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Downstream Impacted Areas Soil and Sediment Data Summary Report

Silvertip Pipeline Incident Response

Laurel, Montana

November 2011
(Revised July 2013)

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1. Introduction

This Downstream Impacted Areas Soil and Sediment Data Summary Report has been prepared for ExxonMobil Environmental Services Company (EMES) on behalf of ExxonMobil Pipeline Company (EMPCo) and describes the soil and sediment sampling activities conducted from August 12 through September 1, 2011. This sampling was conducted to characterize the soil and sediment quality adjacent to and in the Yellowstone River (the river) downstream of the Silvertip Pipeline Incident near Laurel, Montana. This sampling program was implemented to address the soil and sediment sampling objectives established in the Remediation Plan for Downstream Impacted Areas (CTEH 2011a), the Comprehensive Sampling and Analysis Plan (SAP; Center for Toxicology and Environmental Health, L.L.C. [CTEH] 2011b), and the Downstream Impacted Areas Soil and Sediment Sampling Plan (the Soil and Sediment Sampling Plan; ARCADIS 2011a), all of which were required under the United States Environmental Protection Agency (USEPA) Administrative Order for the Silvertip Pipeline Incident. This sampling program also partially addresses the Montana Department of Environmental Quality (MDEQ) Notice of Violation (NOV) letter item 5b (MDEQ 2011). As established in the Soil and Sediment Sampling Plan (ARCADIS 2011a), soil refers to upland material above the waterline at the time of sampling, while sediment refers to submerged material below the water line for the purposes of this report. As discussed in Section 1.3, the river flow and stage conditions at the time of sampling were above or partially above average annual conditions which indicates that some of the sediment sampling locations may not be submerged during periods of lower flows.

1.1 Purpose and Objectives

This report describes soil and sediment sampling field activities completed by ARCADIS, CTEH, and Incident Command Boat Operations from August 12 through September 1, 2011, and presents validated analytical data for the soil and sediment samples collected during the field activities. Independently, the USEPA and MDEQ collected sediment samples from the river between July 12 and August 27, 2011; the results of which are included in the evaluation of downstream sediment presented in this report and included in Appendix A.

The objectives of this report are to:

- Document the field and analytical procedures used during implementation of the Soil and Sediment Sampling Plan (ARCADIS 2011a).

- Present the analytical results of background and downstream soil and sediment samples to characterize soil and sediment that are most likely to be impacted by Silvertip Pipeline Incident-related crude oil.

- Screen the soil and sediment analytical results against applicable regulatory criteria and guidance values.

1.2 Key Findings

Key findings of the downstream soil and sediment sampling activities include:

- A total of 75 sediment samples were collected (including field duplicates). A total of 33 downstream samples were collected by ARCADIS and 35 downstream samples were collected by USEPA or MDEQ. A total of 7 background samples were also collected. Sheens and odors were not observed at any sediment sample location during sediment sample collection activities. Organic compounds were detected at four downstream sediment sampling locations at concentrations exceeding sediment screening criteria. Total extractable hydrocarbons (TEH) were detected at two sediment sampling locations at concentrations exceeding the 200 mg/kg soil screening criteria for analysis of extractable petroleum hydrocarbon (EPH) fractions. The Massachusetts Department of Environmental Protection (MADEP) EPH analysis includes an initial screen that provides a TEH result. If the TEH concentration was greater than 200 mg/kg, then EPH fraction analysis was performed. The EPH fraction analysis provides results for ranges of aliphatic and aromatic petroleum hydrocarbons. No aliphatic or aromatic EPH fractions were detected above screening criteria in the sediment samples.

- A total of 68 downstream composite soil samples were collected (including field duplicates). Three composite soil sampling locations contained organic compounds at concentrations that exceeded soil criteria for polycyclic aromatic hydrocarbons (PAHs) and one sample contained benzene at a concentration that exceeded soil screening criteria. Four of the composite soil samples contained TEH concentrations which exceeded the 200 mg/kg soil screening criteria for analysis of EPH fractions. No EPH fractions exceeded the soil criteria for the composite soil samples.

- Eight soil core samples were collected at two locations where visible evidence of oil was observed. No individual organic compounds were detected in any of the soil core samples at concentrations exceeding soil screening criteria. Three of the soil core samples contained TEH at concentrations exceeding the 200 mg/kg

soil screening criteria for analysis of EPH fractions. C11-C22 aromatics were detected in one soil core sample at a concentration exceeding the soil criteria. No EPH aliphatic fractions were detected in the soil core samples at concentrations exceeding soil criteria.

More detailed discussion of the sediment and soil data are provided in Sections 2 and 3, respectively.

1.3 Site Setting and Conditions

On July 1, 2011, there was a release of crude oil from the Silvertip Pipeline located near Laurel, Montana. EMPCo activated its Emergency Response Plan to provide a rapid and comprehensive response to the incident. An Incident Action Plan was developed, and an Incident Command System (ICS) organization and Unified Command (UC) were established to manage the release response activities in a coordinated manner with the multiple stakeholders involved, including the MDEQ and USEPA.

The Silvertip Pipeline Incident site (site) is located near Laurel, Montana and downstream along the Yellowstone River, which originates in northwest Wyoming and flows northeast through Montana to its confluence with the Missouri River near Buford, North Dakota (Figure 1). During the soil and sediment sampling activities conducted by ARCADIS and CTEH from August 12 through September 1, 2011, river flow at Billings, Montana (U.S. Geological Survey [USGS] gage 06214500) ranged from 6,650 to 12,700 cubic feet per second (cfs), corresponding to river stages between approximately 4.10 and 5.81 feet (gage datum, 3,080 feet National Geodetic Vertical Datum of 1929 [NGVD 29]). These river flow and stage conditions were above the annual average river flow of approximately 6,600 cfs, and partially above the average river stage of approximately 5 feet gage datum. The area upstream from the Silvertip Pipeline Incident and the area of the Clarks Fork River of the Yellowstone upstream from its confluence with the Yellowstone River represent background conditions relative to the Silvertip Pipeline Incident, and background soil and sediment samples were collected from these areas (Figure 1).

For operational purposes, the downstream area has been divided into eight divisions, as follows and as shown on Figures 2 through 16:

- Division A: Silvertip Pipeline Incident point to the intersection of Rudio Road and Duck Creek Road. Division A includes the source area (Figures 2 through 4).

- Division B: Intersection of Rudio Road and Duck Creek Road to Alkali Creek (Figures 5 through 9).
- Division C: Alkali Creek to Yellowstone County – Treasure County border (Figures 10 and 11).
- Division D: Yellowstone County – Treasure County border to Treasure County – Rosebud County border (Figure 12).
- Division E: Treasure County – Rosebud County border to Rosebud County – Custer County border (Figure 13).
- Division F: Rosebud County – Custer County border to Custer County – Prairie County border (Figure 14).
- Division G: Custer County – Prairie County border to Prairie County – Dawson County border (Figure 15).
- Division H: Prairie County – Dawson County border to Dawson County – Richland County border (Figure 16).

2. Sediment Investigation

The sediment investigation activities were performed by ARCADIS, CTEH, and Incident Command Boat Operations on behalf of EMPCo from August 23 through August 28, 2011. The following sections present the scope of work completed and the field and laboratory data collected during these activities, along with a discussion of the results.

2.1 Sample Location Selection

Sediment sample locations were based on target coordinates identified in the Soil and Sediment Sampling Plan (ARCADIS 2011a). Target sediment sample locations were selected in River Divisions A through C to be biased towards potential depositional areas downstream from shoreline areas where Shoreline Characterization Assessment Technique (SCAT) mapping indicated oiling. In River Divisions D though H, where SCAT was not performed, target sediment sample locations were selected to provide spatial coverage and to be in proximity to boat ramps.

After arriving at the target sediment sample location, field teams scouted the area of the river near the target coordinates to identify areas where fine-grained sediments were present. Visual indications of the presence of soft sediments, indicating the presence of recently deposited fine-grained sediments, were verified by probing with rebar to determine the thickness of the fine-grained sediment deposits at the target sample location. During probing, sampling crews watched for indications of potential crude oil impacts (e.g., sheen or odor) that may have resulted from disturbing the sediments. Sheens and odors were not observed at any sediment sample location during sediment sample collection activities. Field teams documented the conditions observed at the sample location, highlighting notable characteristics such as the presence of oiling or lack thereof, vegetation, debris, erosion, or other indicators of flooding.

Sediment sample locations were selected in the field according to the following criteria:

- Sediment sample location was accessible and allowed for safe sample collection.
- Sediment sample location was representative of fine-grained sediment appearing to have been recently deposited.

The 26 downstream sediment sample locations, collected in accordance with the Soil and Sediment Sampling Plan (ARCADIS 2011a), were distributed across the river divisions as follows:

- 12 locations in Division A
- 6 locations in Division B
- 3 locations in Division C
- 1 location in each division for Division D through Division H (for a total of 5 locations).

Location coordinates for sediment sample locations were recorded using a handheld global positioning system (GPS) locator with an accuracy greater than +/- 3 feet and are tabulated in Table 1. Sediment sample locations are indicated by the letters “SE” in the sample ID and are presented on Figures 2 through 16.

In addition to sediment samples collected in accordance with the Soil and Sediment Sampling Plan (ARCADIS 2011a), the USEPA collected 33 sediment samples from July 12, 2011 through July 29, 2011, and the MDEQ collected two sediment samples on August 27, 2011. During the periods when USEPA sediment samples were collected, the river was at relatively high flow conditions and still at a high stage, though rapidly receding, following the flood stage conditions, which peaked on July 2, 2011. The sampling methodology employed by USEPA for collection of these sediment samples was not necessarily in accordance with the method presented in the SAP (CTEH 2011b) and Soil and Sediment Sampling Plan (ARCADIS 2011a). USEPA collected sediment samples by wading into shallow quiescent areas of the river during a high river stage condition, which may have included some bank soil sampling locations that were inundated during the higher river stage, but would not be under water under more typical river stage conditions. The downstream sediment data collected by USEPA and MDEQ are included in the downstream sediment data set discussed in Section 2.4.2 because these data were collected to represent conditions in sediments following the Silvertip Pipeline Incident.

2.2 Sampling Methodology

The sediment sampling methodology was developed to characterize background sediment conditions upstream of the Silvertip Pipeline Incident and upstream of oiling documented through SCAT mapping as well as in downstream areas most likely to have crude oil impacts related to the Silvertip Pipeline Incident. In River Divisions D though H, where SCAT was not performed, target sediment sample locations were

selected to provide spatial coverage and to be in proximity to public-accessible boat ramps.

The following sections describe the sediment sampling methodology.

2.2.1 Sampling Plan and Process

Sediment samples were collected in accordance with the Soil and Sediment Sampling Plan (ARCADIS 2011a) and the Surface Water and Sediment Sampling Standard Operating Procedures (SOPs; CTEH 2011b), with deviations from the approved work plans described in Section 2.2.2.

Two methods were used to collect sediment samples, as described in the Soil and Sediment Sampling Plan (ARCADIS 2011a). Sediment samples were collected with a hand-push core at all but one location, BIMT0828SE406, which was collected using a ponar dredge because the water depth at the sample location was too deep for workers.

A technique of probing sediments with rebar was used to locate areas of fine-grained sediments and to select the location where sediment sampling would be attempted. During probing, sampling crews watched for indications of potential crude oil impacts (e.g., sheen or odor) that may have resulted from disturbing the sediments. Field teams documented the conditions observed at the sample location, highlighting notable characteristics such as the presence of oiling or lack thereof, vegetation, debris, erosion, or other indicators of flooding.

At all sediment sample locations, sediment was recovered and collected from the target sample interval of 0 to 6 inches bss. Deeper sediment was recovered and collected from 6 to 12 inches bss at samples LAMT0824SE406, LAMT0827SE508, BIMT0826SE402, PPMT0828SE405, and HYMT0828SE403, because soft sediment conditions allowed for hand-push coring to 12 inches bss.

Sediment was screened visually and using a photoionization detector (PID) for indications of potential crude oil impacts. Sediments were logged in accordance with Unified Soil Classification System (USCS) ASTM standards, and additional observations such as color, type of organic materials present, odor, sheen, if present, and staining were recorded. Sediment sample logs are presented in Table 2.

Sediment samples, identified in Table 3, were submitted to Pace Analytical Laboratory, located in Billings, Montana (Pace Lab) for the following analytical suite:

- Semivolatile organic compounds (SVOCs) by USEPA Method 8270C
- Volatile petroleum hydrocarbons (VPH) by VPH Massachusetts Method (MT Modified)
- Extractable petroleum hydrocarbons (EPH) Screen by EPH Massachusetts Method (MT Modified) – if the EPH screen produced a TEH value greater than 200 mg/kg, the sample was analyzed for EPH fractions
- Total metals by USEPA Methods 6010/6020 (arsenic, barium, cadmium, chromium, lead, nickel, selenium, silver, and vanadium) and 7470 (mercury)
- Total organic carbon (TOC) by EPA Method M9060
- PAHs by 8270 SIM

2.2.2 Deviations from the Sampling Plan

The Soil and Sediment Sampling Plan (ARCADIS 2011a) was implemented in accordance with the SAP (CTEH 2011b), the Quality Assurance Project Plan for Comprehensive Sampling and Analysis Plan (QAPP; CTEH 2011c), and the Surface Water Sampling Plan (ARCADIS 2011b), with the exception of the following deviations:

- Samples LAMT0825SE405 and LAMT0827SE501, and LAMT0825SE406 and LAMT0827SE503 were inadvertently conducted at the same sediment sampling locations on two separate occasions. Both sets of sample results (including field duplicate sample results collected in conjunction with samples LAMT0825SE406 and LAMT0827SE503 during both sampling events) are presented in Table 6.
- The target sediment sample location for sample BIMT0827SE501 was relocated approximately 0.5 mile downstream to river segment B05, due to inaccessibility of the target location identified in the Soil and Sediment Sampling Plan (ARCADIS 2011a). The relocated sample location was selected based on SCAT mapping in river section B05 indicating shorelines experienced similar levels of oiling as were targeted by the B01 target location.

- The target sediment sample location for sample BIMT0828SE407 was relocated into river section C19, due to lack of navigability of the river in section C20 at the time of sampling. A dam located above C20 resulted in shallow water conditions in C20 that precluded navigation by boat, as was necessary for sampling. Instead, the sediment sample was collected above the dam in section C19 where SCAT maps indicated shorelines with similar levels of oiling as were targeted by the C20 target location.

2.3 Sediment Sample Data Quality

As described in the Soil and Sediment Sampling Plan (ARCADIS 2011a), field activities were completed in accordance with quality assurance/quality control (QA/QC) procedures, as outlined in the QAPP (CTEH 2011c).

Field quality control samples were collected during implementation of the sediment investigation program, in accordance with the QAPP. Two matrix spike and matrix spike duplicate (MS/MSD) samples and two blind duplicate (BD) samples were collected. To verify the effectiveness of field decontamination procedures, equipment rinsate blanks were collected by rinsing laboratory-supplied analyte-free water over decontaminated field equipment, such as the ponar, push core tubes used to collect sediment, and stainless steel bowls used for sample homogenization, at the end of each day of sampling. The QA/QC samples are tabulated in Table 4.

The project QAPP requires third-party data validation of all analytical results. Validated sediment analytical results are included in this report.

2.4 Sediment Sample Analytical Results

Thirty-nine sediment samples (5 background samples, 29 downstream sediment samples from 0-6 inches bss, and 6 downstream sediment samples up to 12 inches bss) were collected under the Soil and Sediment Sampling Plan and analyzed to characterize the concentrations of chemicals that could be associated with potential crude oil impacts associated with the Silvertip Pipeline Incident. Sediment analytical results were reported directly by Pace Lab and then validated by a third party. These validated results are tabulated in Tables 5 and 6. The validated sediment analytical results were screened against the USEPA Region 3 Biological Technical Assistance Group (BTAG) Freshwater Sediment Screening Benchmarks (USEPA 2006) and, if needed, the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT) values (Buchman 2008). Consideration of SQuiRT values did not provide any additional screening values for evaluation, since SQuiRT

values were not available for any compounds that were detected in sediment that did not have a corresponding BTAG value. Sediment analytical results for EPH and VPH fractions have been screened against MDEQ Risk-Based Screening Levels (RBSLs) identified in the MDEQ Risk-Based Corrective Action (RBCA) guidance document (September 2009).

As indicated on Tables 5 and 6, sediment sample reporting limits were less than the screening criteria for most compounds; however, the reporting limits for 34 compounds exceeded the sediment screening criteria as noted in the tables (shaded values). As identified in the Tables of the Montana Tier 1 RBCA Guidance for petroleum releases (September 2009), the majority of the compounds with reporting limits that exceed sediment screening criteria are not considered to be commonly associated with crude oil.

Although sediment samples were collected and analyzed for metals, it was determined that metals concentrations in soil and sediment are not related to crude oil impacts. On September 7, 2011, USEPA and MDEQ granted approval of the revised SAP (CTEH 2011d), which excluded metals as constituents of concern (COCs) related to the Silvertip Pipeline Incident. Analytical results for metals in sediment samples are presented in Appendix B1; however, these metal concentrations were not evaluated or further discussed.

Analytical results for the background and downstream sediment samples collected by USEPA and MDEQ are provided in Appendix A.

The terms “individual organic compound” and “organic compound” are used in the discussion of sediment data. Individual organic compound indicates distinct organic compounds (i.e., SVOCs, PAHs, methyl tertiary-butyl ether, benzene, toluene, ethylbenzene, m,p-xylene, o-xylene, and naphthalene). Organic compound indicates a group of organic compounds (e.g., VPH, TEH, C11-C12 aromatics, etc.). Concentrations exceeding their respective screening level were then evaluated in the context of the detected individual organic compounds to evaluate potential impacts to downstream sediments from crude oil related to the Silvertip Pipeline Incident.

In the two MDEQ sediment samples, the samples were also analyzed for TEH by USEPA Method 8015. As these are the only two results for TEH by USEPA Method 8015, TEH by USEPA Method 8015 is not discussed further in this report. All discussion of TEH in the remainder of this report refers to MADEP EPH TEH.

The MADEP VPH analysis does not include an initial screen. The analysis provides results for individual organic compounds (e.g., benzene, ethylbenzene, toluene, and xylenes [BTEX]) and ranges of petroleum hydrocarbons (e.g., C5-C8 aliphatic, C9-C12 aliphatic).

There are a number of individual organic compounds and organic compounds that do not have BTAG or SQuiRT values. Detections of these individual organic compounds and organic compounds are discussed below.

2.4.1 Background Sediment Analytical Results

Five sediment samples were collected from background locations in the river upstream of the Silvertip Pipeline crossing in Laurel (LAMT0823SE401, LAMT0823SE402, LAMT0824SE401, LAMT0824SE402, and USEPA sediment sample SPSE101), and two sediment samples were collected from a background location in the Clarks Fork River (LAMT0824SE403 and USEPA sediment sample SPSE107).

Probing and inspection of sediments in the vicinity of the background sediment sample locations did not result in observations of crude oil impacts (e.g., sheen or odor). Background sediment analytical data are presented in Table 5. USEPA and MDEQ sediment analytical data are provided in Appendix A.

A number of individual organic compounds were detected in background sediment samples as follows:

- Fluoranthene, which has a BTAG of 423 micrograms per kilogram (µg/kg), was detected at a concentration of 25.8 µg/kg in LAMT0823SE401 and 13 µg/kg in LAMT0823SE402.
- Pyrene, which has a BTAG of 195 µg/kg, was detected at a concentration of 27.6 µg/kg in LAMT0823SE401 and 15.9 µg/kg in LAMT0823SE402.
- Benzo(b)fluoranthene, which does not have a BTAG value, was detected at a concentration of 12.5 µg/kg in LAMT0823SE402.
- Toluene, which does not have a BTAG value, was detected at a concentration of 87.6 µg/kg via USEPA Method 8260 and 100 µg/kg via MADEP VPH in USEPA sediment sample SPSE101.

- All other analytical results for individual organic compounds or organic compounds were below laboratory reporting limits in background sediment samples.

2.4.2 Downstream Sediment Analytical Results

There are a total of 68 downstream sediment samples:

- 33 samples under the Soil and Sediment Sampling Plan (27 downstream samples from 0-6 inches bss (including 2 field duplicates), and 6 downstream samples up to 12 inches bss)

- 33 samples collected by USEPA (including 1 field duplicate)

- 2 samples collected by MDEQ

Analytical results for the 33 downstream sediment samples collected under the Soil and Sediment Sampling Plan are presented in Table 6. In addition, as described above, USEPA and MDEQ also collected a total of 34 downstream sediment samples, and the analytical results for those samples are provided in Appendix A.

Only four downstream sediment samples had concentrations of individual organic compounds above BTAG screening values, as follows:

- MDEQ sediment sample ST-082711-A-3-West_Sediment, located 0.5 miles downstream of the Silvertip Pipeline crossing in Laurel (also designated as samples ST-Yellr-03), slightly exceeded the BTAG values for bis(2-ethylhexyl)phthalate (BEHP; 0.22 mg/kg vs. BTAG of 0.18 mg/kg).

- Sediment sample LAMT0827SE504 (field duplicate of sample LAMT0827SE503) contained m&p-xylene at a concentration that exceeded the BTAG value. Ethylbenzene was also detected at a concentration below the BTAG value.

- USEPA sediment sample SPSE125, located 82 miles downstream of the Silvertip Pipeline crossing in Laurel, contained concentrations of benzo(a)anthracene, chrysene, flouranthene, phenanthrene, and pyrene above the BTAG values.

- Sediment sample ROMT0828SE401, located 160 miles downstream of the Silvertip Pipeline crossing in Laurel, exceeded BTAG for indeno(l,2,3-c,d)pyrene. Several additional PAHs were detected at concentrations below BTAG values.

Seven downstream sediment samples (samples LAMT0825SE403, LAMT0827SE504, LAMT0827SE506, BIMT0827SE503, BIMT0826SE401, ROMT0828SE401, and SPSE125) had detected concentrations of individual organic compounds that have no BTAG values. With the exception of 3&4-methylphenol detected in sample BIMT0827SE503, and benzo(b)fluoranthene detected in a samples SPSE125 and ROMT0828SE401, all other detections were BTEX compounds:

- Benzene was detected at sample locations LAMT0827SE504 and LAMT0827SE506.
- Toluene was detected at sample locations LAMT0827SE504, BIMT0826SE401, and BIMT0827SE503.
- O-xylene was detected at sample locations LAMT0825SE403 and LAMT0827SE504.

At the location where field duplicate sample LAMT0827SE504 was collected, where several BTEX compounds were detected, there were two other samples collected (including the parent sample for the filed duplicate and sample LAMT0827SE501); none of which had any BTEX detections.

TEH was detected in 12 downstream sediment samples as follows:

- Detected TEH concentrations, varied from 16 mg/kg to 2,150 mg/kg, with the highest detection in a sample collected by USEPA from Division D (Figure 12). However, this sediment sample had no detection of individual organic compounds.
- There were no samples collected under the Soil and Sediment Sampling Plan with TEH detections above 200 mg/kg; therefore, sediment samples were not analyzed for EPH fractions.
- A total of 6 of the 12 TEH detections were at locations that had no detection of any individual organic compounds.

3. Soil Investigation

The downstream soil investigation activities were performed by ARCADIS, CTEH, and Incident Command Boat Operations on behalf of EMPCo from August 12 through September 1, 2011. The following sections present the scope of work completed and the field and laboratory data collected during these activities, as well as a discussion of the results from field observations, laboratory analyses, and screening of laboratory results against relevant criteria.

3.1 Sample Location Selection

Soil sample locations were based on target coordinates identified in the Soil and Sediment Sampling Plan (ARCADIS 2011a). Sampling crews selected sampling locations in the field to facilitate safe access and to collect samples representative of the most visually impacted soil, if observed in the vicinity of the target location. Wherever physical obstructions prevented the sampling crews from accessing the target location, the sampling location was modified based on accessibility and safety, as described in Section 3.2.2.

Soil sample locations were selected to target locations with the most heavily oiled shoreline conditions based on SCAT mapping and field reconnaissance. In River Divisions D through H, where SCAT was not performed, target soil sample locations were selected to provide spatial coverage of the floodplain, while also considering river morphology, accessibility, and worker safety. As described in the Soil and Sediment Sampling Plan (ARCADIS 2011a), composited surface soil samples and soil core samples were collected to characterize surface and shallow subsurface (to a maximum of 2 feet below ground surface [bgs]) soil. The following sections describe the soil sampling methodology.

After arriving at the target sampling coordinates, field teams visually inspected soil present in the area between the river shoreline and the July 2, 2011, maximum river stage boundary for indications of potential crude oil impacts. If potentially impacted soil was observed, the center point of the composite sample grid, described in Section 3.2 below, was placed to coincide with the most visually impacted soil. Location coordinates for the center sample point were recorded using a handheld GPS with accuracy greater than +/- 3 feet and are tabulated in Table 7. Soil sample locations are indicated by the letters “SO” in the sample ID and are presented on Figures 2 through 16.

Field teams documented the conditions observed at the sample location highlighting notable characteristics such as the presence of oiling or lack thereof, vegetation, debris, erosion, or other indicators of flooding.

3.2 Sampling Methodology

The soil sampling methodology was developed to characterize:

- Background soil conditions upstream of the Silvertip Pipeline Incident and upstream of oiling documented through SCAT mapping performed following the Silvertip Pipeline Incident.
- Soil with observed crude oil impacts or soil likely to be impacted by crude oil downstream of the Silvertip Pipeline Incident.

3.2.1 Sampling Plan and Process

Soil samples were collected in accordance with the Soil and Sediment Sampling Plan (ARCADIS 2011a) and the Soil Sampling SOP (CTEH 2011b), with deviations described in Section 3.2.2.

Two types of soil samples were collected: composite soil samples were collected to characterize soil currently exposed on the ground surface, biased towards locations with visual indications of potential crude oil impacts where present, and soil core samples were collected to characterize subsurface soil, at locations underlying surface soil with visual indications of potential crude oil impacts. Each of these sample types is described below.

- Composite soil samples – Five-point composite samples were collected from ground surface to 2 inches bgs and submitted for laboratory analysis. As described in the Soil and Sediment Sampling Plan (ARCADIS 2011a), five-point composite soil samples were collected using a centric 25-foot square configuration. The axes of the square were aligned along cardinal directions (north-south and east-west), and sample aliquots were collected at each corner and at the center of the square to achieve random representation of the soil at the sample location. The center point was placed to coincide with stained or oiled soil, if observed. If no stained or oiled soil was observed, the center point was placed on the target coordinates, if access and worker safety allowed.

- Soil core samples – Soil cores were completed at the center location of the five-point composite using hand auger methods to a target depth of 2 feet bgs. Soil cores were segmented into 6-inch sample intervals. Soil core samples were selected for laboratory analysis if indications of crude oil impacts were observed at the surface at the sample location or in the soil segment during soil screening, as described below. Soil samples not selected for laboratory analysis were archived at below freezing temperatures (approximately -20 degrees Celsius [°C]).

All soil samples (Table 3) for laboratory analysis and/or archive were submitted to Pace Lab. Analysis of soil samples was performed for the following analytical suite:

- SVOCs by USEPA Method 8270C
- VPH by VPH Massachusetts Method (MT Modified) – includes analysis of the following individual compounds: benzene, ethylbenzene, toluene, m&p-xylenes, o-xylene, naphthalene, and methyl tertiary-butyl ether
- EPH Screen by EPH Massachusetts Method (MT Modified) – if the EPH screen produced a TEH value greater than 200 mg/kg, the sample was analyzed for EPH fractions. The EPH fraction analysis provides results for petroleum hydrocarbon ranges for aliphatic and aromatic compounds (e.g., aliphatic C9-C18, aromatic C11-C22).
- Total metals by USEPA Methods 6010/6020 (arsenic, barium, cadmium, chromium, lead, nickel, selenium, silver, and vanadium) and 7470 (mercury)
- TOC by USEPA Method M9060
- PAHs by 8270 SIM

Composite and subsurface soil samples were screened visually and using PIDs for indications of potential crude oil impacts, as described in the Soil and Sediment Plan (ARCADIS 2011a). Soil samples were logged in accordance with USCS ASTM standards and any additional observations such as staining were documented (Table 8).

Following screening and logging, soil samples were homogenized prior to filling laboratory-supplied sample containers.

Composite soil samples were collected from five background composite soil sample locations and 66 downstream composite soil sample locations in accordance with the methods presented in the Soil and Sediment Sampling Plan (ARCADIS 2011a). The background and downstream soil sample locations are presented on Figures 2 through 16 and location coordinates are included in Table 7.

The downstream soil sample locations were distributed across the river divisions as follows:

- 33 locations in Division A
- 21 locations in Division B
- 2 locations in each division for Division C through Division H (for a total of 12 locations)

Soil core samples were collected and submitted for analysis based on field indications of potential visible crude oil impacts at the downstream soil sample locations (samples BIMT0826SO502 through BIMT0826SO505 and LAMT0813SO402 through LAMT0813SO405) and to collect subsurface background data (LAMT0826SOBKG602 through LAMT0826SOBKG605). Four samples were collected at each location: 0-6 inches bgs, 6-12 inches bgs, 12-18 inches bgs, and 18-24 inches bgs.

All other soil core samples were submitted for frozen archive. No further analysis of the archived soil core samples has been conducted. Archived soil core samples will be retained until MDEQ confirms that the samples are no longer needed.

3.2.2 Deviations from the Sampling Plan

The soil sampling portion of the Soil and Sediment Sampling Plan (ARCADIS 2011a) was implemented in accordance with the SAP (CTEH 2011b) and the QAPP (CTEH 2011c), with the exception of the following deviations.

Property access was denied by property owners for eight soil sample locations that were proposed in the Soil and Sediment Sampling Plan (ARCADIS 2011a), as presented in the table below. The target sample locations were revised to achieve equivalent representation of similar SCAT mapping conditions at the revised target location and access was approved by the property owners, as follows:

Proposed Sample Location	Revised Sample Location
SO-A04L	SO-A11R
SO-A06L	SO-A14R
SO-A20	SO-A18
SO-A21	SO-A18
SO-A26	N/A
SO-A27R	N/A
SO-C17	SO-C02
SO-D16	SO-D17

Note: NA – not applicable. Proposed sample location eliminated from scope.

The following soil sample locations were added on a voluntary basis by EMPCo during implementation of soil sampling activities, as follows:

- BIMT0825SO515 through BIMT0825SO519 (BIMT0825SO516 through BIMT0825SO519 were archived) were added based on SCAT mapping of heavy oiling on the bank.

- BIMT0825SO505 through BIMT0825SO509 (BIMT0825SO506 through BIMT0825SO509 were archived), BIMT0825SO510 through BIMT0825SO514 (BIMT0825SO511 through BIMT0825SO514 were archived), and BIMT0826SO501 through BIMT0826SO505 were added based on SCAT mapping of heavy oiling on soil at the confluence of the Clarks Fork River with the Yellowstone River.

- LAMT0824SO606 through LAMT0824SO610 (LAMT0824SO607 through LAMT0824SO610 were archived) were added based on SCAT mapping of heavy oiling.

- LAMT0824SO601 through LAMT0824SO605 (LAMT0824SO602 through LAMT0824SO605 were archived) were added based on SCAT mapping of heavy oiling.

- LAMT0825SO606 and LAMT0825SO608 through LAMT0825SO612 (LAMT0825SO609 through LAMT0825SO612 were archived) were added to target heavy oiling associated with debris at the target locations as identified by SCAT teams.

The Soil and Sediment Sampling Plan (ARCADIS 2011a) established a protocol for collecting soil core samples at the center point of each soil sample location to support

evaluation of potential impacts to subsurface soil. During implementation of the soil investigation, there did not appear to be actionable oil in Divisions D through H. Based on these observations, a decision was made to not collect soil cores at soil sample locations within Divisions D through H. Prior to this decision being made, one soil core was collected in Division H; however, the samples from that core were archived (Table 3).

3.3 Soil Sample Data Quality

Field quality control samples were collected during implementation of the soil investigation program, in accordance with the QAPP. Six MS and MSD samples and five BD samples were collected. To verify the effectiveness of field decontamination procedures, equipment rinsate blanks were collected by rinsing laboratory-supplied analyte-free water over decontaminated field equipment, such as the hand auger, trowels used to collect soil, and stainless steel bowls used for sample homogenization, at the end of each day of sampling. The QA/QC samples are tabulated in Table 4.

3.4 Soil Sample Analytical Results

Soil analytical results were reported directly by Pace Lab and validated by a third party. The validated soil analytical results are tabulated in Tables 9 and 10. Soil analytical results were compared to Tier 1 RBSLs for residential soil less than 10 feet from groundwater (MDEQ 2009).

As indicated on Tables 9 and 10, soil sample reporting limits were less than the screening criteria for most compounds; however, the reporting limits for 8 compounds exceeded the soil screening criteria as noted in the tables (shaded values). As identified in the Tables of the Montana Tier 1 RBCA Guidance for petroleum releases (September 2009), the majority of the compounds with reporting limits that exceed soil screening criteria are not considered to be commonly associated with crude oil.

Although soil samples were collected and analyzed for metals, it was determined that concentrations of metals in soil and sediment are not related to crude oil impacts. On September 7, 2011, USEPA and MDEQ granted approval of the revised SAP (CTEH 2011d), which excluded metals as COCs related to the Silvertip Pipeline Incident. Analytical results for metals in soil samples are presented in Appendix B; however, these metals concentrations were not evaluated or further discussed in the context of the Silvertip Pipeline Incident.

The terms “individual organic compound” and “organic compound” are used in the discussion of soil data. Individual organic compound indicates distinct organic compounds (i.e., SVOCs, PAHs, methyl tertiary-butyl ether, benzene, toluene, ethylbenzene, m,p-xylene, o-xylene, and naphthalene). Organic compound indicates an aggregate group of compounds (e.g., VPH, TEH, C11-C12 aromatics, etc.).

Similar to the sediment samples, soil samples were initially screened for TEH. If the TEH concentration was greater than 200 mg/kg, then the EPH fraction analysis was performed. The EPH fraction analysis provides results for petroleum hydrocarbon ranges for aliphatic and aromatic compounds.

The MADEP VPH analysis does not have an initial screen. The analysis provides results for individual organic compounds (e.g., BTEX) and petroleum hydrocarbon ranges for aliphatic and aromatic compounds (e.g., C5-C8 aliphatic, C9-C12 aliphatic, C9-C10 aromatics).

There are a number of individual organic compounds and organic compounds that do not have Soil criteria. Detections of these individual organic compounds and organic compounds are discussed below.

Field observations during implementation of the soil sampling program indicated visible impacts of crude oil on soil (i.e., oiled vegetation, staining, and sheen) in the areas surrounding sample locations BIMT0826SO501 and LAMT0813SO401.

3.4.1 Background Soil Analytical Results

Based on visual inspection of soil in the vicinity of the target background sampling locations, crude oil impacts (e.g., sheen or odor) were not observed.

Analytical results for background soil samples are presented in Table 9. Analytical results from the background composite soil sample LAMT0828SOBKG501, and its duplicate LAMT0828SOBKG501, had detections of following organic constituents:

- TEH, which has a Soil benchmark of 200 mg/kg, was detected at a concentration of 11 mg/kg.
- Pyrene, which has a soil criteria of 200,000 µg/kg, was detected at a concentration of 18.1 µg/kg.

- Benzo(b)fluoranthene, which has a soil criteria of 200 µg/kg, was detected at a concentration of 14.2 µg/kg.
- Fluoranthene, which has a soil criteria of 300,000 µg/kg, was detected at a concentration of 16.9 µg/kg.
- Chrysene, which has a soil criteria of 20,000 µg/kg, was detected at a concentration of 11.7 µg/kg.
- Benzene, which has a soil criteria of 0.04 mg/kg, was detected at a concentration of 0.063 mg/kg (which exceeds the soil screening criteria).
- Ethylbenzene, which has a soil criteria of 6 mg/kg, was detected at a concentration of 0.077 mg/kg.
- Total Xylenes, which have a soil criteria of 70 mg/kg, were detected at a concentration of 0.2 mg/kg (with m&p-xylene detected at a concentration of 0.14 mg/kg and o-xylene detected at a concentration of 0.059 mg/kg).

All other analytical results for individual organic compounds and organic compounds were below laboratory reporting limits in the background composite soil or soil core samples. One soil core was collected and analyzed at a background location (samples LAMT0826SOBKG602 through LAMT0826SOBKG605).

3.4.2 Downstream Soil Analytical Results

Analytical results for downstream soil samples are presented in Table 10.

3.4.2.1 Composite Soil Samples

Individual organic compounds were detected at four downstream composite soil sample locations (LAMT0815SO512, LAMT0815SO401 [field duplicate LAMT0815SO407], BIMT0817SO507, and BIMT0828SO501) at concentrations that exceeded soil criteria:

- The composite soil sample from soil sample location LAMT0815SO512:
    - benzo(b)fluoranthene (653 µg/kg [USEPA Method 8270] and 519 µg/kg [USEPA Method 8270 SIM]) above the soil criteria of 200 µg/kg,

- o benzo(a)pyrene (430 µg/kg [USEPA Method 8270] and 364 µg/kg [USEPA Method 8270 SIM]) above the soil criteria of 20 µg/kg,
- o benzo(a)anthracene (473 µg/kg [USEPA Method 8270] and 429 µg/kg [USEPA Method 8270 SIM]) above the soil criteria of 200 µg/kg, and
- o indeno(1,2,3-cd)pyrene (202 µg/kg) above the soil criteria of 200 µg/kg.

- The composite soil sample LAMT0815SO401 (maximum was selected of either the parent or duplicate sample [LAMT0815SO407] collected from this location):
  - o benzo(b)fluoranthene (503 µg/kg [USEPA Method 8270] and 463 µg/kg [USEPA Method 8270 SIM]) above the soil benchmark of 200 µg/kg,
  - o benzo(a)pyrene (99.4 µg/kg) above the soil benchmark of 20 µg/kg, and
  - o dibenzo(a,h)anthracene (43.2 µg/kg) above the soil benchmark of 20 µg/kg.
- The composite soil sample BIMT0817SO507:
  - o benzo(a)pyrene (39.2 µg/kg) above the soil benchmark of 20 µg/kg.
- The composite soil sample BIMT0828SO501:
  - o benzene (0.052 mg/kg) above the Soil benchmark of 0.04 mg/kg.

All other analytical results for individual organic compounds or organic compounds were below soil criteria in the downstream composite soil samples.

TEH was detected in composite soil samples collected at 30 downstream composite soil sample locations. TEH concentrations in the downstream composite soil samples ranged from 15.3 mg/kg to 1,600 mg/kg. Four samples had concentrations of TEH that were greater than the 200 mg/kg soil screening criteria (BIMT0825SO515, BIMT0825SO510, BIMT0825SO505, and LAMT0813SO401). The EPH fraction results for these five samples are provided in Table 10. EPH fraction results did not exceed soil criteria for any of the aromatic or aliphatic factions.

3.4.2.2 Soil Core Samples

Individual organic compounds were detected in soil core samples LAMT0813SO402 and LAMT0813SO403 (0 to 6 inches bgs and 6 to 12 inches bgs depth intervals) at

concentrations that were less that soil criteria. Organic compounds were detected in six of the eight soil core samples from two locations as follows:

- TEH was detected in soil core samples from samples LAMT0813SO402 through LAMT0813SO405 at concentrations of 2,220 mg/kg (0-6 inches bgs), 386 mg/kg (6-12 inches bgs), 255 mg/kg (12-18 inches bgs), and 22.4 mg/kg (18-24 inches bgs), respectively.

- TEH was detected in soil core samples from samples BIMT0826SO502 and BIMT0826SO505 at concentrations of 79.5 mg/kg (0-6 inches bgs) and 199 mg/kg (12-18 inches bgs), respectively.

For the six soil core samples that had TEH detections, three samples had concentrations of TEH that were greater than the 200 mg/kg soil screening criteria [LAMT0813SO402 (0-6 inches bgs), LAMT0813SO403 (6-12 inches bgs), and LAMT0813SO404 (12-18 inches bgs)]. C11-C22 aromatics were detected in sample LAMT0813402 (0-6 inches bgs) at a concentration of 694 mg/kg, which exceeds the soil criteria of 400 mg/kg. No EPH aliphatic fraction results exceeded soil criteria.

4. References

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USEPA. 2006. Region 3 Biological Technical Assistance Group Freshwater Sediment Screening Benchmarks. United States Environmental Protection Agency. August 2006.

Tables

Table 1
Downstream Areas Soil and Sediment Data Report
Sediment Sample Locations
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Longitude	Latitude	Elevation
	Decimal Degrees	Decimal Degrees	Feet
LAMT0824SE404	-108.75001	45.65505	980
LAMT0824SE405	-108.74261	45.65323	977
LAMT0824SE406			
LAMT0825SE401A	-108.73148	45.65068	976
LAMT0825SE401			
LAMT0825SE403A	-108.71472	45.65043	973
LAMT0825SE403			
LAMT0825SE404A	-108.70547	45.65801	970
LAMT0825SE404			
LAMT0825SE405A	-108.69926	45.66659	969
LAMT0825SE405			
LAMT0827SE501A	-108.70201	45.66541	970
LAMT0827SE501			
LAMT0825SE406	-108.67947	45.67363	965
LAMT0825SE406A			
LAMT0825SE407			
LAMT0825SE407A			
LAMT0827SE503	-108.67810	45.67389	967
LAMT0827SE503A			
LAMT0827SE504			
LAMT0827SE504A			
LAMT0827SE506A	-108.67005	45.67550	965
LAMT0827SE506			
LAMT0827SE507A	-108.66407	45.68752	964
LAMT0827SE507			
LAMT0827SE509A	-108.64906	45.68744	962
LAMT0827SE508A			
LAMT0827SE509			
LAMT0827SE508			
BIMT0827SE501A	-108.62581	45.69624	959
BIMT0827SE501			
BIMT0828SE501A	-108.62104	45.69732	959
BIMT0828SE501			
BIMT0827SE502A	-108.59722	45.71430	952
BIMT0827SE502			
BIMT0827SE503A	-108.56982	45.72485	949
BIMT0827SE503			
BIMT0826SE401A	-108.48978	45.75213	935
BIMT0826SE402A			
BIMT0826SE401			
BIMT0826SE402			

Table 1
Downstream Areas Soil and Sediment Data Report
Sediment Sample Locations
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Longitude	Latitude	Elevation
	Decimal Degrees	Decimal Degrees	Feet
BIMT0826SE403A	-108.47328	45.79040	927
BIMT0826SE403			
BIMT0828SE406	-108.35713	45.87227	908
BIMT0828SE406A			
BIMT0828SE407	-108.35111	45.87469	908
BIMT0828SE407A			
PPMT0828SE404A	-108.06354	45.99915	865
PPMT0828SE405A			
PPMT0828SE404			
PPMT0828SE405			
LAMT0824SE403	-108.71716	45.64791	974
HYMT0828SE402A	-107.34625	46.25503	792
HYMT0828SE403A			
HYMT0828SE402			
HYMT0828SE403			
ROMT0828SE401A	-106.46721	46.27405	735
ROMT0828SE401			
KIMT0827SE403A	-105.71583	46.53225	680
KIMT0827SE403			
TEMT0827SE402	-105.13603	46.85853	634
GLMT0827SE401A	-104.65857	47.20349	598
GLMT0827SE401			
LAMT0823SE401	-108.76017	45.65399	981
LAMT0823SE402	-108.75832	45.65393	980
LAMT0824SE401	-108.76110	45.65228	981
LAMT0824SE402	-108.76972	45.65034	983

Notes:
Coordinates are in World Geodetic System (WGS84).
Elevations are feet above WGS84 ellipsoid.

Table 2
Downstream Areas Soil and Sediment Data Report
Sediment Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)
LAMT0824SE404	8/24/2011	Composite	ML	5.6
LAMT0824SE405	8/24/2011	Composite 0-6"	SM	6.0
LAMT0824SE406	8/24/2011	Composite 6-12"	SM	8.4
LAMT0825SE401A	8/25/2011	Archive - Composite	ML	5.1
LAMT0825SE401	8/25/2011	Composite		
LAMT0825SE403A	8/25/2011	Archive - Composite	SM	7.0
LAMT0825SE403	8/25/2011	Composite		
LAMT0825SE404A	8/25/2011	Archive - Composite	SM	2.1
LAMT0825SE404	8/25/2011	Composite		
LAMT0825SE405	8/25/2011	Composite	SM	1.8
LAMT0825SE405A	8/25/2011	Archive- Composite		
LAMT0827SE501	8/27/2011	Composite	SM	2.7
LAMT0827SE501A	8/27/2011	Archive - Composite		
LAMT0825SE406	8/25/2011	Composite	SM	5.7
LAMT0825SE406A	8/25/2011	Archive - Composite		
LAMT0827SE503	8/27/2011	Composite 0-6"	ML	3.7
LAMT0827SE503A	8/27/2011	Archive - Composite		
LAMT0827SE506A	8/27/2011	Archive - Composite	ML	4.4
LAMT0827SE506	8/27/2011	Composite 0-6"		
LAMT0827SE507A	8/27/2011	Archive - Composite	ML	3.2
LAMT0827SE507	8/27/2011	Composite 0-6"		
LAMT0827SE509A	8/27/2011	Archive - Composite 0-6"	SW	6.7
LAMT0827SE509	8/27/2011	Composite 0-6"		
LAMT0827SE508	8/27/2011	Composite 6-12"	SW	3.9
LAMT0827SE508A	8/27/2011	Archive - Composite 6-12"		
BIMT0827SE501A	8/27/2011	Archive - Composite 0-4.5"	SW	4.2
BIMT0827SE501	8/27/2011	Composite 0-4.5"		
BIMT0828SE501A	8/28/2011	Archive - Composite 0-6"	ML	0.8
BIMT0828SE501	8/28/2011	Composite 0-6"		
BIMT0827SE502A	8/27/2011	Archive - Composite 0-2"	ML	2.3
BIMT0827SE502	8/27/2011	Composite 0-2"		

Table 2
Downstream Areas Soil and Sediment Data Report
Sediment Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)
BIMT0827SE503A	8/27/2011	Archive - Composite 0-6"	ML	8.0
BIMT0827SE503	8/27/2011	Composite 0-6"		
BIMT0826SE401A	8/26/2011	Archive - Composite 0-6"	ML	3.6
BIMT0826SE401	8/26/2011	Composite 0-6"		
BIMT0826SE402A	8/26/2011	Archive - Composite 6-12"	ML	4.9
BIMT0826SE402	8/26/2011	Composite 6-12"		
BIMT0826SE403A	8/26/2011	Archive - Composite	ML	7.1
BIMT0826SE403	8/26/2011	Composite		
BIMT0828SE406	8/28/2011	Composite	ML	3.5
BIMT0828SE406A	8/28/2011	Archive - Composite		
BIMT0828SE407	8/28/2011	Composite	ML	4.9
BIMT0828SE407A	8/28/2011	Archive - Composite		
PPMT0828SE404A	8/28/2011	Archive - Composite 0-6"	ML	5.2
PPMT0828SE404	8/28/2011	Composite 0-6"		
PPMT0828SE405A	8/28/2011	Archive - Composite 6-12"	ML	4.1
PPMT0828SE405	8/28/2011	Composite 6-12"		
LAMT0824SE403	8/24/2011	Composite	ML	3.6
HYMT0828SE402	8/28/2011	Composite 0-6"	ML	7.5
HYMT0828SE402A	8/28/2011	Archive - Composite 0-6"		
HYMT0828SE403A	8/28/2011	Archive - Composite 6-12"	ML	6.0
HYMT0828SE403	8/28/2011	Composite 6-12"		
ROMT0828SE401A	8/28/2011	Archive - Composite	ML	1.4
ROMT0828SE401	8/28/2011	Composite		
KIMT0827SE403A	8/27/2011	Archive - Composite	ML	5.4
KIMT0827SE403	8/27/2011	Composite		
TEMT0827SE402	8/27/2011	Composite	ML	3.4
GLMT0827SE401A	8/27/2011	Archive - Composite	SP	4.4
GLMT0827SE401	8/27/2011	Composite		
LAMT0823SE401	8/23/2011	Composite	SM	3.6
LAMT0823SE402	8/23/2011	Composite	SM	2.5

Table 2
Downstream Areas Soil and Sediment Data Report
Sediment Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)
LAMT0824SE401	8/24/2011	Composite	SM	3.3
LAMT0824SE402	8/24/2011	Composite	SM	2.3

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Sediment	LAMT0824SE404		8/24/11 12:40	Composite	
	LAMT0824SE405		8/24/11 13:30	Composite 0-6"	(MS/MSD)
	LAMT0824SE406		8/24/11 14:00	Composite 6-12"	
	LAMT0825SE401A		8/25/11 8:45	Archive - Composite	
	LAMT0825SE401		8/25/11 8:45	Composite	
	LAMT0825SE403A		8/25/11 9:35	Archive - Composite	
	LAMT0825SE403		8/25/11 9:35	Composite	
	LAMT0825SE404A		8/25/11 13:40	Archive - Composite	
	LAMT0825SE404		8/25/11 13:40	Composite	
	LAMT0825SE405A		8/25/11 14:30	Archive- composite	
	LAMT0825SE405		8/25/11 14:30	Composite	
	LAMT0827SE501A		8/27/11 9:15	Archive - composite	
	LAMT0827SE501		8/27/11 9:15	Composite	
	LAMT0825SE406	LAMT0825SE407	8/25/11 15:00	Composite	(Dup)
	LAMT0825SE406A	LAMT0825SE407A	8/25/11 15:00	Archive - composite	(Dup)
	LAMT0827SE503	LAMT0827SE504	8/27/11 10:15	Composite 0-6"	(Dup)
	LAMT0827SE503A	LAMT0827SE504A	8/27/11 10:15	Archive - composite	(Dup)
	LAMT0827SE506A		8/27/11 11:30	Archive - composite	
	LAMT0827SE506		8/27/11 11:30	Composite 0-6"	
	LAMT0827SE507A		8/27/11 13:15	Archive - composite	
	LAMT0827SE507		8/27/11 13:15	Composite 0-6"	
	LAMT0827SE509A		8/27/11 14:15	Archive - Composite 0-6"	
	LAMT0827SE508A		8/27/11 14:05	Archive - Composite 6-12"	
	LAMT0827SE509		8/27/11 14:15	Composite 0-6"	
	LAMT0827SE508		8/27/11 14:05	Composite 6-12"	
	BIMT0827SE501A		8/27/11 15:15	Archive - Composite 0-4.5"	
	BIMT0827SE501		8/27/11 15:15	Composite 0-4.5"	
	BIMT0828SE501A		8/28/11 8:00	Archive - Composite 0-6"	
	BIMT0828SE501		8/28/11 8:00	Composite 0-6"	
	BIMT0827SE502A		8/27/11 16:20	Archive - Composite 0-2"	
	BIMT0827SE502		8/27/11 16:20	Composite 0-2"	
	BIMT0827SE503A		8/27/11 17:00	Archive - Composite 0-6"	(MS/MSD)
	BIMT0827SE503		8/27/11 17:00	Composite 0-6"	(MS/MSD)
	BIMT0826SE401A		8/26/11 9:20	Archive - Composite 0-6"	
	BIMT0826SE402A		8/26/11 9:25	Archive - Composite 6-12"	
	BIMT0826SE401		8/26/11 9:20	Composite 0-6"	
	BIMT0826SE402		8/26/11 9:25	Composite 6-12"	
	BIMT0826SE403A		8/26/11 10:25	Archive - Composite	
	BIMT0826SE403		8/26/11 10:25	Composite	
	BIMT0828SE406		8/28/11 16:10	Composite	
	BIMT0828SE406A		8/28/11 16:10	Composite	
	BIMT0828SE407		8/28/11 17:00	Composite	
	BIMT0828SE407A		8/28/11 17:00	Composite	
	PPMT0828SE404A		8/28/11 13:50	Archive - Composite 0-6"	
	PPMT0828SE405A		8/28/11 13:55	Archive - Composite 6-12"	
	PPMT0828SE404		8/28/11 13:50	Composite 0-6"	
	PPMT0828SE405		8/28/11 13:55	Composite 6-12"	
	LAMT0824SE403		8/24/11 11:15	Composite	

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Sediment	HYMT0828SE402A		8/28/11 10:45	Archive - Composite 0-6"	
	HYMT0828SE403A		8/28/11 10:50	Archive - Composite 6-12"	
	HYMT0828SE402		8/28/11 10:45	Composite 0-6"	
	HYMT0828SE403		8/28/11 10:50	Composite 6-12"	
	ROMT0828SE401A		8/28/11 8:20	Archive - Composite	
	ROMT0828SE401		8/28/11 8:20	Composite	
	KIMT0827SE403A		8/27/11 15:55	Archive - Composite	
	KIMT0827SE403		8/27/11 15:55	Composite	
	TEMT0827SE402		8/27/11 13:50	Composite	
	GLMT0827SE401A		8/27/11 10:40	Archive - Composite	
	GLMT0827SE401		8/27/11 10:40	Composite	
	LAMT0823SE401		8/23/11 12:15	Composite	
	LAMT0823SE402		8/23/11 13:15	Composite	
	LAMT0824SE401		8/24/11 9:25	Composite	
	LAMT0824SE402		8/24/11 10:25	Composite	
Soil	LAMT0815SO502		8/15/11 9:35	Archive - 0-6 inches	
	LAMT0815SO504		8/15/11 9:35	Archive - 12-18 inches	
	LAMT0815SO505		8/15/11 9:35	Archive - 18-24 inches	
	LAMT0815SO503		8/15/11 9:35	Archive - 6-12 inches	
	LAMT0815SO501		8/15/11 9:35	Composite Soil	
	LAMT0815SO508		8/15/11 13:00	Archive - 0-6 inches	
	LAMT0815SO510		8/15/11 13:00	Archive - 12-18 inches	
	LAMT0815SO511		8/15/11 13:00	Archive - 18-24 inches	
	LAMT0815SO509		8/15/11 13:00	Archive - 6-12 inches	
	LAMT0815SO507		8/15/11 13:00	Composite Soil	
	LAMT0815SO513		8/15/11 14:30	Archive - 0-6 inches	
	LAMT0815SO515		8/15/11 14:30	Archive - 12-18 inches	
	LAMT0815SO516		8/15/11 14:30	Archive - 18-24 inches	
	LAMT0815SO514		8/15/11 14:30	Archive - 6-12 inches	
	LAMT0815SO512		8/15/11 14:30	Composite Soil	
	LAMT0812SO402		8/12/11 10:15	Archive - 0-6 inches	
	LAMT0812SO406		8/12/11 10:15	Archive - 12-18 inches	
	LAMT0812SO407		8/12/11 10:15	Archive - 18-24 inches	
	LAMT0812SO405		8/12/11 10:15	Archive - 6-12 inches	
	LAMT0812SO401		8/12/11 10:15	Composite Soil	
	LAMT0814SO403		8/14/11 11:28	Archive - 0-6 inches	
	LAMT0814SO405		8/14/11 11:24	Archive - 12-18 inches	
	LAMT0814SO406		8/14/11 11:41	Archive - 18-24 inches	
	LAMT0814SO404		8/14/11 11:17	Archive - 6-12 inches	
	LAMT0814SO402	LAMT0814SO407	8/14/11 9:33	Composite Soil	(Dup)
	LAMT0814SO409		8/14/11 14:15	Composite Soil	(MS/MSD)
	LAMT0816SO404		8/16/11 12:15	Archive - 0-6 inches	
	LAMT0816SO405		8/16/11 12:15	Archive - 6-12 inches	
	LAMT0816SO403		8/16/11 12:15	Composite Soil	
	LAMT0816SO407		8/16/11 13:15	Archive - 0-6 inches	
	LAMT0816SO409		8/16/11 13:15	Archive - 12-18 inches	
	LAMT0816SO410		8/16/11 13:15	Archive - 18-24 inches	
	LAMT0816SO408		8/16/11 13:15	Archive - 6-12 inches	

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Soil	LAMT0816SO406		8/16/11 13:15	Composite Soil	
	LAMT0816SO412		8/16/11 14:34	Archive - 0-6 inches	
	LAMT0816SO414		8/16/11 14:45	Archive - 12-18 inches	
	LAMT0816SO416		8/16/11 14:52	Archive - 18-24 inches	
	LAMT0816SO413		8/16/11 14:38	Archive - 6-12 inches	
	LAMT0816SO411		8/16/11 14:30	Composite Soil	
	LAMT0812SO414		8/12/11 17:15	Archive - 0-6 inches	
	LAMT0812SO413		8/12/11 17:15	Composite Soil	
	LAMT0812SO409		8/12/11 14:30	Archive - 0-6 inches	
	LAMT0812SO411		8/12/11 14:30	Archive - 12-18 inches	
	LAMT0812SO412		8/12/11 14:30	Archive - 18-24 inches	
	LAMT0812SO410		8/12/11 14:30	Archive - 6-12 inches	
	LAMT0812SO408		8/12/11 14:30	Composite Soil	
	BIMT0825SO516		8/25/11 17:30	Archive - 0-6 inches	
	BIMT0825SO518		8/25/11 17:40	Archive - 12-18 inches	
	BIMT0825SO519		8/25/11 17:45	Archive - 18-24 inches	
	BIMT0825SO517		8/25/11 17:35	Archive - 6-12 inches	
	BIMT0825SO515a		8/25/11 17:15	Archive - Composite	(MS/MSD)
	BIMT0825SO515		8/25/11 17:15	Composite soil	(MS/MSD)
	BIMT0825SO502a	BIMT0825SO503a	8/25/11 9:30	Archive - Composite	(Dup)
	BIMT0825SO502	BIMT0825SO503	8/25/11 9:30	Composite soil	(Dup)
	LAMT0823SO607		8/23/11 15:45	Archive - 0-6 inches	
	LAMT0823SO609		8/23/11 15:55	Archive - 12-18 inches	
	LAMT0823SO610		8/23/11 16:00	Archive - 18-24 inches	
	LAMT0823SO608		8/23/11 15:50	Archive - 6-12 inches	
	LAMT0823SO606		8/23/11 15:40	Composite Soil	
	BIMT0825SO506		8/25/11 14:15	Archive - 0-6 inches	
	BIMT0825SO508		8/25/11 14:25	Archive - 12-18 inches	
	BIMT0825SO509		8/25/11 14:30	Archive - 18-24 inches	
	BIMT0825SO507		8/25/11 14:20	Archive - 6-12 inches	
	BIMT0825SO505a		8/25/11 14:00	Archive - Composite	
	BIMT0825SO505		8/25/11 14:00	Composite Soil	
	BIMT0825SO511		8/25/11 15:45	Archive - 0-6 inches	
	BIMT0825SO513		8/25/11 15:55	Archive - 12-18 inches	
	BIMT0825SO514		8/25/11 16:00	Archive - 18-24 inches	
	BIMT0825SO512		8/25/11 15:50	Archive - 6-12 inches	
	BIMT0825SO510A		8/25/11 15:30	Archive - Composite	
	BIMT0825SO510		8/25/11 15:30	Composite Soil	
	BIMT0826SO502		8/26/11 13:10	0-6 inches - Analyze	
	BIMT0826SO504		8/26/11 13:30	12-18 inches - Analyze	
	BIMT0826SO505		8/26/11 13:40	18-24 inches - Analyze	
	BIMT0826SO503		8/26/11 13:20	6-12 inches - Analyze	
	BIMT0826SO502A		8/26/11 13:10	Archive - 0-6 inches	
	BIMT0826SO504A		8/26/11 13:30	Archive - 12-18 inches	
	BIMT0826SO505A		8/26/11 13:40	Archive - 18-24 inches	
	BIMT0826SO503A		8/26/11 13:20	Archive - 6-12 inches	
	BIMT0826SO501A		8/26/11 13:00	Archive - Composite	
	BIMT0826SO501		8/26/11 13:00	Composite Soil	

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Soil	LAMT0823SO602		8/23/11 14:45	Archive - 0-6 inches	
	LAMT0823SO604		8/23/11 14:55	Archive - 12-18 inches	
	LAMT0823SO605		8/23/11 15:00	Archive - 18-21 inches	
	LAMT0823SO603		8/23/11 14:50	Archive - 6-12 inches	
	LAMT0823SO601		8/23/11 14:35	Composite Soil	
	LAMT0824SO612		8/24/11 13:25	Archive - 0-6 inches	
	LAMT0824SO614		8/24/11 13:35	Archive - 12-18 inches	
	LAMT0824SO615		8/24/11 13:40	Archive - 18-21 inches	
	LAMT0824SO613		8/24/11 13:30	Archive - 6-12 inches	
	LAMT0824SO611		8/24/11 13:20	Composite Soil	
	LAMT0901SO501A		9/1/11 8:00	Archive - Composite	
	LAMT0901SO501		9/1/11 8:00	Composite Soil	
	LAMT0824SO607		8/24/11 11:25	Archive - 0-6 inches	
	LAMT0824SO609		8/24/11 11:35	Archive - 12-18 inches	
	LAMT0824SO610		8/24/11 11:40	Archive - 18-21 inches	
	LAMT0824SO608		8/24/11 11:30	Archive - 6-12 inches	
	LAMT0824SO606		8/24/11 11:20	Composite Soil	
	LAMT0824SO602		8/24/11 10:05	Archive - 0-6 inches	
	LAMT0824SO604		8/24/11 10:15	Archive - 12-18 inches	
	LAMT0824SO605		8/24/11 10:20	Archive - 18-24 inches	
	LAMT0824SO603		8/24/11 10:10	Archive - 6-12 inches	
	LAMT0824SO601		8/24/11 10:00	Composite Soil	
	LAMT0816SO402		8/16/11 9:20	Composite Soil	
	LAMT0813SO410		8/13/11 16:30	Archive - 0-6 inches	
	LAMT0813SO412		8/13/11 16:30	Archive - 12-16 inches	
	LAMT0813SO411		8/13/11 16:30	Archive - 6-12 inches	
	LAMT0813SO409		8/13/11 16:30	Composite Soil	(MS/MSD)
	LAMT0813SO402		8/13/11 12:15	0-6 inches - Analyze	
	LAMT0813SO404		8/13/11 12:15	12-18 inches - Analyze	
	LAMT0813SO405		8/13/11 13:47	18-24 inches - Analyze	
	LAMT0813SO403	LAMT0813SO406	8/13/11 12:15	6-12 inches - Analyze	(Dup)
	LAMT0813SO401		8/13/11 12:15	Composite Soil	
	LAMT0817SO413		8/17/11 15:00	Archive - 0-6 inches	
	LAMT0817SO415		8/17/11 15:20	Archive - 12-18 inches	
	LAMT0817SO414		8/17/11 15:05	Archive - 6-12 inches	
	LAMT0817SO412		8/17/11 14:45	Composite Soil	
	LAMT0817SO418		8/17/11 16:00	Archive - 0-6 inches	
	LAMT0817SO420		8/17/11 16:10	Archive - 12-18 inches	
	LAMT0817SO421		8/17/11 16:20	Archive - 18-24 inches	
	LAMT0817SO419		8/17/11 16:05	Archive - 6-12 inches	
	LAMT0817SO417		8/17/11 15:40	Composite Soil	
	LAMT0824SO617		8/24/11 14:45	Archive - 0-4 inches	
	LAMT0824SO616		8/24/11 14:40	Composite Soil	
	LAMT0824SO619		8/24/11 15:40	Archive - 0-6 inches	
	LAMT0824SO618		8/24/11 15:35	Composite Soil	
	LAMT0814SO411		8/14/11 16:00	Archive - 0-6 inches	
	LAMT0814SO413		8/14/11 16:00	Archive - 12-18 inches	
	LAMT0814SO412		8/14/11 16:00	Archive - 6-12 inches	

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Soil	LAMT0814SO410		8/14/11 16:00	Composite Soil	
	LAMT0825SO602A		8/25/11 9:15	Archive - 0-6 inches	
	LAMT0825SO604A		8/25/11 9:25	Archive - 12-18 inches	
	LAMT0825SO605A		8/25/11 9:30	Archive - 18-24 inches	
	LAMT0825SO603A		8/25/11 9:20	Archive - 6-12 inches	
	LAMT0825SO601		8/25/11 9:10	Composite Soil	
	LAMT0825SO601A		8/25/11 9:10	Composite Soil	
	BIMT0816SO502		8/16/11 9:30	Archive - 0-6 inches	
	BIMT0816SO504		8/16/11 9:30	Archive - 12-18 inches	
	BIMT0816SO505		8/16/11 9:30	Archive - 18-24 inches	
	BIMT0816SO503		8/16/11 9:30	Archive - 6-12 inches	
	BIMT0816SO501		8/16/11 9:30	Composite Soil	
	BIMT0816SO524		8/16/11 18:00	Archive - 0-6 inches	
	BIMT0816SO526		8/16/11 18:10	Archive - 12-18 inches	
	BIMT0816SO527		8/16/11 18:15	Archive - 18-24 inches	
	BIMT0816SO525		8/16/11 18:05	Archive - 6-12 inches	
	BIMT0816SO523		8/16/11 17:45	Composite Soil	
	LAMT0825SO607A		8/25/11 14:15	Archive - 0-6 inches	
	LAMT0825SO606		8/25/11 14:00	Composite Soil	
	LAMT0825SO609		8/25/11 15:40	Archive - 0-6 inches	
	LAMT0825SO609A		8/25/11 15:40	Archive - 0-6 inches	
	LAMT0825SO611		8/25/11 15:55	Archive - 12-18 inches	
	LAMT0825SO611A		8/25/11 15:55	Archive - 12-18 inches	
	LAMT0825SO612		8/25/11 16:00	Archive - 18-24 inches	
	LAMT0825SO612A		8/25/11 16:00	Archive - 18-24 inches	
	LAMT0825SO610		8/25/11 15:45	Archive - 6-12 inches	
	LAMT0825SO610A		8/25/11 15:45	Archive - 6-12 inches	
	LAMT0825SO608A		8/25/11 15:30	Archive - Composite	
	LAMT0825SO608		8/25/11 15:30	Composite Soil	
	LAMT0817SO403		8/17/11 12:25	Archive - 0-6 inches	
	LAMT0817SO405		8/17/11 12:45	Archive - 12-18 inches	
	LAMT0817SO406		8/17/11 12:55	Archive - 18-24 inches	
	LAMT0817SO404		8/17/11 12:35	Archive - 6-12 inches	
	LAMT0817SO402		8/17/11 12:15	Composite Soil	
	LAMT0817SO408		8/17/11 15:40	Archive - 0-6 inches	
	LAMT0817SO410		8/17/11 15:55	Archive - 12-18 inches	
	LAMT0817SO411		8/17/11 16:00	Archive - 18-24 inches	
	LAMT0817SO409		8/17/11 15:45	Archive - 6-12 inches	
	LAMT0817SO407		8/17/11 15:30	Composite Soil	
	LAMT0815SO403		8/15/11 9:45	0-5 inches - Archive	
	LAMT0815SO401	LAMT0815SO407	8/15/11 9:45	Composite Soil	(Dup)
	LAMT0815SO405		8/15/11 12:30	Archive - 0-6 inches	
	LAMT0815SO408		8/15/11 12:30	Archive - 12-18 inches	
	LAMT0815SO409		8/15/11 12:30	Archive - 18-24 inches	
	LAMT0815SO406		8/15/11 12:30	Archive - 6-12 inches	
	LAMT0815SO404		8/15/11 10:45	Composite Soil	(MS/MSD)
	BIMT0823SO508		8/23/11 17:45	Archive - 0-6 inches	
	BIMT0823SO510		8/23/11 17:55	Archive - 12-18 inches	

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Soil	BIMT0823SO511		8/23/11 18:00	Archive - 18-24 inches	
	BIMT0823SO509		8/23/11 17:50	Archive - 6-12 inches	
	BIMT0823SO507		8/23/11 17:30	Composite Soil	
	BIMT0815SO411		8/15/11 14:30	0-6 inches - Archive	
	BIMT0815SO413		8/15/11 14:30	12-18 inches - Archive	
	BIMT0815SO414		8/15/11 14:30	18-24 inches - Archive	
	BIMT0815SO412		8/15/11 14:30	6-12 inches - Archive	
	BIMT0815SO410		8/15/11 14:30	Composite Soil	
	LAMT0826SO622A		8/26/11 15:55	Archive - 0-6 inches	
	LAMT0826SO624A		8/26/11 16:05	Archive - 12-18 inches	
	LAMT0826SO625A		8/26/11 16:10	Archive - 18-24 inches	
	LAMT0826SO623A		8/26/11 16:00	Archive - 6-12 inches	
	LAMT0826SO621A		8/26/11 15:50	Archive - Composite	
	LAMT0826SO621		8/26/11 15:50	Composite Soil	
	BIMT0816SO508		8/16/11 11:45	Archive - 0-6 inches	
	BIMT0816SO510		8/16/11 11:45	Archive - 12-18 inches	
	BIMT0816SO511		8/16/11 11:45	Archive - 18-24 inches	
	BIMT0816SO509		8/16/11 11:45	Archive - 6-12 inches	
	BIMT0816SO507		8/16/11 11:45	Composite Soil	
	BIMT0823SO504		8/23/11 15:30	Archive - 0-6 inches	
	BIMT0823SO506		8/23/11 15:40	Archive - 18-24 inches	
	BIMT0823SO505		8/23/11 15:35	Archive - 6-12 inches	
	BIMT0823SO503		8/23/11 15:15	Composite Soil	
	BIMT0823SO501		8/23/11 12:00	Composite Soil	
	BIMT0816SO513		8/16/11 14:15	Archive - 0-6 inches	
	BIMT0816SO515		8/16/11 14:25	Archive - 12-18 inches	
	BIMT0816SO516		8/16/11 14:30	Archive - 18-24 inches	
	BIMT0816SO514		8/16/11 14:20	Archive - 6-12 inches	
	BIMT0816SO512		8/16/11 14:00	Composite Soil	(MS/MSD)
	BIMT0816SO518		8/16/11 16:45	Archive - 0-6 inches	
	BIMT0816SO520		8/16/11 16:55	Archive - 12-18 inches	
	BIMT0816SO521		8/16/11 17:00	Archive - 18-24 inches	
	BIMT0816SO519		8/16/11 16:50	Archive - 6-12 inches	
	BIMT0816SO517		8/16/11 16:30	Composite Soil	
	BIMT0817SO518		8/17/11 16:15	Archive - 0-6 inches	
	BIMT0817SO517		8/17/11 16:00	Composite Soil	
	BIMT0817SO513		8/17/11 13:45	Archive - 0-6 inches	
	BIMT0817SO515		8/17/11 13:55	Archive - 12-18 inches	
	BIMT0817SO516		8/17/11 14:00	Archive - 18-24 inches	
	BIMT0817SO514		8/17/11 13:50	Archive - 6-12 inches	
	BIMT0817SO512		8/17/11 13:30	Composite Soil	
	BIMT0817SO502		8/17/11 10:00	Archive - 0-6 inches	
	BIMT0817SO504		8/17/11 10:10	Archive - 12-18 inches	
	BIMT0817SO505		8/17/11 10:15	Archive - 18-24 inches	
	BIMT0817SO503		8/17/11 10:05	Archive - 6-12 inches	
	BIMT0817SO501		8/17/11 9:45	Composite Soil	
	BIMT0824SO507		8/24/11 15:30	Composite Soil	
	BIMT0824SO503		8/24/11 13:00	Archive - 0-6 inches	

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Soil	BIMT0824SO505		8/24/11 13:10	Archive - 12-18 inches	
	BIMT0824SO506		8/24/11 13:15	Archive - 18-24 inches	
	BIMT0824SO504		8/24/11 13:05	Archive - 6-12 inches	
	BIMT0824SO502		8/24/11 12:45	Composite Soil	
	BIMT0817SO508		8/17/11 11:45	Archive - 0-6 inches	
	BIMT0817SO510		8/17/11 11:55	Archive - 12-18 inches	
	BIMT0817SO511		8/17/11 12:00	Archive - 18-24 inches	
	BIMT0817SO509		8/17/11 11:50	Archive - 6-12 inches	
	BIMT0817SO507		8/17/11 11:30	Composite Soil	
	BIMT0828SO502		8/28/11 13:15	Archive - 0-6 inches	
	BIMT0828SO504		8/28/11 13:25	Archive - 12-18 inches	
	BIMT0828SO505		8/28/11 13:30	Archive - 18-24 inches	
	BIMT0828SO503		8/28/11 13:20	Archive - 6-12 inches	
	BIMT0828SO501		8/28/11 13:00	Composite Soil	
	BIMT0831SO502A		8/31/11 12:35	Archive - 0-6 inches	
	BIMT0831SO504A		8/31/11 12:45	Archive - 12-18 inches	
	BIMT0831SO503A		8/31/11 12:40	Archive - 6-12 inches	
	BIMT0831SO501A		8/31/11 12:30	Archive - Composite	
	BIMT0831SO501		8/31/11 12:30	Composite Soil	
	PPMT0831SO501		8/31/11 9:30	Composite Soil	
	PPMT0831SO501A		8/31/11 9:30	Archive - 0-2 inches	
	PPMT0831SO502A		8/31/11 9:35	Archive - 0-6 inches	
	PPMT0831SO504A		8/31/11 9:45	Archive - 12-18 inches	
	PPMT0831SO505A		8/31/11 9:50	Archive - 18-24 inches	
	PPMT0831SO503A		8/31/11 9:40	Archive - 6-12 inches	
	HYMT0812SO502		8/15/11 14:00	Composite Soil	
	HYMT0812SO501		8/15/11 12:30	Composite Soil	
	FOMT0814SO501		8/14/11 10:00	Composite Soil	(MS/MSD)
	ROMT0814SO501	ROMT0814SO502	8/14/11 8:00	Composite Soil	(Dup)
	MIMT0813SO501		8/13/11 14:20	Composite Soil	
	KIMT0813SO501		8/13/11 16:00	Composite Soil	
	CAMT0813SO501		8/13/11 12:10	Composite Soil	
	FAMT0813SO501		8/13/11 10:00	Composite Soil	
	GLMT0812SO505		8/12/11 15:45	Archive - 0-6 inches	
	GLMT0812SO507		8/12/11 15:45	Archive - 12-18 inches	
	GLMT0812SO506		8/12/11 15:45	Archive - 6-12 inches	
	GLMT0812SO504		8/12/11 15:45	Archive - Composite	
	GLMT0812SO503		8/12/11 15:45	Composite Soil	
	GLMT0812SO501		8/12/11 13:30	Composite Soil	
	LAMT0828SOBKG501	LAMT0828SOBKG502	8/28/11 15:00	Composite Soil	(Dup)
	LAMT0826SOBKG617A		8/26/11 14:15	Archive - 0-6 inches	
	LAMT0826SOBKG619A		8/26/11 14:25	Archive - 12-18 inches	
	LAMT0826SOBKG620A		8/26/11 14:30	Archive - 18-24 inches	
	LAMT0826SOBKG618A		8/26/11 14:20	Archive - 6-12 inches	
	LAMT0826SOBKG616		8/26/11 14:10	Composite Soil	

Table 3
Downstream Areas Soil and Sediment Data Report
Soil and Sediment Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Sample ID	Duplicate ID	Sample Date	Sample Info	Notes
Soil	LAMT0826SOBKG612A		8/26/11 13:15	Archive - 0-6 inches	
	LAMT0826SOBKG614A		8/26/11 13:25	Archive - 12-18 inches	
	LAMT0826SOBKG615A		8/26/11 13:30	Archive - 18-24 inches	
	LAMT0826SOBKG613A		8/26/11 13:20	Archive - 6-12 inches	
	LAMT0826SOBKG611A		8/26/11 13:10	Archive - Composite	
	LAMT0826SOBKG611		8/26/11 13:10	Composite Soil	
	LAMT0826SOBKG607A		8/26/11 11:25	Archive - 0-6 inches	
	LAMT0826SOBKG609A		8/26/11 11:35	Archive - 12-18 inches	
	LAMT0826SOBKG610A		8/26/11 11:40	Archive - 18-24 inches	
	LAMT0826SOBKG608A		8/26/11 11:30	Archive - 6-12 inches	
	LAMT0826SOBKG606A		8/26/11 11:20	Archive - Composite	
	LAMT0826SOBKG606		8/26/11 11:20	Composite Soil	
	LAMT0826SOBKG602		8/26/11 9:40	0-6 inches - Analyzed	
	LAMT0826SOBKG604		8/26/11 9:50	12-18 inches - Analyze	
	LAMT0826SOBKG605		8/26/11 9:55	18-24 inches - Analyze	
	LAMT0826SOBKG603		8/26/11 9:45	6-12 inches - Analyze	
	LAMT0826SOBKG602A		8/26/11 9:40	Archive - 0-6 inches	
	LAMT0826SOBKG604A		8/26/11 9:50	Archive - 12-18 inches	
	LAMT0826SOBKG605A		8/26/11 9:55	Archive - 18-24 inches	
	LAMT0826SOBKG603A		8/26/11 9:45	Archive - 6-12 inches	
	LAMT0826SOBKG601A		8/26/11 9:35	Archive - Composite	
	LAMT0826SOBKG601		8/26/11 9:35	Composite Soil	

Notes:
(Dup) = Duplicate sample
(MS/MSD) = Matrix spike and matrix spike duplicate samples

Table 4
Downstream Areas Soil and Sediment Data Report
QA/QC Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Date Sampled	Sample ID	Type
Sediment	8/25/2011	LAMT0825SE402	Field Blank
	8/23/2011	LAMT0823SE404	Trip Blank
	8/23/2011	LAMT0823SE403	Rinse Blank
	8/24/2011	LAMT0824SE408	Trip Blank
	8/24/2011	LAMT0824SE407	Rinse Blank
	8/24/2011	LAMT0824SE405	MS/MSD
	8/25/2011	LAMT0825SE409	Trip Blank
	8/25/2011	LAMT0825SE408	Rinse Blank
	8/26/2011	BIMT0826SE405	Trip Blank
	8/26/2011	BIMT0826SE404	Rinse Blank
	8/27/2011	LAMT0827SE502	Trip Blank
	8/27/2011	LAMT0827SE505	Field Blank
	8/27/2011	BIMT0827SE503	MS/MSD
	8/27/2011	KIMT0827SE404	Rinse Blank
	8/27/2011	KIMT0827SE405	Trip Blank
	8/27/2011	BIMT0827SE504	Rinse Blank
	8/27/2011	BIMT0827SE505	Trip Blank
	8/27/2011	BIMT0827SE506	Trip Blank
	8/28/2011	BIMT0828SE409	Trip Blank
	8/28/2011	BIMT0828SE502	Trip Blank
	8/28/2011	BIMT0828SE408	Rinse Blank
Soil	8/13/2011	FAMT0813SO503	Field Blank
	8/12/2011	LAMT0812SO404	Field Blank
	8/12/2011	LAMT0812SO403	Trip Blank
	8/12/2011	GLMT0812SO502	Trip Blank
	8/12/2011	GLMT0812SO508	Rinse Blank
	8/13/2011	LAMT0813SO409	MS/MSD
	8/13/2011	FAMT0813SO502	Trip Blank
	8/13/2011	LAMT0812SO415	Rinse Blank
	8/13/2011	LAMT0813SO414	Rinse Blank
	8/13/2011	LAMT0813SO415	Trip Blank
	8/13/2011	KIMT0813SO502	Rinse Blank
	8/14/2011	LAMT0814SO401	Trip Blank
	8/14/2011	LAMT0814SO408	Trip Blank
	8/14/2011	LAMT0814SO415	Trip Blank
	8/14/2011	ROMT0814SO503	Trip Blank
	8/14/2011	LAMT0814SO409	MS/MSD
	8/14/2011	FOMT0814SO501	MS/MSD
	8/14/2011	HYMT0814SO503	Rinse Blank
	8/14/2011	LAMT0814SO414	Rinse Blank
	8/15/2011	LAMT0815SO402	Trip Blank
	8/15/2011	LAMT0815SO506	Trip Blank
	8/15/2011	BIMT0815SO415	Trip Blank
	8/15/2011	BIMT0815SO416	Rinse Blank

Table 4
Downstream Areas Soil and Sediment Data Report
QA/QC Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Date Sampled	Sample ID	Type
Soil	8/15/2011	LAMT0815SO404	MS/MSD
	8/16/2011	BIMT0816SO522	Trip Blank
	8/16/2011	LAMT0816SO401	Trip Blank
	8/16/2011	BIMT0816SO506	Trip Blank
	8/16/2011	LAMT0816SO415	Trip Blank
	8/16/2011	LAMT0816SO417	Rinse Blank
	8/16/2011	BIMT0816SO528	Rinse Blank
	8/16/2011	BIMT0815SO512	MS/MSD
	8/17/2011	BIMT0817SO506	Trip Blank
	8/17/2011	BIMT0817SO520	Trip Blank
	8/17/2011	LAMT0817SO401	Trip Blank
	8/17/2011	LAMT0817SO416	Trip Blank
	8/17/2011	LAMT0817SO417	MS/MSD
	8/17/2011	LAMT0817SO423	Trip Blank
	8/17/2011	LAMT0817SO422	Rinse Blank
	8/17/2011	BIMT0817SO519	Rinse Blank
	8/23/2011	BIMT0823SO502	Trip Blank
	8/23/2011	LAMT0823SO612	Trip Blank
	8/23/2011	LAMT0823SO613	Trip Blank
	8/23/2011	BIMT0823SO512	Rinse Blank
	8/23/2011	BIMT0823SO513	Trip Blank
	8/23/2011	LAMT0823SO611	Rinse Blank
	8/24/2011	BIMT0824SO501	Trip Blank
	8/24/2011	LAMT0824SO621	Trip Blank
	8/24/2011	LAMT0824SO622	Trip Blank
	8/24/2011	LAMT0824SO623	Trip Blank
	8/24/2011	BIMT0824SO508	Rinse Blank
	8/24/2011	BIMT0824SO509	Trip Blank
	8/24/2011	LAMT0824SO620	Rinse Blank
	8/25/2011	BIMT0825SO501	Trip Blank
	8/25/2011	BIMT0825SO521	Trip Blank
	8/25/2011	BIMT0825SO515	MS/MSD
	8/25/2011	BIMT0825SO522	Trip Blank
	8/25/2011	LAMT0825SO614	Trip Blank
	8/25/2011	LAMT0825SO615	Trip Blank
	8/25/2011	BIMT0825SO504	Field Blank
	8/25/2011	LAMT0825SO613	Rinse Blank
	8/25/2011	BIMT0825SO520	Rinse Blank
	8/26/2011	BIMT0826SO507	Rinse Blank
	8/26/2011	BIMT0826SO506	Trip Blank
	8/26/2011	BIMT0826SO508	Trip Blank
	8/26/2011	LAMT0826SO626	Rinse Blank
	8/26/2011	LAMT0826SO627	Trip Blank
	8/26/2011	LAMT0826SO628	Trip Blank

Table 4
Downstream Areas Soil and Sediment Data Report
QA/QC Sample Key
Silvertip Pipeline Incident
Laurel, Montana

	Date Sampled	Sample ID	Type
Soil	8/26/2011	LAMT0826SO629	Trip Blank
	8/26/2011	LAMT0826SO630	Trip Blank
	8/28/2011	LAMT0828SO501	Rinse Blank
	8/28/2011	LAMT0828SO502	Trip Blank
	8/31/2011	BIMT0831SO505	Trip Blank
	8/31/2011	BIMT0831SO506	Rinse Blank
	8/31/2011	BIMT0831SO507	Trip Blank
	9/1/2011	LAMT0901SO502	Rinse Blank
	9/1/2011	LAMT0901SO503	Trip Blank

Notes:
MS/MSD = Matrix spike and matrix spike duplicate

Table 5
Downstream Impacted Areas Soil and Sediment Data Report
Background Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0823SE401		LAMT0823SE402		LAMT0824SE401		LAMT0824SE402		LAMT0824SE403	
		Sample Date	8/23/2011		8/23/2011		8/24/2011		8/24/2011		8/24/2011	
		Start Depth (in)	0		0		0		0		0	
		End Depth (in)	6		6		6		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 3	
Chemical	**Units**	**Freshwater Sediment[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		26.5		12.1		24.7		22.2		24.5	
Semivolatile Organic Compounds (USEPA 8270)												
1,2,4-Trichlorobenzene	µg/kg	2100	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
1,2-Dichlorobenzene	µg/kg	16.5	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
1,2-Diphenylhydrazine	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
1,3-Dichlorobenzene	µg/kg	4430	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
1,4-Dichlorobenzene	µg/kg	599	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
1-Methylnaphthalene	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2,4,5-Trichlorophenol	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
2,4,6-Trichlorophenol	µg/kg	213	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2,4-Dichlorophenol	µg/kg	117	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2,4-Dimethylphenol	µg/kg	29	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2,4-Dinitrophenol	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
2,4-Dinitrotoluene	µg/kg	41.6	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2,6-Dinitrotoluene	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2-Chloronaphthalene	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2-Chlorophenol	µg/kg	31.2	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2-Methylnaphthalene	µg/kg	20.2	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2-Methylphenol (o-Cresol)	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
2-Nitroaniline	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
2-Nitrophenol	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
3&4-Methylphenol	µg/kg		< 898	U	< 745	U	< 874	U	< 846	U	< 868	U
3,3'-Dichlorobenzidine	µg/kg	127	< 911	U	< 757	U	< 887	U	< 858	U	< 881	U
3-Nitroaniline	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
4,6-Dinitro-2-methylphenol	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
4-Bromophenyl phenyl ether	µg/kg	1230	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
4-Chloro-3-methylphenol	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
4-Chloroaniline	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
4-Chlorophenyl phenyl ether	µg/kg	0	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
4-Nitroaniline	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
4-Nitrophenol	µg/kg		< 2310	U	< 1920	U	< 2250	U	< 2180	U	< 2240	U
Acenaphthene	µg/kg	6.7	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Acenaphthylene	µg/kg	5.9	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Anthracene	µg/kg	57.2	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Benzo(a)anthracene	µg/kg	108	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Benzo(a)pyrene	µg/kg	150	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Benzo(b)fluoranthene	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Benzo(g,h,i)perylene	µg/kg	170	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Benzo(k)fluoranthene	µg/kg	240	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Bis(2-chloroethoxy)methane	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Bis(2-chloroethyl)ether	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U

Table 5
Downstream Impacted Areas Soil and Sediment Data Report
Background Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0823SE401		LAMT0823SE402		LAMT0824SE401		LAMT0824SE402		LAMT0824SE403	
		Sample Date	8/23/2011		8/23/2011		8/24/2011		8/24/2011		8/24/2011	
		Start Depth (in)	0		0		0		0		0	
		End Depth (in)	6		6		6		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 3	
Chemical	**Units**	**Freshwater Sediment[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
bis(2-chloroisopropyl)ether	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Bis(2-ethylhexyl)phthalate	µg/kg	180	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Butylbenzylphthalate	µg/kg	10900	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Carbazole	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Chrysene	µg/kg	166	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Dibenzo(a,h)anthracene	µg/kg	33	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Dibenzofuran	µg/kg	415	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Diethyl phthalate	µg/kg	603	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Dimethyl phthalate	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Di-n-butyl phthalate	µg/kg	6470	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Di-n-octyl phthalate	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Fluoranthene	µg/kg	423	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Fluorene	µg/kg	77.4	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Hexachloro-1,3-butadiene	µg/kg	0	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Hexachlorobenzene	µg/kg	20	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Hexachloroethane	µg/kg	1027	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Indeno(1,2,3-cd)pyrene	µg/kg	17	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Isophorone	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Naphthalene	µg/kg	176	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Nitrobenzene	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
n-Nitrosodimethylamine	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
n-Nitroso-di-n-propylamine	µg/kg		< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
n-nitrosodiphenylamine	µg/kg	2680	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Pentachlorophenol	µg/kg	504	< 911	U	< 757	U	< 887	U	< 858	U	< 881	U
Phenanthrene	µg/kg	204	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Phenol	µg/kg	420	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Pyrene	µg/kg	195	< 449	U	< 373	U	< 437	U	< 423	U	< 434	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)												
Acenaphthene	µg/kg	6.7	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Anthracene	µg/kg	57.2	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Benzo(a)anthracene	µg/kg	108	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Benzo(a)pyrene	µg/kg	150	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Benzo(b)fluoranthene	µg/kg		< 13.6	U	12.5		< 13.2	U	< 12.8	U	< 13.2	U
Benzo(k)fluoranthene	µg/kg	240	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Chrysene	µg/kg	166	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Dibenzo(a,h)anthracene	µg/kg	33	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Fluoranthene	µg/kg	423	25.8		13		< 13.2	U	< 12.8	U	< 13.2	U
Fluorene	µg/kg	77.4	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Indeno(1,2,3-cd)pyrene	µg/kg	17	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Naphthalene	µg/kg	176	< 13.6	U	< 11.3	U	< 13.2	U	< 12.8	U	< 13.2	U
Pyrene	µg/kg	195	27.6		15.9		< 13.2	U	< 12.8	U	< 13.2	U

Table 5
Downstream Impacted Areas Soil and Sediment Data Report
Background Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0823SE401		LAMT0823SE402		LAMT0824SE401		LAMT0824SE402		LAMT0824SE403	
		Sample Date	8/23/2011		8/23/2011		8/24/2011		8/24/2011		8/24/2011	
		Start Depth (in)	0		0		0		0		0	
		End Depth (in)	6		6		6		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 3	
Chemical	**Units**	**Freshwater Sediment[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Organic Carbon (USEPA 9060)												
Mean Total Organic Carbon	mg/kg		2670		9820		1760		2930		4790	
Total Organic Carbon	mg/kg		3010		12900		1630		2880		6860	
			2620		6660		1760		2480		4020	
			2630		11900		1800		3320		3860	
			2420		7890		1860		3050		4420	
Extractable Petroleum Hydrocarbons (MADEP EPH)												
Total Extractable Hydrocarbons	mg/kg	200[3]	< 13.5	U	< 11.2	U	< 13.3	U	< 12.7	U	< 13.2	U
Volatile Petroleum Hydrocarbons (MADEP VPH)												
Aliphatic (C05-C08), Adjusted	mg/kg		< 6.7	U	< 5.4	U	< 6.5	U	< 6.4	U	< 6.5	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60[3]	< 6.7	U	< 5.4	U	< 6.5	U	< 6.4	U	< 6.5	U
Aliphatic (C09-C12), Adjusted	mg/kg	60[3]	< 6.7	U	< 5.4	U	< 6.5	U	< 6.4	U	< 6.5	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100[3]	< 6.7	U	< 5.4	U	< 6.5	U	< 6.4	U	< 6.5	U
Benzene	mg/kg	100[3]	< 0.034	U	< 0.027	U	< 0.032	U	< 0.032	U	< 0.032	U
C9-C10 Aromatics	mg/kg	100[3]	< 1.3	U	< 1.1	U	< 1.3	U	< 1.3	U	< 1.3	U
Ethylbenzene	mg/kg	1.1	< 0.067	U	< 0.054	U	< 0.065	U	< 0.064	U	< 0.065	U
m&p-Xylene	mg/kg	0.0252	< 0.13	U	< 0.11	U	< 0.13	U	< 0.13	U	< 0.13	U
Methyl-tert-butylether	mg/kg		< 0.067	U	< 0.054	U	< 0.065	U	< 0.064	U	< 0.065	U
Naphthalene	mg/kg	0.176	< 0.81	U	< 0.65	U	< 0.78	U	< 0.76	U	< 0.77	U
o-Xylene	mg/kg		< 0.067	U	< 0.054	U	< 0.065	U	< 0.064	U	< 0.065	U
Toluene	mg/kg		< 0.067	U	< 0.054	U	< 0.065	U	< 0.064	U	< 0.065	U
Total Purgeable Hydrocarbons	mg/kg		< 13.4	U	< 10.8	U	< 12.9	U	< 12.7	U	< 12.9	U
Xylenes, total	mg/kg		< 0.2	U	< 0.16	U	< 0.19	U	< 0.19	U	< 0.19	U

Table 5
Downstream Impacted Areas Soil and Sediment Data Report
Background Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

Notes:

1. This table presents validated data.
2. USEPA Freshwater Sediment Screening Benchmarks
3. MDEQ Tier 1 surface soil RBSL's
4. Non-detects that exceed USEPA Freshwater Sediment Screening Benchmarks - shaded
5. **Detects that exceed USEPA Freshwater Sediment Screening Benchmarks - boldfaced**
6. mg/kg = milligrams per kilogram
7. ug/kg = micrograms per kilogram
8. U = The chemical was not detected above the reporting limit shown.
9. Qual = Laboratory Qualifier

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0824SE404		LAMT0824SE405		LAMT0824SE406		LAMT0825SE401		LAMT0825SE403		LAMT0825SE404		LAMT0825SE405		LAMT0827SE501	
		Sample Date	8/24/2011		8/24/2011		8/24/2011		8/25/2011		8/25/2011		8/25/2011		8/25/2011		8/27/2011	
		Start Depth (in)	0		0		6		0		0		0		0		0	
		End Depth (in)	6		6		12		6		6		6		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 3		Figure 3		Figure 3		Figure 3	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Percent Moisture	%		32.4		25.7		27		29.5		22.6		24.3		20.6		24	
Semivolatile Organic Compounds (USEPA 8270)																		
1,2,4-Trichlorobenzene	ug/kg	2100	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
1,2-Dichlorobenzene	ug/kg	16.50	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
1,2-Diphenylhydrazine	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
1,3-Dichlorobenzene	ug/kg	4430	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
1,4-Dichlorobenzene	ug/kg	599.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
1-Methylnaphthalene	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2,4,5-Trichlorophenol	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
2,4,6-Trichlorophenol	ug/kg	213.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2,4-Dichlorophenol	ug/kg	117.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2,4-Dimethylphenol	ug/kg	29.00	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2,4-Dinitrophenol	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
2,4-Dinitrotoluene	ug/kg	41.60	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2,6-Dinitrotoluene	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2-Chloronaphthalene	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2-Chlorophenol	ug/kg	31.20	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2-Methylnaphthalene	ug/kg	20.20	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2-Methylphenol (o-Cresol)	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
2-Nitroaniline	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
2-Nitrophenol	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
3&4-Methylphenol	ug/kg		< 974	U	< 879	U	< 898	U	< 933	U	< 852	U	< 872	U	< 828	U	< 868	U
3,3'-Dichlorobenzidine	ug/kg	127.0	< 988	U	< 893	U	< 912	U	< 947	U	< 865	U	< 885	U	< 841	U	< 881	U
3-Nitroaniline	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
4-Bromophenyl phenyl ether	ug/kg	1230	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
4-Chloro-3-methylphenol	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
4-Chloroaniline	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
4-Chlorophenyl phenyl ether	ug/kg	0.0			< 440	U												
4-Chlorophenyl phenyl ether	ug/kg	0.00	< 487	U			< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
4-Nitroaniline	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
4-Nitrophenol	ug/kg		< 2510	U	< 2270	U	< 2310	U	< 2400	U	< 2200	U	< 2250	U	< 2130	U	< 2240	U
Acenaphthene	ug/kg	6.700	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Acenaphthylene	ug/kg	5.900	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Anthracene	ug/kg	57.20	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Benzo(a)anthracene	ug/kg	108.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Benzo(a)pyrene	ug/kg	150.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Benzo(b)fluoranthene	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Benzo(g,h,i)perylene	ug/kg	170.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Benzo(k)fluoranthene	ug/kg	240.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Bis(2-chloroethoxy)methane	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Bis(2-chloroethyl)ether	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
bis(2-chloroisopropyl)ether	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Bis(2-ethylhexyl)phthalate	ug/kg	180.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Butylbenzylphthalate	ug/kg	10900	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Carbazole	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Chrysene	ug/kg	166.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Dibenzofuran	ug/kg	415.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Diethyl phthalate	ug/kg	603.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Dimethyl phthalate	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Di-n-butyl phthalate	ug/kg	6470	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Di-n-octyl phthalate	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Fluoranthene	ug/kg	423.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Fluorene	ug/kg	77.40	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Hexachloro-1,3-butadiene	ug/kg	0.0			< 440	U												
Hexachloro-1,3-butadiene	ug/kg	0.00	< 487	U			< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Hexachlorobenzene	ug/kg	20.00	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Hexachloroethane	ug/kg	1027	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0824SE404		LAMT0824SE405		LAMT0824SE406		LAMT0825SE401		LAMT0825SE403		LAMT0825SE404		LAMT0825SE405		LAMT0827SE501	
		Sample Date	8/24/2011		8/24/2011		8/24/2011		8/25/2011		8/25/2011		8/25/2011		8/25/2011		8/27/2011	
		Start Depth (in)	0		0		6		0		0		0		0		0	
		End Depth (in)	6		6		12		6		6		6		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 3		Figure 3		Figure 3		Figure 3	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Isophorone	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Naphthalene	ug/kg	176.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Nitrobenzene	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
n-Nitrosodimethylamine	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
n-Nitroso-di-n-propylamine	ug/kg		< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
n-nitrosodiphenylamine	ug/kg	2680	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Pentachlorophenol	ug/kg	504.0	< 988	U	< 893	U	< 912	U	< 947	U	< 865	U	< 885	U	< 841	U	< 881	U
Phenanthrene	ug/kg	204.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Phenol	ug/kg	420.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Pyrene	ug/kg	195.0	< 487	U	< 440	U	< 449	U	< 466	U	< 426	U	< 436	U	< 414	U	< 434	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																		
Acenaphthene	ug/kg	6.700	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Anthracene	ug/kg	57.20	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Benzo(a)anthracene	ug/kg	108.0	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Benzo(a)pyrene	ug/kg	150.0	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Benzo(b)fluoranthene	ug/kg		< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Benzo(k)fluoranthene	ug/kg	240.0	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Chrysene	ug/kg	166.0	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Fluoranthene	ug/kg	423.0	< 14.8	U	< 13.5	U	< 13.6	U	14.6		< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Fluorene	ug/kg	77.40	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Naphthalene	ug/kg	176.0	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	UJ-	< 12.9	UJ-	< 13.2	UJ-	< 12.6	UJ-	< 13.1	U
Pyrene	ug/kg	195.0	< 14.8	U	< 13.5	U	< 13.6	U	< 14.1	U	< 12.9	U	< 13.2	U	< 12.6	U	< 13.1	U
Organic Carbon (USEPA 9060)																		
Mean Total Organic Carbon	mg/kg		8900		2740		6190		3010	J-	11000	J-	4110	J-	2230	J-	5060	
Total Organic Carbon	mg/kg		8820		2350		6510		2340		16900		2680		1620		7130	
			9340		3420		7010		6200		6520		4540		2310		3430	
			8760		2950		5590		1490		6070		4040		2590		3410	
			8700		2250		5650		2020		14500		5180		2400		6270	
Extractable Petroleum Hydrocarbons (MADEP EPH)																		
Total Extractable Hydrocarbons	mg/kg	200[3]	18.5		< 13.3	U	< 13.6	U	16.6		< 12.6	U	18.3		< 12.5	U	< 12.8	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																		
Aliphatic (C05-C08), Adjusted	mg/kg		< 6.8	U	< 6.6	U	< 6.7	U	< 8.3	UJ-	< 6.5	U	< 6.6	U	< 6.4	U	< 6.4	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60[3]	< 6.8	U	< 6.6	UJ-	< 6.7	U	< 8.3	UJ-	< 6.5	U	< 6.6	U	< 6.4	U	< 6.4	U
Aliphatic (C09-C12), Adjusted	mg/kg	60[3]	< 6.8	U	< 6.6	U	< 6.7	U	< 8.3	UJ-	< 6.5	U	< 6.6	U	< 6.4	U	< 6.4	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100[3]	< 6.8	U	< 6.6	U	< 6.7	U	< 8.3	UJ-	< 6.5	U	< 6.6	U	< 6.4	U	< 6.4	U
Benzene	mg/kg	100[3]	< 0.034	U	< 0.033	U	< 0.033	U	< 0.041	UJ-	< 0.032	U	< 0.033	U	< 0.032	U	< 0.032	U
C9-C10 Aromatics	mg/kg	100[3]	< 1.4	U	< 1.3	U	< 1.3	U	< 1.7	UJ-	< 1.3	U	< 1.3	U	< 1.3	U	< 1.3	U
Ethylbenzene	mg/kg	1.100	< 0.068	U	< 0.066	U	< 0.067	U	< 0.083	UJ-	< 0.065	U	< 0.066	U	< 0.064	U	< 0.064	U
m&p-Xylene	mg/kg	0.02520	< 0.14	U	< 0.13	U	< 0.13	U	< 0.17	UJ-	< 0.13	U	< 0.13	U	< 0.13	U	< 0.13	U
Methyl-tert-butylether	mg/kg		< 0.068	U	< 0.066	U	< 0.067	U	< 0.083	UJ-	< 0.065	U	< 0.066	U	< 0.064	U	< 0.064	U
Naphthalene	mg/kg	0.1760	< 0.82	U	< 0.79	U	< 0.8	U	< 0.99	UJ-	< 0.78	U	< 0.79	U	< 0.76	U	< 0.76	U
o-Xylene	mg/kg		< 0.068	U	< 0.066	U	< 0.067	U	< 0.083	UJ-	0.09		< 0.066	U	< 0.064	U	< 0.064	U
Toluene	mg/kg		< 0.068	U	< 0.066	U	< 0.067	U	< 0.083	UJ-	< 0.065	U	< 0.066	U	< 0.064	U	< 0.064	U
Total Purgeable Hydrocarbons	mg/kg		< 13.6	U	< 13.1	UJ-	< 13.3	U	< 16.6	UJ-	< 12.9	U	< 13.2	U	< 12.7	U	< 12.7	U
Xylenes, total	mg/kg		< 0.2	U	< 0.2	U	< 0.2	U	< 0.25	UJ-	< 0.19	U	< 0.2	U	< 0.19	U	< 0.19	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0825SE406		LAMT0825SE407		LAMT0827SE503		LAMT0827SE504		LAMT0827SE506		LAMT0827SE507	
		Sample Date	8/25/2011		8/25/2011		8/27/2011		8/27/2011		8/27/2011		8/27/2011	
		Start Depth (in)	0		0		0		0		0		0	
		End Depth (in)	6		6		6		6		6		6	
		Sample Type	Normal		Field Duplicate		Normal		Field Duplicate		Normal		Normal	
		Figure Reference	Figure 4		Figure 4		Figure 4		Figure 4		Figure 4		Figure 4	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Percent Moisture	%		23.1		25		34.8		35.3		26.2		25	
Semivolatile Organic Compounds (USEPA 8270)														
1,2,4-Trichlorobenzene	ug/kg	2100	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
1,2-Dichlorobenzene	ug/kg	16.50	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
1,2-Diphenylhydrazine	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
1,3-Dichlorobenzene	ug/kg	4430	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
1,4-Dichlorobenzene	ug/kg	599.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
1-Methylnaphthalene	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2,4,5-Trichlorophenol	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
2,4,6-Trichlorophenol	ug/kg	213.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2,4-Dichlorophenol	ug/kg	117.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2,4-Dimethylphenol	ug/kg	29.00	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2,4-Dinitrophenol	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
2,4-Dinitrotoluene	ug/kg	41.60	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2,6-Dinitrotoluene	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2-Chloronaphthalene	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2-Chlorophenol	ug/kg	31.20	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2-Methylnaphthalene	ug/kg	20.20	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2-Methylphenol (o-Cresol)	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
2-Nitroaniline	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
2-Nitrophenol	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
3&4-Methylphenol	ug/kg		< 858	U	< 877	U	< 1010	U	< 1010	U	< 889	U	< 877	U
3,3'-Dichlorobenzidine	ug/kg	127.0	< 871	U	< 891	U	< 1020	U	< 1030	U	< 902	U	< 890	U
3-Nitroaniline	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
4-Bromophenyl phenyl ether	ug/kg	1230	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
4-Chloro-3-methylphenol	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
4-Chloroaniline	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
4-Chlorophenyl phenyl ether	ug/kg	0.0												
4-Chlorophenyl phenyl ether	ug/kg	0.00	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
4-Nitroaniline	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
4-Nitrophenol	ug/kg		< 2210	U	< 2260	U	< 2600	U	< 2600	U	< 2290	U	< 2260	U
Acenaphthene	ug/kg	6.700	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Acenaphthylene	ug/kg	5.900	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Anthracene	ug/kg	57.20	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Benzo(a)anthracene	ug/kg	108.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Benzo(a)pyrene	ug/kg	150.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Benzo(b)fluoranthene	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Benzo(g,h,i)perylene	ug/kg	170.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Benzo(k)fluoranthene	ug/kg	240.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Bis(2-chloroethoxy)methane	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Bis(2-chloroethyl)ether	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
bis(2-chloroisopropyl)ether	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Bis(2-ethylhexyl)phthalate	ug/kg	180.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Butylbenzylphthalate	ug/kg	10900	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Carbazole	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Chrysene	ug/kg	166.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Dibenzofuran	ug/kg	415.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Diethyl phthalate	ug/kg	603.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Dimethyl phthalate	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Di-n-butyl phthalate	ug/kg	6470	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Di-n-octyl phthalate	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Fluoranthene	ug/kg	423.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Fluorene	ug/kg	77.40	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Hexachloro-1,3-butadiene	ug/kg	0.0												
Hexachloro-1,3-butadiene	ug/kg	0.00	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Hexachlorobenzene	ug/kg	20.00	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Hexachloroethane	ug/kg	1027	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0825SE406		LAMT0825SE407		LAMT0827SE503		LAMT0827SE504		LAMT0827SE506		LAMT0827SE507	
		Sample Date	8/25/2011		8/25/2011		8/27/2011		8/27/2011		8/27/2011		8/27/2011	
		Start Depth (in)	0		0		0		0		0		0	
		End Depth (in)	6		6		6		6		6		6	
		Sample Type	Normal		Field Duplicate		Normal		Field Duplicate		Normal		Normal	
		Figure Reference	Figure 4		Figure 4		Figure 4		Figure 4		Figure 4		Figure 4	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Isophorone	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Naphthalene	ug/kg	176.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Nitrobenzene	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
n-Nitrosodimethylamine	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
n-Nitroso-di-n-propylamine	ug/kg		< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
n-nitrosodiphenylamine	ug/kg	2680	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Pentachlorophenol	ug/kg	504.0	< 871	U	< 891	U	< 1020	U	< 1030	U	< 902	U	< 890	U
Phenanthrene	ug/kg	204.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Phenol	ug/kg	420.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Pyrene	ug/kg	195.0	< 429	U	< 439	U	< 504	U	< 505	U	< 444	U	< 438	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)														
Acenaphthene	ug/kg	6.700	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Anthracene	ug/kg	57.20	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Benzo(a)anthracene	ug/kg	108.0	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Benzo(a)pyrene	ug/kg	150.0	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Benzo(b)fluoranthene	ug/kg		< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Benzo(k)fluoranthene	ug/kg	240.0	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Chrysene	ug/kg	166.0	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Fluoranthene	ug/kg	423.0	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Fluorene	ug/kg	77.40	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Naphthalene	ug/kg	176.0	< 13	UJ-	< 13.3	UJ-	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Pyrene	ug/kg	195.0	< 13	U	< 13.3	U	< 15.2	U	< 15.5	U	< 13.5	U	< 13.3	U
Organic Carbon (USEPA 9060)														
Mean Total Organic Carbon	mg/kg		636	J-	603	J-	9560		10300		7650		4640	
Total Organic Carbon	mg/kg		541 595 644 765		522 737 577 578		9060 8740 9240 11200		9610 10800 10400 10500		8390 7930 6940 7370		4190 3300 6830 4240	
Extractable Petroleum Hydrocarbons (MADEP EPH)														
Total Extractable Hydrocarbons	mg/kg	200[3]	< 12.9	U	< 13.1	U	< 15	U	16		< 13.3	U	< 13.1	U
Volatile Petroleum Hydrocarbons (MADEP VPH)														
Aliphatic (C05-C08), Adjusted	mg/kg		< 6.5	U	< 6.7	U	< 7.7	U	< 7.7	U	< 6.7	U	< 6.5	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60[3]	< 6.5	U	< 6.7	U	< 7.7	U	< 7.7	U	< 6.7	U	< 6.5	U
Aliphatic (C09-C12), Adjusted	mg/kg	60[3]	< 6.5	U	< 6.7	U	< 7.7	U	< 7.7	U	< 6.7	U	< 6.5	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100[3]	< 6.5	U	< 6.7	U	< 7.7	U	< 7.7	U	< 6.7	U	< 6.5	U
Benzene	mg/kg	100[3]	< 0.033	U	< 0.034	U	< 0.038	U	0.099		0.052		< 0.032	U
C9-C10 Aromatics	mg/kg	100[3]	< 1.3	U	< 1.3	U	< 1.5	U	< 1.5	U	< 1.3	U	< 1.3	U
Ethylbenzene	mg/kg	1.100	< 0.065	U	< 0.067	U	< 0.077	U	0.11		< 0.067	U	< 0.065	U
m&p-Xylene	mg/kg	0.02520	< 0.13	U	< 0.13	U	< 0.15	U	**0.2**		< 0.13	U	< 0.13	U
Methyl-tert-butylether	mg/kg		< 0.065	U	< 0.067	U	< 0.077	U	< 0.077	U	< 0.067	U	< 0.065	U
Naphthalene	mg/kg	0.1760	< 0.78	U	< 0.81	U	< 0.92	U	< 0.92	U	< 0.8	U	< 0.78	U
o-Xylene	mg/kg		< 0.065	U	< 0.067	U	< 0.077	U	0.09		< 0.067	U	< 0.065	U
Toluene	mg/kg		< 0.065	U	< 0.067	U	< 0.077	U	0.1		< 0.067	U	< 0.065	U
Total Purgeable Hydrocarbons	mg/kg		< 13	U	< 13.5	U	< 15.3	U	< 15.4	U	< 13.3	U	< 13	U
Xylenes, total	mg/kg		< 0.2	U	< 0.2	U	< 0.23	U	0.29		< 0.2	U	< 0.19	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0827SE509		LAMT0827SE508		BIMT0827SE501		BIMT0827SE502		BIMT0828SE501		BIMT0827SE503		BIMT0826SE401		BIMT0826SE402		BIMT0826SE403	
		Sample Date	8/27/2011		8/27/2011		8/27/2011		8/27/2011		8/28/2011		8/27/2011		8/26/2011		8/26/2011		8/26/2011	
		Start Depth (in)	0		6		0		0		0		0		0		6		0	
		End Depth (in)	6		12		6		6		6		6		6		12		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 4		Figure 4		Figure 5		Figure 5		Figure 5		Figure 6		Figures 7&8		Figures 7&8		Figure 9	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Percent Moisture	%		23.1		21.4		24.7		25.2		19.5		39.3		25.3		29		24.5	
Semivolatile Organic Compounds (USEPA 8270)																				
1,2,4-Trichlorobenzene	ug/kg	2100	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
1,2-Dichlorobenzene	ug/kg	16.50	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
1,2-Diphenylhydrazine	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
1,3-Dichlorobenzene	ug/kg	4430	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
1,4-Dichlorobenzene	ug/kg	599.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
1-Methylnaphthalene	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2,4,5-Trichlorophenol	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
2,4,6-Trichlorophenol	ug/kg	213.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2,4-Dichlorophenol	ug/kg	117.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2,4-Dimethylphenol	ug/kg	29.00	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2,4-Dinitrophenol	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
2,4-Dinitrotoluene	ug/kg	41.60	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2,6-Dinitrotoluene	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2-Chloronaphthalene	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2-Chlorophenol	ug/kg	31.20	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2-Methylnaphthalene	ug/kg	20.20	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2-Methylphenol (o-Cresol)	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
2-Nitroaniline	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
2-Nitrophenol	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
3&4-Methylphenol	ug/kg		< 855	U	< 837	U	< 876	U	< 879	U	< 820	U	2190		< 881	U	< 930	U	< 874	U
3,3'-Dichlorobenzidine	ug/kg	127.0	< 868	U	< 849	U	< 890	U	< 893	U	< 833	U	< 1100	U	< 894	U	< 944	U	< 888	U
3-Nitroaniline	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
4-Bromophenyl phenyl ether	ug/kg	1230	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
4-Chloro-3-methylphenol	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
4-Chloroaniline	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
4-Chlorophenyl phenyl ether	ug/kg	0.0							< 440	U	< 410	U			< 440	U				
4-Chlorophenyl phenyl ether	ug/kg	0.00	< 428	U	< 418	U	< 438	U					< 542	U			< 465	U	< 437	U
4-Nitroaniline	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
4-Nitrophenol	ug/kg		< 2200	U	< 2160	U	< 2260	U	< 2270	U	< 2110	U	< 2790	U	< 2270	U	< 2390	U	< 2250	U
Acenaphthene	ug/kg	6.700	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Acenaphthylene	ug/kg	5.900	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Anthracene	ug/kg	57.20	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Benzo(a)anthracene	ug/kg	108.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Benzo(a)pyrene	ug/kg	150.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Benzo(b)fluoranthene	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Benzo(g,h,i)perylene	ug/kg	170.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Benzo(k)fluoranthene	ug/kg	240.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Bis(2-chloroethoxy)methane	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Bis(2-chloroethyl)ether	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
bis(2-chloroisopropyl)ether	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Bis(2-ethylhexyl)phthalate	ug/kg	180.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Butylbenzylphthalate	ug/kg	10900	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Carbazole	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Chrysene	ug/kg	166.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Dibenzofuran	ug/kg	415.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Diethyl phthalate	ug/kg	603.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Dimethyl phthalate	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Di-n-butyl phthalate	ug/kg	6470	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Di-n-octyl phthalate	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Fluoranthene	ug/kg	423.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Fluorene	ug/kg	77.40	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Hexachloro-1,3-butadiene	ug/kg	0.0							< 440	U	< 410	U			< 440	U				
Hexachloro-1,3-butadiene	ug/kg	0.00	< 428	U	< 418	U	< 438	U					< 542	U			< 465	U	< 437	U
Hexachlorobenzene	ug/kg	20.00	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Hexachloroethane	ug/kg	1027	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0827SE509		LAMT0827SE508		BIMT0827SE501		BIMT0827SE502		BIMT0828SE501		BIMT0827SE503		BIMT0826SE401		BIMT0826SE402		BIMT0826SE403	
		Sample Date	8/27/2011		8/27/2011		8/27/2011		8/27/2011		8/28/2011		8/27/2011		8/26/2011		8/26/2011		8/26/2011	
		Start Depth (in)	0		6		0		0		0		0		0		6		0	
		End Depth (in)	6		12		6		6		6		6		6		12		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 4		Figure 4		Figure 5		Figure 5		Figure 5		Figure 6		Figures 7&8		Figures 7&8		Figure 9	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Isophorone	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Naphthalene	ug/kg	176.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Nitrobenzene	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
n-Nitrosodimethylamine	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
n-Nitroso-di-n-propylamine	ug/kg		< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
n-nitrosodiphenylamine	ug/kg	2680	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Pentachlorophenol	ug/kg	504.0	< 868	U	< 849	U	< 890	U	< 893	U	< 833	U	< 1100	U	< 894	U	< 944	U	< 888	U
Phenanthrene	ug/kg	204.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Phenol	ug/kg	420.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Pyrene	ug/kg	195.0	< 428	U	< 418	U	< 438	U	< 440	U	< 410	U	< 542	U	< 440	U	< 465	U	< 437	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																				
Acenaphthene	ug/kg	6.700	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Anthracene	ug/kg	57.20	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Benzo(a)anthracene	ug/kg	108.0	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Benzo(a)pyrene	ug/kg	150.0	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Benzo(b)fluoranthene	ug/kg		< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Benzo(k)fluoranthene	ug/kg	240.0	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Chrysene	ug/kg	166.0	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Fluoranthene	ug/kg	423.0	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Fluorene	ug/kg	77.40	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Naphthalene	ug/kg	176.0	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Pyrene	ug/kg	195.0	< 12.9	U	< 12.7	U	< 13.2	U	< 13.3	U	< 12.4	U	< 16.4	U	< 13.3	U	< 14	U	< 13.2	U
Organic Carbon (USEPA 9060)																				
Mean Total Organic Carbon	mg/kg		3770		2740		1630		2960		2080		8870		10100		16900		2180	
Total Organic Carbon	mg/kg		3540		2980		1570		2930		1900		8480		9540		17000		2210	
			4390		2800		1970		3320		1770		10200		11700		20100		2070	
			3710		2400		1380		2850		1830		9320		10100		14700		2170	
			3460		2780		1580		2730		2820		7450		8930		15900		2260	
Extractable Petroleum Hydrocarbons (MADEP EPH)																				
Total Extractable Hydrocarbons	mg/kg	200[3]	< 12.7	U	< 12.6	U	< 12.9	U	< 13.3	U	< 12.1	U	80.1		< 13.2	U	< 13.6	U	< 13.1	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																				
Aliphatic (C05-C08), Adjusted	mg/kg		< 6.5	U	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 8	U	< 6.8	U	< 7.1	U	< 6.7	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60[3]	< 6.5	U	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 8	U	< 6.8	U	< 7.1	U	< 6.7	U
Aliphatic (C09-C12), Adjusted	mg/kg	60[3]	< 6.5	U	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 8	U	< 6.8	U	< 7.1	U	< 6.7	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100[3]	< 6.5	U	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 8	U	< 6.8	U	< 7.1	U	< 6.7	U
Benzene	mg/kg	100[3]	< 0.032	U	< 0.031	U	< 0.032	U	< 0.033	U	< 0.03	U	< 0.04	U	< 0.034	U	< 0.035	U	< 0.033	U
C9-C10 Aromatics	mg/kg	100[3]	< 1.3	U	< 1.3	U	< 1.3	U	< 1.3	U	< 1.2	U	< 1.6	U	< 1.4	U	< 1.4	U	< 1.3	U
Ethylbenzene	mg/kg	1.100	< 0.065	U	< 0.063	U	< 0.064	U	< 0.065	U	< 0.061	U	< 0.08	U	< 0.068	U	< 0.071	U	< 0.067	U
m&p-Xylene	mg/kg	0.02520	< 0.13	U	< 0.13	U	< 0.13	U	< 0.13	U	< 0.12	U	< 0.16	U	< 0.14	U	< 0.14	U	< 0.13	U
Methyl-tert-butylether	mg/kg		< 0.065	U	< 0.063	U	< 0.064	U	< 0.065	U	< 0.061	U	< 0.08	U	< 0.068	U	< 0.071	U	< 0.067	U
Naphthalene	mg/kg	0.1760	< 0.77	U	< 0.75	U	< 0.77	U	< 0.78	U	< 0.73	U	< 0.95	U	< 0.82	U	< 0.85	U	< 0.8	U
o-Xylene	mg/kg		< 0.065	U	< 0.063	U	< 0.064	U	< 0.065	U	< 0.061	U	< 0.08	U	< 0.068	U	< 0.071	U	< 0.067	U
Toluene	mg/kg		< 0.065	U	< 0.063	U	< 0.064	U	< 0.065	U	< 0.061	U	0.65		0.14		< 0.071	U	< 0.067	U
Total Purgeable Hydrocarbons	mg/kg		< 12.9	U	< 12.6	U	< 12.8	U	< 13.1	U	< 12.2	U	< 15.9	U	< 13.6	U	< 14.2	U	< 13.3	U
Xylenes, total	mg/kg		< 0.19	U	< 0.19	U	< 0.19	U	< 0.2	U	< 0.18	U	< 0.24	U	< 0.2	U	< 0.21	U	< 0.2	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	BIMT0828SE406		BIMT0828SE407		PPMT0828SE404		PPMT0828SE405		HYMT0828SE402		HYMT0828SE403		ROMT0828SE401		KIMT0827SE403		TEMT0827SE402		GLMT0827SE401	
		Sample Date	8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/27/2011		8/27/2011		8/27/2011	
		Start Depth (in)	0		0		0		6		0		6		0		0		0		0	
		End Depth (in)	6		6		6		12		6		12		6		6		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 10		Figure 10		Figure 10		Figure 10		Figure 12		Figure 12		Figure 13		Figure 14		Figure 15		Figure 16	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Percent Moisture	%		30.4		23.5		26.5		26.5		20.5		20.8		29.1		50.7		27.6		17.7	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg	2100	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
1,2-Dichlorobenzene	ug/kg	16.50	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
1,2-Diphenylhydrazine	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
1,3-Dichlorobenzene	ug/kg	4430	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
1,4-Dichlorobenzene	ug/kg	599.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
1-Methylnaphthalene	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2,4,5-Trichlorophenol	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
2,4,6-Trichlorophenol	ug/kg	213.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2,4-Dichlorophenol	ug/kg	117.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2,4-Dimethylphenol	ug/kg	29.00	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2,4-Dinitrophenol	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
2,4-Dinitrotoluene	ug/kg	41.60	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2,6-Dinitrotoluene	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2-Chloronaphthalene	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2-Chlorophenol	ug/kg	31.20	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2-Methylnaphthalene	ug/kg	20.20	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2-Methylphenol (o-Cresol)	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
2-Nitroaniline	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
2-Nitrophenol	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
3&4-Methylphenol	ug/kg		< 942	U	< 857	U	< 888	U	< 893	U	< 822	U	< 825	U	< 930	U	< 1340	U	< 911	U	< 802	U
3,3'-Dichlorobenzidine	ug/kg	127.0	< 956	U	< 870	U	< 902	U	< 906	U	< 834	U	< 837	U	< 944	U	< 1360	U	< 925	U	< 814	U
3-Nitroaniline	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
4-Bromophenyl phenyl ether	ug/kg	1230	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
4-Chloro-3-methylphenol	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
4-Chloroaniline	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
4-Chlorophenyl phenyl ether	ug/kg	0.0																				
4-Chlorophenyl phenyl ether	ug/kg	0.00	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
4-Nitroaniline	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
4-Nitrophenol	ug/kg		< 2430	U	< 2210	U	< 2290	U	< 2300	U	< 2120	U	< 2120	U	< 2400	U	< 3450	U	< 2350	U	< 2070	U
Acenaphthene	ug/kg	6.700	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Acenaphthylene	ug/kg	5.900	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Anthracene	ug/kg	57.20	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Benzo(a)anthracene	ug/kg	108.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Benzo(a)pyrene	ug/kg	150.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Benzo(b)fluoranthene	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Benzo(g,h,i)perylene	ug/kg	170.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Benzo(k)fluoranthene	ug/kg	240.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Bis(2-chloroethoxy)methane	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Bis(2-chloroethyl)ether	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
bis(2-chloroisopropyl)ether	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Bis(2-ethylhexyl)phthalate	ug/kg	180.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Butylbenzylphthalate	ug/kg	10900	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Carbazole	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Chrysene	ug/kg	166.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Dibenzofuran	ug/kg	415.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Diethyl phthalate	ug/kg	603.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Dimethyl phthalate	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Di-n-butyl phthalate	ug/kg	6470	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Di-n-octyl phthalate	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Fluoranthene	ug/kg	423.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Fluorene	ug/kg	77.40	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Hexachloro-1,3-butadiene	ug/kg	0.0																				
Hexachloro-1,3-butadiene	ug/kg	0.00	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Hexachlorobenzene	ug/kg	20.00	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Hexachloroethane	ug/kg	1027	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	BIMT0828SE406		BIMT0828SE407		PPMT0828SE404		PPMT0828SE405		HYMT0828SE402		HYMT0828SE403		ROMT0828SE401		KIMT0827SE403		TEMT0827SE402		GLMT0827SE401	
		Sample Date	8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/28/2011		8/27/2011		8/27/2011		8/27/2011	
		Start Depth (in)	0		0		0		6		0		6		0		0		0		0	
		End Depth (in)	6		6		6		12		6		12		6		6		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 10		Figure 10		Figure 10		Figure 10		Figure 12		Figure 12		Figure 13		Figure 14		Figure 15		Figure 16	
Chemical	**Units**	**Freshwater Sediment[2]**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**	**Results**	**Qual**
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Isophorone	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Naphthalene	ug/kg	176.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Nitrobenzene	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
n-Nitrosodimethylamine	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
n-Nitroso-di-n-propylamine	ug/kg		< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
n-nitrosodiphenylamine	ug/kg	2680	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Pentachlorophenol	ug/kg	504.0	< 956	U	< 870	U	< 902	U	< 906	U	< 834	U	< 837	U	< 944	U	< 1360	U	< 925	U	< 814	U
Phenanthrene	ug/kg	204.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Phenol	ug/kg	420.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Pyrene	ug/kg	195.0	< 471	U	< 429	U	< 444	U	< 446	U	< 411	U	< 412	U	< 465	U	< 669	U	< 456	U	< 401	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	6.700	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	< 14	U	< 20.3	U	< 13.8	U	< 12.1	U
Anthracene	ug/kg	57.20	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	< 14	U	< 20.3	U	< 13.8	U	< 12.1	U
Benzo(a)anthracene	ug/kg	108.0	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	48.1		< 20.3	U	< 13.8	U	< 12.1	U
Benzo(a)pyrene	ug/kg	150.0	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	38.3		< 20.3	U	< 13.8	U	< 12.1	U
Benzo(b)fluoranthene	ug/kg		< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	59.2		< 20.3	U	< 13.8	U	< 12.1	U
Benzo(k)fluoranthene	ug/kg	240.0	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	16.6		< 20.3	U	< 13.8	U	< 12.1	U
Chrysene	ug/kg	166.0	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	39.7		< 20.3	U	< 13.8	U	< 12.1	U
Dibenzo(a,h)anthracene	ug/kg	33.00	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	< 14	U	< 20.3	U	< 13.8	U	< 12.1	U
Fluoranthene	ug/kg	423.0	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	93.5		< 20.3	U	< 13.8	U	< 12.1	U
Fluorene	ug/kg	77.40	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	< 14	U	< 20.3	U	< 13.8	U	< 12.1	U
Indeno(1,2,3-cd)pyrene	ug/kg	17.00	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	**20.6**		< 20.3	U	< 13.8	U	< 12.1	U
Naphthalene	ug/kg	176.0	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	< 14	U	< 20.3	U	< 13.8	U	< 12.1	U
Pyrene	ug/kg	195.0	< 14.3	U	< 13.1	U	< 13.6	U	< 13.5	U	< 12.5	U	< 12.6	U	91.6		< 20.3	U	< 13.8	U	< 12.1	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		10200		3740		4450		4670		2310		751		9050		10500		6050		1850	
Total Organic Carbon	mg/kg		11100		3820		3660		6570		2620		660		6100		9860		7320		1720	
			9550		3370		3820		3680		2650		735		11600		10500		5570		2410	
			10500		4380		3620		4880		2150		730		9350		10200		5180		1450	
			9680		3380		6680		3540		1830		881		9190		11400		6150		1810	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
Total Extractable Hydrocarbons	mg/kg	200[3]	59.2		< 12.7	U	< 13.3	U	< 13.3	U	< 12.5	U	< 12.3	U	< 14	U	< 20.1	U	< 13.7	U	< 11.9	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg		< 7.2	U	< 6.5	U	< 6.8	U	< 6.8	U	< 6.2	U	< 6.3	U	< 7	U	< 10	UJ-	< 6.9	U	< 5.9	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60[3]	< 7.2	U	< 6.5	U	< 6.8	U	< 6.8	U	< 6.2	U	< 6.3	U	< 7	U	< 10	UJ-	< 6.9	U	< 5.9	U
Aliphatic (C09-C12), Adjusted	mg/kg	60[3]	< 7.2	U	< 6.5	U	< 6.8	U	< 6.8	U	< 6.2	U	< 6.3	U	< 7	U	< 10	UJ-	< 6.9	U	< 5.9	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100[3]	< 7.2	U	< 6.5	U	< 6.8	U	< 6.8	U	< 6.2	U	< 6.3	U	< 7	U	< 10	UJ-	< 6.9	U	< 5.9	U
Benzene	mg/kg	100[3]	< 0.036	U	< 0.032	U	< 0.034	U	< 0.034	U	< 0.031	U	< 0.031	U	< 0.035	U	< 0.05	UJ-	< 0.034	U	< 0.03	U
C9-C10 Aromatics	mg/kg	100[3]	< 1.4	U	< 1.3	U	< 1.4	U	< 1.4	U	< 1.2	U	< 1.3	U	< 1.4	U	< 2	UJ-	< 1.4	U	< 1.2	U
Ethylbenzene	mg/kg	1.100	< 0.072	U	< 0.065	U	< 0.068	U	< 0.068	U	< 0.062	U	< 0.063	U	< 0.07	U	< 0.1	UJ-	< 0.069	U	< 0.059	U
m&p-Xylene	mg/kg	0.02520	< 0.14	U	< 0.13	U	< 0.14	U	< 0.14	U	< 0.12	U	< 0.13	U	< 0.14	U	< 0.2	UJ-	< 0.14	U	< 0.12	U
Methyl-tert-butylether	mg/kg		< 0.072	U	< 0.065	U	< 0.068	U	< 0.068	U	< 0.062	U	< 0.063	U	< 0.07	U	< 0.1	UJ-	< 0.069	U	< 0.059	U
Naphthalene	mg/kg	0.1760	< 0.86	U	< 0.78	U	< 0.81	U	< 0.82	U	< 0.74	U	< 0.75	U	< 0.84	U	< 1.2	UJ-	< 0.83	U	< 0.71	U
o-Xylene	mg/kg		< 0.072	U	< 0.065	U	< 0.068	U	< 0.068	U	< 0.062	U	< 0.063	U	< 0.07	U	< 0.1	UJ-	< 0.069	U	< 0.059	U
Toluene	mg/kg		< 0.072	U	< 0.065	U	< 0.068	U	< 0.068	U	< 0.062	U	< 0.063	U	< 0.07	U	< 0.1	UJ-	< 0.069	U	< 0.059	U
Total Purgeable Hydrocarbons	mg/kg		< 14.3	U	< 13	U	< 13.6	U	< 13.6	U	< 12.4	U	< 12.5	U	< 14	U	< 20	UJ-	< 13.8	U	< 11.9	U
Xylenes, total	mg/kg		< 0.21	U	< 0.19	U	< 0.2	U	< 0.2	U	< 0.19	U	< 0.19	U	< 0.21	U	< 0.3	UJ-	< 0.21	U	< 0.18	U

Table 6
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

Notes:

1. This table presents validated data.
2. USEPA Freshwater Sediment Screening Benchmarks
3. MDEQ Tier 1 surface soil RBSL's
4. Non-detects that exceed USEPA Freshwater Sediment Screening Benchmarks - shaded
5. **Detects that exceed USEPA Freshwater Sediment Screening Benchmarks - boldfaced**
6. mg/kg = milligrams per kilogram
7. ug/kg = micrograms per kilogram
8. + = Result may be biased high
9. - = Result may be biased low
10. J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
11. U = The chemical was not detected above the reporting limit shown.
12. UJ = The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
13. Qual = Laboratory Qualifier

Table 7
Downstream Areas Soil and Sediment Data Report
Soil Sample Locations
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Longitude	Latitude	Elevation	Notes
	Decimal Degrees	Decimal Degrees	Feet	
LAMT0815SO502	-108.75404	46.65493	982	(NP)
LAMT0815SO504				
LAMT0815SO505				
LAMT0815SO503				
LAMT0815SO501				
LAMT0815SO508	-108.75226	45.65496	982	(NP)
LAMT0815SO510				
LAMT0815SO511				
LAMT0815SO509				
LAMT0815SO507				
LAMT0815SO513	-108.75216	45.65664	983	(NP)
LAMT0815SO515				
LAMT0815SO516				
LAMT0815SO514				
LAMT0815SO512				
LAMT0812SO402	-108.74767	45.65431	981	
LAMT0812SO406				
LAMT0812SO407				
LAMT0812SO405				
LAMT0812SO401				
LAMT0814SO403	-108.74472	45.65337	981	
LAMT0814SO405				
LAMT0814SO406				
LAMT0814SO404				
LAMT0814SO402				
LAMT0814SO407				
LAMT0814SO409	-108.74351	45.65300	979	
LAMT0816SO404	-108.73324	45.65026	976	
LAMT0816SO405				
LAMT0816SO403				
LAMT0816SO407	-108.72478	45.64994	976	
LAMT0816SO409				
LAMT0816SO410				
LAMT0816SO408				
LAMT0816SO406				
LAMT0816SO412	-108.71937	45.65060	977	
LAMT0816SO414				
LAMT0816SO416				
LAMT0816SO413				
LAMT0816SO411				
LAMT0812SO414	-108.74173	45.65744	979	
LAMT0812SO413				
LAMT0812SO409	-108.72879	45.65842	978	
LAMT0812SO411				
LAMT0812SO412				
LAMT0812SO410				
LAMT0812SO408				

Table 7
Downstream Areas Soil and Sediment Data Report
Soil Sample Locations
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Longitude	Latitude	Elevation	Notes
	Decimal Degrees	Decimal Degrees	Feet	
BIMT0825SO516	-108.71651	45.64965	977	
BIMT0825SO518				
BIMT0825SO519				
BIMT0825SO517				
BIMT0825SO515a				
BIMT0825SO515				
BIMT0825SO502a	-108.71547	45.64999	975	
BIMT0825SO502				
BIMT0825SO503a				
BIMT0825SO503				
LAMT0823SO607	-108.71331	45.65145	977	
LAMT0823SO609				
LAMT0823SO610				
LAMT0823SO608				
LAMT0823SO606				
BIMT0825SO506	-108.71547	45.65073	976	
BIMT0825SO508				
BIMT0825SO509				
BIMT0825SO507				
BIMT0825SO505a				
BIMT0825SO505				
BIMT0825SO511	-108.71565	45.65071	976	
BIMT0825SO513				
BIMT0825SO514				
BIMT0825SO512				
BIMT0825SO510A				
BIMT0825SO510				
BIMT0826SO502	-108.71571	45.65077	975	
BIMT0826SO504				
BIMT0826SO505				
BIMT0826SO503				
BIMT0826SO502A				
BIMT0826SO504A				
BIMT0826SO505A				
BIMT0826SO503A				
BIMT0826SO501A				
BIMT0826SO501				
LAMT0823SO602	-108.70979	45.65177	975	
LAMT0823SO604				
LAMT0823SO605				
LAMT0823SO603				
LAMT0823SO601				
LAMT0824SO612	-108.70744	45.65419	974	
LAMT0824SO614				
LAMT0824SO615				
LAMT0824SO613				
LAMT0824SO611				
LAMT0901SO501A	-108.70598	45.65405	975	
LAMT0901SO501				

Table 7
Downstream Areas Soil and Sediment Data Report
Soil Sample Locations
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Sample ID	Longitude	Latitude	Elevation	Notes
	Decimal Degrees	Decimal Degrees	Feet	
LAMT0824SO607	-108.71436	45.65319	976	
LAMT0824SO609				
LAMT0824SO610				
LAMT0824SO608				
LAMT0824SO606				
LAMT0824SO602	-108.71019	45.65600	974	
LAMT0824SO604				
LAMT0824SO605				
LAMT0824SO603				
LAMT0824SO601				
LAMT0816SO402	-108.70428	45.65964	973	
LAMT0813SO410	-108.70330	45.66205	973	
LAMT0813SO412				
LAMT0813SO411				
LAMT0813SO409				
LAMT0813SO402	-108.70135	45.66486	974	
LAMT0813SO404				
LAMT0813SO405				
LAMT0813SO403				
LAMT0813SO406				
LAMT0813SO401				
LAMT0817SO413	-108.67774	45.67389	968	
LAMT0817SO415				
LAMT0817SO414				
LAMT0817SO412				
LAMT0817SO418	-108.67459	45.67453	968	
LAMT0817SO420				
LAMT0817SO421				
LAMT0817SO419				
LAMT0817SO417				
LAMT0824SO617	-108.67171	45.67691	967	
LAMT0824SO616				
LAMT0824SO619	-108.66831	45.67975	968	
LAMT0824SO618				
LAMT0814SO411	-108.65650	45.68867	964	
LAMT0814SO413				
LAMT0814SO412				
LAMT0814SO410				
LAMT0825SO602A	-108.65109	45.68706	964	
LAMT0825SO604A				
LAMT0825SO605A				
LAMT0825SO603A				
LAMT0825SO601				
LAMT0825SO601A				

Table 7
Downstream Areas Soil and Sediment Data Report
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Sample ID	Longitude	Latitude	Elevation	Notes
	Decimal Degrees	Decimal Degrees	Feet	
BIMT0816SO502	-108.64378	45.68624	964	
BIMT0816SO504				
BIMT0816SO505				
BIMT0816SO503				
BIMT0816SO501				
BIMT0816SO524	-108.64166	45.68812	963	
BIMT0816SO526				
BIMT0816SO527				
BIMT0816SO525				
BIMT0816SO523				
LAMT0825SO607A	-108.63548	45.69426	962	
LAMT0825SO606				
LAMT0825SO609	-108.63490	45.69457	963	
LAMT0825SO609A				
LAMT0825SO611				
LAMT0825SO611A				
LAMT0825SO612				
LAMT0825SO612A				
LAMT0825SO610				
LAMT0825SO610A				
LAMT0825SO608A				
LAMT0825SO608				
LAMT0817SO403	-108.63667	45.69344	961	
LAMT0817SO405				
LAMT0817SO406				
LAMT0817SO404				
LAMT0817SO402				
LAMT0817SO408	-108.62711	45.69385	961	
LAMT0817SO410				
LAMT0817SO411				
LAMT0817SO409				
LAMT0817SO407				
LAMT0815SO403	-108.61715	45.70173	958	
LAMT0815SO401				
LAMT0815SO407				
LAMT0815SO405	-108.61054	45.70377	957	
LAMT0815SO408				
LAMT0815SO409				
LAMT0815SO406				
LAMT0815SO404				
BIMT0823SO508	-108.59629	45.70729	956	
BIMT0823SO510				
BIMT0823SO511				
BIMT0823SO509				
BIMT0823SO507				

Table 7
Downstream Areas Soil and Sediment Data Report
Soil Sample Locations
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Longitude	Latitude	Elevation	Notes
	Decimal Degrees	Decimal Degrees	Feet	
BIMT0815SO411	-108.59683	45.71736	954	
BIMT0815SO413				
BIMT0815SO414				
BIMT0815SO412				
BIMT0815SO410				
LAMT0826SO622A	-108.58953	45.72080	954	
LAMT0826SO624A				
LAMT0826SO625A				
LAMT0826SO623A				
LAMT0826SO621A				
LAMT0826SO621				
BIMT0816SO508	-108.57742	45.72468	951	
BIMT0816SO510				
BIMT0816SO511				
BIMT0816SO509				
BIMT0816SO507				
BIMT0823SO504	-108.56766	45.72545	951	
BIMT0823SO506				
BIMT0823SO505				
BIMT0823SO503				
BIMT0823SO501	-108.55608	45.73116	947	
BIMT0816SO513	-108.53850	45.73744	944	
BIMT0816SO515				
BIMT0816SO516				
BIMT0816SO514				
BIMT0816SO512				
BIMT0816SO518	-108.54599	45.73838	946	
BIMT0816SO520				
BIMT0816SO521				
BIMT0816SO519				
BIMT0816SO517				
BIMT0817SO518	-108.52566	45.73870	943	
BIMT0817SO517				
BIMT0817SO513	-108.50925	45.74854	942	
BIMT0817SO515				
BIMT0817SO516				
BIMT0817SO514				
BIMT0817SO512				
BIMT0817SO502	-108.48662	45.75092	937	
BIMT0817SO504				
BIMT0817SO505				
BIMT0817SO503				
BIMT0817SO501				
BIMT0824SO507	-108.48066	45.75805	936	

Table 7
Downstream Areas Soil and Sediment Data Report
Soil Sample Locations
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Longitude	Latitude	Elevation	Notes
	Decimal Degrees	Decimal Degrees	Feet	
BIMT0824SO503	-108.47669	45.76751	935	
BIMT0824SO505				
BIMT0824SO506				
BIMT0824SO504				
BIMT0824SO502				
BIMT0817SO508	-108.47812	45.78654	930	
BIMT0817SO510				
BIMT0817SO511				
BIMT0817SO509				
BIMT0817SO507				
BIMT0828SO502	-108.59472	45.70904	965	
BIMT0828SO504				
BIMT0828SO505				
BIMT0828SO503				
BIMT0828SO501				
BIMT0831SO502A	-108.46171	45.80773	927	
BIMT0831SO504A				
BIMT0831SO503A				
BIMT0831SO501A				
BIMT0831SO501				
PPMT0831SO501	-108.07438	45.99755	870	
PPMT0831SO501A				
PPMT0831SO502A				
PPMT0831SO504A				
PPMT0831SO505A				
PPMT0831SO503A				
HYMT0812SO502	-107.34184	46.25533	801	(NP)
HYMT0812SO501	-107.24012	46.31375	784	(NP)
FOMT0814SO501	-106.67791	46.27473	752	(NP)
ROMT0814SO501	-106.48599	46.28054	741	(NP)
ROMT0814SO502				
MIMT0813SO501	-105.85633	46.42150	701	(NP)
KIMT0813SO501	-105.71224	46.53321	683	(NP)
CAMT0813SO501	-105.43367	46.73949	655	(NP)
FAMT0813SO501	-105.11369	46.85607	637	(NP)
GLMT0812SO505	-104.72421	47.09982	610	(NP)
GLMT0812SO507				
GLMT0812SO506				
GLMT0812SO504				
GLMT0812SO503				
GLMT0812SO501	-104.52524	47.28120	591	(NP)
LAMT0828SOBKG501	-108.76151	45.65411	985	
LAMT0828SOBKG502				

Table 7
Downstream Areas Soil and Sediment Data Report
Soil Sample Locations
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Longitude	Latitude	Elevation	Notes
	Decimal Degrees	Decimal Degrees	Feet	
LAMT0826SOBKG617A	-108.76076	45.65178	983	
LAMT0826SOBKG619A				
LAMT0826SOBKG620A				
LAMT0826SOBKG618A				
LAMT0826SOBKG616				
LAMT0826SOBKG612A	-108.76377	45.65078	985	
LAMT0826SOBKG614A				
LAMT0826SOBKG615A				
LAMT0826SOBKG613A				
LAMT0826SOBKG611A				
LAMT0826SOBKG611				
LAMT0826SOBKG607A	-108.76678	45.64982	984	
LAMT0826SOBKG609A				
LAMT0826SOBKG610A				
LAMT0826SOBKG608A				
LAMT0826SOBKG606A				
LAMT0826SOBKG606				
LAMT0826SOBKG602	-108.77056	45.64814	986	
LAMT0826SOBKG604				
LAMT0826SOBKG605				
LAMT0826SOBKG603				
LAMT0826SOBKG602A				
LAMT0826SOBKG604A				
LAMT0826SOBKG605A				
LAMT0826SOBKG603A				
LAMT0826SOBKG601A				
LAMT0826SOBKG601				

Notes:
(NP) = Not post-processed
Coordinates are in World Geodetic System (WGS84).
Elevations are feet above WGS84 ellipsoid.

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
LAMT0815SO502	8/15/2011	Archive - 0-6 inches	SM	NM	--
LAMT0815SO504	8/15/2011	Archive - 12-18 inches	SM	NM	--
LAMT0815SO505	8/15/2011	Archive - 18-24 inches	ML	NM	--
LAMT0815SO503	8/15/2011	Archive - 6-12 inches	SM	NM	--
LAMT0815SO501	8/15/2011	Composite Soil	SM	0.4	--
LAMT0815SO508	8/15/2011	Archive - 0-6 inches	SM	NM	--
LAMT0815SO510	8/15/2011	Archive - 12-18 inches	ML	NM	--
LAMT0815SO511	8/15/2011	Archive - 18-24 inches	CL	NM	--
LAMT0815SO509	8/15/2011	Archive - 6-12 inches	SM	NM	--
LAMT0815SO507	8/15/2011	Composite Soil	SM	0.9	--
LAMT0815SO513	8/15/2011	Archive - 0-6 inches	SP	NM	--
LAMT0815SO515	8/15/2011	Archive - 12-18 inches	ML	NM	--
LAMT0815SO516	8/15/2011	Archive - 18-24 inches	ML	NM	--
LAMT0815SO514	8/15/2011	Archive - 6-12 inches	ML	NM	--
LAMT0815SO512	8/15/2011	Composite Soil	ML	0.4	--
LAMT0812SO402	8/12/2011	Archive - 0-6 inches	SM	4.1	--
LAMT0812SO406	8/12/2011	Archive - 12-18 inches	SM	3.8	--
LAMT0812SO407	8/12/2011	Archive - 18-24 inches	ML	2.6	--
LAMT0812SO405	8/12/2011	Archive - 6-12 inches	SM	4.1	--
LAMT0812SO401	8/12/2011	Composite Soil	SM	1.4	--
LAMT0814SO403	8/14/2011	Archive - 0-6 inches	OH	NM	--
LAMT0814SO405	8/14/2011	Archive - 12-18 inches	OH	NM	--
LAMT0814SO406	8/14/2011	Archive - 18-24 inches	OH	NM	--
LAMT0814SO404	8/14/2011	Archive - 6-12 inches	OH	NM	--
LAMT0814SO402	8/14/2011	Composite Soil	OH	NM	--

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
LAMT0814SO409	8/14/2011	Composite Soil	SP	NM	--
LAMT0816SO404	8/16/2011	Archive - 0-6 inches	SM	2.5	--
LAMT0816SO405	8/16/2011	Archive - 6-12 inches	SM	12.1	--
LAMT0816SO403	8/16/2011	Composite Soil	ML	4.1	--
LAMT0816SO407	8/16/2011	Archive - 0-6 inches	ML	3.8	--
LAMT0816SO409	8/16/2011	Archive - 12-18 inches	ML	14.1	--
LAMT0816SO410	8/16/2011	Archive - 18-24 inches	ML	6.7	--
LAMT0816SO408	8/16/2011	Archive - 6-12 inches	SM	8.1	--
LAMT0816SO406	8/16/2011	Composite Soil	ML	11.7	--
LAMT0816SO412	8/16/2011	Archive - 0-6 inches	ML	4.4	--
LAMT0816SO414	8/16/2011	Archive - 12-18 inches	ML	10.6	--
LAMT0816SO416	8/16/2011	Archive - 18-24 inches	ML	3.9	--
LAMT0816SO413	8/16/2011	Archive - 6-12 inches	ML	NM	--
LAMT0816SO411	8/16/2011	Composite Soil	ML	3.7	--
LAMT0812SO414	8/12/2011	Archive - 0-6 inches	SM	5.1	--
LAMT0812SO413	8/12/2011	Composite Soil	SM	2.0	--
LAMT0812SO409	8/12/2011	Archive - 0-6 inches	ML	3.7	--
LAMT0812SO411	8/12/2011	Archive - 12-18 inches	ML	1.9	--
LAMT0812SO412	8/12/2011	Archive - 18-24 inches	ML	3.3	--
LAMT0812SO410	8/12/2011	Archive - 6-12 inches	ML	2.8	--
LAMT0812SO408	8/12/2011	Composite Soil	SM	4.9	--
BIMT0825SO516	8/25/2011	Archive - 0-6 inches	ML	3.3	--
BIMT0825SO518	8/25/2011	Archive - 12-18 inches	ML	2.6	--
BIMT0825SO519	8/25/2011	Archive - 18-24 inches	ML	2.5	--
BIMT0825SO517	8/25/2011	Archive - 6-12 inches	ML	3.0	--
BIMT0825SO515a	8/25/2011	Archive - Composite	ML	2.1	--
BIMT0825SO515	8/25/2011	Composite soil			--
BIMT0825SO502a	8/25/2011	Archive - Composite	SM	2.9	--
BIMT0825SO502	8/25/2011	Composite soil			--
LAMT0823SO607	8/23/2011	Archive - 0-6 inches	SM	4.0	--
LAMT0823SO609	8/23/2011	Archive - 12-18 inches	ML	3.0	--
LAMT0823SO610	8/23/2011	Archive - 18-24 inches	ML	4.1	--
LAMT0823SO608	8/23/2011	Archive - 6-12 inches	ML	3.5	--
LAMT0823SO606	8/23/2011	Composite Soil	SM	1.5	--

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
BIMT0825SO506	8/25/2011	Archive - 0-6 inches	ML	3.0	--
BIMT0825SO508	8/25/2011	Archive - 12-18 inches	SM	8.5	--
BIMT0825SO509	8/25/2011	Archive - 18-24 inches	SM	3.3	--
BIMT0825SO507	8/25/2011	Archive - 6-12 inches	ML	6.1	--
BIMT0825SO505a	8/25/2011	Archive - Composite	ML	2.1	--
BIMT0825SO505	8/25/2011	Composite Soil			--
BIMT0825SO511	8/25/2011	Archive - 0-6 inches	SM	4.5	--
BIMT0825SO513	8/25/2011	Archive - 12-18 inches	SM	3.5	--
BIMT0825SO514	8/25/2011	Archive - 18-24 inches	SM	4.6	--
BIMT0825SO512	8/25/2011	Archive - 6-12 inches	SM	5.3	--
BIMT0825SO510A	8/25/2011	Archive - Composite	ML	1.1	--
BIMT0825SO510	8/25/2011	Composite Soil			--
BIMT0826SO502A	8/26/2011	Archive - 0-6 inches	SM	4.9	--
BIMT0826SO502	8/26/2011	0-6 inches - Analyze			--
BIMT0826SO504A	8/26/2011	Archive - 12-18 inches	SM	2.6	--
BIMT0826SO504	8/26/2011	12-18 inches - Analyze			--
BIMT0826SO505A	8/26/2011	Archive - 18-24 inches	SM	3.3	--
BIMT0826SO505	8/26/2011	18-24 inches - Analyze			--
BIMT0826SO503	8/26/2011	6-12 inches - Analyze	SM	3.3	--
BIMT0826SO503A	8/26/2011	Archive - 6-12 inches			--
BIMT0826SO501A	8/26/2011	Archive - Composite	SM	2.6	--
BIMT0826SO501	8/26/2011	Composite Soil			--
LAMT0823SO602	8/23/2011	Archive - 0-6 inches	SW	NM	--
LAMT0823SO604	8/23/2011	Archive - 12-18 inches	SM	NM	--
LAMT0823SO605	8/23/2011	Archive - 18-21 inches	SW	NM	--
LAMT0823SO603	8/23/2011	Archive - 6-12 inches	SW	NM	--
LAMT0823SO601	8/23/2011	Composite Soil	SW	5.0	--
LAMT0824SO612	8/24/2011	Archive - 0-6 inches	ML	0.6	--
LAMT0824SO614	8/24/2011	Archive - 12-18 inches	SM	1.1	--
LAMT0824SO615	8/24/2011	Archive - 18-24 inches	ML	2.8	--
LAMT0824SO613	8/24/2011	Archive - 6-12 inches	SM	1.0	--
LAMT0824SO611	8/24/2011	Composite Soil	SM	1.5	--

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
LAMT0901SO501A	9/1/2011	Archive - Composite	ML	2.0	--
LAMT0901SO501	9/1/2011	Composite Soil			--
LAMT0824SO607	8/24/2011	Archive - 0-6 inches	SW	7.9	--
LAMT0824SO609	8/24/2011	Archive - 12-18 inches	CL	2.4	--
LAMT0824SO610	8/24/2011	Archive - 18-21 inches	CL	4.8	--
LAMT0824SO608	8/24/2011	Archive - 6-12 inches	ML	5.8	--
LAMT0824SO606	8/24/2011	Composite Soil	SM	5.6	--
LAMT0824SO602	8/24/2011	Archive - 0-6 inches	ML	1.3	--
LAMT0824SO604	8/24/2011	Archive - 12-18 inches	ML	3.1	--
LAMT0824SO605	8/24/2011	Archive - 18-24 inches	SM	7.1	--
LAMT0824SO603	8/24/2011	Archive - 6-12 inches	ML	5.5	--
LAMT0824SO601	8/24/2011	Composite Soil	ML	2.0	--
LAMT0816SO402	8/16/2011	Composite Soil	ML	1.9	--
LAMT0813SO410	8/13/2011	Archive - 0-6 inches	ML	NM	--
LAMT0813SO412	8/13/2011	Archive - 12-16 inches	SM	NM	--
LAMT0813SO411	8/13/2011	Archive - 6-12 inches	SM	NM	--
LAMT0813SO409	8/13/2011	Composite Soil	SM	NM	--
LAMT0813SO402	8/13/2011	0-6 inches - Analyze	ML	NM	--
LAMT0813SO404	8/13/2011	12-18 inches - Analyze	ML	NM	--
LAMT0813SO405	8/13/2011	18-24 inches - Analyze	SM	NM	--
LAMT0813SO403	8/13/2011	6-12 inches - Analyze	ML	NM	--
LAMT0813SO401	8/13/2011	Composite Soil	ML	2.8	Surface staining
LAMT0817SO413	8/17/2011	Archive - 0-6 inches	ML	2.6	--
LAMT0817SO415	8/17/2011	Archive - 12-18 inches	ML	1.9	--
LAMT0817SO414	8/17/2011	Archive - 6-12 inches	ML	3.4	--
LAMT0817SO412	8/17/2011	Composite Soil	ML	1.4	--
LAMT0817SO418	8/17/2011	Archive - 0-6 inches	ML	3.0	--
LAMT0817SO420	8/17/2011	Archive - 12-18 inches	SM	4.2	--
LAMT0817SO421	8/17/2011	Archive - 18-24 inches	SM	2.2	--
LAMT0817SO419	8/17/2011	Archive - 6-12 inches	ML	3.1	--
LAMT0817SO417	8/17/2011	Composite Soil	ML	5.1	--

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
LAMT0824SO617	8/24/2011	Archive - 0-4 inches	SM	3.4	--
LAMT0824SO616	8/24/2011	Composite Soil	SP	0.8	--
LAMT0824SO619	8/24/2011	Archive - 0-6 inches	ML	3.1	--
LAMT0824SO618	8/24/2011	Composite Soil	SM	5.1	--
LAMT0814SO411	8/14/2011	Archive - 0-6 inches	ML	NM	--
LAMT0814SO413	8/14/2011	Archive - 12-18 inches	ML	NM	--
LAMT0814SO412	8/14/2011	Archive - 6-12 inches	ML	NM	--
LAMT0814SO410	8/14/2011	Composite Soil	SM	NM	--
LAMT0825SO602A	8/25/2011	Archive - 0-6 inches	SM	3.8	--
LAMT0825SO604A	8/25/2011	Archive - 12-18 inches	SP	2.1	--
LAMT0825SO605A	8/25/2011	Archive - 18-24 inches	SP	1.9	--
LAMT0825SO603A	8/25/2011	Archive - 6-12 inches	SM	2.7	--
LAMT0825SO601	8/25/2011	Composite Soil	SP	2.4	--
LAMT0825SO601A	8/25/2011	Archive - Composite Soil			
BIMT0816SO502	8/16/2011	Archive - 0-6 inches	CL	NM	--
BIMT0816SO504	8/16/2011	Archive - 12-18 inches	CL	NM	--
BIMT0816SO505	8/16/2011	Archive - 18-24 inches	CL	NM	--
BIMT0816SO503	8/16/2011	Archive - 6-12 inches	CL	NM	--
BIMT0816SO501	8/16/2011	Composite Soil	ML	0.8	--
BIMT0816SO524	8/16/2011	Archive - 0-6 inches	ML	NM	--
BIMT0816SO526	8/16/2011	Archive - 12-18 inches	CL	NM	--
BIMT0816SO527	8/16/2011	Archive - 18-24 inches	CL	NM	--
BIMT0816SO525	8/16/2011	Archive - 6-12 inches	CL	NM	--
BIMT0816SO523	8/16/2011	Composite Soil	SM	1.2	--
LAMT0825SO607A	8/25/2011	Archive - 0-6 inches	SM	3.6	--
LAMT0825SO606	8/25/2011	Composite Soil	ML	1.9	--
LAMT0825SO609	8/25/2011	Archive - 0-6 inches	ML	1.2	--
LAMT0825SO609A	8/25/2011	Archive - 0-6 inches			
LAMT0825SO611	8/25/2011	Archive - 12-18 inches	SM	1.5	--
LAMT0825SO611A	8/25/2011	Archive - 12-18 inches			
LAMT0825SO612	8/25/2011	Archive - 18-24 inches	SM	0.8	--
LAMT0825SO612A	8/25/2011	Archive - 18-24 inches			

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
LAMT0825SO610	8/25/2011	Archive - 6-12 inches	SM	0.5	--
LAMT0825SO610A	8/25/2011	Archive - 6-12 inches			
LAMT0825SO608A	8/25/2011	Archive - Composite	SM	1.1	--
LAMT0825SO608	8/25/2011	Composite Soil			
LAMT0817SO403	8/17/2011	Archive - 0-6 inches	ML	1.6	--
LAMT0817SO405	8/17/2011	Archive - 12-18 inches	ML	2.7	--
LAMT0817SO406	8/17/2011	Archive - 18-24 inches	ML	2.1	--
LAMT0817SO404	8/17/2011	Archive - 6-12 inches	ML	2.7	--
LAMT0817SO402	8/17/2011	Composite Soil	SM	2.7	--
LAMT0817SO408	8/17/2011	Archive - 0-6 inches	ML	3.3	--
LAMT0817SO410	8/17/2011	Archive - 12-18 inches	ML	2.6	--
LAMT0817SO411	8/17/2011	Archive - 18-24 inches	MH	3.0	--
LAMT0817SO409	8/17/2011	Archive - 6-12 inches	ML	2.6	--
LAMT0817SO407	8/17/2011	Composite Soil	ML	7.4	--
LAMT0815SO403	8/15/2011	0-5 inches - Archive	SM	0.9	--
LAMT0815SO401	8/15/2011	Composite Soil	SM	0.5	--
LAMT0815SO405	8/15/2011	Archive - 0-6 inches	ML	5.0	--
LAMT0815SO408	8/15/2011	Archive - 12-18 inches	ML	5.0	--
LAMT0815SO409	8/15/2011	Archive - 18-24 inches	ML	4.4	--
LAMT0815SO406	8/15/2011	Archive - 6-12 inches	ML	1.9	--
LAMT0815SO404	8/15/2011	Composite Soil	ML	1.2	--
BIMT0823SO508	8/23/2011	Archive - 0-6 inches	SM	NM	--
BIMT0823SO510	8/23/2011	Archive - 12-18 inches	SM	NM	--
BIMT0823SO511	8/23/2011	Archive - 18-24 inches	ML	NM	--
BIMT0823SO509	8/23/2011	Archive - 6-12 inches	SM	NM	--
BIMT0823SO507	8/23/2011	Composite Soil	SM	NM	--
BIMT0815SO411	8/15/2011	0-6 inches - Archive	ML	3.1	--
BIMT0815SO413	8/15/2011	12-18 inches - Archive	ML	4.1	--
BIMT0815SO414	8/15/2011	18-24 inches - Archive	ML	3.8	--
BIMT0815SO412	8/15/2011	6-12 inches - Archive	ML	10.3	--
BIMT0815SO410	8/15/2011	Composite Soil	ML	4.5	--
LAMT0826SO622A	8/26/2011	Archive - 0-6 inches	ML	0.0	--
LAMT0826SO624A	8/26/2011	Archive - 12-18 inches	ML	0.0	--
LAMT0826SO625A	8/26/2011	Archive - 18-24 inches	ML	0.0	--

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
LAMT0826SO623A	8/26/2011	Archive - 6-12 inches	ML	0.0	--
LAMT0826SO621A	8/26/2011	Archive - Composite	ML	0.0	--
LAMT0826SO621	8/26/2011	Composite Soil			
BIMT0816SO508	8/16/2011	Archive - 0-6 inches	CL	NM	--
BIMT0816SO510	8/16/2011	Archive - 12-18 inches	ML	NM	--
BIMT0816SO511	8/16/2011	Archive - 18-24 inches	ML	NM	--
BIMT0816SO509	8/16/2011	Archive - 6-12 inches	ML	NM	--
BIMT0816SO507	8/16/2011	Composite Soil	CL	0.4	--
BIMT0823SO504	8/23/2011	Archive - 0-6 inches	SM	NM	--
BIMT0823SO506	8/23/2011	Archive - 12-16 inches	SM	NM	--
BIMT0823SO505	8/23/2011	Archive - 6-12 inches	ML	NM	--
BIMT0823SO503	8/23/2011	Composite Soil	SM	1.1	--
BIMT0823SO501	8/23/2011	Composite Soil	SP	0.7	--
BIMT0816SO513	8/16/2011	Archive - 0-6 inches	SP	NM	--
BIMT0816SO515	8/16/2011	Archive - 12-18 inches	ML	NM	--
BIMT0816SO516	8/16/2011	Archive - 18-24 inches	SP	NM	--
BIMT0816SO514	8/16/2011	Archive - 6-12 inches	SP	NM	--
BIMT0816SO512	8/16/2011	Composite Soil	SP	0.5	--
BIMT0816SO518	8/16/2011	Archive - 0-6 inches	SM	NM	--
BIMT0816SO520	8/16/2011	Archive - 12-18 inches	ML	NM	--
BIMT0816SO521	8/16/2011	Archive - 18-24 inches	ML	NM	--
BIMT0816SO519	8/16/2011	Archive - 6-12 inches	ML	NM	--
BIMT0816SO517	8/16/2011	Composite Soil	SM	1.4	--
BIMT0817SO518	8/17/2011	Archive - 0-6 inches	ML	NM	--
BIMT0817SO517	8/17/2011	Composite Soil	ML	0.9	--
BIMT0817SO513	8/17/2011	Archive - 0-6 inches	ML	NM	--
BIMT0817SO515	8/17/2011	Archive - 12-18 inches	ML	NM	--
BIMT0817SO516	8/17/2011	Archive - 18-24 inches	ML	NM	--
BIMT0817SO514	8/17/2011	Archive - 6-12 inches	ML	NM	--
BIMT0817SO512	8/17/2011	Composite Soil	ML	0.5	--
BIMT0817SO502	8/17/2011	Archive - 0-6 inches	ML	NM	--
BIMT0817SO504	8/17/2011	Archive - 12-18 inches	ML	NM	--

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
BIMT0817SO505	8/17/2011	Archive - 18-24 inches	ML	NM	--
BIMT0817SO503	8/17/2011	Archive - 6-12 inches	CL	NM	--
BIMT0817SO501	8/17/2011	Composite Soil	ML	0.4	--
BIMT0824SO507	8/24/2011	Composite Soil	SW	1.5	--
BIMT0824SO503	8/24/2011	Archive - 0-6 inches	SP	NM	--
BIMT0824SO505	8/24/2011	Archive - 12-18 inches	SM	NM	--
BIMT0824SO506	8/24/2011	Archive - 18-24 inches	SM	NM	--
BIMT0824SO504	8/24/2011	Archive - 6-12 inches	ML	NM	--
BIMT0824SO502	8/24/2011	Composite Soil	SP	3.1	--
BIMT0817SO508	8/17/2011	Archive - 0-6 inches	ML	NM	--
BIMT0817SO510	8/17/2011	Archive - 12-18 inches	SM	NM	--
BIMT0817SO511	8/17/2011	Archive - 18-24 inches	ML	NM	--
BIMT0817SO509	8/17/2011	Archive - 6-12 inches	ML	NM	--
BIMT0817SO507	8/17/2011	Composite Soil	ML	1.2	--
BIMT0828SO502	8/28/2011	Archive - 0-6 inches	SM	3.1	--
BIMT0828SO504	8/28/2011	Archive - 12-18 inches	ML	4.4	--
BIMT0828SO505	8/28/2011	Archive - 18-24 inches	ML	4.6	--
BIMT0828SO503	8/28/2011	Archive - 6-12 inches	SM	4.7	--
BIMT0828SO501	8/28/2011	Composite Soil	SW	2.0	--
BIMT0831SO502A	8/31/2011	Archive - 0-6 inches	ML	18.1	--
BIMT0831SO504A	8/31/2011	Archive - 12-18 inches	ML	26.5	--
BIMT0831SO503A	8/31/2011	Archive - 6-12 inches	SM	22.0	--
BIMT0831SO501A	8/31/2011	Archive - Composite	SP	20.3	--
BIMT0831SO501	8/31/2011	Composite Soil			
PPMT0831SO501	8/31/2011	Composite Soil	ML	3.3	--
PPMT0831SO501A	8/31/2011	Archive - 0-2 inches			
PPMT0831SO502A	8/31/2011	Archive - 0-6 inches	SM	11.5	--
PPMT0831SO504A	8/31/2011	Archive - 12-18 inches	SM	10.2	--
PPMT0831SO505A	8/31/2011	Archive - 18-24 inches	SM	11.5	--
PPMT0831SO503A	8/31/2011	Archive - 6-12 inches	ML	10.3	--
HYMT0812SO502	8/15/2011	Composite Soil	SM	NM	--
HYMT0812SO501	8/15/2011	Composite Soil	SM	NM	--
FOMT0814SO501	8/14/2011	Composite Soil	SM	NM	--
ROMT0814SO501	8/14/2011	Composite Soil	ML	1.1	--

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
MIMT0813SO501	8/13/2011	Composite Soil	SM	NM	--
KIMT0813SO501	8/13/2011	Composite Soil	SM	NM	--
CAMT0813SO501	8/13/2011	Composite Soil	SM	NM	--
FAMT0813SO501	8/13/2011	Composite Soil	ML	0.6	--
GLMT0812SO505	8/12/2011	Archive - 0-6 inches	ML	NM	--
GLMT0812SO507	8/12/2011	Archive - 12-18 inches	ML	NM	--
GLMT0812SO506	8/12/2011	Archive - 6-12 inches	ML	NM	--
GLMT0812SO504	8/12/2011	Archive - Composite	ML	0.5	--
GLMT0812SO503	8/12/2011	Composite Soil			
GLMT0812SO501	8/12/2011	Composite Soil	SP	0.0	--
LAMT0828SOBKG501	8/28/2011	Composite Soil	ML	1.3	--
LAMT0826SOBKG617A	8/26/2011	Archive - 0-6 inches	SM	0.0	--
LAMT0826SOBKG619A	8/26/2011	Archive - 12-18 inches	SM	0.0	--
LAMT0826SOBKG620A	8/26/2011	Archive - 18-24 inches	SM	0.0	--
LAMT0826SOBKG618A	8/26/2011	Archive - 6-12 inches	SM	0.0	--
LAMT0826SOBKG616	8/26/2011	Composite Soil	SM	0.0	--
LAMT0826SOBKG612A	8/26/2011	Archive - 0-6 inches	SM	0.0	--
LAMT0826SOBKG614A	8/26/2011	Archive - 12-18 inches	SM	0.0	--
LAMT0826SOBKG615A	8/26/2011	Archive - 18-24 inches	SM	0.0	--
LAMT0826SOBKG613A	8/26/2011	Archive - 6-12 inches	SM	0.0	--
LAMT0826SOBKG611A	8/26/2011	Archive - Composite	SP	0.0	--
LAMT0826SOBKG611	8/26/2011	Composite Soil			
LAMT0826SOBKG607A	8/26/2011	Archive - 0-6 inches	SM	0.0	--
LAMT0826SOBKG609A	8/26/2011	Archive - 12-18 inches	SP	0.1	--
LAMT0826SOBKG610A	8/26/2011	Archive - 18-24 inches	SP	0.0	--
LAMT0826SOBKG608A	8/26/2011	Archive - 6-12 inches	SP	0.0	--
LAMT0826SOBKG606A	8/26/2011	Archive - Composite	SP	0.0	--
LAMT0826SOBKG606	8/26/2011	Composite Soil	SM	0.0	--
LAMT0826SOBKG602A	8/26/2011	Archive - 0-6 inches	SP	0.0	--
LAMT0826SOBKG602	8/26/2011	0-6 inches - Analyzed			
LAMT0826SOBKG604A	8/26/2011	Archive - 12-18 inches	SP	0.0	--
LAMT0826SOBKG604	8/26/2011	12-18 inches - Analyze			
LAMT0826SOBKG605A	8/26/2011	Archive - 18-24 inches	ML	0.0	--
LAMT0826SOBKG605	8/26/2011	18-24 inches - Analyze			

Table 8
Downstream Areas Soil and Sediment Data Report
Soil Sample Descriptions
Silvertip Pipeline Incident
Laurel, Montana

Sample ID	Sample Date	Sample Info	USCS	PID (ppm)	Notes
LAMT0826SOBKG603A	8/26/2011	Archive - 6-12 inches	SP	0.0	--
LAMT0826SOBKG603	8/26/2011	6-12 inches - Analyze			
LAMT0826SOBKG601A	8/26/2011	Archive - Composite	SP	0.0	--
LAMT0826SOBKG601	8/26/2011	Composite Soil			

Table 9
Downstream Impacted Areas Soil and Sediment Data Report
Background Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0826SOBKG601		LAMT0826SOBKG602		LAMT0826SOBKG603		LAMT0826SOBKG604		LAMT0826SOBKG605		LAMT0826SOBKG606		LAMT0826SOBKG611		LAMT0826SOBKG616		LAMT0828SOBKG501		LAMT0828SOBKG502	
		Sample Date	8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/28/2011		8/28/2011	
		Start Depth (in)	0		0		6		12		18		0		0		0		0		0	
		End Depth (in)	2		6		12		18		24		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Field Duplicate	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		5.4		4.5		7.9		8.5		17.8		2.5		12.4		9.7		2.9		13	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
1,2-Dichlorobenzene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
1,2-Diphenylhydrazine	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
1,3-Dichlorobenzene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
1,4-Dichlorobenzene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
1-Methylnaphthalene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2,4,5-Trichlorophenol	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
2,4,6-Trichlorophenol	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2,4-Dichlorophenol	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2,4-Dimethylphenol	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2,4-Dinitrophenol	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
2,4-Dinitrotoluene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2,6-Dinitrotoluene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2-Chloronaphthalene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2-Chlorophenol	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2-Methylnaphthalene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2-Methylphenol (o-Cresol)	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
2-Nitroaniline	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
2-Nitrophenol	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
3&4-Methylphenol	µg/kg		< 693	U	< 689	U	< 716	U	< 722	U	< 800	U	< 674	U	< 751	U	< 731	U	< 675	U	< 756	U
3,3'-Dichlorobenzidine	µg/kg		< 703	U	< 700	U	< 727	U	< 733	U	< 812	U	< 685	U	< 763	U	< 742	U	< 685	U	< 767	U
3-Nitroaniline	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
4,6-Dinitro-2-methylphenol	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
4-Bromophenyl phenyl ether	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
4-Chloro-3-methylphenol	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
4-Chloroaniline	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
4-Chlorophenyl phenyl ether	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
4-Nitroaniline	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
4-Nitrophenol	µg/kg		< 1780	U	< 1770	U	< 1840	U	< 1860	U	< 2060	U	< 1740	U	< 1940	U	< 1880	U	< 1740	U	< 1950	U
Acenaphthene	µg/kg	200000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Acenaphthylene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Anthracene	µg/kg	2000000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Benzo(a)anthracene	µg/kg	200	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Benzo(a)pyrene	µg/kg	20	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Benzo(b)fluoranthene	µg/kg	200	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Benzo(g,h,i)perylene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Benzo(k)fluoranthene	µg/kg	2000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Bis(2-chloroethoxy)methane	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Bis(2-chloroethyl)ether	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
bis(2-chloroisopropyl)ether	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Bis(2-ethylhexyl)phthalate	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Butylbenzylphthalate	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Carbazole	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Chrysene	µg/kg	20000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Dibenzo(a,h)anthracene	µg/kg	20	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Dibenzofuran	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Diethyl phthalate	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Dimethyl phthalate	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Di-n-butyl phthalate	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Di-n-octyl phthalate	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Fluoranthene	µg/kg	300000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Fluorene	µg/kg	300000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Hexachloro-1,3-butadiene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Hexachlorobenzene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Hexachloroethane	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Indeno(1,2,3-cd)pyrene	µg/kg	200	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Isophorone	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U

Table 9
Downstream Impacted Areas Soil and Sediment Data Report
Background Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0826SOBKG601		LAMT0826SOBKG602		LAMT0826SOBKG603		LAMT0826SOBKG604		LAMT0826SOBKG605		LAMT0826SOBKG606		LAMT0826SOBKG611		LAMT0826SOBKG616		LAMT0828SOBKG501		LAMT0828SOBKG502	
		Sample Date	8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/28/2011		8/28/2011	
		Start Depth (in)	0		0		6		12		18		0		0		0		0		0	
		End Depth (in)	2		6		12		18		24		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Field Duplicate	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	µg/kg	4000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Nitrobenzene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
n-Nitrosodimethylamine	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
n-Nitroso-di-n-propylamine	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
n-nitrosodiphenylamine	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Pentachlorophenol	µg/kg		< 703	U	< 700	U	< 727	U	< 733	U	< 812	U	< 685	U	< 763	U	< 742	U	< 685	U	< 767	U
Phenanthrene	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Phenol	µg/kg		< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Pyrene	µg/kg	200000	< 346	U	< 345	U	< 358	U	< 361	U	< 400	U	< 337	U	< 376	U	< 365	U	< 337	U	< 378	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	µg/kg	200000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Acenaphthylene	µg/kg																					
Anthracene	µg/kg	2000000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Benzo(a)anthracene	µg/kg	200	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Benzo(a)pyrene	µg/kg	20	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Benzo(b)fluoranthene	µg/kg	200	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	14.2	
Benzo(g,h,i)perylene	µg/kg																					
Benzo(k)fluoranthene	µg/kg	2000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Chrysene	µg/kg	20000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	11.7	
Dibenzo(a,h)anthracene	µg/kg	20	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Fluoranthene	µg/kg	300000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	16.9	
Fluorene	µg/kg	300000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Indeno(1,2,3-cd)pyrene	µg/kg	200	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Naphthalene	µg/kg	4000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	< 11.5	U
Phenanthrene	µg/kg																					
Pyrene	µg/kg	200000	< 10.5	U	< 10.4	U	< 10.8	U	< 10.9	U	< 12.2	U	< 10.2	U	< 11.4	U	< 11	U	< 10.3	U	18.1	
Organic Carbon (USEPA 9060)																						
Total Organic Carbon	mg/kg		4800 5850 5480 6500		2810 1940 2920 2790		3770 3540 2850 3990		2450 3230 3130 2640		8060 10300 9940 11100		4350 3490 3020 3520		12200 11200 10200 11800		3740 3500 3910 3660		12100 11200 15000 11200		8760 13700 17400 11700	
Mean Total Organic Carbon	mg/kg		5660		2620		3540		2860		9830		3590		11300		3700		12400		12900	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
Total Extractable Hydrocarbons	mg/kg	200	< 10.5	U	< 10.5	U	< 10.8	U	< 10.7	U	< 12.1	U	< 10	U	< 11.3	U	< 11	U	11		< 11.4	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Benzene	mg/kg	0.04000	< 0.032	U	< 0.032	U	< 0.031	U	< 0.035	U	< 0.035	U	< 0.036	U	< 0.037	U	< 0.033	U	**0.063**		< 0.028	U
Ethylbenzene	mg/kg	6	< 0.064	U	< 0.063	U	< 0.063	U	< 0.07	U	< 0.071	U	< 0.072	U	< 0.075	U	< 0.065	U	0.077		< 0.056	U
m&p-Xylene	mg/kg		< 0.13	U	< 0.13	U	< 0.13	U	< 0.14	U	< 0.14	U	< 0.14	U	< 0.15	U	< 0.13	U	0.14		< 0.11	U
Methyl-tert-butylether	mg/kg	0.08000	< 0.064	U	< 0.063	U	< 0.063	U	< 0.07	U	< 0.071	U	< 0.072	U	< 0.075	U	< 0.065	U	< 0.051	U	< 0.056	U
Naphthalene	mg/kg	4000	< 0.77	U	< 0.76	U	< 0.75	U	< 0.83	U	< 0.85	U	< 0.87	U	< 0.9	U	< 0.78	U	< 0.62	U	< 0.68	U
o-Xylene	mg/kg		< 0.064	U	< 0.063	U	< 0.063	U	< 0.07	U	< 0.071	U	< 0.072	U	< 0.075	U	< 0.065	U	0.059		< 0.056	U
Toluene	mg/kg	10.00	< 0.064	U	< 0.063	U	< 0.063	U	< 0.07	U	< 0.071	U	< 0.072	U	< 0.075	U	< 0.065	U	0.073		< 0.056	U
Xylenes, total	mg/kg	70	< 0.19	U	< 0.19	U	< 0.19	U	< 0.21	U	< 0.21	U	< 0.22	U	< 0.22	U	< 0.2	U	0.2		< 0.17	U
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 6.4	U	< 6.3	U	< 6.3	U	< 7	U	< 7.1	U	< 7.2	U	< 7.5	U	< 6.5	U	< 5.1	U	< 5.6	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 6.4	U	< 6.3	U	< 6.3	U	< 7	U	< 7.1	U	< 7.2	U	< 7.5	U	< 6.5	U	< 5.1	U	< 5.6	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 6.4	U	< 6.3	U	< 6.3	U	< 7	U	< 7.1	U	< 7.2	U	< 7.5	U	< 6.5	U	< 5.1	U	< 5.6	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 6.4	U	< 6.3	U	< 6.3	U	< 7	U	< 7.1	U	< 7.2	U	< 7.5	U	< 6.5	U	< 5.1	U	< 5.6	U
Total Purgeable Hydrocarbons	mg/kg		< 12.9	U	< 12.7	U	< 12.6	U	< 13.9	U	< 14.1	U	< 14.5	U	< 14.9	U	< 13	U	< 10.3	U	< 11.3	U
C9-C10 Aromatics	mg/kg	100	< 1.3	U	< 1.3	U	< 1.3	U	< 1.4	U	< 1.4	U	< 1.4	U	< 1.5	U	< 1.3	U	< 1	U	< 1.1	U

Table 9
Downstream Impacted Areas Soil and Sediment Data Report
Background Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

Notes:
1. This table presents validated data.
2. Risk-Based Screening Level - Tier 1 Surface Soil (0 - 2 feet below ground surface), within 10 feet of the water table
3. Non-detects that exceed the RBSL - shaded
4. **Detects that exceed the RBSL - boldfaced**
5. mg/kg = milligrams per kilogram
6. ug/kg = micrograms per kilogram
7. U = The chemical was not detected above the reporting limit shown.
8. Qual = Laboratory Qualifier

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0812SO401		LAMT0812SO413		LAMT0812SO408		LAMT0814SO402		LAMT0814SO407		LAMT0814SO409		LAMT0815SO501		LAMT0815SO507		LAMT0815SO512		LAMT0816SO403	
		Sample Date	8/12/2011		8/12/2011		8/12/2011		8/14/2011		8/14/2011		8/14/2011		8/15/2011		8/15/2011		8/15/2011		8/16/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Field Duplicate		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		2.1		1		24.6		34.3		35.5		8.9		24.6		41.6		2.9		23.9	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
1,2-Dichlorobenzene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
1,2-Diphenylhydrazine	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
1,3-Dichlorobenzene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
1,4-Dichlorobenzene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
1-Methylnaphthalene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2,4,5-Trichlorophenol	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
2,4,6-Trichlorophenol	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2,4-Dichlorophenol	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2,4-Dimethylphenol	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2,4-Dinitrophenol	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
2,4-Dinitrotoluene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2,6-Dinitrotoluene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2-Chloronaphthalene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2-Chlorophenol	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2-Methylnaphthalene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2-Methylphenol (o-Cresol)	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
2-Nitroaniline	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
2-Nitrophenol	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
3&4-Methylphenol	ug/kg		< 672	U	< 665	U	< 876	U	< 1000	U	< 1020	U	< 722	U	< 872	U	< 1130	U	< 675	U	< 865	U
3,3'-Dichlorobenzidine	ug/kg		< 682	U	< 675	U	< 889	U	< 1020	U	< 1030	U	< 733	U	< 885	U	< 1140	U	< 686	U	< 878	U
3-Nitroaniline	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
4,6-Dinitro-2-methylphenol	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
4-Bromophenyl phenyl ether	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
4-Chloro-3-methylphenol	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
4-Chloroaniline	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
4-Chlorophenyl phenyl ether	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
4-Nitroaniline	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
4-Nitrophenol	ug/kg		< 1730	U	< 1710	U	< 2260	U	< 2580	U	< 2620	U	< 1860	U	< 2250	U	< 2900	U	< 1740	U	< 2230	U
Acenaphthene	ug/kg	200000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Acenaphthylene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Anthracene	ug/kg	2000000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Benzo(a)anthracene	ug/kg	200	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	**473**		< 432	U
Benzo(a)pyrene	ug/kg	20	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	**430**		< 432	U
Benzo(b)fluoranthene	ug/kg	200	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	**653**		< 432	U
Benzo(g,h,i)perylene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Benzo(k)fluoranthene	ug/kg	2000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Bis(2-chloroethoxy)methane	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Bis(2-chloroethyl)ether	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
bis(2-chloroisopropyl)ether	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Butylbenzylphthalate	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Carbazole	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Chrysene	ug/kg	20000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	529		< 432	U
Dibenzo(a,h)anthracene	ug/kg	20	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Dibenzofuran	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Diethyl phthalate	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Dimethyl phthalate	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Di-n-butyl phthalate	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Di-n-octyl phthalate	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Fluoranthene	ug/kg	300000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	731		< 432	U
Fluorene	ug/kg	300000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Hexachloro-1,3-butadiene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Hexachlorobenzene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Hexachloroethane	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Isophorone	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0812SO401		LAMT0812SO413		LAMT0812SO408		LAMT0814SO402		LAMT0814SO407		LAMT0814SO409		LAMT0815SO501		LAMT0815SO507		LAMT0815SO512		LAMT0816SO403	
		Sample Date	8/12/2011		8/12/2011		8/12/2011		8/14/2011		8/14/2011		8/14/2011		8/15/2011		8/15/2011		8/15/2011		8/16/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Field Duplicate		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2		Figure 2	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Nitrobenzene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
n-Nitrosodimethylamine	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
n-Nitroso-di-n-propylamine	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
n-nitrosodiphenylamine	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Pentachlorophenol	ug/kg		< 682	U	< 675	U	< 889	U	< 1020	U	< 1030	U	< 733	U	< 885	U	< 1140	U	< 686	U	< 878	U
Phenanthrene	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	398		< 432	U
Phenol	ug/kg		< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	< 338	U	< 432	U
Pyrene	ug/kg	200000	< 336	U	< 332	U	< 438	U	< 500	U	< 510	U	< 361	U	< 436	U	< 563	U	596		< 432	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	200000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	< 103	U	< 13.1	U
Acenaphthylene	ug/kg																					
Anthracene	ug/kg	2000000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	148		< 13.1	U
Benzo(a)anthracene	ug/kg	200	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	**429**		< 13.1	U
Benzo(a)pyrene	ug/kg	20	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	**364**		< 13.1	U
Benzo(b)fluoranthene	ug/kg	200	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	**519**		< 13.1	U
Benzo(g,h,i)perylene	ug/kg																					
Benzo(k)fluoranthene	ug/kg	2000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	210		< 13.1	U
Chrysene	ug/kg	20000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	439		< 13.1	U
Dibenzo(a,h)anthracene	ug/kg	20	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	< 103	U	< 13.1	U
Fluoranthene	ug/kg	300000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	913		< 13.1	U
Fluorene	ug/kg	300000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	< 103	U	< 13.1	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	**202**		< 13.1	U
Naphthalene	ug/kg	4000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	< 103	U	< 13.1	U
Phenanthrene	ug/kg																					
Pyrene	ug/kg	200000	< 10.2	U	< 10.1	U	< 13.2	U	< 15.2	U	< 15.4	U	< 11	U	< 13.2	U	< 17.1	U	756		< 13.1	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		20300		1380		20800		18700		22300		3810		9200		9640		29800		4150	
Total Organic Carbon	mg/kg		12600 16500 25000 27200		1160 1200 1480 1670		14800 17100 19400 32000		16200 16800 22800 18800		23000 22100 19800 24200		3690 3990 4030 3540		8580 8980 8700 10500		10200 10500 8300 9580		31100 25500 28400 34200		3720 4720 3930 4230	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
C11-C22 Aromatics	mg/kg	400																				
C19-C36 Aliphatics	mg/kg	100000																				
C9-C18 Aliphatics	mg/kg	2000																				
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		34		< 9.9	U	38.6		47.6		61		< 10.9	U	45.9		39.4		< 20.3	U	< 12.9	U
Total Extractable Hydrocarbons	mg/kg																					
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 5.1	U	< 4.8	U	< 6.5	U	< 7.6	U	< 7.1	U	< 5	U	< 6.6	U	< 8.4	U	< 5.1	U	< 6.1	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 5.1	U	< 4.8	U	< 6.5	U	< 7.6	U	< 7.1	U	< 5	U	< 6.6	U	< 8.4	U	< 5.1	U	< 6.1	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 5.1	U	< 4.8	U	< 6.5	U	< 7.6	U	< 7.1	U	< 5	U	< 6.6	U	< 8.4	U	< 5.1	U	< 6.1	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 5.1	U	< 4.8	U	< 6.5	U	< 7.6	U	< 7.1	U	< 5	U	< 6.6	U	< 8.4	U	< 5.1	U	< 6.1	U
Benzene	mg/kg	0.04	< 0.026	U	< 0.024	U	< 0.032	U	< 0.038	U	< 0.035	U	< 0.025	U	< 0.033	U	< 0.042	U	< 0.026	U	< 0.031	U
C9-C10 Aromatics	mg/kg	100	< 1	U	< 0.97	U	< 1.3	U	< 1.5	U	< 1.4	U	< 1	U	< 1.3	U	< 1.7	U	< 1	U	< 1.2	U
Ethylbenzene	mg/kg	6	< 0.051	U	< 0.048	U	< 0.065	U	< 0.076	U	< 0.071	U	< 0.05	U	< 0.066	U	< 0.084	U	< 0.051	U	< 0.061	U
m&p-Xylene	mg/kg		< 0.1	U	< 0.097	U	< 0.13	U	< 0.15	U	< 0.14	U	< 0.1	U	< 0.13	U	< 0.17	U	< 0.1	U	< 0.12	U
Methyl-tert-butylether	mg/kg	0.08	< 0.051	U	< 0.048	U	< 0.065	U	< 0.076	U	< 0.071	U	< 0.05	U	< 0.066	U	< 0.084	U	< 0.051	U	< 0.061	U
Naphthalene	mg/kg	4000	< 0.61	U	< 0.58	U	< 0.78	U	< 0.91	U	< 0.85	U	< 0.6	U	< 0.79	U	< 1	U	< 0.61	U	< 0.73	UJ-
o-Xylene	mg/kg		< 0.051	U	< 0.048	U	< 0.065	U	< 0.076	U	< 0.071	U	< 0.05	U	< 0.066	U	< 0.084	U	< 0.051	U	< 0.061	U
Toluene	mg/kg	10	< 0.051	U	< 0.048	U	< 0.065	U	< 0.076	U	< 0.071	U	< 0.05	U	< 0.066	U	< 0.084	U	< 0.051	U	< 0.061	U
Total Purgeable Hydrocarbons	mg/kg		< 10.2	U	< 9.7	U	< 12.9	U	< 15.1	U	< 14.1	U	< 10	U	< 13.2	U	< 16.7	U	< 10.2	A	< 12.2	U
Xylenes, total	mg/kg	70	< 0.15	U	< 0.14	U	< 0.19	U	< 0.23	U	< 0.21	U	< 0.15	U	< 0.2	U	< 0.25	U	< 0.15	U	< 0.18	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0816SO406		LAMT0813SO409		LAMT0813SO401		LAMT0813SO402		LAMT0813SO403		LAMT0813SO404		LAMT0813SO405		LAMT0816SO402		LAMT0816SO411		LAMT0823SO606	
		Sample Date	8/16/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011		8/16/2011		8/16/2011		8/23/2011	
		Start Depth (in)	0		0		0		0		6		12		18		0		0		0	
		End Depth (in)	2		2		2		6		12		18		24		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		28.2		0.43		17.3		28.2		26.3		21.7		13.4		9.4		25.7		3	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
1,2-Dichlorobenzene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
1,2-Diphenylhydrazine	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
1,3-Dichlorobenzene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
1,4-Dichlorobenzene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
1-Methylnaphthalene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2,4,5-Trichlorophenol	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
2,4,6-Trichlorophenol	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2,4-Dichlorophenol	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2,4-Dimethylphenol	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2,4-Dinitrophenol	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
2,4-Dinitrotoluene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2,6-Dinitrotoluene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2-Chloronaphthalene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2-Chlorophenol	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2-Methylnaphthalene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2-Methylphenol (o-Cresol)	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
2-Nitroaniline	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
2-Nitrophenol	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
3&4-Methylphenol	ug/kg		< 916	U	< 663	U	< 798	U	< 916	U	< 893	U	< 840	U	< 762	U	< 726	U	< 883	U	< 676	U
3,3'-Dichlorobenzidine	ug/kg		< 930	U	< 673	U	< 810	U	< 930	U	< 906	U	< 852	U	< 774	U	< 737	U	< 896	U	< 686	U
3-Nitroaniline	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
4-Bromophenyl phenyl ether	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
4-Chloro-3-methylphenol	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
4-Chloroaniline	ug/kg		< 458	U	< 331	UJ-	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
4-Chlorophenyl phenyl ether	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
4-Nitroaniline	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
4-Nitrophenol	ug/kg		< 2360	U	< 1710	U	< 2060	U	< 2360	U	< 2300	U	< 2160	U	< 1960	U	< 1870	U	< 2270	U	< 1740	U
Acenaphthene	ug/kg	200000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Acenaphthylene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Anthracene	ug/kg	2000000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Benzo(a)anthracene	ug/kg	200	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Benzo(a)pyrene	ug/kg	20	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Benzo(b)fluoranthene	ug/kg	200	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Benzo(g,h,i)perylene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Benzo(k)fluoranthene	ug/kg	2000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Bis(2-chloroethoxy)methane	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Bis(2-chloroethyl)ether	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
bis(2-chloroisopropyl)ether	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Butylbenzylphthalate	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Carbazole	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Chrysene	ug/kg	20000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Dibenzo(a,h)anthracene	ug/kg	20	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Dibenzofuran	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Diethyl phthalate	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Dimethyl phthalate	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Di-n-butyl phthalate	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Di-n-octyl phthalate	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Fluoranthene	ug/kg	300000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Fluorene	ug/kg	300000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Hexachloro-1,3-butadiene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Hexachlorobenzene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Hexachloroethane	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Isophorone	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0816SO406		LAMT0813SO409		LAMT0813SO401		LAMT0813SO402		LAMT0813SO403		LAMT0813SO404		LAMT0813SO405		LAMT0816SO402		LAMT0816SO411		LAMT0823SO606	
		Sample Date	8/16/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011		8/16/2011		8/16/2011		8/23/2011	
		Start Depth (in)	0		0		0		0		6		12		18		0		0		0	
		End Depth (in)	2		2		2		6		12		18		24		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Nitrobenzene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
n-Nitrosodimethylamine	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
n-Nitroso-di-n-propylamine	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
n-nitrosodiphenylamine	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Pentachlorophenol	ug/kg		< 930	U	< 673	U	< 810	U	< 930	U	< 906	U	< 852	U	< 774	U	< 737	U	< 896	U	< 686	U
Phenanthrene	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Phenol	ug/kg		< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Pyrene	ug/kg	200000	< 458	U	< 331	U	< 399	U	< 458	U	< 446	U	< 420	U	< 381	U	< 363	U	< 441	U	< 338	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	200000	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Acenaphthylene	ug/kg				< 10	U																
Anthracene	ug/kg	2000000	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Benzo(a)anthracene	ug/kg	200	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Benzo(a)pyrene	ug/kg	20	< 13.9	U	< 10	U	14		19.5		< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Benzo(b)fluoranthene	ug/kg	200	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Benzo(g,h,i)perylene	ug/kg				< 10	U																
Benzo(k)fluoranthene	ug/kg	2000	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Chrysene	ug/kg	20000	< 13.9	U	< 10	U	40.9		64.9		21.5		< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Dibenzo(a,h)anthracene	ug/kg	20	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Fluoranthene	ug/kg	300000	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Fluorene	ug/kg	300000	< 13.9	U	< 10	U	< 12.1	U	16.8		< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Naphthalene	ug/kg	4000	< 13.9	U	< 10	U	< 12.1	U	< 13.9	U	< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Phenanthrene	ug/kg				< 10	U																
Pyrene	ug/kg	200000	< 13.9	U	< 10	U	22.2		31.1		< 13.6	U	< 12.7	U	< 11.5	U	< 11	U	< 13.4	U	< 10.3	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		9110		2470		13200		23300		29700		20300		5070		10100		13700		14600	
Total Organic Carbon	mg/kg		9050		2310		13500		23700		30800		25700		4250		9970		14000		14500	
			9260		2440		12900		19400		29800		17000		6320		8980		12900		14900	
			8750		2460		13900		22700		33700		18300		4180		9560		14100		14000	
			9360		2660		12500		27200		24700		20300		5550		11900		13800		15200	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
C11-C22 Aromatics	mg/kg	400					224	J-	**694**	J-	105	J-	30.6	J-								
C19-C36 Aliphatics	mg/kg	100000					377	J-	989	J-	152	J-	< 12.7	UJ-								
C9-C18 Aliphatics	mg/kg	2000					82	J-	297	J-	29.7	J-	< 12.7	UJ-								
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		148		< 9.9	U	1600		2220		386		255		22.4		55.7		45.4		< 10.3	U
Total Extractable Hydrocarbons	mg/kg						683	J-	1980	J-	287	J-	< 38.1	UJ-								
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 6.4	U	< 4.9	U	< 6	U	< 6.8	U	< 7.6	U	< 6.1	U	< 5.8	U	< 5.3	U	< 6.5	U	< 4.7	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 6.4	U	< 4.9	U	< 6	U	< 6.8	U	< 7.6	U	< 6.1	U	< 5.8	U	< 5.3	U	< 6.5	U	< 4.7	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 6.4	U	< 4.9	U	< 6	U	< 6.8	U	< 7.6	U	< 6.1	U	< 5.8	U	< 5.3	U	< 6.5	U	< 4.7	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 6.4	U	< 4.9	U	< 6	U	< 6.8	U	< 7.6	U	< 6.1	U	< 5.8	U	< 5.3	U	< 6.5	U	< 4.7	U
Benzene	mg/kg	0.04	< 0.032	U	< 0.024	U	< 0.03	U	< 0.034	U	< 0.038	U	< 0.031	U	< 0.029	U	< 0.026	U	< 0.033	U	< 0.024	U
C9-C10 Aromatics	mg/kg	100	< 1.3	U	< 0.97	U	< 1.2	U	< 1.4	U	< 1.5	U	< 1.2	U	< 1.2	U	< 1.1	U	< 1.3	U	< 0.95	U
Ethylbenzene	mg/kg	6	< 0.064	U	< 0.049	U	< 0.06	U	< 0.068	U	< 0.076	U	< 0.061	U	< 0.058	U	< 0.053	U	< 0.065	U	< 0.047	U
m&p-Xylene	mg/kg		< 0.13	U	< 0.097	U	< 0.12	U	< 0.14	U	< 0.15	U	< 0.12	U	< 0.12	U	< 0.11	U	< 0.13	U	< 0.095	U
Methyl-tert-butylether	mg/kg	0.08	< 0.064	U	< 0.049	U	< 0.06	U	< 0.068	U	< 0.076	U	< 0.061	U	< 0.058	U	< 0.053	U	< 0.065	U	< 0.047	U
Naphthalene	mg/kg	4000	< 0.77	UJ-	< 0.58	U	< 0.72	U	< 0.81	U	< 0.92	U	< 0.73	U	< 0.69	U	< 0.63	UJ-	< 0.78	UJ-	< 0.57	U
o-Xylene	mg/kg		< 0.064	U	< 0.049	U	< 0.06	U	< 0.068	U	< 0.076	U	< 0.061	U	< 0.058	U	< 0.053	U	< 0.065	U	< 0.047	U
Toluene	mg/kg	10	< 0.064	U	< 0.049	U	< 0.06	U	< 0.068	U	< 0.076	U	< 0.061	U	< 0.058	U	< 0.053	U	< 0.065	U	< 0.047	U
Total Purgeable Hydrocarbons	mg/kg		< 12.8	U	< 9.7	U	< 12	U	< 13.5	U	< 15.3	U	< 12.2	U	< 11.5	U	< 10.5	U	< 13.1	U	< 9.5	U
Xylenes, total	mg/kg	70	< 0.19	U	< 0.15	U	< 0.18	U	< 0.2	U	< 0.23	U	< 0.18	U	< 0.17	U	< 0.16	U	< 0.2	U	< 0.14	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0823SO601		LAMT0824SO611		LAMT0824SO606		LAMT0824SO601		BIMT0825SO515		BIMT0825SO502		BIMT0825SO503		BIMT0825SO505		BIMT0825SO510		BIMT0826SO501	
		Sample Date	8/23/2011		8/24/2011		8/24/2011		8/24/2011		8/25/2011		8/25/2011		8/25/2011		8/25/2011		8/25/2011		8/26/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Field Duplicate		Normal		Normal		Normal	
	Figure Reference		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		2.4		17.6		2.6		8.9		13.2		24.8		29.1		12.1		16.4		22.4	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
1,2-Dichlorobenzene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
1,2-Diphenylhydrazine	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
1,3-Dichlorobenzene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
1,4-Dichlorobenzene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
1-Methylnaphthalene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2,4,5-Trichlorophenol	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
2,4,6-Trichlorophenol	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2,4-Dichlorophenol	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2,4-Dimethylphenol	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2,4-Dinitrophenol	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
2,4-Dinitrotoluene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2,6-Dinitrotoluene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2-Chloronaphthalene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2-Chlorophenol	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2-Methylnaphthalene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2-Methylphenol (o-Cresol)	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
2-Nitroaniline	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
2-Nitrophenol	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
3&4-Methylphenol	ug/kg		< 672	U	< 801	U	< 673	U	< 722	U	< 758	U	< 875	U	< 927	U	< 749	U	< 790	U	< 850	U
3,3'-Dichlorobenzidine	ug/kg		< 682	U	< 813	U	< 683	U	< 733	U	< 769	U	< 888	U	< 942	U	< 760	U	< 802	U	< 863	U
3-Nitroaniline	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
4,6-Dinitro-2-methylphenol	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
4-Bromophenyl phenyl ether	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
4-Chloro-3-methylphenol	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
4-Chloroaniline	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	UJ-	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
4-Chlorophenyl phenyl ether	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
4-Nitroaniline	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
4-Nitrophenol	ug/kg		< 1730	U	< 2060	U	< 1730	U	< 1860	U	< 1950	U	< 2250	U	< 2390	U	< 1930	U	< 2030	U	< 2190	U
Acenaphthene	ug/kg	200000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Acenaphthylene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Anthracene	ug/kg	2000000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Benzo(a)anthracene	ug/kg	200	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Benzo(a)pyrene	ug/kg	20	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Benzo(b)fluoranthene	ug/kg	200	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Benzo(g,h,i)perylene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Benzo(k)fluoranthene	ug/kg	2000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Bis(2-chloroethoxy)methane	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Bis(2-chloroethyl)ether	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
bis(2-chloroisopropyl)ether	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Butylbenzylphthalate	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Carbazole	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Chrysene	ug/kg	20000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Dibenzo(a,h)anthracene	ug/kg	20	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Dibenzofuran	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Diethyl phthalate	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Dimethyl phthalate	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Di-n-butyl phthalate	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Di-n-octyl phthalate	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Fluoranthene	ug/kg	300000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Fluorene	ug/kg	300000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Hexachloro-1,3-butadiene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Hexachlorobenzene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Hexachloroethane	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Isophorone	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0823SO601		LAMT0824SO611		LAMT0824SO606		LAMT0824SO601		BIMT0825SO515		BIMT0825SO502		BIMT0825SO503		BIMT0825SO505		BIMT0825SO510		BIMT0826SO501	
		Sample Date	8/23/2011		8/24/2011		8/24/2011		8/24/2011		8/25/2011		8/25/2011		8/25/2011		8/25/2011		8/25/2011		8/26/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Field Duplicate		Normal		Normal		Normal	
		Figure Reference	Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 3	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Nitrobenzene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
n-Nitrosodimethylamine	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
n-Nitroso-di-n-propylamine	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
n-nitrosodiphenylamine	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Pentachlorophenol	ug/kg		< 682	U	< 813	U	< 683	U	< 733	U	< 769	U	< 888	U	< 942	U	< 760	U	< 802	U	< 863	U
Phenanthrene	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Phenol	ug/kg		< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Pyrene	ug/kg	200000	< 336	U	< 400	U	< 336	U	< 361	U	< 379	U	< 438	U	< 464	U	< 374	U	< 395	U	< 425	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	200000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Acenaphthylene	ug/kg																					
Anthracene	ug/kg	2000000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Benzo(a)anthracene	ug/kg	200	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Benzo(a)pyrene	ug/kg	20	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Benzo(b)fluoranthene	ug/kg	200	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Benzo(g,h,i)perylene	ug/kg																					
Benzo(k)fluoranthene	ug/kg	2000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Chrysene	ug/kg	20000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	33.1		< 13.3	U	< 14.1	U	14.3		< 11.9	U	< 12.9	U
Dibenzo(a,h)anthracene	ug/kg	20	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Fluoranthene	ug/kg	300000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Fluorene	ug/kg	300000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Naphthalene	ug/kg	4000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	UJ-	< 13.3	UJ-	< 14.1	UJ-	< 11.4	UJ-	< 11.9	UJ-	< 12.9	U
Phenanthrene	ug/kg																					
Pyrene	ug/kg	200000	< 10.2	U	< 12.1	U	< 10.3	U	< 10.9	U	< 23	U	< 13.3	U	< 14.1	U	< 11.4	U	< 11.9	U	< 12.9	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		6260		11500		3500		6420		13600		6250		7140		20600		21900		12900	
Total Organic Carbon	mg/kg		5390 6490 5890 7270		11900 9690 11700 12800		3360 3370 3780 3490		6250 6310 6790 6330		14100 11100 13700 15400		6500 6030 6670 5820		6180 6910 8150 7320		33100 15200 16100 17800		19700 27000 20300 20400		11500 12800 13000 14300	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
C11-C22 Aromatics	mg/kg	400									269						186		53			
C19-C36 Aliphatics	mg/kg	100000									194						233		< 11.9	U		
C9-C18 Aliphatics	mg/kg	2000									67.9						39.5		< 11.9	U		
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		74.2		< 12.3	U	< 10.3	U	< 10.9	U	883		< 13.2	U	15.3		468		203		< 12.8	UJ
Total Extractable Hydrocarbons	mg/kg										531						459		53			
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 4.8	U	< 5.9	U	< 5.1	U	< 5.5	U	< 7.8	UJ-	< 6.6	U	< 7.1	U	< 6.9	U	< 10.5	U	< 7.3	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 4.8	U	< 5.9	U	< 5.1	U	< 5.5	U	< 7.8	UJ-	< 6.6	U	< 7.1	U	< 6.9	U	< 10.5	U	< 7.3	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 4.8	U	< 5.9	U	< 5.1	U	< 5.5	U	< 7.8	U	11.8		< 7.1	U	< 6.9	U	< 10.5	U	< 7.3	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 4.8	U	< 5.9	U	< 5.1	U	< 5.5	U	< 7.8	UJ-	27.1		< 7.1	U	< 6.9	U	< 10.5	U	< 7.3	U
Benzene	mg/kg	0.04	< 0.024	U	< 0.03	U	< 0.026	U	< 0.027	U	< 0.039	UJ-	< 0.033	U	< 0.036	U	< 0.035	U	< 0.052	U	< 0.037	U
C9-C10 Aromatics	mg/kg	100	< 0.96	U	< 1.2	U	< 1	U	< 1.1	U	< 1.6	UJ-	15.1		< 1.4	U	< 1.4	U	< 2.1	U	< 1.5	U
Ethylbenzene	mg/kg	6	< 0.048	U	< 0.059	U	< 0.051	U	< 0.055	U	< 0.078	UJ-	< 0.066	U	< 0.071	U	< 0.069	U	< 0.1	U	< 0.073	U
m&p-Xylene	mg/kg		< 0.096	U	< 0.12	U	< 0.1	U	< 0.11	U	< 0.16	UJ-	< 0.13	U	< 0.14	U	< 0.14	U	< 0.21	U	< 0.15	U
Methyl-tert-butylether	mg/kg	0.08	< 0.048	U	< 0.059	U	< 0.051	U	< 0.055	U	< 0.078	U	< 0.066	U	< 0.071	U	< 0.069	U	< 0.1	U	< 0.073	U
Naphthalene	mg/kg	4000	< 0.57	U	< 0.71	U	< 0.61	U	< 0.66	U	< 0.94	U	< 0.79	U	< 0.86	U	< 0.83	U	< 1.3	U	< 0.88	U
o-Xylene	mg/kg		< 0.048	U	< 0.059	U	< 0.051	U	< 0.055	U	< 0.078	U	0.13		< 0.071	U	< 0.069	U	< 0.1	U	< 0.073	U
Toluene	mg/kg	10	< 0.048	U	< 0.059	U	< 0.051	U	< 0.055	U	< 0.078	UJ-	< 0.066	U	< 0.071	U	< 0.069	U	< 0.1	U	< 0.073	U
Total Purgeable Hydrocarbons	mg/kg		< 9.6	U	< 11.8	U	< 10.2	U	< 10.9	U	< 15.6	UJ-	38.5		< 14.3	U	< 13.9	U	< 20.9	U	< 14.6	U
Xylenes, total	mg/kg	70	< 0.14	U	< 0.18	U	< 0.15	U	< 0.16	U	< 0.23	UJ-	< 0.2	U	< 0.21	U	< 0.21	U	< 0.31	U	< 0.22	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	BIMT0826SO502		BIMT0826SO503		BIMT0826SO504		BIMT0826SO505		LAMT0901SO501		LAMT0814SO410		BIMT0816SO501		BIMT0816SO523		LAMT0817SO412		LAMT0817SO417	
		Sample Date	8/26/2011		8/26/2011		8/26/2011		8/26/2011		9/1/2011		8/14/2011		8/16/2011		8/16/2011		8/17/2011		8/17/2011	
		Start Depth (in)	0		6		12		18		0		0		0		0		0		0	
		End Depth (in)	6		12		18		24		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 4		Figure 4		Figure 4		Figure 4		Figure 4	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		25.1		19.4		18.3		23.1		9		5		29.8		13.8		10.7		10.2	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
1,2-Dichlorobenzene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
1,2-Diphenylhydrazine	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
1,3-Dichlorobenzene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
1,4-Dichlorobenzene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
1-Methylnaphthalene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2,4,5-Trichlorophenol	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
2,4,6-Trichlorophenol	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2,4-Dichlorophenol	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2,4-Dimethylphenol	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2,4-Dinitrophenol	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
2,4-Dinitrotoluene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2,6-Dinitrotoluene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2-Chloronaphthalene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2-Chlorophenol	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2-Methylnaphthalene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2-Methylphenol (o-Cresol)	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
2-Nitroaniline	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
2-Nitrophenol	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
3&4-Methylphenol	ug/kg		< 881	U	< 816	U	< 805	U	< 858	U	< 725	U	< 695	U	< 934	U	< 760	U	< 737	U	< 735	U
3,3'-Dichlorobenzidine	ug/kg		< 895	U	< 828	U	< 817	U	< 871	U	< 736	U	< 705	U	< 948	U	< 772	U	< 748	U	< 746	U
3-Nitroaniline	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
4-Bromophenyl phenyl ether	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
4-Chloro-3-methylphenol	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
4-Chloroaniline	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
4-Chlorophenyl phenyl ether	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
4-Nitroaniline	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
4-Nitrophenol	ug/kg		< 2270	U	< 2100	U	< 2070	U	< 2210	U	< 1870	U	< 1790	U	< 2410	U	< 1960	U	< 1900	U	< 1890	U
Acenaphthene	ug/kg	200000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Acenaphthylene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Anthracene	ug/kg	2000000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Benzo(a)anthracene	ug/kg	200	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Benzo(a)pyrene	ug/kg	20	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Benzo(b)fluoranthene	ug/kg	200	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Benzo(g,h,i)perylene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Benzo(k)fluoranthene	ug/kg	2000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Bis(2-chloroethoxy)methane	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Bis(2-chloroethyl)ether	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
bis(2-chloroisopropyl)ether	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Butylbenzylphthalate	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Carbazole	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Chrysene	ug/kg	20000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Dibenzo(a,h)anthracene	ug/kg	20	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Dibenzofuran	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Diethyl phthalate	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Dimethyl phthalate	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Di-n-butyl phthalate	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Di-n-octyl phthalate	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Fluoranthene	ug/kg	300000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Fluorene	ug/kg	300000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Hexachloro-1,3-butadiene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Hexachlorobenzene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Hexachloroethane	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Isophorone	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	BIMT0826SO502		BIMT0826SO503		BIMT0826SO504		BIMT0826SO505		LAMT0901SO501		LAMT0814SO410		BIMT0816SO501		BIMT0816SO523		LAMT0817SO412		LAMT0817SO417	
		Sample Date	8/26/2011		8/26/2011		8/26/2011		8/26/2011		9/1/2011		8/14/2011		8/16/2011		8/16/2011		8/17/2011		8/17/2011	
		Start Depth (in)	0		6		12		18		0		0		0		0		0		0	
		End Depth (in)	6		12		18		24		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 3		Figure 3		Figure 3		Figure 3		Figure 3		Figure 4		Figure 4		Figure 4		Figure 4		Figure 4	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Nitrobenzene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
n-Nitrosodimethylamine	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
n-Nitroso-di-n-propylamine	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
n-nitrosodiphenylamine	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Pentachlorophenol	ug/kg		< 895	U	< 828	U	< 817	U	< 871	U	< 736	U	< 705	U	< 948	U	< 772	U	< 748	U	< 746	U
Phenanthrene	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Phenol	ug/kg		< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Pyrene	ug/kg	200000	< 441	U	< 408	U	< 402	U	< 429	U	< 363	U	< 347	U	< 467	U	< 380	U	< 368	U	< 368	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	200000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Acenaphthylene	ug/kg																				< 11.1	U
Anthracene	ug/kg	2000000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Benzo(a)anthracene	ug/kg	200	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Benzo(a)pyrene	ug/kg	20	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Benzo(b)fluoranthene	ug/kg	200	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	11.3		< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Benzo(g,h,i)perylene	ug/kg																				< 11.1	U
Benzo(k)fluoranthene	ug/kg	2000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Chrysene	ug/kg	20000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Dibenzo(a,h)anthracene	ug/kg	20	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Fluoranthene	ug/kg	300000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Fluorene	ug/kg	300000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Naphthalene	ug/kg	4000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Phenanthrene	ug/kg																				< 11.1	U
Pyrene	ug/kg	200000	< 13.4	U	< 12.4	U	< 12.2	U	< 13	U	< 11	U	< 10.5	U	< 14.1	U	< 11.5	U	< 11.2	U	< 11.1	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		13400		7650		10500		7460		23000		3110		29000		14400		8910		21800	
Total Organic Carbon	mg/kg		13600		8340		9740		8060		18700		3060		31200		14500		9160		26400	
			13400		6880		12100		6300		24400		3380		27900		14600		9170		19100	
			13400		7740		10100		7200		26600		3010		30500		13600		8220		18500	
			13000		7630		9970		8280		22300		2980		26400		15100		9080		23300	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
C11-C22 Aromatics	mg/kg	400																				
C19-C36 Aliphatics	mg/kg	100000																				
C9-C18 Aliphatics	mg/kg	2000																				
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		79.5		< 12.1	UJ	199		< 13	UJ	52.5		< 10.2	U	30.1		20.3					
Total Extractable Hydrocarbons	mg/kg																		29.9		22.1	
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 8.7	U	< 7.1	U	< 7	U	< 7.4	U	< 5.5	U	< 4.9	U	< 6.8	U	< 5.7	U	< 5.4	U	< 5.5	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 8.7	U	< 7.1	U	< 7	U	< 7.4	U	< 5.5	U	< 4.9	U	< 6.8	U	< 5.7	U	< 5.4	U	< 5.5	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 8.7	U	< 7.1	U	< 7	U	< 7.4	U	< 5.5	U	< 4.9	U	< 6.8	U	< 5.7	U	< 5.4	U	< 5.5	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 8.7	U	< 7.1	U	< 7	U	< 7.4	U	< 5.5	U	< 4.9	U	< 6.8	U	< 5.7	U	< 5.4	U	< 5.5	U
Benzene	mg/kg	0.04	< 0.044	U	< 0.036	U	< 0.035	U	< 0.037	U	< 0.027	U	< 0.024	U	< 0.034	U	< 0.029	U	< 0.027	U	< 0.027	U
C9-C10 Aromatics	mg/kg	100	< 1.7	U	< 1.4	U	< 1.4	U	< 1.5	U	< 1.1	U	< 0.98	U	< 1.4	U	< 1.1	U	< 1.1	U	< 1.1	U
Ethylbenzene	mg/kg	6	< 0.087	U	< 0.071	U	< 0.07	U	< 0.074	U	< 0.055	U	< 0.049	U	< 0.068	U	< 0.057	U	< 0.054	U	< 0.055	U
m&p-Xylene	mg/kg		< 0.17	U	< 0.14	U	< 0.14	U	< 0.15	U	< 0.11	U	< 0.098	U	< 0.14	U	< 0.11	U	< 0.11	U	< 0.11	U
Methyl-tert-butylether	mg/kg	0.08	< 0.087	U	< 0.071	U	< 0.07	U	< 0.074	U	< 0.055	U	< 0.049	U	< 0.068	U	< 0.057	U	< 0.054	U	< 0.055	U
Naphthalene	mg/kg	4000	< 1	U	< 0.85	U	< 0.84	U	< 0.88	U	< 0.66	U	< 0.59	U	< 0.82	U	< 0.69	U	< 0.65	U	< 0.66	U
o-Xylene	mg/kg		< 0.087	U	< 0.071	U	< 0.07	U	< 0.074	U	< 0.055	U	< 0.049	U	< 0.068	U	< 0.057	U	< 0.054	U	< 0.055	U
Toluene	mg/kg	10	< 0.087	U	< 0.071	U	< 0.07	U	< 0.074	U	< 0.055	U	< 0.049	U	< 0.068	U	< 0.057	U	< 0.054	U	< 0.055	U
Total Purgeable Hydrocarbons	mg/kg		< 17.4	U	< 14.2	U	< 14.1	U	< 14.7	U	< 10.9	U	< 9.8	U	< 13.7	U	< 11.5	U	< 10.9	U	< 10.9	U
Xylenes, total	mg/kg	70	< 0.26	U	< 0.21	U	< 0.21	U	< 0.22	U	< 0.16	U	< 0.15	U	< 0.2	U	< 0.17	U	< 0.16	U	< 0.16	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0824SO616		LAMT0824SO618		LAMT0825SO601		LAMT0815SO401		LAMT0815SO407		LAMT0815SO404		LAMT0817SO402		LAMT0817SO407		BIMT0823SO507		LAMT0825SO606	
		Sample Date	8/24/2011		8/24/2011		8/25/2011		8/15/2011		8/15/2011		8/15/2011		8/17/2011		8/17/2011		8/23/2011		8/25/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Field Duplicate		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 4		Figure 4		Figure 4		Figure 5		Figure 5		Figure 5		Figure 5		Figure 5		Figure 5		Figure 5	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		3.1		1.4		8.6		21		5.3		11.5		3.6		20.1		30.8		1.5	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
1,2-Dichlorobenzene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
1,2-Diphenylhydrazine	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
1,3-Dichlorobenzene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
1,4-Dichlorobenzene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
1-Methylnaphthalene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2,4,5-Trichlorophenol	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
2,4,6-Trichlorophenol	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2,4-Dichlorophenol	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2,4-Dimethylphenol	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2,4-Dinitrophenol	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
2,4-Dinitrotoluene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	UJ-	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2,6-Dinitrotoluene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	UJ-	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2-Chloronaphthalene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2-Chlorophenol	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2-Methylnaphthalene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2-Methylphenol (o-Cresol)	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
2-Nitroaniline	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
2-Nitrophenol	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
3&4-Methylphenol	ug/kg		< 679	U	< 665	U	< 719	U	< 835	U	< 693	U	< 746	U	< 680	U	< 824	U	< 950	U	< 670	U
3,3'-Dichlorobenzidine	ug/kg		< 689	U	< 675	U	< 730	U	< 848	U	< 703	U	< 757	U	< 690	U	< 836	U	< 964	U	< 680	U
3-Nitroaniline	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
4,6-Dinitro-2-methylphenol	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
4-Bromophenyl phenyl ether	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
4-Chloro-3-methylphenol	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
4-Chloroaniline	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
4-Chlorophenyl phenyl ether	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
4-Nitroaniline	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
4-Nitrophenol	ug/kg		< 1750	U	< 1710	U	< 1850	U	< 2150	U	< 1780	U	< 1920	U	< 1750	U	< 2120	U	< 2450	U	< 1730	U
Acenaphthene	ug/kg	200000	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Acenaphthylene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Anthracene	ug/kg	2000000	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Benzo(a)anthracene	ug/kg	200	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Benzo(a)pyrene	ug/kg	20	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Benzo(b)fluoranthene	ug/kg	200	< 339	U	< 333	U	< 360	U	< 418	U	**503**		< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Benzo(g,h,i)perylene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Benzo(k)fluoranthene	ug/kg	2000	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Bis(2-chloroethoxy)methane	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Bis(2-chloroethyl)ether	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
bis(2-chloroisopropyl)ether	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Butylbenzylphthalate	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Carbazole	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Chrysene	ug/kg	20000	< 339	U	< 333	U	< 360	U	< 418	U	389		< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Dibenzo(a,h)anthracene	ug/kg	20	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Dibenzofuran	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Diethyl phthalate	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Dimethyl phthalate	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Di-n-butyl phthalate	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Di-n-octyl phthalate	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Fluoranthene	ug/kg	300000	< 339	U	< 333	U	< 360	U	< 418	U	537		< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Fluorene	ug/kg	300000	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Hexachloro-1,3-butadiene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Hexachlorobenzene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Hexachloroethane	ug/kg		< 339	U	< 333	U	< 360	U	< 418	UJ-	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Isophorone	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0824SO616		LAMT0824SO618		LAMT0825SO601		LAMT0815SO401		LAMT0815SO407		LAMT0815SO404		LAMT0817SO402		LAMT0817SO407		BIMT0823SO507		LAMT0825SO606	
		Sample Date	8/24/2011		8/24/2011		8/25/2011		8/15/2011		8/15/2011		8/15/2011		8/17/2011		8/17/2011		8/23/2011		8/25/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Field Duplicate		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 4		Figure 4		Figure 4		Figure 5		Figure 5		Figure 5		Figure 5		Figure 5		Figure 5		Figure 5	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Nitrobenzene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	UJ-	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
n-Nitrosodimethylamine	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
n-Nitroso-di-n-propylamine	ug/kg		< 339	U	< 333	U	< 360	U	< 418	UJ-	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
n-nitrosodiphenylamine	ug/kg		< 339	U	< 333	U	< 360	U	< 418	UJ-	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Pentachlorophenol	ug/kg		< 689	U	< 675	U	< 730	U	< 848	U	< 703	U	< 757	U	< 690	U	< 836	U	< 964	U	< 680	U
Phenanthrene	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Phenol	ug/kg		< 339	U	< 333	U	< 360	U	< 418	U	< 346	U	< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Pyrene	ug/kg	200000	< 339	U	< 333	U	< 360	U	< 418	U	386		< 373	U	< 340	U	< 412	U	< 475	U	< 335	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	200000	< 10.3	U	< 10.1	U	< 10.9	U	< 12.7	U	< 10.5	U	< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Acenaphthylene	ug/kg																					
Anthracene	ug/kg	2000000	< 10.3	U	< 10.1	U	< 10.9	U	51.3		41.7		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Benzo(a)anthracene	ug/kg	200	< 10.3	U	< 10.1	U	< 10.9	U	120		99.5		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Benzo(a)pyrene	ug/kg	20	< 10.3	U	< 10.1	U	< 10.9	U	**99.4**		**78.5**		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Benzo(b)fluoranthene	ug/kg	200	< 10.3	U	< 10.1	U	< 10.9	U	**463**		**383**		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Benzo(g,h,i)perylene	ug/kg																					
Benzo(k)fluoranthene	ug/kg	2000	< 10.3	U	< 10.1	U	< 10.9	U	107		96.1		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Chrysene	ug/kg	20000	< 10.3	U	< 10.1	U	< 10.9	U	320		280		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Dibenzo(a,h)anthracene	ug/kg	20	< 10.3	U	< 10.1	U	< 10.9	U	**43.2**		**36.6**		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Fluoranthene	ug/kg	300000	< 10.3	U	< 10.1	U	< 10.9	U	476		384		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Fluorene	ug/kg	300000	< 10.3	U	< 10.1	U	< 10.9	U	< 12.7	U	< 10.5	U	< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 10.3	U	< 10.1	U	< 10.9	U	122		102		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Naphthalene	ug/kg	4000	< 10.3	U	< 10.1	U	< 10.9	UJ-	< 12.7	U	< 10.5	U	< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	UJ-
Phenanthrene	ug/kg																					
Pyrene	ug/kg	200000	< 10.3	U	< 10.1	U	< 10.9	U	317		264		< 11.3	U	< 10.3	U	< 12.4	U	< 14.4	U	< 10.1	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		1320		2320		1460		13300		11400		6040		4540		12800		4660		13500	
Total Organic Carbon	mg/kg		1300 1210 1250 1510		2170 2240 2470 2420		1310 1120 1720 1670		12700 12000 14900 13700		11800 11400 11700 10700		6230 5850 6310 5790		4940 4440 4660 4130		11400 12800 14000 13000		5930 4030 4280 4400		11500 13800 17900 10800	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
C11-C22 Aromatics	mg/kg	400																				
C19-C36 Aliphatics	mg/kg	100000																				
C9-C18 Aliphatics	mg/kg	2000																				
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		< 10.1	U	< 10	U	< 10.8	U	27.7		28.1		< 11.1	U					21		< 10.1	U
Total Extractable Hydrocarbons	mg/kg														16.8		72.7					
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 5	U	< 5	U	< 6.9	U	< 5.8	U	< 4.9	U	< 5.6	UJ-	< 5.1	U	< 6.2	U	< 6.7	U	< 7.2	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 5	U	< 5	U	< 6.9	U	< 5.8	U	< 4.9	U	< 5.6	UJ-	< 5.1	U	< 6.2	U	< 6.7	U	< 7.2	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 5	U	< 5	U	< 6.9	U	< 5.8	U	< 4.9	U	< 5.6	UJ-	< 5.1	U	< 6.2	U	< 6.7	U	< 7.2	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 5	U	< 5	U	< 6.9	U	< 5.8	U	< 4.9	U	< 5.6	UJ-	< 5.1	U	< 6.2	U	< 6.7	U	< 7.2	U
Benzene	mg/kg	0.04	< 0.025	U	< 0.025	U	0.036		< 0.029	U	< 0.025	U	< 0.028	UJ-	< 0.026	U	< 0.031	U	< 0.034	U	< 0.036	U
C9-C10 Aromatics	mg/kg	100	< 0.99	U	< 1	U	< 1.4	U	< 1.2	U	< 0.98	U	< 1.1	UJ-	< 1	U	< 1.2	U	< 1.3	U	< 1.4	U
Ethylbenzene	mg/kg	6	< 0.05	U	< 0.05	U	< 0.069	U	< 0.058	U	< 0.049	U	< 0.056	UJ-	< 0.051	U	< 0.062	U	< 0.067	U	< 0.072	U
m&p-Xylene	mg/kg		< 0.099	U	< 0.1	U	< 0.14	U	< 0.12	U	< 0.098	U	< 0.11	UJ-	< 0.1	U	< 0.12	U	< 0.13	U	< 0.14	U
Methyl-tert-butylether	mg/kg	0.08	< 0.05	U	< 0.05	U	< 0.069	U	< 0.058	U	< 0.049	U	< 0.056	UJ-	< 0.051	U	< 0.062	U	< 0.067	U	< 0.072	U
Naphthalene	mg/kg	4000	< 0.59	U	< 0.6	U	< 0.83	U	< 0.7	U	< 0.59	U	< 0.67	UJ-	< 0.61	U	< 0.75	U	< 0.81	U	< 0.86	U
o-Xylene	mg/kg		< 0.05	U	< 0.05	U	< 0.069	U	< 0.058	U	< 0.049	U	< 0.056	UJ-	< 0.051	U	< 0.062	U	< 0.067	U	< 0.072	U
Toluene	mg/kg	10	< 0.05	U	< 0.05	U	< 0.069	U	< 0.058	U	< 0.049	U	< 0.056	UJ-	< 0.051	U	< 0.062	U	< 0.067	U	< 0.072	U
Total Purgeable Hydrocarbons	mg/kg		< 9.9	U	< 10	U	< 13.8	U	< 11.6	U	< 9.8	U	< 11.2	UJ-	< 10.2	U	< 12.5	U	< 13.5	U	< 14.4	U
Xylenes, total	mg/kg	70	< 0.15	U	< 0.15	U	< 0.21	U	< 0.17	U	< 0.15	U	< 0.17	UJ-	< 0.15	U	< 0.19	U	< 0.2	U	< 0.22	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0825SO608		BIMT0828SO501		BIMT0815SO410		BIMT0816SO507		BIMT0816SO517		BIMT0823SO503		BIMT0823SO501		LAMT0826SO621		BIMT0816SO512		BIMT0817SO517	
		Sample Date	8/25/2011		8/28/2011		8/15/2011		8/16/2011		8/16/2011		8/23/2011		8/23/2011		8/26/2011		8/16/2011		8/17/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 5		Figure 5		Figure 6		Figure 6		Figure 6		Figure 6		Figure 6		Figure 6		Figure 7		Figure 7	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		3.3		21.8		5.5		29.5		28.2		7.6		14.4		8.7		6.6		26.6	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
1,2-Dichlorobenzene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
1,2-Diphenylhydrazine	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
1,3-Dichlorobenzene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
1,4-Dichlorobenzene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
1-Methylnaphthalene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2,4,5-Trichlorophenol	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
2,4,6-Trichlorophenol	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2,4-Dichlorophenol	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2,4-Dimethylphenol	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2,4-Dinitrophenol	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
2,4-Dinitrotoluene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2,6-Dinitrotoluene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2-Chloronaphthalene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2-Chlorophenol	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2-Methylnaphthalene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2-Methylphenol (o-Cresol)	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
2-Nitroaniline	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
2-Nitrophenol	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
3&4-Methylphenol	ug/kg		< 680	U	< 835	U	< 698	U	< 934	U	< 913	U	< 709	U	< 768	U	< 723	U	< 702	U	< 899	U
3,3'-Dichlorobenzidine	ug/kg		< 690	U	< 848	U	< 709	U	< 948	U	< 927	U	< 720	U	< 780	U	< 734	U	< 713	U	< 913	U
3-Nitroaniline	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
4,6-Dinitro-2-methylphenol	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
4-Bromophenyl phenyl ether	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
4-Chloro-3-methylphenol	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
4-Chloroaniline	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
4-Chlorophenyl phenyl ether	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
4-Nitroaniline	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
4-Nitrophenol	ug/kg		< 1750	U	< 2150	U	< 1800	U	< 2400	U	< 2350	U	< 1830	U	< 1980	U	< 1860	U	< 1810	U	< 2320	U
Acenaphthene	ug/kg	200000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Acenaphthylene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Anthracene	ug/kg	2000000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Benzo(a)anthracene	ug/kg	200	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Benzo(a)pyrene	ug/kg	20	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Benzo(b)fluoranthene	ug/kg	200	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Benzo(g,h,i)perylene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Benzo(k)fluoranthene	ug/kg	2000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Bis(2-chloroethoxy)methane	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Bis(2-chloroethyl)ether	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
bis(2-chloroisopropyl)ether	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Butylbenzylphthalate	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Carbazole	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Chrysene	ug/kg	20000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Dibenzo(a,h)anthracene	ug/kg	20	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Dibenzofuran	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Diethyl phthalate	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Dimethyl phthalate	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Di-n-butyl phthalate	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Di-n-octyl phthalate	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Fluoranthene	ug/kg	300000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Fluorene	ug/kg	300000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Hexachloro-1,3-butadiene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Hexachlorobenzene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Hexachloroethane	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Isophorone	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	LAMT0825SO608		BIMT0828SO501		BIMT0815SO410		BIMT0816SO507		BIMT0816SO517		BIMT0823SO503		BIMT0823SO501		LAMT0826SO621		BIMT0816SO512		BIMT0817SO517	
		Sample Date	8/25/2011		8/28/2011		8/15/2011		8/16/2011		8/16/2011		8/23/2011		8/23/2011		8/26/2011		8/16/2011		8/17/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 5		Figure 5		Figure 6		Figure 6		Figure 6		Figure 6		Figure 6		Figure 6		Figure 7		Figure 7	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Nitrobenzene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
n-Nitrosodimethylamine	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
n-Nitroso-di-n-propylamine	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
n-nitrosodiphenylamine	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Pentachlorophenol	ug/kg		< 690	U	< 848	U	< 709	U	< 948	U	< 927	U	< 720	U	< 780	U	< 734	U	< 713	U	< 913	U
Phenanthrene	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Phenol	ug/kg		< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Pyrene	ug/kg	200000	< 340	U	< 418	U	< 349	U	< 467	U	< 456	U	< 355	U	< 384	U	< 362	U	< 351	U	< 449	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	200000	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Acenaphthylene	ug/kg																					
Anthracene	ug/kg	2000000	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Benzo(a)anthracene	ug/kg	200	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Benzo(a)pyrene	ug/kg	20	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Benzo(b)fluoranthene	ug/kg	200	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Benzo(g,h,i)perylene	ug/kg																					
Benzo(k)fluoranthene	ug/kg	2000	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Chrysene	ug/kg	20000	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Dibenzo(a,h)anthracene	ug/kg	20	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Fluoranthene	ug/kg	300000	< 10.3	U	21.6		< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Fluorene	ug/kg	300000	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 10.3	U	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Naphthalene	ug/kg	4000	< 10.3	UJ-	< 12.7	U	< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Phenanthrene	ug/kg																					
Pyrene	ug/kg	200000	< 10.3	U	21		< 10.5	U	< 14.1	U	< 13.9	U	< 10.8	U	< 11.6	U	< 11	U	< 10.7	U	< 13.6	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		8000		3730		6620		9760		6020		3070		1230		11600		2650		4540	
Total Organic Carbon	mg/kg		7100		3670		5440		9140		6170		3590		1050		14700		2310		4030	
			8240		3480		6680		10300		5100		2830		1150		10100		2990		6760	
			8590		3780		6230		10100		5540		3110		1350		10400		2620		3690	
			8060		4010		8140		9420		7250		2750		1380		11100		2660		3670	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
C11-C22 Aromatics	mg/kg	400																				
C19-C36 Aliphatics	mg/kg	100000																				
C9-C18 Aliphatics	mg/kg	2000																				
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		< 10.3	U	< 12.6	U	< 10.5	U	32		23.8		< 10.8	U	< 11.3	U	21.4		< 10.6	U	< 13.3	U
Total Extractable Hydrocarbons	mg/kg																					
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 6.7	U	< 6.2	U	< 5.3	U	< 6.9	U	< 6.8	U	< 5.1	U	< 5.7	U	< 7.3	U	< 5	U	< 6.5	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 6.7	U	< 6.2	U	< 5.3	U	< 6.9	U	< 6.8	U	< 5.1	U	< 5.7	U	< 7.3	U	< 5	U	< 6.5	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 6.7	U	< 6.2	U	< 5.3	U	< 6.9	U	< 6.8	U	< 5.1	U	< 5.7	U	< 7.3	U	< 5	U	< 6.5	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 6.7	U	< 6.2	U	< 5.3	U	< 6.9	U	< 6.8	U	< 5.1	U	< 5.7	U	< 7.3	U	< 5	U	< 6.5	U
Benzene	mg/kg	0.04	< 0.034	U	**0.052**		< 0.026	U	< 0.035	U	< 0.034	U	< 0.025	U	< 0.029	U	< 0.037	U	< 0.025	U	< 0.032	U
C9-C10 Aromatics	mg/kg	100	< 1.3	U	< 1.2	U	< 1.1	U	< 1.4	U	< 1.4	U	< 1	U	< 1.1	U	< 1.5	U	< 1	U	< 1.3	U
Ethylbenzene	mg/kg	6	< 0.067	U	< 0.062	U	< 0.053	U	< 0.069	U	< 0.068	U	< 0.051	U	< 0.057	U	< 0.073	U	< 0.05	U	< 0.065	U
m&p-Xylene	mg/kg		< 0.13	U	< 0.12	U	< 0.11	U	< 0.14	U	< 0.14	U	< 0.1	U	< 0.11	U	< 0.15	U	< 0.1	U	< 0.13	U
Methyl-tert-butylether	mg/kg	0.08	< 0.067	U	< 0.062	U	< 0.053	U	< 0.069	U	< 0.068	U	< 0.051	U	< 0.057	U	< 0.073	U	< 0.05	U	< 0.065	U
Naphthalene	mg/kg	4000	< 0.81	U	< 0.74	U	< 0.63	U	< 0.83	U	< 0.82	U	< 0.61	U	< 0.69	U	< 0.88	U	< 0.6	U	< 0.78	UJ-
o-Xylene	mg/kg		< 0.067	U	< 0.062	U	< 0.053	U	< 0.069	U	< 0.068	U	< 0.051	U	< 0.057	U	< 0.073	U	< 0.05	U	< 0.065	U
Toluene	mg/kg	10	< 0.067	U	< 0.062	U	< 0.053	U	< 0.069	U	< 0.068	U	< 0.051	U	< 0.057	UJ+	< 0.073	U	< 0.05	U	< 0.065	U
Total Purgeable Hydrocarbons	mg/kg		< 13.5	U	< 12.3	U	< 10.5	U	< 13.9	U	< 13.6	U	< 10.2	U	< 11.5	U	< 14.6	U	< 10.1	U	< 12.9	U
Xylenes, total	mg/kg	70	< 0.2	U	< 0.18	U	< 0.16	U	< 0.21	U	< 0.2	U	< 0.15	U	< 0.17	U	< 0.22	U	< 0.15	U	< 0.19	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	BIMT0817SO512		BIMT0817SO507		BIMT0817SO501		BIMT0824SO507		BIMT0824SO502		HYMT0814SO502		BIMT0831SO501		PPMT0831SO501		HYMT0814SO501		FOMT0814SO501	
		Sample Date	8/17/2011		8/17/2011		8/17/2011		8/24/2011		8/24/2011		8/14/2011		8/31/2011		8/31/2011		8/14/2011		8/14/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
	Figure Reference		Figure 7		Figure 7		Figure 8		Figure 8		Figures 8&9		Figure 9		Figure 10		Figure 10		Figure 12		Figure 13	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		17.4		3.4		17.3		1.2		9.7		10.1		3.5		11.3		26		10.9	
Semivolatile Organic Compounds (USEPA 8270)																						
1,2,4-Trichlorobenzene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
1,2-Dichlorobenzene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
1,2-Diphenylhydrazine	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
1,3-Dichlorobenzene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
1,4-Dichlorobenzene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
1-Methylnaphthalene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2,4,5-Trichlorophenol	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
2,4,6-Trichlorophenol	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2,4-Dichlorophenol	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2,4-Dimethylphenol	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2,4-Dinitrophenol	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
2,4-Dinitrotoluene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2,6-Dinitrotoluene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2-Chloronaphthalene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2-Chlorophenol	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2-Methylnaphthalene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2-Methylphenol (o-Cresol)	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
2-Nitroaniline	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
2-Nitrophenol	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
3&4-Methylphenol	ug/kg		< 799	U	< 681	U	< 796	U	< 663	U	< 728	U	< 729	U	< 682	U	< 744	U	< 889	U	< 741	U
3,3'-Dichlorobenzidine	ug/kg		< 811	U	< 691	U	< 808	U	< 673	U	< 739	U	< 740	U	< 692	U	< 755	U	< 903	U	< 752	U
3-Nitroaniline	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
4-Bromophenyl phenyl ether	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
4-Chloro-3-methylphenol	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
4-Chloroaniline	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
4-Chlorophenyl phenyl ether	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
4-Nitroaniline	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
4-Nitrophenol	ug/kg		< 2060	U	< 1750	U	< 2050	U	< 1710	U	< 1880	U	< 1880	U	< 1760	U	< 1920	U	< 2290	U	< 1910	U
Acenaphthene	ug/kg	200000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Acenaphthylene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Anthracene	ug/kg	2000000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Benzo(a)anthracene	ug/kg	200	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Benzo(a)pyrene	ug/kg	20	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Benzo(b)fluoranthene	ug/kg	200	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Benzo(g,h,i)perylene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Benzo(k)fluoranthene	ug/kg	2000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Bis(2-chloroethoxy)methane	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Bis(2-chloroethyl)ether	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
bis(2-chloroisopropyl)ether	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Butylbenzylphthalate	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Carbazole	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Chrysene	ug/kg	20000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Dibenzo(a,h)anthracene	ug/kg	20	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Dibenzofuran	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Diethyl phthalate	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Dimethyl phthalate	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Di-n-butyl phthalate	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Di-n-octyl phthalate	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Fluoranthene	ug/kg	300000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Fluorene	ug/kg	300000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Hexachloro-1,3-butadiene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Hexachlorobenzene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Hexachloroethane	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Isophorone	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	BIMT0817SO512		BIMT0817SO507		BIMT0817SO501		BIMT0824SO507		BIMT0824SO502		HYMT0814SO502		BIMT0831SO501		PPMT0831SO501		HYMT0814SO501		FOMT0814SO501	
		Sample Date	8/17/2011		8/17/2011		8/17/2011		8/24/2011		8/24/2011		8/14/2011		8/31/2011		8/31/2011		8/14/2011		8/14/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2		2		2	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
	Figure Reference		Figure 7		Figure 7		Figure 8		Figure 8		Figures 8&9		Figure 9		Figure 10		Figure 10		Figure 12		Figure 13	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Nitrobenzene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
n-Nitrosodimethylamine	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
n-Nitroso-di-n-propylamine	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
n-nitrosodiphenylamine	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Pentachlorophenol	ug/kg		< 811	U	< 691	U	< 808	U	< 673	U	< 739	U	< 740	U	< 692	U	< 755	U	< 903	U	< 752	U
Phenanthrene	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Phenol	ug/kg		< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Pyrene	ug/kg	200000	< 399	U	< 341	U	< 398	U	< 332	U	< 364	U	< 365	U	< 341	U	< 372	U	< 445	U	< 370	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																						
Acenaphthene	ug/kg	200000	< 12.1	U	< 10.3	U	< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Acenaphthylene	ug/kg																					
Anthracene	ug/kg	2000000	< 12.1	U	< 10.3	U	< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Benzo(a)anthracene	ug/kg	200	< 12.1	U	38.7		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Benzo(a)pyrene	ug/kg	20	13.4		**39.2**		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Benzo(b)fluoranthene	ug/kg	200	17.9		61.1		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Benzo(g,h,i)perylene	ug/kg																					
Benzo(k)fluoranthene	ug/kg	2000	< 12.1	U	26.8		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Chrysene	ug/kg	20000	14.9		41.1		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Dibenzo(a,h)anthracene	ug/kg	20	< 12.1	U	< 10.3	U	< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Fluoranthene	ug/kg	300000	18.5		70.2		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Fluorene	ug/kg	300000	< 12.1	U	< 10.3	U	< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 12.1	U	13.4		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Naphthalene	ug/kg	4000	< 12.1	U	< 10.3	U	< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Phenanthrene	ug/kg																					
Pyrene	ug/kg	200000	17.9		65		< 12.1	U	< 10.1	U	< 11	U	< 11.1	U	< 10.3	U	< 11.3	U	< 13.5	U	< 11.2	U
Organic Carbon (USEPA 9060)																						
Mean Total Organic Carbon	mg/kg		29900		12400		6000		705		2880		5500		1530		15700		5170		2280	
Total Organic Carbon	mg/kg		34100		12400		5770		743		2690		4950		1510		17000		5270		2140	
			42000		9280		5790		729		2830		4120		1310		17900		5620		2380	
			19500		17900		5960		687		3130		7900		1840		13200		4860		2380	
			24000		10100		6480		661		2860		5020		1460		14600		4930		2230	
Extractable Petroleum Hydrocarbons (MADEP EPH)																						
C11-C22 Aromatics	mg/kg	400																				
C19-C36 Aliphatics	mg/kg	100000																				
C9-C18 Aliphatics	mg/kg	2000																				
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		41.2		25.4		15.7		< 10	U	< 11	U	< 11	U	< 10.4	U	27.3		< 13.3	U	< 11.1	U
Total Extractable Hydrocarbons	mg/kg																					
Volatile Petroleum Hydrocarbons (MADEP VPH)																						
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 5.8	U	< 5.1	U	< 5.6	U	< 4.6	U	< 5.5	U	< 5.3	U	< 5.2	U	< 5.6	U	< 6.3	U	< 5.4	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 5.8	U	< 5.1	U	< 5.6	U	< 4.6	U	< 5.5	U	< 5.3	U	< 5.2	U	< 5.6	U	< 6.3	U	< 5.4	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 5.8	U	< 5.1	U	< 5.6	U	< 4.6	U	< 5.5	U	< 5.3	U	< 5.2	U	< 5.6	U	< 6.3	U	< 5.4	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 5.8	U	< 5.1	U	< 5.6	U	< 4.6	U	< 5.5	U	< 5.3	U	< 5.2	U	< 5.6	U	< 6.3	U	< 5.4	U
Benzene	mg/kg	0.04	< 0.029	U	< 0.025	U	< 0.028	U	< 0.023	U	< 0.027	U	< 0.026	U	< 0.026	U	< 0.028	U	< 0.032	U	< 0.027	U
C9-C10 Aromatics	mg/kg	100	< 1.2	U	< 1	U	< 1.1	U	< 0.93	U	< 1.1	U	< 1.1	U	< 1	U	< 1.1	U	< 1.3	U	< 1.1	U
Ethylbenzene	mg/kg	6	< 0.058	U	< 0.051	U	< 0.056	U	< 0.046	U	< 0.055	U	< 0.053	U	< 0.052	U	< 0.056	U	< 0.063	U	< 0.054	U
m&p-Xylene	mg/kg		< 0.12	U	< 0.1	U	< 0.11	U	< 0.093	U	< 0.11	U	< 0.11	U	< 0.1	U	< 0.11	U	< 0.13	U	< 0.11	U
Methyl-tert-butylether	mg/kg	0.08	< 0.058	U	< 0.051	U	< 0.056	U	< 0.046	U	< 0.055	U	< 0.053	U	< 0.052	U	< 0.056	U	< 0.063	U	< 0.054	U
Naphthalene	mg/kg	4000	< 0.69	UJ-	< 0.61	UJ-	< 0.67	UJ-	< 0.56	U	< 0.66	U	< 0.63	U	< 0.62	U	< 0.67	U	< 0.76	U	< 0.65	U
o-Xylene	mg/kg		< 0.058	U	< 0.051	U	< 0.056	U	< 0.046	U	< 0.055	U	< 0.053	U	< 0.052	U	< 0.056	U	< 0.063	U	< 0.054	U
Toluene	mg/kg	10	< 0.058	U	< 0.051	U	< 0.056	U	< 0.046	U	< 0.055	U	< 0.053	U	< 0.052	U	< 0.056	U	< 0.063	U	< 0.054	U
Total Purgeable Hydrocarbons	mg/kg		< 11.5	U	< 10.1	U	< 11.2	U	< 9.3	U	< 11	U	< 10.6	U	< 10.3	U	< 11.2	U	< 12.7	U	< 10.8	U
Xylenes, total	mg/kg	70	< 0.17	U	< 0.15	U	< 0.17	U	< 0.14	U	< 0.16	U	< 0.16	U	< 0.15	U	< 0.17	U	< 0.19	U	< 0.16	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Sample	ROMT0814SO501		ROMT0814SO502		KIMT0813SO501		MIMT0813SO501		GLMT0812SO503		GLMT0812SO501		CAMT0813SO501		FAMT0813SO501	
		Sample Date	8/14/2011		8/14/2011		8/13/2011		8/13/2011		8/12/2011		8/12/2011		8/13/2011		8/13/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2	
		Sample Type	Normal		Field Duplicate		Normal		Normal		Normal		Normal		Normal		Normal	
	Figure Reference		Figure 13		Figure 13		Figure 14		Figure 14		Figure 16		Figure 16		Figure 15		Figure 15	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	%		26.4		28.1		27.9		24.5		3.4		20.4		8		14.8	
Semivolatile Organic Compounds (USEPA 8270)																		
1,2,4-Trichlorobenzene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
1,2-Dichlorobenzene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
1,2-Diphenylhydrazine	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
1,3-Dichlorobenzene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
1,4-Dichlorobenzene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
1-Methylnaphthalene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2,4,5-Trichlorophenol	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
2,4,6-Trichlorophenol	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2,4-Dichlorophenol	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2,4-Dimethylphenol	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2,4-Dinitrophenol	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
2,4-Dinitrotoluene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2,6-Dinitrotoluene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2-Chloronaphthalene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2-Chlorophenol	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2-Methylnaphthalene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2-Methylphenol (o-Cresol)	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
2-Nitroaniline	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
2-Nitrophenol	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
3&4-Methylphenol	ug/kg		< 896	U	< 918	U	< 915	U	< 874	U	< 681	U	< 829	U	< 718	U	< 775	U
3,3'-Dichlorobenzidine	ug/kg		< 910	U	< 932	U	< 929	U	< 887	U	< 691	U	< 842	U	< 728	U	< 786	U
3-Nitroaniline	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
4,6-Dinitro-2-methylphenol	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
4-Bromophenyl phenyl ether	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
4-Chloro-3-methylphenol	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
4-Chloroaniline	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
4-Chlorophenyl phenyl ether	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
4-Nitroaniline	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
4-Nitrophenol	ug/kg		< 2310	U	< 2370	U	< 2360	U	< 2250	U	< 1750	U	< 2140	U	< 1850	U	< 2000	U
Acenaphthene	ug/kg	200000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Acenaphthylene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Anthracene	ug/kg	2000000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Benzo(a)anthracene	ug/kg	200	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Benzo(a)pyrene	ug/kg	20	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Benzo(b)fluoranthene	ug/kg	200	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Benzo(g,h,i)perylene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Benzo(k)fluoranthene	ug/kg	2000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Bis(2-chloroethoxy)methane	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Bis(2-chloroethyl)ether	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
bis(2-chloroisopropyl)ether	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Bis(2-ethylhexyl)phthalate	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Butylbenzylphthalate	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Carbazole	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Chrysene	ug/kg	20000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Dibenzo(a,h)anthracene	ug/kg	20	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Dibenzofuran	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Diethyl phthalate	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Dimethyl phthalate	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Di-n-butyl phthalate	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Di-n-octyl phthalate	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Fluoranthene	ug/kg	300000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Fluorene	ug/kg	300000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Hexachloro-1,3-butadiene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Hexachlorobenzene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Hexachloroethane	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Isophorone	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U

Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

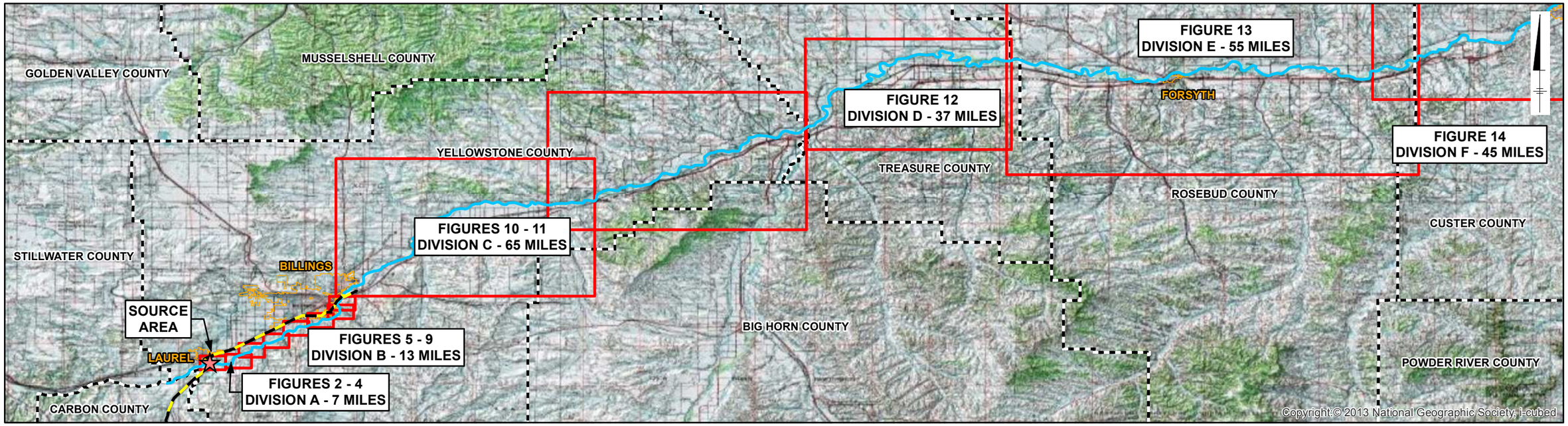
		Sample	ROMT0814SO501		ROMT0814SO502		KIMT0813SO501		MIMT0813SO501		GLMT0812SO503		GLMT0812SO501		CAMT0813SO501		FAMT0813SO501	
		Sample Date	8/14/2011		8/14/2011		8/13/2011		8/13/2011		8/12/2011		8/12/2011		8/13/2011		8/13/2011	
		Start Depth (in)	0		0		0		0		0		0		0		0	
		End Depth (in)	2		2		2		2		2		2		2		2	
		Sample Type	Normal		Field Duplicate		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 13		Figure 13		Figure 14		Figure 14		Figure 16		Figure 16		Figure 15		Figure 15	
Chemical	**Units**	**RBSL[2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Naphthalene	ug/kg	4000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Nitrobenzene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
n-Nitrosodimethylamine	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
n-Nitroso-di-n-propylamine	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
n-nitrosodiphenylamine	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Pentachlorophenol	ug/kg		< 910	U	< 932	U	< 929	U	< 887	U	< 691	U	< 842	U	< 728	U	< 786	U
Phenanthrene	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Phenol	ug/kg		< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Pyrene	ug/kg	200000	< 448	U	< 459	U	< 458	U	< 437	U	< 340	U	< 414	U	< 359	U	< 387	U
Polycyclic Aromatic Hydrocarbons (USEPA 8270 SIM)																		
Acenaphthene	ug/kg	200000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Acenaphthylene	ug/kg																	
Anthracene	ug/kg	2000000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Benzo(a)anthracene	ug/kg	200	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Benzo(a)pyrene	ug/kg	20	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Benzo(b)fluoranthene	ug/kg	200	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Benzo(g,h,i)perylene	ug/kg																	
Benzo(k)fluoranthene	ug/kg	2000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Chrysene	ug/kg	20000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Dibenzo(a,h)anthracene	ug/kg	20	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Fluoranthene	ug/kg	300000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Fluorene	ug/kg	300000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Indeno(1,2,3-cd)pyrene	ug/kg	200	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Naphthalene	ug/kg	4000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Phenanthrene	ug/kg																	
Pyrene	ug/kg	200000	< 13.5	U	< 13.9	U	< 13.9	U	< 13.2	U	< 10.3	U	< 12.6	U	< 10.8	U	< 11.7	U
Organic Carbon (USEPA 9060)																		
Mean Total Organic Carbon	mg/kg		9290		6050		9420		2920		4880		2100		7940		7750	
Total Organic Carbon	mg/kg		10300 8200 9500 9170		5280 6040 5560 7320		8110 8940 11400 9280		2520 2650 2820 3710		4720 6060 4470 4250		1780 1930 2090 2580		12700 7080 5270 6650		8170 6960 9320 6550	
Extractable Petroleum Hydrocarbons (MADEP EPH)																		
C11-C22 Aromatics	mg/kg	400																
C19-C36 Aliphatics	mg/kg	100000																
C9-C18 Aliphatics	mg/kg	2000																
Total Extractable Hydrocarbons - Initial Screen (200 mg/kg)	mg/kg		20.9		< 13.7	U					< 10.3	U	< 12.5	U				
Total Extractable Hydrocarbons	mg/kg						29.4		< 13.2	U					< 10.7	U	< 11.6	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																		
Aliphatic (C05-C08), Adjusted	mg/kg	60	< 6.7	U	< 6.8	U	< 6.7	U	< 6.3	U	< 5	U	< 6.2	U	< 5.1	U	< 5.8	U
Aliphatic (C05-C08).Unadjusted	mg/kg	60	< 6.7	U	< 6.8	U	< 6.7	U	< 6.3	U	< 5	U	< 6.2	U	< 5.1	U	< 5.8	U
Aliphatic (C09-C12), Adjusted	mg/kg	100	< 6.7	U	< 6.8	U	< 6.7	U	< 6.3	U	< 5	U	< 6.2	U	< 5.1	U	< 5.8	U
Aliphatic (C09-C12).Unadjusted	mg/kg	100	< 6.7	U	< 6.8	U	< 6.7	U	< 6.3	U	< 5	U	< 6.2	U	< 5.1	U	< 5.8	U
Benzene	mg/kg	0.04	< 0.033	U	< 0.034	U	< 0.034	U	< 0.031	U	< 0.025	U	< 0.031	U	< 0.025	U	< 0.029	U
C9-C10 Aromatics	mg/kg	100	< 1.3	U	< 1.4	U	< 1.3	U	< 1.3	U	< 1	U	< 1.2	U	< 1	U	< 1.2	U
Ethylbenzene	mg/kg	6	< 0.067	U	< 0.068	U	< 0.067	U	< 0.063	U	< 0.05	U	< 0.062	U	< 0.051	U	< 0.058	U
m&p-Xylene	mg/kg		< 0.13	U	< 0.14	U	< 0.13	U	< 0.13	U	< 0.1	U	< 0.12	U	< 0.1	U	< 0.12	U
Methyl-tert-butylether	mg/kg	0.08	< 0.067	U	< 0.068	U	< 0.067	U	< 0.063	U	< 0.05	U	< 0.062	U	< 0.051	U	< 0.058	U
Naphthalene	mg/kg	4000	< 0.8	U	< 0.82	U	< 0.8	U	< 0.75	U	< 0.6	U	< 0.75	U	< 0.61	U	< 0.7	U
o-Xylene	mg/kg		< 0.067	U	< 0.068	U	< 0.067	U	< 0.063	U	< 0.05	U	< 0.062	U	< 0.051	U	< 0.058	U
Toluene	mg/kg	10	< 0.067	U	< 0.068	U	< 0.067	U	< 0.063	U	< 0.05	U	< 0.062	U	< 0.051	U	< 0.058	U
Total Purgeable Hydrocarbons	mg/kg		< 13.3	U	< 13.7	U	< 13.4	U	< 12.5	U	< 10	U	< 12.5	U	< 10.2	U	< 11.7	U
Xylenes, total	mg/kg	70	< 0.2	U	< 0.21	U	< 0.2	U	< 0.19	U	< 0.15	U	< 0.19	U	< 0.15	U	< 0.18	U

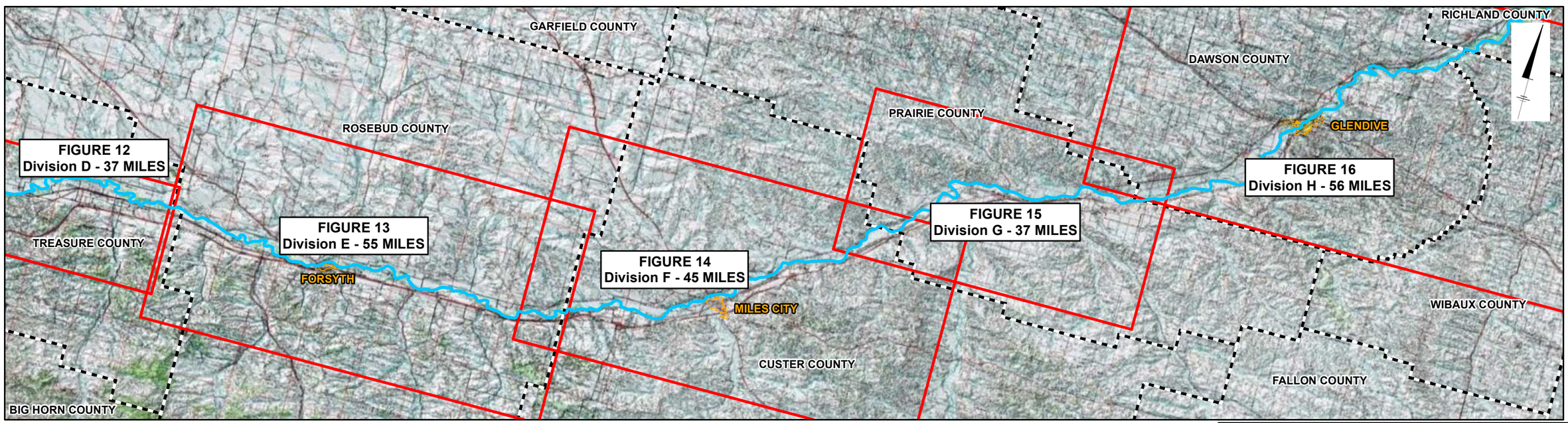
Table 10
Downstream Impacted Areas Soil and Sediment Data Report
Downstream Soil Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

Notes:

1. This table presents validated data.
2. Risk-Based Screening Level - Tier 1 Surface Soil (0 - 2 feet below ground surface), within 10 feet of the water table
3. Non-detects that exceed the RBSL - shaded
4. **Detects that exceed the RBSL - boldfaced**
5. mg/kg = milligrams per kilogram
6. ug/kg = micrograms per kilogram
7. + = Result may be biased high
8. - = Result may be biased low
9. J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
10. U = The chemical was not detected above the reporting limit shown.
11. UJ = The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
12. Qual = Laboratory Qualifier

Figures





LEGEND:

- SPILL SITE
- PIPELINE
- YELLOWSTONE RIVER CENTERLINE (APPROXIMATE)
- CITY BOUNDARY
- COUNTY BOUNDARY

0 15 30 Miles

GRAPHIC SCALE

NOTES:

1. BASEMAPPING TOPOGRAPHIC MAP PROVIDED BY ESRI ARCGIS ONLINE MAP SERVICE.
2. YELLOWSTONE RIVER CENTERLINE APPROXIMATED FROM 2009 AERIAL IMAGERY.

SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

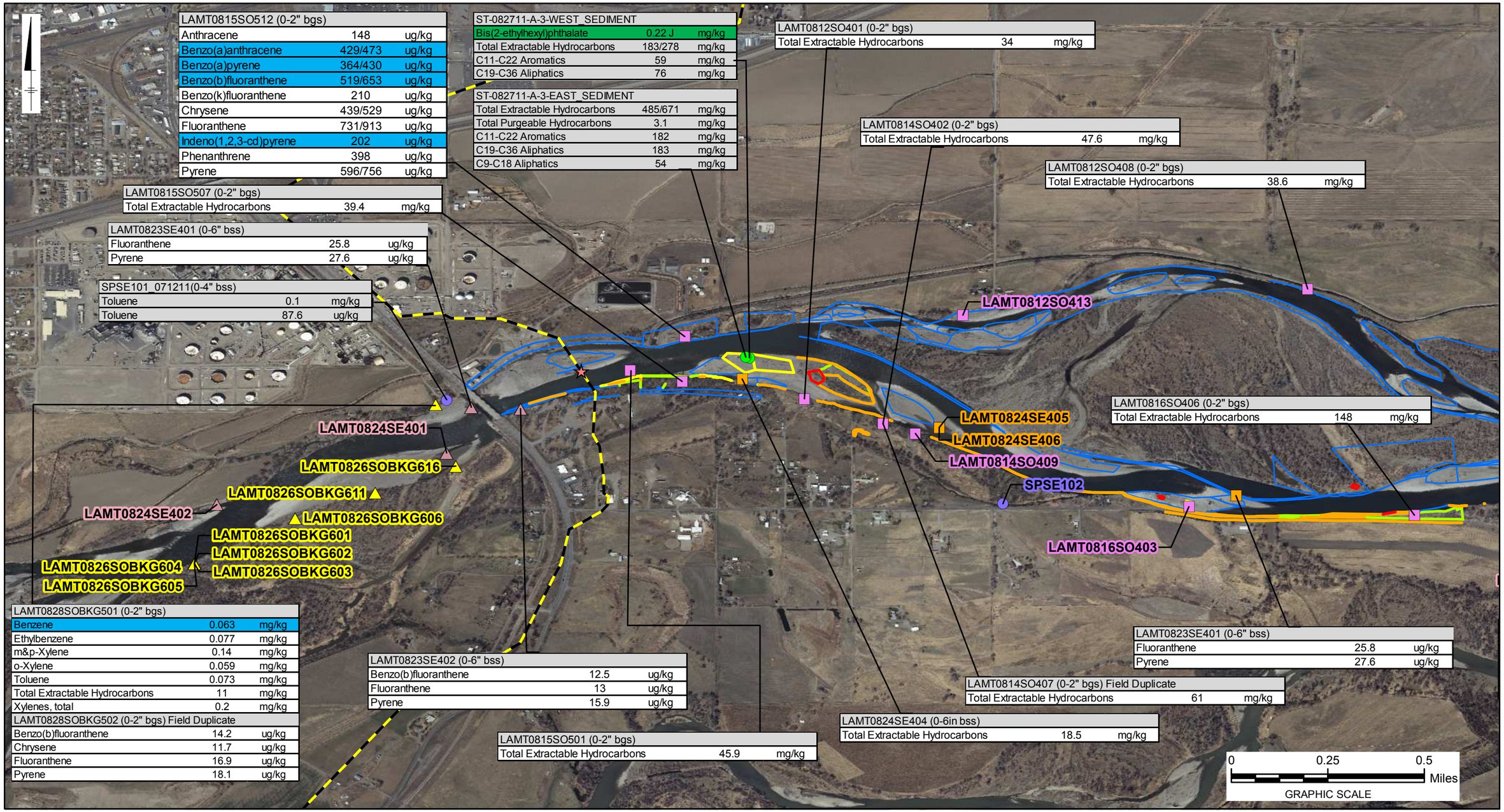
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

YELLOWSTONE RIVER STUDY AREA

ARCADIS

FIGURE 1

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\Fig1_Study Area.mxd 6/25/2013 7:52:59 AM (Page of)



LEGEND:

- LOCATION OF PIPELINE BREAK
- BACKGROUND SOIL SAMPLES
- DOWNSTREAM SOIL SAMPLES
- BACKGROUND SEDIMENT SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- MDEQ SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:
BGS = BELOW GROUND SURFACE
BSS = BELOW SEDIMENT SURFACE
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TEH = TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS
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USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NOTES:
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2. DATA TABLES PRESENT ONLY THOSE ANALYTICAL RESULTS DETECTED ABOVE REPORTING LIMITS (NOT INCLUDING TOC). SAMPLES WITHOUT DATA TABLES REPRESENT THOSE LOCATIONS WITH ANALYTICAL RESULTS NOT DETECTED ABOVE REPORTING LIMITS.
3. AERIALS: IMAGERY WAS ACQUIRED APRIL 2, 2012. 4-BAND DIGITAL AERIAL PHOTOGRAPHY, 1-FOOT PIXEL RESOLUTION.
4. USEPA AND MDEQ DATA IS PRESENTED ON THE GREY SHADED DATA TABLES, ALL OTHER TABLES PRESENT DATA COLLECTED IN ACCORDANCE WITH THE SOIL AND SEDIMENT SAMPLING PLAN (ARCADIS 2011A).
5. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.
6. ~J = RESULT MAY BE BIASED LOW. THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.

SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

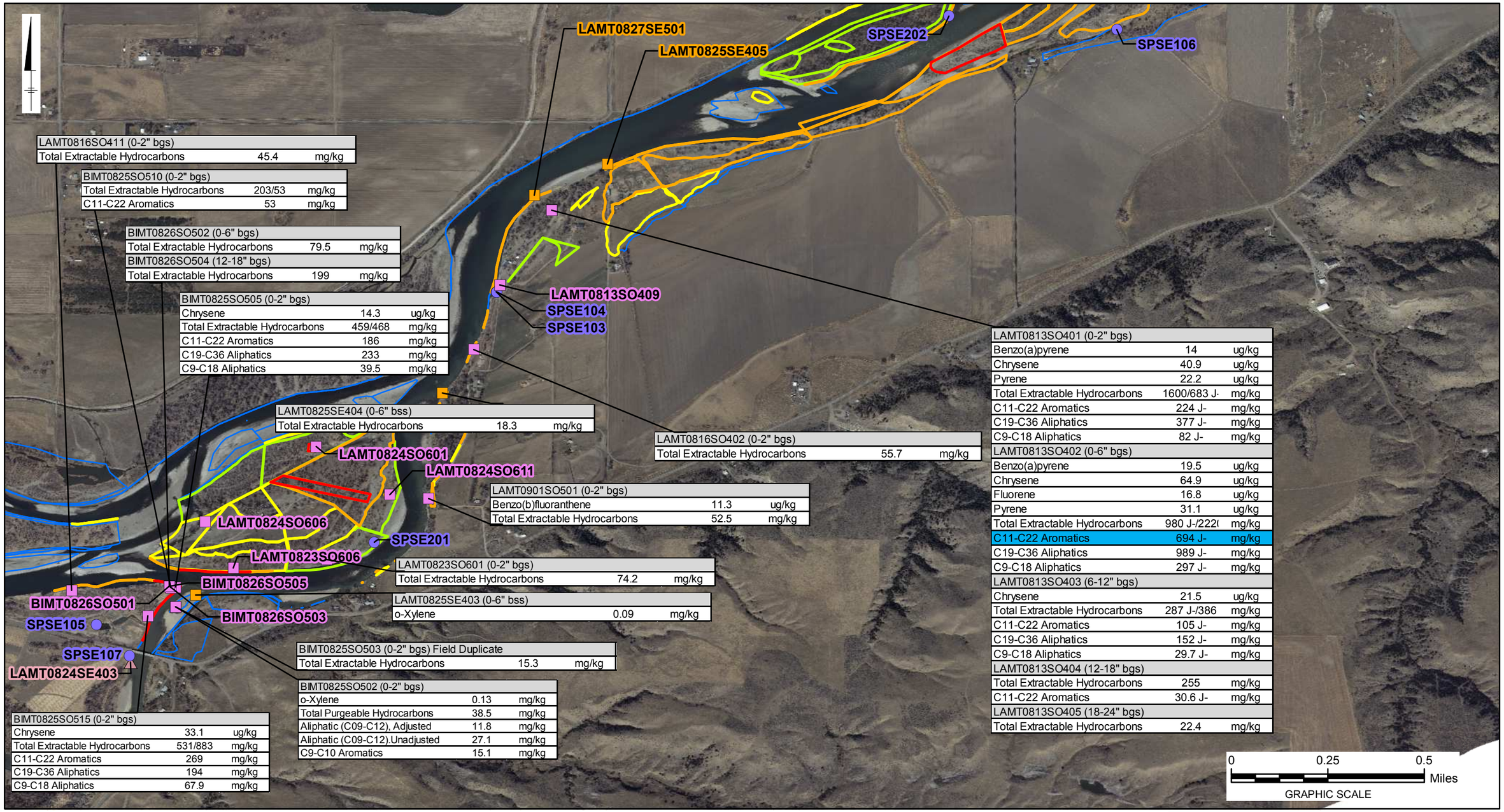
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION A

ARCADIS

FIGURE
2

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/27/2013 3:34:45 PM (Page 1 of 15)



LAMT0816SO411 (0-2" bgs)		
Total Extractable Hydrocarbons	45.4	mg/kg

BIMT0825SO510 (0-2" bgs)		
Total Extractable Hydrocarbons	203/53	mg/kg
C11-C22 Aromatics	53	mg/kg

BIMT0826SO502 (0-6" bgs)		
Total Extractable Hydrocarbons	79.5	mg/kg
BIMT0826SO504 (12-18" bgs)		
Total Extractable Hydrocarbons	199	mg/kg

BIMT0825SO505 (0-2" bgs)		
Chrysene	14.3	ug/kg
Total Extractable Hydrocarbons	459/468	mg/kg
C11-C22 Aromatics	186	mg/kg
C19-C36 Aliphatics	233	mg/kg
C9-C18 Aliphatics	39.5	mg/kg

LAMT0825SE404 (0-6" bss)		
Total Extractable Hydrocarbons	18.3	mg/kg

LAMT0816SO402 (0-2" bgs)		
Total Extractable Hydrocarbons	55.7	mg/kg

LAMT0901SO501 (0-2" bgs)		
Benzo(b)fluoranthene	11.3	ug/kg
Total Extractable Hydrocarbons	52.5	mg/kg

LAMT0823SO601 (0-2" bgs)		
Total Extractable Hydrocarbons	74.2	mg/kg

LAMT0825SE403 (0-6" bss)		
o-Xylene	0.09	mg/kg

BIMT0825SO503 (0-2" bgs) Field Duplicate		
Total Extractable Hydrocarbons	15.3	mg/kg

BIMT0825SO502 (0-2" bgs)		
o-Xylene	0.13	mg/kg
Total Purgeable Hydrocarbons	38.5	mg/kg
Aliphatic (C09-C12), Adjusted	11.8	mg/kg
Aliphatic (C09-C12).Unadjusted	27.1	mg/kg
C9-C10 Aromatics	15.1	mg/kg

BIMT0825SO515 (0-2" bgs)		
Chrysene	33.1	ug/kg
Total Extractable Hydrocarbons	531/883	mg/kg
C11-C22 Aromatics	269	mg/kg
C19-C36 Aliphatics	194	mg/kg
C9-C18 Aliphatics	67.9	mg/kg

LAMT0813SO401 (0-2" bgs)		
Benzo(a)pyrene	14	ug/kg
Chrysene	40.9	ug/kg
Pyrene	22.2	ug/kg
Total Extractable Hydrocarbons	1600/683 J-	mg/kg
C11-C22 Aromatics	224 J-	mg/kg
C19-C36 Aliphatics	377 J-	mg/kg
C9-C18 Aliphatics	82 J-	mg/kg
LAMT0813SO402 (0-6" bgs)		
Benzo(a)pyrene	19.5	ug/kg
Chrysene	64.9	ug/kg
Fluorene	16.8	ug/kg
Pyrene	31.1	ug/kg
Total Extractable Hydrocarbons	980 J-/222(	mg/kg
C11-C22 Aromatics	694 J-	mg/kg
C19-C36 Aliphatics	989 J-	mg/kg
C9-C18 Aliphatics	297 J-	mg/kg
LAMT0813SO403 (6-12" bgs)		
Chrysene	21.5	ug/kg
Total Extractable Hydrocarbons	287 J-/386	mg/kg
C11-C22 Aromatics	105 J-	mg/kg
C19-C36 Aliphatics	152 J-	mg/kg
C9-C18 Aliphatics	29.7 J-	mg/kg
LAMT0813SO404 (12-18" bgs)		
Total Extractable Hydrocarbons	255	mg/kg
C11-C22 Aromatics	30.6 J-	mg/kg
LAMT0813SO405 (18-24" bgs)		
Total Extractable Hydrocarbons	22.4	mg/kg

LEGEND:

- DOWNSTREAM SOIL SAMPLES
- BACKGROUND SEDIMENT SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:

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NOTES:

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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION A

ARCADIS

FIGURE
3

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
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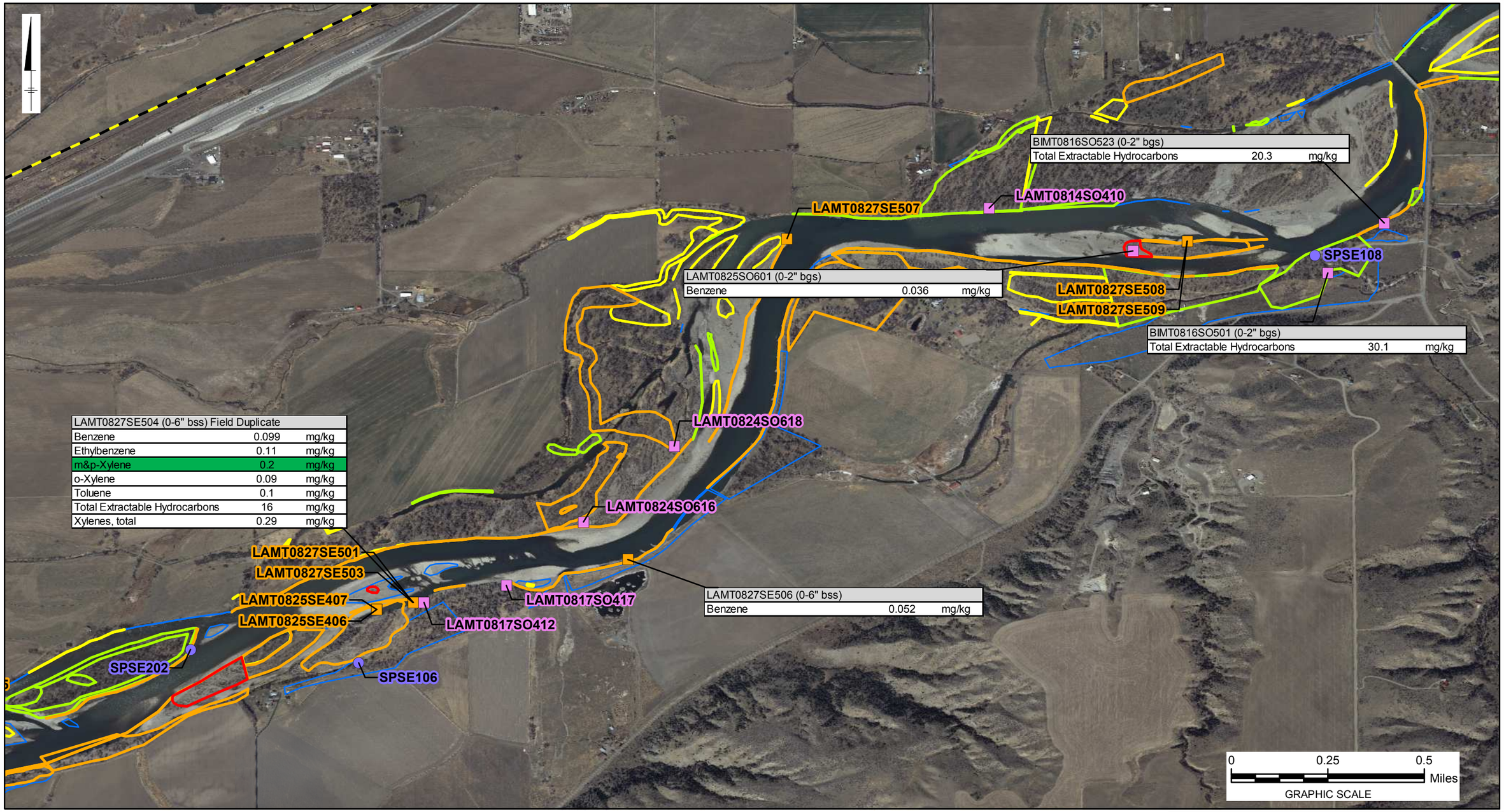

LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:
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SVOC = SEMI-VOLATILE ORGANIC COMPOUNDS
SS RBSL RES <10FT TO GW = MONTANA TIER 1 SURFACE RISK BASED SCREENING LEVELS FOR SOIL LESS THAN 10 FEET FROM GROUNDWATER
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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

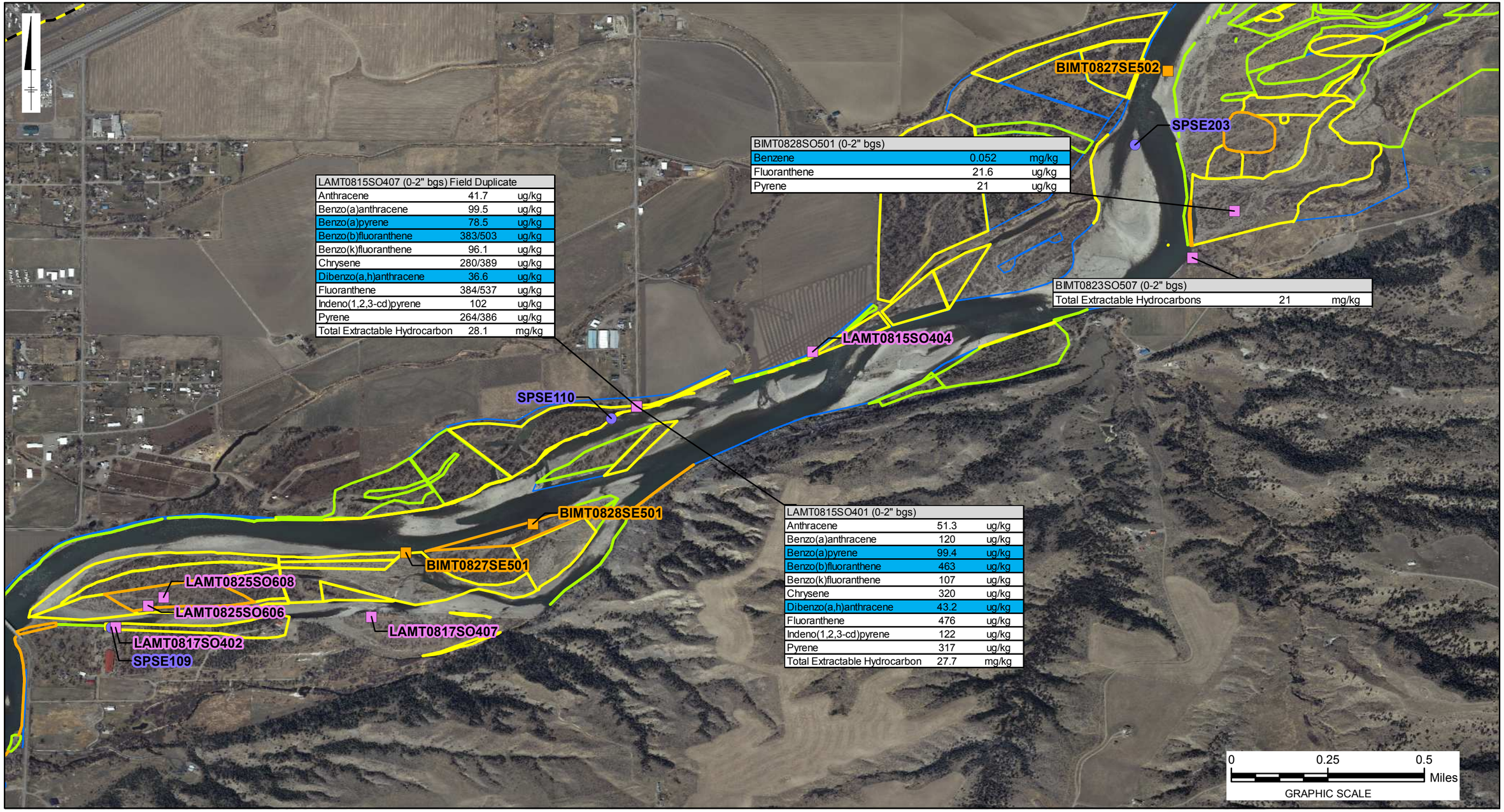
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION A

ARCADIS

FIGURE
4

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/27/2013 3:34:45 PM (Page 3 of 15)



LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

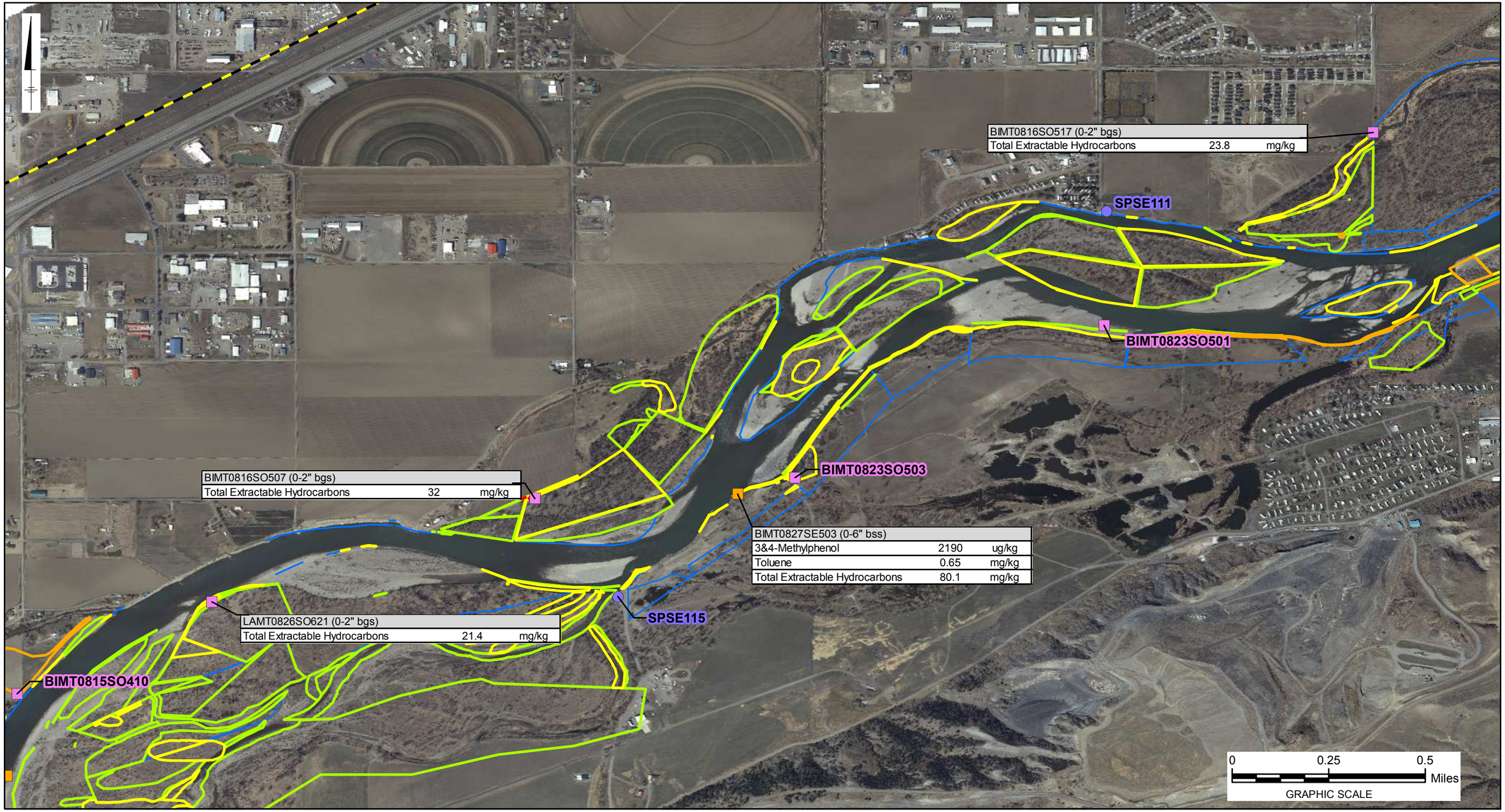
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION B

ARCADIS

FIGURE
5

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/27/2013 3:34:45 PM (Page 4 of 15)



LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:
BGS = BELOW GROUND SURFACE
BSS = BELOW SEDIMENT SURFACE
EPH = EXTRACTABLE PETROLEUM HYDROCARBONS
TEH = TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS
PAH = POLYCYCLIC AROMATIC HYDROCARBONS
SVOC = SEMI-VOLATILE ORGANIC COMPOUNDS
SS RBSL RES <10FT TO GW = MONTANA TIER 1 SURFACE RISK BASED SCREENING LEVELS FOR SOIL LESS THAN 10 FEET FROM GROUNDWATER
USEPA BTAG FS SB = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 3 BIOLOGICAL TECHNICAL ASSISTANCE GROUP FRESHWATER SEDIMENT SCREENING BENCHMARKS
MG/KG = MILLIGRAM PER KILOGRAM
UG/KG = MICROGRAM PER KILOGRAM
MDEQ = MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NOTES:
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2. DATA TABLES PRESENT ONLY THOSE ANALYTICAL RESULTS DETECTED ABOVE REPORTING LIMITS (NOT INCLUDING TOC). SAMPLES WITHOUT DATA TABLES REPRESENT THOSE LOCATIONS WITH ANALYTICAL RESULTS NOT DETECTED ABOVE REPORTING LIMITS.
3. AERIALS: IMAGERY WAS ACQUIRED APRIL 2, 2012. 4-BAND DIGITAL AERIAL PHOTOGRAPHY, 1-FOOT PIXEL RESOLUTION.
4. USEPA AND MDEQ DATA IS PRESENTED ON THE GREY SHADED DATA TABLES, ALL OTHER TABLES PRESENT DATA COLLECTED IN ACCORDANCE WITH THE SOIL AND SEDIMENT SAMPLING PLAN (ARCADIS 2011A).

SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

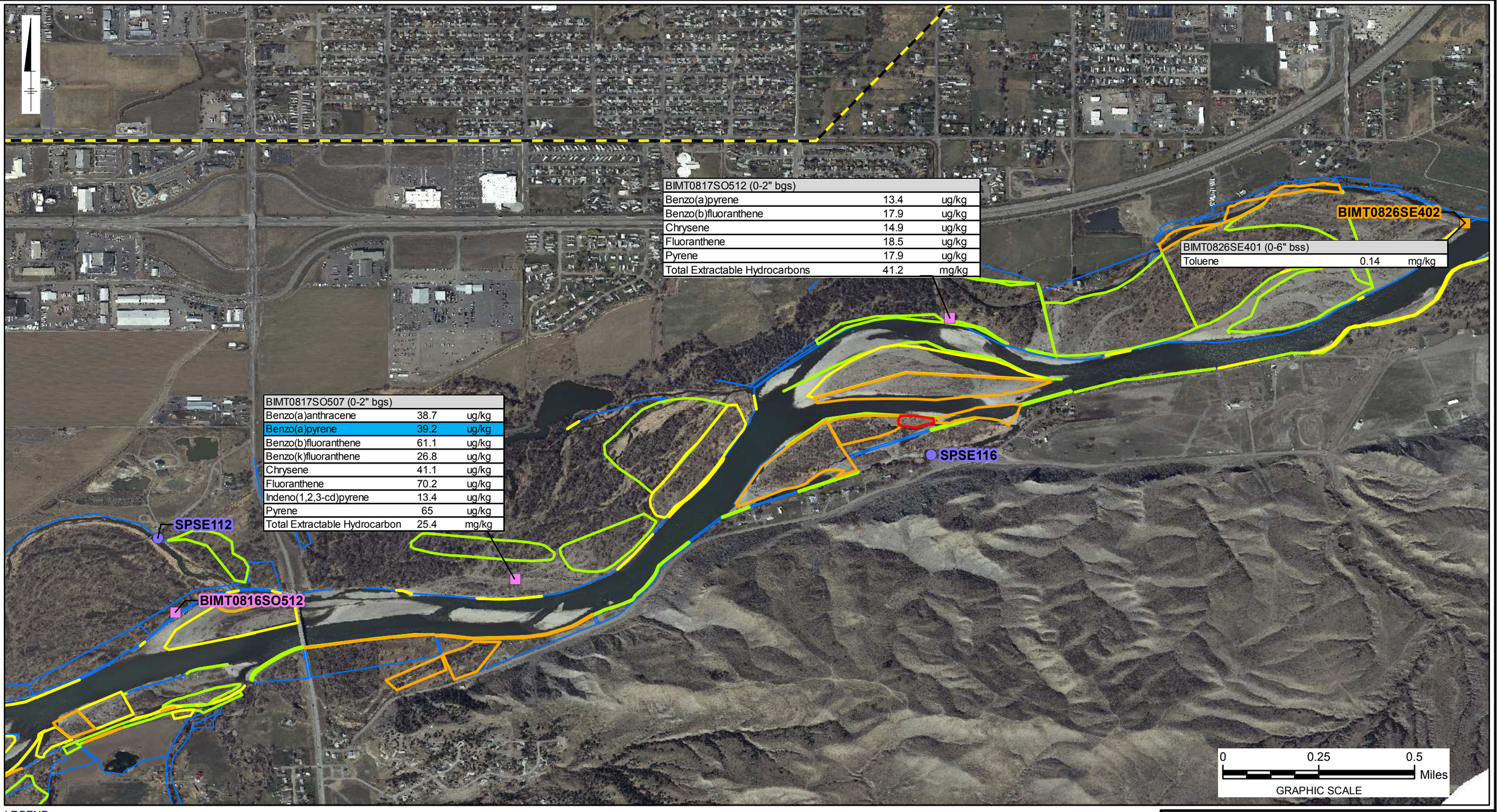
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION B

ARCADIS

FIGURE
6

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/27/2013 3:34:45 PM (Page 5 of 15)



LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:

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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

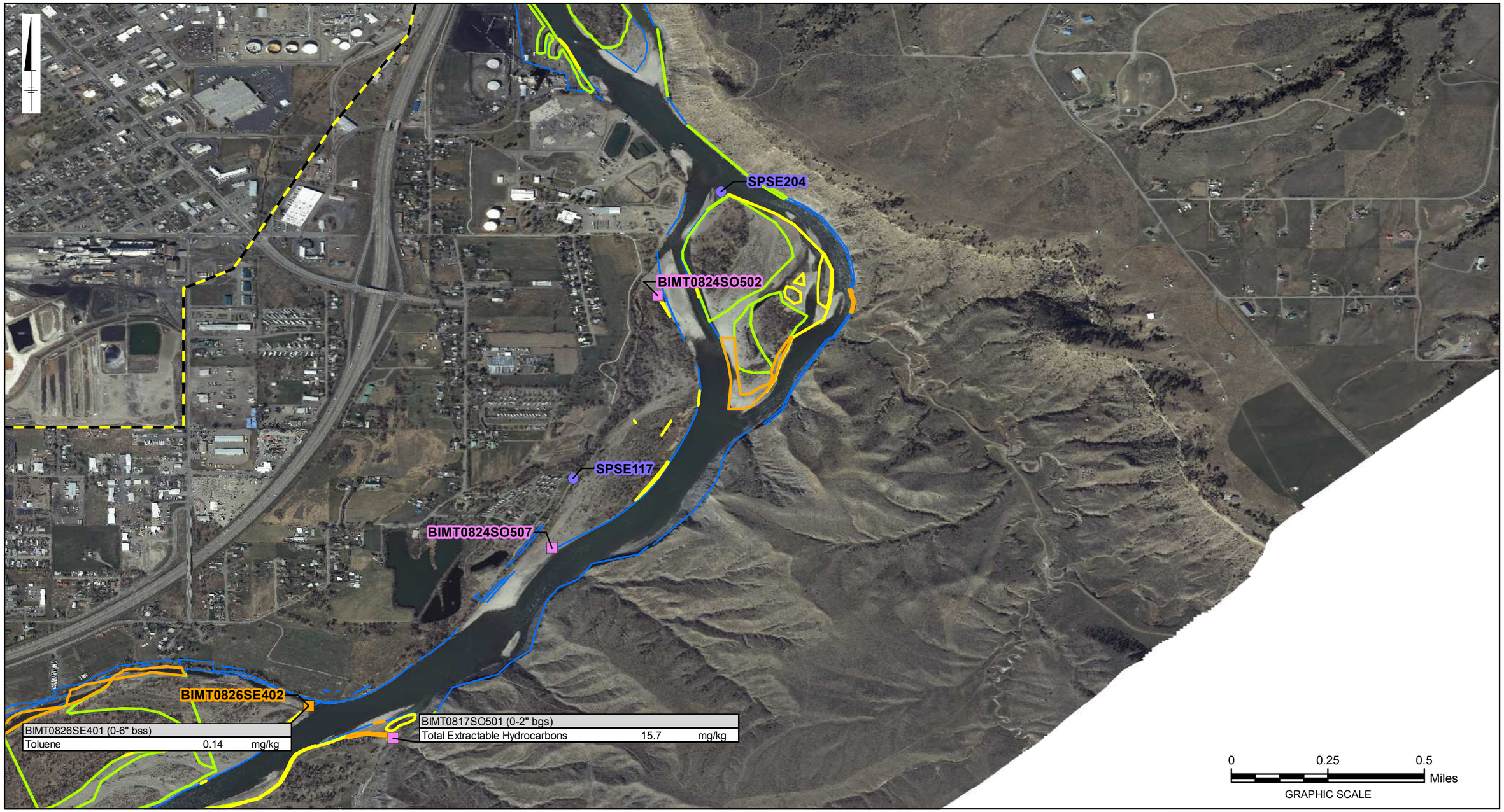
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION B

ARCADIS

FIGURE
7

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:26:52 PM (Page 6 of 15)



LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:
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SS RBSL RES <10FT TO GW = MONTANA TIER 1 SURFACE RISK BASED SCREENING LEVELS FOR SOIL LESS THAN 10 FEET FROM GROUNDWATER
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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

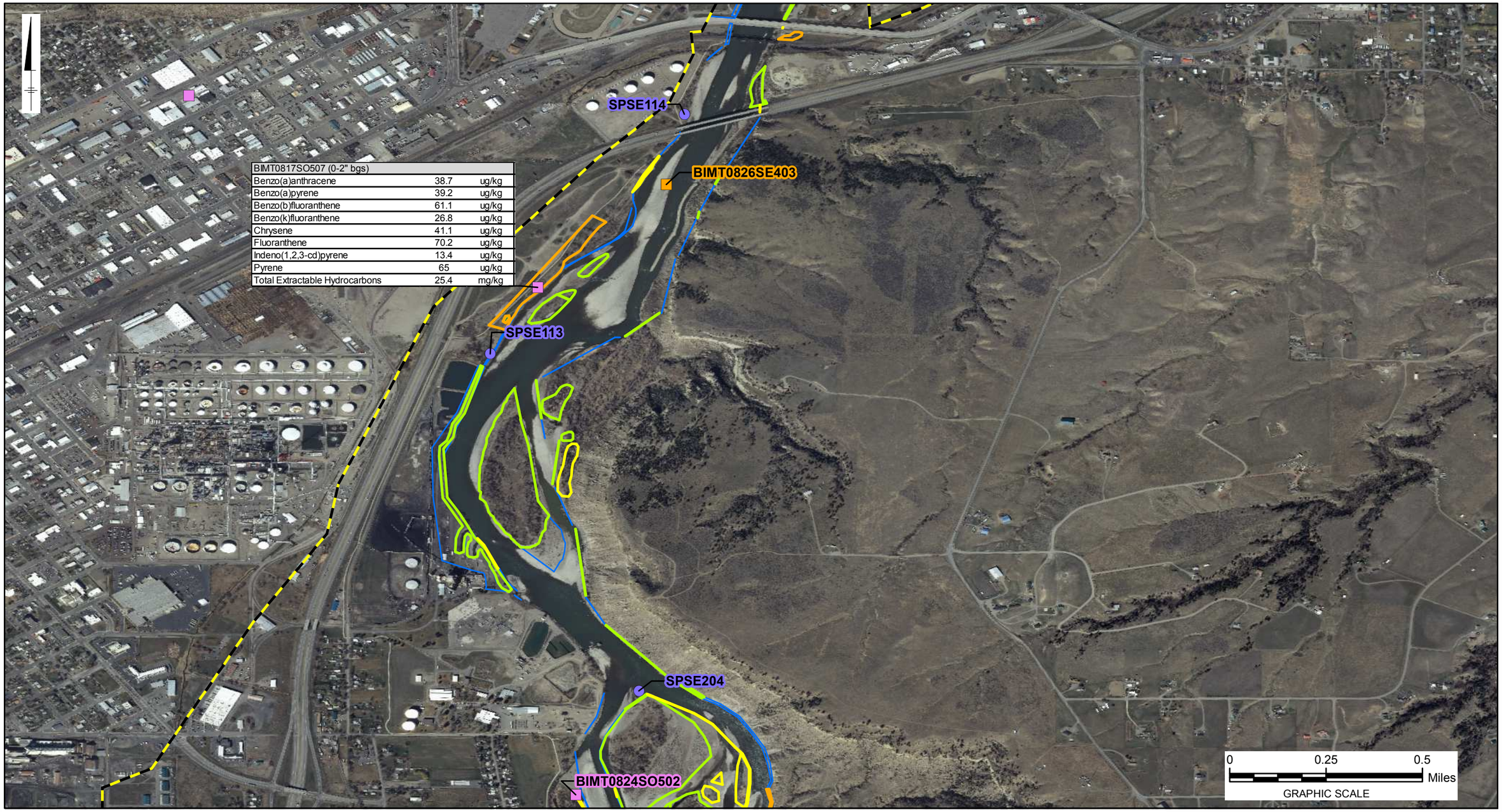
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION B

ARCADIS

FIGURE
8

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:26:52 PM (Page 7 of 15)



BIMT0817SO507 (0-2" bgs)		
Benzo(a)anthracene	38.7	ug/kg
Benzo(a)pyrene	39.2	ug/kg
Benzo(b)fluoranthene	61.1	ug/kg
Benzo(k)fluoranthene	26.8	ug/kg
Chrysene	41.1	ug/kg
Fluoranthene	70.2	ug/kg
Indeno(1,2,3-cd)pyrene	13.4	ug/kg
Pyrene	65	ug/kg
Total Extractable Hydrocarbons	25.4	mg/kg

LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

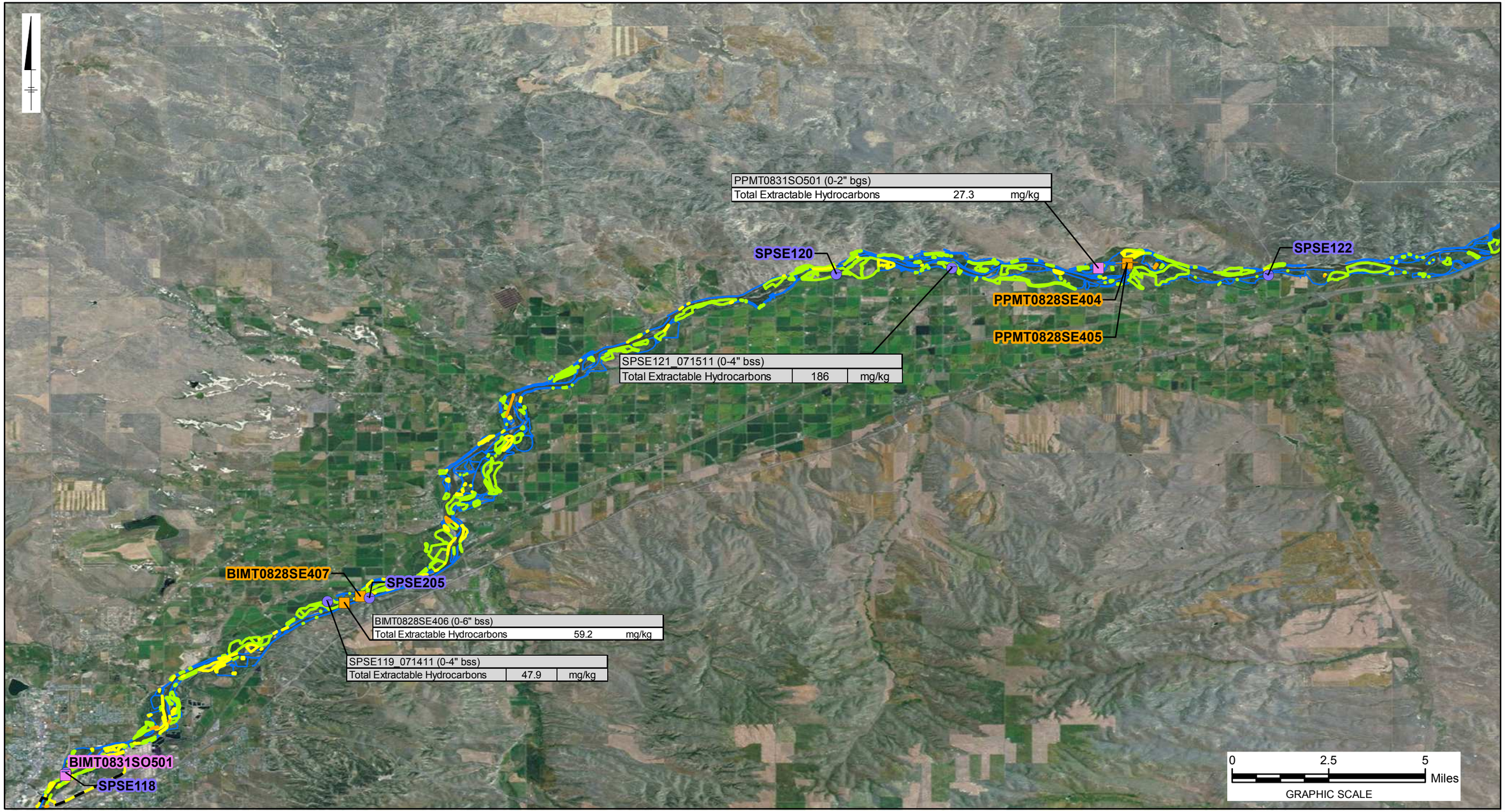
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION B

ARCADIS

FIGURE
9

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:26:52 PM (Page 8 of 15)



LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES
- PIPELINE

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

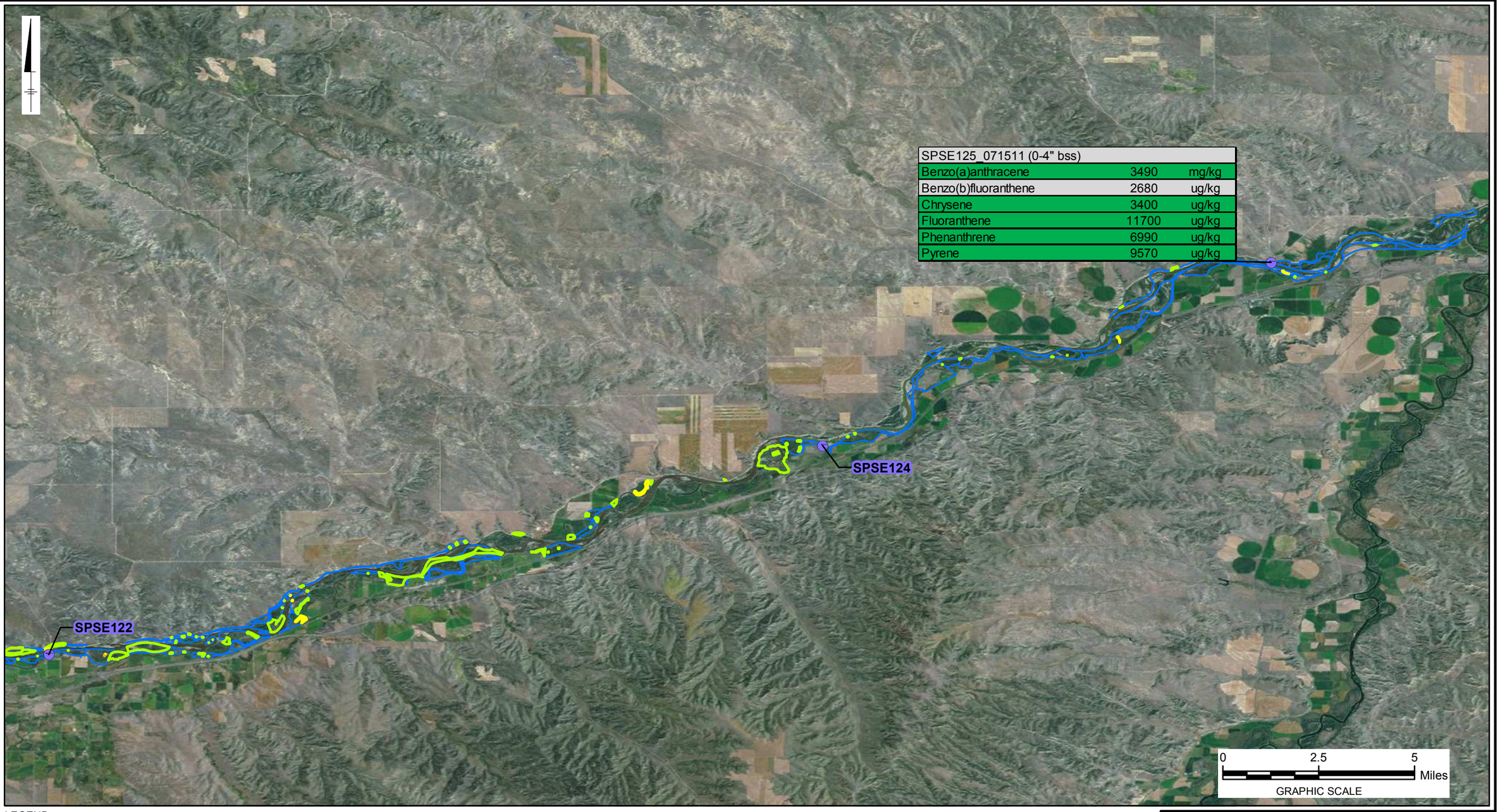
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION C

ARCADIS

FIGURE
10

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:17:36 PM (Page 9 of 15)



LEGEND:

USEPA SAMPLES

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:

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SVOC = SEMI-VOLATILE ORGANIC COMPOUNDS
SS RBSL RES <10FT TO GW = MONTANA TIER 1 SURFACE RISK BASED SCREENING LEVELS FOR SOIL LESS THAN 10 FEET FROM GROUNDWATER
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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION C

ARCADIS

FIGURE
11

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:17:36 PM (Page 10 of 15)

LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES
- USEPA SAMPLES

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:

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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

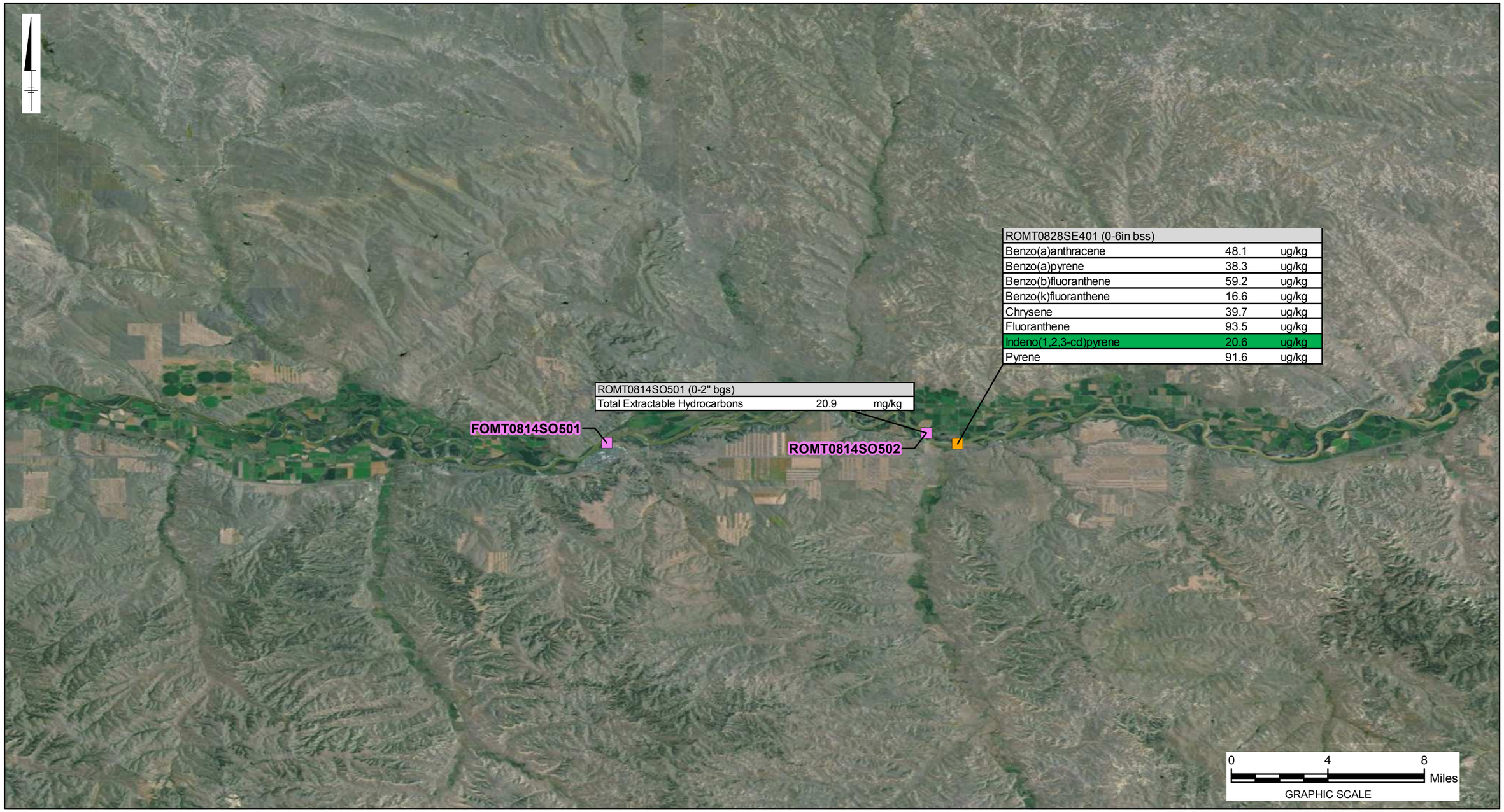
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION D

ARCADIS

FIGURE
12

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:17:36 PM (Page 11 of 15)



LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:
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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION E

ARCADIS

FIGURE
13

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
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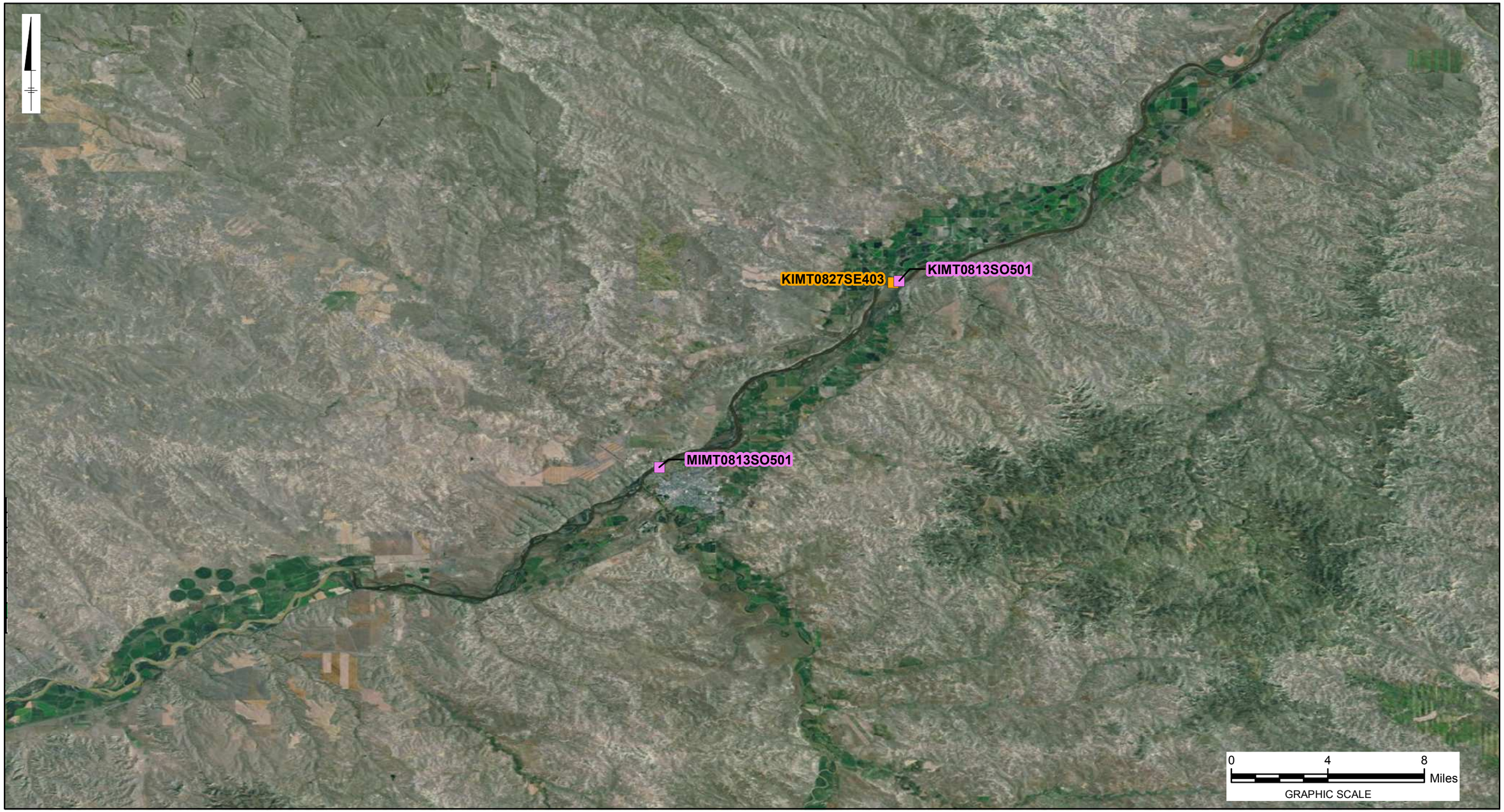

LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

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SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

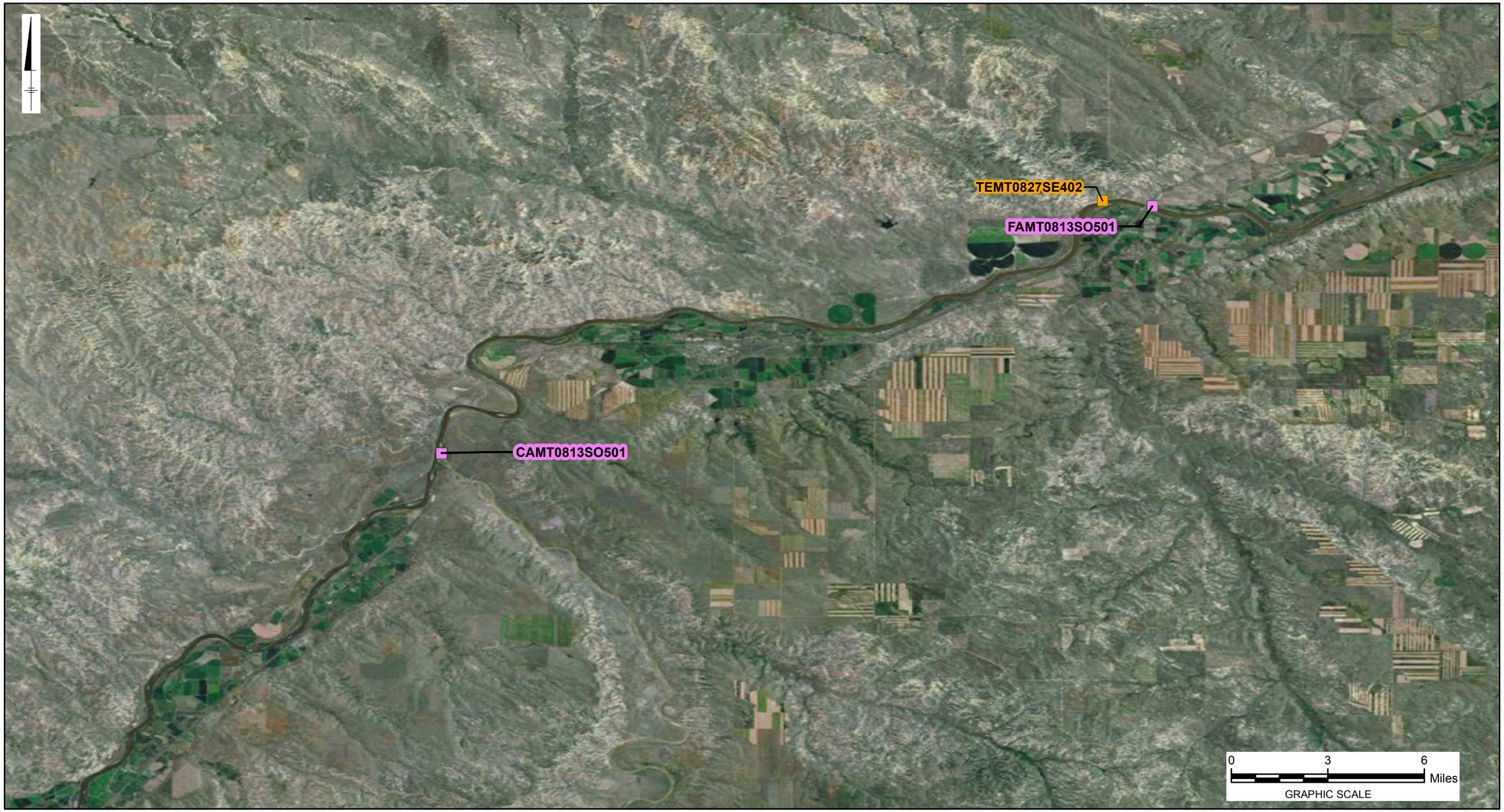
DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION F

ARCADIS

FIGURE
14

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:22:08 PM (Page 13 of 15)



LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:
BGS = BELOW GROUND SURFACE
BSS = BELOW SEDIMENT SURFACE
EPH = EXTRACTABLE PETROLEUM HYDROCARBONS
TEH = TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS
PAH = POLYCYCLIC AROMATIC HYDROCARBONS
SVOC = SEMI-VOLATILE ORGANIC COMPOUNDS
SS RBSL RES <10FT TO GW = MONTANA TIER 1 SURFACE RISK BASED SCREENING LEVELS FOR SOIL LESS THAN 10 FEET FROM GROUNDWATER
USEPA BTAG FS SB = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 3 BIOLOGICAL TECHNICAL ASSISTANCE GROUP FRESHWATER SEDIMENT SCREENING BENCHMARKS
MG/KG = MILLIGRAM PER KILOGRAM
UG/KG = MICROGRAM PER KILOGRAM
MDEQ = MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NOTES:
1. OIL OBSERVATIONS ALONG SHORELINE PROVIDED AS A GIS LAYER BY THE SHORELINE CLEAN UP ASSESSMENT TEAM (SCAT). OIL OBSERVATIONS SHOWN ARE CUMULATIVE FOR ASSESSMENT EFFORTS ACCOMPLISHED AS OF OCTOBER 25, 2011.
2. DATA TABLES PRESENT ONLY THOSE ANALYTICAL RESULTS DETECTED ABOVE REPORTING LIMITS (NOT INCLUDING TOC). SAMPLES WITHOUT DATA TABLES REPRESENT THOSE LOCATIONS WITH ANALYTICAL RESULTS NOT DETECTED ABOVE REPORTING LIMITS.
3. AERIALS: IMAGERY PROVIDED BY ESRI THROUGH ARCGIS ONLINE USING ARCMAP 10.1.
4. USEPA AND MDEQ DATA IS PRESENTED ON THE GREY SHADED DATA TABLES, ALL OTHER TABLES PRESENT DATA COLLECTED IN ACCORDANCE WITH THE SOIL AND SEDIMENT SAMPLING PLAN (ARCADIS 2011A).

SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION G

ARCADIS

FIGURE
15

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
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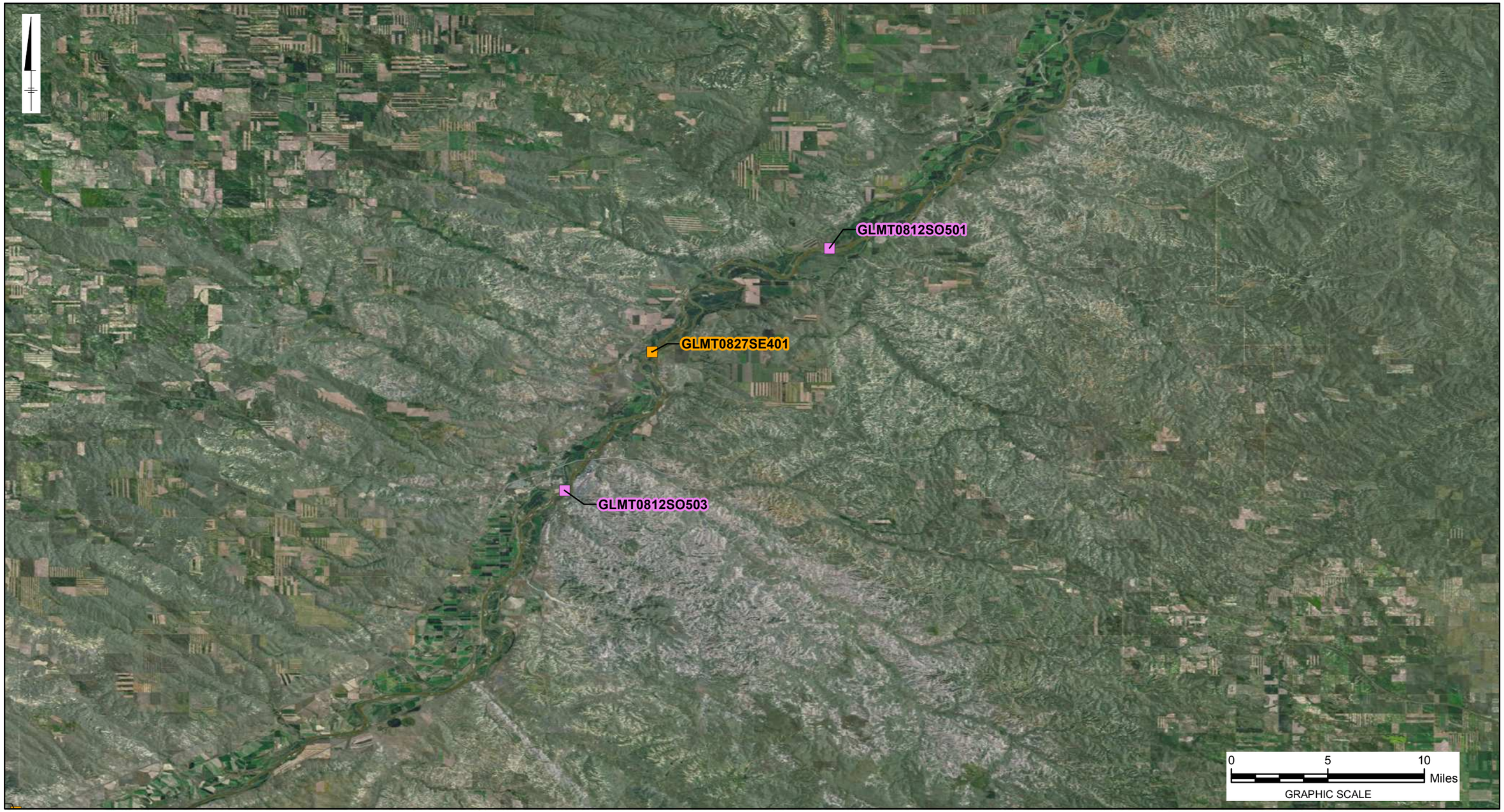

LEGEND:

- DOWNSTREAM SOIL SAMPLES
- DOWNSTREAM SEDIMENT SAMPLES

Sample ID (Depth)	Result (Units)
Analyte Name	
Exceeds SS RBSL RES <10FT TO GW	
Exceeds USEPA BTAG FS SB	

ACRONYMS:

BGS = BELOW GROUND SURFACE
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EPH = EXTRACTABLE PETROLEUM HYDROCARBONS
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SS RBSL RES <10FT TO GW = MONTANA TIER 1 SURFACE RISK BASED SCREENING LEVELS FOR SOIL LESS THAN 10 FEET FROM GROUNDWATER
USEPA BTAG FS SB = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 3 BIOLOGICAL TECHNICAL ASSISTANCE GROUP FRESHWATER SEDIMENT SCREENING BENCHMARKS
MG/KG = MILLIGRAM PER KILOGRAM
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NOTES:

1. OIL OBSERVATIONS ALONG SHORELINE PROVIDED AS A GIS LAYER BY THE SHORELINE CLEAN UP ASSESSMENT TEAM (SCAT). OIL OBSERVATIONS SHOWN ARE CUMULATIVE FOR ASSESSMENT EFFORTS ACCOMPLISHED AS OF OCTOBER 25, 2011.
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4. USEPA AND MDEQ DATA IS PRESENTED ON THE GREY SHADED DATA TABLES, ALL OTHER TABLES PRESENT DATA COLLECTED IN ACCORDANCE WITH THE SOIL AND SEDIMENT SAMPLING PLAN (ARCADIS 2011A).

SILVERTIP PIPELINE INCIDENT RESPONSE
LAUREL, MONTANA

DOWNSTREAM IMPACTED AREAS SOIL AND SEDIMENT DATA SUMMARY REPORT

SAMPLE LOCATIONS - DIVISION H

ARCADIS

FIGURE
16

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: gmckinney
Exxon-Mobil (B0085883.1103.00001)
K:\SamplingAndAnalysisPlan\mxd\Sed_Soil_2013\SoilSediment_Sample_Locations.mxd 6/28/2013 12:22:08 PM (Page 15 of 15)

Appendices

Appendix A

USEPA and MDEQ Analytical Results

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE101		SPSE102		SPSE103		SPSE104		SPSE105		SPSE107		SPSE106		SPSE201		SPSE202	
		Sample	SPSE101_071211		SPSE102_071211		SPSE103_071211		SPSE104_071211		SPSE105_071211		SPSE107_071211		SPSE106_071211		SPSE201_072811		SPSE202_072811	
		Sample Date	7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/28/2011		7/28/2011	
		start_depth	0		0		0		0		0		0		0		0		0	
		end_depth	4		4		4		4		4		4		4		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 3		Figure 3		Figure 3		Figure 3		Figures 3&4		Figure 3		Figures 3&4	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Percent Moisture	--	%	24.2		29.4		27.7		17.7		41		25.7		22.9		29.7		27.3	
Volatile Organic Compounds (USEPA 8260B)																				
1,1,1,2-Tetrachloroethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,1,1-Trichloroethane	30.20	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,1,2,2-Tetrachloroethane	1360	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,1,2-Trichloroethane	1240	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,1,2-Trichlorotrifluoroethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,1-Dichloroethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,1-Dichloroethene	31.00	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,1-Dichloropropene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,2,3-Trichlorobenzene	858.0	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,2,3-Trichloropropane	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
1,2,4-Trichlorobenzene	2100	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,2,4-Trimethylbenzene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,2-Dibromo-3-chloropropane	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
1,2-Dibromoethane (EDB)	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,2-Dichlorobenzene	16.50	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,2-Dichloroethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,2-Dichloropropane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,3,5-Trimethylbenzene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,3-Dichlorobenzene	4430	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,3-Dichloropropane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
1,4-Dichlorobenzene	599.0	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
2,2-Dichloropropane	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
2-Butanone (MEK)	--	ug/kg	< 658	U	< 706	U	< 685	U	< 605	U	< 845	U	< 645	U	< 643	U	< 711	U	< 685	U
2-Chlorotoluene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
4-Chlorotoluene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
4-Methyl-2-pentanone (MIBK)	--	ug/kg	< 658	U	< 706	U	< 685	U	< 605	U	< 845	U	< 645	U	< 643	U	< 711	U	< 685	U
Acetone	--	ug/kg	< 658	U	< 706	U	< 685	U	< 605	U	< 845	U	< 645	U	< 643	U	< 711	UJ	< 685	UJ
Allyl chloride	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
Benzene	--	ug/kg																	< 27.4	U
Bromobenzene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Bromochloromethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Bromodichloromethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Bromomethane	--	ug/kg	< 658	U	< 706	U	< 685	U	< 605	U	< 845	U	< 645	U	< 643	U	< 711	U	< 685	U
Carbon tetrachloride	64.20	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Chlorobenzene	8.420	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Chlorodibromomethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Chloroethane	--	ug/kg	< 658	U	< 706	U	< 685	U	< 605	U	< 845	U	< 645	U	< 643	U	< 711	U	< 685	U
Chloroform	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Chloromethane	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
cis-1,2-Dichloroethene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
cis-1,3-Dichloropropene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Dibromomethane	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Dichlorodifluoromethane (CFC-12)	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Dichlorofluoromethane	--	ug/kg	< 658	U	< 706	U	< 685	U	< 605	U	< 845	U	< 645	UJ	< 643	U	< 711	U	< 685	U
Diethyl ether	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
Ethylbenzene	1100	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U			< 64.3	U			< 68.5	U
Hexachloro-1,3-butadiene	--	ug/kg	< 329	U	< 353	U	< 342	U	< 303	U	< 423	U	< 322	U	< 322	U	< 355	U	< 342	U
Isopropylbenzene (Cumene)	86.00	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Methylene chloride	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
Methyl-tert-butylether	--	ug/kg																	< 68.5	U
Naphthalene	176.0	ug/kg																	< 274	U
n-Butylbenzene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
n-Propylbenzene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
p-Isopropyltoluene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
sec-Butylbenzene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Styrene	559.0	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
tert-Butylbenzene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE101		SPSE102		SPSE103		SPSE104		SPSE105		SPSE107		SPSE106		SPSE201		SPSE202	
		Sample	SPSE101_071211		SPSE102_071211		SPSE103_071211		SPSE104_071211		SPSE105_071211		SPSE107_071211		SPSE106_071211		SPSE201_072811		SPSE202_072811	
		Sample Date	7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/28/2011		7/28/2011	
		start_depth	0		0		0		0		0		0		0		0		0	
		end_depth	4		4		4		4		4		4		4		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 3		Figure 3		Figure 3		Figure 3		Figures 3&4		Figure 3		Figures 3&4	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Tetrachloroethene	468.0	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Tetrahydrofuran	--	ug/kg	< 2630	U	< 2820	U	< 2740	U	< 2420	U	< 3380	U	< 2580	U	< 2570	U	< 2840	U	< 2740	U
Toluene	--	ug/kg	87.6		< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U			< 64.3	U			< 68.5	U
trans-1,2-dichloroethene	1050	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
trans-1,3-dichloropropene	--	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Tribromomethane	654.0	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	U	< 257	U	< 284	U	< 274	U
Trichloroethene	96.90	ug/kg	< 65.8	U	< 70.6	U	< 68.5	U	< 60.5	U	< 84.5	U	< 64.5	U	< 64.3	U	< 71.1	U	< 68.5	U
Trichlorofluoromethane (CFC-11)	--	ug/kg	< 263	U	< 282	U	< 274	U	< 242	U	< 338	U	< 258	UJ	< 257	U	< 284	U	< 274	U
Vinyl chloride	--	ug/kg	< 26.3	U	< 28.2	U	< 27.4	U	< 24.2	U	< 33.8	U	< 25.8	U	< 25.7	U	< 28.4	U	< 27.4	U
Xylenes, total	--	ug/kg																	< 205	U
Semivolatile Organic Compounds (USEPA 8270)																				
1,2,4-Trichlorobenzene	2100	ug/kg																	< 452	U
1,2-Dichlorobenzene	16.50	ug/kg																	< 452	U
1,2-Diphenylhydrazine	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	U
1,3-Dichlorobenzene	4430	ug/kg																	< 452	U
1,4-Dichlorobenzene	599.0	ug/kg																	< 452	U
1-Methylnaphthalene	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2,4,5-Trichlorophenol	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	U
2,4,6-Trichlorophenol	213.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2,4-Dichlorophenol	117.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2,4-Dimethylphenol	29.00	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2,4-Dinitrophenol	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	UJ
2,4-Dinitrotoluene	41.60	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2,6-Dinitrotoluene	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2-Chloronaphthalene	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2-Chlorophenol	31.20	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2-Methylnaphthalene	20.20	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2-Methylphenol (o-Cresol)	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
2-Nitroaniline	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	U
2-Nitrophenol	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
3&4-Methylphenol	--	ug/kg	< 868	U	< 935	U	< 912	U	< 800	U	< 1120	U	< 888	U	< 856	U	< 939	U	< 904	U
3,3'-Dichlorobenzidine	127.0	ug/kg	< 881	U	< 949	U	< 926	U	< 812	U	< 1140	U	< 901	U	< 869	U	< 954	U	< 918	U
3-Nitroaniline	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	U
4,6-Dinitro-2-methylphenol	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	U
4-Bromophenyl phenyl ether	1230	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
4-Chloro-3-methylphenol	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
4-Chloroaniline	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
4-Chlorophenyl phenyl ether	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
4-Nitroaniline	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	U
4-Nitrophenol	--	ug/kg	< 2240	U	< 2410	U	< 2350	U	< 2060	U	< 2880	U	< 2290	U	< 2200	U	< 2420	U	< 2330	U
Acenaphthene	6.700	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Acenaphthylene	5.900	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Anthracene	57.20	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Benzo(a)anthracene	108.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Benzo(a)pyrene	150.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Benzo(b)fluoranthene	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Benzo(g,h,i)perylene	170.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Benzo(k)fluoranthene	240.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Bis(2-chloroethoxy)methane	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Bis(2-chloroethyl)ether	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
bis(2-chloroisopropyl)ether	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Bis(2-ethylhexyl)phthalate	180.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Butylbenzylphthalate	10900	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Carbazole	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Chrysene	166.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Dibenzo(a,h)anthracene	33.00	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Dibenzofuran	415.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Diethyl phthalate	603.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Dimethyl phthalate	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE101		SPSE102		SPSE103		SPSE104		SPSE105		SPSE107		SPSE106		SPSE201		SPSE202	
		Sample	SPSE101_071211		SPSE102_071211		SPSE103_071211		SPSE104_071211		SPSE105_071211		SPSE107_071211		SPSE106_071211		SPSE201_072811		SPSE202_072811	
		Sample Date	7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/12/2011		7/28/2011		7/28/2011	
		start_depth	0		0		0		0		0		0		0		0		0	
		end_depth	4		4		4		4		4		4		4		6		6	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 2		Figure 2		Figure 3		Figure 3		Figure 3		Figure 3		Figures 3&4		Figure 3		Figures 3&4	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Di-n-butyl phthalate	6470	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Di-n-octyl phthalate	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Fluoranthene	423.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Fluorene	77.40	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Hexachloro-1,3-butadiene	--	ug/kg																	< 452	U
Hexachlorobenzene	20.00	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Hexachloroethane	1027	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Indeno(1,2,3-cd)pyrene	17.00	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Isophorone	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Naphthalene	176.0	ug/kg																	< 452	U
Nitrobenzene	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
n-Nitrosodimethylamine	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
n-Nitroso-di-n-propylamine	--	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
n-nitrosodiphenylamine	2680	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Pentachlorophenol	504.0	ug/kg	< 881	U	< 949	U	< 926	U	< 812	U	< 1140	U	< 901	U	< 869	U	< 954	U	< 918	U
Phenanthrene	204.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Phenol	420.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Pyrene	195.0	ug/kg	< 434	U	< 467	U	< 456	U	< 400	U	< 559	U	< 444	U	< 428	U	< 470	U	< 452	U
Extractable Petroleum Hydrocarbons (MADEP EPH)																				
Total Extractable Hydrocarbons	--	mg/kg	< 12.9	U	< 14	U	< 13.4	U	< 12.1	U	76.4		< 13.8	U	< 12.9	U	< 13.9	U	< 13.6	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																				
Aliphatic (C05-C08), Adjusted	--	mg/kg	< 6.3	U	< 7.1	U	< 6.6	U	< 5.5	U	< 8	U	< 6.7	U	< 6.4	U	< 6.9	U	< 6.6	U
Aliphatic (C05-C08).Unadjusted	--	mg/kg	< 6.3	U	< 7.1	U	< 6.6	U	< 5.5	U	< 8	U	< 6.7	U	< 6.4	U	< 6.9	U	< 6.6	U
Aliphatic (C09-C12), Adjusted	--	mg/kg	< 6.3	U	< 7.1	U	< 6.6	U	< 5.5	U	< 8	U	< 6.7	U	< 6.4	U	< 6.9	U	< 6.6	U
Aliphatic (C09-C12).Unadjusted	--	mg/kg	< 6.3	U	< 7.1	U	< 6.6	U	< 5.5	U	< 8	U	< 6.7	U	< 6.4	U	< 6.9	U	< 6.6	U
C9-C10 Aromatics	--	mg/kg	< 1.3	U	< 1.4	U	< 1.3	U	< 1.1	U	< 1.6	U	< 1.3	U	< 1.3	U	< 1.4	U	< 1.3	U
Ethylbenzene	1.100	mg/kg	< 0.063	U	< 0.071	U	< 0.066	U	< 0.055	U	< 0.08	U	< 0.067	UJ	< 0.064	U	< 0.069	U	< 0.066	U
m&p-Xylene	0.02520	mg/kg	< 0.13	U	< 0.14	U	< 0.13	U	< 0.11	U	< 0.16	U	< 0.13	U	< 0.13	U	< 0.14	U	< 0.13	U
Methyl-tert-butylether	--	mg/kg	< 0.063	U	< 0.071	U	< 0.066	U	< 0.055	U	< 0.08	U	< 0.067	U	< 0.064	U	< 0.069	U	< 0.066	U
Naphthalene	0.1760	mg/kg	< 0.76	U	< 0.85	U	< 0.79	U	< 0.66	U	< 0.96	U	< 0.8	U	< 0.77	U	< 0.83	U	< 0.79	U
o-Xylene	--	mg/kg	< 0.063	U	< 0.071	U	< 0.066	U	< 0.055	U	< 0.08	U	< 0.067	U	< 0.064	U	< 0.069	U	< 0.066	U
Toluene	--	mg/kg	0.1		< 0.071	U	< 0.066	U	< 0.055	U	< 0.08	U	< 0.067	U	< 0.064	U	< 0.069	U	< 0.066	U
Total Purgeable Hydrocarbons	--	mg/kg	< 12.7	U	< 14.2	U	< 13.2	U	< 11.1	U	< 15.9	U	< 13.3	U	< 12.9	U	< 13.8	U	< 13.2	U
Xylenes, total	--	mg/kg	< 0.19	U	< 0.21	U	< 0.2	U	< 0.17	U	< 0.24	U	< 0.2	U	< 0.19	U	< 0.21	U	< 0.2	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE108		SPSE109		SPSE110		SPSE203		SPSE111		SPSE115		SPSE112		SPSE116		SPSE117	
		Sample	SPSE108_071311		SPSE109_071311		SPSE110_071311		SPSE203_072811		SPSE111_071311		SPSE115_071411		SPSE112_071311		SPSE116_071411		SPSE117_071411	
		Sample Date	7/13/2011		7/13/2011		7/13/2011		7/28/2011		7/13/2011		7/14/2011		7/13/2011		7/14/2011		7/14/2011	
		start_depth	0		0		0		2		0		0		0		0		0	
		end_depth	4		4		4		2		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 4		Figure 5		Figure 5		Figure 5		Figure 6		Figure 6		Figure 7		Figure 7		Figure 8	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Percent Moisture	--	%	22.3		24.5				31.5											
Volatile Organic Compounds (USEPA 8260B)																				
1,1,1,2-Tetrachloroethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,1,1-Trichloroethane	30.20	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,1,2,2-Tetrachloroethane	1360	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,1,2-Trichloroethane	1240	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,1,2-Trichlorotrifluoroethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,1-Dichloroethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,1-Dichloroethene	31.00	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,1-Dichloropropene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,2,3-Trichlorobenzene	858.0	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,2,3-Trichloropropane	--	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
1,2,4-Trichlorobenzene	2100	ug/kg	< 63.7	U	< 64.1	U			< 73	U										
1,2,4-Trimethylbenzene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,2-Dibromo-3-chloropropane	--	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
1,2-Dibromoethane (EDB)	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,2-Dichlorobenzene	16.50	ug/kg	< 63.7	U	< 64.1	U			< 73	U										
1,2-Dichloroethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,2-Dichloropropane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,3,5-Trimethylbenzene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,3-Dichlorobenzene	4430	ug/kg	< 63.7	U	< 64.1	U			< 73	U										
1,3-Dichloropropane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
1,4-Dichlorobenzene	599.0	ug/kg	< 63.7	U	< 64.1	U			< 73	U										
2,2-Dichloropropane	--	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
2-Butanone (MEK)	--	ug/kg	< 637	U	< 641	U	< 737	U	< 730	U	< 667	U	< 667	U	< 730	U	< 601	U	< 639	U
2-Chlorotoluene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
4-Chlorotoluene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
4-Methyl-2-pentanone (MIBK)	--	ug/kg	< 637	U	< 641	U	< 737	U	< 730	U	< 667	U	< 667	U	< 730	U	< 601	U	< 639	U
Acetone	--	ug/kg	< 637	U	< 641	U	< 737	U	< 730	UJ	< 667	U	< 667	U	< 730	U	< 601	U	< 639	U
Allyl chloride	--	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
Benzene	--	ug/kg			< 25.6	U														
Bromobenzene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Bromochloromethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Bromodichloromethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Bromomethane	--	ug/kg	< 637	U	< 641	U	< 737	U	< 730	U	< 667	U	< 667	U	< 730	U	< 601	U	< 639	U
Carbon tetrachloride	64.20	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Chlorobenzene	8.420	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Chlorodibromomethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Chloroethane	--	ug/kg	< 637	U	< 641	U	< 737	U	< 730	U	< 667	U	< 667	U	< 730	U	< 601	U	< 639	U
Chloroform	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Chloromethane	--	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
cis-1,2-Dichloroethene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
cis-1,3-Dichloropropene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Dibromomethane	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Dichlorodifluoromethane (CFC-12)	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Dichlorofluoromethane	--	ug/kg	< 637	UJ	< 641	UJ	< 737	U	< 730	U	< 667	U	< 667	U	< 730	U	< 601	U	< 639	U
Diethyl ether	--	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
Ethylbenzene	1100	ug/kg			< 64.1	U														
Hexachloro-1,3-butadiene	--	ug/kg	< 319	U	< 321	U			< 365	U										
Isopropylbenzene (Cumene)	86.00	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Methylene chloride	--	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
Methyl-tert-butylether	--	ug/kg			< 64.1	U														
Naphthalene	176.0	ug/kg			< 256	U														
n-Butylbenzene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
n-Propylbenzene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
p-Isopropyltoluene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
sec-Butylbenzene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Styrene	559.0	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
tert-Butylbenzene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE108		SPSE109		SPSE110		SPSE203		SPSE111		SPSE115		SPSE112		SPSE116		SPSE117	
		Sample	SPSE108_071311		SPSE109_071311		SPSE110_071311		SPSE203_072811		SPSE111_071311		SPSE115_071411		SPSE112_071311		SPSE116_071411		SPSE117_071411	
		Sample Date	7/13/2011		7/13/2011		7/13/2011		7/28/2011		7/13/2011		7/14/2011		7/13/2011		7/14/2011		7/14/2011	
		start_depth	0		0		0		2		0		0		0		0		0	
		end_depth	4		4		4		2		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 4		Figure 5		Figure 5		Figure 5		Figure 6		Figure 6		Figure 7		Figure 7		Figure 8	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Tetrachloroethene	468.0	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Tetrahydrofuran	--	ug/kg	< 2550	U	< 2560	U	< 2950	U	< 2920	U	< 2670	U	< 2670	U	< 2920	U	< 2400	U	< 2560	U
Toluene	--	ug/kg			< 64.1	U														
trans-1,2-dichloroethene	1050	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
trans-1,3-dichloropropene	--	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Tribromomethane	654.0	ug/kg	< 255	U	< 256	U	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
Trichloroethene	96.90	ug/kg	< 63.7	U	< 64.1	U	< 73.7	U	< 73	U	< 66.7	U	< 66.7	U	< 73	U	< 60.1	U	< 63.9	U
Trichlorofluoromethane (CFC-11)	--	ug/kg	< 255	UJ	< 256	UJ	< 295	U	< 292	U	< 267	U	< 267	U	< 292	U	< 240	U	< 256	U
Vinyl chloride	--	ug/kg	< 25.5	U	< 25.6	U	< 29.5	U	< 29.2	U	< 26.7	U	< 26.7	U	< 29.2	U	< 24	U	< 25.6	U
Xylenes, total	--	ug/kg			< 192	U														
Semivolatile Organic Compounds (USEPA 8270)																				
1,2,4-Trichlorobenzene	2100	ug/kg			< 434	U														
1,2-Dichlorobenzene	16.50	ug/kg			< 434	U														
1,2-Diphenylhydrazine	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
1,3-Dichlorobenzene	4430	ug/kg			< 434	U														
1,4-Dichlorobenzene	599.0	ug/kg			< 434	U														
1-Methylnaphthalene	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2,4,5-Trichlorophenol	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
2,4,6-Trichlorophenol	213.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2,4-Dichlorophenol	117.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2,4-Dimethylphenol	29.00	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2,4-Dinitrophenol	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
2,4-Dinitrotoluene	41.60	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2,6-Dinitrotoluene	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2-Chloronaphthalene	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2-Chlorophenol	31.20	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2-Methylnaphthalene	20.20	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2-Methylphenol (o-Cresol)	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
2-Nitroaniline	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
2-Nitrophenol	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
3&4-Methylphenol	--	ug/kg	< 822	U	< 868	U	< 956	U	< 964	U	< 867	U	< 877	U	< 966	U	< 792	U	< 867	U
3,3'-Dichlorobenzidine	127.0	ug/kg	< 835	U	< 881	U	< 971	U	< 979	U	< 880	U	< 890	U	< 981	U	< 804	U	< 880	U
3-Nitroaniline	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
4,6-Dinitro-2-methylphenol	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
4-Bromophenyl phenyl ether	1230	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
4-Chloro-3-methylphenol	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
4-Chloroaniline	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
4-Chlorophenyl phenyl ether	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
4-Nitroaniline	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
4-Nitrophenol	--	ug/kg	< 2120	U	< 2240	U	< 2460	U	< 2480	U	< 2230	U	< 2260	U	< 2490	U	< 2040	U	< 2230	U
Acenaphthene	6.700	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Acenaphthylene	5.900	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Anthracene	57.20	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Benzo(a)anthracene	108.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Benzo(a)pyrene	150.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Benzo(b)fluoranthene	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Benzo(g,h,i)perylene	170.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Benzo(k)fluoranthene	240.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Bis(2-chloroethoxy)methane	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Bis(2-chloroethyl)ether	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
bis(2-chloroisopropyl)ether	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Bis(2-ethylhexyl)phthalate	180.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Butylbenzylphthalate	10900	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Carbazole	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Chrysene	166.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Dibenzo(a,h)anthracene	33.00	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Dibenzofuran	415.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Diethyl phthalate	603.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Dimethyl phthalate	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE108		SPSE109		SPSE110		SPSE203		SPSE111		SPSE115		SPSE112		SPSE116		SPSE117	
		Sample	SPSE108_071311		SPSE109_071311		SPSE110_071311		SPSE203_072811		SPSE111_071311		SPSE115_071411		SPSE112_071311		SPSE116_071411		SPSE117_071411	
		Sample Date	7/13/2011		7/13/2011		7/13/2011		7/28/2011		7/13/2011		7/14/2011		7/13/2011		7/14/2011		7/14/2011	
		start_depth	0		0		0		2		0		0		0		0		0	
		end_depth	4		4		4		2		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figure 4		Figure 5		Figure 5		Figure 5		Figure 6		Figure 6		Figure 7		Figure 7		Figure 8	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Di-n-butyl phthalate	6470	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Di-n-octyl phthalate	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Fluoranthene	423.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Fluorene	77.40	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Hexachloro-1,3-butadiene	--	ug/kg			< 434	U														
Hexachlorobenzene	20.00	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Hexachloroethane	1027	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Indeno(1,2,3-cd)pyrene	17.00	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Isophorone	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Naphthalene	176.0	ug/kg			< 434	U														
Nitrobenzene	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
n-Nitrosodimethylamine	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
n-Nitroso-di-n-propylamine	--	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
n-nitrosodiphenylamine	2680	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Pentachlorophenol	504.0	ug/kg	< 835	U	< 881	U	< 971	U	< 979	U	< 880	U	< 890	U	< 981	U	< 804	U	< 880	U
Phenanthrene	204.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Phenol	420.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Pyrene	195.0	ug/kg	< 411	U	< 434	U	< 478	U	< 482	U	< 434	U	< 438	U	< 483	U	< 396	U	< 434	U
Extractable Petroleum Hydrocarbons (MADEP EPH)																				
Total Extractable Hydrocarbons	--	mg/kg	< 12.3	U	< 13.1	U	< 14.8	U	< 14.3	U	< 13.3	U	< 13.1	U	< 14.4	U	< 12.5	U	< 13.5	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																				
Aliphatic (C05-C08), Adjusted	--	mg/kg	< 6.1	U	< 6.1	U	< 7.1	U	< 6.9	U	< 6.8	U	< 6.1	U	< 7.1	U	< 5.9	U	< 6.6	U
Aliphatic (C05-C08).Unadjusted	--	mg/kg	< 6.1	U	< 6.1	U	< 7.1	U	< 6.9	U	< 6.8	U	< 6.1	U	< 7.1	U	< 5.9	U	< 6.6	U
Aliphatic (C09-C12), Adjusted	--	mg/kg	< 6.1	U	< 6.1	U	< 7.1	U	< 6.9	U	< 6.8	U	< 6.1	U	< 7.1	U	< 5.9	U	< 6.6	U
Aliphatic (C09-C12).Unadjusted	--	mg/kg	< 6.1	U	< 6.1	U	< 7.1	U	< 6.9	U	< 6.8	U	< 6.1	U	< 7.1	U	< 5.9	U	< 6.6	U
C9-C10 Aromatics	--	mg/kg	< 1.2	U	< 1.2	U	< 1.4	U	< 1.4	U	< 1.4	U	< 1.2	U	< 1.4	U	< 1.2	U	< 1.3	U
Ethylbenzene	1.100	mg/kg	< 0.061	UJ	< 0.061	UJ	< 0.071	U	< 0.069	U	< 0.068	U	< 0.061	U	< 0.071	U	< 0.059	U	< 0.066	U
m&p-Xylene	0.02520	mg/kg	< 0.12	U	< 0.12	U	< 0.14	U	< 0.14	U	< 0.14	U	< 0.12	U	< 0.14	U	< 0.12	U	< 0.13	U
Methyl-tert-butylether	--	mg/kg	< 0.061	U	< 0.061	U			< 0.069	U										
Naphthalene	0.1760	mg/kg	< 0.73	U	< 0.73	U	< 0.85	U	< 0.83	U	< 0.81	U	< 0.74	U	< 0.86	U	< 0.71	U	< 0.79	U
o-Xylene	--	mg/kg	< 0.061	U	< 0.061	U	< 0.071	U	< 0.069	U	< 0.068	U	< 0.061	U	< 0.071	U	< 0.059	U	< 0.066	U
Toluene	--	mg/kg	< 0.061	U	< 0.061	U	< 0.071	U	< 0.069	U	< 0.068	U	< 0.061	U	< 0.071	U	< 0.059	U	< 0.066	U
Total Purgeable Hydrocarbons	--	mg/kg	< 12.1	U	< 12.2	U	< 14.2	U	< 13.9	U	< 13.6	U	< 12.3	U	< 14.3	U	< 11.9	U	< 13.1	U
Xylenes, total	--	mg/kg	< 0.18	U	< 0.18	U	< 0.21	U	< 0.21	U	< 0.2	U	< 0.18	U	< 0.21	U	< 0.18	U	< 0.2	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE204		SPSE113		SPSE114		SPSE118		SPSE119		SPSE120		SPSE121	
		Sample	SPSE204_072811		SPSE113_071311		SPSE114_071311		SPSE118_071411		SPSE119_071411		SPSE120_071511		SPSE121_071511	
		Sample Date	7/28/2011		7/13/2011		7/13/2011		7/14/2011		7/14/2011		7/15/2011		7/15/2011	
		start_depth	1.5		0		0		0		0		0		0	
		end_depth	1.5		4		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figures 8&9		Figure 9		Figure 9		Figure 10		Figure 10		Figure 10		Figure 10	
Chemical	**Freshwater Sediment[1]**	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	--	%	29.2						26.9		39					
Volatile Organic Compounds (USEPA 8260B)																
1,1,1,2-Tetrachloroethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,1,1-Trichloroethane	30.20	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,1,2,2-Tetrachloroethane	1360	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,1,2-Trichloroethane	1240	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,1,2-Trichlorotrifluoroethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,1-Dichloroethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,1-Dichloroethene	31.00	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,1-Dichloropropene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,2,3-Trichlorobenzene	858.0	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,2,3-Trichloropropane	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
1,2,4-Trichlorobenzene	2100	ug/kg	< 70.4	U					< 67.6	U	< 80.5	U				
1,2,4-Trimethylbenzene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,2-Dibromo-3-chloropropane	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
1,2-Dibromoethane (EDB)	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,2-Dichlorobenzene	16.50	ug/kg	< 70.4	U					< 67.6	U	< 80.5	U				
1,2-Dichloroethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,2-Dichloropropane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,3,5-Trimethylbenzene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,3-Dichlorobenzene	4430	ug/kg	< 70.4	U					< 67.6	U	< 80.5	U				
1,3-Dichloropropane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
1,4-Dichlorobenzene	599.0	ug/kg	< 70.4	U					< 67.6	U	< 80.5	U				
2,2-Dichloropropane	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
2-Butanone (MEK)	--	ug/kg	< 704	U	< 636	U	< 626	U	< 676	U	< 805	U	< 688	U	< 741	U
2-Chlorotoluene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
4-Chlorotoluene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
4-Methyl-2-pentanone (MIBK)	--	ug/kg	< 704	U	< 636	U	< 626	U	< 676	U	< 805	U	< 688	U	< 741	U
Acetone	--	ug/kg	< 704	UJ	< 636	U	< 626	U	< 676	U	< 805	U	< 688	U	< 741	U
Allyl chloride	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
Benzene	--	ug/kg														
Bromobenzene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Bromochloromethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Bromodichloromethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Bromomethane	--	ug/kg	< 704	U	< 636	U	< 626	U	< 676	U	< 805	U	< 688	U	< 741	U
Carbon tetrachloride	64.20	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Chlorobenzene	8.420	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Chlorodibromomethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Chloroethane	--	ug/kg	< 704	U	< 636	U	< 626	U	< 676	U	< 805	U	< 688	U	< 741	U
Chloroform	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Chloromethane	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
cis-1,2-Dichloroethene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
cis-1,3-Dichloropropene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Dibromomethane	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Dichlorodifluoromethane (CFC-12)	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Dichlorofluoromethane	--	ug/kg	< 704	U	< 636	U	< 626	U	< 676	U	< 805	U	< 688	U	< 741	U
Diethyl ether	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
Ethylbenzene	1100	ug/kg							< 67.6	U	< 80.5	U				
Hexachloro-1,3-butadiene	--	ug/kg	< 352	U					< 338	U	< 403	U				
Isopropylbenzene (Cumene)	86.00	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Methylene chloride	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
Methyl-tert-butylether	--	ug/kg														
Naphthalene	176.0	ug/kg														
n-Butylbenzene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
n-Propylbenzene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
p-Isopropyltoluene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
sec-Butylbenzene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Styrene	559.0	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
tert-Butylbenzene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE204		SPSE113		SPSE114		SPSE118		SPSE119		SPSE120		SPSE121	
		Sample	SPSE204_072811		SPSE113_071311		SPSE114_071311		SPSE118_071411		SPSE119_071411		SPSE120_071511		SPSE121_071511	
		Sample Date	7/28/2011		7/13/2011		7/13/2011		7/14/2011		7/14/2011		7/15/2011		7/15/2011	
		start_depth	1.5		0		0		0		0		0		0	
		end_depth	1.5		4		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figures 8&9		Figure 9		Figure 9		Figure 10		Figure 10		Figure 10		Figure 10	
Chemical	**Freshwater Sediment[1]**	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Tetrachloroethene	468.0	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Tetrahydrofuran	--	ug/kg	< 2810	U	< 2550	U	< 2500	U	< 2700	U	< 3220	U	< 2750	U	< 2970	U
Toluene	--	ug/kg							< 67.6	U	< 80.5	U				
trans-1,2-dichloroethene	1050	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
trans-1,3-dichloropropene	--	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Tribromomethane	654.0	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
Trichloroethene	96.90	ug/kg	< 70.4	U	< 63.6	U	< 62.6	U	< 67.6	U	< 80.5	U	< 68.8	U	< 74.1	U
Trichlorofluoromethane (CFC-11)	--	ug/kg	< 281	U	< 255	U	< 250	U	< 270	U	< 322	U	< 275	U	< 297	U
Vinyl chloride	--	ug/kg	< 28.1	U	< 25.5	U	< 25	U	< 27	U	< 32.2	U	< 27.5	U	< 29.7	U
Xylenes, total	--	ug/kg														
Semivolatile Organic Compounds (USEPA 8270)																
1,2,4-Trichlorobenzene	2100	ug/kg														
1,2-Dichlorobenzene	16.50	ug/kg														
1,2-Diphenylhydrazine	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
1,3-Dichlorobenzene	4430	ug/kg														
1,4-Dichlorobenzene	599.0	ug/kg														
1-Methylnaphthalene	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2,4,5-Trichlorophenol	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
2,4,6-Trichlorophenol	213.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2,4-Dichlorophenol	117.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2,4-Dimethylphenol	29.00	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2,4-Dinitrophenol	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
2,4-Dinitrotoluene	41.60	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2,6-Dinitrotoluene	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2-Chloronaphthalene	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2-Chlorophenol	31.20	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2-Methylnaphthalene	20.20	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2-Methylphenol (o-Cresol)	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
2-Nitroaniline	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
2-Nitrophenol	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
3&4-Methylphenol	--	ug/kg	< 929	U	< 858	U	< 794	U	< 894	U	< 990	U	< 910	U	< 986	U
3,3'-Dichlorobenzidine	127.0	ug/kg	< 943	U	< 871	U	< 806	U	< 908	U	< 1010	U	< 924	U	< 1000	U
3-Nitroaniline	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
4,6-Dinitro-2-methylphenol	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
4-Bromophenyl phenyl ether	1230	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
4-Chloro-3-methylphenol	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
4-Chloroaniline	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
4-Chlorophenyl phenyl ether	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
4-Nitroaniline	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
4-Nitrophenol	--	ug/kg	< 2390	U	< 2210	U	< 2050	U	< 2300	U	< 2550	U	< 2340	U	< 2540	U
Acenaphthene	6.700	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Acenaphthylene	5.900	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Anthracene	57.20	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Benzo(a)anthracene	108.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Benzo(a)pyrene	150.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Benzo(b)fluoranthene	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Benzo(g,h,i)perylene	170.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Benzo(k)fluoranthene	240.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Bis(2-chloroethoxy)methane	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Bis(2-chloroethyl)ether	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
bis(2-chloroisopropyl)ether	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Bis(2-ethylhexyl)phthalate	180.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Butylbenzylphthalate	10900	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Carbazole	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Chrysene	166.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Dibenzo(a,h)anthracene	33.00	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Dibenzofuran	415.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Diethyl phthalate	603.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Dimethyl phthalate	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U

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Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE204		SPSE113		SPSE114		SPSE118		SPSE119		SPSE120		SPSE121	
		Sample	SPSE204_072811		SPSE113_071311		SPSE114_071311		SPSE118_071411		SPSE119_071411		SPSE120_071511		SPSE121_071511	
		Sample Date	7/28/2011		7/13/2011		7/13/2011		7/14/2011		7/14/2011		7/15/2011		7/15/2011	
		start_depth	1.5		0		0		0		0		0		0	
		end_depth	1.5		4		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal	
		Figure Reference	Figures 8&9		Figure 9		Figure 9		Figure 10		Figure 10		Figure 10		Figure 10	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Di-n-butyl phthalate	6470	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Di-n-octyl phthalate	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Fluoranthene	423.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Fluorene	77.40	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Hexachloro-1,3-butadiene	--	ug/kg														
Hexachlorobenzene	20.00	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Hexachloroethane	1027	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Indeno(1,2,3-cd)pyrene	17.00	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Isophorone	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Naphthalene	176.0	ug/kg														
Nitrobenzene	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
n-Nitrosodimethylamine	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
n-Nitroso-di-n-propylamine	--	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
n-nitrosodiphenylamine	2680	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Pentachlorophenol	504.0	ug/kg	< 943	U	< 871	U	< 806	U	< 908	U	< 1010	U	< 924	U	< 1000	U
Phenanthrene	204.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Phenol	420.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Pyrene	195.0	ug/kg	< 465	U	< 429	U	< 397	U	< 447	U	< 495	U	< 455	U	< 493	U
Extractable Petroleum Hydrocarbons (MADEP EPH)																
Total Extractable Hydrocarbons	--	mg/kg	< 13.8	U	< 13.5	U	< 12.8	U	< 13.4	U	47.9		< 13.9	U	186	
Volatile Petroleum Hydrocarbons (MADEP VPH)																
Aliphatic (C05-C08), Adjusted	--	mg/kg	< 6.8	U	< 6.1	U	< 6.1	U	< 6.5	U	< 8.1	U	< 6.5	U	< 7.2	U
Aliphatic (C05-C08).Unadjusted	--	mg/kg	< 6.8	U	< 6.1	U	< 6.1	U	< 6.5	U	< 8.1	U	< 6.5	U	< 7.2	U
Aliphatic (C09-C12), Adjusted	--	mg/kg	< 6.8	U	< 6.1	U	< 6.1	U	< 6.5	U	< 8.1	U	< 6.5	U	< 7.2	U
Aliphatic (C09-C12).Unadjusted	--	mg/kg	< 6.8	U	< 6.1	U	< 6.1	U	< 6.5	U	< 8.1	U	< 6.5	U	< 7.2	U
C9-C10 Aromatics	--	mg/kg	< 1.4	U	< 1.2	U	< 1.2	U	< 1.3	U	< 1.6	U	< 1.3	U	< 1.4	U
Ethylbenzene	1.100	mg/kg	< 0.068	U	< 0.061	U	< 0.061	U	< 0.065	U	< 0.081	U	< 0.065	U	< 0.072	U
m&p-Xylene	0.02520	mg/kg	< 0.14	U	< 0.12	U	< 0.12	U	< 0.13	U	< 0.16	U	< 0.13	U	< 0.14	U
Methyl-tert-butylether	--	mg/kg	< 0.068	U					< 0.065	U	< 0.081	U				
Naphthalene	0.1760	mg/kg	< 0.82	U	< 0.73	U	< 0.73	U	< 0.78	U	< 0.97	U	< 0.78	U	< 0.86	U
o-Xylene	--	mg/kg	< 0.068	U	< 0.061	U	< 0.061	U	< 0.065	U	< 0.081	U	< 0.065	U	< 0.072	U
Toluene	--	mg/kg	< 0.068	U	< 0.061	U	< 0.061	U	< 0.065	U	< 0.081	U	< 0.065	U	< 0.072	U
Total Purgeable Hydrocarbons	--	mg/kg	< 13.6	U	< 12.1	U	< 12.1	U	< 13	U	< 16.2	U	< 12.9	U	< 14.4	U
Xylenes, total	--	mg/kg	< 0.2	U	< 0.18	U	< 0.18	U	< 0.19	U	< 0.24	U	< 0.19	U	< 0.22	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE205		SPSE122		SPSE122		SPSE124		SPSE125		SPSE126		SPSE127		SPSE128		SPSE129	
		Sample	SPSE205_072911		SPSE122_071511		SPSE123_071511		SPSE124_071511		SPSE125_071511		SPSE126_071511		SPSE127_071611		SPSE128_071611		SPSE129_071611	
		Sample Date	7/29/2011		7/15/2011		7/15/2011		7/15/2011		7/15/2011		7/15/2011		7/16/2011		7/16/2011		7/16/2011	
		start_depth	1		0		0		0		0		0		0		0		0	
		end_depth	1		4		4		4		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Field Duplicate	
		Figure Reference	Figure 10		Figures 10&11		Figure 11		Figure 11		Figure 11		Figure 12		Figure 12		Figure 12		Figure 12	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Percent Moisture	--	%	23.4																	
Volatile Organic Compounds (USEPA 8260B)																				
1,1,1,2-Tetrachloroethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,1,1-Trichloroethane	30.20	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,1,2,2-Tetrachloroethane	1360	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,1,2-Trichloroethane	1240	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,1,2-Trichlorotrifluoroethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,1-Dichloroethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,1-Dichloroethene	31.00	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,1-Dichloropropene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,2,3-Trichlorobenzene	858.0	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,2,3-Trichloropropane	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
1,2,4-Trichlorobenzene	2100	ug/kg	< 65.1	U																
1,2,4-Trimethylbenzene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,2-Dibromo-3-chloropropane	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
1,2-Dibromoethane (EDB)	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,2-Dichlorobenzene	16.50	ug/kg	< 65.1	U																
1,2-Dichloroethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,2-Dichloropropane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,3,5-Trimethylbenzene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,3-Dichlorobenzene	4430	ug/kg	< 65.1	U																
1,3-Dichloropropane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
1,4-Dichlorobenzene	599.0	ug/kg	< 65.1	U																
2,2-Dichloropropane	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
2-Butanone (MEK)	--	ug/kg	< 651	U	< 630	U	< 659	U	< 633	U	< 603	U	< 884	U	< 680	U	< 831	U	< 845	U
2-Chlorotoluene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
4-Chlorotoluene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
4-Methyl-2-pentanone (MIBK)	--	ug/kg	< 651	U	< 630	U	< 659	U	< 633	U	< 603	U	< 884	U	< 680	U	< 831	U	< 845	U
Acetone	--	ug/kg	< 651	U	< 630	U	< 659	U	< 633	U	< 603	U	< 884	U	< 680	U	< 831	U	< 845	U
Allyl chloride	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
Benzene	--	ug/kg																		
Bromobenzene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Bromochloromethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Bromodichloromethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Bromomethane	--	ug/kg	< 651	U	< 630	U	< 659	U	< 633	U	< 603	U	< 884	U	< 680	U	< 831	U	< 845	U
Carbon tetrachloride	64.20	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Chlorobenzene	8.420	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Chlorodibromomethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Chloroethane	--	ug/kg	< 651	U	< 630	U	< 659	U	< 633	U	< 603	U	< 884	U	< 680	U	< 831	U	< 845	U
Chloroform	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Chloromethane	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
cis-1,2-Dichloroethene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
cis-1,3-Dichloropropene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Dibromomethane	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Dichlorodifluoromethane (CFC-12)	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Dichlorofluoromethane	--	ug/kg	< 651	UJ	< 630	U	< 659	U	< 633	U	< 603	U	< 884	U	< 680	U	< 831	U	< 845	U
Diethyl ether	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
Ethylbenzene	1100	ug/kg																		
Hexachloro-1,3-butadiene	--	ug/kg	< 326	U																
Isopropylbenzene (Cumene)	86.00	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Methylene chloride	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
Methyl-tert-butylether	--	ug/kg																		
Naphthalene	176.0	ug/kg																		
n-Butylbenzene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
n-Propylbenzene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
p-Isopropyltoluene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
sec-Butylbenzene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Styrene	559.0	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
tert-Butylbenzene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE205		SPSE122		SPSE122		SPSE124		SPSE125		SPSE126		SPSE127		SPSE128		SPSE129	
		Sample	SPSE205_072911		SPSE122_071511		SPSE123_071511		SPSE124_071511		SPSE125_071511		SPSE126_071511		SPSE127_071611		SPSE128_071611		SPSE129_071611	
		Sample Date	7/29/2011		7/15/2011		7/15/2011		7/15/2011		7/15/2011		7/15/2011		7/16/2011		7/16/2011		7/16/2011	
		start_depth	1		0		0		0		0		0		0		0		0	
		end_depth	1		4		4		4		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Field Duplicate	
		Figure Reference	Figure 10		Figures 10&11		Figure 11		Figure 11		Figure 11		Figure 12		Figure 12		Figure 12		Figure 12	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Tetrachloroethene	468.0	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Tetrahydrofuran	--	ug/kg	< 2600	U	< 2520	U	< 2640	U	< 2530	U	< 2410	U	< 3530	U	< 2720	U	< 3320	U	< 3380	U
Toluene	--	ug/kg																		
trans-1,2-dichloroethene	1050	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
trans-1,3-dichloropropene	--	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Tribromomethane	654.0	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
Trichloroethene	96.90	ug/kg	< 65.1	U	< 63	U	< 65.9	U	< 63.3	U	< 60.3	U	< 88.4	U	< 68	U	< 83.1	U	< 84.5	U
Trichlorofluoromethane (CFC-11)	--	ug/kg	< 260	U	< 252	U	< 264	U	< 253	U	< 241	U	< 353	U	< 272	U	< 332	U	< 338	U
Vinyl chloride	--	ug/kg	< 26	U	< 25.2	U	< 26.4	U	< 25.3	U	< 24.1	U	< 35.3	U	< 27.2	U	< 33.2	U	< 33.8	U
Xylenes, total	--	ug/kg																		
Semivolatile Organic Compounds (USEPA 8270)																				
1,2,4-Trichlorobenzene	2100	ug/kg																		
1,2-Dichlorobenzene	16.50	ug/kg																		
1,2-Diphenylhydrazine	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
1,3-Dichlorobenzene	4430	ug/kg																		
1,4-Dichlorobenzene	599.0	ug/kg																		
1-Methylnaphthalene	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2,4,5-Trichlorophenol	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
2,4,6-Trichlorophenol	213.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2,4-Dichlorophenol	117.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2,4-Dimethylphenol	29.00	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2,4-Dinitrophenol	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
2,4-Dinitrotoluene	41.60	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2,6-Dinitrotoluene	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2-Chloronaphthalene	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2-Chlorophenol	31.20	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2-Methylnaphthalene	20.20	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2-Methylphenol (o-Cresol)	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
2-Nitroaniline	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
2-Nitrophenol	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
3&4-Methylphenol	--	ug/kg	< 861	U	< 864	U	< 869	U	< 860	U	< 4060	U	< 1200	U	< 901	U	< 1100	U	< 1120	U
3,3'-Dichlorobenzidine	127.0	ug/kg	< 874	U	< 877	U	< 882	U	< 873	U	< 4130	U	< 1220	U	< 914	U	< 1110	U	< 1140	U
3-Nitroaniline	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
4,6-Dinitro-2-methylphenol	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
4-Bromophenyl phenyl ether	1230	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
4-Chloro-3-methylphenol	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
4-Chloroaniline	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
4-Chlorophenyl phenyl ether	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
4-Nitroaniline	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
4-Nitrophenol	--	ug/kg	< 2220	U	< 2220	U	< 2240	U	< 2220	U	< 10500	U	< 3080	U	< 2320	U	< 2830	U	< 2880	U
Acenaphthene	6.700	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Acenaphthylene	5.900	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Anthracene	57.20	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Benzo(a)anthracene	108.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	**3490**		< 599	U	< 450	U	< 549	U	< 560	U
Benzo(a)pyrene	150.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Benzo(b)fluoranthene	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	2680		< 599	U	< 450	U	< 549	U	< 560	U
Benzo(g,h,i)perylene	170.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Benzo(k)fluoranthene	240.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Bis(2-chloroethoxy)methane	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Bis(2-chloroethyl)ether	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
bis(2-chloroisopropyl)ether	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Bis(2-ethylhexyl)phthalate	180.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Butylbenzylphthalate	10900	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Carbazole	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Chrysene	166.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	**3400**		< 599	U	< 450	U	< 549	U	< 560	U
Dibenzo(a,h)anthracene	33.00	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Dibenzofuran	415.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Diethyl phthalate	603.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Dimethyl phthalate	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	SPSE205		SPSE122		SPSE122		SPSE124		SPSE125		SPSE126		SPSE127		SPSE128		SPSE129	
		Sample	SPSE205_072911		SPSE122_071511		SPSE123_071511		SPSE124_071511		SPSE125_071511		SPSE126_071511		SPSE127_071611		SPSE128_071611		SPSE129_071611	
		Sample Date	7/29/2011		7/15/2011		7/15/2011		7/15/2011		7/15/2011		7/15/2011		7/16/2011		7/16/2011		7/16/2011	
		start_depth	1		0		0		0		0		0		0		0		0	
		end_depth	1		4		4		4		4		4		4		4		4	
		Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal		Normal		Field Duplicate	
		Figure Reference	Figure 10		Figures 10&11		Figure 11		Figure 11		Figure 11		Figure 12		Figure 12		Figure 12		Figure 12	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Di-n-butyl phthalate	6470	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Di-n-octyl phthalate	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Fluoranthene	423.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	**11700**		< 599	U	< 450	U	< 549	U	< 560	U
Fluorene	77.40	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Hexachloro-1,3-butadiene	--	ug/kg																		
Hexachlorobenzene	20.00	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Hexachloroethane	1027	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Indeno(1,2,3-cd)pyrene	17.00	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Isophorone	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Naphthalene	176.0	ug/kg																		
Nitrobenzene	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
n-Nitrosodimethylamine	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
n-Nitroso-di-n-propylamine	--	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
n-nitrosodiphenylamine	2680	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Pentachlorophenol	504.0	ug/kg	< 874	U	< 877	U	< 882	U	< 873	U	< 4130	U	< 1220	U	< 914	U	< 1110	U	< 1140	U
Phenanthrene	204.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	**6990**		< 599	U	< 450	U	< 549	U	< 560	U
Phenol	420.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	< 2030	U	< 599	U	< 450	U	< 549	U	< 560	U
Pyrene	195.0	ug/kg	< 431	U	< 432	U	< 435	U	< 430	U	**9570**		< 599	U	< 450	U	< 549	U	< 560	U
Extractable Petroleum Hydrocarbons (MADEP EPH)																				
Total Extractable Hydrocarbons	--	mg/kg	< 12.8	U	< 12.9	U	< 13	U	< 13	U	< 12.1	U	2150		< 13.5	U	< 16.4	U	< 16.7	U
Volatile Petroleum Hydrocarbons (MADEP VPH)																				
Aliphatic (C05-C08), Adjusted	--	mg/kg	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 5.7	U	< 9	U	< 6.7	U	< 8.2	U	< 8.4	U
Aliphatic (C05-C08).Unadjusted	--	mg/kg	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 5.7	U	< 9	U	< 6.7	U	< 8.2	U	< 8.4	U
Aliphatic (C09-C12), Adjusted	--	mg/kg	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 5.7	U	< 9	U	< 6.7	U	< 8.2	U	< 8.4	U
Aliphatic (C09-C12).Unadjusted	--	mg/kg	< 6.3	U	< 6.4	U	< 6.5	U	< 6.1	U	< 5.7	U	< 9	U	< 6.7	U	< 8.2	U	< 8.4	U
C9-C10 Aromatics	--	mg/kg	< 1.3	U	< 1.3	U	< 1.3	U	< 1.2	U	< 1.1	U	< 1.8	U	< 1.3	U	< 1.6	U	< 1.7	U
Ethylbenzene	1.100	mg/kg	< 0.063	U	< 0.064	U	< 0.065	U	< 0.061	U	< 0.057	U	< 0.09	U	< 0.067	U	< 0.082	U	< 0.084	U
m&p-Xylene	0.02520	mg/kg	< 0.13	U	< 0.13	U	< 0.13	U	< 0.12	U	< 0.11	U	< 0.18	U	< 0.13	U	< 0.16	U	< 0.17	U
Methyl-tert-butylether	--	mg/kg	< 0.063	U																
Naphthalene	0.1760	mg/kg	< 0.76	UJ	< 0.77	U	< 0.78	U	< 0.73	U	< 0.68	U	< 1.1	U	< 0.81	U	< 0.99	U	< 1	U
o-Xylene	--	mg/kg	< 0.063	U	< 0.064	U	< 0.065	U	< 0.061	U	< 0.057	U	< 0.09	U	< 0.067	U	< 0.082	U	< 0.084	U
Toluene	--	mg/kg	< 0.063	U	< 0.064	U	< 0.065	U	< 0.061	U	< 0.057	U	< 0.09	U	< 0.067	U	< 0.082	U	< 0.084	U
Total Purgeable Hydrocarbons	--	mg/kg	< 12.6	U	< 12.8	U	< 12.9	U	< 12.2	U	< 11.4	U	< 18	U	< 13.4	U	< 16.5	U	< 16.8	U
Xylenes, total	--	mg/kg	< 0.19	U	< 0.19	U	< 0.19	U	< 0.18	U	< 0.17	U	< 0.27	U	< 0.2	U	< 0.25	U	< 0.25	U

Table A1
Downstream Impacted Areas Soil and Sediment Data Report
USEPA Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

Notes:
1. This table presents validated data.
2. USEPA Freshwater Sediment Screening Benchmarks

Non-detects that exceed USEPA Freshwater Sediment Screening Benchmarks - shaded

Detects that exceed USEPA Freshwater Sediment Screening Benchmarks - boldfaced

mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
+	Result may be biased high
-	Result may be biased low
J	The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U	The chemical was not detected above the reporting limit shown.
UJ	The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
Qual	Laboratory Qualifier

Table A2
Downstream Impacted Areas Soil and Sediment Data Report
DEQ Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	ST-YELLR-02		ST-YELLR-03	
		Sample	ST-082711-A-3-EAST_SEDIMENT		ST-082711-A-3-WEST_SEDIMENT	
		Sample Date	8/27/2011		8/27/2011	
		Sample Type	Normal		Normal	
		Figure Reference	Figure 2		Figure 2	
Chemical	**Freshwater Sediment[1]**	**Units**	**Result**	**Qual**	**Result**	**Qual**
Percent Moisture	--	% by wt	26		37	
Volatile Organic Compounds (EPA 8260B)						
1,1,1,2-Tetrachloroethane	--	mg/kg	< 0.27		< 0.32	
1,1,1-Trichloroethane	0.03020	mg/kg	< 0.27		< 0.32	
1,1,2,2-Tetrachloroethane	1.360	mg/kg	< 0.27		< 0.32	
1,1,2-Trichloroethane	1.240	mg/kg	< 0.27		< 0.32	
1,1-Dichloroethane	--	mg/kg	< 0.27		< 0.32	
1,1-Dichloroethene	0.03100	mg/kg	< 0.27		< 0.32	
1,1-Dichloropropene	--	mg/kg	< 0.27		< 0.32	
1,2,3-Trichloropropane	--	mg/kg	< 0.27		< 0.32	
1,2-Dibromoethane (EDB)	--	mg/kg	< 0.27		< 0.32	
1,2-Dichlorobenzene	0.01650	mg/kg	< 0.27		< 0.32	
1,2-Dichloroethane	--	mg/kg	< 0.27		< 0.32	
1,2-Dichloropropane	--	mg/kg	< 0.27		< 0.32	
1,3-Dichlorobenzene	4.430	mg/kg	< 0.27		< 0.32	
1,3-Dichloropropane	--	mg/kg	< 0.27		< 0.32	
1,4-Dichlorobenzene	0.5990	mg/kg	< 0.27		< 0.32	
2,2-Dichloropropane	--	mg/kg	< 0.27		< 0.32	
2-Butanone (MEK)	--	mg/kg	< 5.4		< 6.3	
2-Chloroethyl Vinyl Ether	--	mg/kg	< 0.27		< 0.32	
2-Chlorotoluene	--	mg/kg	< 0.27		< 0.32	
4-Chlorotoluene	--	mg/kg	< 0.27		< 0.32	
Benzene	--	mg/kg	< 0.27		< 0.32	
Bromobenzene	--	mg/kg	< 0.27		< 0.32	
Bromochloromethane	--	mg/kg	< 0.27		< 0.32	
Bromodichloromethane	--	mg/kg	< 0.27		< 0.32	
Bromomethane	--	mg/kg	< 0.27		< 0.32	
Carbon tetrachloride	0.06420	mg/kg	< 0.27		< 0.32	
Chlorobenzene	0.008420	mg/kg	< 0.27		< 0.32	
Chlorodibromomethane	--	mg/kg	< 0.27		< 0.32	
Chloroethane	--	mg/kg	< 0.27		< 0.32	
Chloroform	--	mg/kg	< 0.27		< 0.32	
Chloromethane	--	mg/kg	< 0.27		< 0.32	
cis-1,2-Dichloroethene	0.0	mg/kg	< 0.27		< 0.32	
cis-1,3-Dichloropropene	--	mg/kg	< 0.27		< 0.32	
Dibromomethane	--	mg/kg	< 0.27		< 0.32	
Dichlorodifluoromethane (CFC-12)	--	mg/kg	< 0.27		< 0.32	
Ethylbenzene	1.100	mg/kg	< 0.27		< 0.32	
m&p-Xylene	0.02520	mg/kg	< 0.27		< 0.32	

Table A2
Downstream Impacted Areas Soil and Sediment Data Report
DEQ Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	ST-YELLR-02		ST-YELLR-03	
		Sample	ST-082711-A-3-EAST_SEDIMENT		ST-082711-A-3-WEST_SEDIMENT	
		Sample Date	8/27/2011		8/27/2011	
		Sample Type	Normal		Normal	
		Figure Reference	Figure 2		Figure 2	
Chemical	**Freshwater Sediment[1]**	**Units**	**Result**	**Qual**	**Result**	**Qual**
Methylene chloride	--	mg/kg	< 0.27		< 0.32	
Methyl-tert-butylether	--	mg/kg	< 0.27		< 0.32	
o-Xylene	--	mg/kg	< 0.27		< 0.32	
Styrene	0.5590	mg/kg	< 0.27		< 0.32	
Tetrachloroethene	0.4680	mg/kg	< 0.27		< 0.32	
Toluene	--	mg/kg	< 0.27		< 0.32	
trans-1,2-dichloroethene	1.050	mg/kg	< 0.27		< 0.32	
trans-1,3-dichloropropene	--	mg/kg	< 0.27		< 0.32	
Tribromomethane	0.6540	mg/kg	< 0.27		< 0.32	
Trichloroethene	0.09690	mg/kg	< 0.27		< 0.32	
Trichlorofluoromethane (CFC-11)	--	mg/kg	< 0.27		< 0.32	
Vinyl chloride	--	mg/kg	< 0.27		< 0.32	
Xylenes, total	--	mg/kg	< 0.27		< 0.32	
Semivolatile Organic Compounds (EPA 8270)						
1,2,4-Trichlorobenzene	2.100	mg/kg	< 0.33		< 0.33	
1,2-Dichlorobenzene	0.01650	mg/kg	< 0.33		< 0.33	
1,3-Dichlorobenzene	4.430	mg/kg	< 0.33		< 0.33	
1,4-Dichlorobenzene	0.5990	mg/kg	< 0.33		< 0.33	
1-Methylnaphthalene	--	mg/kg	< 0.33		< 0.33	
2,4,5-Trichlorophenol	--	mg/kg	< 0.33		< 0.33	
2,4,6-Trichlorophenol	0.2130	mg/kg	< 0.33		< 0.33	
2,4-Dichlorophenol	0.1170	mg/kg	< 0.33		< 0.33	
2,4-Dimethylphenol	0.02900	mg/kg	< 0.33		< 0.33	
2,4-Dinitrophenol	--	mg/kg	< 2.3		< 2.7	
2,4-Dinitrotoluene	0.04160	mg/kg	< 0.33		< 0.33	
2,6-Dinitrotoluene	--	mg/kg	< 0.33		< 0.33	
2-Chloronaphthalene	--	mg/kg	< 0.33		< 0.33	
2-Chlorophenol	0.03120	mg/kg	< 0.33		< 0.33	
2-Methylnaphthalene	0.02020	mg/kg	< 0.33		< 0.33	
2-Methylphenol (o-Cresol)	--	mg/kg	< 0.33		< 0.33	
2-Nitrophenol	--	mg/kg	< 0.33		< 0.33	
3&4-Methylphenol	--	mg/kg	< 0.33		< 0.33	
3,3'-Dichlorobenzidine	0.1270	mg/kg	< 0.33		< 0.33	
4,6-Dinitro-2-methylphenol	--	mg/kg	< 2.3		< 2.7	
4-Bromophenyl phenyl ether	1.230	mg/kg	< 0.33		< 0.33	
4-Chloro-3-methylphenol	--	mg/kg	< 0.33		< 0.33	
4-Chlorophenol	--	mg/kg	< 0.33		< 0.33	
4-Chlorophenyl phenyl ether	--	mg/kg	< 0.33		< 0.33	
4-Nitrophenol	--	mg/kg	< 2.3		< 2.7	

Table A2
Downstream Impacted Areas Soil and Sediment Data Report
DEQ Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	ST-YELLR-02		ST-YELLR-03	
		Sample	ST-082711-A-3-EAST_SEDIMENT		ST-082711-A-3-WEST_SEDIMENT	
		Sample Date	8/27/2011		8/27/2011	
		Sample Type	Normal		Normal	
		Figure Reference	Figure 2		Figure 2	
Chemical	**Freshwater Sediment[1]**	**Units**	**Result**	**Qual**	**Result**	**Qual**
Acenaphthene	0.006700	mg/kg	< 0.33		< 0.33	
Acenaphthylene	0.005900	mg/kg	< 0.33		< 0.33	
Anthracene	0.05720	mg/kg	< 0.33		< 0.33	
Azobenzene	--	mg/kg	< 0.33		< 0.33	
Benzidine	--	mg/kg	< 0.33		< 0.33	
Benzo(a)anthracene	0.1080	mg/kg	< 0.33		< 0.33	
Benzo(a)pyrene	0.1500	mg/kg	< 0.33		< 0.33	
Benzo(b)fluoranthene	--	mg/kg	< 0.33		< 0.33	
Benzo(g,h,i)perylene	0.1700	mg/kg	< 0.33		< 0.33	
Benzo(k)fluoranthene	0.2400	mg/kg	< 0.33		< 0.33	
Bis(2-chloroethoxy)methane	--	mg/kg	< 0.33		< 0.33	
Bis(2-chloroethyl)ether	--	mg/kg	< 0.33		< 0.33	
bis(2-chloroisopropyl)ether	--	mg/kg	< 0.33		< 0.33	
Bis(2-ethylhexyl)phthalate	0.1800	mg/kg	< 0.33		**0.22**	J
Butylbenzylphthalate	10.90	mg/kg	< 0.33		< 0.33	
Chrysene	0.1660	mg/kg	< 0.33		< 0.33	
Dibenzo(a,h)anthracene	0.03300	mg/kg	< 0.33		< 0.33	
Diethyl phthalate	0.6030	mg/kg	< 0.33		< 0.33	
Dimethyl phthalate	--	mg/kg	< 0.33		< 0.33	
Di-n-butyl phthalate	6.470	mg/kg	< 0.33		< 0.33	
Di-n-octyl phthalate	--	mg/kg	< 0.33		< 0.33	
Fluoranthene	0.4230	mg/kg	< 0.33		< 0.33	
Fluorene	0.07740	mg/kg	< 0.33		< 0.33	
Hexachloro-1,3-butadiene	0.0	mg/kg	< 0.33		< 0.33	
Hexachlorobenzene	0.02000	mg/kg	< 0.33		< 0.33	
Hexachlorocyclopentadiene	0.0	mg/kg	< 0.33		< 0.33	
Hexachloroethane	1.027	mg/kg	< 0.33		< 0.33	
Indeno(1,2,3-cd)pyrene	0.01700	mg/kg	< 0.33		< 0.33	
Isophorone	--	mg/kg	< 0.33		< 0.33	
Naphthalene	0.1760	mg/kg	< 0.33		< 0.33	
Nitrobenzene	--	mg/kg	< 0.33		< 0.33	
n-Nitrosodimethylamine	--	mg/kg	< 0.33		< 0.33	
n-Nitroso-di-n-propylamine	--	mg/kg	< 0.33		< 0.33	
n-nitrosodiphenylamine	2.680	mg/kg	< 0.33		< 0.33	
Pentachlorophenol	0.5040	mg/kg	< 2.3		< 2.7	
Phenanthrene	0.2040	mg/kg	< 0.33		< 0.33	
Phenol	0.4200	mg/kg	< 0.33		< 0.33	
Pyrene	0.1950	mg/kg	< 0.33		< 0.33	
Pyridine	--	mg/kg	< 0.33		< 0.33	

Table A2
Downstream Impacted Areas Soil and Sediment Data Report
DEQ Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	ST-YELLR-02		ST-YELLR-03	
		Sample	ST-082711-A-3-EAST_SEDIMENT		ST-082711-A-3-WEST_SEDIMENT	
		Sample Date	8/27/2011		8/27/2011	
		Sample Type	Normal		Normal	
		Figure Reference	Figure 2		Figure 2	
Chemical	Freshwater Sediment[1]	Units	Result	Qual	Result	Qual
Total Petroleum Hydrocarbons (EPA 8015)						
Total Extractable Hydrocarbons	--	mg/kg	671		278	
Extractable Petroleum Hydrocarbons (MADEP EPH)						
C11-C22 Aromatics	--	mg/kg	182		59	
C19-C36 Aliphatics	--	mg/kg	183		76	
C9-C18 Aliphatics	--	mg/kg	54		< 16	
Total Extractable Hydrocarbons	--	mg/kg	485		183	
Volatile Petroleum Hydrocarbons (MADEP VPH)						
Benzene	--	mg/kg	< 0.068		< 0.079	
C5-C8 Aliphatics	--	mg/kg	< 2.7		< 3.2	
C9-C10 Aromatics	--	mg/kg	< 2.7		< 3.2	
C9-C12 Aliphatics	--	mg/kg	< 2.7		< 3.2	
Ethylbenzene	1.100	mg/kg	< 0.068		< 0.079	
m&p-Xylene	0.02520	mg/kg	< 0.068		< 0.079	
Methyl-tert-butylether	--	mg/kg	< 0.14		< 0.16	
Naphthalene	0.1760	mg/kg	< 0.14		< 0.16	
o-Xylene	--	mg/kg	< 0.068		< 0.079	
Toluene	--	mg/kg	< 0.068		< 0.079	
Total Purgeable Hydrocarbons	--	mg/kg	3.1		< 3.2	
Xylenes, total	--	mg/kg	< 0.068		< 0.079	
Simulated Distillation (SimDist)						
C10-C11 Hydrocarbons	--	% by vol	< 0.01		< 0.01	
C11-C12 Hydrocarbons	--	% by vol	< 0.01		< 0.01	
C12-C13 Hydrocarbons	--	% by vol	0.02		< 0.01	
C13-C14 Hydrocarbons	--	% by vol	0.24		0.05	
C14-C15 Hydrocarbons	--	% by vol	0.8		0.42	
C15-C16 Hydrocarbons	--	% by vol	1.66		0.8	
C16-C17 Hydrocarbons	--	% by vol	2.74		1.54	
C17-C18 Hydrocarbons	--	% by vol	4.51		2.23	
C18-C19 Hydrocarbons	--	% by vol	4.95		2.85	
C19-C20 Hydrocarbons	--	% by vol	5.27		4.11	
C1-C5 Hydrocarbons	--	% by vol	< 0.01		< 0.01	
C20-C21 Hydrocarbons	--	% by vol	4.62		3.47	
C21-C22 Hydrocarbons	--	% by vol	5.08		3.87	
C22-C23 Hydrocarbons	--	% by vol	4.8		3.8	
C23-C24 Hydrocarbons	--	% by vol	4.65		3.81	
C24-C25 Hydrocarbons	--	% by vol	4.01		3.27	
C25-C26 Hydrocarbons	--	% by vol	4.41		3.7	
C26-C27 Hydrocarbons	--	% by vol	3.79		3.2	

Table A2
Downstream Impacted Areas Soil and Sediment Data Report
DEQ Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

		Location	ST-YELLR-02		ST-YELLR-03	
		Sample	ST-082711-A-3-EAST_SEDIMENT		ST-082711-A-3-WEST_SEDIMENT	
		Sample Date	8/27/2011		8/27/2011	
		Sample Type	Normal		Normal	
		Figure Reference	Figure 2		Figure 2	
Chemical	**Freshwater Sediment[1]**	**Units**	**Result**	**Qual**	**Result**	**Qual**
C27-C28 Hydrocarbons	--	% by vol	4.49		4.14	
C28-C29 Hydrocarbons	--	% by vol	3.31		3.33	
C29-C30 Hydrocarbons	--	% by vol	4.74		5.05	
C30-C32 Hydrocarbons	--	% by vol	7.86		8.79	
C32-C34 Hydrocarbons	--	% by vol	7.43		10.13	
C34-C36 Hydrocarbons	--	% by vol	7.79		12.94	
C36-C38 Hydrocarbons	--	% by vol	6.25		9.08	
C38-C40 Hydrocarbons	--	% by vol	4.65		6.35	
C40+ Hydrocarbons	--	% by vol	1.95		3.08	
C5-C6 Hydrocarbons	--	% by vol	< 0.01		< 0.01	
C6-C7 Hydrocarbons	--	% by vol	< 0.01		< 0.01	
C7-C8 Hydrocarbons	--	% by vol	< 0.01		< 0.01	
C8-C9 Hydrocarbons	--	% by vol	< 0.01		< 0.01	
C9-C10 Hydrocarbons	--	% by vol	< 0.01		< 0.01	

Table A2
Downstream Impacted Areas Soil and Sediment Data Report
DEQ Sediment Sample Analytical Results
Silvertip Pipeline Incident Response
Laurel, Montana

Notes:

1. This table presents validated data.
2. USEPA Freshwater Sediment Screening Benchmarks

Non-detects that exceed USEPA Freshwater Sediment Screening Benchmarks - shaded

Detects that exceed USEPA Freshwater Sediment Screening Benchmarks - boldfaced

mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
+	Result may be biased high
-	Result may be biased low
J	The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U	The chemical was not detected above the reporting limit shown.
UJ	The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
Qual	Laboratory Qualifier

Appendix B

Sediment and Soil Sample Metals Analytical Results

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0824SE404		LAMT0824SE405		LAMT0824SE406		LAMT0825SE401	
	Sample Date	8/24/2011		8/24/2011		8/24/2011		8/25/2011	
	Start Depth (in)	0		0		6		0	
	End Depth (in)	6		6		12		6	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**25**		**17.1**		**17.8**		**11.6**	
Barium	mg/kg	**150**	J-	**131**	J-	**127**	J-	**162**	
Cadmium	mg/kg	**1.3**		**0.99**		**1**		**0.33**	
Chromium	mg/kg	**24.3**		**17.5**		**16.9**		**25.7**	
Iron	mg/kg								
Lead	mg/kg	**9.6**	J-	**12.9**	J-	**7.3**	J-	**20.5**	
Nickel	mg/kg	**19.6**		**13**		**12.9**		**19.2**	
Selenium	mg/kg	< 0.93	U	< 0.89	U	< 0.8	U	**2.7**	
Silver	mg/kg	< 0.62	U	< 0.6	U	< 0.53	U	< 0.71	U
Vanadium	mg/kg	**39.9**		**33.6**		**33.9**		**44.2**	
Mercury	mg/kg	**0.037**		< 0.026	U	< 0.027	U	**0.026**	

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0825SE403		LAMT0825SE404		LAMT0827SE501		LAMT0825SE405	
	Sample Date	8/25/2011		8/25/2011		8/27/2011		8/25/2011	
	Start Depth (in)	0		0		0		0	
	End Depth (in)	6		6		6		6	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**2.2**		**3.3**		**12.4**		**4.3**	
Barium	mg/kg	**136**		**127**		**95.4**		**109**	
Cadmium	mg/kg	**0.11**		**0.14**		**0.89**		**0.15**	
Chromium	mg/kg	**17.4**		**22.4**		**13.9**		**16**	
Iron	mg/kg								
Lead	mg/kg	**18.8**		**17.8**		**7.7**		**17.1**	
Nickel	mg/kg	**14.1**		**11.9**		**10.7**		**12**	
Selenium	mg/kg	**2.5**		**2.4**		< 0.91	U	**2.8**	
Silver	mg/kg	< 0.59	U	< 0.58	U	< 0.61	U	< 0.58	U
Vanadium	mg/kg	**47.6**		**45.6**		**33.7**		**40.1**	
Mercury	mg/kg	< 0.022	U	< 0.026	U	< 0.026	U	< 0.022	U

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0825SE406		LAMT0825SE407		LAMT0827SE503		LAMT0827SE504	
	Sample Date	8/25/2011		8/25/2011		8/27/2011		8/27/2011	
	Start Depth (in)	0		0		0		0	
	End Depth (in)	6		6		6		6	
	Sample Type	Normal		Field Duplicate		Normal		Field Duplicate	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**4.2**		**5.5**		**15.5**		**12.4**	
Barium	mg/kg	**105**		**111**		**133**		**104**	
Cadmium	mg/kg	**0.13**		**0.16**		**1**		**0.8**	
Chromium	mg/kg	**13.3**		**15.1**		**20.1**		**17.5**	
Iron	mg/kg								
Lead	mg/kg	**15**		**17.2**		**8.9**		**8.6**	
Nickel	mg/kg	**9.8**		**12**		**16.1**		**15.6**	
Selenium	mg/kg	**2.8**		**2.7**		< 0.94	U	< 1.1	U
Silver	mg/kg	< 0.6	U	< 0.6	U	< 0.63	U	< 0.75	U
Vanadium	mg/kg	**34.9**		**39.2**		**39.1**		**33.9**	
Mercury	mg/kg	< 0.022	U	< 0.027	U	**0.028**		< 0.03	U

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0827SE506		LAMT0827SE507		LAMT0827SE508		LAMT0827SE509	
	Sample Date	8/27/2011		8/27/2011		8/27/2011		8/27/2011	
	Start Depth (in)	0		0		0		0	
	End Depth (in)	6		6		12		12	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**13.2**		**22.9**		**15.9**		**14.8**	
Barium	mg/kg	**101**		**139**		**103**		**107**	
Cadmium	mg/kg	**0.89**		**1.2**		**0.9**		**0.9**	
Chromium	mg/kg	**19.2**		**21**		**13.9**		**15.8**	
Iron	mg/kg								
Lead	mg/kg	**6.7**		**12.5**		**6.5**		**6.8**	
Nickel	mg/kg	**12.4**		**18.1**		**11.2**		**12.7**	
Selenium	mg/kg	< 1	U	< 0.94	U	< 0.83	U	< 0.93	U
Silver	mg/kg	< 0.68	U	< 0.63	U	< 0.55	U	< 0.62	U
Vanadium	mg/kg	**37.4**		**35.7**		**31.4**		**32.5**	
Mercury	mg/kg	< 0.024	U	< 0.023	U	< 0.025	U	**0.032**	

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0827SE501		BIMT0828SE501		BIMT0827SE502		BIMT0827SE503	
	Sample Date	8/27/2011		8/28/2011		8/27/2011		8/27/2011	
	Start Depth (in)	0		0		0		0	
	End Depth (in)	6		6		6		6	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**15.3**		**17.5**		**15.9**	J-	**13.8**	J-
Barium	mg/kg	**111**		**142**		**112**	J-	**97**	J-
Cadmium	mg/kg	**0.96**		**1.2**		**0.87**	J-	**0.78**	J-
Chromium	mg/kg	**17.4**		**17.4**		**14.6**	J-	**14.1**	J-
Iron	mg/kg								
Lead	mg/kg	**6.7**		**9.6**		**7.5**	J-	**6.8**	J-
Nickel	mg/kg	**12.1**		**14.3**		**12.8**	J-	**11.8**	J-
Selenium	mg/kg	< 0.77	U	< 0.92	U	< 0.78	UJ-	< 1.2	UJ-
Silver	mg/kg	< 0.51	U	< 0.62	U	< 0.52	UJ-	< 0.77	UJ-
Vanadium	mg/kg	**36.7**		**35**		**26.1**	J-	**24.8**	J-
Mercury	mg/kg	< 0.027	U	< 0.025	U	< 0.024	U	< 0.03	U

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0826SE401		BIMT0826SE402		BIMT0826SE403		BIMT0828SE406	
	Sample Date	8/26/2011		8/26/2011		8/26/2011		8/28/2011	
	Start Depth (in)	0		6		0		0	
	End Depth (in)	6		12		6		6	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**12.2**		**11.1**		**9.1**		**13.3**	
Barium	mg/kg	**174**		**163**		**127**		**141**	
Cadmium	mg/kg	**0.32**		**0.31**		**0.24**		**0.62**	
Chromium	mg/kg	**26.5**		**25.5**		**19.3**		**20.6**	
Iron	mg/kg								
Lead	mg/kg	**22.9**		**21.9**		**17.3**		**27.8**	
Nickel	mg/kg	**20.1**		**18.8**		**14.5**		**19.8**	
Selenium	mg/kg	**3.4**		**3**		**2.6**		**3.4**	
Silver	mg/kg	< 0.57	U	< 0.48	U	< 0.45	U	< 0.57	U
Vanadium	mg/kg	**47.4**		**46.2**		**35.8**		**35.4**	
Mercury	mg/kg	**0.027**		< 0.028	U	< 0.026	U	**0.048**	

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0828SE407		PPMT0828SE404		PPMT0828SE405		LAMT0824SE403	
	Sample Date	8/28/2011		8/28/2011		8/28/2011		8/24/2011	
	Start Depth (in)	0		0		6		0	
	End Depth (in)	6		6		12		6	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**7.3**		**6.1**		**7.1**		**11**	
Barium	mg/kg	**119**		**113**		**129**		**115**	J-
Cadmium	mg/kg	**0.38**		**0.31**		**0.35**		**0.85**	
Chromium	mg/kg	**16.9**		**14.3**		**17.8**		**16.4**	
Iron	mg/kg								
Lead	mg/kg	**21.1**		**18.6**		**21.6**		**7.2**	J-
Nickel	mg/kg	**15**		**12.5**		**15**		**13.3**	
Selenium	mg/kg	**3.6**		**3**		**3.2**		< 0.93	U
Silver	mg/kg	< 0.62	U	< 0.62	U	< 0.47	U	< 0.62	U
Vanadium	mg/kg	**30.8**		**27.3**		**32.8**		**37.7**	
Mercury	mg/kg	< 0.026	U	< 0.025	U	< 0.027	U	< 0.026	U

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	HYMT0828SE402		HYMT0828SE403		ROMT0828SE401		KIMT0827SE403	
	Sample Date	8/28/2011		8/28/2011		8/28/2011		8/27/2011	
	Start Depth (in)	0		6		0		0	
	End Depth (in)	6		12		6		6	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**11.3**		**8.8**		**12.6**		**12**	
Barium	mg/kg	**108**		**100**		**128**		**154**	
Cadmium	mg/kg	**0.65**		**0.53**		**0.66**		**0.73**	
Chromium	mg/kg	**14.4**		**13**		**13.5**		**15.3**	
Iron	mg/kg								
Lead	mg/kg	**5.9**		**4.4**		**6.9**		**9.6**	
Nickel	mg/kg	**10.1**		**7.3**		**11.9**		**16.4**	
Selenium	mg/kg	< 0.72	U	< 0.72	U	< 1	U	< 1.5	U
Silver	mg/kg	< 0.48	U	< 0.48	U	< 0.68	U	< 0.98	U
Vanadium	mg/kg	**25.8**		**24.2**		**24.4**		**24.2**	
Mercury	mg/kg	< 0.023	U	< 0.024	U	< 0.026	U	< 0.038	U

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	TEMT0827SE402		GLMT0827SE401		LAMT0823SE401		LAMT0823SE402	
	Sample Date	8/27/2011		8/27/2011		8/23/2011		8/23/2011	
	Start Depth (in)	0		0		0		0	
	End Depth (in)	6		6		6		6	
	Sample Type	Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)									
Arsenic	mg/kg	**13.1**		**17.6**		**14.9**		**11.9**	
Barium	mg/kg	**146**		**63.6**		**108**	J+	**124**	J+
Cadmium	mg/kg	**0.68**		**1.1**		**0.82**		**0.6**	
Chromium	mg/kg	**10.2**		**2.9**		**14.6**		**11.1**	
Iron	mg/kg								
Lead	mg/kg	**6.8**		**4.2**		**6.6**		**11.7**	
Nickel	mg/kg	**10.7**		**6.9**		**12.4**		**10.8**	
Selenium	mg/kg	< 0.92	U	< 0.63	U	< 0.92	U	< 0.75	U
Silver	mg/kg	< 0.61	U	< 0.42	U	< 0.61	U	< 0.5	U
Vanadium	mg/kg	**19.4**		**10.3**		**25**		**22.8**	
Mercury	mg/kg	< 0.025	U	< 0.021	U	< 0.023	U	< 0.021	U

Table B1
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0824SE401		LAMT0824SE402	
	Sample Date	8/24/2011		8/24/2011	
	Start Depth (in)	0		0	
	End Depth (in)	6		6	
	Sample Type	Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)					
Arsenic	mg/kg	**18.7**		**16.5**	
Barium	mg/kg	**119**	J-	**128**	J-
Cadmium	mg/kg	**1.1**		**1.1**	
Chromium	mg/kg	**20.1**		**20.1**	
Iron	mg/kg				
Lead	mg/kg	**7.7**	J-	**7.8**	J-
Nickel	mg/kg	**14.5**		**14.8**	
Selenium	mg/kg	< 0.84	U	< 0.72	U
Silver	mg/kg	< 0.56	U	< 0.48	U
Vanadium	mg/kg	**36.1**		**35.5**	
Mercury	mg/kg	< 0.024	U	< 0.023	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0815SO501		LAMT0815SO507		LAMT0815SO512		LAMT0812SO401		LAMT0814SO402	
	Sample Date	8/15/2011		8/15/2011		8/15/2011		8/12/2011		8/14/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**20.4**		**31.4**		**28.5**		**20.6**		**24.2**	
Barium	mg/kg	**142**		**220**		**291**		**143**		**198**	
Cadmium	mg/kg	**1.1**		**1.8**		**3.9**		**1.1**		**1.6**	
Chromium	mg/kg	**23.3**		**34.9**		**34**		**21.8**		**31.5**	
Iron	mg/kg										
Lead	mg/kg	**8.9**		**14.2**		**380**		**9.8**		**13.9**	
Nickel	mg/kg	**17.5**	J-	**26.7**	J-	**32.2**	J-	**17.4**		**25.8**	
Selenium	mg/kg	< 0.75	UJ-	< 1.2	UJ-	< 0.57	UJ-	< 0.77	UJ-	**1.5**	
Silver	mg/kg	< 0.5	U	< 0.78	U	**0.57**		< 0.51	U	< 0.71	U
Vanadium	mg/kg	**38**		**60.6**		**63**		**36**		**51.3**	
Mercury	mg/kg	< 0.021	U	< 0.032	U	< 0.019	U	< 0.02	U	**0.036**	

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0814SO407		LAMT0814SO409		LAMT0816SO403		LAMT0816SO406		LAMT0816SO411	
	Sample Date	8/14/2011		8/14/2011		8/16/2011		8/16/2011		8/16/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Field Duplicate		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**24.2**		**17.3**		**11**		**11.9**		**15**	
Barium	mg/kg	**202**		**113**		**155**	J-	**180**	J-	**217**	J-
Cadmium	mg/kg	**1.6**		**1**		**0.21**		**0.26**		**0.33**	
Chromium	mg/kg	**31.2**		**17.1**		**21.5**		**28.5**		**36.2**	
Iron	mg/kg										
Lead	mg/kg	**13.8**		**7.9**		**18.8**		**22.7**		**29.2**	
Nickel	mg/kg	**26.3**		**12.9**		**16.3**		**23.3**		**31**	
Selenium	mg/kg	< 1	U	< 0.65	U	**0.92**		**1.2**		**1.4**	
Silver	mg/kg	< 0.67	U	< 0.44	U	< 0.56	U	< 0.59	U	< 0.65	U
Vanadium	mg/kg	**51.8**		**33.7**		**40.1**		**48.3**		**61**	
Mercury	mg/kg	**0.036**		< 0.018	U	< 0.025	U	**0.032**		**0.054**	

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0812SO413		LAMT0812SO408		BIMT0825SO515		BIMT0825SO502		BIMT0825SO503	
	Sample Date	8/12/2011		8/12/2011		8/25/2011		8/25/2011		8/25/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Field Duplicate	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**17.4**		**18.9**		**14.4**		**2.8**		**4.1**	
Barium	mg/kg	**114**		**145**		**199**		**152**		**160**	
Cadmium	mg/kg	**1**		**1.3**		**0.43**		**0.13**		**0.12**	
Chromium	mg/kg	**17.8**		**22.1**		**33.1**		**23.9**		**25.4**	
Iron	mg/kg										
Lead	mg/kg	**8.3**		**13.5**		**27.9**		**22.8**		**24.2**	
Nickel	mg/kg	**13.2**		**17.7**		**26.9**		**19.2**		**20**	
Selenium	mg/kg	**0.68**	J-	< 0.85	UJ-	**3.7**		**2.9**		**2.7**	
Silver	mg/kg	< 0.42	U	< 0.57	U	< 0.58	U	< 0.6	U	< 0.54	U
Vanadium	mg/kg	**35.3**		**37.9**		**58.1**		**57.4**		**61.4**	
Mercury	mg/kg	< 0.02	U	< 0.027	U	**0.046**		< 0.024	U	< 0.025	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0823SO606		BIMT0825SO505		BIMT0825SO510		BIMT0826SO501		BIMT0826SO502	
	Sample Date	8/23/2011		8/25/2011		8/25/2011		8/26/2011		8/26/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**17.4**		**8.8**		**11.1**		**15.6**		**14.5**	
Barium	mg/kg	**118**		**141**		**177**		**201**		**199**	
Cadmium	mg/kg	**1**		**0.26**		**0.36**		**0.36**		**0.34**	
Chromium	mg/kg	**20**		**23.5**		**30.5**		**33.1**		**32.9**	
Iron	mg/kg										
Lead	mg/kg	**8.3**		**21**		**25.5**		**28.2**		**27.2**	
Nickel	mg/kg	**15.9**		**17.5**		**24.1**		**26.1**		**24.1**	
Selenium	mg/kg	< 0.77	U	**2.9**		**3.6**		**3.1**		**4.6**	
Silver	mg/kg	< 0.52	U	< 0.51	U	< 0.58	U	< 0.55	U	< 0.61	U
Vanadium	mg/kg	**33.4**		**45.6**		**52.8**		**54.3**		**54.7**	
Mercury	mg/kg	**0.021**		**0.023**		**0.027**		**0.035**		**0.03**	

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0826SO503		BIMT0826SO504		BIMT0826SO505		LAMT0823SO601		LAMT0824SO611	
	Sample Date	8/26/2011		8/26/2011		8/26/2011		8/23/2011		8/24/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**11.8**		**12.4**		**13.9**		**11.3**		**23.3**	
Barium	mg/kg	**168**		**167**		**180**		**86.3**		**171**	
Cadmium	mg/kg	**0.25**		**0.28**		**0.31**		**0.6**		**1.3**	
Chromium	mg/kg	**29.9**		**29.9**		**32**		**11.4**		**27**	
Iron	mg/kg										
Lead	mg/kg	**23.8**		**22.6**		**25.6**		**5.1**		**11.1**	
Nickel	mg/kg	**20.5**		**20.8**		**22.4**		**9.9**		**21.4**	
Selenium	mg/kg	**3.6**		**2.8**		**4.1**		< 0.6	U	< 0.87	U
Silver	mg/kg	< 0.56	U	< 0.46	U	< 0.6	U	< 0.4	U	< 0.58	U
Vanadium	mg/kg	**49.5**		**49.1**		**52.4**		**18.8**		**43.4**	
Mercury	mg/kg	**0.057**		**0.025**		**0.029**		**0.019**		**0.034**	

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0901SO501		LAMT0824SO606		LAMT0824SO601		LAMT0816SO402		LAMT0813SO409	
	Sample Date	9/1/2011		8/24/2011		8/24/2011		8/16/2011		8/13/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**3.5**		**19.4**		**22.1**		**3.6**		**13.4**	
Barium	mg/kg	**182**		**135**		**164**		**136**	J-	**103**	
Cadmium	mg/kg	**0.34**		**1.1**		**1.2**		**0.15**		**0.95**	
Chromium	mg/kg	**20.1**		**21.4**		**24.4**		**19.8**		**18.8**	
Iron	mg/kg										
Lead	mg/kg	**22.8**		**10.7**		**10.1**		**17.3**		**7.2**	
Nickel	mg/kg	**13.8**		**16.1**		**19.9**		**14.5**		**10.9**	
Selenium	mg/kg	< 0.8	U	< 0.74	U	< 0.81	U	**1.1**		< 0.7	U
Silver	mg/kg	< 0.53	U	< 0.49	U	< 0.54	U	< 0.55	U	< 0.47	U
Vanadium	mg/kg	**37.7**		**38.4**		**39.2**		**38.6**		**40.3**	
Mercury	mg/kg	**0.026**		< 0.019	U	< 0.022	U	< 0.019	U	< 0.018	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0813SO405		LAMT0813SO404		LAMT0813SO403		LAMT0813SO402		LAMT0813SO401	
	Sample Date	8/13/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**13.3**		**15.3**		**16.6**		**20.2**		**18.5**	
Barium	mg/kg	**137**		**149**		**157**		**168**		**161**	
Cadmium	mg/kg	**0.88**		**1.1**		**1.2**		**1.4**		**1.3**	
Chromium	mg/kg	**17.3**		**19.9**		**22**		**25.4**		**24.2**	
Iron	mg/kg										
Lead	mg/kg	**8**		**11.1**		**12**		**13.1**		**11.3**	
Nickel	mg/kg	**13**		**16.2**		**19**		**23.2**		**20.3**	
Selenium	mg/kg	< 0.77	U	< 0.87	U	< 1	U	< 0.91	U	< 0.88	U
Silver	mg/kg	< 0.51	U	< 0.58	U	< 0.68	U	< 0.61	U	< 0.59	U
Vanadium	mg/kg	**35.9**		**39.8**		**46.3**		**53.3**		**49.1**	
Mercury	mg/kg	< 0.023	U	< 0.024	U	**0.029**		**0.032**		< 0.023	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0824SO616		LAMT0824SO618		LAMT0814SO410		LAMT0825SO601		BIMT0816SO501	
	Sample Date	8/24/2011		8/24/2011		8/14/2011		8/25/2011		8/16/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**17.5**		**18**		**18**		**8.3**		**3.5**	
Barium	mg/kg	**122**		**125**		**123**		**156**	J+	**116**	
Cadmium	mg/kg	**1**		**1.1**		**1.1**		**0.22**		**0.33**	
Chromium	mg/kg	**21.4**		**21.7**		**19**		**23.3**		**11.3**	
Iron	mg/kg										
Lead	mg/kg	**7.5**		**7.6**		**8.3**		**20.4**		**16.4**	
Nickel	mg/kg	**14.1**		**13.8**		**14.1**		**15.8**		**12.6**	
Selenium	mg/kg	< 0.74	U	< 0.66	U	< 0.74	U	**2.8**		**2**	
Silver	mg/kg	< 0.49	U	< 0.44	U	< 0.5	U	< 0.51	U	< 0.65	U
Vanadium	mg/kg	**38.5**		**41.1**		**37**		**45.4**		**20.7**	
Mercury	mg/kg	< 0.021	U	< 0.02	U	< 0.019	U	< 0.019	U	< 0.024	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0816SO523		LAMT0825SO606		LAMT0825SO608		LAMT0815SO401		LAMT0815SO407	
	Sample Date	8/16/2011		8/25/2011		8/25/2011		8/15/2011		8/15/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Field Duplicate	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**4.8**		**9**		**9**		**15.2**		**15**	
Barium	mg/kg	**109**		**171**	J+	**162**	J+	**120**	J-	**136**	J-
Cadmium	mg/kg	**0.15**		**0.26**		**0.22**		**1.2**		**1.2**	
Chromium	mg/kg	**16.3**		**27.5**		**25.6**		**19**		**21.4**	
Iron	mg/kg										
Lead	mg/kg	**13.8**		**23.8**		**21.5**		**10.1**	J-	**11**	J-
Nickel	mg/kg	**13.1**		**20.4**		**18**		**15.1**	J-	**17**	J-
Selenium	mg/kg	**0.79**		**3.3**		**2.4**		< 0.85	U	< 0.68	U
Silver	mg/kg	< 0.43	U	< 0.48	U	< 0.36	U	< 0.56	U	< 0.45	U
Vanadium	mg/kg	**30.6**		**48.3**		**46.3**		**33**		**35.4**	
Mercury	mg/kg	< 0.022	U	**0.019**		< 0.02	U	< 0.02	U	< 0.02	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0815SO404		BIMT0823SO507		BIMT0815SO410		LAMT0826SO621		BIMT0816SO507	
	Sample Date	8/15/2011		8/23/2011		8/15/2011		8/26/2011		8/16/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**16.7**		**15.6**		**14.8**		**16.6**		**9**	
Barium	mg/kg	**156**	J-	**153**		**134**		**134**		**164**	
Cadmium	mg/kg	**1.2**		**1.1**		**1**		**1**		**0.22**	
Chromium	mg/kg	**23.3**		**13.5**		**19.4**		**18**		**26**	
Iron	mg/kg										
Lead	mg/kg	**10.9**	J-	**10**		**9.9**		**8.9**		**20.9**	
Nickel	mg/kg	**17**	J-	**14.8**		**14.9**		**15.7**		**19.4**	
Selenium	mg/kg	< 0.76	U	< 1.1	U	< 0.56	U	< 0.78	U	< 0.99	U
Silver	mg/kg	< 0.5	U	< 0.71	U	< 0.37	U	< 0.52	U	< 0.66	U
Vanadium	mg/kg	**40.5**		**24**		**32.7**		**31**		**47.9**	
Mercury	mg/kg	< 0.023	U	< 0.025	U	**0.025**		**0.022**		**0.046**	

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0823SO503		BIMT0823SO501		BIMT0816SO512		BIMT0816SO517		BIMT0817SO517	
	Sample Date	8/23/2011		8/23/2011		8/16/2011		8/16/2011		8/17/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**16.8**		**11.6**		**7.8**		**9.7**		**21.3**	
Barium	mg/kg	**145**		**76.4**		**133**		**148**		**147**	
Cadmium	mg/kg	**1**		**0.74**		**0.21**		**0.2**		**1.4**	
Chromium	mg/kg	**17.1**		**11.1**		**19.7**		**23.2**		**27.5**	
Iron	mg/kg										
Lead	mg/kg	**8.7**		**5.3**		**17.2**		**18.4**		**9.5**	
Nickel	mg/kg	**14.9**		**8.6**		**14.8**		**17.1**		**17**	
Selenium	mg/kg	< 0.76	U	< 0.8	U	< 0.8	U	**0.82**		< 0.96	U
Silver	mg/kg	< 0.51	U	< 0.53	U	< 0.54	U	< 0.53	U	< 0.64	U
Vanadium	mg/kg	**31.9**		**24.2**		**39.4**		**42.8**		**54.2**	
Mercury	mg/kg	< 0.022	U	< 0.021	U	< 0.017	U	< 0.022	U	< 0.022	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0817SO512		BIMT0817SO501		BIMT0824SO507		BIMT0824SO502		BIMT0817SO507	
	Sample Date	8/17/2011		8/17/2011		8/24/2011		8/24/2011		8/17/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**39**		**19.2**		**13.9**		**18.5**		**12.5**	
Barium	mg/kg	**166**		**164**		**95.3**		**130**		**103**	
Cadmium	mg/kg	**1.4**		**0.99**		**0.86**		**1.1**		**0.77**	
Chromium	mg/kg	**26.9**		**21.8**		**13.5**		**16.1**		**16.5**	
Iron	mg/kg										
Lead	mg/kg	**61.3**		**10.1**		**6.6**		**7.6**		**8.4**	
Nickel	mg/kg	**20.3**		**18.6**		**10.7**		**12.7**		**12.4**	
Selenium	mg/kg	< 0.7	U	< 0.64	U	< 0.73	U	< 0.83	U	< 0.65	U
Silver	mg/kg	< 0.47	U	< 0.43	U	< 0.49	U	< 0.55	U	< 0.43	U
Vanadium	mg/kg	**44.9**		**35.8**		**29.6**		**37.7**		**31**	
Mercury	mg/kg	**0.033**		< 0.023	U	< 0.02	U	< 0.022	U	< 0.019	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	BIMT0828SO501		BIMT0831SO501		PPMT0831SO501		HYMT0814SO502		HYMT0814SO501	
	Sample Date	8/28/2011		8/31/2011		8/31/2011		8/14/2011		8/14/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**15.2**		**16.9**		**18.7**		**12.2**		**16.5**	
Barium	mg/kg	**101**		**126**		**177**		**115**		**161**	
Cadmium	mg/kg	**0.94**		**1.1**		**1.2**		**0.72**		**1**	
Chromium	mg/kg	**19.5**		**20.6**		**21.8**		**14.3**		**21.3**	
Iron	mg/kg										
Lead	mg/kg	**6.6**		**8.1**		**9.8**		**6.1**		**8.8**	
Nickel	mg/kg	**11.8**		**12.8**		**16.7**		**10**		**14.2**	
Selenium	mg/kg	< 0.83	U	< 0.76	U	< 0.65	U	< 0.7	U	< 1	U
Silver	mg/kg	< 0.56	U	< 0.51	U	< 0.43	U	< 0.46	U	< 0.67	U
Vanadium	mg/kg	**33.2**		**42.7**		**40.3**		**26.7**		**37.6**	
Mercury	mg/kg	< 0.026	U	< 0.017	U	< 0.019	U	< 0.02	U	< 0.022	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	FOMT0814SO501		ROMT0814SO501		ROMT0814SO502		GLMT0812SO503		GLMT0812SO501	
	Sample Date	8/14/2011		8/14/2011		8/14/2011		8/12/2011		8/12/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Field Duplicate		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**13.2**		**15.4**		**10.5**		< 0.51	U	**16.2**	
Barium	mg/kg	**165**		**177**		**137**		< 0.51	U	**337**	
Cadmium	mg/kg	**0.76**		**1**		**0.72**		< 0.051	U	**0.88**	
Chromium	mg/kg	**16.8**		**19.2**		**13.1**		< 0.51	U	**15.5**	
Iron	mg/kg										
Lead	mg/kg	**7.5**		**10.3**		**7.4**		< 0.31	U	**7.5**	
Nickel	mg/kg	**11.6**		**14.7**		**10.4**		< 1	U	**11**	
Selenium	mg/kg	< 0.74	U	< 0.98	U	< 0.76	U	< 0.77	U	< 0.79	U
Silver	mg/kg	< 0.49	U	< 0.65	U	< 0.5	U	< 0.51	U	< 0.53	U
Vanadium	mg/kg	**30.7**		**34.7**		**24.3**		< 0.77	U	**28.8**	
Mercury	mg/kg	< 0.02	U	< 0.023	U	< 0.027	U	< 0.019	U	< 0.022	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0828SOBKG501		LAMT0826SOBKG616		LAMT0826SOBKG611		LAMT0826SOBKG606		LAMT0826SOBKG601	
	Sample Date	8/28/2011		8/26/2011		8/26/2011		8/26/2011		8/26/2011	
	Start Depth (in)	0		0		0		0		0	
	End Depth (in)	2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**15.3**		**19.1**		**21.1**		**19.3**		**17.8**	
Barium	mg/kg	**133**		**126**		**137**		**128**		**121**	
Cadmium	mg/kg	**1.1**		**1**		**1.3**		**1.1**		**1.1**	
Chromium	mg/kg	**23.9**		**19.9**		**22.4**		**20.7**		**19**	
Iron	mg/kg									**16700**	
Lead	mg/kg	**12.9**		**7.5**		**8.7**		**8.1**		**7.6**	
Nickel	mg/kg	**17.4**		**15.1**		**16.9**		**15.7**		**13.6**	
Selenium	mg/kg	< 0.75	U	< 0.81	U	< 0.75	U	< 0.68	U	< 0.74	U
Silver	mg/kg	< 0.5	U	< 0.54	U	< 0.5	U	< 0.45	U	< 0.49	U
Vanadium	mg/kg	**38**		**33.3**		**40.9**		**37.4**		**36.2**	
Mercury	mg/kg	**0.022**		< 0.022	U	< 0.023	U	**0.022**		< 0.02	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0826SOBKG602		LAMT0826SOBKG603		LAMT0826SOBKG604		LAMT0826SOBKG605		LAMT0817SO412	
	Sample Date	8/26/2011		8/26/2011		8/26/2011		8/26/2011		8/17/2011	
	Start Depth (in)	0		6		12		18		0	
	End Depth (in)	6		12		18		24		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)											
Arsenic	mg/kg	**18.3**		**17.5**		**17.3**		**18.6**		**14.5**	
Barium	mg/kg	**127**		**117**		**118**		**135**		**144**	
Cadmium	mg/kg	**0.99**		**0.96**		**0.96**		**1.1**		**0.88**	
Chromium	mg/kg	**17.3**		**17.5**		**17.1**		**20.2**		**22.2**	
Iron	mg/kg										
Lead	mg/kg	**7.5**		**7.5**		**7.8**		**8.4**		**8.5**	
Nickel	mg/kg	**13.8**		**13.6**		**13.2**		**15.6**		**16.2**	
Selenium	mg/kg	< 0.77	U	< 0.8	U	< 0.8	U	< 0.79	U	< 0.74	U
Silver	mg/kg	< 0.51	U	< 0.53	U	< 0.54	U	< 0.53	U	< 0.5	U
Vanadium	mg/kg	**32.1**		**30.2**		**31.2**		**34.8**		**43.3**	
Mercury	mg/kg	< 0.02	U	< 0.021	U	**0.021**		< 0.024	U	< 0.02	U

Table B2
Downstream Areas Soil and Sediment Data Report
Soil Sample Metals Analytical Results
Silvertip Pipeline Incident
Laurel, Montana

	Sample	LAMT0817SO417		LAMT0817SO402		LAMT0817SO407		KIMT0813SO501		CAMT0813SO501		FAMT0813SO501		MIMT0813SO501	
	Sample Date	8/17/2011		8/17/2011		8/17/2011		8/13/2011		8/13/2011		8/13/2011		8/13/2011	
	Start Depth (in)	0		0		0		0		0		0		0	
	End Depth (in)	2		2		2		2		2		2		2	
	Sample Type	Normal		Normal		Normal		Normal		Normal		Normal		Normal	
Chemical	**Units**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Metals (USEPA 6010/7471)															
Arsenic	mg/kg	**15.9**		**15.3**		**20**		**13.7**		**9**		**13.9**		**11.4**	
Barium	mg/kg	**147**		**132**		**165**		**219**		**89.4**		**196**		**157**	
Cadmium	mg/kg	**0.99**		**0.87**		**1.1**		**0.86**		**0.45**		**0.67**		**0.64**	
Chromium	mg/kg	**22.4**		**22.8**		**26.9**		**15**		**5.1**		**13**		**12.6**	
Iron	mg/kg														
Lead	mg/kg	**10.9**		**7.9**		**10.7**		**7.2**		**5**		**9.1**		**6.9**	
Nickel	mg/kg	**19.3**		**14.1**		**20.9**		**11.8**		**7.5**		**13.1**		**10**	
Selenium	mg/kg	< 0.73	U	< 0.58	U	< 0.65	U	< 0.9	U	< 0.72	U	< 0.87	U	< 0.71	U
Silver	mg/kg	< 0.49	U	< 0.39	U	< 0.43	U	< 0.6	U	< 0.48	U	< 0.58	U	< 0.47	U
Vanadium	mg/kg	**42**		**43.1**		**46.8**		**27.7**		**10.5**		**23.3**		**23.7**	
Mercury	mg/kg	< 0.022	U	< 0.018	U	< 0.025	U	< 0.025	U	< 0.02	U	< 0.023	U	< 0.024	U

Appendix B
Downstream Impacted Areas Soil and Sediment Data Report
Soil and Sediment Metals Analytical Results
Footnotes
Silvertip Pipeline Incident Response
Laurel, Montana

Notes:

These tables present validated data.

Detections are boldfaced.

mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
+	Result may be biased high
-	Result may be biased low
J	The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U	The chemical was not detected above the reporting limit shown.
UJ	The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
Qual	Laboratory Qualifier