sample analytical results are shown on Figure 6.

2.3 DEQ REVIEW OF COMPREHENSIVE REPORT

DEQ conducted a preliminary review of the soil sampling data summarized in the Comprehensive Report and identified data gaps that could prevent closure of the USTs and former API separator ponds area. The data gaps identified during the review are summarized in the following subsections and led to the recommendation that soils in the former oil reclamation area (Figure 3), the former freight refueling area (Figure 4), the former depot refueling area (Figure 5), and the API separator ponds area (Figure 6) be resampled to evaluate whether soils left in place are below ROD cleanup/screening levels and other applicable screening criteria for chemicals without specified ROD cleanup levels.

2.3.1 Former Oil Reclamation Area

This area includes four waste oil USTs (2, 3, and 4, and an undesignated tank located north of the Former Oil Reclamation Plant building) associated with waste oil reclamation activities and one other gasoline UST located west of the former Talgo warehouse (Figure 3).

One soil sample was collected beneath UST 2 and another soil sample was collected between USTs 3 and 4 (depths unknown) during the UST removal activities in 1988/1989. The samples were analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOCs), including polynuclear aromatic hydrocarbons (PAHs), pesticides/polychlorinated biphenyls (PCBs), and metals. 2-methylnaphthalene [4.8 milligram per kilogram (mg/kg)] and dibenzofuran (4.0 mg/kg) were reported in the sample collected at UST 2 above their respective EPA SSLs (see Table 2). While TPH (800 and 3,500 mg/kg) was not reported above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg, the concentrations are above 200 mg/kg, the current requirement for analyzing soil samples for extractable petroleum hydrocarbon (EPH) fractions in accordance with the Massachusetts Department of Environmental Protection (MADEP) method for comparison to ROD cleanup/screening levels for petroleum hydrocarbons and DEQ's current (2009) RBSLs.

During the removal of the 3,000-gallon UST north of the Former Oil Reclamation Plant Building, three sample were collected from the west end, middle, and east end of the tank excavation at 12 feet BGS. A composite sample was also collected from the soil above the tank. Two of the samples were analyzed for diesel-range organics (DRO) and two of the samples were analyzed for VOCs. Elevated concentrations of DRO were reported above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg in the samples collected from east and west end of the excavation (6,000 and 8,600 mg/kg, respectively) (see Table 2). 2-chlorotoluene was reported above the EPA SSL in the composite sample collected from the top of the tank; however, this sample is not representative of soil left in place. As noted above, methods are now available for analyzing samples for EPH screen and follow-on EPH fractions and PAHs for

comparison to ROD cleanup/screening levels for petroleum hydrocarbons and DEQ's current (2009) RBSLs.

For the purpose of this Work Plan, the former oil reclamation area also includes one additional former 590-gallon gasoline UST (located west of the former Talgo warehouse). One soil sample was collected from a depth of 10 feet BGS during tank removal and analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX) compounds (see Table 2). Total xylenes were reported at 0.42 mg/kg, below the current 2009 RBSLs; however, methods are now available for analyzing samples for volatile petroleum hydrocarbons (VPH) (as fractions) using the MADEP method for comparison to DEQ's current (2009) RBSLs.

Three test pits (TP-42, TP-43, and TP-45) were excavated in the former oil reclamation area as part of the RI (see Table 2 and Figure 3). Test pit TP-42 was located within the backfill area of former UST 2, test pit TP-43 was located beneath the former fueling stanchions, and test pit TP-45 was located between USTs 3 and 4 (Figure 3). The sample collected from TP-42 at eight feet BGS reported TPH at a concentration of 47,500 mg/kg, above the ROD total ceiling for total petroleum hydrocarbons (see Table 2). Concentrations of 2-chlorotoluene (5.9 mg/kg) and naphthalene (5.1 mg/kg) were reported above the EPA SSL and ROD screening level, respectively, in this sample. However, the naphthalene concentration is below the current 2009 RBSL of 9.32 mg/kg. The samples collected from TP-43 at 10 feet BGS and TP-45 at 11 feet BGS and contained 35 mg/kg and 22 mg/kg of TPH, respectively.

Based on current UST closure confirmation sampling protocols (see Section 4.3), insufficient samples were collected during the removal of USTs in the former oil reclamation area. Soils in this area should be re-assessed using current UST closure confirmation sampling protocols and current soil sample analysis methods for petroleum hydrocarbons to determine whether there are any residual petroleum hydrocarbons (including PAHs) and/or VOCs impacts left in place that may pose an unacceptable risk and preclude closure of the former tank locations in this area.

2.3.2 Former Freight Train Refueling Area

The former freight train refueling area includes three USTs (6, 7, and 8), two grit chambers (13 and 18), and four ASTs (14 through 17) (Figure 4).

One 3-point composite soil sample was collected beneath UST 6 (depth unknown) during the tank removal activities. The sample was analyzed for VOCs, TPH, SVOCs, including PAHs, pesticides/PCBs, and metals. None of the reported concentrations were above ROD cleanup/screening levels or other applicable screening criteria. One sample was also collected from test pit TP-74 during the RI at 12.5 feet BGS located near the west end of former UST 6 location which was analyzed for TPH. No TPH was reported above the method reporting limit of 10 mg/kg (see Table 2).

One sample was collected beneath grit chamber 13 (depth unknown), no samples were collected beneath grit chamber 18. Two composite samples were also collected along the piping alignments adjacent to the wash rack and track pan areas. These samples were collected during the tank removal activities and analyzed for VOCs, TPH, SVOCs, including PAHs, pesticides/PCBs, and metals. TPH was reported at a concentration of 130,000 mg/kg in the composite sample collected along the track pan area piping alignment (see Table 2). 2-methynaphthalene (46 mg/kg) and naphthalene (7.9 mg/kg) were also reported

above the EPA SSL and ROD screening level, respectively, in this sample. However, the naphthalene concentration is below the current 2009 RBSL of 9.32 mg/kg.

One sample was collected beneath UST 7 and one 3-point composite sample was collected beneath UST 8 (depths unknown) during the tank removal activities. The samples were analyzed for VOCs, TPH, SVOCs, including PAHs, pesticides/PCBs, and metals. None of the reported concentrations were above ROD cleanup/screening levels or other applicable screening criteria in the sample collected beneath UST 7. TPH was reported at a concentration of 15,000 mg/kg, above the ROD total ceiling for total petroleum hydrocarbons, in the sample collected from beneath UST 8 (see Table 2).

At AST 14, one sample was collected from the pipe manifold pit (depth unknown) located just outside the eastern corner of the AST containment area. A composite sample was also collected along the fueling stanchions piping alignment. These samples were collected during the tank removal activities and analyzed for VOCs, TPH, SVOCs, including PAHs, pesticides/PCBs, and metals. One sample was also collected from test pit TP-66 during the RI at 8.5 feet BGS located near the fueling stanchions and analyzed for the same suite of compounds. Another sample was collected from TP-65 during the RI, located with AST 14 containment area, at 13 feet BGS and analyzed for TPH. The reported TPH concentration (8,900 mg/kg) in the composite collected from along the fueling stanchions piping alignment is above the ROD total ceiling for total petroleum hydrocarbons (see Table 2). With the exception of the sample collected from within the AST 14 containment area, TPH concentration from the other two sampling locations are below the ceiling of 5,000 mg/kg, but are above 200 mg/kg, the current requirement for analyzing soil samples for EPH fractions in accordance with the MADEP method. The sample collected within the containment area contained 25 mg/kg of TPH. 2-methynaphthalene (19 and 40 mg/kg) and naphthalene (11 and 7.7 mg/kg) were also reported above the EPA SSL and ROD screening level, respectively, in the two of the samples.

One sample was collected from between the AST 16 and 17 near the southern pipe T junction during the tank removal activities. The sample was analyzed for VOCs, SVOCs, including PAHs, pesticides/PCBs, and metals; however, the sample was not analyzed for TPH or DRO. 2-methynaphthalene (12 mg/kg), and dibenzofuran (9.8 mg/kg) were reported above their respective EPA SSLs and naphthalene (5.2 mg/kg) was reported above the ROD screening level (see Table 2). However, the naphthalene concentration is below the current 2009 RBSL of 9.32 mg/kg.

As noted above, based on current UST closure confirmation sampling protocols (see Section 4.3), insufficient samples were collected during the removal of USTs and AST piping in the former freight train refueling area. Soils in this area should be re-assessed using current UST closure confirmation sampling protocols and current soil sample analysis methods for petroleum hydrocarbons to determine whether there are any residual petroleum hydrocarbons (including PAHs) and/or VOCs impacts left in place that may pose an unacceptable risk and preclude closure of the former tanks/piping in this area.

2.3.3 Former Depot Refueling Area

The former depot refueling area includes four USTs (9A, 9B, 10 and 11) (Figure 5). One sample was collected from beneath UST 9A (depth unknown) during the tank removal activities. The sample was analyzed for VOCs, TPH, SVOCs, including PAHs, pesticides/PCBs, and metals. TPH was reported at a

concentration of 350 mg/kg, below the ROD total ceiling for total petroleum hydrocarbons, but above the current requirement for analyzing soil samples for EPH fractions in accordance with the MADEP method. 2-methynaphthalene (14 mg/kg) and naphthalene (11 mg/kg) were also reported above the EPA SSL and ROD screening level, respectively, in this sample (see Table 2). One sample was also collected from test pit TP-86 during the RI at 13 feet BGS located adjacent to former UST 9A location which was analyzed for TPH. No TPH was reported above the method reporting limit of 10 mg/kg.

One 2-point composite sample was collected beneath USTs 10 and 11 and another 3-point composite sample was collected along the former freight train fueling stanchions piping alignment (depths unknown) during the tank removal activities. The samples were analyzed for VOCs, TPH, SVOCs, including PAHs, pesticides/PCBs, and metals. One sample was also collected from test pit TP-87 during the RI at 14 feet BGS located at the western end of the fueling stanchions and analyzed for the same suite of compounds. The reported concentration of TPH (2,900 mg/kg) in the composite sample collect beneath USTs 10 and 11 is below the ROD total ceiling for total petroleum hydrocarbons, but above the current requirement for analyzing soil samples for EPH fractions in accordance with the MADEP method. The concentrations of 2-methylnaphthalene (17 mg/kg) and dibenzofuran (2.8 mg/kg) were reported at concentrations above their respective EPA SSLs (see Table 2).

The reported concentration of TPH (20,000 mg/kg) in the composite sample collected from along the fueling stanchions piping alignment is above the ROD total ceiling for total petroleum hydrocarbons. 2-methynaphthalene (380 mg/kg) and naphthalene (96 mg/kg) were also reported above the EPA SSL and ROD screening level, respectively, in this sample (see Table 2). The reported concentration of TPH (1,700 mg/kg) in the sample collected from the test pit TP-97 during the RI is below the ROD total ceiling for total petroleum hydrocarbons, but above the current requirement for analyzing soil samples for EPH fractions in accordance with the MADEP method.

As noted above, based on current UST closure confirmation sampling protocols (see Section 4.3), insufficient samples were collected during the removal of USTs in the former depot refueling area. Soils in this area should be re-assessed using current UST closure confirmation sampling protocols and current soil sample analysis methods for petroleum hydrocarbons to determine whether there are any residual petroleum hydrocarbons (including PAHs) and/or VOCs impacts left in place that may pose an unacceptable risk and preclude closure of the former tanks/piping in this area.

2.3.4 API Separator Ponds Area

As shown in Table 3, samples collected from the API separator ponds area during the RI were analyzed for VOCs, petroleum hydrocarbons (including PAHs) and metals. The samples contained elevated concentrations of petroleum hydrocarbons. Three samples collected from the API separator pond [API-1-discrete, API-1 (composite) and API-2] after sludge was removed from the API separator pond to the first overflow pond reported TPH concentrations up to 15,800 mg/kg. 2-chlorotoluene (7.5 to 15 mg/kg) and 1,2,4-trimethylbenzene (1.1 and 0.62 mg/kg) were also reported in the same samples above their respective EPA SSLs. Two samples (API-3 and API-6) collected from the sludge in the relic overflow pond reported TPH at concentrations of 119,000 and 203,000 mg/kg, respectively. The sludge samples also contained higher concentrations of metals than reported in the soil samples Subsequent samples collected from the API separator ponds area after removal of the sludge and subsequent soil treatment

only included analysis of VOCs; soil samples were not collected for analysis of petroleum hydrocarbons (including PAHs), or metals during confirmation sampling.

Given the elevated concentrations of petroleum hydrocarbons up to 6 feet BGS, and presence of metals in the sludge (see Table 3), as reported during the RI, and the possibility for residual contamination to be present in the former API separator ponds area as a result of sludge being stored in this area of the Facility, soils in this area should be re-characterized to assess the presence of petroleum hydrocarbons (including PAHs), VOCs, and metals.

3.0 OBJECTIVES

The objectives of the sampling activities proposed in this Work Plan are to 1) characterize soils underlying former tanks (USTs, ASTs, and flow-through grit chambers) and associated piping for potential presence of petroleum hydrocarbons, including PAHs, and VOCs, and 2) assess if residual petroleum hydrocarbon, VOC, and metals impacts exist in the former API separator ponds area. The data collected will compliment historical data collected in these areas, and will ultimately be used to determine whether impacts are present at concentrations above ROD cleanup/screening levels or other applicable screening criteria (see Section 2.1.2) for compounds without ROD cleanup/screening levels and whether any further remedial action is needed prior to closure. It is understood that when the ROD was finalized in 2001, screening levels were established for petroleum hydrocarbons in soil (with the exception of total carcinogenic PAHs in surface soil which has a specific ROD cleanup level). These screening levels were the most current DEQ RBCA screening levels at the time (year 2000). However, since more current RBCA screening levels are now available, soil analytical data collected through implementation of this Work Plan will be evaluated using the most current RBCA screening levels (2009 RBSLs) as outlined in DEQ Memorandum dated October 14, 2011 (DEQ 2011) for constituents that do not have a site-specific ROD cleanup level (DEQ 2001). If a constituent does not have a ROD cleanup level or 2009 RBSL (i.e., metals), it will be compared to background concentrations or EPA's RSLs and SSLs, as appropriate (see Section 2.1.2).

Objectives for each specific area (former oil reclamation area, former freight train refueling area, former depot refueling area, and former API separator ponds area), along with the rationale for the proposed investigation are summarized in Table 4.

4.0 INVESTIGATION METHODS

Field procedures will be conducted in accordance with the Facility-Wide SAP (Kennedy/Jenks Consultants 2006) and associated addenda, the Facility-Wide Quality Assurance Project Plan (QAPP) (Appendix B of Facility-Wide SAP), and UST closure requirements. The SOGs referenced herein were submitted to DEQ as Appendix A of the Facility-Wide SAP. Prior to start of field activities, a site reconnaissance will be conducted to determine if surface evidence of the former UST/piping locations exist to assist in placement of soil boring and test pit locations. Once soil boring and test pit locations have been identified and marked, the locations will be cleared of underground utilities. Utility clearance will include an Underground Service Alert one-call utility notification, a private utility locate, and a site walk with MRL representatives and utility companies, as appropriate.

4.1 SOIL SAMPLE COLLECTION METHODS

A rotosonic drill rig will be used to advance borings to characterize soils associated with ASTs, USTs, and associated piping, with the exception of ASTs 15, 16, and 17 in the former freight train refueling area (see Figure 4). These are located within a secondary containment structure inaccessible by drill rig. This AST area, as well as the former API separator ponds area will be characterized by test pits excavated with a rubber tire or track-mounted excavator.

Sampling procedures for soil borings are outlined in SOG-7, and test pit sampling methodology is outlined in SOG-11. Soil samples collected using a rotosonic drill rig will be collected as follows: a core barrel will be advanced (typically 10 feet) in a single core run, the core barrel will then be overridden with a temporary casing to support and seal off the borehole to mitigate downhole sample contamination. The core barrel will then be pulled from the borehole and the sample extruded into a long plastic bag for field observation and sample collection. Soil samples will be collected from the extruded core using a clean stainless or plastic scoop (or similar) for field screening and for transferring soil into jars for chemical analysis. Criteria for selecting samples for chemical analysis are discussed in Sections 4.3, 4.4, and 4.5. A drill rod will then be added to the drill string to advance the core barrel beyond the existing casing for the next core run. If non-disposable equipment is used to collect the samples from the retrieved cores for field screening and chemical analysis, the equipment will be decontaminated between sampling locations.

At test pit locations, soil samples will be collected from the excavator bucket; field personnel will not enter test pits. The soil sample will be collected from soil that has not been in direct contact with the excavator bucket using a clean stainless or plastic scoop (or similar) for field screening and for transferring soil into jars for chemical analysis. Criteria for selecting samples for chemical analysis are discussed in Sections 4.4, and 4.6. Brushes will be used to remove dry residual soil from the excavator bucket between test pit locations. If necessary, the excavator bucket will be decontaminated using high-pressure washing at either a portable decontamination unit or at the decontamination pad located at the nearby BNSF field office. Following completion of the investigation activities, the excavator bucket will be decontaminated using high-pressure washing at the decontamination pad located at the BNSF field office.

Borehole and test pit locations will be recorded in the field using a hand-held global positioning system (GPS) device.

4.2 FIELD AND LABORATORY ANALYSES

Field personnel will log boreholes and test pits using the procedures described in SOG-13 and SOG-11, respectively. Data collected (e.g., soil conditions, sampling locations/depths, depth to groundwater, etc.) will be documented in a field notebook and on appropriate field forms, (i.e., boring or test pit log).

Field screening will include visual inspection of soils to identify lithology, as wells as visual evidence of petroleum hydrocarbon impacts. In addition, sheen tests will be conducted using deionized water to assess the potential presence of separate phase petroleum hydrocarbons, and organic vapor headspace monitoring will be conducted using a photoionization detector.

The collection of samples for laboratory analyses will emphasize soils that are stained or discolored by petroleum or other substances, contain residual non-aqueous phase liquids (NAPLs), and/or exhibit

appreciable VOCs above background concentrations during headspace screening. If no visual evidence of petroleum hydrocarbon and/or VOC impacts are observed through visual observations and field screening, a minimum of one sample per boring/test pit will be submitted for chemical analysis as described in Sections 4.3, 4.4, 4.5, and 4.6 . Samples destined for laboratory analysis will be submitted to Energy Laboratories in Billings, Montana under chain-of-custody protocol.

Soil samples submitted to the laboratory will be analyzed for:

- VOCs using EPA Method 8260;
- VPH [including methyl-t-butyl-ether (MTBE), benzene, toluene, ethylbenzene, xylenes, and naphthalene, collectively referred to as MTBEXN] using the MADEP VPH Method. Where soil sample will also be analyzed for VOCs, the MTBEXN results reported by both methods will be presented and evaluated. As required by DEQ, the higher of the two results will used for decision-making; and
- EPH screen using January 1998 MADEP Method as modified by Montana DEQ with follow-on analysis for EPH fractions using MADEP EPH Fractionation Method and PAHs using EPA Method 8270 in selective ion monitoring (SIM) mode if the EPH screen result is above 200 mg/kg.

In addition, soil samples collected from the former oil reclamation area and the former API separator ponds area will be analyzed for:

- Resource Conservation and Recovery Act (RCRA) Metals using EPA Method 6010/6020.

4.3 UST SAMPLE LOCATIONS

Soils underlying historical USTs will be characterized in accordance with DEQ UST closure requirements as defined in Administrative Rules of Montana (ARM) 17.56.703. As part of the requirements of tank closure, soil samples will be collected from at least one to two feet below the bottom of the tank, piping, or equipment. Samples will be collected at both ends of a former tank or tanks within a single basin. Soil sampling, analysis, and specific screening levels will follow requirements specified in *Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases* (DEQ, 2009).

UST borings will be advanced in the locations shown on Figures 3, 4, and 5 to approximately two feet below the depth of the tank basin as identified by native alluvium. Tank basin locations were approximated on Figures 3 through 5 by geo-referencing several diagrams from Attachment 3-2 of the Comprehensive Report; however, as previously noted these locations should be considered best approximation as the maps used to obtain the historical information were not topographic maps or aerial photographs and showed limited physical features. The boring location therefore may not coincide exactly with the former tank basin. In these instances, the boring will be advanced to two feet below the projected bottom of tank depth (see Table 4).

At least one soil sample will be collected from each boring for laboratory analysis. If no evidence of petroleum hydrocarbon and/or VOC impacts are observed through visual observation and field screening (see Section 4.2), the confirmation sample for laboratory analysis will be collected approximately one to two feet below the depth of the tank basin (or projected bottom of tank depth; see Table 4). If evidence of

petroleum hydrocarbon and/or VOC impacts is observed through visual observation and field screening, the boring will continue until non-impacted soil is encountered or to the soil/groundwater interface, whichever comes first. In this case, one sample will be collected from the depth interval exhibiting the highest petroleum hydrocarbon and/or VOC impacts if impacted soil is encountered the entire soil column to the soil/groundwater interface. If vertical impacts appear to be limited, one sample will be collected as described above from the depth interval exhibiting the highest petroleum hydrocarbon and/or VOC impacts, and a second confirmation sample will be collected from below the impacted zone or at the soil/groundwater interface, whichever comes first.

The specific former UST and grit chamber locations identified for further characterization include:

- USTs 2, 3, 4 and undesignated 3,000-gallon UST in the former oil reclamation area (Figure 3) ;
- Undesignated 590-gallon gasoline UST west of the former Talgo warehouse (Figure 3);
- USTs 6 and 8 in the former freight train refueling area (Figure 4);
- Grit chambers 13 and 18 in the former freight train refueling area (Figure 4); and
- USTs 9A, 9B, 10, and 11 in the former depot refueling area (Figure 5).

Further characterization is not required at the following former UST locations: UST 1 (east of MRL's WWTP), UST 12 (south of the mainline between of the former depot and former freight train refueling areas), and UST 7 (former freight train refueling area). No soil was removed during tank removal activities at USTs 7 and 12 due to the absence of visual contamination (Re-Tec/Olympus, 1989). Although only one confirmation sample was collected beneath UST 7 and beneath UST 12 during the tank removals, reported concentrations of TPH, VOCs, and SVOCs (including PAHs) were below laboratory reporting limits. Similarly, only one sample was collected during removal of UST 1 at 8.5 feet BGS for analysis of TPH. TPH was reported at a concentration of 20 mg/kg, well below current criteria for fractionation (see Table 2).

4.4 AST AREA SAMPLE LOCATIONS

The specific ASTs identified for further characterization are located in the former freight train refueling area, as shown on Figure 4, and include:

- AST 14; and
- ASTs 15, 16, and 17.

As DEQ considers underground piping associated with ASTs subject to its tank closure requirements, underground piping associated with the ASTs is addressed in Section 4.5. This section is specific to addressing potential releases to the subsurface from the three ASTs in the former freight train refueling area. As these ASTs still exist, sampling directly beneath the structures is not possible. As noted in Section 2.0, this area is part of the Task D/E remediation activities, and is undergoing bioventing to enhance destruction of the petroleum hydrocarbon-impacted soils in the vadose zone. The ASTs in the former freight train refueling area lie within the radius of influence of the bioventing system. Collecting deeper subsurface samples is not expected to provide additional information related to closure of the ASTs (see Section 3.0, Objectives). Therefore, samples will be limited to the shallow depths and in the immediate vicinity of the ASTs

AST 14, as shown on Figure 4, is a large (100,000-gallon) AST located within its own concrete containment area. Aerial photographs from this area indicate the west end of the concrete containment wall has been removed; therefore, test pits will be advanced inside the containment area as shown on Figure 4. Due to physical constraints, including size and stability of the AST, test pits inside the containment area will be advanced to approximately 4 feet bgs and one sample will be collected from the base of each test pit for laboratory analysis.

Aerial photographs indicate ASTs 15, 16, and 17 are separated by approximately eight or nine feet, which may not be enough space for a drill rig and support vehicle to operate. Therefore, this area will be sampled by test pits excavated in four locations just inside the concrete containment basin as shown on Figure 4. These locations coincide with former underground piping and will be sampled as indicated below.

4.5 FUEL/OIL PIPING SAMPLE LOCATIONS

Soil borings and test pits will be advanced in the locations shown on Figures 4 and 5 to characterize soils underlying historical UST and AST piping. Boring locations were selected in accordance with the DEQ requirement of one soil sample per 20 linear feet of piping. Test pit locations were selected to coincide with underground piping located inside AST 15/16/17 containment area. Underground piping associated with USTs/ASTs and fueling stanchions is not anticipated to be encountered at depths greater than four feet BGS; therefore borings along piping runs will be initially advanced to a depth of six feet unless it is evident that piping is or was buried at a shallower depth. If petroleum impacts are present at a boring location, the boring will continue until clean soils are encountered or to the soil/groundwater interface, whichever comes first. At least one soil sample will be collected from each of these borings for laboratory analysis. If there is no evidence of petroleum hydrocarbon and/or VOC impacts, the soil sample will be collected from six feet BGS, unless it is evident the piping is or was buried at a shallower depth, in which case the sample will be collected within one to two feet beneath the piping. If there is evidence of petroleum hydrocarbon and/or VOC impacts and the boring extends beyond six feet, soil sampling will be conducted as described in Section 4.3. Due to physical constraints, test pits inside the AST 15/16/17 containment area will not extend deeper than six feet BGS.

4.6 API PONDS SAMPLE LOCATIONS

The depth to groundwater in this area is variable and estimated to range from five to ten feet during high groundwater conditions to approximately ten to fifteen feet during low groundwater conditions. Test pits will be initially excavated to six feet BGS or native material (whichever is greater) in the locations shown on Figure 6 using a rubber tire or track-mounted excavator. At least one soil sample will be collected from each test pit for laboratory analysis (see Table 4). If a test pit exhibits no evidence of petroleum hydrocarbon and/or VOC impacts based on field screening and visual observations, the sample will be collected from the base of the test pit (six feet BGS). If evidence of petroleum hydrocarbon and/or VOC impacts are observed based on field screening and visual observations, the test pit will be extended until 1) non-impacted soil (based on field screening) is encountered, 2) soil/groundwater interface is encountered, or 3) limit of excavator reached, whichever comes first. In this case, a sample will be collected from the zone exhibiting highest impacts based on field screening and visual observations, and a second sample will be collected from beneath the impacted zone or at the limit of excavation, whichever comes first.

4.7 SAMPLE LABELING

Soil samples will be labeled as follows:

- Samples associated with tanks will be labeled with H for "Task H", then T for "Tank", followed by the tank ID number, followed by a sequential number representing the order in which the tank samples were collected, followed by the sample depth in feet (e.g., H-T14-2-15 for Tank 14, 2nd sample, from 15 feet BGS)
- Samples associated with piping will be labeled with H for "Task H", then P for Piping, followed by a sequential number in the order in which the piping samples are collected, followed by the sample depth in feet (e.g., H-P12-11 for Piping sample number 12, from 11 feet BGS); and
- Samples associated with API ponds will be labeled with H for "Task H", then API, followed by a sequential number identifying the test pit from which the sample was collected, followed by the sample depth in feet (e.g., H-API15-12 for API test pit number 15, from 12 feet BGS).

QC samples will be labeled as described in Section B2.3.3 of the Facility-Wide QAPP.

4.8 CHAIN-OF-CUSTODY PROCEDURES

The chain-of-custody procedures presented in Section B2.3.2 of the Facility-Wide QAPP will be followed.

4.9 SAMPLE SHIPPING AND HANDLING

Shipping and handling procedures that will be followed are provided in Section B2.3.4 of the Facility-Wide QAPP and in SOG-3 (Appendix A of the Facility-Wide SAP).

4.10 QUALITY ASSURANCE QUALITY CONTROL (QA/QC)

QA/QC will be performed in accordance with the QAPP in Appendix B of the Facility-Wide SAP. QC samples will be collected and analyzed for both field and laboratory operations to monitor precision and accuracy for the soil sampling activities. Field QC samples will include field duplicate (i.e., collocated) and equipment rinsate blank samples and will be collected at frequencies of one duplicate and one blank per 20 natural samples. Duplicate samples will be collected by splitting a natural sample in the field, and rinsate blank samples will be collected by pouring laboratory-provided deionized water through or over decontaminated sample collection equipment.

Upon receipt of the analytical results, a QA/QC review of the data will be conducted in general accordance with applicable sections of the EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review and National Functional Guidelines for Inorganic Superfund Data Review (EPA 2014a,b) and the DEQ-approved QAPP. The evaluation will consist of reviewing the following:

- Holding times
- Laboratory method blank sample results
- Surrogate compound recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) sample results

- Laboratory control sample (LCS) results
- Laboratory duplicate sample results
- Field blind duplicate sample results
- Field blank sample results.

The QA/QC reviews will be presented in the data validation summaries that will be included in the Supplemental Investigation Report (see Section 9.0).

5.0 INVESTIGATION DERIVED WASTE

Investigation-derived waste (IDW) generated during implementation of this Work Plan will include drill cuttings and excavation spoils generated during soil boring advancement and test pit excavations, decontamination water, and non-indigenous IDW.

Since some of the work will be conducted in an area containing F-listed constituents (i.e., near the Former Oil Reclamation Plant building and API separator ponds area), soil cuttings, spoils, and decontamination water generated during field activities may contain F-listed constituents. Therefore, these IDW will be contained in a secured area as described in Section 8.0 of the Facility-Wide SAP and associated addenda and be managed as hazardous wastes, until determined otherwise through analytical testing and DEQ "no-longer contained-in" determinations.

Soil cuttings from soil borings will be contained in a lined, securely covered, labeled roll-off bin(s) and temporarily stored in the roll-off bin storage area at the former C&P Packing property (or other location determined in the field in consultation with DEQ or its onsite representative).

Non-impacted test pit spoils (as determined in the field based on visual observation and field screening) will be returned to the excavation at the end of the investigation. Imported fill material (i.e., sand from Fisher Sand & Gravel in Livingston, Montana as previously approved by the DEQ for Task D/E and Task J backfilling activities) will be used as needed to backfill the test pits to grade level. Impacted soils will be segregated and stockpiled for further testing and disposal. The locations for stockpile storage will be determined in the field in consultation with the DEQ or its onsite representative. The test pit spoils will be placed on minimum 10-mil scrim-reinforced plastic sheeting within a bermed area(s). Upon completion of field activities the stockpiles with be sprayed with Soil Sement® pending characterization, receipt of DEQ's no-longer contained-in determination, and appropriate disposal. The berm and placement of the stockpiled soil will be such that any water that has contacted the soil (e.g., condensate) will accumulate inside of the berm and not runoff. Temporary fencing panels will be installed at the perimeter of the final stockpile area(s). A sign will be posted next to or on the stockpile(s) indicating the constituents of concern present and will state the following: "Warning – Hazardous Waste Containing Chlorinated Solvents and/or Metals". The stockpiled soil will be inspected at least weekly or after a significant wind storm event.

Water IDW (i.e., decontamination water) will be contained either at the decontamination pad or in other appropriate containers (i.e., drums) and transferred to the 4,000-gallon holding tank located in the Task

D/E Groundwater Treatment Plant (GWTP) pending sampling, pre-treatment (if warranted based on holding tank analytical results), a DEQ no-longer contained-in determination, then batch treatment through granular activated carbon prior to discharge to the Yellowstone River under a Montana Pollutant Discharge Elimination System (MPDES) permit.

Non-indigenous IDW [e.g., disposable personal protective equipment (PPE), disposable sampling equipment, decontamination materials/equipment, etc.] will be handled as a non-hazardous waste in accordance with Section 8.4.3 of the Facility-Wide SAP unless the materials are saturated with solvent-containing groundwater or solvent-containing decontamination water, or materials are coated with solvent-containing soil or residue that cannot be removed. In that case, the non-indigenous IDW will be managed as hazardous waste in accordance with Section 8.4 of the Facility-Wide SAP and associated addenda.

6.0 HEALTH AND SAFETY PLAN

A task-specific health and safety plan (THASP) has been prepared and is included in Appendix C. 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 2008b). Daily safety briefings will be conducted to discuss scope of work and health and safety considerations.

7.0 ENVIRONMENTAL REQUIREMENTS, CRITERIA AND LIMITATIONS (ERCLs)

Environmental requirements, criteria, and limitations (ERCLs) have been developed by DEQ for the Facility and are included in Attachment A of the Record of Decision (ROD) (DEQ, 2001). The activities proposed in this Work Plan comply with Facility ERCLs as detailed in Appendix D.

8.0 SCHEDULE

WET will begin scheduling field activities following DEQ approval of this Work Plan. Field work will include an approximately two-day site visit to 1) stake tank locations, approximate pond limits, and proposed soil sample locations, and 2) conduct both public and private utility locates in these areas to identify potential conflicts with underground utilities. The site visit will be followed by the sampling effort detailed in Section 4.0, which is anticipated to require approximately three to four weeks to complete. WET will notify DEQ at least 10 days before commencing field work.

9.0 DELIVERABLE

WET will upload laboratory data to the Livshare website upon receipt of laboratory analytical reports for soil sampling activities. A Supplemental Investigation Report outlining the results of the investigation will be submitted within 8 weeks of receiving laboratory analytical results and will include tables outlining field screening results, figures showing borehole and test pit locations, tabulated analytical results and data validation summaries (see Section 4.10), boring logs, and test pit logs.

10.0 REFERENCES

DEQ, 2001. Record of Decision, Burlington Northern Livingston Shop Complex. Montana Department of Environmental Quality, Remediation Division. September 2001.

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

Re-Tec/Olympus, 1989. Summary Report for the Removal of Storage Tanks, Piping, and Contaminated Soils/Gravel. Livingston Fueling Facility, Livingston, Montana. April 1989.

U.S. Environmental Protection Agency. 2014a. National Functional Guidelines for Superfund Organic Methods Data Review. EPA 540-R-014-002. August 2014. U.S. EPA, Office of Superfund Remediation and Technology Innovation, Washington, DC.

U.S. Environmental Protection Agency. 2014b. National Functional Guidelines for Inorganic Superfund Data Review. EPA 540-R-013-001. August 2014. U.S. EPA, Office of Superfund Remediation and Technology Innovation, Washington, DC.

U.S. Environmental Protection Agency. 2016. Regional Screening Levels for Chemical Contaminants at Superfund Sites. Dated May 2016.

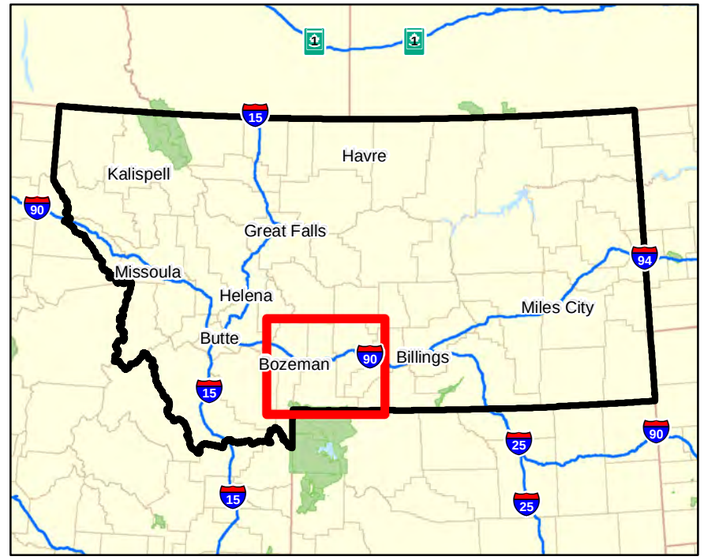
FIGURES

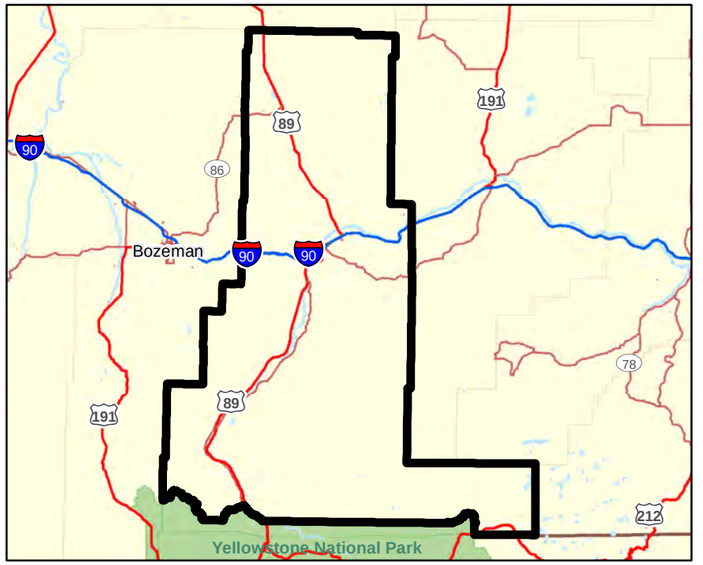
SITE LOCATION

N
W
E
S

Feet
0 400 800 1,600 2,400 3,200

Image courtesy of USGS © 2013 Microsoft Corporation © 2010 NAVTEQ © AND





WATER & ENVIRONMENTAL TECHNOLOGIES, PC

SITE LOCATION

Burlington Northern Livingston Shop Complex

Job#: LRGM01 Task 7

Date: 8/14/2015

FIGURE 1

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Legend

Figure Index

N
W
E
S

Feet

0 1,000 2,000

Water & Environmental TECHNOLOGIES

Site Features / Sheet Index

Burlington Northern Livingston Shop Complex

Job#: LRGM01 Task 3

Date: 7/26/2016

Figure 2

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Analytical Abbreviations:

2-CT	2-Chlorotoluene
2-MN	2-Methylnaphthalene
CVOCs	Chlorinated Volatile Organic Compounds
DBF	Dibenzofuran
PAHs	Polynuclear Aromatic Hydrocarbons
PP Metals	Priority Pollutant Metals
PST	Pesticides
PCBs	Polychlorinated Biphenyls
RCRA Metals	Resource Conservation and Recovery Act Metals
SVOCs	Semivolatile Organic Compounds
TEH	Total Extractable Hydrocarbons
TPH	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds

Locomotive Shop

Former Boiler House

Tanks 3 and 4 Waste Oil USTs (10,000-gal each)

TP-45	11 feet	Apr 1990
TPH		
--		

TP-45

03-04-03-GI/SI

03-04-03-GI/SI		NP		Dec 1988	
TPH	VOCs	PAHs	SVOCs	PST/PCBs	PP Metals
--	--	--	--	--	--

TP-43	10 feet	Apr 1990
TPH		
--		

TP-43

TP-44

Waste Oil UST (3,000-gal)

SO-436	12 feet	Dec 1993
TEH		
8,600		

SO-438	12 feet	Dec 1993
TEH		
6,000		

SO-436 SO-437 CF-24 SO-439 SO-438

SO-437	12 feet	Dec 1993
CVOCs		
--		

02-02-GI/SI			NP	Dec 1988	
TPH	VOCs	2-MN	DBF	PST/PCBs	PP Metals
--	--	4.80	4.00	--	--

SO-439	NP	Dec 1993
2-CT		
7.9		

02-02-GI/SI

CF-13 TP-42 TP-175 TP-40

Former Oil Reclamation Plant

Tank 2 Recycled Waste Oil UST (1,100-gal)

TP-42	8 feet		Apr 1990		
TPH	2-CT	N	SVOCs	PST/PCBs	RCRA Metals
47,500	5.9	5.1	--	--	--

Locomotive Shop

LRC-TR2	10 feet	Aug 1990
BTEX		
--		

LRC-TR2

Gasoline UST (590-gal)

Former Talgo Warehouse

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Proposed Boring Location
- Extent of Petroleum Containing Soil
- Extent of Soil Removal
- Composite Sample Extent
- Tank Removal Sample
- Test Pit
- Surface Soil Composite
- Soil Boring
- AST/UST Locations
- Diesel/Used Oil (Removed)
- Gas

Location ID

Sample Depth (NP denotes sample depth was not provided)

SO-439	NP	Dec 1993
2-CT		
7.9		

Sample Date

Analyte

Concentration in milligrams per kilogram (mg/kg)

Blue shaded concentrations indicate concentrations above the screening criteria

"--" indicates concentrations below the screening criteria

Feet 0 30 60

Water & Environmental Technologies

Proposed Boring Locations
Former Oil Reclamation Area

Burlington Northern Livingston Shop Complex

Job#: LRGM01 Task 3

Date: 7/26/2016

Figure 3

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Analytical Abbreviations:

2-MN	2-Methylnaphthalene
DBF	Dibenzofuran
N	Naphthalene
PAHs	Polynuclear Aromatic Hydrocarbons
PP Metals	Priority Pollutant Metals
PST	Pesticides
PCBs	Polychlorinated Biphenyls
RCRA Metals	Resource Conservation and Recovery Act Metals
SVOCs	Semivolatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds

14/15/16/17-13-SI			NP	Dec 1988	
VOCs	2-MN	N	DBF	PST/PCBs	PP Metals
--	12.0	5.20	9.80	--	--

07-01-SI		NP		Dec 1988	
TPH	VOCs	PAHs	SVOCs	PST/PCBs	PP Metals
--	--	--	--	--	--

TP-65	13 feet	Apr 1990
TPH		
--		

14/15/16/17-05-GI [(a)]		NP			Dec 1988	
TPH	VOCs	2-MN	N	SVOCs	PST/PCBs	PP Metals
--	--	19.0/15.0	1.10/5.30	--	--	--

08-02-GI/SI		NP		Dec 1988	
TPH	VOCs	PAHs	SVOCs	PST/PCBs	PP Metals
15,000	--	--	--	--	--

14/15/16/17-02-SI		NP		Dec 1988	
TPH	VOCs	2-MN	N	SVOCs	PST/PCBs	PP Metals
8,900	--	40.0	7.70	--	--	--

TP-66	8.5 feet		Apr 1990	
TPH	VOCs	PAHs	SVOCs	PST/PCBs	RCRA Metals
--	--	--	--	--	--

TP-74	12.5 feet	Apr 1990
TPH		
--		

06-03-GI/SI		NP		Dec 1988	
TPH	VOCs	PAHs	SVOCs	PST/PCBs	PP Metals
--	--	--	--	--	--

14/15/16/17-09-SI/GI		NP		Dec 1988	
TPH	VOCs	PAHs	SVOCs	PST/PCBs	PP Metals
--	--	--	--	--	--

14/15/16/17-08-GI/SI		NP			Dec 1988	
TPH	VOCs	2-MN	N	DBF	PST/PCBs	PP Metals
130,000	--	46.0	7.90	13.0	--	--

13-04-GI/SI		NP		Dec 1988
TPH	VOCs	PAHs	SVOCs	PP Metals
--	--	--	--	--

Tanks 15, 16, and 17
Diesel ASTs
(25,000-gal each)

Tank 7
Caustic Soda
UST (7,500-gal)

Tank 14
Diesel AST
(100,000-gal)

Tank 8
Methanol UST
(10,000-gal)

Track Pans
(Removed)

Tank 6
Waste Oil UST
(13,000-gal)

Tank 18
Wash Rack Grit Chamber
(6,500-gal)

Tank 13
Track Pan Grit Chamber
(8,000-gal)

15 16 17

14/15/16/17-13-SI
07-01-SI
BVW-78
TP-67
TP-65
08-02-GI/SI
BVW-79
14/15/16/17-05-GI
14/15/16/17-02-GI
TP-73
TP 68
TP-66
BVW-80
EX-7
95-1
TP-136
TP-72
TP-137
LS-7
EX-54
TP-69
14/15/16/17-09-SI
EX-30
14/15/16/17-08-SI
TP-70
EX-55
13-04-GI/SI
TP-74
06-03-GI/SI
EX-33

Note:
(a) Second value represents duplicate sample result.

Service Layer Credits: Source: Esri, DigitalBox, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Proposed Boring Location
- Proposed Test Pit Location
- Extent of Soil Removal
- Composite Sample Extent
- Tank Removal Sample
- Test Pit
- Monitoring Well
- Bioventing Well
- AST/UST Locations
- Track_Pans
- Diesel/Used Oil (Removed)
- Industrial Wastewater (Removed)
- Methanol Antifreeze (Removed)
- Caustic (Removed)
- Water

Location ID
Sample Depth (NP denotes sampling depth was not provided)

TP-74	12.5 feet	Apr 1990	← Sample Date
TPH			← Analyte
--			

Concentration in milligrams per kilogram (mg/kg)
Blue shaded concentrations indicate concentrations above the screening criteria
"--" indicates concentrations below the screening criteria

Feet
0 50 100

Water & Environmental TECHNOLOGIES

Proposed Boring and Test Pit Locations
Former Freight Train Refueling Area

Burlington Northern Livingston Shop Complex

Job#: LRGM01 Task 3
Date: 7/26/2016

Figure 4

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Analytical Abbreviations:

2-MN	2-Methylnaphthalene
DBA	Dibenzo(a,h)anthracene
N	Naphthalene
PAHs	Polynuclear Aromatic Hydrocarbons
PP Metals	Priority Pollutant Metals
PST	Pesticides
PCBs	Polychlorinated Biphenyls
RCRA Metals	Resource Conservation and Recovery Act Metals
SVOCs	Semivolatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
VOCs	Volatile Organic Compounds

Former Freight Train Refueling Area

Tanks 10,and 11
Diesel USTs
(25,000-gal each)

Tank 9A
Gasoline UST
(500-gal)

Tank 9B
Kerosene UST
(200-gal)

11/10-03-SI/GI		NP		Dec 1988	
TPH	VOCs	2-MN	DBA	PST/PCBs	PP Metals
--	--	17.0	2.80	--	--

09A-05-GI		NP			Dec 1988	
TPH	VOCs	2-MN	N	SVOCs	PST/PCBs	PP Metals
--	--	14.0	11.0	--	--	--

TP-87		14 feet		May 1990	
TPH	VOCs	PAHs	SVOCs	PST/PCBs	RCRA Metals
--	--	--	--	--	--

TP-86	13 feet	May 1990
TPH		
--		

11/10-05-SI/GI		NP			Dec 1988	
TPH	VOCs	2-MN	N	SVOCs	PST/PCBs	PP Metals
20,000	--	380	96.0	--	--	--

LS-9
09A-05-G1
TP-86
TP-91
LS-10
TP-90
TP 87
10
11
11/10-03-SI/GI
11/10-05-SI/GI
06-SB-2
06-SB-4
LS-6
TP-92
TP-96
TP-88
TP-95
TP-97
TP-93

Former Passenger Refueling Area

Source:

Legend

- Proposed Boring Location
- Extent of Petroleum Containing Soil
- Composite Sample Extent
- Tank Removal Sample
- Test Pit
- Monitoring Well
- Soil Boring
- AST/UST Locations
- Diesel/Used Oil (Removed)
- Methanol Antifreeze (Removed)
- Gas
- Water

Location ID
Sample Depth (NP denotes sampling depth was not provided)
Sample Date
Analyte

TP-86	13 feet	May 1990
TPH		
--		

Concentration in milligrams per kilogram (mg/kg)
Blue shaded concentrations indicate concentrations above the screening criteria
"--" indicates concentrations below the screening criteria

Feet
0 60 120

Water & Environmental TECHNOLOGIES

Proposed Boring Locations
Former Depot Refueling Area

Burlington Northern Livingston Shop Complex

Job#: LRGM01 Task 3
Date: 7/26/2016

Figure 5

Path: N:\BNSF Montana\Livingston\GIS\Events\20160715 WET\Fig5.FDRA.mxd, Author: JohnLe

Analytical Abbreviations:

1,2,4-TMB	1,2,4-Trimethylbenzene
2-CT	2-Chlorotoluene
CVOCs	Chlorinated Volatile Organic Compounds
N	Naphthalene
PAHs	Polynuclear Aromatic Hydrocarbons
RCRA Metals	Resource Conservation and Recovery Act Metals
SVOCs	Semivolatile Organic Compounds
TPH	Total Petroleum Hydrocarbons

C-3	2 feet	Jun 1995
2-CT		
3.9		

Post Land Farming Sample		
SO-430	1 foot	Dec 1993
CVOCs	--	

C-7	2 feet	Jun 1995
CVOCs		
--		

Pre Land Farming Sample		
SO-403	0.5 feet	Oct 1992
CVOCs	--	

Pre Land Farming Sample		
SO-402	0.5 feet	Oct 1992
CVOCs	--	

Pre Land Farming Sample		
SO-401	0.5 feet	Oct 1992
CVOCs	--	

API-2		0-2 feet		Nov 1989	
2-CT	1,2,4-TMB	TPH	PAHs	SVOCs	RCRA Metals
9.6	2.0	8,350	--	--	--

Post Land Farming Sample		
SO-431	1 foot	Dec 1993
CVOCs	--	

Post Land Farming Sample		
SO-432	1 foot	Dec 1993
CVOCs	--	

API-1		0-6 feet		Nov 1989	
2-CT	1,2,4-TMB	TPH	N	SVOCs	RCRA Metals
7.5	0.62	15,800	3.8	--	--

API-1		5-6 feet		Nov 1989	
2-CT	1,2,4-TMB	TPH	PAHs	SVOCs	RCRA Metals
14	1.1	15,500	--	--	--

C-1	2 feet	Jun 1995
CVOCs		
--		

C-8	2 feet	Jun 1995
CVOCs		
--		

C-6	2 feet	Jun 1995
CVOCs		
--		

C-2	2 feet	Jun 1995
2-CT		
5.5		

C-5	2 feet	Jun 1995
CVOCs		
--		

C-4	2 feet	Jun 1995
CVOCs		
--		

C-3, C-2, API-2, API-1, SO-430, C-1, C-7, C-6, SO-403, SO-431, C-8, SO-402, C-4, C-5, LS-8, SO-432, SO-401

Source: Esri, DigitalGlobe, GeoEye Community

Legend

- Proposed Test Pit Location
- Test Pit
- Surface Soil Composite
- Monitoring Well
- Composite Sample Extent
- Land Farming Areas
- API Ponds

Location ID — Sample Depth (NP denotes sampling depth was not provided) — Sample Date — Analyte

C-2	2 feet	Jun 1995
2-CT		
5.5		

Concentration in milligrams per kilogram (mg/kg)
Blue shaded concentrations indicate concentrations above the screening criteria
"--" indicates concentrations below the screening criteria

Note:
(1) Gray shading indiaces results no longer representative. Area subjected to biological land treatment.

Feet
0 40 80

Water & Environmental TECHNOLOGIES

Proposed Test Pit Locations
Former API Separator Ponds Area
Burlington Northern Livingston Shop Complex

Job#: LRGM01 Task 3
Date: 8/3/2016

Figure 6

Path: N:\BNSF Montana\Livingston\GIS\Events\20160715 WET\Fig6.API.mxd, Author: JuliaSchwarz

TABLES

Table 1. Tank Summary

Area Description / Tank Number	Contents	Approximate Capacity (Gallons)	UST / AST	Existing / Removed
Former Oil Reclamation Area (Figure 3)				
2	Recycled Waste Oil	1,100	UST	Removed
3	Waste Oil	10,000	UST	Removed
4	Waste Oil	10,000	UST	Removed
North of Former Oil Reclamation Plant	Waste Oil	3,000	UST	Removed
West of Former Talgo Warehouse	Gasoline	590	UST	Removed
Former Freight Train Refueling Area (Figure 4)				
6	Waste Oil (Skimmer Holding Tank)	13,000	UST	Removed
7	Caustic Soda	7,500	UST	Removed
8	Methanol	10,000	UST	Removed
13	Waste Oil (Track Pan Grit Chamber)	8,000	Grit Chamber	Removed
14	Diesel	100,000	AST	Existing
15	Diesel	25,000	AST	Existing
16	Diesel	25,000	AST	Existing
17	Diesel	25,000	AST	Existing
18	Waste Oil (Wash Rack Grit Chamber)	6,500	Grit Chamber	Removed
Former Depot Refueling Area (Figure 5)				
9A	Gasoline	500	UST	Removed
9B	Kerosene	200	UST	Removed
10	Diesel	25,000	UST	Removed
11	Diesel	25,000	UST	Removed
Other				
12 (Figure 2)	Gasoline	300	UST	Removed
East of MRL WWTP (UST 1) (Figure 2)	Diesel	1,500	UST	Removed

Table 2. Soil Analytical Results Associated with Tank Removals

Location	Sample ID	Event	Depth (feet bgs)	Date	Volatile Organic Compounds (mg/kg)[b]									TPH (mg/kg)[c]	Diesel Range Organics (mg/kg)[d]	Carcinogenic Polynuclear Aromatic Hydrocarbons (mg/kg)[e]							Non-Carcinogenic Polynuclear Aromatic Hydrocarbons (mg/kg)[e]									Other Semivolatile Organic Compounds (mg/kg)[e]			
					Ethyl-benzene	Toluene	Total Xylenes	2-Chloro toluene	1,2-Dichloro benzene	Methy lene Chloride	Tetra chloro ethene	Tri chloro ethene				Benz(a) anth racene	Chrysene	Benzo(b) fluor anthene	Benzo(k)fluo r anthene	Benzo(a) pyrene	Indeno (1,2,3-c,d) pyrene	Dibenzo (a,h)anth racene	2-Methyl naphth alene	Naph-thalene	Ace naphthene	Anthra cene	Benzo (g,h,i) perylene	Fluor anthene	Fluorene	Phen anthrene	Pyrene	1,2-Dichloro benzene	Benzoic Acid	Dibenzo furan	Di-n-Octyl Phthalate
CLEANUP LEVELS/SCREENING LEVELS[a]																																		
ROD Cleanup Levels - Surface and Subsurface Soil					NA[f]	NA	NA	NA	NA	NA	4	2		NA	NA	4 (surface soil only)							NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ROD Screening Levels - Surface Soil					NA	NA	NA	NA	NA	NA	NA	NA		5,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ROD Screening Levels - Surburface Soil					NA	NA	NA	NA	NA	NA	NA	NA		5,000	NA	13	1,400	45	450	3	130	6	NA	3	160	3,700	NA	1,000	160	NA	1,100	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Commercial)					30	5,801	319	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21	4,125	20,627	NA	2,750	2,750	NA	2,063	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Excavation)					1,226	5,073	625	NA	NA	NA	NA	NA		NA	NA	51	5,091	51	509	5	51	5	NA	156	3,717	18,583	NA	2,478	2,478	NA	1,858	NA	NA	NA	NA
2009 RBSLs - Leaching (0-10 feet)					13.3	13.9	217	NA	NA	NA	NA	NA		NA	NA	13.6	1,510	46.6	466	3.67	312	6.78	NA	9.32	249	3,740	NA	484	643	NA	4,280	NA	NA	NA	NA
2009 RBSLs - Leaching (10-20 feet)					40.1	40.7	679	NA	NA	NA	NA	NA		NA	NA	45.7	5,080	157	1,570	12.4	443	22.8	NA	30.6	840	12,600	NA	1,630	2,170	NA	14,400	NA	NA	NA	NA
2009 RBSLs - Leaching (>20 feet)					62	62.8	1,050	NA	NA	NA	NA	NA		NA	NA	706	7,850	243	2,430	19.1	685	35.3	NA	47.4	1,300	19,500	NA	2,520	3,350	NA	22,300	NA	NA	NA	NA
Background Concentration					NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May 2016 RSLs					NA	NA	NA	2,300	930	320	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	NA	NA	NA	NA	NA	NA	NA	930	330,000	100	820
May 2016 SSLs					NA	NA	NA	2.3	5.8	0.013	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.19	NA	NA	NA	NA	NA	NA	NA	5.8	150	1.5	570
OIL RECLAMATION AREA																																		
UST 2 (East of Oil Reclamation Plant Building)																																		
Beneath UST 2	02-02-GI/SI	1988/1989 Tank Removal	NP[g]	Dec-88	<0.025[h]	<0.025	**0.010J**[f]	--[f]	--	<0.025	<0.025	<0.025		**800**	--	**0.660J**	**0.790J**	**0.650J**	<1.332	**0.520J**	**0.390J**	<1.332	**4.80**	<1.332	**4.60**	<1.332	**0.790J**	**2.10**	**3.500**	**5.70**	**2.00**	**0.520J**	**20.0**	**4.00**	<1.332
TP-42 (within backfill of UST 2)	SO-109	1990-1992 RI Characterization	8	Apr-90	**0.45**	<0.1	**2.4**	**5.9**	<0.1	<0.1	<0.1	<0.1		**47,500**	--	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	--	**5.1**	**9.8**	<3.3	<3.3	**6.6**	**11**	**30**	**3.6**	<3.3	--	--	<3.3
TP-43 (under fueling stanchion)	SO-108	1990-1992 RI Characterization	10	Apr-90	--	--	--	--	--	--	--	--		**35**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
USTs 3 and 4																																		
Between UST 3 and 4	03-04-03-GI/SI	1988/1989 Tank Removal	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025		**3,500**	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	**0.081J**	<0.330	**0.094J**	**0.160J**	<0.330	<1.650	<0.330	<0.330
TP-45 (between USTs 3 and 4)	SO-111	1990-1992 RI Characterization	11	Apr-90	--	--	--	--	--	--	--	--		**22**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3,000-Gallon UST (North of Oil Reclamation Plant Building)																																		
SO-436 (west end of tank bed)	SO-436	1993 Tank Removal	12	Dec-93	--	--	--	--	--	--	--	--		--	**8,600**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-437 (middle of tank)	SO-437	1993 Tank Removal	12	Dec-93	--	--	--	**0.13J**	<0.20	<0.20	**0.10J**	<0.20		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-438 (east end of tank)	SO-438	1993 Tank Removal	12	Dec-93	--	--	--	--	--	--	--	--		--	**6,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-439 (soil above tank)	SO-439	1993 Tank Removal	0-2 (composite)	Dec-93	--	--	--	**7.9**	**0.083**	<0.005	**0.046**	**0.032**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
590-Gallon Gasoline UST (West of Former Talgo Warehouse)																																		
LRC-TR2 (590-gal Gasoline UST)	140307-001	1990 Tank Removal	10	Aug-90	<0.2	<0.2	**0.42**	--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FORMER FREIGHT TRAIN REFUELING AREA																																		
UST 6																																		
Beneath UST 6	06-03-GI/SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025		<5	--	**0.070J**	**0.210J**	**0.210J**	<0.333	**0.210J**	<0.333	**0.070J**	<0.333	<0.333	<0.333	**0.070J**	**0.110J**	**0.280J**	<0.333	**0.250J**	**0.460**	<0.333	<1.665	<0.333	<0.333
TP-74 (near UST 6)	SO-141 SO-147[b]	1990-1992 RI Characterization	12.5	Apr-90	--	--	--	--	--	--	--	--		<10/ <10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grit Chambers 13 and 18 (and associated piping)																																		
Beneath Grit Chamber 13	13-04-GI/SI	1988/1989 Tank Removal	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025		<5	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	0.040J	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330
Track pan area (along piping)	14/15/16/17-08-GI/SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<1.250	<1.250	<1.250	--	--	<1.250	<1.250	<1.250		**130,000**	--	<1.5651	<1.5651	<1.5651	<1.5651	<1.5651	<1.5651	<1.5651	**46.0**	**7.90**	**2.30**	<1.5651	<1.5651	**0.620J**	**7.90**	**12.00**	**0.460J**	<1.5651	<7.8255	**13.0**	<1.5651
Wash rack area (along piping)	14/15/16/17-09-SI/GI	1988/1989 Tank Removal	NP (composite)	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025		**700**	--	**0.070J**	**0.140J**	<0.333	<0.333	<0.333	<0.333	<0.333	**0.140J**	**0.180J**	**0.140J**	<0.333	<0.333	**0.110J**	**0.180J**	**0.180J**	**0.180J**	<0.333	<1.665	**0.390**	**3.20B[k]**
UST 7																																		
Beneath UST 7	07-01-SI	1988/1989 Tank Removal	NP	Dec-88	<0.005	<0.005	<0.005	--	--	<0.005	<0.005	<0.005		<5	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330
UST 8																																		
Beneath UST 8	08-02-GI/SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025		**15,000**	--	**0.100J**	**0.067J**	**0.100J**	<0.333	**0.100J**	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	**0.130J**	<0.333	<0.333	**0.060J**	<0.333	<1.665	<0.333	<0.333
AST 14																																		
Pipe manifold pit	14/15/16/17-05-GI/ 14/15/16/17-06-GI[f]	1988/1989 Tank Removal	NP	Dec-88	<1.250/ <1.250	<1.250/ <1.250	**2.500/ 1.200J**	--	--	<1.250/ <1.250	<1.250/ <1.250	<1.250/ <1.250		**4,200/ 4,700**	--	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	**19.0/ 15.0**	**11.0/ 5.30**	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	**4.70/ 7.90**	<0.330/ <0.330	<0.330/ <0.330	<1.650/ <1.650	<0.330/ <0.330	<0.330/ <0.330
Offload stanchion	14/15/16/17-02-SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025		**8,900**	--	**0.400**	**0.330J**	**0.470**	**0.330J**	**0.267J**	**0.130J**	**0.067J**	**40.0**	**7.70**	<0.333	<0.333	**0.167J**	**4.10**	**4.00**	**7.70**	**3.70**	<0.333	<1.665	<0.333	<0.333
TP-65 (within containment area)	SO-132	Former Freight Train Refueling A	13	Apr-90	--	--	--	--	--	--	--	--		**25**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-66 (near fueling stanchions)	SO-133	1990-1992 RI Characterization	8.5	Apr-90	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		**4,000**	--	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	--	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	--	--	<1.6
ASTs 16, 17, 18																																		
Between AST 16 and 17	14/15/16/17-13-SI	1988/1989 Tank Removal	NP	Dec-88	**0.140**	**0.021J**	**0.730**	--	--	<0.025	<0.025	<0.025		--	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	**12.0**	**5.20**	<0.330	<0.330	<0.330	<0.330	<0.330	**7.30**	<0.330	<0.330	<1.650	**9.80**	<0.330
FORMER DEPOT REFUELING AREA (INCLUDES TWO REFUELING AREAS; FREIGHT TRAIN AND PASSENGER TRAIN)																																		
UST 9A and 9B																																		
Beneath UST 9A	09A-05-GI	1988/1989 Tank Removal	NP	Dec-88	<1.000	**0.800J**	**80.0**	--	--	<1.000	<1.000	<1.000		**350**	--	<0.333	**0.200J**	<0.333	<0.333	<0.333	<0.333	<0.333	**14.0**	**11.0**	<0.333	<0.333	<0.333	**0.100J**	<0.333	**0.033J**	**0.130J**	<0.333	<1.665	<0.333	<0.333
TP-86	SO-155	1990-1992 RI Characterization	13	May-90	--	--	--	--	--	--	--	--		<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
USTs 10 and 11																																		
Beneath USTs 10/11	11/10-03-SI/GI	1988/1989 Tank Removal	NP (composite)	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025		**2,900**	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	**17.0**	<0.330	<0.330	<0.330	<0.330	**0.220J**	<0.330	**1.60**	**0.140J**	<0.330	<1.650	**2.80**	<0.330
Freight train fueling stanchions	11/10-05-SI/GI	1988/1989 Tank Removal	NP (composite)	Dec-88	<1.250	<1.250	<1.250	--	--	<1.250	<1.250	<1.250		**20,000**	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	**380**	**96.0**	<0.330	<0.330	<0.330	<0.330	<0.330	**18.0**	<0.330	<0.330	<1.650	<0.330	<0.330
TP-87 (freight train fueling stanchions)	SO-156 SO-157[b]	1990-1992 RI Characterization	14	May-90	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005		**1,700/ 1,100**	--	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	--	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	**0.72**/ <0.33	<0.66/ <0.33	<0.66/ <0.33	--	--	<0.66/ <0.33
OTHER																																		
UST 1 (East of MRL WWTP)																																		
TP-1 (near UST 1 location)	LRC-TR	1990 Tank Removal	8.5	Apr-90	--	--	--	--	--	--	--	--		**20**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UST 12 (South of Mainline)																																		
Beneath UST 12	12-01-SI	1988/1989 Tank Removal	NP	Dec-88	<0.005	<0.005	<0.005	--	--	<0.005	<0.005	<0.005		<5	--	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<1.665	<0.333	<0.333

Table 2. Soil Analytical Results Associated with Tank Removals

Location	Sample ID	Event	Depth (feet bgs)	Date	Pesticides/PCBs (µg/kg)[m]	Metals (mg/kg)[n]												
					Arochlor 1248	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
CLEANUP LEVELS/SCREENING LEVELS[a]																		
ROD Cleanup Levels - Surface and Subsurface Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ROD Screening Levels - Surface Soil					NA	NA	NA	NA	NA	NA	NA	750	NA	NA	NA	NA	NA	NA
ROD Screening Levels - Surburface Soil					NA	NA	NA	NA	NA	NA	NA	750	NA	NA	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Commercial)					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Excavation)					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (0-10 feet)					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (10-20 feet)					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (>20 feet)					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Background Concentration					NA	22.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May 2016 RSLs					950	NA	22,000	230	98	180,000	4,700	NA	4.6	2,200	580	580	1	35,000
May 2016 SSLs					12	NA	421	32	3.8	1,800,000	460	NA	1.0	66.7	2.6	8.5	1.4	1,233
OIL RECLAMATION AREA																		
UST 2 (East of Oil Reclamation Plant Building)																		
Beneath UST 2	02-02-GI/SI	1988/1989 Tank Removal	NP[g]	Dec-88	<160	**3.2**	--	**0.4**	**0.7**	**2**	**12**	**3.7**	<0.1	**15**	<1	<1	<0.4	**0.29**
TP-42 (within backfill of UST 2)	SO-109	1990-1992 RI Characterization	8	Apr-90	<2,500	**10**	**61**	--	<1	**21**	--	**11**	<1	--	<5	<5	--	--
TP-43 (under fueling stanchion)	SO-108	1990-1992 RI Characterization	10	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
USTs 3 and 4																		
Between UST 3 and 4	03-04-03-GI/SI	1988/1989 Tank Removal	NP	Dec-88	<1,600	**1.5**	--	**0.2**	**1.1**	**6.8**	**13**	**2.6**	<0.1	<10	<0.2	<1	<0.1	**27**
TP-45 (between USTs 3 and 4)	SO-111	1990-1992 RI Characterization	11	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3,000-Gallon UST (North of Oil Reclamation Plant Building)																		
SO-436 (west end of tank bed)	SO-436	1993 Tank Removal	12	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-437 (middle of tank)	SO-437	1993 Tank Removal	12	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-438 (east end of tank)	SO-438	1993 Tank Removal	12	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-439 (soil above tank)	SO-439	1993 Tank Removal	0-2 (composite)	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
590-Gallon Gasoline UST (West of Former Talgo Warehouse)																		
LRC-TR2 (590-gal Gasoline UST)	140307-001	1990 Tank Removal	10	Aug-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FORMER FREIGHT TRAIN REFUELING AREA																		
UST 6																		
Beneath UST 6	06-03-GI/SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<160	**1.0**	--	**0.3**	**1.0**	**6.2**	**22**	**50**	<0.1	**14**	<1	<1	<0.4	**0.42**
TP-74 (near UST 6)	SO-141 SO-142[h]	1990-1992 RI Characterization	12.5	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Grit Chambers 13 and 18 (and associated piping)																		
Beneath Grit Chamber 13	13-04-GI/SI	1988/1989 Tank Removal	NP	Dec-88	--	**3.0**	--	<1	<0.05	**16**	**11**	**7**	<0.0002	**8**	**1.1**	<1	<0.1	**27.4**
Track pan area (along piping)	14/15/16/17-08-GI/SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<800	**2.2**	--	**0.4**	**1.0**	**8**	**28**	**18**	<0.1	**19**	<1	<1	<0.4	**0.43**
Wash rack area (along piping)	14/15/16/17-09-SI/GI	1988/1989 Tank Removal	NP (composite)	Dec-88	<160	**12**	--	**0.9**	**2.4**	**11**	**86**	**120**	<0.1	**30**	<2	**1**	<0.4	**1.1**
UST 7																		
Beneath UST 7	07-01-SI	1988/1989 Tank Removal	NP	Dec-88	<1,600	**0.7**	--	<0.1	**0.7**	**1.8**	**9**	**64**	<0.1	<10	**0.1**	<1	<0.1	**30**
UST 8																		
Beneath UST 8	08-02-GI/SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<160	**1.9**	--	**0.3**	**0.8**	**7**	**14**	**4.0**	<0.1	**14**	<1	<1	<0.4	**0.26**
AST 14																		
Pipe manifold pit	14/15/16/17-05-GI/ 14/15/16/17-06-GI[l]	1988/1989 Tank Removal	NP	Dec-88	<160/ <160	**1.9/ 2.5**	--	**0.3/ 0.4**	**0.06/ 0.24**	**16/ 18**	**16/ 44**	**4.8/ 16**	**0.2/** <0.1	**14/ 20**	<1/ <1	<0.05/ <0.1	**0.1/ 0.1**	**31/ 65**
Offload stanchion	14/15/16/17-02-SI	1988/1989 Tank Removal	NP (composite)	Dec-88	<160	**10**	--	**0.5**	**2**	**22**	**82**	**240**	**0.2**	**20**	<1	<2	<0.2	**180**
TP-65 (within containment area)	SO-132	Former Freight Train Refueling A	13	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-66 (near fueling stanchions)	SO-133	1990-1992 RI Characterization	8.5	Apr-90	<100	<5	**46**	--	<1	**12**	--	<5	<1	--	<5	<5	--	--
ASTs 16, 17, 18																		
Between AST 16 and 17	14/15/16/17-13-SI	1988/1989 Tank Removal	NP	Dec-88	<1,600	<1	--	**0.2**	<0.1	**6.3**	**11**	**4**	<0.1	<10	<1	<1	<0.4	**25**
FORMER DEPOT REFUELING AREA (INCLUDES TWO REFUELING AREAS; FREIGHT TRAIN AND PASSENGER TRAIN)																		
UST 9A and 9B																		
Beneath UST 9A	09A-05-GI	1988/1989 Tank Removal	NP	Dec-88	<160	**2.3**	--	**0.2**	<1	**10**	**19**	**18**	**0.3**	**9**	<1	<2	<0.2	**26**
TP-86	SO-155	1990-1992 RI Characterization	13	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
USTs 10 and 11																		
Beneath USTs 10/11	11/10-03-SI/GI	1988/1989 Tank Removal	NP (composite)	Dec-88	<1,600	<1	--	**0.3**	**0.07**	**6.3**	**13**	**8**	<0.1	**10**	<0.4	<1	<0.4	**25**
Freight train fueling stanchions	11/10-05-SI/GI	1988/1989 Tank Removal	NP (composite)	Dec-88	<1,600	<3	--	**0.3**	<0.1	**22**	**24**	**4**	<0.1	**20**	<0.4	<1	<0.4	**33**
TP-87 (freight train fueling stanchions)	SO-156 SO-157[k]	1990-1992 RI Characterization	14	May-90	<100/ <100	<5/ <5	**74/ 67**	--	<1/ <1	**10/ 9**	--	**6/ 5**	<1/ <1	--	<5/ <5	<5/ <5	--	--
OTHER																		
UST 1 (East of MRL WWTP)																		
TP-1 (near UST 1 location)	LRC-TR	1990 Tank Removal	8.5	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UST 12 (South of Mainline)																		
Beneath UST 12	12-01-SI	1988/1989 Tank Removal	NP	Dec-88	<160	**7.5**	--	**0.4**	<1	**16**	**67**	**75**	<0.1	**15**	<1	<2	<0.2	**76**

Notes:

(a) Cleanup/screening levels taken from Record of Decision (ROD) (DEQ 2001).
Risk-Based Screening Levels (RBSLs) taken from Master Table - All Potential Tier 1 RBSLs for Soil (Appendix C) of Montana Tier 1 Risk-Based Corrective Action (RBCA) Guidance for Petroleum Releases dated September 2009.
Background concentrations taken from Project Report - Background Concentrations of Inorganic Constituents in Montana Surface Soils prepared by Hydrometrics for the Montana Department of Environmental Quality (DEQ) dated September 2013 (Hydrometrics 2013)
Industrial Regional Screening Levels (RSLs) taken from U.S. Environmental Protection Agency (EPA) RSLs for Chemical Contaminants at Superfund Sites dated May 2016. If the compound is a non-carcinogen, the non-carcinogenic RSL has been divided by 10.
Soil screening levels (SSLs) taken from EPA RSLs for Chemical Contaminants at Superfund Sites dated May 2016 for contaminant leaching to groundwater pathway.
An SSL has been calculated based on Montana's numeric water quality (DEQ-7) standards, adjusted for a dilution attenuation factor (DAF) of 10. The DEQ-7 adjusted risk-based SSL is equal to the ratio of the DEQ-7 standard to the tap water RSL multiplied by the risk-based SSL and a factor of 10. If the DEQ-7 standard and EPA maximum contaminant level (MCL) were the same value, the MCL-based SSL provided in the RSL table (May 2016), adjusted for a DAF of 10, was used.
DEQ has determined that a DAF of 10 is appropriate for conditions in Montana. If no DEQ-7 standard is available, the EPA SSL, adjusted for a DAF of 10, has been provided.
Value represents a screening level based on EPA Technical Review Workgroup for Lead, Recommendations of the Technical Review: Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil including the TRWL Guidance Document dated April 1999.

(b) Soil samples were analyzed for purgeable halocarbons, volatile organic compounds (VOCs), or purgeable aromatics using EPA Methods 8010, 8240/8260, and 8020, respectively.

(c) Soil samples collected in 1988 were analyzed for total petroleum hydrocarbons (TPH) using PAL B009, samples collected from 1990 to 1992 were analyzed for TPH using EPA Method 418.1.

(d) Soil samples were analyzed for diesel range organics (DRO) using EPA Method 8015 modified.

(e) Soil samples were analyzed for semivolatile organic compounds (SVOCs) using EPA Method 8270.

(f) "NA" denotes screening values not applicable because a ROD cleanup/screening level or RBCA RBSL exists, or a screening value has not been established. In accordance with DEQ's Soil Screening Process dated October 2013, compounds with RBSLs do not need to be screened using EPA RSLs/SSLs.

(g) "NP" denotes sampling depth was not provided.

(h) "<" denotes analyte was not detected at the indicated method reporting limit.

(i) "J" denotes a value based on analytical instrument response below the limit of quantitation for the analytical method used.

(j) "--" denotes not analyzed.

(k) "B" indicates that the analyte was also detected in the associated method blank sample.

(l) The second sample ID is a duplicate sample, and the second value represents the analytical result for the duplicate sample unless otherwise indicated.

(m) Soil samples were analyzed for pesticides and polychlorinated biphenyls using EPA Method 8080.

(n) Soil samples were analyzed for metals using EPA Methods 3050 and 6010.

Only the results for detected analytes are summarized in this table.

Detected values are shown in bold.

mg/kg - milligrams per kilogram µg/kg - micrograms per kilogram

ROD cleanup/screening level.

Reported concentration above ROD cleanup/screening level or other listed screening criteria.

Method reporting limit above one or more screening criteria.

Table 3. Soil Analytical Results Associated With API Separator Ponds Areas

Location	Sample ID	Area	Depth (feet)	Date	Volatile Organic Compounds (mg/kg)[b]																										
					Benzene	Ethyl-benzene	Toluene	m+p Xylene	o-Xylene	Total Xylenes	Bromo dichloro methane	n-Butyl benzene	sec-Butyl benzene	Chloro benzene	2-Chloro toluene	4-Chloro toluene	1,2-Dichloro benzene	1,3-Dichloro benzene	1,4-Dichloro benzene	cis-1,2-Dichloro ethene	trans-1,2-Dichloro ethene	Iso propyl benzene	p-Iso propyl toluene	Methy lene Chloride	n-Propyl benzene	Naph thalene	Tetra chloro ethene	1,1,1-Trichlor ethane	Tri chloro ethene	1,2,4-Tri methyl benzene	1,3,5-Tri methyl benzene
CLEANUP LEVELS/SCREENING LEVELS[a]																															
ROD Cleanup Levels - Surface and Subsurface Soil					NA[c]	NA	NA	NA	NA	NA	NA	NA	NA	124	NA	NA	NA	NA	264	14	NA	NA	NA	NA	NA	NA	4	NA	2	NA	NA
ROD Screening Levels - Surface Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ROD Screening Levels - Surburface Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Commercial)					6	30	5,801	319	319	319	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21	NA	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Excavation)					243	1,226	5,073	625	625	625	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	156	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (0-10 feet)					0.0379	13.3	13.9	217	217	217	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.32	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (10-20 feet)					0.101	40.1	40.7	679	679	679	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.6	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (>20 feet)					0.156	62	62.8	1,050	1,050	1,050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47.4	NA	NA	NA	NA	NA
Background Concentration					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May 2016 RSLs					NA	NA	NA	NA	NA	NA	1.3	5,800	12,000	NA	2,300	2,300	930	NA	NA	NA	2,300	990	NA	320	2,400	NA	NA	3,600	NA	24	1,200
May 2016 SSLs					NA	NA	NA	NA	NA	NA	0.028	32	59	NA	2.3	2.4	5.8	NA	NA	NA	0.31	7.4	NA	0.013	12	NA	NA	0.70	NA	0.21	1.7
Remedial Investigation (RI) Sampling																															
API-1	SO-001 (discrete)	API Separator Pond	5-6	Nov-89	<0.20[d]	**0.4**	<0.20	**0.47**	**0.78**	**1.25**	<0.20	**1.9**	**1.5**	**12**	**14**	<0.20	**1.7**	**0.38**	**4.8**	<0.20	<0.20	**0.49**	<0.20	<0.20	**1.5**	**1.3**	<0.20	<0.20	<0.20	**1.1**	<0.20
API-1	SO-002 (composite)	API Separator Pond	0-6	Nov-89	<0.20	**0.22**	<0.20	**0.33**	**0.54**	**0.87**	<0.20	**0.94**	**0.92**	**5.9**	**7.5**	<0.20	**1.2**	**0.31**	**3.6**	<0.20	<0.20	**0.26**	<0.20	<0.20	**0.89**	**1.5**	<0.20	<0.20	<0.20	**0.62**	<0.20
API-2	SO-003 (composite)	API Separator Pond	0-2	Nov-89	<0.20	<0.20	<0.20	**0.23**	**0.2**	**0.43**	<0.20	**0.61**	**0.32**	**4**	**9.6**	<0.20	**0.64**	**0.24**	**0.84**	<0.20	<0.20	<0.20	**0.23**	<0.20	**0.23**	**0.36**	<0.20	<0.20	<0.20	**2.0**	**0.24**
API-3	*SL-004*	*API Relic Pond - Sludge*	*5-7*	*Dec-89*	*<1.0*	***3.1***	*<1.0*	***8.7***	***4.2***	***12.9***	*<1.0*	*--[e]*	*--*	***380***	***10***	*--*	***28***	***5.9***	***49***	*<1.0*	*<1.0*	*--*	*--*	*<1.0*	*--*	*--*	*<1.0*	*<1.0*	*<1.0*	*--*	*--*
API-6	*SL-005*	*API Relic Pond - Sludge*	*4-5*	*Dec-89*	*<1.0*	***2.1***	*<1.0*	***4.1***	***7.1***	***11.2***	*<1.0*	*--*	*--*	***394***	*<1.0*	*--*	***55***	***16***	***94***	*<1.0*	*<1.0*	*--*	*--*	*<1.0*	*--*	*--*	*<1.0*	*<1.0*	*<1.0*	*--*	*--*
Sampling Prior to Biological Land Treatment (6-point composite)																															
SO-401	SO-401	API Relic Pond	0.5	Oct-92	--	--	--	--	--	--	<0.20	--	--	<0.20	<0.20	--	<0.20	**0.24**	<0.20	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
SO-402	SO-402	API Relic Pond	0.5	Oct-92	--	--	--	--	--	--	<0.20	--	--	<0.20	<0.20	--	**0.26**	<0.20	<0.20	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
SO-403	SO-403	API Overflow Pond	0.5	Oct-92	--	--	--	--	--	--	<0.20	--	--	<0.20	<0.20	--	**0.20**	**0.20**	<0.20	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
Sampling Following Biological Land Treatment (3-point composite)																															
SO-430	SO-430	API Separator Pond	1	Dec-93	--	--	--	--	--	--	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	<0.005	<0.005	- -	- -
SO-431	SO-431	API Overflow/Relic Pond	1	Dec-93	--	--	--	--	--	--	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	<0.005	<0.005	- -	- -
SO-432	SO-432	API Overflow/Relic Pond	1	Dec-93	--	--	--	--	--	--	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	**0.006**	<0.005	- -	- -
1995 Confirmation Sampling (discrete)																															
C-1	SO-441	API Separator Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**0.15J[f]**	**0.31**	--	<0.20	**0.059J**	**0.16J**	**0.074J**	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
C-2	SO-442	API Separator Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**0.62**	**5.5**	--	<0.20	**0.15J**	**0.63**	**0.13J**	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
C-3	SO-443	API Separator Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**0.82**	**3.9**	--	<0.20	**0.12J**	**0.47**	**0.11J**	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
C-4	SO-444	API Relic Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**5.3**	<0.20	--	<0.20	**0.20**	**3.9**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
C-5	SO-445	API Relic Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**3.7**	<0.20	--	<0.20	**0.14J**	**2.1**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
C-6	SO-446	API Relic Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**1.1**	<0.20	--	<0.20	**0.076J**	**1.0**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
C-7	SO-447	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**2.6**	**0.30**	--	<0.20	**0.14J**	**2.0**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--
C-8	SO-448	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**1.7**	**1.1**	--	<0.20	**0.22**	**2.0**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--

Table 3. Soil Analytical Results Associated With API Separator Ponds Areas

Location	Sample ID	Area	Depth (feet)	Date	TPH as 418.1 (mg/kg)[g]	Carcinogenic Polynuclear Aromatic Hydrocarbons (mg/kg)(h)							Non-Carcinogenic Polynuclear Aromatic Hydrocarbons (mg/kg)(h)									Other Semivolatile Organic Compounds (mg/kg)(h)						
						Benzo(a) anth racene	Chrysene	Benzo(b) fluor anthene	Benzo(k) fluor anthene	Benzo(a) pyrene	Indeno (1,2,3-c,d) pyrene	Dibenzo (a,h)anth racene	1-Methyl naphth alene	2-Methyl naphth alene	Naph thalene	Ace naph thene	Benzo (g,h,i) perylene	Fluor anthene	Fluorene	Phen anthrene	Pyrene	Butyl benzyl phthalate	bis(2-ethyl hexyl) phthalate	1,2-Dichloro benzene	1,3-Dichloro benzene	1,4-Dichloro benzene	Phenol	1,2,4-Trichloro benzene
CLEANUP LEVELS/SCREENING LEVELS[a]																												
ROD Cleanup Levels - Surface and Subsurface Soil					NA	4 (surface soil only)							NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	264	NA	NA
ROD Screening Levels - Surface Soil					5,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ROD Screening Levels - Surburface Soil					5,000	13	1,400	45	450	3	130	6	NA	NA	3	160	NA	1,000	160	NA	1,100	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Commercial)					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21	4125	NA	2,750	2,750	NA	2,063	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Excavation)					NA	51	5,091	51	509	5	51	5	NA	NA	156	3717	NA	2,478	2,478	NA	1,858	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (0-10 feet)					NA	13.6	1,510	46.6	466	3.67	312	6.78	NA	NA	9.32	249	NA	484	643	NA	4,280	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (10-20 feet)					NA	45.7	5,080	157	1,570	12.4	443	22.8	NA	NA	30.6	840	NA	1,630	2,170	NA	14,400	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (>20 feet)					NA	706	7,850	243	2,430	19.1	685	35.3	NA	NA	47.4	1300	NA	2,520	3,350	NA	22,300	NA	NA	NA	NA	NA	NA	NA
Background Concentration					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
May 2016 RSLs					NA	NA	NA	NA	NA	NA	NA	NA	73	300	NA	NA	NA	NA	NA	NA	NA	1,200	1,200	930	NA	NA	25,000	26
May 2016 SSLs					NA	NA	NA	NA	NA	NA	NA	NA	0.060	0.19	NA	NA	NA	NA	NA	NA	NA	225	225	5.8	NA	NA	1.7	2
Remedial Investigation (RI) Sampling																												
API-1	SO-001 (discrete)	API Separator Pond	5-6	Nov-89	**15,500**	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	--	--	**2.9**	**5.4**	<1.6	<1.6	**4.9**	**4.6**	<1.6	<1.6	<1.6	<1.6	<1.6	**1.6**	<0.33	<1.6
API-1	SO-002 (composite)	API Separator Pond	0-6	Nov-89	**15,800**	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	--	--	**3.8**	**7.5**	<1.6	<1.6	**6.3**	**4.9**	<1.6	<1.6	<1.6	<1.6	<1.6	**2.0**	<0.33	<1.6
API-2	SO-003 (composite)	API Separator Pond	0-2	Nov-89	**8,350**	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	--	--	<1.6	**1.9**	<1.6	<1.6	<1.6	**2.9**	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<0.33	<1.6
API-3	*SL-004*	*API Relic Pond - Sludge*	*5-7*	*Dec-89*	***119,000***	*<10*	*<10*	*<10*		*<10*	*<10*	*<10*	--	--	***50***	*<10*	*<10*	*<10*	***31***	***44***	*<10*	*<10*	*<10*	***37***	*<10*	***39***	*<5.0*	*<10*
API-6	*SL-005*	*API Relic Pond - Sludge*	*4-5*	*Dec-89*	***203,000***	*<10*	*<10*	*<10*		*<10*	*<10*	*<10*	--	--	***39***	*<10*	*<10*	*<10*	***42***	***46***	*<10*	*<10*	*<10*	***31***	***10***	***81***	*<5.0*	*<10*
Sampling Prior to Biological Land Treatment (6-point composite)																												
SO-401	SO-401	API Relic Pond	0.5	Oct-92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-402	SO-402	API Relic Pond	0.5	Oct-92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-403	SO-403	API Overflow Pond	0.5	Oct-92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sampling Following Biological Land Treatment (3-point composite)																												
SO-430	SO-430	API Separator Pond	1	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-431	SO-431	API Overflow/Relic Pond	1	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-432	SO-432	API Overflow/Relic Pond	1	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1995 Confirmation Sampling (discrete)																												
C-1	SO-441	API Separator Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-2	SO-442	API Separator Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-3	SO-443	API Separator Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-4	SO-444	API Relic Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-5	SO-445	API Relic Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-6	SO-446	API Relic Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-7	SO-447	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C-8	SO-448	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 3. Soil Analytical Results Associated With API Separator Ponds Areas

Location	Sample ID	Area	Depth (feet)	Date	Metals (mg/kg)[(i)] Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
CLEANUP LEVELS/SCREENING LEVELS[(a)]												
ROD Cleanup Levels - Surface and Subsurface Soil					NA	NA	NA	NA	NA	NA	NA	NA
ROD Screening Levels - Surface Soil					NA	NA	NA	NA	750[(o)]	NA	NA	NA
ROD Screening Levels - Surburface Soil					NA	NA	NA	NA	750[(o)]	NA	NA	NA
2009 RBSLs - Direct Contact (Commercial)					NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Direct Contact (Excavation)					NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (0-10 feet)					NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (10-20 feet)					NA	NA	NA	NA	NA	NA	NA	NA
2009 RBSLs - Leaching (>20 feet)					NA	NA	NA	NA	NA	NA	NA	NA
Background Concentration					22.5	NA	NA	NA	NA	NA	NA	NA
May 2016 RSLs					NA	22,000	98	180,000	NA	4.6	580	580
May 2016 SSLs					NA	421	3.8	1,800,000	NA	1.0	2.6	8.5
Remedial Investigation (RI) Sampling												
API-1	SO-001 (discrete)	API Separator Pond	5-6	Nov-89	<5	**81**	<1	**83**	**17**	<1	<5	<1
API-1	SO-002 (composite)	API Separator Pond	0-6	Nov-89	<5	**44**	<1	**38**	**8.8**	<1	<5	<1
API-2	SO-003 (composite)	API Separator Pond	0-2	Nov-89	<5	**120**	<1	**41**	**20**	<1	<5	<1
API-3	*SL-004*	*API Relic Pond - Sludge*	*5-7*	*Dec-89*	***0.36***	***264***	***13.3***	***512***	***537***	***2.67***	***0.01***	***16.5***
API-6	*SL-005*	*API Relic Pond - Sludge*	*4-5*	*Dec-89*	***0.3***	***347***	***10.5***	***523***	***479***	***0.64***	***0.02***	***3.7***
Sampling Prior to Biological Land Treatment (6-point composite)												
SO-401	SO-401	API Relic Pond	0.5	Oct-92	--	--	--	--	--	--	--	--
SO-402	SO-402	API Relic Pond	0.5	Oct-92	--	--	--	--	--	--	--	--
SO-403	SO-403	API Overflow Pond	0.5	Oct-92	--	--	--	--	--	--	--	--
Sampling Following Biological Land Treatment (3-point composite)												
SO-430	SO-430	API Separator Pond	1	Dec-93	--	--	--	--	--	--	--	--
SO-431	SO-431	API Overflow/Relic Pond	1	Dec-93	--	--	--	--	--	--	--	--
SO-432	SO-432	API Overflow/Relic Pond	1	Dec-93	--	--	--	--	--	--	--	--
1995 Confirmation Sampling (discrete)												
C-1	SO-441	API Separator Pond	2	Jun-95	--	--	--	--	--	--	--	--
C-2	SO-442	API Separator Pond	2	Jun-95	--	--	--	--	--	--	--	--
C-3	SO-443	API Separator Pond	2	Jun-95	--	--	--	--	--	--	--	--
C-4	SO-444	API Relic Pond	2	Jun-95	--	--	--	--	--	--	--	--
C-5	SO-445	API Relic Pond	2	Jun-95	--	--	--	--	--	--	--	--
C-6	SO-446	API Relic Pond	2	Jun-95	--	--	--	--	--	--	--	--
C-7	SO-447	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	--	--
C-8	SO-448	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	--	--

Notes:

(a) Cleanup/screening levels taken from Record of Decision (ROD) (DEQ 2001).
Risk-Based Screening Levels (RBSLs) taken from Master Table - All Potential Tier 1 RBSLs for Soil (Appendix C) of Montana Tier 1 Risk-Based Corrective Action (RBCA) Guidance for Petroleum Releases dated September 2009.
Background concentrations taken from Project Report - Background Concentrations of Inorganic Constituents in Montana Surface Soils prepared by Hydrometrics for the Montana Department of Environmental Quality (DEQ) dated September 2013 (Hydrometrics 2013)
Industrial Regional Screening Levels (RSLs) taken from U.S. Environmental Protection Agency (EPA) RSLs for Chemical Contaminants at Superfund Sites dated May 2016. If the compound is a non-carcinogen, the non-carcinogenic RSL has been divided by 10.
Soil screening levels (SSLs) taken from EPA RSLs for Chemical Contaminants at Superfund Sites dated May 2016 for contaminant leaching to groundwater pathway.
An SSL has been calculated based on Montana's numeric water quality (DEQ-7) standards, adjusted for a dilution attenuation factor (DAF) of 10. The DEQ-7 adjusted risk-based SSL is equal to the ratio of the DEQ-7 standard to the tap water RSL multiplied by the risk-based SSL and a factor of 10. If the DEQ-7 standard and EPA maximum contaminant level (MCL) were the same value, the MCL-based SSL provided in the RSL table (May 2016), adjusted for a DAF of 10, was used. DEQ has determined that a DAF of 10 is appropriate for conditions in Montana. If no DEQ-7 standard is available, the EPA SSL, adjusted for a DAF of 10, has been provided.
Value represents a screening level based on EPA Technical Review Workgroup for Lead, Recommendations of the Technical Review: Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil including the TRWL Guidance Document dated April 1999.

(b) Soil samples were analyzed for purgeable halocarbons and volatile organic compounds (VOCs) using EPA Methods 8010, 8240 or 8260.

(c) "NA" denotes screening values not applicable because a ROD cleanup/screening level or RBCA RBSL exists, or a screening value has not been established. In accordance with DEQ's Soil Screening Process dated October 2013, compounds with RBSLs do not need to be screened using EPA RSLs/SSLs.

(d) "<" denotes analyte was not detected at the indicated method reporting limit.

(e) "--" denotes not analyzed.

(f) "J" denotes a value based on analytical instrument response below the limit of quantitation for the analytical method used.

(g) Soil samples were analyzed for total petroleum hydrocarbons (TPH) using EPA Method 418.1.

(h) Soil samples were analyzed for SVOCs using EPA Method 8270. Select samples were analyzed for only the base neutral extractables.

(i) Soil samples were analyzed for metals using EPA Methods 3050 and 6010.

Only the results of detected analytes are summarized in this table.

Detected values are shown in bold.

mg/kg - milligrams per kilogram

ROD cleanup/screening level.

Reported concentration above ROD cleanup/screening level or other listed screening criteria.

Method reporting limit above one or more screening criteria.

Samples no longer representative. Sludge removed and area has been subjected to biological land treatment. Sludge sample results italicized.

Table 4. Summary of Identified Data Gaps and Rationale for Supplemental Confirmation Sampling

Location/Area and Tank Removal Information	Historical Data	Data Gap	Proposed Investigation	Objectives/Rationale
OIL RECLAMATION AREA (Figure 3)				
UST 2: 1,100-gallon Recycled Waste Oil UST Reported condition of UST at time of removal – rusted. Approximately 12 cubic yards (cy) of visibly impacted soil was removed from the tank excavation. Piping associated with tank removed, except for pipe leading into Former Oil Reclamation Plant building. Pipe was cut adjacent to building and grouted. **UST 3 and 4: 10,000-gallon Waste Oil USTs** Reported condition of the two USTs at time of removal – good. Impacted soil was observed at the surface and to the depth of the tanks. Approximately 160 cy of visibly impacted soil was removed from surface to maximum reach of the excavator [15 feet below ground surface (BGS)] from the tank excavation. Piping to former Boiler House building cut at foundation of building and grouted. Section of pipe also left beneath road and grouted in-place.	**Tank Removal Data** One sample collected at UST 2 and between USTs 3 and 4 during tank removals. Samples were analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOCs) including polynuclear aromatic hydrocarbons (PAHs), pesticides/polychlorinated biphenyls (PCBs), and metals. Petroleum hydrocarbon concentrations (800 to 3,500 mg/kg) reported below the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg but the above the current criteria (200 mg/kg) for EPH fractionation and PAH analysis. Two SVOC compounds (2-methylnaphthalene and dibenzofuran) were reported above EPA Soil Screening Levels (SSLs) at UST 2. **Other Applicable Data** One sample collected during RI from TP-42 at former UST 2 location contained TPH at 47,500 mg/kg at 8 feet BGS suggesting residual petroleum hydrocarbon beneath the former tank location. One sample collected during RI from TP-43 between fueling stanchions contained TPH at 22 mg/kg at 11 feet BGS. One sample collected during RI from TP-45 between USTs 3 and 4 contained TPH at 22 mg/kg at 11 feet BGS.	Insufficient samples collected during tank removal for compliance with current UST closure regulations. A minimum of two samples required for tanks over 600 gallons, collected at each end of the tank (or at suspected worst-case locations) from 1 to 2 feet below the bottom of the tank. Previous sample collection depths during tank removals unknown. Samples analyzed for total petroleum hydrocarbons (TPH) and PAHs; methods now available to screen for extractable petroleum hydrocarbons (EPH screen) and perform follow-on EPH fractionation and PAH analysis for comparison to *Record of Decision* (ROD) cleanup/screening levels for petroleum hydrocarbons and DEQ's current (2009) risk-based screening levels (RBSLs). DEQ determined no additional investigation of the piping associated with these tanks is required.	• Field reconnaissance to determine if surface evidence of former UST locations (tank basin) exists to assist in placement of boring locations. • Advance one soil boring at each end of the former UST tank basin. If tank basin contained two tanks, four borings will be advanced, one representing the end of each tank. Maximum depth to be determine (TBD) in field but will extent to a minimum of 2 feet below the bottom of the tank basin in native material. If tank basin not readily identifiable, boring will be advanced in the best approximation of the former tank basin to 2 feet below the projected bottom of tank depth (projected tank depth), assuming a nominal 2 feet of soil existed above the tank: - UST 2 (1,100-gallon tank): estimated 4 feet tank diameter; projected tank depth 6 feet BGS, target boring depth 8 feet BGS. - USTs 3 and 4 (10,000-gallon tanks): estimated 8 feet diameter; projected tank depth 10 feet BGS, target boring depth 12 feet BGS. Boring will be extended beyond projected tank depth if evidence of petroleum hydrocarbon and/or VOC impacts (based on visual observations and field screening) is observed. Boring will extend until non-impacted soil or groundwater is encountered, whichever comes first. • Field screening: - Visual observations (for presence of staining, odor, etc.). - Sheen test (for presence of petroleum hydrocarbons). - Photoionization detector (PID) (for presence of volatile organic compounds). • Soil sampling: - A minimum of one soil sample per boring will be collected for laboratory analysis. If no evidence of petroleum hydrocarbon and/or VOC impacts, sample will be collected from 2 feet below base of the tank basin or projected tank depth. If evidence of petroleum hydrocarbon and/or VOC impacts based on visual observations and field screening is observed, one sample will be collected from the impacted soil and another sample will be collected from non-impacted soil below the impacted zone or at the soil /groundwater interface, whichever comes first. • Sample analysis: - EPH screen using January 1998 Massachusetts Department of Environmental Protection (MADEP) Method as modified by Montana DEQ with follow-on analysis for EPH fractions using MADEP EPH Fractionation Method and PAHs using EPA Method 8270 in selective ion monitoring (SIM) mode if the EPH screen result is above 200 mg/kg - VPH [including methyl-t-butyl-ether (MTBE), benzene, toluene, ethylbenzene, xylenes, and naphthalene, collectively referred to as MTBEXN] using the MADEP VPH Method - VOCs using EPA Method 8260. - RCRA Metals using EPA Method 6010/6020	Collect additional samples 1 to 2 feet below the tank basin or projected tank depth to: • Meet current sampling requirements for UST closure (for tanks greater than 600-gallon). • Confirm if concentrations of petroleum hydrocarbons previously reported (up to 47,500 mg/kg) persist. • Analyze samples using current analytical methods to determine if petroleum hydrocarbon concentrations are above the ROD cleanup/screening levels for and DEQ's current (2009) RBSLs. • Confirm VOCs (specifically F-listed constituents) are not present above ROD cleanup levels. • Confirm metals are not present above applicable screening criteria.

Table 4. Summary of Identified Data Gaps and Rationale for Supplemental Confirmation Sampling

Location/Area and Tank Removal Information	Historical Data	Data Gap	Proposed Investigation	Objectives/Rationale
OIL RECLAMATION AREA continued (Figure 3)				
590-gallon Gasoline UST (West of Former Talgo Warehouse) No information available regarding condition of tank, visual observations, or impacted soil removal, if any.	One soil sample collected during tank removal at 10 feet BGS and analyzed for BTEX compounds. No BTEX compounds reported above screening criteria.	Sufficient samples collected for compliance with current UST closure regulations, requiring one sample for tanks 600 gallons or less; however, sample was collected greater than 2 feet below the projected tank depth. Sample analyzed for BTEX compounds; methods now available to screen for VPH fractions for comparison to DEQ's current (2009) RBSLs.	• Field reconnaissance (as above). • Advance UST borings (as above, unless tank basin not readily identifiable): - 590-gallon: estimated 4 feet tank diameter; projected tank depth 6 feet BGS, target boring depth 8 feet BGS. • Field screening (as above). • Soil sampling (as above). • Sample analysis: - EPH, VPH, and VOCs. No analysis for RCRA metals required.	Collect additional samples 1 to 2 feet below the tank basin or projected tank depth to: • Meet current sampling requirements for UST closure (since tank was close to 600 gallons, two samples will be collected). • Analyze samples using current analytical VPH methods to determine if petroleum hydrocarbon concentrations are above the DEQ's current (2009) RBSLs.
3,000-gallon Waste Oil UST (North of Former Oil Reclamation Plant building) No information available regarding condition of tank, visual observations, or impacted soil removal, if any.	Three soil samples collected during tank removal from west, middle, and east end of the tank excavation at 12 feet BGS. Samples collected from end of tank basin analyzed for diesel-range organics (DRO); middle sample analyzed for VOCs. Elevated concentrations of petroleum hydrocarbons reported (6,000 to 8,600 mg/kg) above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg.	Sufficient samples collected for compliance with current UST closure regulations, requiring a minimum of two samples for tanks over 600 gallons; however, samples were collected greater than 2 feet below the base of the tank. Sample analyzed for DRO; no PAH analysis. Methods now available to screen for extractable petroleum hydrocarbons (EPH screen) and performed follow-on EPH fractionation and PAH analysis for comparison to ROD cleanup/screening levels for petroleum hydrocarbons and DEQ's current (2009) RBSLs.	• Field reconnaissance (as above). • Advance UST borings (as above, unless tank basin not readily identifiable): - 3,000-gallon tank: estimated 6 feet tank diameter; projected tank depth 8 feet BGS, target boring depth 10 feet BGS. • Field screening (as above). • Soil sampling (as above). • Sample analysis: - EPH, VPH, and VOCs. No analysis for RCRA metals required.	Collect additional samples 1 to 2 feet below the tank basin or projected tank depth to: • Meet current sampling requirements for UST closure (for tanks greater than 600-gallon). • Confirm if concentrations of petroleum hydrocarbons previously reported (up to 8,600 mg/kg) persist. • Analyze samples using current analytical methods to determine if petroleum hydrocarbon concentrations are above the ROD cleanup/screening levels for and DEQ's current (2009) RBSLs. • Confirm VOCs (specifically F-listed constituents) are not present above ROD cleanup levels.
FORMER FREIGHT TRAIN REFUELING AREA (Figure 4)				
UST 6: 13,000-gallon Waste Oil UST Reported condition of UST at time of removal – good. Approximately 10 cy of visibly impacted soil was removed from the tank excavation from the surface to 10 feet BGS. Piping was completely removed. **UST 7: 7,500-gallon Caustic Soda UST** Reported condition of UST at time of removal – good. No soil was removed from the tank excavation due to the absence of visibly impacted soils. Piping from tank to wash racks beneath tracks left in place and grouted. **UST 8: 10,000-gallon Methanol UST** Reported condition of UST at time of removal – good. Approximately 60 cy of visibly impacted soil was removed from the tank excavation from the surface to 10 feet BGS. Section of pipe within Pump House foundation left in-place and grouted.	One soil sample was collected beneath USTs 6, 7, and 8 (depths unknown) during the UST removal activities. Samples were analyzed for VOCs, TPH, SVOCs including PAHs, pesticides/PCBs, and metals. Elevated concentrations of petroleum hydrocarbons (15,000 mg/kg) reported above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg in the sample collected beneath UST 8. No TPH reported beneath USTs 6 and 7. **Other Applicable Data** One sample collected during RI from TP-74 at former UST 6 location at 12.5 feet BGS did not contained TPH above the method reporting limit.	Insufficient samples collected during tank removal for compliance with current UST closure regulations. A minimum of two samples required for tanks over 600 gallons, collected at each end of the tank (or at suspected worst-case locations) from 1 to 2 feet below the bottom of the tank. Insufficient samples collected along piping that was either removed or closed in-place for compliance with current UST closure regulations. Current regulations require samples be collected 1 to 2 feet below piping at intervals not to exceed 20 feet. Previous sample collection depths during tank removals unknown. Sample analyzed for TPH and PAHs; methods now available to screen for extractable petroleum hydrocarbons (EPH screen) and performed follow-on EPH fractionation and PAH analysis for comparison to ROD cleanup/screening levels for petroleum hydrocarbons and DEQ's current (2009) RBSLs. DEQ has determined no additional sampling is required at UST 7.	• Field reconnaissance (as above). • Advance UST borings (as above, unless tank basin not readily identifiable): - UST 6 (13,000-gallon tank) and UST8 (10,000-gallon tank): estimated 8 feet diameter; projected tank depth 10 feet BGS, target boring depth 12 feet BGS. • Advance soil borings along former piping alignments at approximately 20 foot intervals, as shown on Figure 4. Borings initially advanced to a depth of 6 feet BGS unless evident that piping is or was buried at a shallower depth. • Field screening (as above). • Soil sampling (as above for USTs): • Soil sampling for piping alignments: - A minimum of one soil sample per boring will be collected for laboratory analysis. If there is no evidence of petroleum hydrocarbon and/or VOC impacts, sample will be collected from 6 feet BGS, unless it is evident the piping is or was buried at a shallower depth, in which case the sample will be collected within 1 to 2 feet beneath the piping. If evidence of petroleum hydrocarbon and/or VOC impacts based on visual observations and field screening is observed beyond 6 feet BGS, one sample will be collected from the impacted soil and another sample will be collected from non-impacted soil below the impacted zone or at the soil /groundwater interface, whichever comes first. • Sample analysis: - EPH, VPH, and VOCs. No analysis for RCRA metals required.	Collect additional samples 1 to 2 feet below the tank basin or projected tank depth and below piping alignments (at 20-foot intervals) to: • Meet current sampling requirements for UST closure (for tanks greater than 600-gallon) • Meet current sampling requirements for UST closure (for underground piping). • Confirm if concentrations of petroleum hydrocarbons previously reported (up to 130,000 mg/kg) persist. • Analyze samples using current analytical methods to determine if petroleum hydrocarbon concentrations are above the ROD cleanup/screening levels for and DEQ's current (2009) RBSLs. • Confirm VOCs (specifically F-listed constituents) are not present above ROD cleanup levels.

Table 4. Summary of Identified Data Gaps and Rationale for Supplemental Confirmation Sampling

Location/Area and Tank Removal Information	Historical Data	Data Gap	Proposed Investigation	Objectives/Rationale
FORMER FREIGHT TRAIN REFUELING AREA continued (Figure 4)				
Track Pan Grit Chamber 13: 8,000-gallon Waste Oil Reported condition of concrete chamber at time of removal – good. Portion of vitrified clay piping from fueling area leading to grit chamber was left in-place. Approximately 120 cy of soil and concrete rubble removed from the excavation. A wooden grit was also encountered during excavation activities and removed. **Wash Rack Grit Chamber 18: 6,500-gallon Waste Oil** Reported condition of concrete chamber at time of removal – good. Approximately 60 cy of soil and concrete rubble were removed from the excavation. Piping was completely removed.	One soil sample was collected beneath grit chamber 13 (depth unknown) during the UST removal activities. No sample was collected beneath grit chamber 18. Two samples were collected along the piping alignments adjacent to the wash rack and track pan areas (depths unknown). Samples were analyzed for VOCs, TPH, SVOCs including PAHs, pesticides/PCBs, and metals. Elevated concentrations of petroleum hydrocarbons (130,000 mg/kg) reported above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg in the sample collected along the track pan piping alignment. 2-methylnaphthalene and naphthalene were also reported above EPA SSL and ROD screening level in this sample.	As above for USTs 6/7/8.	As above for USTs 6/7/8.	As above for USTs 6/7/8.
AST 14: 100,0000-gallon Diesel AST Reported condition of AST – unknown. **ASTs 15, 16, 17: 25,000-gallon (each) - Diesel AST** Reported condition of ASTs – good. Underground piping between ASTs 16 and 17 cracked and pressure fitting. Approximately 230 cy of visibly impacted soil from the piping and surface spills was removed. Piping associated with ASTs was removed, except one small section of piping adjacent to AST 14; several pipes were cut off at the Pump House and grouted.	One soil sample was collected between ASTs 16 and 17 (depths unknown) during the UST removal activities. One sample was collected just outside AST 14 containment area at the pipe manifold pit, at the offload fueling stanchion near AST 14, at the fueling stanchions in the track pan area, and from the wash rack area. Samples were analyzed for VOCs, TPH, SVOCs including PAHs, pesticides/PCBs, and metals. Elevated concentrations of petroleum hydrocarbons (8,900 mg/kg) reported above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg in the sample collected along the fueling stanchions piping alignment. 2-methylnaphthalene and naphthalene were also reported above EPA SSL and ROD screening level in this sample. Petroleum hydrocarbon concentrations (4,700 mg/kg) reported below the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg but the above the current criteria (200 mg/kg) for EPH fractionation and PAH analysis in sample collected from the pipe manifold pit. **Other Applicable Data** One sample collected during RI from TP-66 located near the fueling stanchions contained TPH at 4,000 mg/kg at 8.5 feet BGS. One sample collected during RI from TP-65 within AST 14 containment area contained TPH at 25 mg/kg at 13 feet BGS.	Insufficient samples collected along piping within AST containment areas that was either removed or closed in-place for compliance with current UST closure regulations. Sample analyzed for TPH and PAHs; methods now available to screen for extractable petroleum hydrocarbons (EPH screen) and performed follow-on EPH fractionation and PAH analysis for comparison to ROD cleanup/screening levels for petroleum hydrocarbons and DEQ's current (2009) RBSLs.	• Field reconnaissance to determine access and physical constraints to placement of test pit locations. • AST 14: Advance four test pits around AST 14 to 4 feet BGS. One test to coincide with former AST piping. • ASTs 15/16/17: Advance four test pits to coincide with former AST piping. Alignments to 6 feet BGS. • Field screening (as above) • Soil sampling (for ASTs): - Collect sample at base of test pit for analysis. • Sample analysis: - EPH, VPH, and VOCs. No analysis for RCRA metals required.	ASTs located with containment areas. ASTs still present, physical constraints (including access); samples cannot be collected from directly beneath the ASTs. • Collect shallow subsurface samples as close to ASTs as possible based on access and other physical constraints. Test pit locations to coincide with former underground piping. • Collect additional samples 1 to 2 feet below the below piping alignments to meet current sampling requirements for UST closure (for underground piping), if logistically possible, otherwise at base of excavation. • Confirm if concentrations of petroleum hydrocarbons previously reported (up to 8,900 mg/kg) persist. • Analyze samples using current analytical methods to determine if petroleum hydrocarbon concentrations are above the ROD cleanup/screening levels for and DEQ's current (2009) RBSLs. • Confirm VOCs (specifically F-listed constituents) are not present above ROD cleanup levels.

Table 4. Summary of Identified Data Gaps and Rationale for Supplemental Confirmation Sampling

Location/Area and Tank Removal Information	Historical Data	Data Gap	Proposed Investigation	Objectives/Rationale
FORMER DEPOT REFUELING AREA (Figure 5)				
UST 9A: 500-gallon gasoline UST Reported condition of UST – rusted, with holes present at bottom of tank. Approximately 4 cy of visibly impacted soil was removed from the tank excavation. Piping was completely removed. **UST 9B: 200-gallon – Kerosene UST** Reported condition of UST – rusted. No soil was removed from the tank excavation due to the absence of visibly impacted soils. Piping was completely removed.	One soil sample was collected beneath UST 9A (depth unknown) during the UST removal activities. Samples were analyzed for VOCs, TPH, SVOCs including PAHs, pesticides/PCBs, and metals. Petroleum hydrocarbon concentrations (350 mg/kg) reported below the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg but the above the current criteria (200 mg/kg) for EPH fractionation and PAH analysis. 2-methylnaphthalene and naphthalene were also reported above EPA SSL and ROD screening levels in this sample. **Other Applicable Data** One sample collected during RI from TP-86 adjacent to former UST 9A location at 13 feet BGS did not contained TPH above the method reporting limit.	Sufficient samples collected for compliance with current UST closure regulations at UST9A, requiring one sample for tanks 600 gallons or less. No sample collected beneath UST 9B and insufficient samples collected from other UST 10 and 11. A minimum of two samples required for tanks over 600 gallons, collected at each end of the tank (or at suspected worst-case locations) from 1 to 2 feet below the bottom of the tank. Insufficient samples collected along piping that was either removed or closed in-place for compliance with current UST closure regulations. Current regulations require samples be collected 1 to 2 feet below piping at intervals not to exceed 20 feet. Previous sample collection depths during tank removals unknown. Sample analyzed for TPH (including PAHs); methods now available to screen for extractable petroleum hydrocarbons (EPH screen) and performed follow-on EPH fractionation and PAH analysis for comparison to ROD cleanup/screening levels for petroleum hydrocarbons and DEQ's current (2009) RBSLs. Samples analyzed for VOCs; methods now available to screen for VPH fractions for comparison to DEQ's current (2009) RBSLs.	• Field reconnaissance (as above). • Advance UST borings (as above, unless tank basin not readily identifiable): - UST 9A (500-gallon tank): estimated 4 feet diameter; projected tank depth 6 feet BGS, target boring depth 8 feet BGS. - UST 9B (200-gallon tank): estimated 3 feet diameter; projected tank depth 5 feet BGS, target boring depth 7 feet BGS. - USTs 10 and 11 (25,000-gallon tanks): estimated 11 feet diameter; projected tank depth 13 feet BGS, target boring depth 15 feet BGS. • Field screening (as above). • Soil sampling (as above for USTs). • Sample analysis: - EPH, VPH, and VOCs. No analysis for RCRA metals required.	Collect additional samples 1 to 2 feet below the tank basin or projected tank depth and below piping alignments (at 20-foot intervals) to: • Meet current sampling requirements for UST closure (for tanks less than and greater than 600-gallon) • Meet current sampling requirements for UST closure (for underground piping). • Confirm if concentrations of petroleum hydrocarbons previously reported (up to 20,000 mg/kg) persist. • Analyze samples using current analytical methods (EPH and VPH) to determine if petroleum hydrocarbon concentrations are above the ROD cleanup/screening levels for and DEQ's current (2009) RBSLs. • Confirm VOCs (specifically F-listed constituents) are not present above ROD cleanup levels.
UST 10 and 11: 25,000-gallon (each) –Diesel UST Reported condition of USTs – good. No visibly impacted soil was noted within the tank excavations. Piping was cut at Pump House and grouted.	One sample was collected beneath USTs 10 and 11; another sample was collected along the former freight train fueling stanchions piping alignment (depth unknown). Samples were analyzed for VOCs, TPH, SVOCs including PAHs, pesticides/PCBs, and metals. Elevated concentrations of petroleum hydrocarbons reported (up to 20,000 mg/kg) above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg in the sample collected along the piping alignment. TPH was also reported in the sample beneath UST 10 and 11 below the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg but the above the current criteria (200 mg/kg) for EPH fractionation and PAH analysis. **Other Applicable Data** One sample collected during RI from TP-87 along the fueling stanchions piping alignment at 14 feet BGS contained TPH at 1,700 mg/kg.			

Table 4. Summary of Identified Data Gaps and Rationale for Supplemental Confirmation Sampling

Location/Area and Tank Removal Information	Historical Data	Data Gap	Proposed Investigation	Objectives/Rationale
API SEPARATOR PONDS AREA (Figure 6)				
API Separator Pond, First Overflow Pond, Relic Overflow Pond	Samples collected from sludge contained in the former API separator pond and associated overflow ponds contained elevated concentrations of petroleum hydrocarbons and presence of metals. Sludge has been removed from the API separator ponds and subsequent treatment/amendment was conducted on the soil left in-place. Depth of tilling/land treatment unknown. Three composite samples and eight discrete samples collected post land treatment in 1993, and 1995, respectively. Confirmation samples analyzed for VOCs. **Other Applicable Data** A discrete sample collected during theRI reported concentrations of petroleum hydrocarbons at 15,500 mg/kg above the ROD total ceiling for total petroleum hydrocarbons of 5,000 mg/kg at 5 to 6 feet BGS. 2-chlorotoluene and 1,2,4-trimethylbenzene were also reported in the same sample above their EPA SSLs.	The former API separator ponds and associated overflow ponds were not lined during operation. Discrete sample collected below likely extent of tilling/land treatment contained elevated concentrations of TPH. No samples collected after sludge removal from depths greater than 2 feet below grade. Historical confirmation samples not analyzed for petroleum hydrocarbons and metals.	• Advance 23 test pits to an initial depth of 6 feet BGS or Native Soil. • Field screening: - Visual observations (for presence of staining, odor, etc.). - Sheen test (for presence of petroleum hydrocarbons). - PID (for presence of volatile organic compounds). • Soil sampling: - A minimum of one soil sample per test pit will be collected for laboratory analysis. If no evidence of petroleum hydrocarbon and/or VOC impacts based on visual observations and field screening, sample will be collected from base of test pit (6 feet BGS). If evidence of petroleum hydrocarbon and/or VOC impacts based on visual observations and field screening is observed, the excavation will be extended until 1) non-impacted soil (based on field screening) is encountered, 2) soil/groundwater interface is encountered, or 3) limit of excavator reached, whichever comes first One sample will be collected from the zone exhibiting highest impacts based on field screening and visual observations, and another sample will be collected from beneath the impacted zone or at the limit of excavation, whichever comes first. • Sample analysis: - EPH, VPH, VOCs, and RCRA metals.	Collect additional samples to: • Determine if residual impacts exists in the former API separator ponds area resulting from sludge historically contained in this area of the Facility. • Confirm if concentrations of petroleum hydrocarbons previously reported at depth (up to 15,500 mg/kg) persist. • Analyze samples using current analytical methods (EPH and VPH) to determine if petroleum hydrocarbon concentrations are above the ROD cleanup/screening levels for and DEQ's current (2009) RBSLs. • Confirm VOCs (specifically F-listed constituents) are not present at concentrations above ROD cleanup levels. • Confirm metals are not present above applicable screening criteria.

APPENDIX A

Historical Storage Tank Information

(from Kennedy/Jenks Consultants, 2008a)

TABLE 3-1

SOIL ANALYTICAL RESULTS ASSOCIATED WITH TANK REMOVALS
Burlington Northern Livingston Shop Complex

Location	Sample ID	Area	Depth (feet)	Date	Volatile Organic Compounds (mg/kg)[a]								TPH (mg/kg)[b]	Diesel Range Organics (mg/kg)[c]	Semivolatile Organic Compounds (mg/kg)[d]																	
					Ethyl-benzene	Toluene	Total Xylenes	2-Chloro toluene	1,2-Dichloro benzene	Methy lene Chloride	Tetra chloro ethene	Tri chloro ethene			Ace naphthene	Anthra cene	Benz(a) anth racene	Benzo(b) fluor anthene	Benzo(k) fluor anthene	Benzo (g,h,i) perylene	Benzo(a) pyrene	Benzoic Acid	Chrysene	Dibenzo (a,h)anth racene	Dibenzo furan	Di-n-Octyl Phthalate	Fluor anthene	Fluorene	Indeno (1,2,3-c,d) pyrene	2-Methyl naphth alene	Naph-thalene	Phen anthrene	Pyrene	1,2-Dichloro benzene
ROD Cleanup/Screening Levels[e]					NA[f]	NA	NA	NA	NA	NA	4	2	NA	NA	200	4,000	10	50	500	NA	4	NA	2,000	5	NA	NA	500	600	50	NA	9	NA	2,000	NA
1988/1989 Tank Removal Sampling																																
At former UST 2	02-02-GI/SI	Oil Recl.	NP[g]	Dec-88	<0.025[h]	<0.025	**0.010J**[i]	--[i]	--	<0.025	<0.025	<0.025	**800**	--	**4.60**	<1.332	**0.660J**	**0.650J**	<1.332	**0.790J**	**0.520J**	**20.0**	**0.790J**	<1.332	**4.00**	<1.332	**2.10**	**3.500**	**0.390J**	**4.80**	<1.332	**5.70**	**2.00**	**0.520J**
Between UST 3 and 4	03-04-03-GI/SI	Oil Recl.	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025	**3,500**	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330	<0.330	<0.330	**0.081J**	<0.330	<0.330	<0.330	<0.330	**0.094J**	**0.160J**	<0.330
Beneath UST 6	06-03-GI/SI	Fueling	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025	<5	--	<0.333	**0.070J**	**0.070J**	**0.210J**	<0.333	**0.110J**	**0.210J**	<1.665	**0.210J**	**0.070J**	<0.333	<0.333	**0.280J**	<0.333	<0.333	<0.333	<0.333	**0.250J**	**0.460**	<0.333
Beneath UST 7	07-01-SI	Fueling	NP	Dec-88	<0.005	<0.005	<0.005	--	--	<0.005	<0.005	<0.005	<5	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Beneath UST 8	08-02-GI/SI	Fueling	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025	**15,000**	--	<0.333	<0.333	**0.100J**	**0.100J**	<0.333	<0.333	**0.100J**	<1.665	**0.067J**	<0.333	<0.333	<0.333	**0.130J**	<0.333	<0.333	<0.333	<0.333	<0.333	**0.060J**	<0.333
Beneath UST 9	09A-05-GI	Depot	NP	Dec-88	<1.000	**0.800J**	**80.0**	--	--	<1.000	<1.000	<1.000	**350**	--	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<1.665	**0.200J**	<0.333	<0.333	<0.333	**0.100J**	<0.333	<0.333	**14.0**	**11.0**	**0.033J**	**0.130J**	<0.333
Beneath USTs 10/11	11/10-03-SI/GI	Depot	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025	**2,900**	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330	**2.80**	<0.330	**0.220J**	<0.330	<0.330	**17.0**	<0.330	**1.60**	**0.140J**	<0.330
Fueling stations	11/10-05-SI/GI	Depot	NP	Dec-88	<1.250	<1.250	<1.250	--	--	<1.250	<1.250	<1.250	**20,000**	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	**380**	**96.0**	**18.0**	<0.330	<0.330
Beneath UST 12	12-01-SI		NP	Dec-88	<0.005	<0.005	<0.005	--	--	<0.005	<0.005	<0.005	<5	--	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<1.665	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333	<0.333
UST 13	13-04-GI/SI	Fueling	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025	<5	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	**0.040J**	<0.330	<0.330	<0.330	<0.330
Offload stanchion	14/15/16/17-02-SI	Fueling	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025	**8,900**	--	<0.333	<0.333	**0.400**	**0.470**	**0.330J**	**0.167J**	**0.267J**	<1.665	**0.330J**	**0.067J**	<0.333	<0.333	**4.10**	**4.00**	**0.130J**	**40.0**	**7.70**	**7.70**	**3.70**	<0.333
Pipe manifold pit	14/15/16/17-05-GI/ 14/15/16/17-06-GI[k]	Fueling	NP	Dec-88	<1.250/ <1.250	<1.250/ <1.250	**2.500/ 1.200J**	--	--	<1.250/ <1.250	<1.250/ <1.250	<1.250/ <1.250	**4,200/ 4,700**	--	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<1.650/ <1.650	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	<0.330/ <0.330	**19.0/ 15.0**	**11.0/ 5.30**	**4.70/ 7.90**	<0.330/ <0.330	<0.330/ <0.330
Track pan area	14/15/16/17-08-GI/SI	Fueling	NP	Dec-88	<1.250	<1.250	<1.250	--	--	<1.250	<1.250	<1.250	**130,000**	--	**2.30**	<1.5651	<1.5651	<1.5651	<1.5651	<1.5651	<1.5651	<7.8255	<1.5651	<1.5651	**13.0**	<1.5651	**0.620J**	**7.90**	<1.5651	**46.0**	**7.90**	**12.00**	**0.460J**	<1.5651
Wash rack area	14/15/16/17-09-SI/GI	Fueling	NP	Dec-88	<0.025	<0.025	<0.025	--	--	<0.025	<0.025	<0.025	**700**	--	**0.140J**	<0.333	**0.070J**	<0.333	<0.333	<0.333	<0.333	<1.665	**0.140J**	<0.333	**0.390**	**3.20B**[f]	**0.110J**	**0.180J**	<0.333	**0.140J**	**0.180J**	**0.180J**	**0.180J**	<0.333
Between AST 16 and 17	14/15/16/17-13-SI	Fueling	NP	Dec-88	**0.140**	**0.021J**	**0.730**	--	--	<0.025	<0.025	<0.025	--	--	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<1.650	<0.330	<0.330	**9.80**	<0.330	<0.330	<0.330	<0.330	**12.0**	**5.20**	**7.30**	<0.330	<0.330
RI Characterization Sampling																																
TP-40	SO-106	Oil Reclamation	14	Apr-90	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**240**	--	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	--	<0.33	<0.33	--	<0.33	<0.33	<0.33	<0.33	--	<0.33	**0.37**	<0.33	<0.33
TP-41	SO-107	Oil Reclamation	4	Apr-90	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	**0.082**	<0.025	**11,300**	--	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	--	<3.3	<3.3	--	<3.3	<3.3	<3.3	<3.3	--	<3.3	**4.7**	<3.3	<3.3
TP-42	SO-109	Oil Reclamation	8	Apr-90	**0.45**	<0.1	**2.4**	**5.9**	<0.1	<0.1	<0.1	<0.1	**47,500**	--	**9.8**	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	--	<3.3	<3.3	--	<3.3	**6.6**	**11**	<3.3	--	**5.1**	**30**	**3.6**	<3.3
TP-43	SO-108	Oil Reclamation	10	Apr-90	--	--	--	--	--	--	--	--	**35**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-44	SO-111	Oil Reclamation	10	Apr-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-45	SO-111	Oil Reclamation	11	Apr-90	--	--	--	--	--	--	--	--	**22**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-149	SO-230	Oil Reclamation	9	Mar-91	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-175	SO-380	Oil Reclamation	5	May-92	--	--	--	<0.025	<0.025	<0.025	**0.039**	<0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-175	SO-381	Oil Reclamation	9	May-92	--	--	--	<0.005	<0.005	<0.005	**0.0097**	<0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-175	SO-382	Oil Reclamation	4	May-92	--	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-65	SO-132	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	**25**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-66	SO-133	Fueling	8.5	Apr-90	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	**4,000**	--	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	--	<1.6	<1.6	--	<1.6	<1.6	<1.6	<1.6	--	<1.6	<1.6	<1.6	<1.6
TP-67	SO-134	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-68	SO-135	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	**165**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-69	SO-136	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	**4,600**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-70	SO-137	Fueling	14	Apr-90	--	--	--	--	--	--	--	--	**8,800**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-71	SO-138	Fueling	14	Apr-90	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<10	--	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	--	<0.33	<0.33	--	--	<0.33	<0.33	<0.33	--	<0.33	<0.33	<0.33	<0.33
TP-72	SO-139	Fueling	13	Apr-90	<0.1	<0.1	**0.194**	<0.1	<0.1	<0.1	<0.1	<0.1	**3,900**	--	**1.7**	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	--	<0.66	<0.66	--	--	<0.66	**4.7**	<0.66	--	<0.66	**4.9**	<0.66	<0.66
TP-73	SO-140	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-74	SO-141 SO-142[k]	Fueling	12.5	Apr-90	--	--	--	--	--	--	--	--	<10/ <10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-136	SO-218	Fueling	9	Feb-91	--	--	--	<0.005	<0.005	**0.068**	<0.005	<0.005	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-137	SO-219	Fueling	9	Feb-91	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	**7,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<1.0
TP-85	SO-154	Depot	15	May-90	--	--	--	--	--	--	--	--	**12**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-86	SO-155	Depot	13	May-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-87	SO-156 SO-157[k]	Depot	14	May-90	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	<0.025/ <0.005	**1,700/ 1,100**	--	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	--	<0.66/ <0.33	<0.66/ <0.33	--	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	<0.66/ <0.33	--	<0.66/ <0.33	**0.72/ <0.33**	<0.66/ <0.33	<0.66/ <0.33
TP-88	SO-158	Depot	13	May-90	--	--	--	--	--	--	--	--	**15**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-89	SO-159	Depot	12	May-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-90	SO-160	Depot	12	May-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-91	SO-161	Depot	15	May-90	--	--	--	--	--	--	--	--	**590**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-92	SO-162	Depot	12	May-90	--	--	--	--	--	--	--	--	**10**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-93	SO-163	Depot	2.5	May-90	--	--	--	--	--	--	--	--	**1,400**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-95	SO-165	Depot	12	May-90	--	--	--	--	--	--	--	--	**50**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-96	SO-166	Depot	12	May-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-97	SO-167	Depot	14	May-90	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sampling during Removal of 1,500-Gallon UST																																		
TP-1	LRC-TR	WWTP	8.5	Apr-90	--	--	--	--	--	--	--	--	**20**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sampling during Removal of 590-Gallon UST																																		
LRC-TR2	140307-001	LRC Office	10	Aug-90	<0.2	<0.2	**0.42**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sampling during Removal of 3,000-Gallon UST																																		
SO-436	SO-436	Oil Reclamation	1.5	Dec-93	--	--	--	--	--	--	--	--	--	**8,600**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-437	SO-437	Oil Reclamation	12	Dec-93	--	--	--	**0.13J**	<0.20	<0.20	**0.10J**	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-438	SO-438	Oil Reclamation	1.5	Dec-93	--	--	--	--	--	--	--	--	--	**6,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-439	SO-439	Oil Reclamation	composite	Dec-93	--	--	--	**7.9**	**0.083**	<0.005	**0.046**	**0.032**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 3-1

SOIL ANALYTICAL RESULTS ASSOCIATED WITH TANK REMOVALS
Burlington Northern Livingston Shop Complex

Location	Sample ID	Area	Depth (feet)	Date	Pesticides/PCBs (µg/kg)[m]	Metals (mg/kg)[n]												
					Arochlor 1248	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
ROD Cleanup/Screening Levels[e]					NA	NA	NA	NA	NA	NA	NA	750[o]	NA	NA	NA	NA	NA	NA
1988/1989 Tank Removal Sampling																		
At former UST 2	02-02-GI/SI	Oil Recl.	NP[g]	Dec-88	<160	**3.2**	--	**0.4**	**0.7**	**2**	**12**	**3.7**	<0.1	**15**	<1	<1	<0.4	**0.29**
Between UST 3 and 4	03-04-03-GI/SI	Oil Recl.	NP	Dec-88	<1,600	**1.5**	--	**0.2**	**1.1**	**6.8**	**13**	**2.6**	<0.1	<10	<0.2	<1	<0.1	**27**
Beneath UST 6	06-03-GI/SI	Fueling	NP	Dec-88	<160	**1.0**	--	**0.3**	**1.0**	**6.2**	**22**	**50**	<0.1	**14**	<1	<1	<0.4	**0.42**
Beneath UST 7	07-01-SI	Fueling	NP	Dec-88	<1,600	**0.7**	--	<0.1	**0.7**	**1.8**	**9**	**64**	<0.1	<10	**0.1**	<1	<0.1	**30**
Beneath UST 8	08-02-GI/SI	Fueling	NP	Dec-88	<160	**1.9**	--	**0.3**	**0.8**	**7**	**14**	**4.0**	<0.1	**14**	<1	<1	<0.4	**0.26**
Beneath UST 9	09A-05-GI	Depot	NP	Dec-88	<160	**2.3**	--	**0.2**	<1	**10**	**19**	**18**	**0.3**	**9**	<1	<2	<0.2	**26**
Beneath USTs 10/11	11/10-03-SI/GI	Depot	NP	Dec-88	<1,600	<1	--	**0.3**	**0.07**	**6.3**	**13**	**8**	<0.1	**10**	<0.4	<1	<0.4	**25**
Fueling stations	11/10-05-SI/GI	Depot	NP	Dec-88	<1,600	<3	--	**0.3**	<0.1	**22**	**24**	**4**	<0.1	**20**	<0.4	<1	<0.4	**33**
Beneath UST 12	12-01-SI		NP	Dec-88	<160	**7.5**	--	**0.4**	<1	**16**	**67**	**75**	<0.1	**15**	<1	<2	<0.2	**76**
UST 13	13-04-GI/SI	Fueling	NP	Dec-88	<1,600	**3.0**	--	<1	<0.05	**16**	**11**	**7**	<0.0002	**8**	**1.1**	<1	<0.1	**27.4**
Offload stanchion	14/15/16/17-02-SI	Fueling	NP	Dec-88	<160	**10**	--	**0.5**	**2**	**22**	**82**	**240**	**0.2**	**20**	<1	<2	<0.2	**180**
Pipe manifold pit	14/15/16/17-05-GI/ 14/15/16/17-06-GI[k]	Fueling	NP	Dec-88	<160/ <160	**1.9/ 2.5**	--	**0.3/ 0.4**	**0.06/ 0.24**	**16/ 18**	**16/ 44**	**4.8/ 16**	**0.2/** <0.1	**14/ 20**	<1/ <1	<0.05/ <0.1	**0.1/ 0.1**	**31/ 65**
Track pan area	14/15/16/17-08-GI/SI	Fueling	NP	Dec-88	<800	**2.2**	--	**0.4**	**1.0**	**8**	**28**	**18**	<0.1	**19**	<1	<1	<0.4	**0.43**
Wash rack area	14/15/16/17-09-SI/GI	Fueling	NP	Dec-88	<160	**12**	--	**0.9**	**2.4**	**11**	**86**	**120**	<0.1	**30**	<2	**1**	<0.4	**1.1**
Between AST 16 and 17	14/15/16/17-13-SI	Fueling	NP	Dec-88	<1,600	<1	--	**0.2**	<0.1	**6.3**	**11**	**4**	<0.1	<10	<1	<1	<0.4	**25**
RI Characterization Sampling																		
TP-40	SO-106	Oil Reclamation	14	Apr-90	<100	<5	**58**	--	<1	**8**	--	**6**	<1	--	<5	<5	--	--
TP-41	SO-107	Oil Reclamation	4	Apr-90	<2,500	**48**	**200**	--	**2**	**53**	--	**310**	<1	--	<5	<5	--	--
TP-42	SO-109	Oil Reclamation	8	Apr-90	<2,500	**10**	**61**	--	<1	**21**	--	**11**	<1	--	<5	<5	--	--
TP-43	SO-108	Oil Reclamation	10	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-44	SO-111	Oil Reclamation	10	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-45	SO-111	Oil Reclamation	11	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-149	SO-230	Oil Reclamation	9	Mar-91	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-175	SO-380	Oil Reclamation	5	May-92	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-175	SO-381	Oil Reclamation	9	May-92	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-175	SO-382	Oil Reclamation	4	May-92	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-65	SO-132	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-66	SO-133	Fueling	8.5	Apr-90	<100	<5	**46**	--	<1	**12**	--	<5	<1	--	<5	<5	--	--
TP-67	SO-134	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-68	SO-135	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-69	SO-136	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-70	SO-137	Fueling	14	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-71	SO-138	Fueling	14	Apr-90	<100	<5	**56**	--	<1	**15**	--	**7**	<1	--	<5	<5	--	--
TP-72	SO-139	Fueling	13	Apr-90	**154**	<5	**94**	--	<1	**11**	--	<5	<1	--	<5	<5	--	--
TP-73	SO-140	Fueling	13	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-74	SO-141 SO-142[k]	Fueling	12.5	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-136	SO-218	Fueling	9	Feb-91	<50	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-137	SO-219	Fueling	9	Feb-91	<50	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-85	SO-154	Depot	15	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-86	SO-155	Depot	13	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-87	SO-156 SO-157[k]	Depot	14	May-90	<100/ <100	<5/ <5	**74/ 67**	--	<1/ <1	**10/ 9**	--	**6/ 5**	<1/ <1	--	<5/ <5	<5/ <5	--	--
TP-88	SO-158	Depot	13	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-89	SO-159	Depot	12	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-90	SO-160	Depot	12	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-91	SO-161	Depot	15	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-92	SO-162	Depot	12	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-93	SO-163	Depot	2.5	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-95	SO-165	Depot	12	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-96	SO-166	Depot	12	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP-97	SO-167	Depot	14	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sampling during Removal of 1,500-Gallon UST																		
TP-1	LRC-TR	WWTP	8.5	Apr-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sampling during Removal of 590-Gallon UST																		
LRC-TR2	140307-001	LRC Office	10	Aug-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sampling during Removal of 3,000-Gallon UST																		
SO-436	SO-436	Oil Reclamation	1.5	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-437	SO-437	Oil Reclamation	12	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-438	SO-438	Oil Reclamation	1.5	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SO-439	SO-439	Oil Reclamation	composite	Dec-93	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 3-1

SOIL ANALYTICAL RESULTS ASSOCIATED WITH TANK REMOVALS
Burlington Northern Livingston Shop Complex

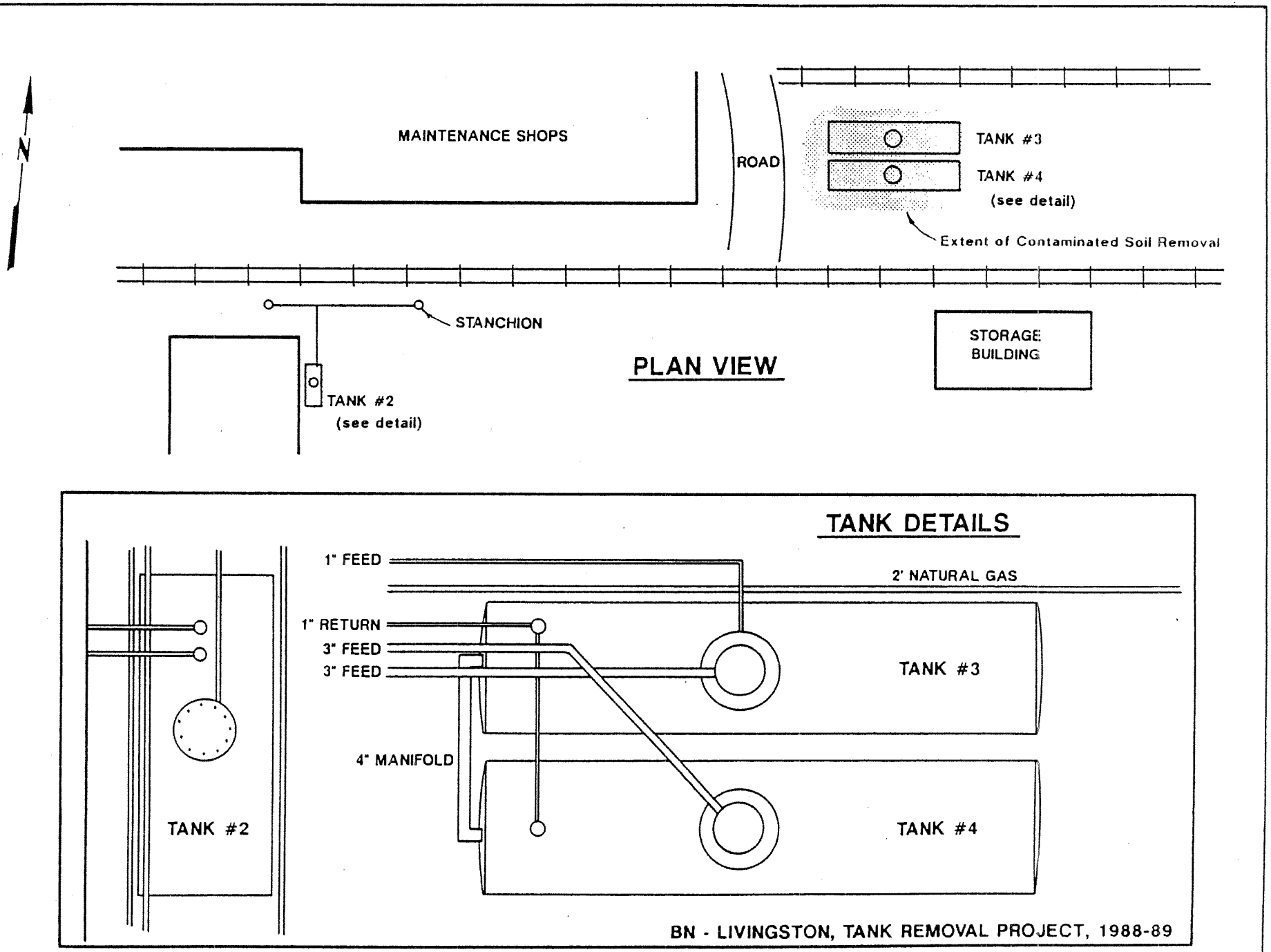
Notes:

(a) Soil samples were analyzed for purgeable halocarbons, volatile organic compounds (VOCs), or purgeable aromatics using EPA Methods 8010, 8240/8260, and 8020, respectively.
(b) Soil samples collected in 1988 were analyzed for total petroleum hydrocarbons (TPH) using PAL B009, samples collected from 1990 to 1992 were analyzed for TPH using EPA Method 418.1.
(c) Soil samples were analyzed for diesel range organics (DRO) using EPA Method 8015 modified.
(d) Soil samples were analyzed for semivolatile organic compounds (SVOCs) using EPA Method 8270.
(e) Cleanup levels are from the *Record of Decision* (ROD) [Montana Department of Environmental Quality (DEQ) 2001] dated September 2001. Values for polynuclear aromatic hydrocarbons (PAHs) are risk-based screening levels (RBSLs) from *Montana Tier I Risk-Based Corrective Action Guidance for Petroleum Releases* dated October 2007 (Table 2 dated July 2007 draft).
(f) "NA" denotes cleanup level or screening value has not been established.
(g) "NP" denotes sampling depth was not provided.
(h) "<" denotes analyte was not detected at the indicated detection limit.
(i) "J" indicates a value based on analytical instrument response below the limit of quantitation for the analytical method used.
(j) "--" denotes not analyzed.
(k) The second sample ID is a duplicate sample, and the second value represents the analytical result for the duplicate sample unless otherwise indicated.
(l) "B" indicates that the analyte was also detected in the associated method blank sample.
(m) Soil samples were analyzed for pesticides and polychlorinated biphenyls using EPA Method 8080.
(n) Soil samples were analyzed for metals using EPA Methods 3050 and 6010.
(o) Value represents a screening level based on EPA Technical Review Workgroup for Lead, *Recommendations of the Technical Review: Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil* including the TRWL Guidance Document dated April 1999.

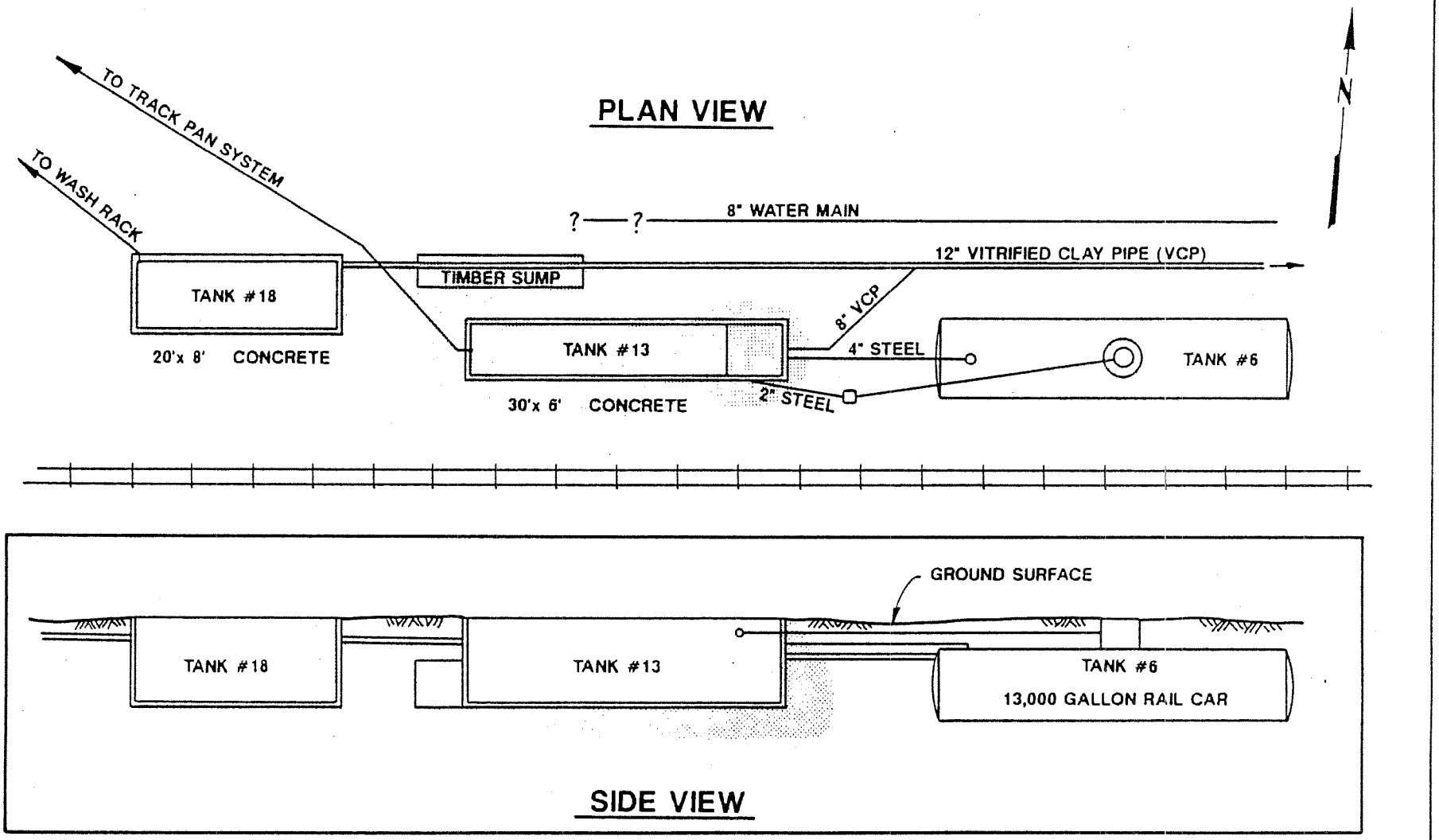
Only the results of detected analytes are summarized in this table.

Detected values are shown in bold.
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram

Figures from *Interim Report: Storage Tank, Piping, and Contaminated Soil Removal*



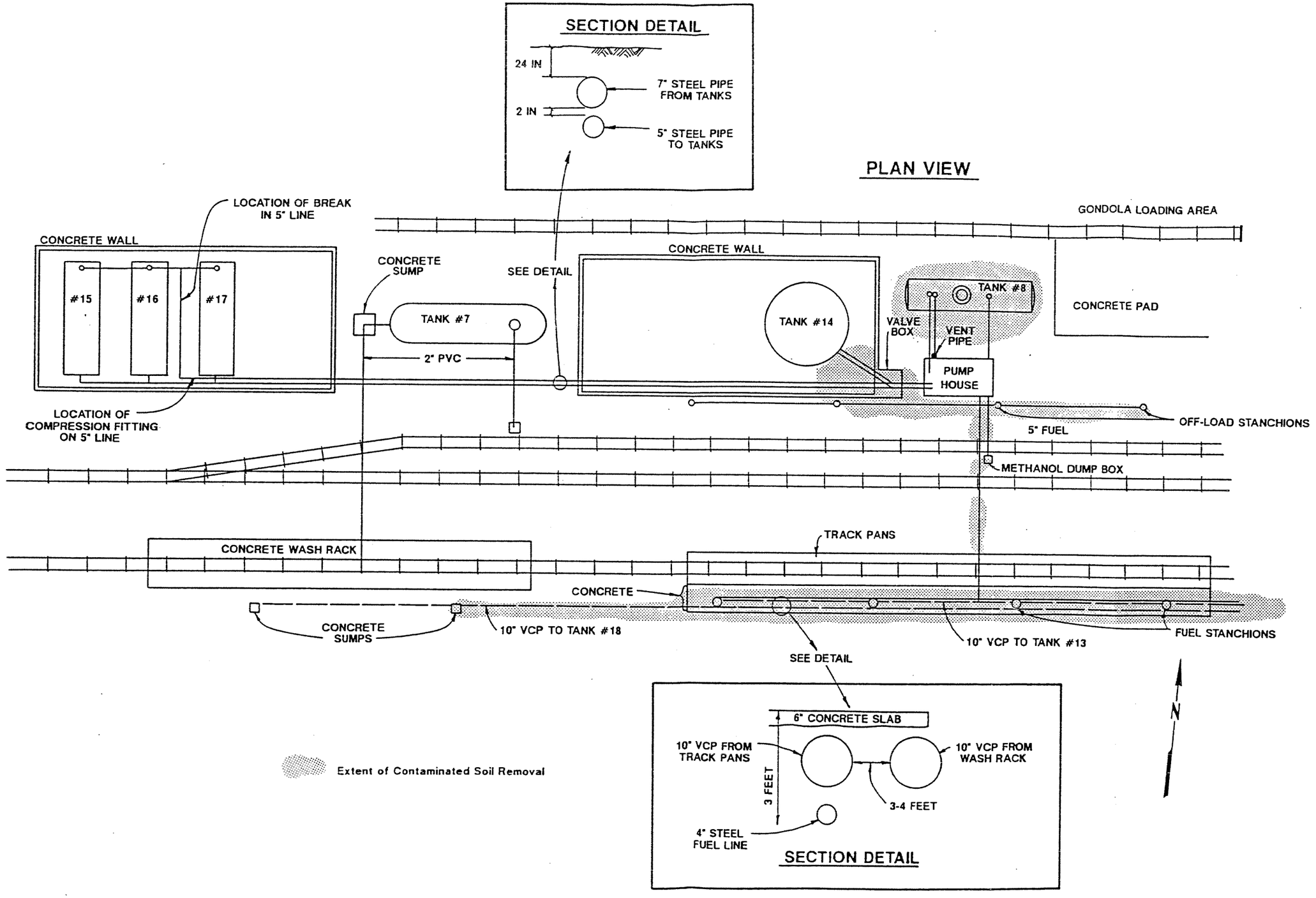
Schematic Diagram Showing Site Features Associated With Tank Numbers 2, 3 and 4. FIGURE 1



Extent of Contaminated Soil Removal

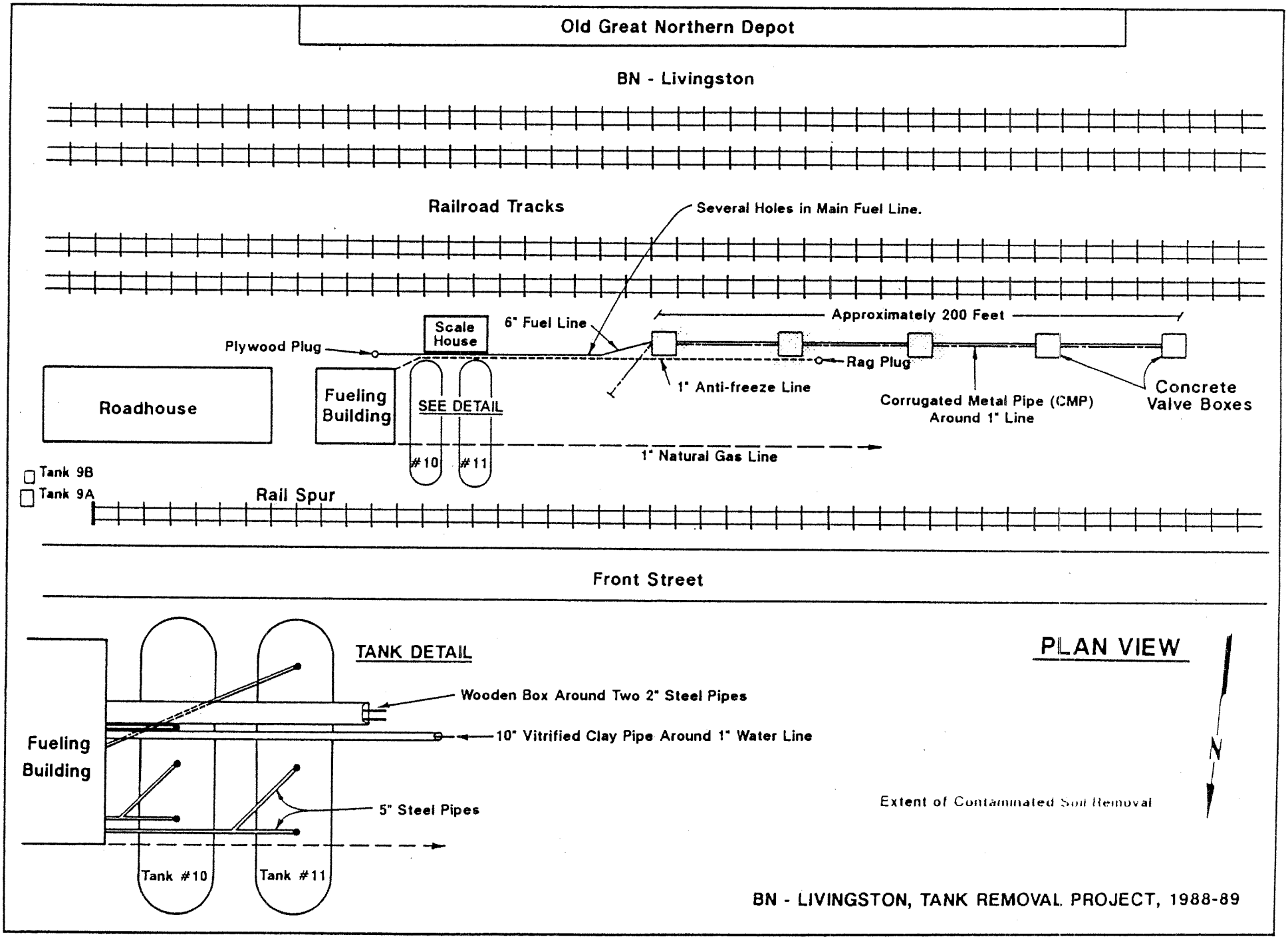
BN - LIVINGSTON, TANK REMOVAL PROJECT, 1988-89

Schematic Diagram Showing Site Features Associated With Tank Numbers 6, 13 and 18. FIGURE 2

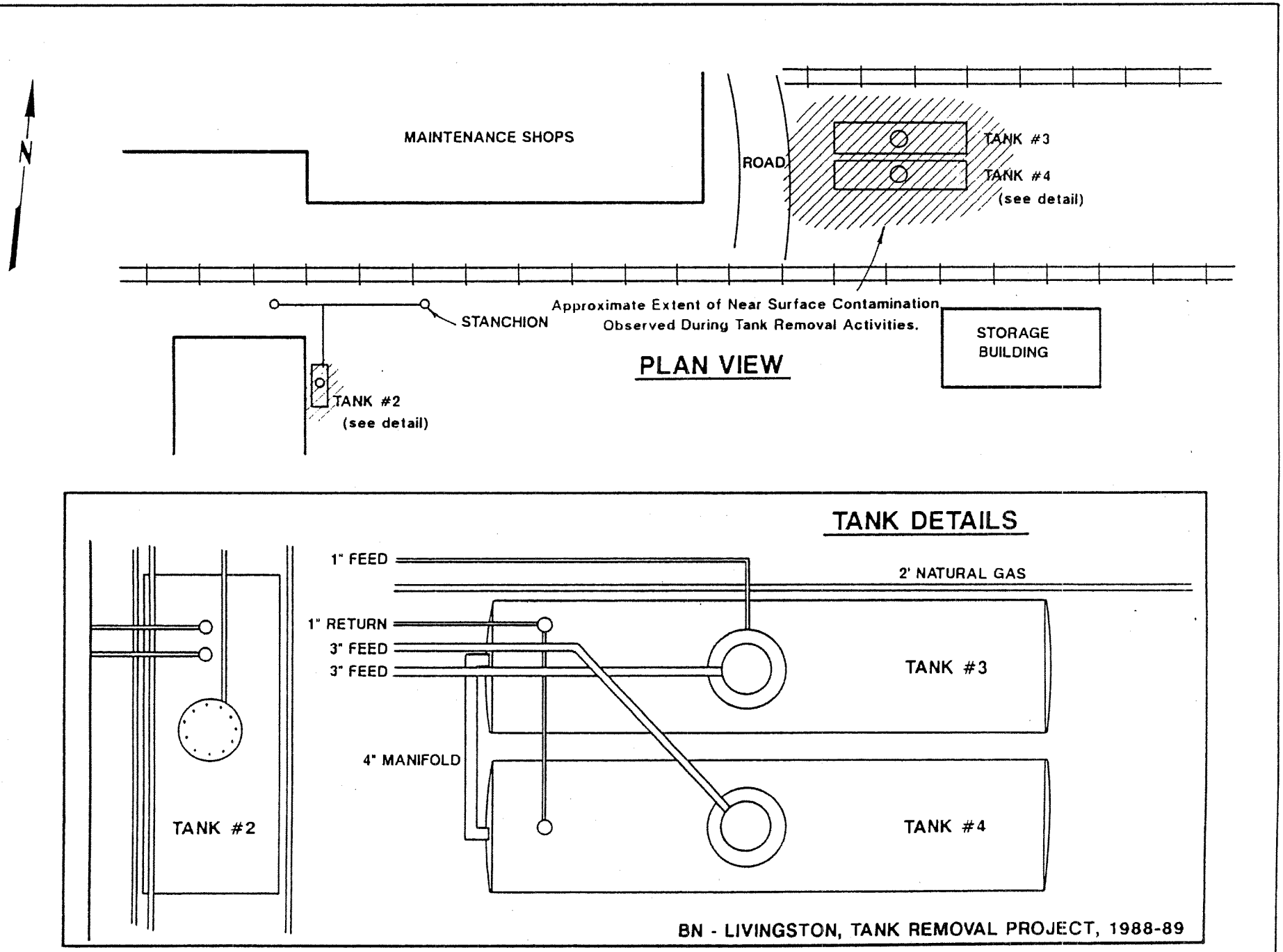


BN - LIVINGSTON, TANK REMOVAL PROJECT, 1988-89

Schematic Diagram Showing Site Features Associated With Former Fueling Area. FIGURE 3

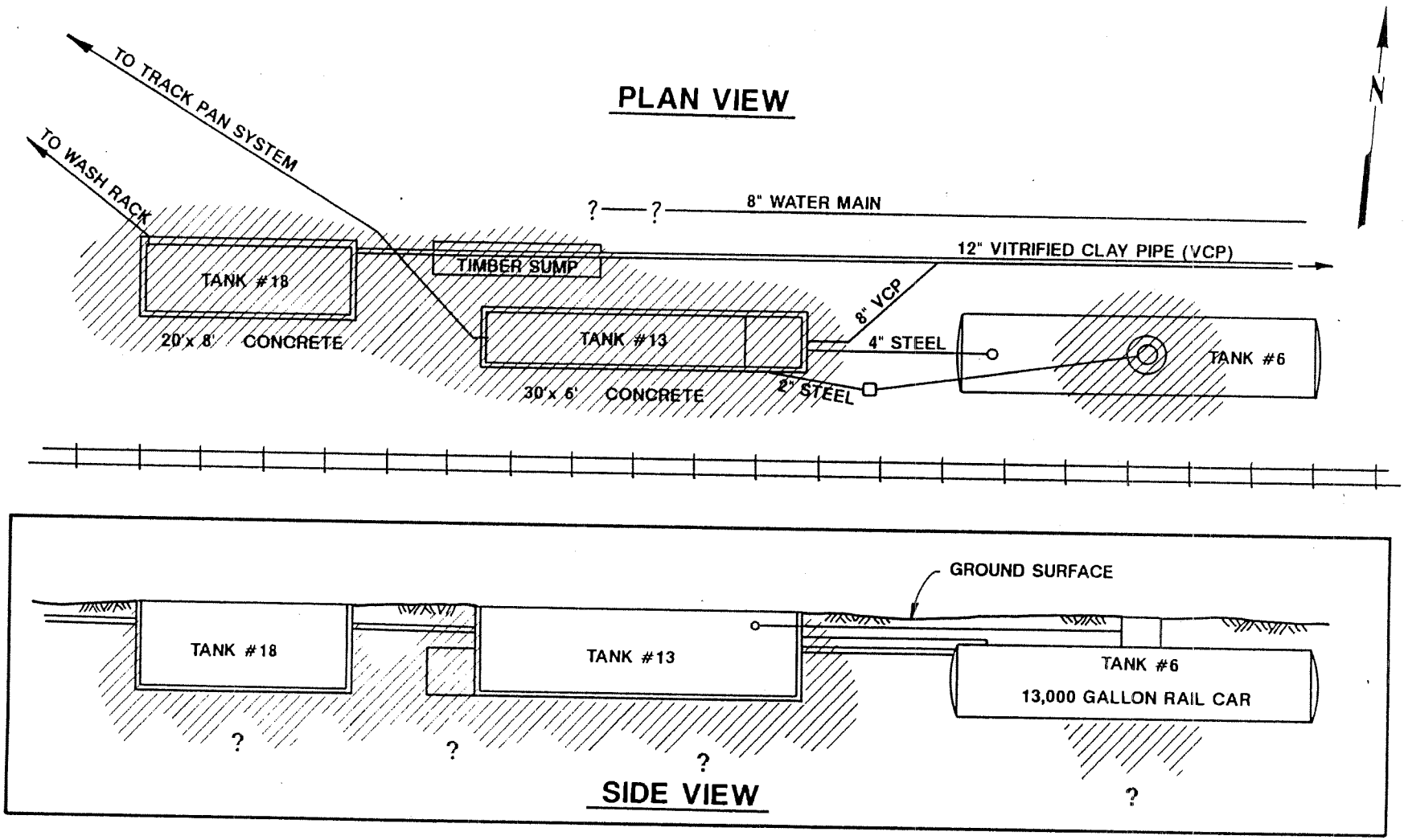


Schematic Diagram Showing Site Features Associated With Tank Numbers 10 and 11. FIGURE 4



Schematic Diagram Showing Site Features Associated With Tank Numbers 2, 3 and 4.

FIGURE 5

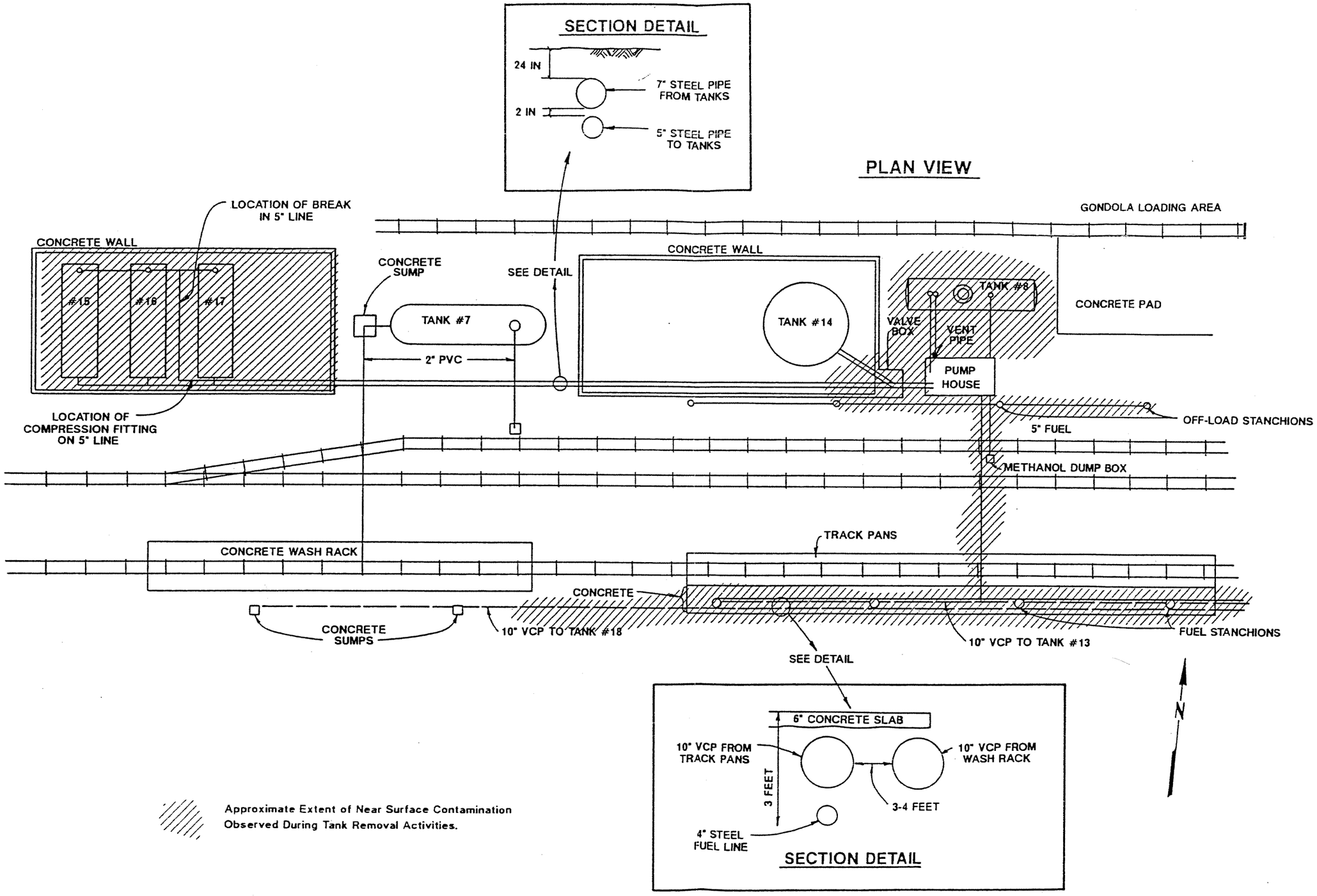


Approximate Extent of Near Surface Contamination
Observed During Tank Removal Activities.

BN - LIVINGSTON, TANK REMOVAL PROJECT, 1988-89

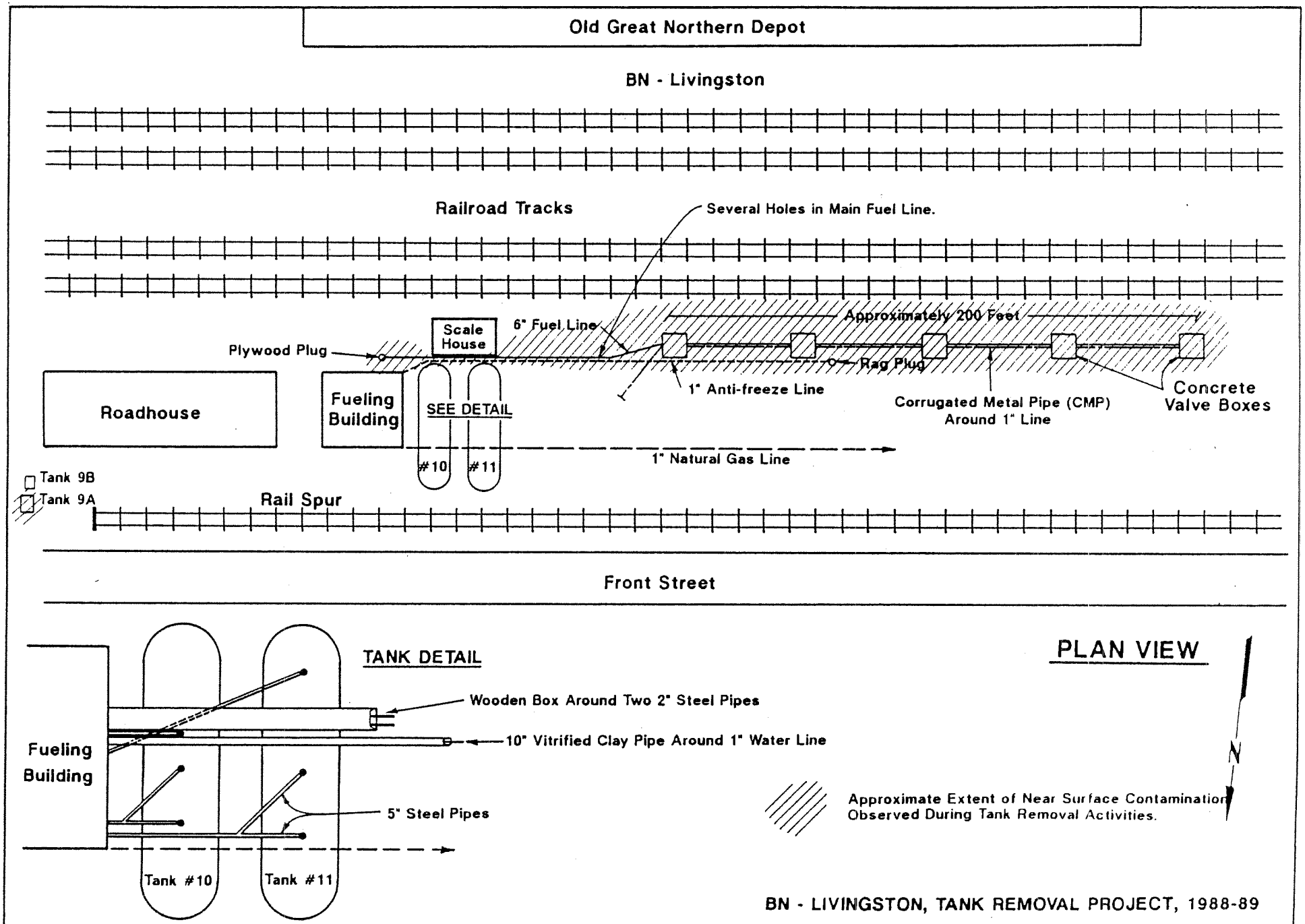
Schematic Diagram Showing Site Features Associated With Tank Numbers 6, 13 and 18.

FIGURE 6



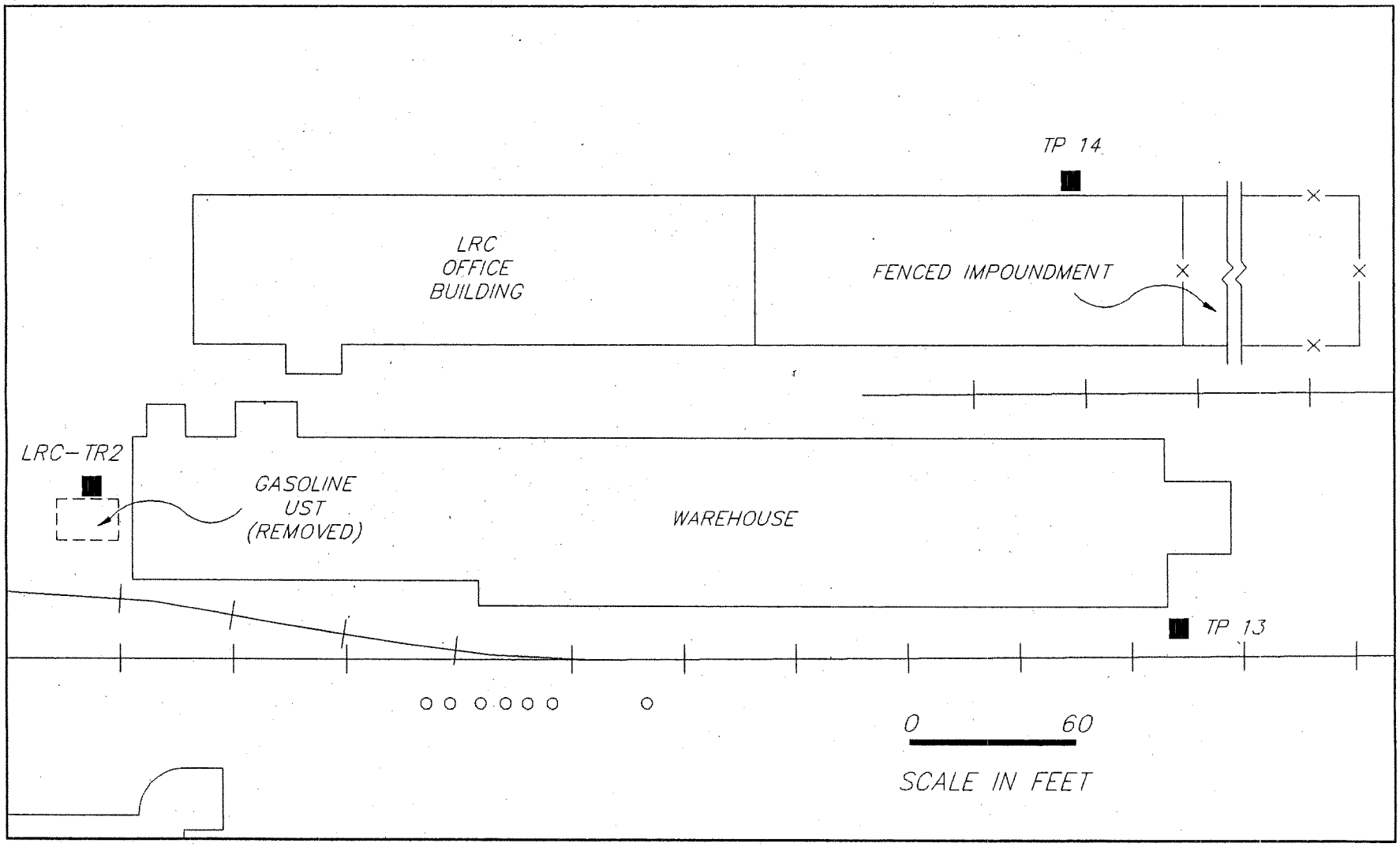
BN - LIVINGSTON, TANK REMOVAL PROJECT, 1988-89

Schematic Diagram Showing Site Features Associated With Former Fueling Area. FIGURE 7



Schematic Diagram Showing Site Features Associated With Tank Numbers 10 and 11. FIGURE 8

Figures from *Livingston Rail Yard Final Remedial Investigation Report*



SYMBOL LEGEND

—X— FENCE

TEST PIT & SOIL SAMPLE LOCATION

N

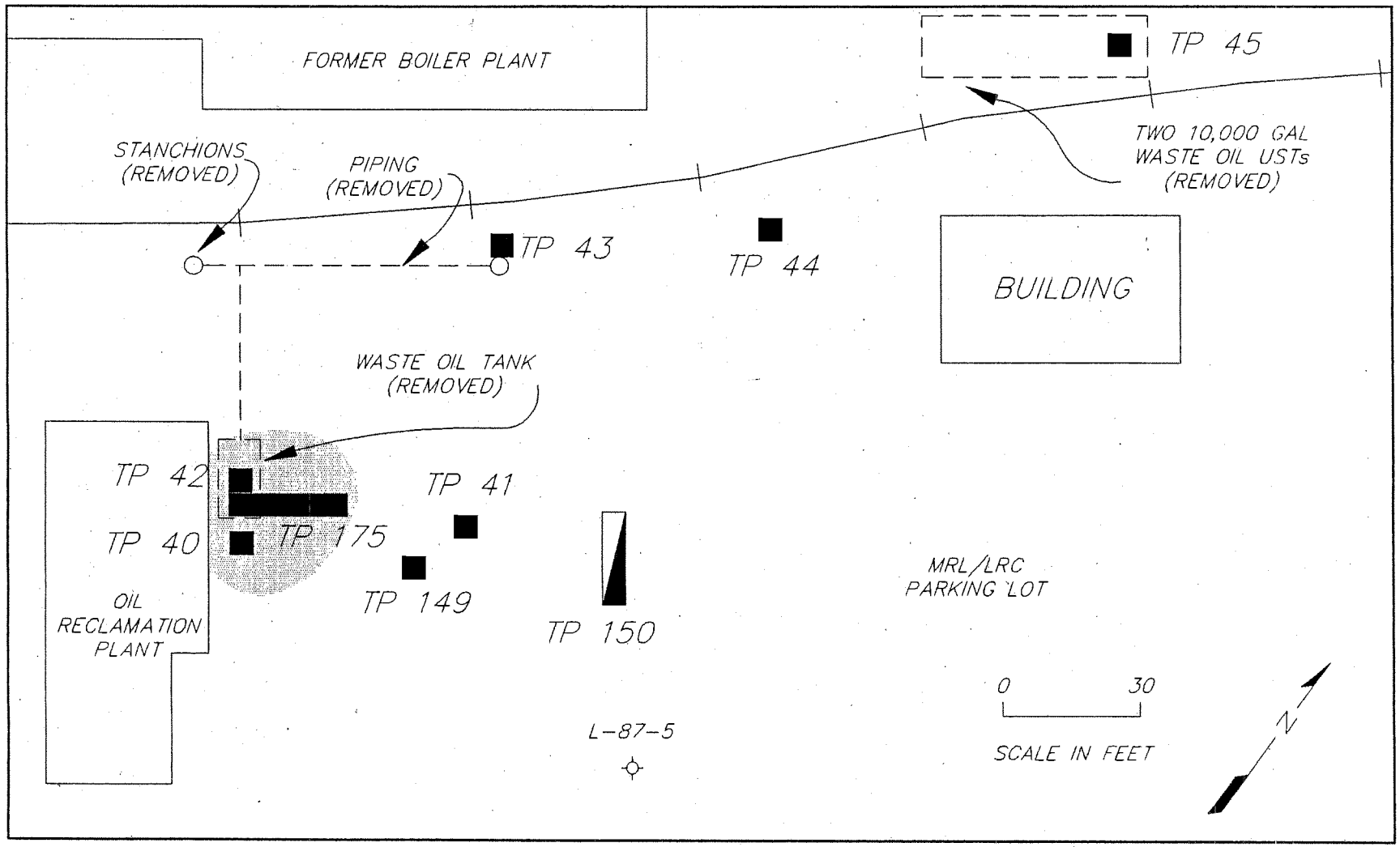
BURLINGTON NORTHERN

ENVIROCON, INC.

SOIL SECTION
LIVINGSTON RAIL YARD
REMEDIAL INVESTIGATION

TEST PIT & SOIL SAMPLE LOCATIONS AT THE LEASED CHURCH UNIVERSAL & TRIUMPHANT PROPERTY

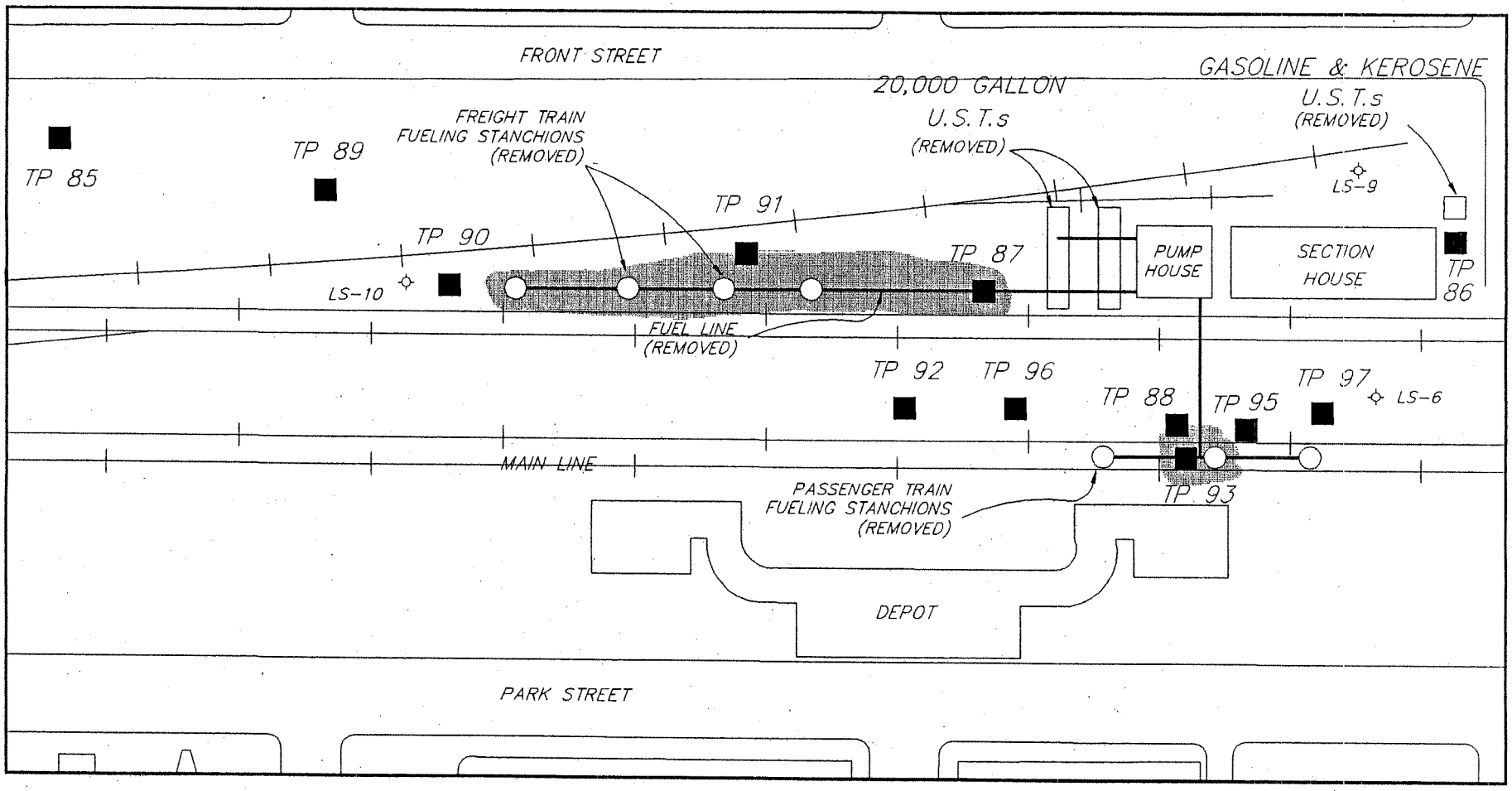
AutoCAD FILE: PJ15.DWG_B | 9/6/91 | FIGURE 3.11



SYMBOL LEGEND

- TEST PIT & SOIL SAMPLE LOCATION
- EXISTING WELL
- TEST PIT ONLY
- APPROX. AREA OF SOIL CONTAMINATION

BURLINGTON NORTHERN	SOIL SECTION LIVINGSTON RAIL YARD REMEDIAL INVESTIGATION	TEST PIT & SOIL SAMPLE LOCATIONS AT THE OIL RECLAMATION PLANT
ENVIROCON, INC.	AutoCAD FILE: PJ17.DWG_E	8/20/92 FIGURE 3.13



BURLINGTON NORTHERN	SOIL SECTION LIVINGSTON RAIL YARD REMEDIAL INVESTIGATION	TEST PIT & SOIL SAMPLE LOCATIONS AT THE DEPOT FUELING FACILITY
ENVIROCON, INC.	AutoCAD FILE: PJ25.DWG_C	9/8/91 FIGURE 3.18

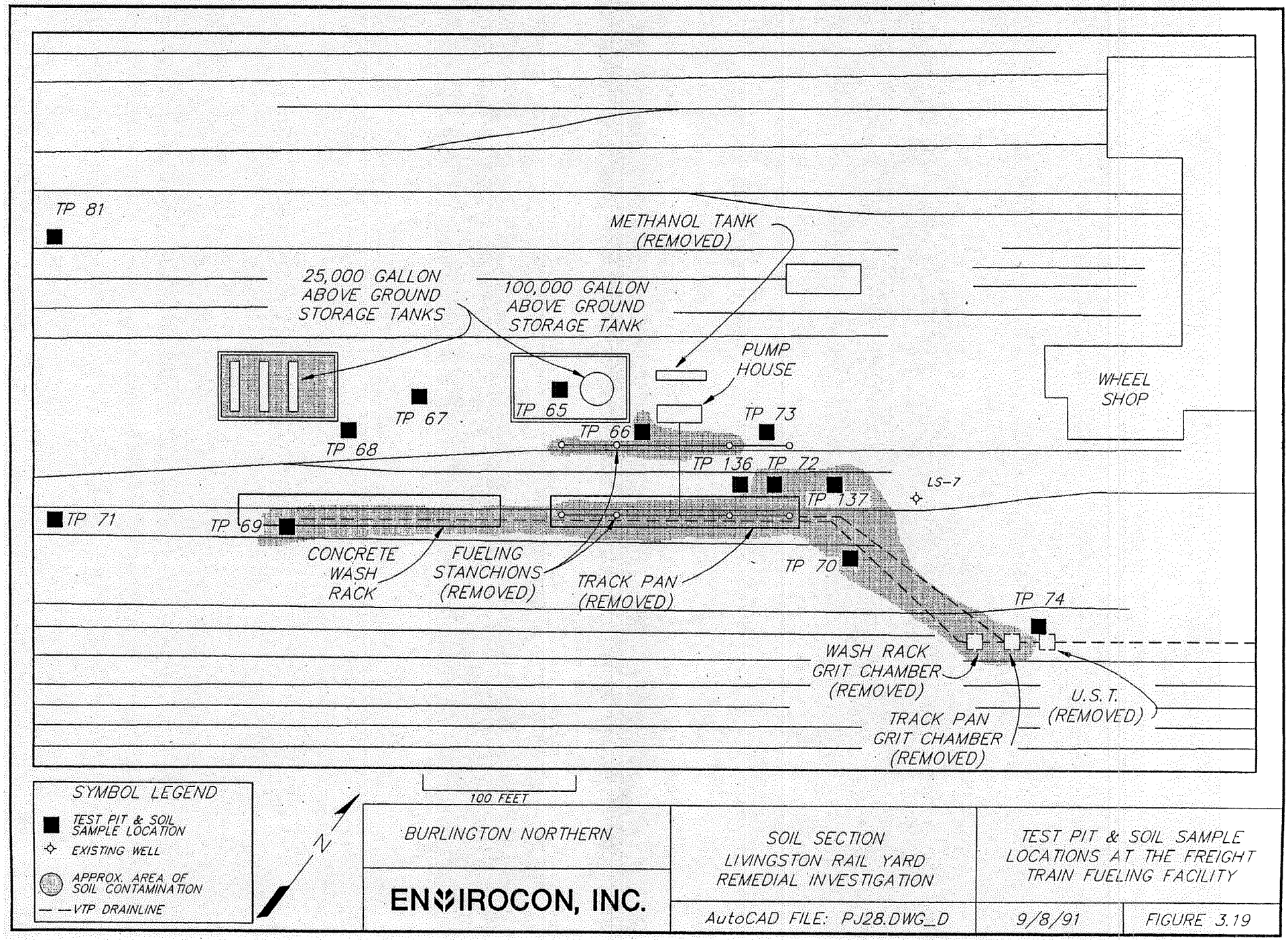
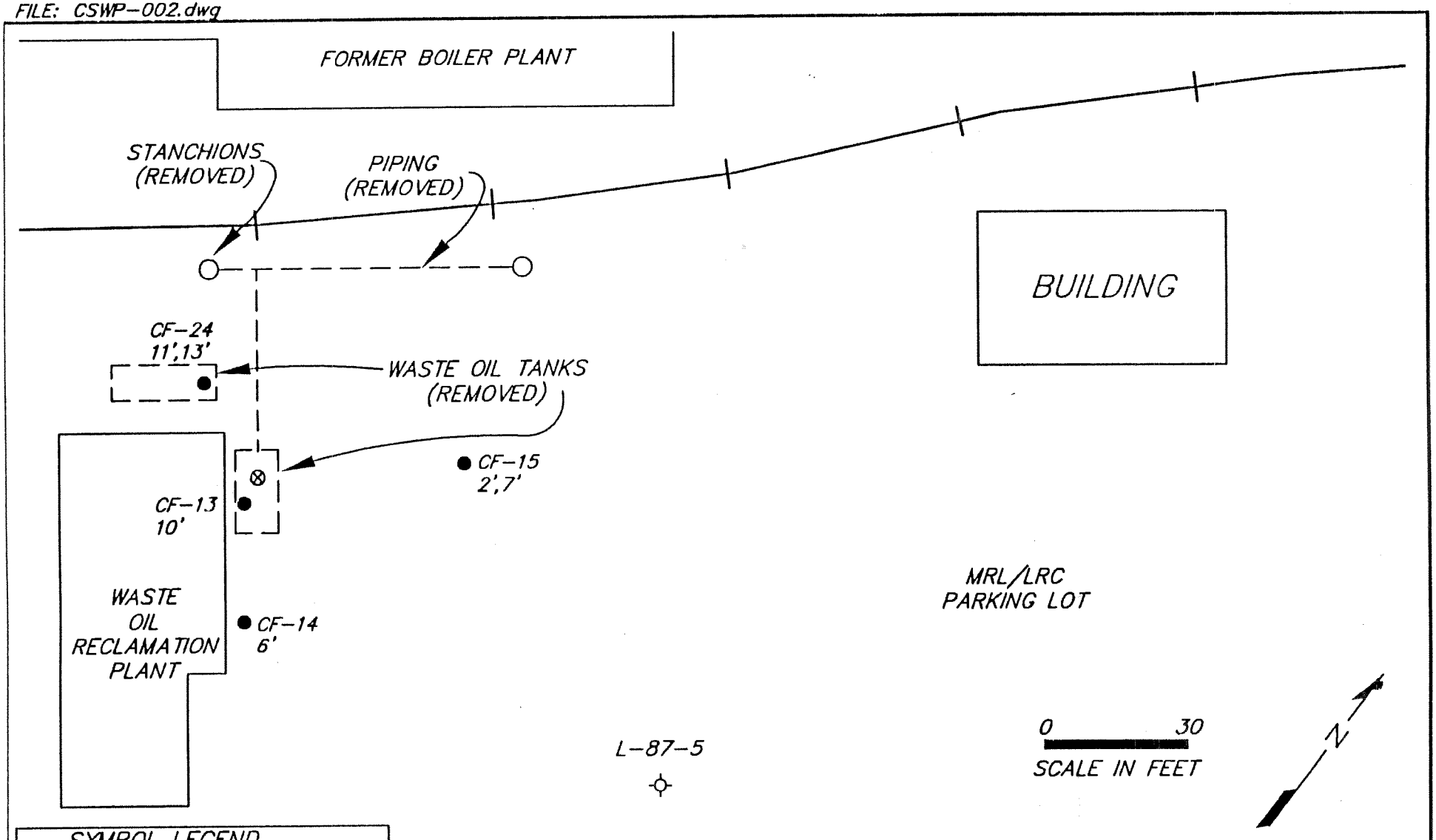

TP 81
METHANOL TANK (REMOVED)
25,000 GALLON ABOVE GROUND STORAGE TANKS
100,000 GALLON ABOVE GROUND STORAGE TANK
PUMP HOUSE
WHEEL SHOP
TP 67
TP 65
TP 73
TP 66
TP 68
TP 136
TP 72
LS-7
TP 137
TP 71
TP 69
CONCRETE WASH RACK
FUELING STANCHIONS (REMOVED)
TRACK PAN (REMOVED)
TP 70
TP 74
WASH RACK GRIT CHAMBER (REMOVED)
U.S.T. (REMOVED)
TRACK PAN GRIT CHAMBER (REMOVED)
SYMBOL LEGEND
TEST PIT & SOIL SAMPLE LOCATION
EXISTING WELL
APPROX. AREA OF SOIL CONTAMINATION
VTP DRAINLINE
100 FEET
N
BURLINGTON NORTHERN
ENVIROCON, INC.
SOIL SECTION
LIVINGSTON RAIL YARD
REMEDIAL INVESTIGATION
AutoCAD FILE: PJ28.DWG_D
TEST PIT & SOIL SAMPLE LOCATIONS AT THE FREIGHT TRAIN FUELING FACILITY
9/8/91
FIGURE 3.19

Figure from *Livingston Rail Yard Confirmation Soil Sampling Report*

FILE: CSWP-002.dwg



SYMBOL LEGEND
- EXISTING MONITOR WELL
- EXISTING SVE WELL
- BOREHOLE SAMPLE LOCATIONS W/ BOREHOLE NUMBER AND SAMPLE DEPTH(S)

0 30
SCALE IN FEET

BURLINGTON NORTHERN	CONFIRMATION SOIL SAMPLING REPORT LIVINGSTON RAIL YARD LIVINGSTON, MONTANA	WORP SOIL SAMPLE LOCATIONS	
ENVIROCON, INC.	PROJECT NO. 140101.R02	10/2/95	FIGURE 7.0

APPENDIX B

Historical API Ponds Information

(from Kennedy/Jenks Consultants, 2008a)

TABLE 4-1

SOIL ANALYTICAL RESULTS ASSOCIATED WITH SLUDGE REMOVAL AREAS
Burlington Northern Livingston Shop Complex

Location	Sample ID	Area	Depth (feet)	Date	Volatile Organic Compounds (mg/kg)[a]																									TPH as 418.1 (mg/kg)[b]
					Benzene	Ethyl-benzene	Toluene	m+p Xylene	o-Xylene	Total Xylenes	Bromo dichloro methane	n-Butyl benzene	sec-Butyl benzene	Chloro benzene	2-Chloro toluene	4-Chloro toluene	1,2-Dichloro benzene	1,3-Dichloro benzene	1,4-Dichloro benzene	cis-1,2-Dichloro ethene	trans-1,2-Dichloro ethene	Iso propyl benzene	p-Iso propyl toluene	Methy lene Chloride	n-Propyl benzene	Naph thalene	Tetra chloro ethene	1,1,1-Trichlor ethane	Tri chloro ethene	1,2,4-Tri methyl benzene	1,3,5-Tri methyl benzene	
ROD Cleanup/Screening Levels[c]					NA[d]	NA	NA	NA	NA	NA	NA	NA	NA	124	NA	NA	NA	NA	264	14	NA	NA	NA	NA	NA	9	4	NA	2	NA	NA	NA
API SEPARATOR/OVERFLOW POND																															
RI Sampling																															
API-1	SO-001	API Separator Pond	5-6	Nov-89	<0.20[e]	**0.4**	<0.20	**0.47**	**0.78**	**1.25**	<0.20	**1.9**	**1.5**	**12**	**14**	<0.20	**1.7**	**0.38**	**4.8**	<0.20	<0.20	**0.49**	<0.20	<0.20	**1.5**	**1.3**	<0.20	<0.20	<0.20	**1.1**	<0.20	**15,500**
API-1	SO-002	API Separator Pond	0-6	Nov-89	<0.20	**0.22**	<0.20	**0.33**	**0.54**	**0.87**	<0.20	**0.94**	**0.92**	**5.9**	**7.5**	<0.20	**1.2**	**0.31**	**3.6**	<0.20	<0.20	**0.26**	<0.20	<0.20	**0.89**	**1.5**	<0.20	<0.20	<0.20	**0.62**	<0.20	**15,800**
API-2	SO-003	API Separator Pond	0-2	Nov-89	<0.20	<0.20	<0.20	**0.23**	**0.2**	**0.43**	<0.20	**0.61**	**0.32**	**4**	**9.6**	<0.20	**0.64**	**0.24**	**0.84**	<0.20	<0.20	<0.20	**0.23**	<0.20	**0.23**	**0.36**	<0.20	<0.20	<0.20	**2.0**	**0.24**	**8,350**
API-3	SL-004	API Relic Pond	5-7	Dec-89	<1.0	**3.1**	<1.0	**8.7**	**4.2**	**12.9**	<1.0	--[f]	--	**380**	**10**	--	**28**	**5.9**	**49**	<1.0	<1.0	--	--	<1.0	--	--	<1.0	<1.0	<1.0	--	--	**119,000**
API-6	SL-005	API Relic Pond	4-5	Dec-89	<1.0	**2.1**	<1.0	**4.1**	**7.1**	**11.2**	<1.0	--	--	**394**	<1.0	--	**55**	**16**	**94**	<1.0	<1.0	--	--	<1.0	--	--	<1.0	<1.0	<1.0	--	--	**203,000**
TP-98	SO-168	North of API Pond	5	May-90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**15**
TP-99	SO-169	North of API Pond	5	May-90	<0.005	<0.005	<0.005	--	--	<0.005	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	<0.005	<0.005	--	--	<10
SO-384	SO-384	West of API Pond	2.2	May-92	--	--	--	--	--	--	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	<0.005	<0.005	--	--	--
Sampling Prior to Biological Land Treatment																															
SO-401	SO-401	API Overflow Pond	0.5	Oct-92	--	--	--	--	--	--	<0.20	--	--	<0.20	<0.20	--	<0.20	**0.24**	<0.20	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
SO-402	SO-402	API Overflow Pond	0.5	Oct-92	--	--	--	--	--	--	<0.20	--	--	<0.20	<0.20	--	**0.26**	<0.20	<0.20	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
SO-403	SO-403	API Overflow Pond	0.5	Oct-92	--	--	--	--	--	--	<0.20	--	--	<0.20	<0.20	--	**0.20**	**0.20**	<0.20	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
Sampling Following Biological Land Treatment																															
SO-430	SO-430	API Separator Pond	1	Dec-93	--	--	--	--	--	--	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	<0.005	<0.005	- -	- -	**--**
SO-431	SO-431	API Overflow Pond	1	Dec-93	--	--	--	--	--	--	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	<0.005	<0.005	- -	- -	--
SO-432	SO-432	API Overflow Pond	1	Dec-93	--	--	--	--	--	--	<0.005	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	<0.005	--	--	<0.005	**0.006**	<0.005	- -	- -	**--**
1995 Confirmation Sampling																															
C-1	SO-441	API Separator Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**0.15J**[g]	**0.31**	--	<0.20	**0.059J**	**0.16J**	**0.074J**	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
C-2	SO-442	API Separator Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**0.62**	**5.5**	--	<0.20	**0.15J**	**0.63**	**0.13J**	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
C-3	SO-443	API Separator Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**0.82**	**3.9**	--	<0.20	**0.12J**	**0.47**	**0.11J**	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
C-4	SO-444	API Relic Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**5.3**	<0.20	--	<0.20	**0.20**	**3.9**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
C-5	SO-445	API Relic Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**3.7**	<0.20	--	<0.20	**0.14J**	**2.1**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
C-6	SO-446	API Relic Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**1.1**	<0.20	--	<0.20	**0.076J**	**1.0**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
C-7	SO-447	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**2.6**	**0.30**	--	<0.20	**0.14J**	**2.0**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**
C-8	SO-448	API Overflow Pond	2	Jun-95	--	--	--	--	--	--	<0.20	--	--	**1.7**	**1.1**	--	<0.20	**0.22**	**2.0**	<0.20	<0.20	--	--	<0.20	--	--	<0.20	<0.20	<0.20	--	--	**--**

TABLE 4-1

SOIL ANALYTICAL RESULTS ASSOCIATED WITH SLUDGE REMOVAL AREAS
Burlington Northern Livingston Shop Complex

Notes:

(a) Soil samples were analyzed for purgeable halocarbons and volatile organic compounds (VOCs) using EPA Methods 8010, 8240 or 8260.

(b) Soil samples were analyzed for total petroleum hydrocarbons (TPH) using EPA Method 418.1.

(c) Cleanup levels are from the *Record of Decision* (ROD) [Montana Department of Environmental Quality (DEQ) 2001] dated September 2001. Values for polynuclear aromatic hydrocarbons (PAHs) are risk-based screening levels (RBSLs) from *Montana Tier I Risk-Based Corrective Action Guidance for Petroleum Releases* dated October 2007 (Table 2 dated July 2007 draft). The cleanup level for surface soil for PAHs is 4 mg/kg and represents a total carcinogenic PAH concentration.

(d) "NA" denotes a cleanup level or screening level has not been established.

(e) "<" denotes analyte was not detected at the indicated detection limit.

(f) "--" denotes not analyzed.

(g) "J" indicates a value based on analytical instrument response below the limit of quantitation for the analytical method used.

(h) The second sample ID is a duplicate sample, and the second value represents the analytical result for the duplicate sample unless otherwise indicated.

(i) Soil samples were analyzed for SVOCs using EPA Method 8270. Select samples were analyzed for only the base neutral extractables.

(j) Soil samples were analyzed for metals using EPA Methods 3050 and 6010.

(k) Value represents a screening level based on EPA Technical Review Workgroup for Lead, *Recommendations of the Technical Review: Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil* including the TRWL Guidance Document dated April 1999.

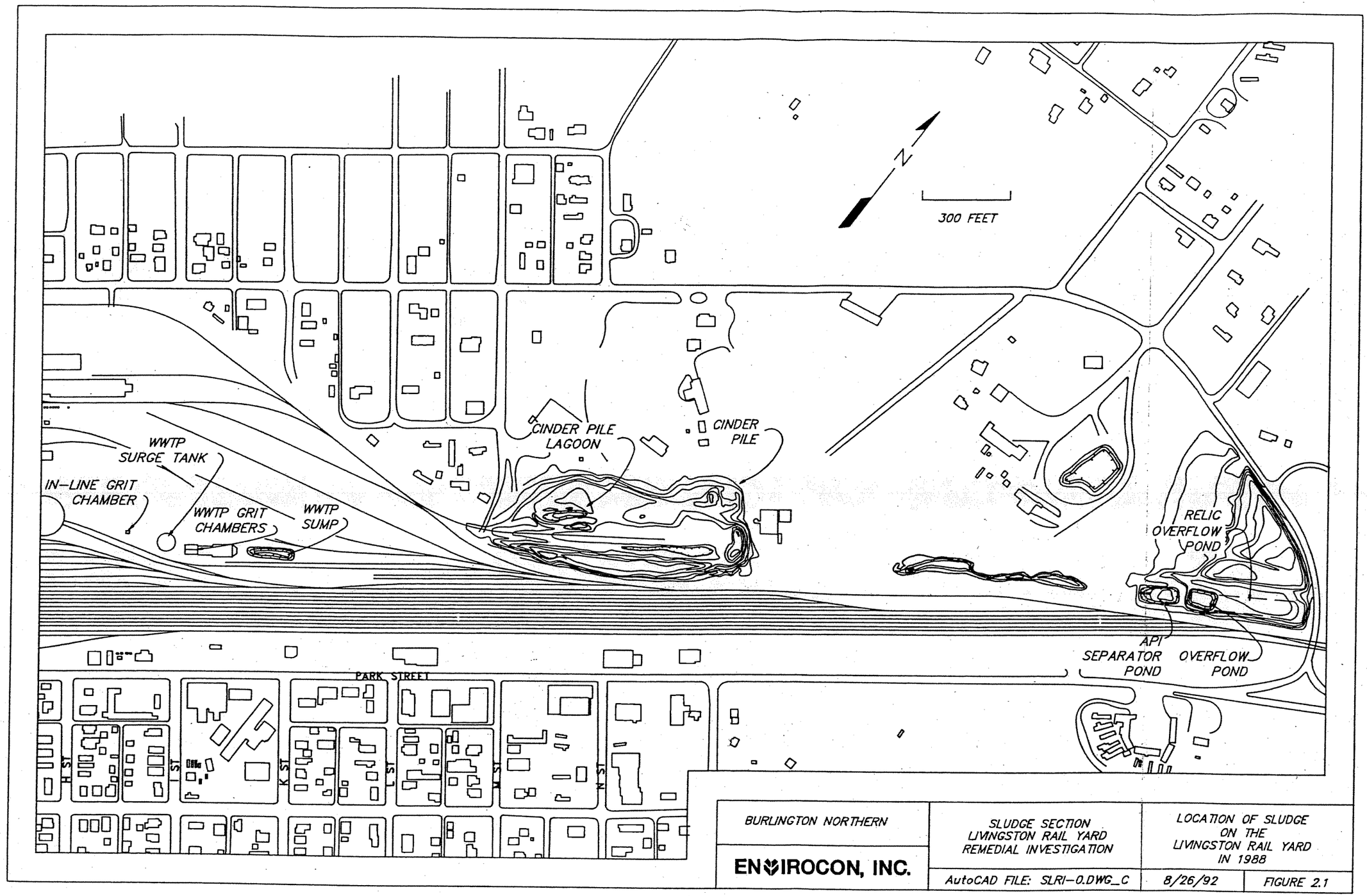
(l) "B" indicates that the analyte was also detected in the associated blank sample.

Only the results of detected analytes are summarized in this table.

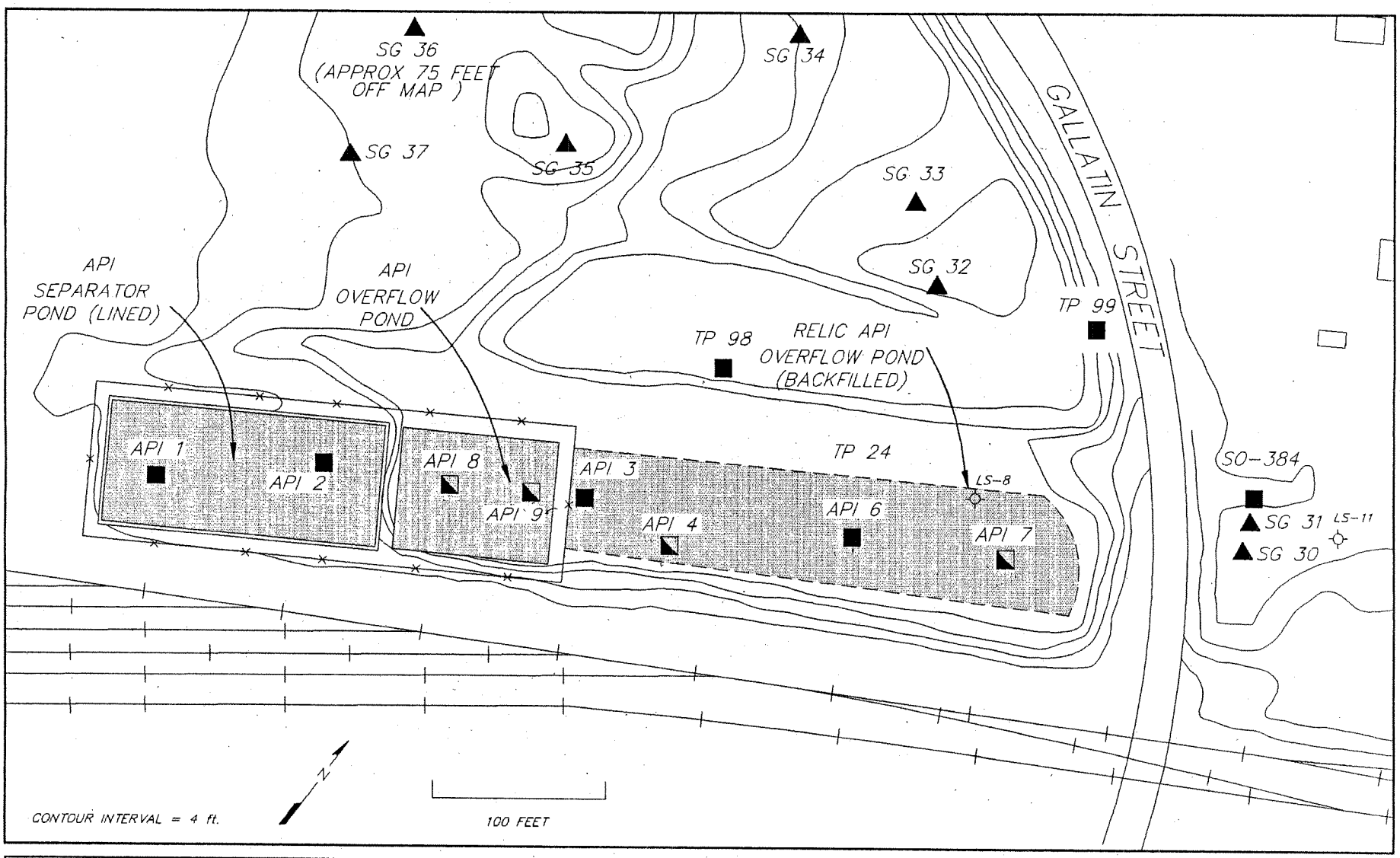
Detected values are shown in bold.

mg/kg - milligrams per kilogram

Figures from *Livingston Rail Yard Final Remedial Investigation Report*



BURLINGTON NORTHERN	SLUDGE SECTION LIVINGSTON RAIL YARD REMEDIAL INVESTIGATION	LOCATION OF SLUDGE ON THE LIVINGSTON RAIL YARD IN 1988
ENVIROCON, INC.	AutoCAD FILE: SLRI-0.DWG_C	8/26/92 | FIGURE 2.1



SYMBOL LEGEND

- TEST PIT & SOIL SAMPLE LOCATION
- APPROX AREA OF CONTAMINATED SOIL
- TEST PIT ONLY
- SOIL GAS SAMPLE
- EXISTING WELL
- FENCE

BURLINGTON NORTHERN

ENVIROCON, INC.

SOIL SECTION
LIVINGSTON RAIL YARD
REMEDIAL INVESTIGATION

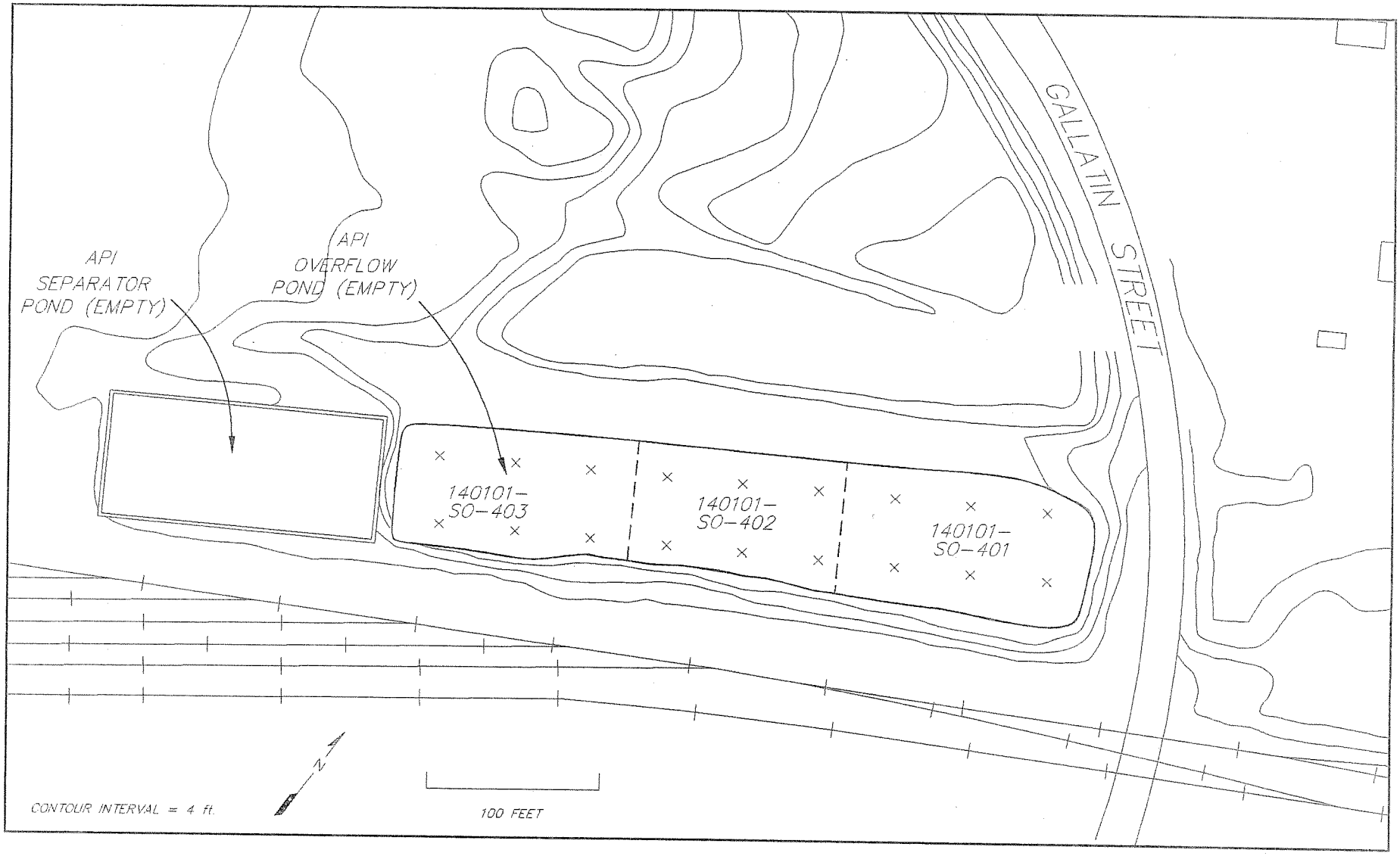
AutoCAD FILE: PJ21.DWG_D

TEST PIT, SOIL & SOIL GAS SAMPLE LOCATIONS AT THE API SEPARATOR & OVERFLOW PONDS

8/20/92

FIGURE 3.15

Figure from Envirocon's Letter dated 4 December 1992

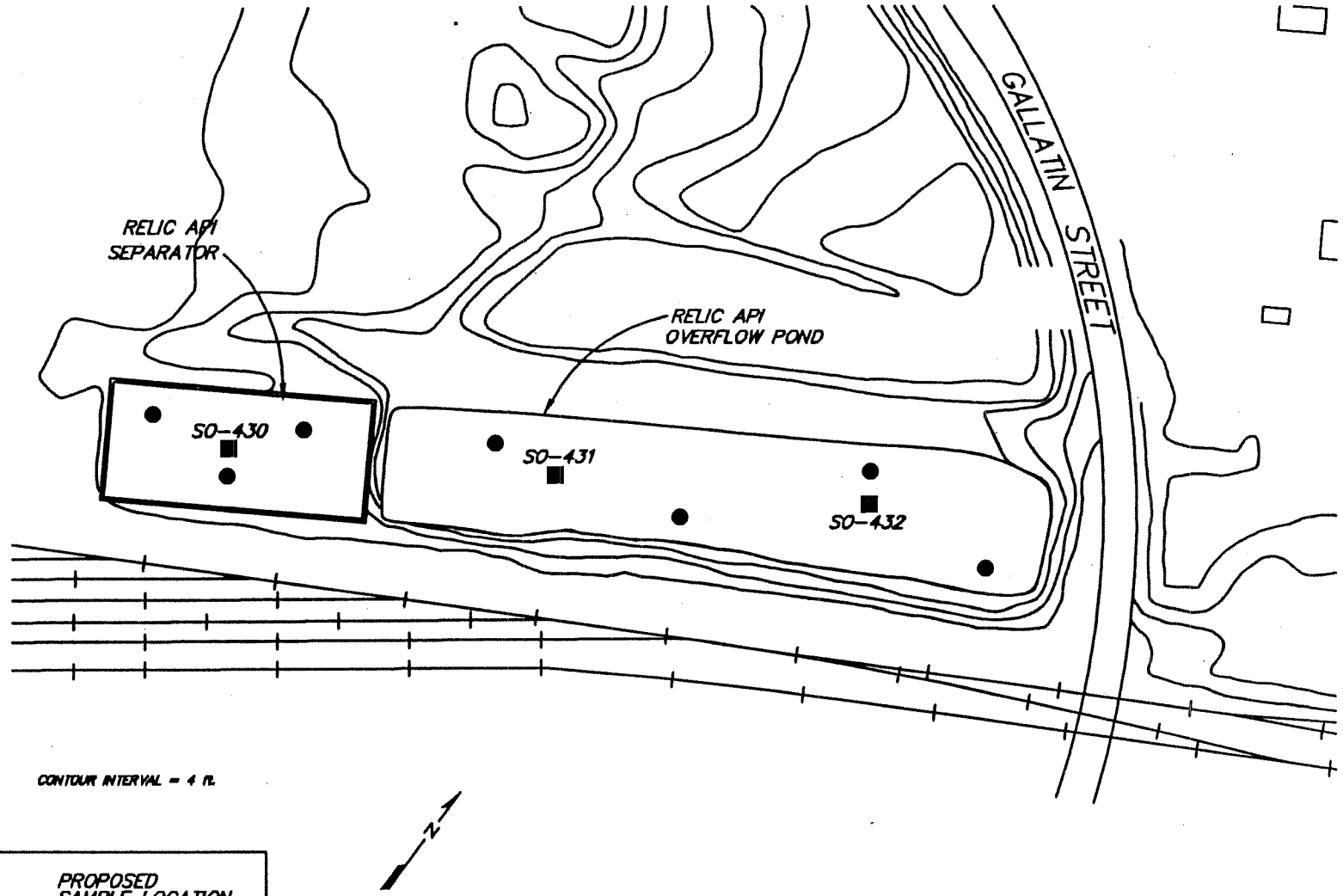


140101-SO-402 SOIL SAMPLE NUMBER

× COMPOSITE SUBSAMPLE LOCATION

BURLINGTON NORTHERN	LIVINGSTON RAIL YARD	API OVERFLOW POND SAMPLE STATIONS
ENVIROCON, INC.	AutoCAD FILE: PJ21.DWG_D	11/23/92 FIGURE 2.0

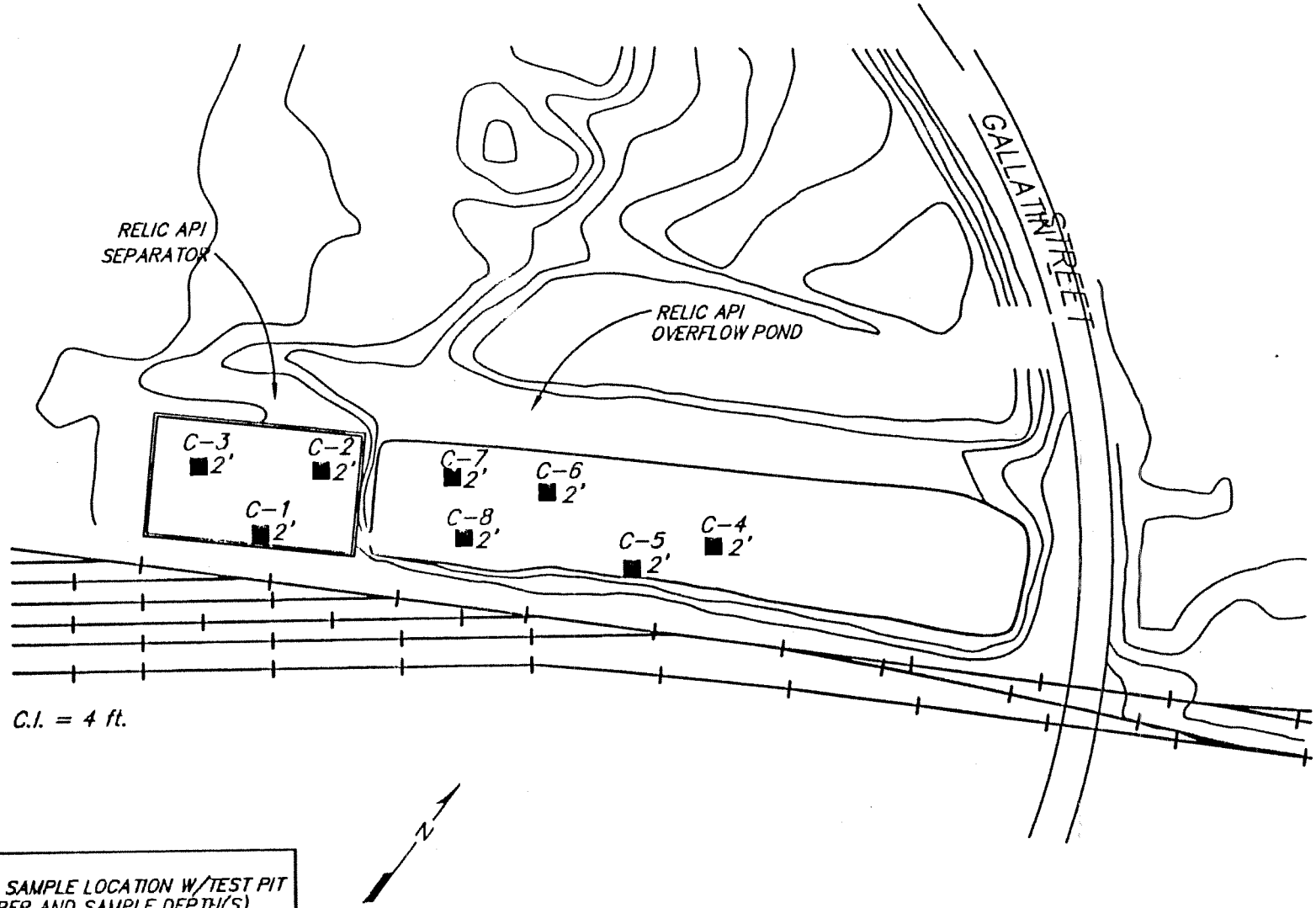
Figures from *Confirmation Soil Sampling Work Plan*



BURLINGTON NORTHERN	CONFIRMATION SOIL SAMPLING WORK PLAN LIVINGSTON RAIL YARD LIVINGSTON, MONTANA	API SAMPLE LOCATIONS
ENVIROCON, INC.	AutoCAD FILE: CSWP-011.DWG	9/7/94 FIGURE 11.0

Figure from *Livingston Rail Yard Confirmation Soil Sampling Report*

FILE: CSWP-011.dwg



■ SOIL SAMPLE LOCATION W/TEST PIT NUMBER AND SAMPLE DEPTH(S).

0 100
SCALE IN FEET

BURLINGTON NORTHERN	CONFIRMATION SOIL SAMPLING REPORT LIVINGSTON RAIL YARD LIVINGSTON, MONTANA	API SEPARATOR AND OVERFLOW POND SAMPLE LOCATIONS
ENVIROCON, INC.	PROJECT NO. 140101.R02	10/2/95 FIGURE 2.0

APPENDIX C

Task-Specific Health and Safety Plan

Date Approved by Kennedy/Jenks Consultants Regional Safety Supervisor:

Task Safety Officer: Steve Nicholls Phone: 406-782-5220

Field Safety Officer: Steve Nicholls Phone: 406-490-0329 (cell)

Task Description:
API / UST Study includes characterizing soils in the vicinity of existing and historical tanks and ponds. New boreholes will be advanced and test pit/trenching will be conducted in the immediate vicinity of the tank/piping locations and in pond locations.

The Task involves advancing borings using conventional drilling techniques and excavating test pits using an appropriate sized excavator, collecting soil samples from the borings and test pits, and backfilling.

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 Information

Activity	Approx. Start Date	Approx. Duration (Days)	Field Personnel	CPR	First Aid
Oversee excavation of test pit/trenches	TBD	2 weeks	Patrick Thomson Steve Nichols John Babcock	X X X	X X X
Overseeing advancement of soil borings and soil sample collection.	TBD	2 weeks	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*)

Study Area:

The design area includes the area in the vicinity of the former oil reclamation plant, locomotive fueling area, passenger fueling area, and API ponds.

Locations of test areas shown on Figures 2 through 7 of the work plan.

Task involves work within 25 feet of track:

___No _x_ 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, Petroleum Hydrocarbons, and PAHs in soils and groundwater during drilling (boring advancement) and excavation (test pit) sampling.

Physical Hazards:

Hazards associated with operating a drilling rig and excavator (noise, dust, overhead equipment falling, high-pressure pneumatic lines, pinch/crush points), underground utilities, equipment hauling, traffic control, and slip/trip hazards.

Chemical Hazards:

Potential Chemicals	**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
Heavy Petroleum Hydrocarbons and PAHs	NA

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.

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 advancement of soil borings and excavation of test pits. 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 may be 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. Steve Nicholls (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)

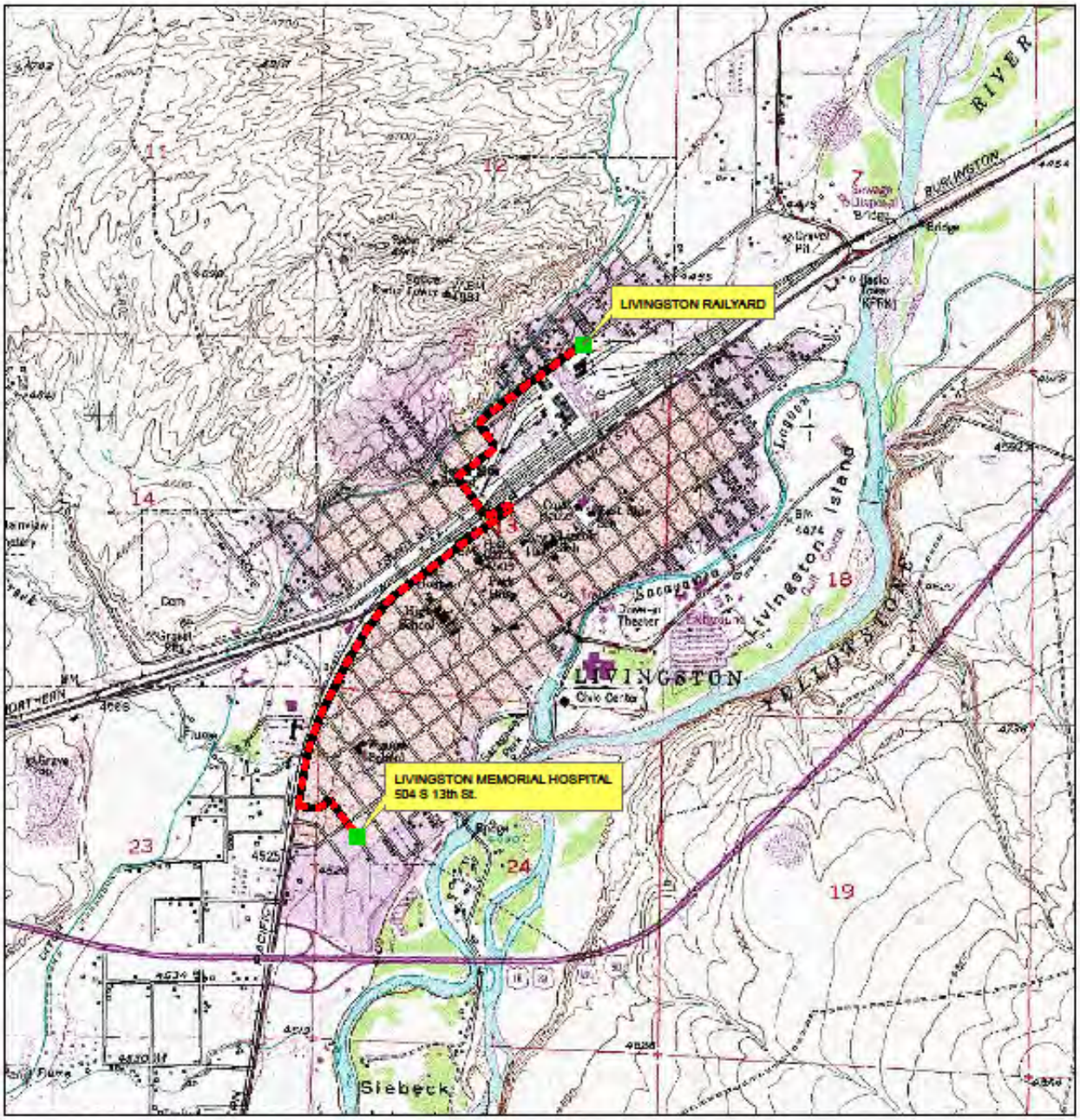
Hazardous Material Used for Task (Attach MSDSs and Submit to BNSF and MRL): See *Facility-Wide Health and Safety Plan (Revision No. 3)* (Appendix A – Hazard Communication and Material Safety Data Sheets.
Map and Directions to Hospital: See attached figure.
SIGNATURES
Task Manager: Steve Nicholls (406) 782-5220
Project Manager: Dave Erickson (406) 782-5220 Cell (406) 490-2915
Site Safety Officer: Steve Nicholls (406) 491-2778

ATTACHMENTS

Attachment 1 – Route to Hospital
• Hospital Location and Route Map – Figure 3 from *Facility-Wide Health and Safety Plan Revision No. 3)*

Attachment 1

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

FIGURE 2

APPENDIX D

Analysis of Environmental Requirements, Criteria, and Limitations

APPENDIX D

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

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 or groundwater. To ensure state waters are not degraded/polluted, investigation-derived waste (IDW) generated during field activities will be managed according to the hazardous and solid waste procedures specified in the Facility-Wide Sampling and Analysis Plan and associated Addendum No.1 and Addendum No.2 (collectively referred to as Facility-Wide SAP). Water IDW (i.e., decontamination water, purge water, etc.) will be contained and batch treated at the Task D/E groundwater treatment plant (GWTP) to the groundwater levels presented in the Record of Decision (ROD) and will meet applicable permit requirements as specified in the Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to the Facility-Wide SAP.
	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.	Soil IDW (i.e., borehole soil cuttings, test pit spoils) will either be contained in lined, securely covered, labeled roll-off bins or temporarily stockpiled within a secured fenced area on the Former C&P Packing Property (C&P Property) (or other location determined in consultation with DEQ). Soil will be stockpiled using best management practices on a bermed liner to prevent surface water run on/run off and either covered or sprayed with SoilSement® to mitigate fugutive dust emissions pending characterization and final disposition in accordance with the hazardous and solid waste procedures specified in the Facility-Wide SAP. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events.
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. .	Management of IDW will not cause pollution of any state waters. Activities proposed in the 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.	Activities proposed in the Work Plan include advancing soil borings and excavting test pits and soil sample collection; these activities will not impact groundwater. To ensure state waters are not degraded/polluted, IDW generated during field activities will be managed according to the hazardous and solid waste procedures specified in the Facility-Wide SAP. Water IDW (i.e., decontamination water) will be contained and batch treated at the Task D/E GWTP to the groundwater levels presented in the ROD and will meet applicable permit requirements as specified in the Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to the Facility-Wide SAP. Soil IDW (i.e., test pit spoils) will either be contained in lined, securely covered, labeled roll-off bins or temporarily stockpiled within a secured fenced area on the C&P Property (or other location determined in consultation with DEQ). Soil will be stockpiled using best management practices on a bermed liner to prevent surface water run on/run off and covered to mitigate fugutive dust emissions pending characterization and final disposition in accordance with the hazardous and solid waste procedures specified in the Facility-Wide SAP. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events. Management of IDW will not cause pollution of any state waters. Activities proposed in the Task M 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 For concentrations of parameters for which human health standards are not listed in WQB-7, ARM 17.30.1006 allows no increase of a parameter to a level that renders the waters harmful, detrimental or injurious to the beneficial uses listed for Class I water. This includes the following petroleum constituents. All levels are "µg/L" and are dissolved phase.	
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.	

APPENDIX D

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
Surface Water Quality Standards (Applicable)		
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.	Activities proposed in the Work Plan will not impact surface water. To ensure surface water will not be impacted, IDW (i.e., soil cuttings, test pit spoils, decontamination water, etc.) generated during field activities will be managed according to the hazardous and solid waste procedures specified in the Facility-Wide SAP. Water IDW (i.e., decontamination water) will be contained and batch treated at the Task D/E GWTP to the groundwater levels presented in the ROD and will meet applicable permit requirements as specified in the Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to 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.	Soil IDW will be contained in lined, securely covered, labeled roll-off bins or temporarily stockpiled on the former C&P property (designated waste storage area) (or other location determined in consultation with DEQ). Soil will be stockpiled using best management practices on a bermed liner to prevent surface water run on/run off and covered or sprayed with SoilSement® to mitigate fugutive dust emissions pending characterization and final disposition in accordance with the hazardous and solid waste procedures specified in the Facility-Wide SAP. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events.
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.	Management of IDW will not cause pollution of any state waters. Activities proposed in the work plan will not degrade surface water quality.
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.	Activities proposed in the Work Plan will not impact surface water (see above).
Water Quality Act, Title 17, Chapter 30, Sub-Chapters 6 and 13 and ARM 17.30.1332	<u>Stormwater Runoff (Applicable)</u> 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 Work Plan will not impact surface water runoff at the Facility (see above).
Ambient Air Quality Standards (Applicable)		
	The following standards are applicable at the site[4]:	Activities proposed in the Work Plan will not impact ambient air quality or result in exceedances of ambient air quality standards for lead or ozone.
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.	During soil boring, test pit excavation and soil IDW management activities, soil will be wetted as necessary to prevent fugutive dust emissions. Soil IDW will be contained in lined, securely covered, labeled roll-off bins or temporarily stockpiled at the C&P property (or other location determined in consultation with DEQ). Soil will be stockpiled using best management practices on a bermed liner to prevent surface water run on/run off and covered or sprayed with SoilSement® to mitigate fugutive dust emissions pending characterization and final disposition in accordance with the hazardous and solid waste procedures specified in the Facility-Wide SAP. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events.
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 maximum 8-hour average 0.08 parts per million (ppm).	
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.	Soil boring, test pit excavation and/or soil IDW management activities will be halted if significant dust is generated and will not resume until adequate dust control measures are in place.

APPENDIX D

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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.	
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 ambient air shall not exceed the following standards: 9 ppm 8-hour average; and 23 ppm for a 1-hour average (35 ppm for federal).	Activities proposed in the Work Plan will not result in exceedances of ambient air quality standards for carbon monoxide.
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.	Activities proposed in the Work Plan will not result in emissions from point sources.
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, transportation, or storage of any material; to the use of streets, roads, or parking lots; and to construction or demolition projects.	
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 Work Plan will not generate odors. No open burning will be conducted during implementation of field activities.
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 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.	Non-hazardous investigation-derived soil will be generated during implementation of field activities as determined through analytical testing and receipt of a "no longer contained-in" determination from the Montana Department of Environmental Quality (DEQ), if applicable. Depending on the constituents and concentrations present and upon approval from the DEQ, soil IDW may be landspread, or treated, if feasible, and landspread in the DEQ-approved landspread area (C&P south pit). Alternatively, the investigation-derived soil will be disposed offsite at an appropriate permitted disposal facility. See the Facility-Wide SAP and Work Plan Plan for additional information on how IDW generated during implementation of field activities will be managed to comply with these ERCLs. Landspreading of soil, if approved by DEQ, will not occur in areas of a floodplain nor be conducted in a manner to cause discharge of pollutants into water. Other IDW or solid waste generated during implementation of field activities will be disposed offsite at an appropriate permitted disposal facility. Landspreading of soil, if approved by DEQ, will not occur in 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. Any other solid waste generated [i.e., tape removed from boxes, plastic bags and/or boxes containing supplies that are not reused, non-indigenous waste (i.e., personnel protective equipment (PPE)) that contains de-minimus amounts of listed waste,etc.] will be contained in a plastic garbage bag (if necessary) [double-bagged (if necessary)] and placed in a garbage can for collection and appropriate disposal as solid waste.
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 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.
Sections 87-5-106, -107, -111, and -201, MCA	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	ARM 12.5.201 (Applicable). Certain activities are prohibited with respect to specified endangered species.	

APPENDIX D

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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 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 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 Work Plan will not impact historical 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 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 Work Plan do not involve locating any wells or borings in the floodplain or floodway. Soil boring or excavation activites are not anticipated to impact the floodplain or floodway.
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 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 solid waste (including borehole cuttings, test pit spoils, and non-indigenous waste i.e., PPE) will be generated during field activities, as determined through analytical testing and receipt of a "no longer contained-in" determination from DEQ, if applicable. Soil IDW will be contained in lined, securely covered , labeled roll-off bins and/or temporarily stockpiled and covered or sprayed with SoilSement® in a secured area at the C&P Property (or other location determined in consultation with DEQ) pending characterization and final disposition. If investigation-derived soil cannot be landspread in the DEQ-approved landspread area (C&P south pit), it will be disposed offsite along with other non-hazardous IDW at an appropriate permitted disposal facility. See the Facility-Wide SAP and Work Plan for additional information regarding the management of IDW. Any other solid waste generated [i.e., tape removed from boxes, plastic bags and/or boxes containing supplies that are not reused, non-indigenous waste (i.e., PPE) that contains de-minimus amounts of listed waste,etc.] will be contained in a plastic garbage bag (if necessary) [double-bagged (if necessary)] and placed in a garbage can for collection and appropriate disposal as solid waste. Activities proposed in Work Plan do not involve the cinder pile or propose treatment of soil. If treatment of soil is proposed as part of the remedial action, this will be addressed in a remedial action work plan or other applicable document. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events.
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.	Solid waste generated during implementation of field activities will be contained in lined, securely covered, labeled roll-off bins or temporarily stockpiled and stored within a secured fenced area on the C&P Property (or other location determined in consultation with DEQ). The C&P Property represent sufficient acreage for IDW management. The C&P Property is not located in a 100-year floodplain. IDW will be stored in appropriate containers to prevent pollution of groundwater, surface water, and public supply systems. If necessary, soil will be stockpiled using best management practices on a bermed liner to prevent surface water run on/run off and covered or sprayed with SoilSement® to mitigate fugutive dust emissions pending characterization and final disposition in accordance with the hazardous and solid waste procedures specified in the Facility-Wide SAP. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events.

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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.	The proposed areas where the borings and test pits are to be located are not located in the floodway or floodplain. Therefore, the activities proposed in the Work Plan will not impact a 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 flow of water, or reduce the carrying capacity of the floodway; and the construction or permanent storage of an object subject to flotation or movement during flood level periods. Section 76-5-402, MCA.	
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 flood waters and may be allowed and approved only in accordance with DEQ regulations, which include certain additional prohibitions on such disposal. ARM 36.15.701(3)(d).	
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 riprap.	
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)		
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).	Field activities are being conducted in the areas that may contain F-listed constituents; therefore, hazardous waste may be generated during implementation of the Work Plan. If F-listed constituents [i.e., tetrachloroethene (PCE), trichloroethene (TCE)] are determined to be present in soil IDW through analytical testing, the soil IDW will be managed as a F-listed hazardous waste unless a "no longer contained-in" determination is received from the DEQ. If metals are determined to be present in soil IDW through analytical testing at concentrations that fail the Toxicity Characteristic Leaching Procedure (TCLP), the soil IDW will be managed as a characteristic hazardous waste. Hazardous soil IDW will be managed in accordance with the Facility-Wide SAP, the Work Plan, and applicable requrements of these ERCLs. Any hazardous waste (i.e., soil or water) generated during implementation of the field activities 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 designated storage area(s), 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, labeled, and containerized. Hazardous waste that is disposed of at an offsite permitted hazardous waste (Subtitle C) disposal facility will be transported by a licensed hazardous waste transporter and will be manifested. Activities associated with Work Plan are anticipated to be conducted within the Facility.

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
		Soil IDW will be contained in lined, securely covered, labeled roll-off bins and/or temporarily stockpiled in a secured area at the C&P Property (or other location determined in consultation with DEQ) pending characterization and final disposition. Soil will be stockpiled using best management practices on a bermed liner to prevent surface water run on/run off and covered or sprayed with SoilSement® to mitigate fugutive dust emissions pending characterization and final disposition in accordance with the hazardous and solid waste procedures specified in the Facility-Wide SAP. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events. Hazardous waste signs will be posted around IDW storage areas/containers that contain hazardous waste. Hazardous waste will be transported to an offsite disposal facility within 90-days of determination unless otherwise directed by DEQ. If treatment of soil is proposed as part of the remedial action, this will be addressed in a remedial action work plan or other applicable document. 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 offsite permitted activities such as transporting and disposing of hazardous waste. DEQ 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.

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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.	Hazardous waste may be generated during field activities. If volatile organic constituents (i.e., PCE) are determined to be present in soil IDW through analytical testing, the soil IDW will be managed as a F-listed hazardous waste unless a "no longer contained-in" determination is received from the DEQ. If metals are determined to be present in soil IDW through analytical testing at concentrations that fail the TCLP, the soil IDW will be managed as a characteristic hazardous waste. Hazardous soil IDW will be managed in accordance with the Facility-Wide SAP, the Work Plan, and applicable requrements of these ERCLs (see above)
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). Set out below are the hazardous waste requirements that are applicable for the types of waste management units or the waste management practices anticipated in the remedial actions at the site.	BNSF has obtained a hazardous waste identification number for the Livingston railyard (EPA ID No. MTT310010087).
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 waste (i.e., soil or water) generated during implementation of the field activities 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 designated storage area(s), 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, labeled, and containerized. Hazardous waste that is disposed of at an offsite permitted hazardous waste (Subtitle C) disposal facility will be transported by a licensed hazardous waste transporter and will be manifested. Activities associated with Work Plan are anticipated to be conducted within the Facility.
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 generated during implementation of the field activities will be managed in accordance with the Facility-Wide SAP and the Work Plan.

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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.	Activities proposed in the Work Plan do not involve an onsite RCRA-regulated solid or hazardous waste management unit. Any hazardous IDW generated during implementation of the field activities will be managed in accordance with the Facility-Wide SAP and the Work Plan.
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.	Activities proposed in the Work Plan do not involve closure or post-closure monitoring or maintenance of 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.	IDW generated during implementation of field activities will be either landspread in the DEQ-approved landspread area (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 field activities will not be stored in soil waste management or disposal facilities. Soil IDW will be contained in lined, securely covered, labeled roll-off bins and/or temporarily stockpiled in a secured area at the C&P Property (or other location determined in consultation with DEQ) pending characterization and final disposition. Soil will be stockpiled using best management practices on a bermed liner to prevent surface water run on/run off and covered or sprayed with SoilSement® to mitigate fugutive dust emissions pending characterization and final disposition in accordance with the hazardous and solid waste procedures specified in the Facility-Wide SAP. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events. Hazardous waste signs will be posted around IDW storage areas/containers that contain hazardous waste. Hazardous waste will be transported to an offsite disposal facility within 90-days of determination unless otherwise directed by DEQ. If treatment of soil is proposed as part of the remedial action, this will be addressed in a remedial action work plan or other applicable document. Water IDW (i.e., decontamination water) will be contained and batch treated at the Task D/E GWTP to the groundwater levels presented in the ROD and will meet applicable permit requirements as specified in the Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to 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.	
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 field activities 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 the Work Plan 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/screening levels and LDR standards will be included in the request to DEQ.
HWIR Media Rule (63 Fed. Reg. 65874)	The HWIR Media Rule, promulgated at 63 Fed. Reg. 65874 (November 30, 1998) allows listed waste treated to levels protective of human health and the environment to be disposed on-site without triggering land ban or minimum technology requirements for these disposal requirements. Treated soils containing hazardous waste will need to meet cleanup levels to avoid triggering land ban or minimum technology requirements for these disposal requirements.	
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 field activities, it will be managed hazardous waste as as outlined in the Facility-Wide SAP.

APPENDIX D

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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 and control are applicable requirements.	Substantive requirements of RCRA will be met as described in the Facility-Wide SAP, including generation, storage, and disposal of hazardous waste.
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 Work Plan will not result in the generation of used oil.
State Hazardous Waste Management Regulations (Applicable)		
Sections 75-10-401 et seq., MCA	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.	Any hazardous waste generated during field activities will be managed in accordance with the Facility-Wide SAP, the Work Plan, and applicable requirements of these ERCLs. If F-listed constituents (i.e., PCE, TCE) are determined to be present in soil IDW through analytical testing, the soil IDW will be managed as a F-listed hazardous waste unless a "no longer contained-in" determination is received from the DEQ. If metals are determined to be present in soil IDW through analytical testing at concentrations that fail the Toxicity Characteristic Leaching Procedure (TCLP), the soil IDW will be managed as a characteristic hazardous waste.
ARM 17.53.501-502	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	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	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	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	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	Section 75-10-422 MCA prohibits the unlawful disposal of hazardous wastes.	
ARM 17.53.1101-1102	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.	
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 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 the Work Plan will not result in air emissions of asbestos. If any potential asbestos material is encountered on the ground surface or during test pit excavation activities, a sample will be collected for laboratory analysis. If the material is confirmed to be an ACM, it will be addressed in the remedial action plan.
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.	Activities proposed in the Work Plan will not result in air emissions of vinyl chloride.

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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.	Water IDW (i.e., decontamination water) will be contained and batch treated at the Task D/E GWTP to the groundwater levels presented in the ROD and will meet applicable permit requirements as specified in the Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to the Facility-Wide SAP. Management of IDW will not cause pollution of any state waters. Activities proposed in the Work Plan will not degrade water quality.
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).	Water IDW (i.e., decontamination water) will be contained and batch treated at the Task D/E GWTP to the groundwater levels presented in the ROD and will meet applicable permit requirements as specified in the Petroleum Cleanup General Permit MTG7900013 before discharge to the Yellowstone River or will be disposed of according to the Facility-Wide SAP. Management of IDW will not cause pollution of any state waters. Activities proposed in the Work Plan will not degrade water quality.
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 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. ARM 17.50.505 also specifies general soil and hydrogeological requirements pertaining to the location of any solid waste management facility.	Activities proposed in the Work Plan do not involve siting, construction, operation/maintenance, and closure of a solid waste management facility. Any IDW (i.e., soil, water) generated during implementation of fieldactivities will be managed in accordance with the Facility-Wide SAP and the Work Plan.
ARM 17.50.511	ARM 17.50.511 sets forth general operational and maintenance and design requirements for solid waste facilities using landfilling methods. Specific operational requirements, specified in ARM 17.14.511 are run-on and run-off control systems requirements, requirements that sites be fenced to prevent unauthorized access, and prohibitions of point source and nonpoint source discharges which would violate Clean Water Act requirements.	
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; 4. revegetate the final cover with native plant growth within one year of placement of the final cover.[5]	
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.	
Transportation of Solid Waste (Applicable)		
Section 75-10-212	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.	Non-hazardous IDW [including boring cuttings, test pit spoils, and non-indigenous waste (i.e., PPE)] will be generated during field activities. Soil IDW will be contained in lined, securely covered, labeled roll-off bins and/or temporarily stockpiled in a secured area at the C&P Property (or other location determined in consultation with DEQ) pending characterization and final disposition. If investigation-derived soil cannot be landspread in the DEQ-approved landspread area (C&P south pit), it will be disposed offsite along with other non-hazardous IDW at an appropriate permitted disposal facility. See the Facility-Wide SAP and Work Plan for additional information regarding the management of IDW. Any other solid waste generated [i.e., tape removed from boxes, plastic bags and/or boxes containing supplies that are not reused, non-indigenous waste (PPE)) that contains de-minimus amounts of listed waste,etc.] will be contained in a plastic garbage bag (if necessary) [double-bagged (if necessary)] and placed in a garbage can for collection and appropriate disposal as solid waste. Solid waste generated during implementation of field

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
ARM 17.50.523	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.	activities will be transported in a manner to prevent discharge, dumping, spilling, and leaking. Roll-off bins and stockpiles will be inspected on a weekly basis in accordance with the Facility-Wide SAP while pending final disposition. Additional inspections of the stockpiles will be performed after windstorm events.

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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 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 the system as is necessary to prevent further release into the environment and prevention of further migration of the released substance into surrounding soil and groundwater.	
Asbestos Regulation in Building Construction and Demolition (Well-Suited)		
Sections 50-64-101, et seq., MCA	Sections 50-64-101 et seq., MCA, regulate construction and demolition of structures that contain asbestos.	Activities proposed in the Work Plan do not involve construction or demolition of any asbestos-containing structures.
50-64-104, MCA	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.	
Well Drilling (Applicable)		
Section 85-2-505, 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.	Activites proposed in the Work Plan do not involve the construction of any monitoring wells.
Section 85-2-516, MCA	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.	
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 field activities.
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 field activities.

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
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 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 activities to minimize the emission of fugitive dust.	

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

Federal or State ERCL Citation	Description	Compliance
Noxious Weeds (Applicable)		
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 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 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 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 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.	Any hazardous IDW generated during implementation of field activities will be managed in accordance with the Facility-Wide SAP, the Work Plan, and comply with these requirements. BNSF has obtained a hazardous waste identification number for the Livingston railyard (EPA ID No. MTT310010087).

ANALYSIS OF ENVIRONMENTAL REQUIREMENTS, CRITERIA, AND LIMITATIONS (ERCLS)[a] FOR API/UST CONFIRMATION SAMPLING

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.	Any hazardous IDW generated during implementation of field activities will be managed in accordance with the Facility-Wide SAP, the Work Plan, and comply with these requirements. BNSF has obtained a hazardous waste identification number for the Livingston railyard (EPA ID No. MTT310010087).
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.	
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 Work Plan do not involve the use of oil and will not generate used oil.
Sections 75-2-501 et seq., MCA	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.	Activities proposed in the Work Plan work plan do not involve asbestos work. If any potential asbestos material is encountered on the ground surface or during test pit excavation activities, a sample will be collected for laboratory analysis. If the material is confirmed to be asbestos material, it will be addressed in the remedial action plan.
Sections 75-2-502(4) and -511, MCA, and ARM 17.74.302(3)	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 meet DEQ training and accreditation requirements. See also Section 75-2-511, MCA.	
ARM 17.74.314	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 29 CFR 1926.58 40 CFR 763.120-121 40 CFR Part 61, Subpart M	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 industry); and 40 CFR 763.120, 121 (requirements for asbestos abatement projects); b. a requirement that all asbestos be properly disposed in an approved asbestos disposal facility. "Approved asbestos disposal facility" is defined at ARM 17.54.302(1) as a A9properly operated and licensed class II landfill as described in ARM 17.50.504; c. a requirement that asbestos be disposed in accordance with 40 CFR Part 61, Subpart M (National Emission Standard for Asbestos). See discussion above on National Emission Standard for Asbestos.	
ARM 17.74.338	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 conducted by an accredited asbestos contractor/supervisor, an engineer or industrial hygienist.	
ARM 17.74.341	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.	
40 CFR Part 92	Locomotive Emissions 40 CFR Part 92 establishes control of air pollution from locomotives and locomotive engines.	Activities proposed in the 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).

[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, respectively (Applicable), require that all ambient air monitoring, sampling and data collection, recording, analysis and transmittal shall be in compliance with the Montana Quality Assurance Manual except when more stringent requirements are determined by DEQ to be necessary.*

[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.*