



Transmitted Via Federal Express

November 19, 2013

Ms. Laura Alvey
Remediation Division
Montana Department of Environmental Quality
1100 N. Last Chance Gulch
P.O. Box 200901
Helena, MT 59620-0901

Re: Submittal of Natural Attenuation Monitoring Fall 2013 Report
Docket No. WQA-12-08
Silvertip Pipeline Incident Response
Laurel, Montana

Dear Ms. Alvey:

Enclosed, please find three hardcopies of the referenced report that is being submitted to the Montana Department of Environmental Quality on behalf of ExxonMobil Pipeline Company (EMPCo). A modifiable electronic version is also included with this submittal per your request. The submittal of this report completes EMPCo's Fall 2013 natural attenuation monitoring requirement.

If there are any questions, please feel free to contact me at 225.384.3131 or via E-mail at tom.s.henson@exxonmobil.com.

Sincerely,

A handwritten signature in blue ink that reads "Tom S. Henson/jcc".

Tom S. Henson, P.E.
Major Projects Manager

cc: Katherine Haque-Hausrath, MDEQ (w/out enclosure)
Joel Larkin, ExxonMobil Environmental Services Company (w/out enclosure)
Kevin Vaughan, Exxon Mobil Corporation (w/out enclosure)
Bill Mercer, Holland & Hart, LLP (w/out enclosure)
Scott Davies, ARCADIS (w/out enclosure)

ExxonMobil Pipeline Company

**Natural Attenuation Monitoring
Fall 2013 Report**

Silvertip Pipeline Incident Response
Laurel, Montana

November 2013



**Natural Attenuation Monitoring
Fall 2013 Report**

Silvertip Pipeline Incident
Response
Laurel, Montana

Prepared for:
ExxonMobil Pipeline Company

Prepared by:
ARCADIS US, Inc.
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Our Ref.:
B085904.1301

Date:
November 2013

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Acronyms and Abbreviations

AOC	Administrative Order on Consent
ATMs	Approved Treatment Methods
CTRs	Complied Treatment Recommendations
EMES	ExxonMobil Environmental Services Company
EMPCo	ExxonMobil Pipeline Company
GPS	Global Positioning System
MDEQ	Montana Department of Environmental Quality
NAM	Natural Attenuation Monitoring
SCAT	Shoreline Cleanup Assessment Technique
USGS	United States Geological Survey



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1. Introduction

This Natural Attenuation Monitoring (NAM) Report has been prepared for ExxonMobil Environmental Services Company (EMES) on behalf of ExxonMobil Pipeline Company (EMPCo) and describes the methods and results of NAM activities conducted on October 8 and 9, 2013. This report satisfies the requirements of the *NAM Work Plan* (ARCADIS, 2012a) submitted to and approved by the Montana Department of Environmental Quality (MDEQ) on April 24, 2012, pursuant to the Administrative Order on Consent (AOC), Attachment A, Item 7 for the EMPCo Silvertip Pipeline Incident that occurred near Laurel, Montana (Docket No. WQA-12-08). Specifically, the NAM program was developed to monitor and document degradation of residual crude oil left on vegetation and debris.

The location of the Silvertip Pipeline is presented on a portion of the U.S. Geological Survey (USGS) 7.5 minute topographic map for Laurel and Mossmain, Montana, presented on Figure 1.



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2. Background

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 and provided a rapid and comprehensive cleanup response to the incident. As part of the assessment and cleanup process, incident-specific Approved Treatment Methods (ATMs) and location-specific Compiled Treatment Recommendations (CTRs) were developed. The CTRs were subsequently implemented to clean up affected areas. In some instances where implementation of active treatment could result in more harm than benefit to the environment, monitored natural attenuation was chosen as the treatment method for the affected area. The MDEQ AOC scope of work included a requirement to implement the above-referenced NAM program to document natural attenuation of residual oil over time.



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3. Purpose and Objectives

This NAM event is the fourth planned monitoring event as specified in the NAM Work Plan and in the AOC. The purpose of the NAM program is to observe and document the degradation over time of residual oil present in River Divisions A, B, and C after the cleanup effort. Monitoring of these locations has occurred over four events: an initial monitoring event in Fall 2011 and follow-up monitoring events in Spring 2012, Fall 2012, and Fall 2013. Reports were previously submitted to the MDEQ for the Fall 2011, Spring 2012, and Fall 2012 monitoring events. This report presents the findings of the Fall 2013 event.



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4. Monitoring Location Selection

Monitoring locations were selected throughout Divisions A, B, and C where residual oil was left on vegetation to naturally attenuate. In Division C, locations were selected between C01 and C55, consistent with Shoreline Cleanup Assessment Technique (SCAT) survey findings of no actionable oil beyond river segment C55 (ARCADIS, 2012a).

CTRs were reviewed to identify locations with an ATM of #7 (Natural Attenuation). Additional locations were selected based on SCAT oiling conditions, access restrictions, potential river conditions during future monitoring events, and varying vegetative and location setting types (ARCADIS, 2012a).



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5. NAM Methodology

In accordance with the AOC requirements, forty-five (45) monitoring locations, 15 each in Divisions A, B, and C, were chosen during the Fall 2011 NAM event to include a variety of vegetation and location setting types in the area (ARCADIS, 2012b). Locations that had residual oiling conditions included a variety of vegetation types (including leaves, bark, stems, willows, and grasses) and setting types (including debris piles, rip-rap, closed canopy areas, open canopy areas, high energy river/cobbles and grassy fields).



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6. Previous NAM Events

A *Natural Attenuation Monitoring Spring 2012 Report* (ARCADIS, 2012c) was submitted to the MDEQ in June 2012 summarizing the results of the monitoring event. EMES requested MDEQ approve the removal of 12 NAM locations from future monitoring events at locations where stained vegetation was no longer present or no residual oil was observed. The MDEQ approved the removal of 11 NAM locations in their letter to EMES dated July 11, 2012.

A *Natural Attenuation Monitoring Fall 2012 Report* (ARCADIS, 2012d) was submitted to the MDEQ in December 2012 summarizing the results of the monitoring event. EMES requested MDEQ approve the removal of 11 NAM locations from future monitoring events at locations where stained vegetation was no longer present or no residual oil was observed. The MDEQ approved the removal of 11 NAM locations in their letter to EMES dated January 2, 2013.

7. Fall 2013 NAM Event

The Fall 2013 NAM event included the following activities:

- Returning to 23 remaining NAM locations using global positioning system (GPS) coordinates.
- Re-flagging of each location (if required), logging of the GPS coordinates, and documenting field conditions.
- Taking a representative digital still image of the location from approximately 4 feet above the ground (unless otherwise noted) facing a specified direction in degrees as logged into the GPS and noted on the field forms.
- Completion of a NAM Field Form which includes the GPS coordinates, direction in degrees of the photo taken, and current residual oiling conditions.

7.1 Summary of NAM Locations

The attached Table 1 summarizes the 23 NAM locations inspected and as reference includes each location's respective river segment, GPS coordinates, date of monitoring, location setting type, vegetation type and residual oil condition. Complete details of each monitoring location are included on the NAM forms in Appendix A. Figures 2 through 4 shows the NAM locations. Appendix B includes photo-documentation of the selected locations. A summary of the general observations for the locations is presented below:

- Natural attenuation is apparent at all NAM locations based on field observations, and 32 of the original 45 NAM locations no longer have residual oil or staining remaining after two years of monitoring.
- No residual oil was observed at 10 additional NAM locations (A07-RB-1, A14-LB-1, A19-RB-1, A22-IS-1, A26-IS-1, A29-IS-1, B14-LB-1, B27-RB-1, B46-RB-1, C05-RB-1).
- The remaining 13 NAM locations showed signs of natural attenuation of residual oil (i.e., less noticeable oil presence).



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- The MDEQ's July 11, 2012 letter states, "EM has also requested that NAM location A19-RB-1 be removed from future NAM events because one of the stained trees is no longer present. However, DEQ notes that additional staining on large fallen logs appears in the photographs of A19-RB-1, and DEQ requires continued monitoring of the staining at this location". During the Fall 2012 NAM event, this location was not accessible and therefore not monitored. During the Fall 2013 event this location was revisited and monitored on October 9, 2013. The location was highly vegetated. Discoloration on large fallen logs was observed and does not appear to be residual oil staining. Appendix B contains two photographs of this location, one taken in the same direction as previous to show discoloration, and one taken from the opposite direction to show vegetative growth.



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8. Recommendations

Natural attenuation is an effective treatment method for addressing residual oil stains resulting from the Silvertip Pipeline Incident based on the findings of four monitoring events conducted between the Fall of 2011 and Fall of 2013. Natural attenuation of residual oil stains is expected at the remaining 13 NAM locations (out of 45); therefore, EMES respectfully recommends that further monitoring be discontinued at this time.



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9. References

ARCADIS, 2012a. *Natural Attenuation Monitoring (NAM) Work Plan*. Silvertip Pipeline Incident Response, Laurel, Montana. Prepared by ARCADIS for ExxonMobil Environmental Services Company. Revised February 2012.

ARCADIS, 2012b. *Natural Attenuation Monitoring Fall 2011 Report*. Silvertip Pipeline Incident Response, Laurel, Montana. Prepared by ARCADIS for ExxonMobil Environmental Services Company. Revised February 2012.

ARCADIS, 2012c. *Natural Attenuation Monitoring Spring 2012 Report*. Silvertip Pipeline Incident Response, Laurel, Montana. Prepared by ARCADIS for ExxonMobil Environmental Services Company.

ARCADIS, 2012d. *Natural Attenuation Monitoring Fall 2012 Report*. Silvertip Pipeline Incident Response, Laurel, Montana. Prepared by ARCADIS for ExxonMobil Environmental Services Company.



Table

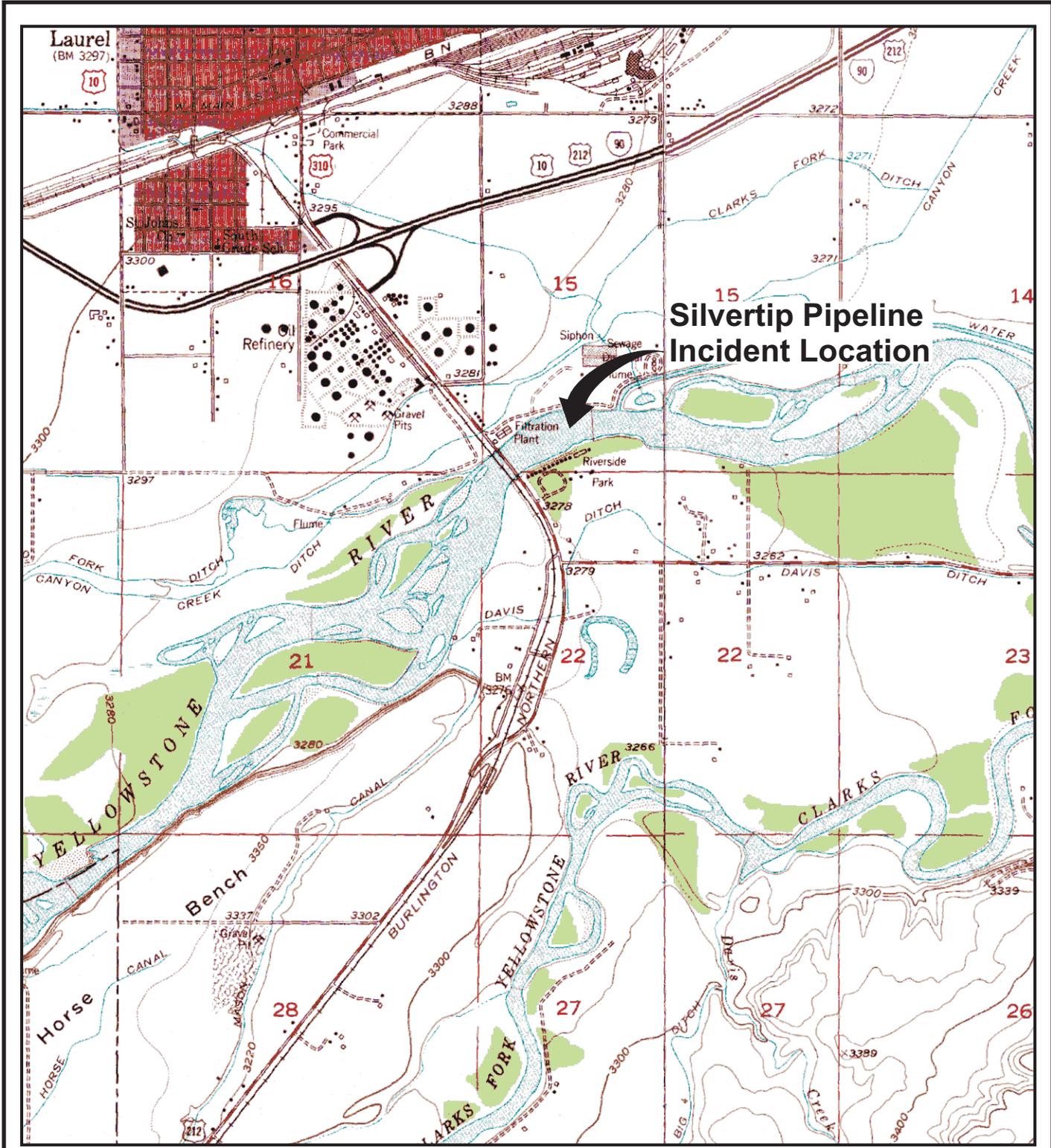
Table 1
 NAM Habitat and Vegetation Type Summary
 Silvertip Pipeline Incident
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NAM Location ID	Latitude	Longitude	Date	Open Canopy	Closed Canopy	Grassy Field	Debris Pile	High Energy/Cobbles	Leaves	Bark	Stems	Willows	Logs	Grasses
A02-RB-1	45.65479	-108.75378	10/8/13		X					X				
A07-LB-1	45.65097	-108.72948	N/A	X						X				
A07-RB-1	45.64964	-108.72331	10/8/13	X		X								X
A12-RB-1	45.65081	-108.71566	N/A	X		X						X		
A13-LB-1	45.65198	-108.71074	10/9/13		X								X	
A14-LB-1	45.65600	-108.70822	10/9/13		X					X				
A14-RB-1	45.65678	-108.70574	N/A	X										X
A19-RB-1	45.66510	-108.70221	10/9/13	X						X				
A22-IS-1	45.67199	-108.68022	10/9/13	X						X				
A24-LB-1	45.67699	-108.67151	10/9/13	X			X						X	
A26-IS-1	45.68532	-108.66645	10/9/13	X								X		
A28-LB-1	45.69130	-108.64809	N/A		X				X		X			X
A28-RB-1	45.68702	-108.64369	10/8/13		X					X				
A28-RB-2	45.68652	-108.64515	N/A	X						X				
A29-IS-1	45.69243	-108.64275	10/9/13	X				X					X	
B04-LB-1	45.69505	-108.64069	10/8/13		X					X	X			X
B08-LB-1	45.70500	-108.60805	N/A		X					X		X		
B10-LB-1	45.70653	-108.60228	10/9/13	X				X					X	
B12-LB-1	45.71426	-108.59853	10/9/13		X					X				
B14-LB-1	45.72251	-108.58917	10/8/13	X				X		X				X
B17-RB-1	45.72487	-108.56871	10/9/13		X					X				
B27-RB-1	45.73773	-108.53898	10/8/13		X					X				
B30-LB-1	45.73987	-108.52372	10/8/13	X				X		X	X			
B31-LB-1	45.74494	-108.51817	N/A	X		X								X
B34-LB-1	45.74747	-108.50457	10/8/13	X				X		X	X			
B35-IS-1	45.74873	-108.49686	10/9/13	X				X		X				
B43-IS-1	45.78641	-108.47674	N/A	X								X		
B45-RB-1	45.79343	-108.47007	N/A	X										X
B46-RB-1	45.71841	-108.58531	10/8/13	X			X		X	X	X			
B47-RB-1	45.70992	-108.59326	10/8/13	X						X				
C03-LB-1	45.81322	-108.45822	10/8/13		X				X	X	X			
C05-RB-1	45.81456	-108.44551	10/9/13	X					X		X			
C08-LB-1	45.82556	-108.42677	N/A	X						X	X			
C09-LB-1	45.83426	-108.42541	N/A	X										X
C11-LB-1	45.84367	-108.42186	N/A		X						X		X	
C23-RB-1	45.89966	-108.31186	N/A	X					X	X	X			
C25-LB-1	45.91795	-108.31787	N/A	X				X				X		
C27-LB-1	45.93221	-108.30459	N/A											
C34-RB-1	45.96657	-108.25218	N/A	X		X								X
C36-RB-1	45.97396	-108.23713	N/A	X						X	X			
C44-RB-1	45.99969	-108.15283	N/A		X					X	X			X
C45-RB-1	45.99862	-108.13025	N/A	X				X				X		
C50-LB-1	46.00265	-108.06488	N/A	X		X			X	X	X			
C50-RB-1	45.99496	-108.04580	N/A	X			X		X					X
C54-RB-1	45.99517	-107.98527	N/A		X					X				

Notes:

1. The 22 locations previously approved by the MDEQ where monitoring is no longer required are italicized and highlighted in gray
2. The 10 locations where no residual staining was observed during this monitoring event are highlighted in green
3. Coordinates collected using a Trimble GPS unit in the WGS-1984 datum

Figures



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., LAUREL, AND MOSSMAIN MONT, 1956, PHOTOREVISED 1969.



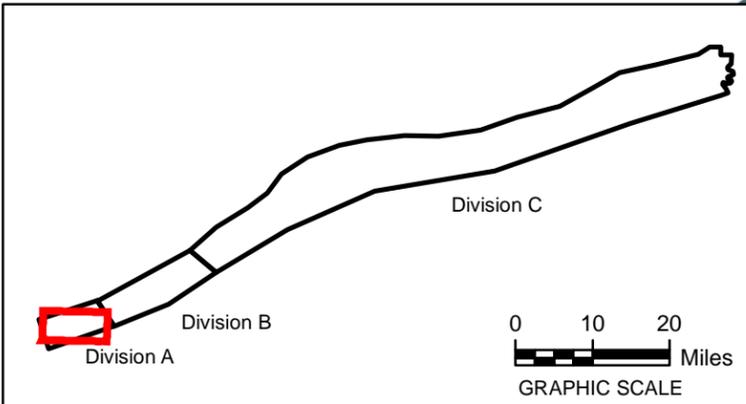
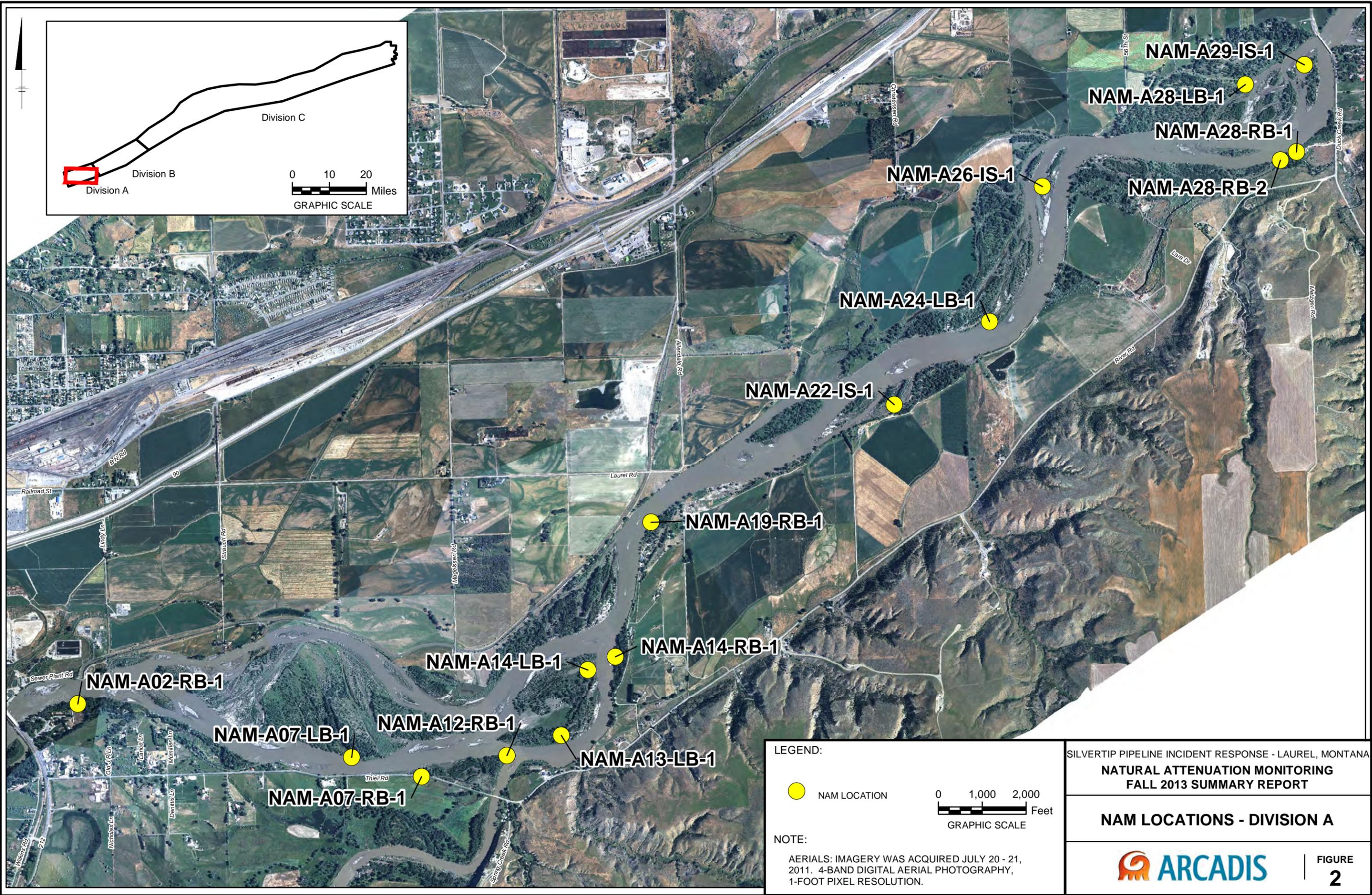
SILVERTIP PIPELINE INCIDENT RESPONSE - LAUREL, MONTANA
 NATURAL ATTENUATION MONITORING
 FALL 2013 SUMMARY REPORT

SITE LOCATION MAP

FIGURE
1

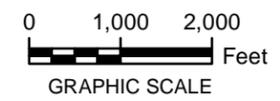
06/13/2012 SYRACUSE, NY:ENV/CAD-141, DJHOWES
 B0085904/1205/00009/CDR/855904N01.CDR

CITY: MPLS DIV/GROUP: IM_DB: MG_LD: EL
SILVERTIP Path: Z:\GISPROJECTS\EN\Laurel\MT\NAM\mxd\Div_A_NAM_Locs_20131014.mxd



LEGEND:

● NAM LOCATION



NOTE:

AERIALS: IMAGERY WAS ACQUIRED JULY 20 - 21, 2011. 4-BAND DIGITAL AERIAL PHOTOGRAPHY, 1-FOOT PIXEL RESOLUTION.

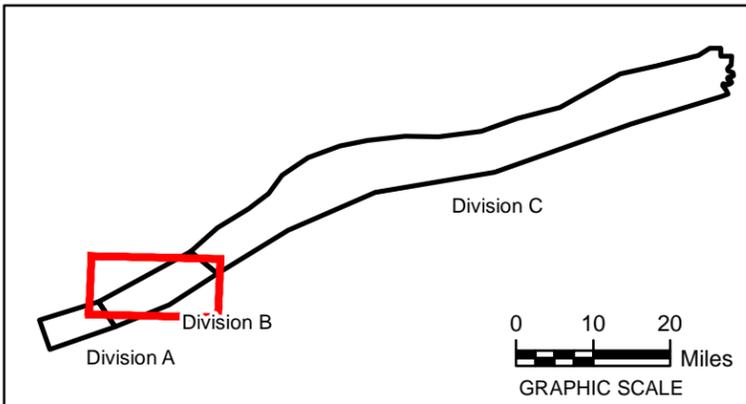
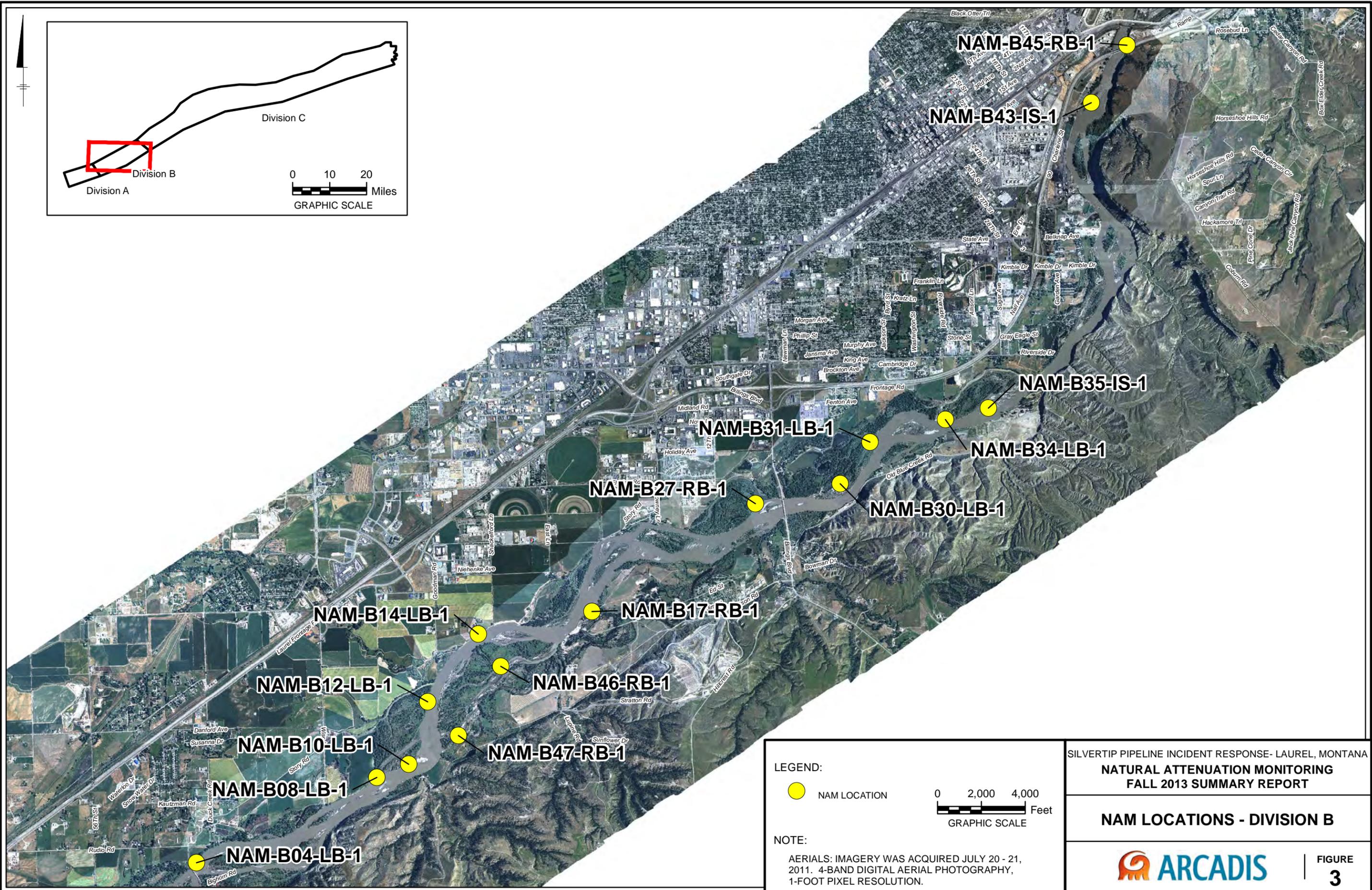
SILVERTIP PIPELINE INCIDENT RESPONSE - LAUREL, MONTANA
NATURAL ATTENUATION MONITORING
FALL 2013 SUMMARY REPORT

NAM LOCATIONS - DIVISION A



FIGURE
2

CITY: MPLS_DIV\GROUP: IM_DB: MG_LD: EL
SILVERTIP Path: Z:\GISPROJECTS\EN\Laurel\MT\NAM\mxd\div_B_NAM_Locs_20131014.mxd



LEGEND:

● NAM LOCATION

0 2,000 4,000
Feet
GRAPHIC SCALE

NOTE:

AERIALS: IMAGERY WAS ACQUIRED JULY 20 - 21, 2011. 4-BAND DIGITAL AERIAL PHOTOGRAPHY, 1-FOOT PIXEL RESOLUTION.

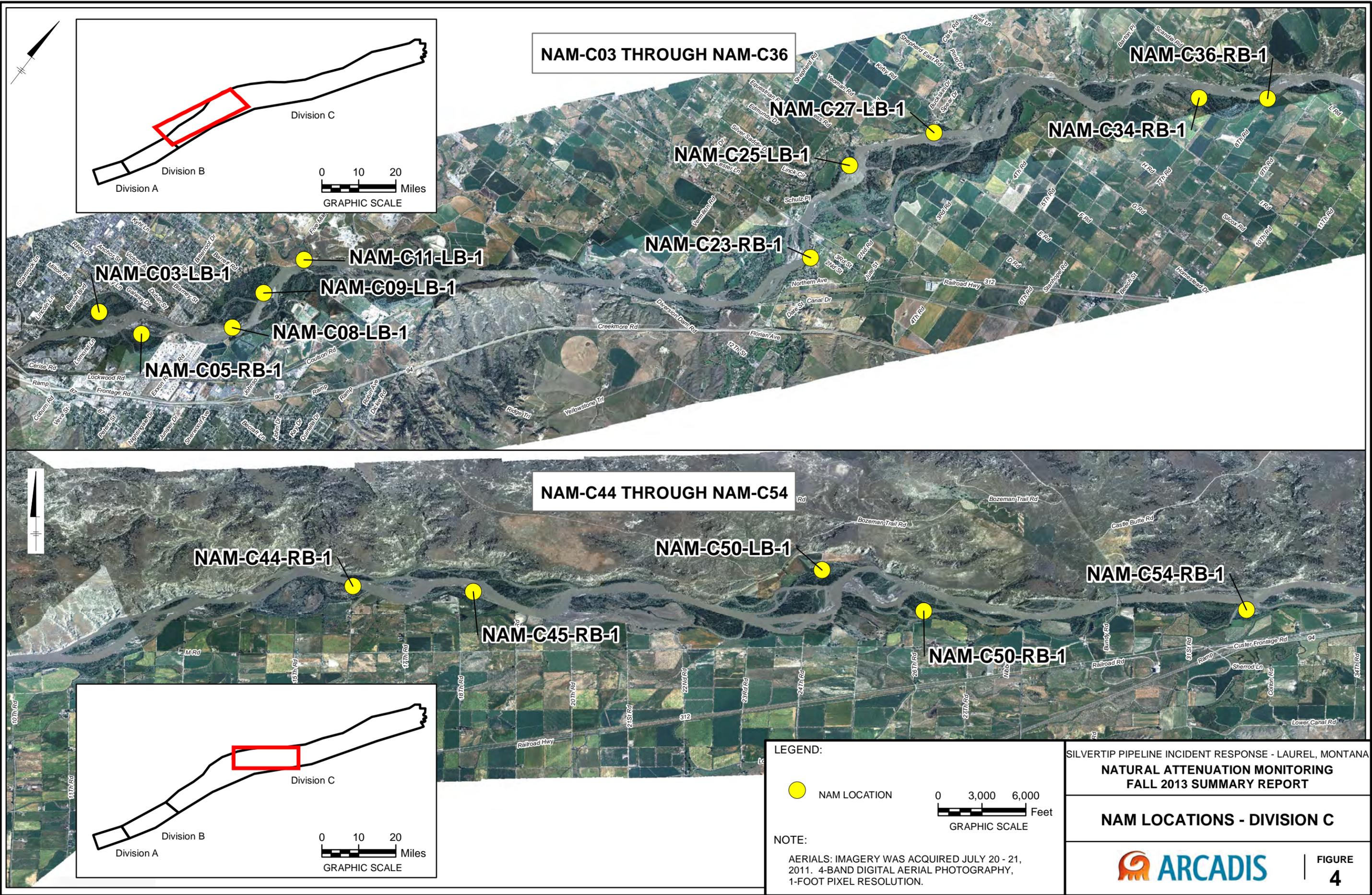
SILVERTIP PIPELINE INCIDENT RESPONSE- LAUREL, MONTANA
**NATURAL ATTENUATION MONITORING
FALL 2013 SUMMARY REPORT**

NAM LOCATIONS - DIVISION B

 **ARCADIS**

**FIGURE
3**

CITY: MPLS, DIV: GROUP: IM, DB: MG, LD: EL
SILVERTIP Path: Z:\GIS\PROJECTS\ENV\Laurel\MT\NAM\mxd\div_C_NAM_Locs_20131014.mxd



NAM-C03 THROUGH NAM-C36

NAM-C36-RB-1

NAM-C27-LB-1

NAM-C34-RB-1

NAM-C25-LB-1

NAM-C23-RB-1

NAM-G11-LB-1

NAM-C09-LB-1

NAM-C08-LB-1

NAM-C03-LB-1

NAM-C05-RB-1

NAM-C44 THROUGH NAM-C54

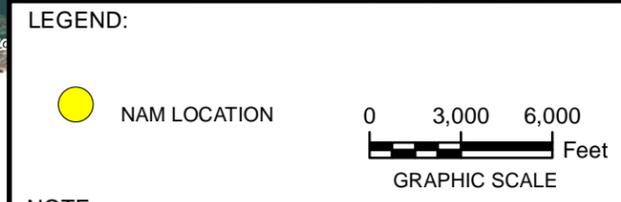
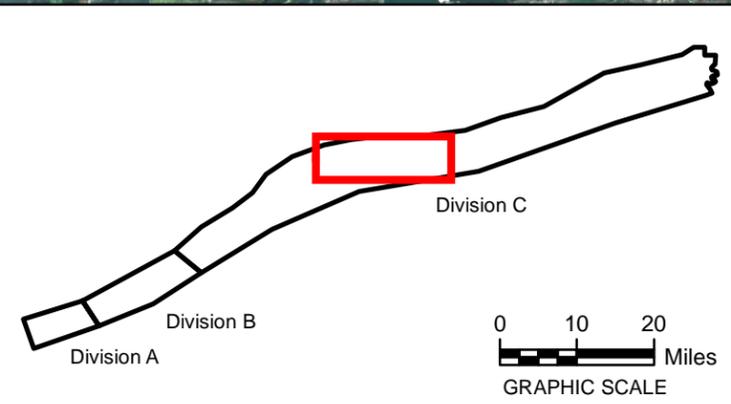
NAM-C44-RB-1

NAM-C50-LB-1

NAM-C54-RB-1

NAM-C45-RB-1

NAM-C50-RB-1



SILVERTIP PIPELINE INCIDENT RESPONSE - LAUREL, MONTANA

NATURAL ATTENUATION MONITORING

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NAM LOCATIONS - DIVISION C





Attachment A

NAM Forms

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM A02 RB 1</u>		<u>10-08-13</u>	<u>0840</u>	<u>FALL 2013</u>
Division: <u>A</u>				
River Segment: <u>02</u>	Left Bank / Right Bank / Island	(Sun) (Clouds) Fog / Rain / Snow / Windy / Calm	Air Temp +/- <u>50</u> deg C	
2 TEAM #	Name	Company	Signature	
	<u>Kirk Schweim</u>	<u>ARCADIS</u>	<u>[Signature]</u>	
	<u>Eric Lunin</u>	<u>ARCADIS</u>	<u>[Signature]</u>	

3 LOCATION

GPS: LATITUDE 45 deg. 39° 17.2123 min. LONGITUDE 108 deg. 45 13.2049 min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE *SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED*

Vegetation: Open Canopy _____ Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE *write "COAT" or "STAIN" as appropriate*

leaves _____ bark stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1302 Direction Photo Taken: _____

Height above ground (inches): 3' 162°

6 COMMENTS

Natural attenuation is apparent

7 SKETCH *tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries*

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: NAM A07 RB 1		10-8-13	0855	FALL 2013
Division: A				
River Segment: 07	Left Bank / <u>Right Bank</u> / Island	<u>Sun</u> / Clouds / Fog / Rain / Snow / Windy / <u>Calm</u>	Air Temp +/- 5.0 deg C	
2 TEAM #		Name		Company
		Kirk Schweim		ARCADIS
		Eric Lunin		ARCADIS
				Signature Kirk Schweim Eric Lunin
3 LOCATION				
GPS:	LATITUDE 45 deg. 38 58.749 min.	LONGITUDE 108 deg. 43 23.9378 min.	Datum: _____	
UNIT USED: _____				
4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED				
Vegetation: Open Canopy <input checked="" type="checkbox"/> Closed Canopy _____ Rip-rap _____ Grassy field <input checked="" type="checkbox"/> Debris Pile _____ Other _____				
4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate				
leaves _____ bark _____ stems _____ willows _____				
logs _____ grasses <input checked="" type="checkbox"/> Other: _____				
5 PHOTOGRAPH				
Photo Number:	1303	Direction Photo Taken:		
Height above ground (inches):	3'	190°		
6 COMMENTS				
No stains observed				
7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries				

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM A13 LBI</u>		<u>10-9-13</u>	<u>0900</u>	<u>FALL 2013</u>
Division: <u>A</u>				
River Segment: <u>13</u>	<input type="checkbox"/> Left Bank <input type="checkbox"/> Right Bank <input type="checkbox"/> Island <input checked="" type="checkbox"/> Sun <input type="checkbox"/> Clouds <input type="checkbox"/> Fog <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> Windy <input type="checkbox"/> Calm			Air Temp +/- <u>40</u> deg C

2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>ARCADIS</u>	<u>Kirk Schweim</u>
	<u>Eric Lunin</u>	<u>ARCADIS</u>	<u>Eric Lunin</u>

3 LOCATION

GPS: LATITUDE 45 deg. 39 min. 6.8507 LONGITUDE 108 deg. 42 min. 38.4459 Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy _____ Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark stems _____ willows _____

logs grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1312 Direction Photo Taken: _____

Height above ground (inches): 3' 351

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM A14 LBI</u>		<u>10-9-13</u>	<u>0915</u>	<u>FALL 2013</u>
Division: <u>A</u>				
River Segment: <u>14</u>		<input checked="" type="checkbox"/> Left Bank / <input type="checkbox"/> Right Bank / <input type="checkbox"/> Island / <input checked="" type="checkbox"/> Sun / <input type="checkbox"/> Clouds / <input type="checkbox"/> Fog / <input type="checkbox"/> Rain / <input type="checkbox"/> Snow / <input type="checkbox"/> Windy / <input type="checkbox"/> Calm		Air Temp +/- <u>40</u> deg C
2 TEAM #	Name	Company		Signature
	<u>Kirk Schweim</u>	<u>ARCADIS</u>		<u>Kirk Schweim</u>
	<u>Eric Lunin</u>	<u>ARCADIS</u>		<u>Eric Lunin</u>
3 LOCATION				
GPS:	LATITUDE <u>45</u> deg. <u>39</u> <u>21.6542</u> min.	LONGITUDE <u>108</u> deg. <u>42</u> <u>29.5895</u> min.	Datum: _____	
UNIT USED: _____				
4A HABITAT TYPE <i>SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED</i>				
Vegetation: Open Canopy _____ Closed Canopy <input checked="" type="checkbox"/> Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____				
4B OILED VEGETATION TYPE <i>write "COAT" or "STAIN" as appropriate</i>				
leaves _____ bark <input checked="" type="checkbox"/> stems _____ willows _____				
logs _____ grasses _____ Other: _____				
5 PHOTOGRAPH				
Photo Number:	<u>313</u>	Direction Photo Taken:		
Height above ground (inches):	<u>3'</u>	<u>195</u>		
6 COMMENTS				
<p>No stains observed</p>				
7 SKETCH <i>tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries</i>				

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM A19 RB1</u>		<u>10-9-13</u>	<u>0930</u>	<u>FALL 2013</u>
Division: <u>A</u>				
River Segment: <u>19</u>	Left Bank / <u>Right Bank</u> / Island / <u>Sun</u> / Clouds / Fog / Rain / Snow / Windy / <u>calm</u>			Air Temp +/- <u>45</u> deg C

2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>Arcadis</u>	<u>Kirk Schweim</u>
	<u>ERIC LUNIN</u>	<u>Arcadis</u>	<u>Eric Lunin</u>

3 LOCATION			
GPS:	LATITUDE <u>45</u> deg. <u>39.54.589</u> min. 40.9.492	LONGITUDE <u>-108</u> deg. <u>42.7.9823</u> min. 40.9.796	Datum: _____
UNIT USED: _____		<u>EL</u>	

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark _____ stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1314 1315 1316 Direction Photo Taken: _____

Height above ground (inches): 3' 285

6 COMMENTS

NO stains observed
Heavy vegetation
Photo 1316 taken 106°

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM A22 151</u>		<u>10-9-13</u>	<u>1015</u>	FALL 2013
Division: <u>A22</u>				
River Segment: <u>22</u>	Left Bank / Right Bank / (Island) <u>Sun</u> / Clouds / Fog / Rain / Snow / Windy / Calm			Air Temp +/- <u>45</u> deg C

2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>Arcadis</u>	<u>Kirk Schweim</u>
	<u>Eric Lunin</u>	<u>Arcadis</u>	<u>[Signature]</u>

3 LOCATION

GPS: LATITUDE 45 deg. 46.19.1492 min. LONGITUDE 108 deg. 40 48.7990 min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark _____ stems _____ willows

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1317 Direction Photo Taken: _____

Height above ground (inches): 3' 285

6 COMMENTS

No stains observed
Heavy vegetation

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM A24 LBI</u>		<u>10-9-13</u>	<u>1045</u>	<u>FALL 2013</u>
Division: <u>A</u>		<input checked="" type="checkbox"/> Left Bank / <input checked="" type="checkbox"/> Right Bank / <input checked="" type="checkbox"/> Island / <input checked="" type="checkbox"/> Sun / <input type="checkbox"/> Clouds / <input type="checkbox"/> Fog / <input type="checkbox"/> Rain / <input type="checkbox"/> Snow / <input type="checkbox"/> Windy / <input checked="" type="checkbox"/> Calm		Air Temp +/- <u>50</u> deg C
River Segment: <u>24</u>				

2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>Arcadis</u>	<u>Kirk Schweim</u>
	<u>Eric Lunin</u>	<u>Arcadis</u>	<u>Eric Lunin</u>

3 LOCATION

GPS: LATITUDE 45 deg. 46.51.1304 min. LONGITUDE 108 deg. 40.17.5063 min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark _____ stems _____ willows _____

logs grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1318 Direction Photo Taken: _____

Height above ground (inches): 3' 070

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries

1 GENERAL INFORMATION

Location ID: NAM A26 IS 1 Date (dd/mm/yy) 10-9-13 Time (24h): std / daylight 1100 Season/Year: FALL 2013

Division: A River Segment: 26 Left Bank / Right Bank (Island) (Sur) / Clouds / Fog / Rain / Snow / Windy / (Calm) Air Temp +/- 45 deg C

Table with 3 columns: TEAM #, Name, Company, Signature. Rows for Kirk Schweim and Eric Lunin, both from ARCADIS.

3 LOCATION GPS: LATITUDE 45 deg. 41 7.1405 min. LONGITUDE 108 deg. 39 59.2134 min. Datum: UNIT USED:

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy [checked] Closed Canopy Rip-rap Grassy field Debris Pile Other

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves bark stems willows [checked] logs grasses Other:

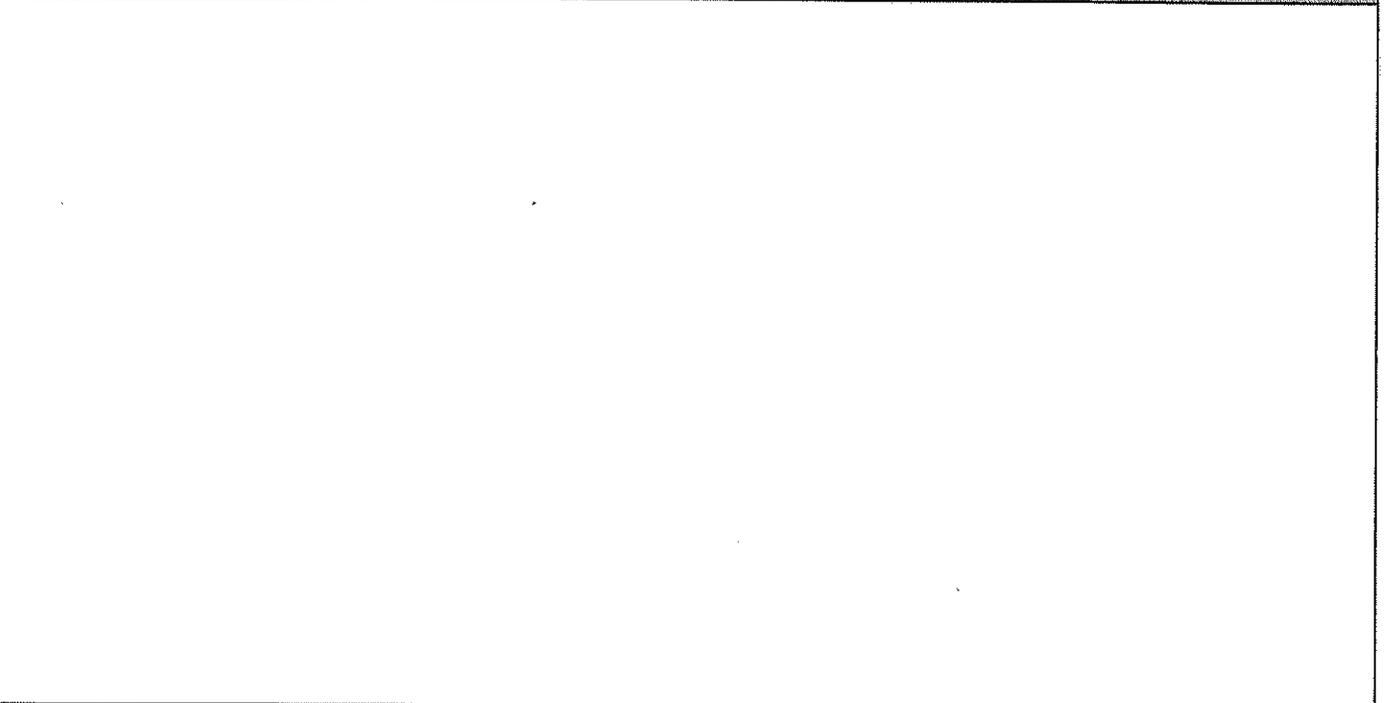
5 PHOTOGRAPH

Photo Number: 1319 Direction Photo Taken: Height above ground (inches): 3' 178

6 COMMENTS

No stains observed

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM A28 RB1</u>		<u>10-8-13</u>	<u>0905</u>	<u>FALL 2013</u>
Division: <u>A</u>				
River Segment: <u>28</u>	Left Bank / <input checked="" type="checkbox"/> Right Bank / Island	<input checked="" type="checkbox"/> Sun / <input type="checkbox"/> Clouds / Fog / Rain / Snow / Windy / <input checked="" type="checkbox"/> Calm	Air Temp +/- <u>50</u> deg C	

2 TEAM #	Name	Company	Signature
	<u>Eric Lunin</u>	<u>ABCADIS</u>	<u>[Signature]</u>
	<u>Kirk Sewell</u>	<u>ABCADIS</u>	<u>[Signature]</u>

3 LOCATION

GPS: LATITUDE 45 deg. 41 13.2435 min. LONGITUDE 108 deg. 38 37.2109 min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE *SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED*

Vegetation: Open Canopy _____ Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE *write "COAT" or "STAIN" as appropriate*

leaves _____ bark stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1304 Direction Photo Taken: _____

Height above ground (inches): 3' 213

6 COMMENTS

Natural attenuation is apparent

7 SKETCH *tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries*

Blank area for sketch.

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: NAM A29 191		10-9-13	1120	FALL 2013
Division: A		Left Bank / Right Bank (Island) (Sun) / Clouds / Fog / Rain / Snow / Windy / (Calm)		Air Temp +/- 50 deg C
River Segment: 29				

2 TEAM #	Name	Company	Signature
	Kirk Schweim	ARCADIS	Kirk Schweim
	Eric Lunin	ARCADIS	Eric Lunin

3 LOCATION

GPS: LATITUDE _____ deg. _____ min. LONGITUDE _____ deg. _____ min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves bark _____ stems _____ willows _____

logs grasses _____ Other: _____

5 PHOTOGRAPH

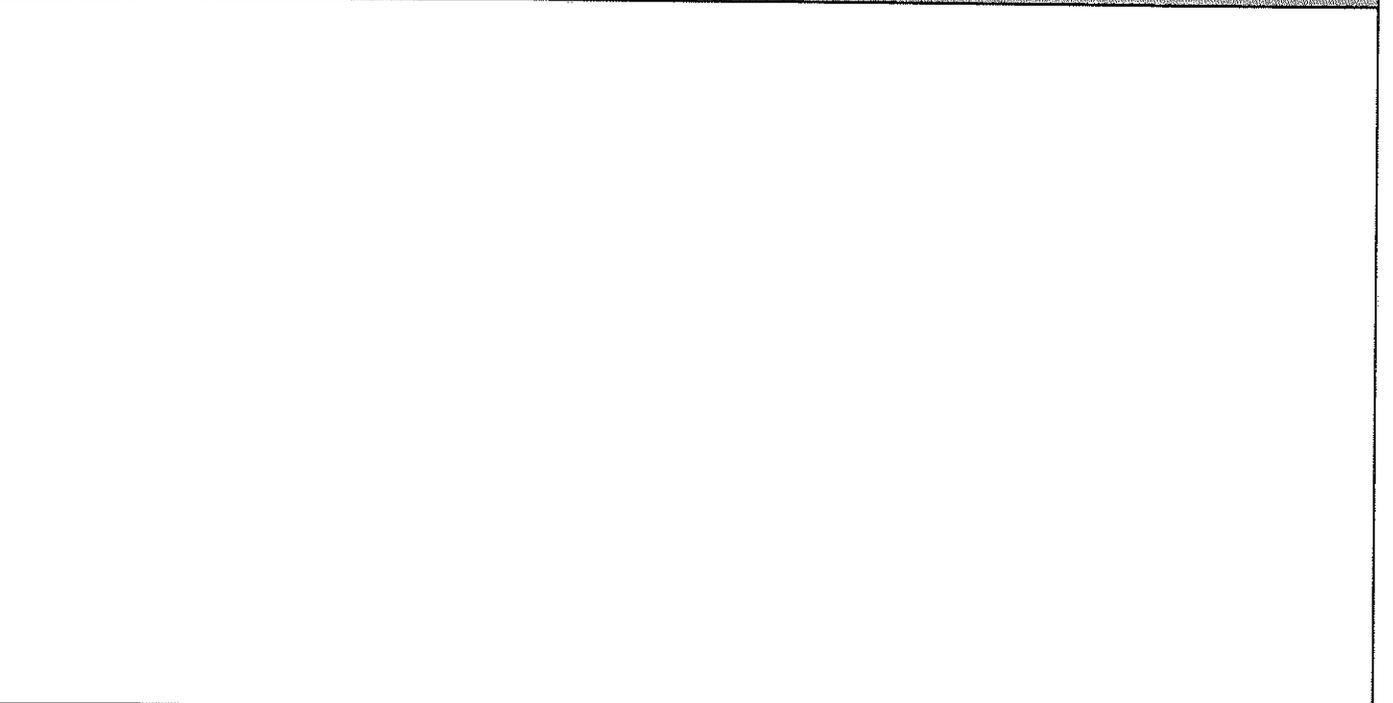
Photo Number: 1321 Direction Photo Taken: _____

Height above ground (inches): 3' 107

6 COMMENTS

NO STAINS OBSERVED

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: NAM 1304 LBI		10-8-13	0925	FALL 2013
Division: B				
River Segment: 04 04 (Left Bank) Right Bank / Island (Sun) Clouds / Fog / Rain / Snow / Windy / Calm				Air Temp: + / - ___ deg C
2 TEAM #	Name	Company	Signature	
	Kirk Schweim	ARCADIS	<i>[Signature]</i>	
	Eric Lunin	ARCADIS	<i>[Signature]</i>	
3 LOCATION				
GPS:	LATITUDE <u>45</u> deg. <u>41</u> <u>42.1647</u> min.	LONGITUDE <u>108</u> deg. <u>38</u> <u>26.4302</u> min.	Datum: _____	
UNIT USED: _____				
4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED				
Vegetation: Open Canopy _____ Closed Canopy <input checked="" type="checkbox"/> Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____				
4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate				
leaves _____ bark <input checked="" type="checkbox"/> stems _____ willows _____				
logs _____ grasses _____ Other: _____				
5 PHOTOGRAPH				
Photo Number:	<u>1305</u>	Direction Photo Taken:		
Height above ground (inches):	<u>3'</u>	<u>060</u>		
6 COMMENTS				
Natural attenuation is apparent				
7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries				

1 GENERAL INFORMATION

Location ID: MAM B10 LB 1 Date (dd/mm/yy) 10-9-13 Time (24h): std / daylight Season/Year: FALL 2013
 Division: B ~~10-8-13~~ EL ~~0925~~ 1300 EL
 River Segment: 10 Left Bank Right Bank / Island Sun Clouds Fog / Rain / Snow / Windy Calm Air Temp +/- 50 deg C

2 TEAM # Name Company Signature
Kirk Schweim ABCADIS Kirk Schweim
Eric Kunin ABCADIS Eric Kunin

3 LOCATION
 GPS: LATITUDE 45 deg. 42 23.5343 min. LONGITUDE 108 deg. 36 8.1347 min. Datum: _____
 UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark stems _____ willows _____
 logs grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1305 1302 Direction Photo Taken: _____
 Height above ground (inches): 3' 335

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries

(Empty sketch area)

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM 012 LB 1</u>		<u>10-9-13</u>	<u>1325</u>	<u>FALL 2013</u>
Division: <u>B</u>				

River Segment: <u>12</u>	<input checked="" type="radio"/> Left Bank / <input type="radio"/> Right Bank / <input type="radio"/> Island	Sun / <input checked="" type="radio"/> Clouds / <input type="radio"/> Fog / <input type="radio"/> Rain / <input type="radio"/> Snow / <input type="radio"/> Windy / <input checked="" type="radio"/> Calm	Air Temp +/- <u>50</u> deg C
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2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>ARCADIS</u>	<u>[Signature]</u>
	<u>Eric Lunin</u>	<u>ARCADIS</u>	<u>[Signature]</u>

3 LOCATION			
GPS:	LATITUDE <u>45</u> deg. <u>42</u> min. <u>51.3447</u>	LONGITUDE <u>108</u> deg. <u>34</u> min. <u>54.6900</u>	Datum: _____
UNIT USED: _____			

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy _____ Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: <u>1323</u>	Direction Photo Taken: _____
Height above ground (inches): <u>3'</u>	<u>252</u>

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>B14 LB 1</u>		<u>10-8-13</u>	<u>0945</u>	FALL 2013
Division: <u>B</u>				
River Segment: <u>14</u>	<input checked="" type="checkbox"/> Left Bank / Right Bank / Island	Sun / Clouds / Fog / Rain / Snow / Windy / Calm		Air Temp +/- <u>50</u> deg C
2 TEAM #	Name	Company	Signature	
	<u>Kirk Schweirm</u>	<u>ARCADIS</u>	<u>Kirk Schweirm</u>	
	<u>ERIC LUNIN</u>	<u>ARCADIS</u>	<u>[Signature]</u>	
3 LOCATION				
GPS:	LATITUDE <u>45</u> deg. <u>43</u> <u>21.0367</u> min.	LONGITUDE <u>108</u> deg. <u>35</u> <u>20.9999</u> min.	Datum: _____	
UNIT USED: _____				
4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED				
Vegetation: Open Canopy <input checked="" type="checkbox"/> Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____				
4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate				
leaves _____ bark _____ stems _____ willows _____				
logs _____ grasses _____ Other: _____				
5 PHOTOGRAPH				
Photo Number:	<u>1306</u>	Direction Photo Taken:		
Height above ground (inches):	<u>3'</u>	<u>260</u>		
6 COMMENTS				
<p>No stains observed</p>				
7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries				

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM B17 BBI</u>		<u>10-9-13</u>	<u>1340</u>	<u>FALL 2013</u>
Division: <u>B</u>				
River Segment: <u>17</u>	Left Bank <input checked="" type="checkbox"/> <u>Right Bank</u> / Island	Sun / <input checked="" type="checkbox"/> <u>Clouds</u> / Fog / Rain / Snow / Windy / <input checked="" type="checkbox"/> <u>Calm</u>	Air Temp +/- <u>50</u> deg C	
2 TEAM #	Name	Company	Signature	
	<u>Kirk Schweim</u>	<u>ARCADIS</u>	<u>[Signature]</u>	
	<u>Eric Kunin</u>	<u>ARCADIS</u>	<u>[Signature]</u>	
3 LOCATION				
GPS:	LATITUDE _____ deg. _____ min.	LONGITUDE _____ deg. _____ min.	Datum: _____	
UNIT USED: _____				
4A HABITAT TYPE <i>SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED</i>				
Vegetation: Open Canopy _____ Closed Canopy <u>1</u> / Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____				
4B OILED VEGETATION TYPE <i>write "COAT" or "STAIN" as appropriate</i>				
leaves _____ bark <input checked="" type="checkbox"/> stems _____ willows _____				
logs _____ grasses _____ Other: _____				
5 PHOTOGRAPH				
Photo Number:	<u>1324</u>	Direction Photo Taken:		
Height above ground (inches):	<u>3'</u>	<u>170</u>		
6 COMMENTS				
<p>Natural attenuation is apparent</p>				
7 SKETCH <i>tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries</i>				

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM B27 BBI</u>		<u>108-13</u>	<u>1005</u>	<u>FALL 2013</u>
Division: <u>B</u>				

River Segment: 27 Left Bank Right Bank Island Sun Clouds Fog Rain Snow Windy Calm Air Temp +/- 55 deg C

2 TEAM #	Name	Company	Signature
	<u>Kirk Schwalm</u>	<u>ARCADIS</u>	<u>Kirk Schwalm</u>
	<u>Eric Lunin</u>	<u>ARCADIS</u>	<u>Eric Lunin</u>

3 LOCATION

GPS: LATITUDE 45 deg. 44 15.9108 min. LONGITUDE 108 deg. 32 20.2297 min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy _____ Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark _____ stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

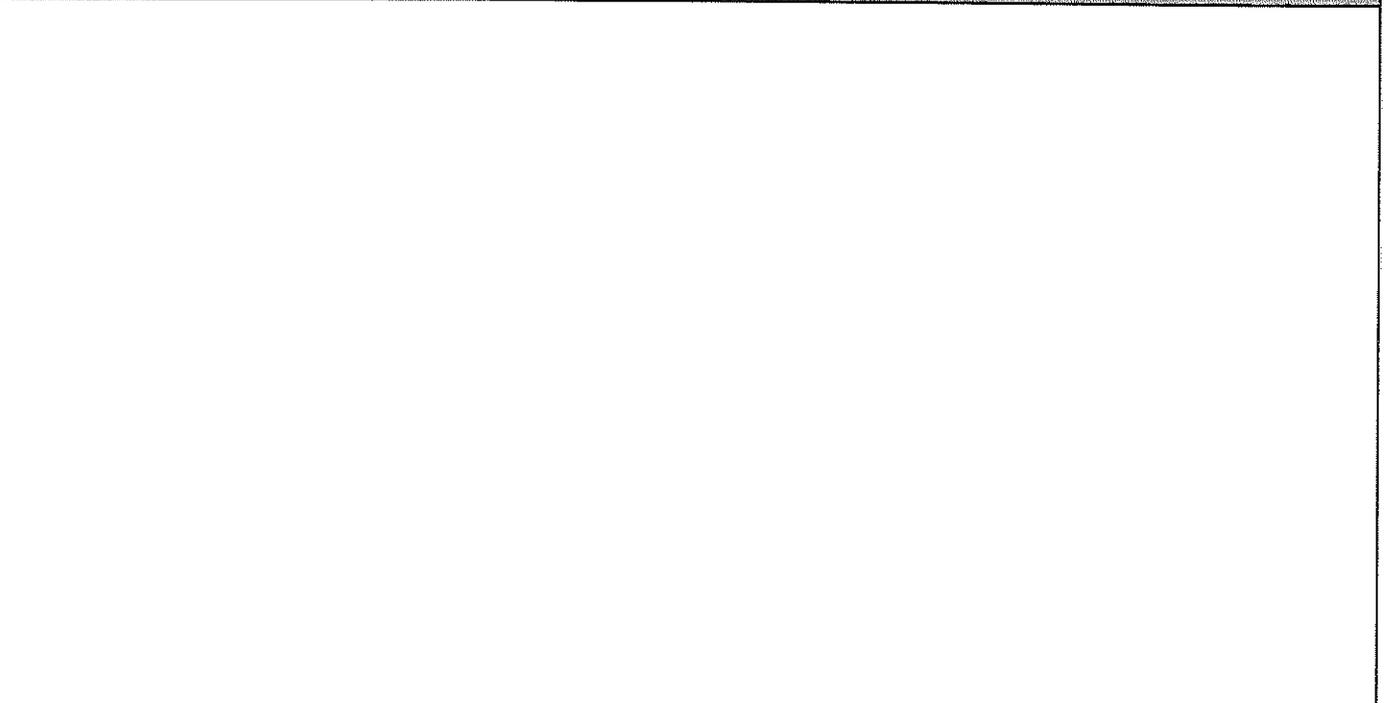
Photo Number: 1307 Direction Photo Taken: _____

Height above ground (inches): 3' 109

6 COMMENTS

No stains observed

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: NAM B30 LBI		10-8-13	1035	FALL 2013
Division: B				

River Segment: 30 (Left Bank) Right Bank / Island (Sun / Clouds / Fog / Rain / Snow / Windy / Calm) Air Temp +/- .55 deg C

2 TEAM #	Name	Company	Signature
	Kirk Schweim	ARCADIS	<i>Kirk Schweim</i>
	Eric Lunan	ARCADIS	<i>Eric Lunan</i>

3 LOCATION

GPS: LATITUDE 45 deg. 44 23.4605 min. LONGITUDE 108 deg. 31 25.4222 min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1308 Direction Photo Taken: _____

Height above ground (inches): 3' _____

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM B34 LBI</u>		<u>10-8-13</u>	<u>1035</u>	<u>FALL 2013</u>
Division: <u>B</u>				

River Segment: 34 Left Bank Right Bank / Island Sun / Clouds / Fog / Rain / Snow / Windy Calm Air Temp +/- 60 deg C

2 TEAM #	Name	Company	Signature
	<u>Kirk Schwab</u>	<u>ABCADIS</u>	<u>Kirk Schwab</u>
	<u>Eric Lunin</u>	<u>ABCADIS</u>	<u>Eric Lunin</u>

3 LOCATION
 GPS: LATITUDE 45 deg. 44 51.0970 min. LONGITUDE 108 deg. 30 16.4437 min. Datum: _____
 UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED
 Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate
 leaves _____ bark _____ stems _____ willows
 logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1309 Direction Photo Taken: _____
 Height above ground (inches): 3' 068

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy) 10-9-13	Time (24h): std / daylight 1405	Season/Year: FALL 2013
Location ID: NAM B35 IS1				
Division: B				

River Segment: 35	Left Bank / Right Bank	Island	Sun / Clouds / Fog / Rain / Snow / Windy / Calm	Air Temp +/- 50 deg C
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2 TEAM #	Name	Company	Signature
	Kirk Schweim	ARCADIS	Kirk Schweim
	Eric Lunin	ARCADIS	Eric Lunin

3 LOCATION			
GPS:	LATITUDE 45 deg. 44 min. 55.5485	LONGITUDE 108 deg. 29 min. 48.6989	Datum:
UNIT USED:			

4A HABITAT TYPE	SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED
Vegetation:	Open Canopy <input checked="" type="checkbox"/> Closed Canopy <input type="checkbox"/> Rip-rap <input type="checkbox"/> Grassy field <input type="checkbox"/> Debris Pile <input type="checkbox"/> Other <input type="checkbox"/>

4B OILED VEGETATION TYPE	write "COAT" or "STAIN" as appropriate
leaves <input type="checkbox"/> bark <input type="checkbox"/> stems <input type="checkbox"/> willows <input checked="" type="checkbox"/>	
logs <input type="checkbox"/> grasses <input type="checkbox"/> Other: <input type="checkbox"/>	

5 PHOTOGRAPH	
Photo Number: 1325 3'	Direction Photo Taken: 045
Height above ground (inches):	

6 COMMENTS

Natural attenuation is apparent

7 SKETCH	tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries
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1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: NAM B46 RB1		10-8-13	1500	FALL 2013
Division: B				

River Segment: 46 Left Bank (Right Bank) / Island / Sun / Clouds / Fog / Rain / Snow / Windy / Calm Air Temp +/- 60 deg C

2 TEAM #	Name	Company	Signature
	Kirk Schwerm	ARCADIS	<i>Kirk Schwerm</i>
	ERIC Lunin	ARCADIS	<i>Eric Lunin</i>

3 LOCATION

GPS: LATITUDE 45 deg. 43 06.3011 min. LONGITUDE 108 deg. 35 07.1006 min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark _____ stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1399 Direction Photo Taken: _____

Height above ground (inches): 3' 060

6 COMMENTS

No stains observed

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries

1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM B47 RBL</u>		<u>10-8-13</u>	<u>1430</u>	<u>FALL 2013</u>
Division: <u>B</u>				

River Segment: 47 Left Bank Right Bank Island Sun Clouds Fog Rain Snow Windy Calm Air Temp +/- 100 deg C

2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>ARCADIS</u>	<u>[Signature]</u>
	<u>Eric Lunin</u>	<u>ARCADIS</u>	<u>[Signature]</u>

3 LOCATION

GPS: LATITUDE 45 deg. 42 min. 35.7287 LONGITUDE 108 deg. 35 min. 35.6849 Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy _____ Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1308 Direction Photo Taken: _____

Height above ground (inches): 3' 312

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM C03 L31</u>		<u>10-8-13</u>	<u>1300</u>	<u>FALL 2013</u>
Division: <u>C</u>				

River Segment: 03 Left Bank Right Bank / Island Sun Clouds / Fog / Rain / Snow / Windy / Calm Air Temp +/- 60 deg C

2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>ARCADIS</u>	<u>Kirk Schweim</u>
	<u>Eric Lunin</u>	<u>ARCADIS</u>	<u>[Signature]</u>

3 LOCATION

GPS: LATITUDE 45 deg. 48 ^{47.6136} min. LONGITUDE 108 deg. 27 ^{29.5222} min. Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy _____ Closed Canopy Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves bark stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1311 Direction Photo Taken: _____

Height above ground (inches): 3' 300

6 COMMENTS

Natural attenuation is apparent

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries



1 GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h): std / daylight	Season/Year:
Location ID: <u>NAM C05 BBI</u>		<u>10-9-13</u>	<u>1440</u>	<u>FALL 2013</u>
Division: <u>C</u>				
River Segment: <u>05</u>	Left Bank / <u>Right Bank</u> / Island	Sun / <u>Cloudy</u> / Fog / Rain / Snow / Windy / Calm	Air Temp +/- <u>5P</u> deg C	

2 TEAM #	Name	Company	Signature
	<u>Kirk Schweim</u>	<u>ARCADIS</u>	<u>[Signature]</u>
	<u>Eric Lunin</u>	<u>ARCADIS</u>	<u>[Signature]</u>

3 LOCATION

GPS: LATITUDE 45 deg. 48 min. 52.4301 LONGITUDE 108 deg. 26 min. 43.8381 Datum: _____

UNIT USED: _____

4A HABITAT TYPE SELECT only one primary (P) shoreline type and any number of secondary (S) types. CIRCLE those OILED

Vegetation: Open Canopy Closed Canopy _____ Rip-rap _____ Grassy field _____ Debris Pile _____ Other _____

4B OILED VEGETATION TYPE write "COAT" or "STAIN" as appropriate

leaves _____ bark stems _____ willows _____

logs _____ grasses _____ Other: _____

5 PHOTOGRAPH

Photo Number: 1320 Direction Photo Taken: _____

Height above ground (inches): 3' 100

6 COMMENTS

No stains observed

7 SKETCH tripod setup in relation to nearby features, trees, rocks, water bodies, parcel boundaries

[Blank area for sketch]



Attachment B

Photo Log

Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A02-RB-1





Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A07-RB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A13-LB-1





Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A14-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

**NAM-A19-RB-1
Photo 1**





Silvertip Incident
Laurel, Montana

LOCATION ID

**NAM-A19-RB-1
Photo 2**





Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A22-IS-1





Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A24-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A26-IS-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A28-RB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-A29-IS-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B04-LB-1





Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B10-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B12-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B14-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B17-RB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B27-RB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B30-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B34-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B35-IS-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B46-RB-1





Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-B47-RB-1





Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-C03-LB-1



Silvertip Incident
Laurel, Montana

LOCATION ID

NAM-C05-RB-1

