

# Alpine Pipeline River Crossing Monitoring 2004

Prepared for

  
**ConocoPhillips**

August 2004

Prepared by

**Baker**

**Michael Baker Jr., Inc.**

*A Unit of Michael Baker Corporation*

4601 Business Park Boulevard, Suite 42  
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103654-MBJ-001



August 2004

Caryn L. Rea  
Environmental Studies Coordinator  
ConocoPhillips Alaska, Inc.  
700 G Street, ATO 1902  
Anchorage, AK 99510-0360

Re: Alpine Pipeline River Crossing Monitoring - 2004

Dear Caryn,

On June 17 and 18, 2004, Michael Baker Jr. (Baker), represented by Jon Wolf and Mike Alexander, P.E., conducted an inspection of three Alpine sales pipeline river crossings. This letter report presents the results of the monitoring efforts. Surveyors from Kuukpik-LCMF accompanied Baker during the pipeline survey and completed all survey-related tasks. The LCMF report is provided as Appendix A. Aerial and ground photographs of the sites that were taken on the days of the inspection are provided in Appendix B.

**Objective:** The objective of the monitoring work was to inspect the Alpine sales pipeline and vertical support members (VSMs) and horizontal support members (HSMs) at major floodplain crossing sites that included the horizontal directional drilling (HDD) site on the Colville River, and the Miluveach and Kachemach River crossings.

**Data:** The data collected during this task was to include the following:

1. Collect photographs at each crossing location;
2. Record evidence of VSM tilting, settling, jacking and scouring by surveying including measurements for top-of-cap, pile and HSMs:
  - Miluveach River – at a minimum check VSM Nos. 2047 and 2048 and other VSMs within 15 feet of the channel;
  - Kachemach River – at a minimum check VSM Nos. 1715A and 1715B and other VSMs within 15 feet of the channel;

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- Evaluate all VSMS in the river channels for scour by surveying depth and width; also, identify all localized scouring near river crossings;
  3. Evaluate bank erosion at each location by surveying the top and bottom elevations and identify locations of bank caving;
    - Colville River/HDD check for bank erosion or migration 50 feet from as-built bank locations;
  4. Evaluate bank and ground stability from the Colville River to the HDD East pad by conducting a topographical survey gathering the same data as in 2003;
  5. Evaluate presence or absence of erosion of the HDD gravel pads;
  6. Evaluate evidence of any settlement and jacking of the HDD building foundation movement by surveying;
  7. Identify any obstructions, ice dams, new river channels or changes in flow in the channels;
  8. Document signs of flooding that might threaten a facility or pipeline, or where water cannot be diverted and there is:
    - Concentrated longitudinally flow on or along the pipeline centerline or;
    - Gullying threatening the buried pipeline at the Colville River/HDD crossing.
  9. Document soil pressure ridges developing parallel to the pipe axis and exceeding 1 foot in height and 60 feet in length;
  10. Document ponding that extends over the pipe axis, deeper than 1 foot, and more than 100 feet long.
  11. Document cracks within 10 feet of the pipeline centerline having one of the following characteristics must be identified:
    - At least 10 feet long with vertical displacement exceeding 6 inches;
    - Wider than 2 inches, parallel to the pipe axis, and longer than 60 feet;
  12. Document depressions occurring longitudinally over pipe axis, are deeper than 1 foot, and are more than 100 feet long;
  13. Identify pipeline leaks;
  14. Evaluate and report on surveying data representing above-mentioned data. Compare data from 2004 with as-built or original elevations of pipeline at installation.

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**Results:** Results of the inspection by Baker and the LCMF survey are subdivided by location. At all three sites, a complete inspection was made of the pipeline, VSMS and HSMs within the floodplain. Survey of the various support members was also completed at each site. Appendix A contains the following survey reports as provided by LCMF:

- HDD West:** Site Drawing  
Pile Cap Monitoring Survey  
Streambank Monitoring Survey
- HDD East:** Site Drawing  
Subsidence Monitoring Survey-Cross Sections A through H  
Streambank Monitoring Survey
- Kachemach River:** Site Drawing  
East Streambank Erosion Monitoring Survey  
West Streambank Erosion Monitoring Survey  
VSM 1715A and 1715B Pile Monitoring Survey
- Miluveach River:** Site Drawing  
East Streambank Erosion Monitoring Survey  
West Streambank Erosion Monitoring Survey  
VSM 2047A and 2048A Plumb Monitoring  
Pile Monitoring Survey

#### Horizontal Directional Drilling Crossing Site – Colville River

The HDD site was inspected from both the air and the ground (Photos 1-14). On the day of the inspection, the west bank was free of snow while some areas of the east bank were obscured by drifts.

Localized slumping and sloughing of bank material was noted on both the east and west banks. On the west bank, it appeared that high water had not reached the bluff face proper; a probable high water mark was identified on a snow bank at the base of the bluff (Photo 5). Limited, isolated portions of the west bank bluff face had slumped due to normal weathering. On the east bank, the water level in the river was lower than observed in 2003; however the degree of bank failure was much more apparent this year. Large cracks were noted along the top of the bank, and it appeared that much larger sections of the bank (relative to the west bank) had or were in

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the process of slumping. Bank failure was apparent along the entire east and west bank, not just in the vicinity of the pipeline axes. See Appendix A – LCMF Report, *HDD Streambank Monitoring Survey, East and West Banks*.

VSMs and HSMs on the east and west banks appeared plumb and level. No evidence of jacking or subsidence was noted. No evidence of scour was noted. Shallow standing water from localized melt was observed around many of the VSMs on the west bank. VSMs on the east bank were generally dry with no standing water. VSMs on both banks were free of debris. No pipeline leaks were found. No pressure ridge development parallel to the pipelines or otherwise was observed. No ponding or depressions that would be indicative of subsidence was observed along the axis of the pipelines. See Appendix A – LCMF Report, *HDD Subsidence Monitoring Survey, East Bank*.

Thermosiphons on both banks appeared straight and level. Gravel pads were free from debris and appeared to be structurally intact with no indication of gravel deterioration or displacement. The power building appeared straight and level with no indication of settling or jacking.

On the west bank a damaged corrugated metal pipe (CMP) used to protect a thermistor sting was noted (Photo 8). The thermistor string and control box appeared to be undamaged. On the east bank, a similarly used CMP had settled unevenly but again, the thermistor string and control box appeared to be undamaged (Photo 11). On the east bank, an Alaska Clean Seas (ACS) spill response container was jacked up off its timber foundation due to uneven settling of the timber (Photo 14). The container appeared to be undamaged, however it was likely tilted enough that opening the container door would have been difficult.

### Kachemach River Crossing

The Kachemach River pipeline crossing was inspected from both the ground and the air (Photos 15-22). On the day of the inspection, the west bank was free of snow with the exception of ice road remnants. The entire east bank was still snow-covered. Water within the active channel was shallow enough to wade. Flow was relatively uniform bank-to-bank with a defined thalweg noted beneath the double set VSM No. 1715 near the east bank.

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VSMs and HSMs on the east and west banks appeared plumb and level. No evidence of jacking or subsidence was noted. See Appendix A - LCMF Report, *VSM 1715A and 1715B Pile Monitoring Survey*. The three instream VSMs were examined for scour. Scour at VSM No. 1715 was 0.5 feet (upstream side) and 0.1 feet (downstream side). Scour at double set VSM No. 1715A and 1715B was measured at 0.8 ft. (upstream) and 0.3 ft. (downstream) and 2.2 ft. (upstream) and 1.2 ft. (downstream) respectively. Scour at VSM No. 1715C (marked in the field as a second 1715B) was 0.8 feet (upstream side) and 0.3 feet (downstream side).

A small isolated scour trench that was observed in 2003 between VSM Nos. 1715A/B and 1715C was no longer in evidence having presumably been infilled by the river. No evidence of significant scour was noted on VSMs outside the active channel. VSMs on both banks and in the active channel were free of debris. No pipeline leaks were found.

The remains of the ice bridge upstream from the pipeline crossing were still very much in evidence. An area of localized scour within the active channel was noted immediately beneath the ice road remnant on the west bank. The scoured area was roughly oval-shaped with a diameter of approximately 20 feet on the long axis, parallel to the bank. The scoured area was deep enough so as to be not wadeable (Photo 17 & 18). The scour was likely a result of short-term flow modification caused by the ice bridge that resulted in floodwaters being directed down toward the channel. Minimal scour on a gravel bar just upstream from the scoured area demonstrate that the scour is limited to the immediate vicinity of the ice road alignment. It is likely that the scour will gradually fill in over the summer months, as it is located in a primarily depositional reach on the left bank of the main channel.

Both banks at the pipeline crossings appear stable with no slumping or other bank deterioration noted. See Appendix A – LCMF Report, *Kachemach Streambank Monitoring Survey, East and West Banks*. On the west bank, a small new area of bank slumping was noted adjacent to the ice road remnant (Photo19). Minor slumping was also observed just downstream from the ice road alignment in an area where small bank failures were previously documented in 2003 (Photo 20).

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## Miluveach River Crossing

The Miluveach River pipeline crossing was inspected from both the ground and the air (Photos 23-28). On the day of the inspection, both the east and west banks were entirely free of snow. Water within the channel was shallow enough to wade. Flow was relatively uniform bank-to-bank with no defined thalweg noted.

VSMs and HSMs on the east and west banks appeared plumb and level. See Appendix A – LCMF Report, *Miluveach Streambank Monitoring Survey, East and West Banks*. No evidence of jacking or subsidence was noted. Two instream double set VSMs were examined for scour. Scour on instream VSMs was minimal, ranging from 0.0 to 1.5 ft. No evidence of significant scour was noted on VSMs outside the active channel. VSMs on both banks and in the active channel were free of debris. No pipeline leaks were found.

Both the east and west bank appeared to be stable with only minimal slumping noted. No indications of channel obstructions were observed.

**Conclusions:** The tabulated ground elevations provided by Kuukpik/LCMF are presented in Appendix A. The topographic monitoring of stream banks and other physical features at the three stream crossing has been collected since 2001.

## Horizontal Directional Drilling Crossing Site – Colville River

Stream bank monitoring was conducted in 2002, 2003, and 2004 along the bluff of HDD West. The average incremental change along the West bluff was –0.8 feet and –0.3 feet between 2002 and 2003, and 2003 and 2004 respectively. A pile cap monitoring survey program was began this season and will allow for tracking incremental changes in pile cap elevations in the future.

Stream bank monitoring was conducted in 2001, 2002, 2003, and 2004 along the bluff of HDD East. The average incremental change along the East bluff was -2.05 feet, -3.1 feet and –2.7 feet between 2001, and 2002, 2002 and 2003, and 2003 and 2004 respectively. Subsidence monitoring was conducted in 2001, 2002, 2003, and 2004 perpendicular to the seawater line at

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HDD East. The average incremental change was –0.1 feet, 0.0 feet and –0.1 feet between 2001, and 2002, 2002 and 2003, and 2003 and 2004 respectively.

### Kachemach River Crossing

Stream bank monitoring was conducted in 2002, 2003, and 2004 along the bluff of the East bank of the Kachemak River. The average incremental change along the East bluff was 0.0 feet and – 1.3 feet between 2002 and 2003, and 2003 and 2004 respectively. Additionally, stream bank monitoring was conducted in 2002, 2003, and 2004 along the bluff of the West bank of the Kachemak River. The average incremental change along the West bluff was 0.0 feet and –3.3 feet between 2002 and 2003, and 2003 and 2004 respectively. A pile cap monitoring survey program was began this season at the Kachemak River crossing and will allow for tracking incremental changes in pile cap elevations in the future.

### Miluveach River Crossing

Stream bank monitoring was conducted in 2002, 2003, and 2004 along the bluff of the East bank of the Miluveach River. The average incremental change along the East bluff was 0.0 feet and – 0.1 feet between 2002 and 2003, and 2003 and 2004 respectively. Additionally, stream bank monitoring was conducted in 2002, 2003, and 2004 along the bluff of the West bank of the Miluveach River. The average incremental change along the West bluff was 0.0 feet and –1.6 feet between 2002 and 2003, and 2003 and 2004 respectively. A pile cap monitoring survey program was began this season at the Miluveach River crossing and will allow for tracking incremental changes in pile cap elevations in the future.

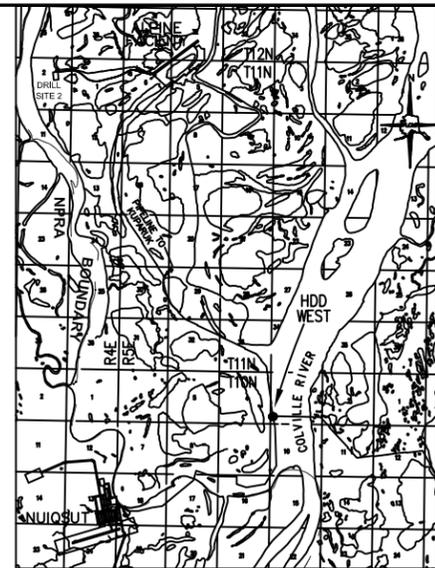
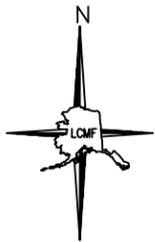
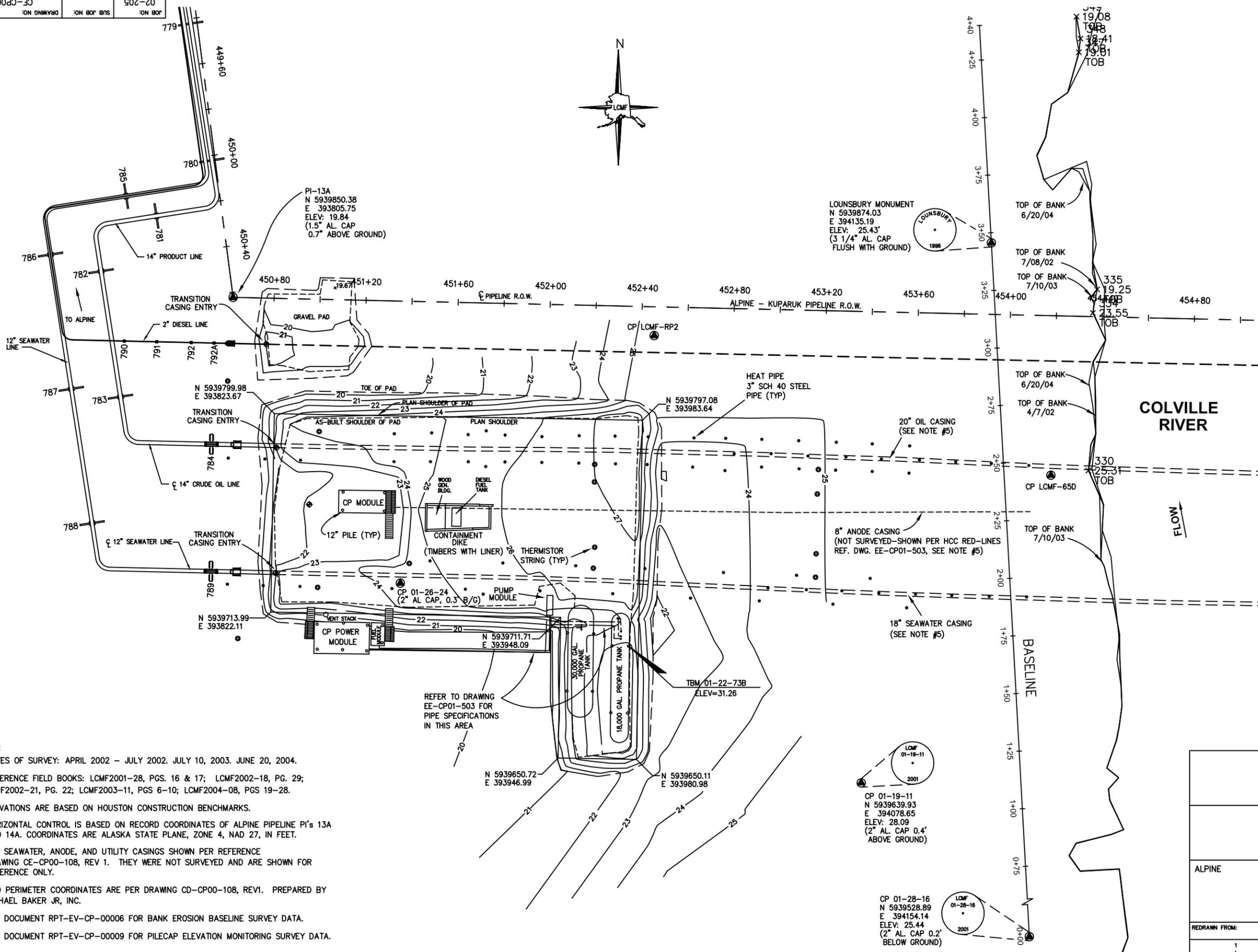
We hope that this monitoring report is sufficient for your needs. Please feel free to call should you have any questions or comments.

Sincerely,  
**Michael Baker Jr., Inc.**

Michael Alexander, P.E.  
Project Manager

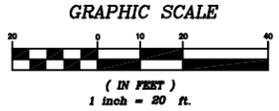
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Appendix A – LCMF Report, HDD Streambank Monitoring Survey, East and West Banks



VICINITY MAP  
NO SCALE

- LEGEND**
- HEAT PIPE
  - ⊙ THERMISTOR STRING
  - ⊕ TRANSITION CASING ENTRY POINT
  - 21- 1' CONTOUR LINES
  - PILE
  - ⊙ SURVEY CONTROL
  - TOE OF PAD
  - SHOULDER OF PAD
  - TOP OF BANK 4/7/02
  - TOP OF BANK 7/8/02
  - TOP OF BANK 7/10/03
  - TOP OF BANK 6/20/04



- NOTES:**
- DATES OF SURVEY: APRIL 2002 - JULY 2002. JULY 10, 2003. JUNE 20, 2004.
  - REFERENCE FIELD BOOKS: LCMF2001-28, PGS. 16 & 17; LCMF2002-18, PG. 29; LCMF2002-21, PG. 22; LCMF2003-11, PGS 6-10; LCMF2004-08, PGS 19-28.
  - ELEVATIONS ARE BASED ON HOUSTON CONSTRUCTION BENCHMARKS.
  - HORIZONTAL CONTROL IS BASED ON RECORD COORDINATES OF ALPINE PIPELINE PI'S 13A AND 14A. COORDINATES ARE ALASKA STATE PLANE, ZONE 4, NAD 27, IN FEET.
  - OIL, SEAWATER, ANODE, AND UTILITY CASINGS SHOWN PER REFERENCE DRAWING CE-CP00-108, REV 1. THEY WERE NOT SURVEYED AND ARE SHOWN FOR REFERENCE ONLY.
  - PAD PERIMETER COORDINATES ARE PER DRAWING CD-CP00-108, REV1. PREPARED BY MICHAEL BAKER JR, INC.
  - SEE DOCUMENT RPT-EV-CP-00006 FOR BANK EROSION BASELINE SURVEY DATA.
  - SEE DOCUMENT RPT-EV-CP-00009 FOR PILECAP ELEVATION MONITORING SURVEY DATA.

**Kuukpik/LCMF**  
 A subsidiary of Magellan Pipeline Corporation  
 Alpine Office (907) 670-4739  
 Anchorage, Alaska (907) 273-1830  
 Alpine Survey Office



ALPINE MODULE: CP00 UNIT: CP  
**HDD BANK EROSION MONITORING**  
 HDD SITE - WEST  
 ALPINE FACILITY

REDRAWN FROM:	CONSTRUCTION SHEET
1 2 3 4 5 6	OF
DO NOT SCALE	ABOVE SCALE FOR REFERENCE ONLY
DATE: 11/5/02	DRAWN: CZ DESIGN: ECM NO: 1870227ACS
SCALE: 1"=20'	CHECKED: JZ CC NO:
APPROVAL: ML	CADD FILE NO. 01-12-05-1WEST
JOB NO: 02-205	SUB JOB NO: DRAWING NO: CE-CP00-143 PART: 1 of 1 REV: 3

REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
								3	6/25/04	UPDATED PER 2390460ACS	CZ	BD			
								2	11/15/03	ISSUED PER 2094387ACS	GD	JZ			
								1	11/5/02	ISSUED PER 1870227ACS	CZ	JZ			

Calc'd By: CZ  
Date: 6/23/2004

**Alpine CP 00  
HDD West Site  
Pilecap Monitor**

**Kuukpik/LCMF**  
Alpine Survey Office

<b>Pile Cap</b>	<b>Pile Cap Monitor - Bottom of Pile Cap Locations</b>						<b>Description</b>
<b>Designation</b>	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location						
	<b>6/20/2004</b>	<b>Future</b>	<b>Future</b>	<b>Future</b>	<b>Future</b>	<b>Future</b>	<b>Date</b>
<b>W-01</b> NE Cor	26.389						Bottom of Pile Cap (In Feet)
							Incremental Change
							Cumulative Change
<b>W-02</b> NE Cor	26.391						Bottom of Pile Cap (In Feet)
							Incremental Change
							Cumulative Change
<b>W-03</b> NE Cor	26.391						Bottom of Pile Cap (In Feet)
							Incremental Change
							Cumulative Change
<b>W-04</b> NE Cor	26.389						Bottom of Pile Cap (In Feet)
							Incremental Change
							Cumulative Change
<b>W-05</b> NE Cor	26.383						Bottom of Pile Cap (In Feet)
							Incremental Change
							Cumulative Change
<b>W-06</b> NE Cor	26.395						Bottom of Pile Cap (In Feet)
							Incremental Change
							Cumulative Change
<b>W-07</b> NE Cor	26.397						Bottom of Pile Cap (In Feet)
							Incremental Change

Calc'd By: CZ  
Date: 6/23/2004

**Alpine CP 00  
HDD West Site  
Pilecap Monitor**

**Kuukpik/LCMF**  
Alpine Survey Office

								Cumulative Change
								Bottom of Pile Cap (In Feet)
								Incremental Change
<b>W-08</b> NE Cor		26.403						Cumulative Change
								Bottom of Pile Cap (In Feet)
								Incremental Change
<b>W-09</b> NE Cor		31.291						Cumulative Change
								Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-10</b> NE Cor		31.266						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-11</b> NE Cor		31.299						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
								Bottom of Pile Cap (In Feet)
<b>W-12</b> NE Cor		31.301						Incremental Change
								Cumulative Change
								Bottom of Pile Cap (In Feet)
								Incremental Change
<b>W-13</b> NE Cor		27.377						Cumulative Change
								Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-14</b> NE Cor		27.428						

Calc'd By: CZ  
Date: 6/23/2004

**Alpine CP 00  
HDD West Site  
Pilecap Monitor**

**Kuukpik/LCMF**  
Alpine Survey Office

								Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-15</b> NE Cor		27.413						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-16</b> NE Cor		27.389						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-17</b> NE Cor		28.940						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-18</b> NE Cor		28.965						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-19</b> NE Cor		28.959						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>W-20</b> NE Cor		28.964						Bottom of Pile Cap (In Feet)
								Incremental Change
								Cumulative Change
<b>Note:</b> Survey completed on 6/20/2004 was used to compute Incremental/Cumulative Change. Positive numbers indicate subsidence.								
All Pile Caps are 0.083' Thick. Add Cap thickness to shown elevations for Top of Pile Cap Elevations								

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>0+00</b>	39.5	39.5	39.5	39.5				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+10</b>	39.4	39.4	39.4	39.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+25</b>	41.5	41.5	41.5	41.5				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+30</b>	37.7	37.9	37.9	37.9				Baseline Offset (In Feet)
		0.1	0.0	0.0				Incremental Change
		0.1	0.1	0.1				Cumulative Change
<b>0+40</b>	41.9	41.9	41.9	41.9				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+50</b>	42.0	42.0	42.0	42.0				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+60</b>	41.4	41.4	41.4	41.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>0+70</b>	40.7	40.7	40.7	40.7				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+75</b>	21.4	21.4	21.4	21.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+80</b>	20.1	20.1	20.1	20.1				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+85</b>	29.0	29.0	29.0	29.0				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>0+90</b>	42.8	42.8	42.8	42.8				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+00</b>	38.7	38.7	38.7	38.7				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>1+05</b>	37.9	37.9	37.9	37.9				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+10</b>	41.4	41.4	41.4	41.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+15</b>	38.2	38.2	38.2	38.2				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+20</b>	39.4	39.4	39.4	39.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+25</b>	41.4	41.4	41.4	41.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+30</b>	43.0	43.0	43.0	43.0				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+40</b>	45.3	45.3	45.3	45.3				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>1+50</b>	45.7	45.7	45.7	45.7				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+60</b>	45.8	45.8	45.8	44.9				Baseline Offset (In Feet)
		0.0	0.0	-1.0				Incremental Change
		0.0	0.0	-1.0				Cumulative Change
<b>1+65</b>	45.9	45.9	45.9	45.0				Baseline Offset (In Feet)
		0.0	0.0	-0.9				Incremental Change
		0.0	0.0	-0.9				Cumulative Change
<b>1+75</b>	45.9	45.9	45.9	45.9				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>1+90</b>	45.0	45.0	44.1	44.1				Baseline Offset (In Feet)
		0.0	-0.9	0.0				Incremental Change
		0.0	-0.9	-0.9				Cumulative Change
<b>2+00</b>	44.7	44.7	41.8	41.8				Baseline Offset (In Feet)
		0.0	-2.9	0.0				Incremental Change
		0.0	-2.9	-2.9				Cumulative Change
<b>2+10</b>	43.7	43.7	40.4	40.2				Baseline Offset (In Feet)
		0.0	-3.2	-0.3				Incremental Change
		0.0	-3.2	-3.5				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>2+20</b>	41.5	41.5	41.5	40.6				Baseline Offset (In Feet)
		0.0	0.0	-0.9				Incremental Change
		0.0	0.0	-0.9				Cumulative Change
<b>2+25</b>	42.0	42.0	42.0	40.7				Baseline Offset (In Feet)
		0.0	0.0	-1.3				Incremental Change
		0.0	0.0	-1.3				Cumulative Change
<b>2+30</b>	42.4	42.3	42.2	40.9				Baseline Offset (In Feet)
		0.0	-0.1	-1.4				Incremental Change
		0.0	-0.1	-1.5				Cumulative Change
<b>2+35</b>	41.0	40.4	40.4	40.4				Baseline Offset (In Feet)
		-0.6	0.0	0.0				Incremental Change
		-0.6	-0.6	-0.6				Cumulative Change
<b>2+45</b>	38.3	36.8	36.8	36.8				Baseline Offset (In Feet)
		-1.5	0.0	0.0				Incremental Change
		-1.5	-1.5	-1.5				Cumulative Change
<b>2+50</b>	39.0	38.1	37.8	37.5				Baseline Offset (In Feet)
		-1.0	-0.3	-0.3				Incremental Change
		-1.0	-1.2	-1.5				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>2+55</b>	39.9	39.3	38.2	38.2				Baseline Offset (In Feet)
		-0.5	-1.1	0.0				Incremental Change
		-0.5	-1.6	-1.6				Cumulative Change
<b>2+60</b>	40.7	40.7	40.7	40.7				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>2+65</b>	40.9	40.9	40.9	40.6				Baseline Offset (In Feet)
		0.0	0.0	-0.4				Incremental Change
		0.0	0.0	-0.4				Cumulative Change
<b>2+70</b>	41.1	41.1	41.1	40.3				Baseline Offset (In Feet)
		0.0	0.0	-0.8				Incremental Change
		0.0	0.0	-0.8				Cumulative Change
<b>2+75</b>	41.3	41.3	41.3	39.9				Baseline Offset (In Feet)
		0.0	0.0	-1.4				Incremental Change
		0.0	0.0	-1.4				Cumulative Change
<b>2+80</b>	41.5	41.5	41.5	39.4				Baseline Offset (In Feet)
		0.0	0.0	-2.2				Incremental Change
		0.0	0.0	-2.2				Cumulative Change
<b>2+85</b>	41.7	41.7	41.7	39.6				Baseline Offset (In Feet)
		0.0	0.0	-2.1				Incremental Change
		0.0	0.0	-2.1				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>2+90</b>	43.5	43.5	41.5	40.8				Baseline Offset (In Feet)
		0.0	-1.9	-0.7				Incremental Change
		0.0	-1.9	-2.6				Cumulative Change
<b>3+00</b>	47.0	47.0	46.1	46.1				Baseline Offset (In Feet)
		0.0	-0.9	0.0				Incremental Change
		0.0	-0.9	-0.9				Cumulative Change
<b>3+10</b>	47.1	43.6	43.6	43.6				Baseline Offset (In Feet)
		-3.5	0.0	0.0				Incremental Change
		-3.5	-3.5	-3.5				Cumulative Change
<b>3+15</b>	47.4	42.9	42.9	42.9				Baseline Offset (In Feet)
		-4.5	0.0	0.0				Incremental Change
		-4.5	-4.5	-4.5				Cumulative Change
<b>3+25</b>	47.3	44.6	44.6	44.4				Baseline Offset (In Feet)
		-2.7	0.0	-0.2				Incremental Change
		-2.7	-2.7	-2.9				Cumulative Change
<b>3+30</b>	45.4	44.0	44.0	43.2				Baseline Offset (In Feet)
		-1.4	0.0	-0.9				Incremental Change
		-1.4	-1.4	-2.2				Cumulative Change
<b>3+35</b>	43.4	43.4	43.4	43.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>3+40</b>	44.8	44.8	44.0	44.0				Baseline Offset (In Feet)
		0.0	-0.8	0.0				Incremental Change
		0.0	-0.8	-0.8				Cumulative Change
<b>3+45</b>	45.2	45.2	44.2	44.2				Baseline Offset (In Feet)
		0.0	-1.0	0.0				Incremental Change
		0.0	-1.0	-1.0				Cumulative Change
<b>3+50</b>	44.9	44.9	44.2	44.2				Baseline Offset (In Feet)
		0.0	-0.6	0.0				Incremental Change
		0.0	-0.6	-0.6				Cumulative Change
<b>3+60</b>	44.1	44.1	44.1	44.1				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>3+70</b>	44.7	44.7	42.8	41.8				Baseline Offset (In Feet)
		0.0	-1.9	-1.1				Incremental Change
		0.0	-1.9	-2.9				Cumulative Change
<b>3+75</b>	23.6	23.6	23.6	23.6				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change

**Alpine CP 00  
HDD West Site  
Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations						Description	
	See Drawing CE-CP00-143 Rev 3 for Survey Baseline Location							
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	Future	Future	Future	Date
<b>3+85</b>	23.1	23.1	23.1	23.1				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>4+00</b>	28.4	28.4	28.4	28.4				Baseline Offset (In Feet)
		0.0	0.0	0.0				Incremental Change
		0.0	0.0	0.0				Cumulative Change
<b>4+10</b>	37.4	37.1	37.1	37.1				Baseline Offset (In Feet)
		-0.3	0.0	0.0				Incremental Change
		-0.3	-0.3	-0.3				Cumulative Change
<b>4+25</b>	45.9	42.2	42.2	42.2				Baseline Offset (In Feet)
		-3.7	0.0	0.0				Incremental Change
		-3.7	-3.7	-3.7				Cumulative Change
<b>4+30</b>	47.3	43.2	43.2	42.1				Baseline Offset (In Feet)
		-4.2	0.0	-1.1				Incremental Change
		-4.2	-4.2	-5.2				Cumulative Change
<b>4+35</b>	48.8	43.1	43.1	41.9				Baseline Offset (In Feet)
		-5.7	0.0	-1.3				Incremental Change
		-5.7	-5.7	-7.0				Cumulative Change
<b>4+40</b>	50.9	42.5	42.5	42.1				Baseline Offset (In Feet)
		-8.4	0.0	-0.4				Incremental Change
		-8.4	-8.4	-8.9				Cumulative Change

\*\*\*Note: Survey completed on 4/7/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.



**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>0+10</b>	N/A	N/A	N/A	N/A	N/A	N/A	-25.3	-25.3	-25.3	-25.3	Baseline Offset (In Feet)
								0.0	0.0	0.0	Incremental Change
								0.0	0.0	0.0	Cumulative Change
<b>0+20</b>	N/A	N/A	N/A	N/A	N/A	N/A	-32.1	-30.9	-30.9	-30.9	Baseline Offset (In Feet)
								-1.2	0.0	0.0	Incremental Change
								-1.2	-1.2	-1.2	Cumulative Change
<b>0+25</b>	N/A	N/A	N/A	N/A	N/A	N/A	-38.2	-38.2	-38.2	-38.2	Baseline Offset (In Feet)
								0.0	0.0	0.0	Incremental Change
								0.0	0.0	0.0	Cumulative Change
<b>0+30</b>	N/A	N/A	N/A	N/A	N/A	N/A	-41.1	-41.1	-41.1	-41.1	Baseline Offset (In Feet)
								0.0	0.0	0.0	Incremental Change
								0.0	0.0	0.0	Cumulative Change
<b>0+40</b>	N/A	N/A	N/A	N/A	N/A	N/A	-37.7	-37.7	-37.7	-37.7	Baseline Offset (In Feet)
								0.0	0.0	0.0	Incremental Change
								0.0	0.0	0.0	Cumulative Change
<b>0+50</b>	N/A	N/A	N/A	N/A	N/A	N/A	-30.3	-30.3	-30.3	-30.3	Baseline Offset (In Feet)
								0.0	0.0	0.0	Incremental Change
								0.0	0.0	0.0	Cumulative Change
<b>0+60</b>	N/A	N/A	N/A	N/A	N/A	N/A	-28.0	-27.9	-27.5	-27.5	Baseline Offset (In Feet)
								-0.1	-0.5	0.0	Incremental Change
								-0.1	-0.5	-0.5	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>0+65</b>	N/A	N/A	N/A	N/A	N/A	N/A	-39.8	-39.8	-23.9	-23.9	Baseline Offset (In Feet)
								0.0	-16.0	0.0	Incremental Change
								0.0	-16.0	-16.0	Cumulative Change
<b>0+70</b>	N/A	-32.4	N/A	-31.2	-31.2	-31.5	-27.7	-27.7	-20.0	-20.0	Baseline Offset (In Feet)
				-1.2	0.0	0.3	-3.8	0.0	-7.7	0.0	Incremental Change
				-1.2	-1.2	-0.9	-4.7	-4.7	-12.4	-12.4	Cumulative Change
<b>0+75</b>	N/A	-27.1	-27.0	-27.0	-27.1	-27.0	-27.2	-27.6	-21.1	-21.0	Baseline Offset (In Feet)
			-0.1	0.0	0.1	-0.1	0.2	0.4	-6.5	-0.1	Incremental Change
			-0.1	-0.1	0.0	-0.1	0.1	0.5	-6.0	-6.1	Cumulative Change
<b>0+80</b>	N/A	-26.4	N/A	-26.6	-26.5	-26.5	-27.5	-27.5	-22.4	-22.4	Baseline Offset (In Feet)
				0.2	-0.1	0.0	1.0	0.0	-5.1	0.0	Incremental Change
				0.2	0.1	0.0	1.1	1.1	-4.0	-4.0	Cumulative Change
<b>0+90</b>	N/A	-29.2	N/A	-28.9	-29.2	-29.2	-29.2	-29.2	-29.2	-27.8	Baseline Offset (In Feet)
				-0.3	0.3	0.0	0.0	0.0	0.0	-1.5	Incremental Change
				-0.3	0.0	0.0	0.0	0.0	0.0	-1.5	Cumulative Change
<b>1+00</b>	N/A	-26.7	-26.9	-26.3	-26.8	-26.7	-26.7	-26.7	-26.7	-26.7	Baseline Offset (In Feet)
			0.2	-0.6	0.5	-0.1	0.0	0.0	0.0	0.0	Incremental Change
			0.2	-0.4	0.1	0.0	0.0	0.0	0.0	0.0	Cumulative Change
<b>1+10</b>	N/A	-25.6	N/A	-25.3	-25.4	-25.6	-25.6	-25.6	-23.9	-23.9	Baseline Offset (In Feet)
				-0.3	0.1	0.2	0.0	0.0	-1.7	0.0	Incremental Change
				-0.3	-0.2	0.0	0.0	0.0	-1.7	-1.7	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>1+15</b>	N/A	-27.6	N/A	-27.5	-27.6	-27.6	-24.5	-24.5	-20.8	-20.8	Baseline Offset (In Feet)
				-0.1	0.1	0.0	-3.1	0.0	-3.7	0.0	Incremental Change
				-0.1	0.0	0.0	-3.1	-3.1	-6.8	-6.8	Cumulative Change
<b>1+20</b>	N/A	-35.5	N/A	-30.5	-30.5	-22.1	-22.6	-22.6	-21.4	-21.4	Baseline Offset (In Feet)
				-5.0	0.0	-8.4	0.4	0.0	-1.2	0.0	Incremental Change
				-5.0	-5.0	-13.4	-12.9	-12.9	-14.0	-14.1	Cumulative Change
<b>1+25</b>	-38.4	-38.7	-39.1	-33.0	-32.8	-22.5	-23.0	-22.9	-18.1	-18.1	Baseline Offset (In Feet)
			0.4	-6.1	-0.2	-10.3	0.5	-0.1	-4.8	0.0	Incremental Change
			0.4	-5.7	-5.9	-16.2	-15.7	-15.8	-20.6	-20.6	Cumulative Change
<b>1+30</b>	N/A	-37.8	N/A	-36.2	-36.1	-27.7	-28.0	-27.9	-17.3	-17.3	Baseline Offset (In Feet)
				-1.6	-0.1	-8.4	0.2	-0.1	-10.6	0.0	Incremental Change
				-1.6	-1.7	-10.1	-9.9	-9.9	-20.5	-20.5	Cumulative Change
<b>1+40</b>	N/A	-33.8	N/A	-35.0	-34.9	-21.3	-20.6	-20.6	-17.1	-17.1	Baseline Offset (In Feet)
				1.2	-0.1	-13.6	-0.8	0.0	-3.5	0.0	Incremental Change
				1.2	1.1	-12.5	-13.3	-13.2	-16.7	-16.7	Cumulative Change
<b>1+45</b>	N/A	-28.2	N/A	-29.5	-28.8	18.6	-16.5	-16.5	-16.1	-16.1	Baseline Offset (In Feet)
				1.3	-0.7	-47.4	35.0	0.0	-0.4	0.0	Incremental Change
				1.3	0.6	-46.8	-11.7	-11.7	-12.1	-12.1	Cumulative Change
<b>1+50</b>	-18.4	-23.7	-23.8	-23.9	-23.8	-20.7	-15.6	-15.6	-13.8	-13.8	Baseline Offset (In Feet)
			0.1	0.1	-0.1	-3.1	-5.1	0.0	-1.8	0.0	Incremental Change
			0.1	0.2	0.1	-3.0	-8.1	-8.1	-9.9	-9.9	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>1+55</b>	N/A	-22.2	N/A	-21.9	-22.2	-21.8	-14.5	-14.5	-11.5	-11.5	Baseline Offset (In Feet)
				-0.2	0.3	-0.4	-7.3	0.0	-3.0	0.0	Incremental Change
				-0.2	0.1	-0.4	-7.7	-7.7	-10.7	-10.7	Cumulative Change
<b>1+60</b>	-17.1	-21.6	-21.8	-21.7	-21.6	-21.4	-15.1	-14.9	-9.0	-9.0	Baseline Offset (In Feet)
			0.2	-0.1	-0.1	-0.2	-6.3	-0.2	-5.9	0.0	Incremental Change
			0.2	0.1	0.0	-0.2	-6.5	-6.7	-12.6	-12.6	Cumulative Change
<b>1+65</b>	N/A	-26.2	N/A	-26.3	-26.5	-25.8	-24.9	-24.6	-11.4	-9.7	Baseline Offset (In Feet)
				0.0	0.2	-0.6	-1.0	-0.2	-13.3	-1.7	Incremental Change
				0.0	0.2	-0.4	-1.4	-1.6	-14.9	-16.6	Cumulative Change
<b>1+70</b>	N/A	-30.1	N/A	-30.1	-30.1	-29.6	-29.7	-29.7	-15.7	-13.0	Baseline Offset (In Feet)
				0.1	0.0	-0.5	0.2	0.0	-14.1	-2.7	Incremental Change
				0.1	0.0	-0.5	-0.3	-0.3	-14.4	-17.1	Cumulative Change
<b>1+75</b>	-30.4	-30.7	-31.1	-30.7	-30.5	-30.0	-29.6	-29.6	-16.1	-14.4	Baseline Offset (In Feet)
			0.4	-0.4	-0.2	-0.5	-0.4	0.0	-13.5	-1.7	Incremental Change
			0.4	0.0	-0.2	-0.7	-1.1	-1.1	-14.6	-16.3	Cumulative Change
<b>1+80</b>	N/A	-30.2	N/A	-30.7	-29.4	-30.2	-24.6	-22.1	-13.9	-13.9	Baseline Offset (In Feet)
				0.5	-1.3	0.8	-5.7	-2.4	-8.3	0.0	Incremental Change
				0.5	-0.8	0.0	-5.7	-8.1	-16.4	-16.4	Cumulative Change
<b>1+85</b>	-27.1	-24.5	-24.4	-24.2	-24.5	-24.5	-20.5	-17.0	-12.7	-12.7	Baseline Offset (In Feet)
			-0.1	-0.2	0.3	0.0	-4.0	-3.5	-4.3	0.0	Incremental Change
			-0.1	-0.3	0.0	0.0	-4.0	-7.5	-11.8	-11.8	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>1+90</b>	N/A	-12.8	N/A	-21.4	-21.5	-21.6	-21.9	-19.5	-16.9	-16.9	Baseline Offset (In Feet)
				8.6	0.0	0.1	0.3	-2.4	-2.6	0.0	Incremental Change
				8.6	8.7	8.8	9.1	6.7	4.1	4.1	Cumulative Change
<b>1+95</b>	N/A	-27.6	N/A	-27.8	-28.5	-27.7	-27.7	-27.7	-27.7	-27.7	Baseline Offset (In Feet)
				0.2	0.7	-0.9	0.0	0.0	0.0	0.0	Incremental Change
				0.2	0.9	0.1	0.1	0.1	0.1	0.1	Cumulative Change
<b>2+00</b>	-32.6	-33.7	-33.8	-33.7	-33.4	-33.7	-27.8	-27.8	-27.8	-27.8	Baseline Offset (In Feet)
			0.1	-0.1	-0.3	0.3	-5.9	0.0	0.0	0.0	Incremental Change
			0.1	0.0	-0.3	0.0	-5.9	-5.9	-5.9	-5.9	Cumulative Change
<b>2+05</b>	N/A	-32.9	N/A	-32.7	-32.6	-32.5	-27.3	-27.3	-27.3	27.3	Baseline Offset (In Feet)
				-0.3	-0.1	-0.1	-5.2	0.0	0.0	0.0	Incremental Change
				-0.3	-0.4	-0.4	-5.6	-5.6	-5.6	-5.6	Cumulative Change
<b>2+10</b>	N/A	-33.7	N/A	-33.5	-33.5	-29.1	-26.0	-26.0	-26.0	-26.0	Baseline Offset (In Feet)
				-0.2	0.0	-4.4	-3.2	0.0	0.0	0.0	Incremental Change
				-0.2	-0.2	-4.6	-7.8	-7.8	-7.8	-7.7	Cumulative Change
<b>2+15</b>	-32.9	-34.9	-35.4	-34.5	-34.5	-28.8	-23.2	-23.2	-23.2	-23.2	Baseline Offset (In Feet)
			0.5	-0.9	0.0	-5.7	-5.6	0.0	0.0	0.0	Incremental Change
			0.5	-0.4	-0.4	-6.1	-11.7	-11.7	-11.7	-11.7	Cumulative Change
<b>2+20</b>	N/A	-34.4	N/A	-34.4	-34.9	-32.0	-21.0	-21.0	-21.0	-20.4	Baseline Offset (In Feet)
				0.0	0.5	-2.9	-11.0	0.0	0.0	-0.6	Incremental Change
				0.0	0.5	-2.4	-13.4	-13.4	-13.4	-14.0	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>2+25</b>	-30.0	-32.0	-31.5	-31.5	-31.2	-31.1	-18.4	-18.4	-8.0	-5.2	Baseline Offset (In Feet)
			-0.5	0.0	-0.3	-0.1	-12.7	0.0	-10.4	-2.9	Incremental Change
			-0.5	-0.5	-0.8	-0.9	-13.6	-13.6	-24.0	-26.8	Cumulative Change
<b>2+30</b>	-22.0	-23.4	-22.6	-23.5	-23.2	-19.7	-13.7	-13.7	2.4	2.4	Baseline Offset (In Feet)
			-0.8	0.9	-0.3	-3.5	-6.0	0.0	-16.1	0.0	Incremental Change
			-0.8	0.1	-0.2	-3.7	-9.7	-9.7	-25.8	-25.8	Cumulative Change
<b>2+35</b>	-21.7	-20.6	-20.1	-20.6	-18.8	-11.7	-8.9	-7.0	-7.0	-7.1	Baseline Offset (In Feet)
			-0.5	0.5	-1.8	-7.1	-2.8	-1.9	0.0	0.1	Incremental Change
			-0.5	0.0	-1.8	-8.9	-11.7	-13.6	-13.6	-13.5	Cumulative Change
<b>2+40</b>	N/A	-19.2	N/A	-20.1	-15.9	-12.0	-8.3	-8.3	-8.3	-8.3	Baseline Offset (In Feet)
				0.9	-4.2	-3.9	-3.6	0.0	0.0	0.0	Incremental Change
				0.9	-3.3	-7.2	-10.8	-10.8	-10.8	-10.8	Cumulative Change
<b>2+50</b>	-21.0	-21.8	-21.3	-21.0	-21.0	-20.7	-14.7	-14.6	-14.6	-14.6	Baseline Offset (In Feet)
			-0.5	-0.3	0.0	-0.3	-6.0	-0.1	0.0	0.0	Incremental Change
			-0.5	-0.8	-0.8	-1.1	-7.1	-7.2	-7.2	-7.2	Cumulative Change
<b>2+60</b>	-26.1	-26.5	-26.7	-26.1	-26.0	-25.9	-20.5	-20.6	-20.6	-20.5	Baseline Offset (In Feet)
			0.2	-0.6	-0.1	-0.1	-5.4	0.1	0.0	-0.1	Incremental Change
			0.2	-0.4	-0.5	-0.6	-6.0	-5.9	-5.9	-6.0	Cumulative Change
<b>2+70</b>	-28.9	-30.4	-30.9	-30.4	-30.0	-30.6	-25.5	-25.4	-20.8	-20.8	Baseline Offset (In Feet)
			0.5	-0.5	-0.4	0.6	-5.1	-0.1	-4.6	0.0	Incremental Change
			0.5	0.0	-0.4	0.2	-4.9	-5.0	-9.6	-9.6	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>2+75</b>	-28.4	-31.4	-31.4	-31.3	-30.7	-31.2	-26.1	-26.0	-20.9	-20.9	Baseline Offset (In Feet)
			0.0	-0.1	-0.6	0.5	-5.1	-0.1	-5.1	0.0	Incremental Change
			0.0	-0.1	-0.7	-0.2	-5.3	-5.4	-10.5	-10.5	Cumulative Change
<b>2+85</b>	-27.5	-26.9	-27.1	-26.9	-26.8	-26.8	-22.8	-22.8	-22.8	-22.8	Baseline Offset (In Feet)
			0.2	-0.2	-0.1	0.0	-4.0	0.0	0.0	0.0	Incremental Change
			0.2	0.0	-0.1	-0.1	-4.1	-4.1	-4.1	-4.1	Cumulative Change
<b>2+90</b>	-24.5	-24.5	-24.8	-24.2	-24.5	-24.5	-21.4	-21.4	-21.4	-21.3	Baseline Offset (In Feet)
			0.3	-0.6	0.3	0.0	-3.1	0.0	0.0	-0.1	Incremental Change
			0.3	-0.3	0.0	0.0	-3.1	-3.1	-3.1	-3.2	Cumulative Change
<b>3+00</b>	-5.5	-9.1	-9.2	-8.9	-8.7	-9.0	-9.0	-8.9	-6.0	-6.0	Baseline Offset (In Feet)
			0.1	-0.3	-0.2	0.3	0.0	-0.1	-2.9	0.0	Incremental Change
			0.1	-0.2	-0.4	-0.1	-0.1	-0.2	-3.1	-3.1	Cumulative Change
<b>3+10</b>	N/A	-11.4	N/A	-11.3	-11.0	-11.4	-11.4	-11.4	-11.4	-11.4	Baseline Offset (In Feet)
				-0.1	-0.3	0.4	0.0	0.0	0.0	0.0	Incremental Change
				-0.1	-0.4	-0.1	-0.1	-0.1	-0.1	-0.1	Cumulative Change
<b>3+15</b>	N/A	-16.2	N/A	-16.2	-16.2	-16.1	-16.0	-15.9	-15.9	-15.9	Baseline Offset (In Feet)
				0.1	-0.1	0.0	-0.2	-0.1	0.0	0.0	Incremental Change
				0.1	0.0	0.0	-0.2	-0.3	-0.3	-0.3	Cumulative Change
<b>3+20</b>	N/A	-15.9	N/A	-15.6	-15.8	-15.9	-11.9	-11.9	-11.9	-11.8	Baseline Offset (In Feet)
				-0.4	0.2	0.1	-4.1	0.0	0.0	0.0	Incremental Change
				-0.4	-0.1	0.0	-4.1	-4.1	-4.1	-4.1	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>3+25</b>	-18.5	-17.1	-17.7	-17.3	-17.3	-16.6	-11.4	-11.1	-11.1	-11.1	Baseline Offset (In Feet)
			0.6	-0.4	0.0	-0.7	-5.2	-0.3	0.0	0.0	Incremental Change
			0.6	0.2	0.2	-0.5	-5.7	-6.0	-6.0	-6.0	Cumulative Change
<b>3+30</b>	-34.3	-35.4	-35.7	-35.3	-35.0	-35.4	-23.4	-13.9	-11.5	-11.5	Baseline Offset (In Feet)
			0.3	-0.4	-0.3	0.4	-12.0	-9.5	-2.4	0.0	Incremental Change
			0.3	-0.1	-0.4	0.0	-12.0	-21.5	-23.9	-23.9	Cumulative Change
<b>3+35</b>	-35.4	-35.7	-35.7	-35.3	-35.0	-35.0	-23.8	-23.5	-23.5	-23.5	Baseline Offset (In Feet)
			0.0	-0.4	-0.3	0.0	-11.2	-0.3	0.0	0.0	Incremental Change
			0.0	-0.4	-0.7	-0.7	-11.9	-12.2	-12.2	-12.2	Cumulative Change
<b>3+40</b>	-33.8	-34.2	-34.1	-34.0	-33.9	-33.9	-25.4	-25.4	-25.4	-25.4	Baseline Offset (In Feet)
			-0.1	-0.1	-0.1	0.0	-8.5	0.0	0.0	0.0	Incremental Change
			-0.1	-0.2	-0.3	-0.3	-8.8	-8.8	-8.8	-8.8	Cumulative Change
<b>3+45</b>	-32.0	-32.4	-32.5	-32.6	-32.4	-32.5	-27.3	-27.4	-27.4	-26.4	Baseline Offset (In Feet)
			0.1	0.1	-0.2	0.1	-5.2	0.1	0.0	-1.0	Incremental Change
			0.1	0.2	0.0	0.1	-5.1	-5.0	-5.0	-6.0	Cumulative Change
<b>3+52</b>	-9.7	-10.1	-10.2	-10.4	-10.4	-10.1	-9.9	-8.4	-8.4	-8.4	Baseline Offset (In Feet)
			0.1	0.2	0.0	-0.3	-0.2	-1.5	0.0	0.0	Incremental Change
			0.1	0.3	0.3	0.0	-0.2	-1.7	-1.7	-1.7	Cumulative Change
<b>3+60</b>	N/A	-11.9	N/A	-10.8	-12.4	-11.5	-11.3	-11.2	-11.2	-10.8	Baseline Offset (In Feet)
				-1.1	1.7	-0.9	-0.2	-0.1	0.0	-0.4	Incremental Change
				-1.1	0.5	-0.4	-0.6	-0.7	-0.7	-1.1	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>3+65</b>	N/A	-18.8	N/A	-18.5	-18.9	-18.7	-18.7	-18.7	-18.7	-18.4	Baseline Offset (In Feet)
				-0.3	0.4	-0.2	0.0	0.0	0.0	-0.3	Incremental Change
				-0.3	0.1	-0.1	-0.1	-0.1	-0.1	-0.4	Cumulative Change
<b>3+70</b>	N/A	-23.9	N/A	-24.1	-23.8	-24.2	-24.0	-24.0	-24.0	-24.1	Baseline Offset (In Feet)
				0.2	-0.3	0.4	-0.1	0.0	0.0	0.1	Incremental Change
				0.2	-0.2	0.2	0.1	0.0	0.0	0.2	Cumulative Change
<b>3+75</b>	N/A	-23.2	-23.3	-23.4	-23.3	-23.3	-20.2	-20.2	-20.2	-20.2	Baseline Offset (In Feet)
			0.1	0.1	-0.1	0.0	-3.1	0.0	0.0	0.0	Incremental Change
			0.1	0.2	0.1	0.1	-3.0	-3.0	-3.0	-3.0	Cumulative Change
<b>3+80</b>	N/A	-19.6	N/A	-19.0	-19.3	-19.7	-12.9	-12.9	-12.9	-11.6	Baseline Offset (In Feet)
				-0.6	0.3	0.4	-6.8	0.0	0.0	-1.3	Incremental Change
				-0.6	-0.4	0.1	-6.7	-6.7	-6.7	-8.0	Cumulative Change
<b>3+85</b>	N/A	-19.9	N/A	-19.9	-19.5	-19.3	-13.2	-12.3	-12.3	-12.0	Baseline Offset (In Feet)
				0.0	-0.5	-0.1	-6.1	-1.0	0.0	-0.3	Incremental Change
				0.0	-0.4	-0.6	-6.7	-7.7	-7.7	-7.9	Cumulative Change
<b>3+95</b>	N/A	-26.1	N/A	-25.7	-25.9	-26.3	-22.4	-22.4	-22.4	-21.9	Baseline Offset (In Feet)
				-0.4	0.2	0.4	-3.9	0.0	0.0	-0.5	Incremental Change
				-0.4	-0.2	0.2	-3.7	-3.8	-3.8	-4.2	Cumulative Change
<b>4+00</b>	N/A	-29.9	-30.0	-29.5	-29.7	-30.2	-21.2	-21.2	-21.2	-21.9	Baseline Offset (In Feet)
			0.1	-0.5	0.2	0.5	-9.0	0.0	0.0	0.7	Incremental Change
			0.1	-0.4	-0.2	0.3	-8.7	-8.7	-8.7	-8.0	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-134 Rev 3 for Survey Baseline Stations										
	7/29/2001	8/7/2001	8/15/2001	8/23/2001	9/8/2001	7/8/2002	9/12/2002	7/9/2003	9/8/2003	6/19/2004	Date
<b>4+05</b>	N/A	-29.8	N/A	-29.4	-29.4	-29.9	-19.5	-19.5	-19.5	-19.5	Baseline Offset (In Feet)
				-0.4	0.0	0.4	-10.4	0.0	0.0	0.0	Incremental Change
				-0.4	-0.4	0.1	-10.3	-10.3	-10.3	-10.3	Cumulative Change
<b>4+15</b>	N/A	N/A	N/A	-30.7	-30.6	-27.3	2.7	2.6	2.6	2.6	Baseline Offset (In Feet)
					-0.1	-3.4	-29.9	0.0	0.0	0.0	Incremental Change
					-0.1	-3.4	-33.4	-33.3	-33.3	-33.3	Cumulative Change
<b>4+25</b>	N/A	N/A	N/A	-8.6	-5.4	-1.0	5.1	5.1	5.1	5.1	Baseline Offset (In Feet)
					-3.2	-4.4	-6.1	0.0	0.0	0.0	Incremental Change
					-3.2	-7.6	-13.7	-13.7	-13.7	-13.7	Cumulative Change
<b>4+35</b>	N/A	N/A	N/A	-5.6	-5.4	-0.7	4.4	4.5	4.5	4.5	Baseline Offset (In Feet)
					-0.2	-4.6	-5.1	0.0	0.0	0.0	Incremental Change
					-0.2	-4.8	-10.0	-10.0	-10.0	-10.0	Cumulative Change
<b>4+45</b>	N/A	N/A	N/A	N/A	N/A	-5.1	1.3	1.2	1.2	1.9	Baseline Offset (In Feet)
							-6.4	0.1	0.0	-0.7	Incremental Change
							-6.4	-6.3	-6.3	-7.0	Cumulative Change
<b>4+50</b>	N/A	N/A	N/A	N/A	N/A	-6.3	1.9	1.8	4.1	4.1	Baseline Offset (In Feet)
							-8.2	0.1	-2.3	0.0	Incremental Change
							-8.1	-10.4	-10.4	-10.4	Cumulative Change

**\*\*\*Note:** Field Survey dated 8/7/01 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section D								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+00</b>	<b>Tundra</b>	17.6	17.6	17.6	17.6	17.3	17.5	17.5	17.5	Elevation (In Feet)
			0.0	0.0	0.0	-0.3	0.2	0.0	0.0	Incremental Change
			0.0	0.0	0.0	-0.3	-0.1	-0.1	-0.1	Cumulative Change
<b>0+10</b>	<b>Tundra</b>		17.7	17.9	17.9	17.6	17.6	17.6	17.6	Elevation (In Feet)
				0.2	0.0	-0.3	0.0	0.0	0.0	Incremental Change
				0.2	0.2	-0.1	-0.1	-0.1	-0.1	Cumulative Change
<b>0+20</b>	<b>Gradebreak</b>		17.4	17.6	17.5	16.6	NA	NA	NA	Elevation (In Feet)
				0.2	-0.1	-0.9				Incremental Change
				0.2	0.1	-0.8				Cumulative Change
<b>0+22</b>	<b>Top Bank</b>		16.8	16.7	16.8	16.6	16.8	16.8	16.8	Elevation (In Feet)
				-0.1	0.1	-0.2	0.2	0.0	0.0	Incremental Change
				-0.1	0.0	-0.2	0.0	0.0	0.0	Cumulative Change
<b>0+24</b>	<b>Toe Bank</b>	14.7	14.6	14.7	14.8	14.3	14.8	14.8	14.8	Elevation (In Feet)
			-0.1	0.1	0.1	-0.5	0.5	0.0	0.0	Incremental Change
			-0.1	0.0	0.1	-0.4	0.1	0.1	0.1	Cumulative Change
<b>0+25</b>	<b>CL Swale</b>		14.1	14.2	14.1	13.7	14.1	14.1	14.1	Elevation (In Feet)
				0.1	-0.1	-0.4	0.4	0.0	0.0	Incremental Change
				0.1	0.0	-0.4	0.0	0.0	0.0	Cumulative Change
<b>0+27</b>	<b>Toe Bank</b>	14.4	14.6	14.6	14.3	14.0	14.2	14.2	14.2	Elevation (In Feet)
			0.2	0.0	-0.3	-0.3	0.2	0.0	0.0	Incremental Change
			0.2	0.2	-0.1	-0.4	-0.2	-0.2	-0.2	Cumulative Change
<b>0+29</b>	<b>Top Bank</b>	17.3	17.3	17.4	17.1	16.9	17.1	17.1	17.0	Elevation (In Feet)
				0.1	-0.3	-0.2	0.2	0.0	-0.1	Incremental Change
				0.1	-0.2	-0.4	-0.2	-0.2	-0.3	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section D								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+38</b>	<b>Tundra</b>		17.6	17.7	17.5	17.3	17.3	17.3	17.2	Elevation (In Feet)
				0.1	-0.2	-0.2	0.0	0.0	-0.1	Incremental Change
				0.1	-0.1	-0.3	-0.3	-0.3	-0.4	Cumulative Change
<b>0+50</b>	<b>Tundra</b>	17.7	17.6	17.6	17.5	17.3	16.8	16.8	17.4	Elevation (In Feet)
			-0.1	0.0	-0.1	-0.2	-0.5	0.0	0.6	Incremental Change
			-0.1	-0.1	-0.2	-0.4	-0.9	-0.9	-0.3	Cumulative Change

\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section B								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+00</b>	<b>Tundra</b>	17.5	17.6	17.6	17.2	17.2	17.4	17.4	17.5	Elevation (In Feet)
			0.1	0.0	-0.4	0.0	0.2	0.0	0.1	Incremental Change
			0.1	0.1	-0.3	-0.3	-0.1	-0.1	0.0	Cumulative Change
<b>0+10</b>	<b>Tundra</b>		17.9	18.0	17.9	17.7	17.7	17.7	17.7	Elevation (In Feet)
				0.1	-0.1	-0.2	0.0	0.0	0.0	Incremental Change
				0.1	0.0	-0.2	-0.2	-0.2	-0.2	Cumulative Change
<b>0+23</b>	<b>Tundra</b>	17.5	17.6	17.6	17.3	17.3	17.4	17.4	17.3	Elevation (In Feet)
			0.1	0.0	-0.3	0.0	0.1	0.0	-0.1	Incremental Change
			0.1	0.1	-0.2	-0.2	-0.1	-0.1	-0.2	Cumulative Change
<b>0+25</b>	<b>Top of Bank</b>	17.2	17.0	17.2	17.0	16.0	16.0	16.0	15.9	Elevation (In Feet)
			-0.2	0.2	-0.2	-1.0	0.0	0.0	-0.1	Incremental Change
			-0.2	0.0	-0.2	-1.2	-1.2	-1.2	-1.3	Cumulative Change
<b>0+27</b>	<b>Gradebreak</b>		16.7	16.6	16.5	16.5	16.5	16.5	16.4	Elevation (In Feet)
				-0.1	-0.1	0.0	0.0	0.0	-0.1	Incremental Change
				-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	Cumulative Change
<b>0+32</b>	<b>Toe Bank</b>	14.2	14.5	14.4	14.6	14.1	14.5	14.5	14.5	Elevation (In Feet)
			0.3	-0.1	0.2	-0.5	0.4	0.0	0.0	Incremental Change
			0.3	0.2	0.4	-0.1	0.3	0.3	0.3	Cumulative Change
<b>0+35</b>	<b>CL Swale</b>		14.4	14.3	14.2	13.7	14.2	14.2	14.2	Elevation (In Feet)
				-0.1	-0.1	-0.5	0.5	0.0	0.0	Incremental Change
				-0.1	-0.2	-0.7	-0.2	-0.2	-0.2	Cumulative Change
<b>0+37</b>	<b>Toe Bank</b>	13.9	13.8	14.2	13.7	13.5	14.4	14.4	13.7	Elevation (In Feet)
			-0.1	0.4	-0.5	-0.2	0.9	0.0	-0.7	Incremental Change
			-0.1	0.3	-0.2	-0.4	0.5	0.5	-0.2	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section B								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+38</b>	<b>Gradebreak</b>		15.2		15.0	14.9	14.9	14.9	14.9	Elevation (In Feet)
					-0.2	-0.1	0.0	0.0	0.0	Incremental Change
					-0.2	-0.3	-0.3	-0.3	-0.3	Cumulative Change
<b>0+40</b>	<b>Gradebreak</b>		14.5		14.2	14.0	15.4	15.4	15.4	Elevation (In Feet)
					-0.3	-0.2	1.4	0.0	0.0	Incremental Change
					-0.3	-0.5	0.9	0.9	0.9	Cumulative Change
<b>0+42</b>	<b>Gradebreak</b>		15.8	16.1	15.6	15.6	15.8	15.8	15.8	Elevation (In Feet)
				0.3	-0.5	0.0	0.2	0.0	0.0	Incremental Change
				0.3	-0.2	-0.2	0.0	0.0	0.0	Cumulative Change
<b>0+49</b>	<b>Gradebreak</b>	16.2	16.2	16.2	16.2	16.0	16.0	16.0	16.0	Elevation (In Feet)
			0.0	0.0	0.0	-0.2	0.0	0.0	0.0	Incremental Change
			0.0	0.0	0.0	-0.2	-0.2	-0.2	-0.2	Cumulative Change
<b>0+52</b>	<b>Top Bank</b>	17.3	17.7	17.6	17.8	17.6	17.7	17.7	17.6	Elevation (In Feet)
			0.4	-0.1	0.2	-0.2	0.1	0.0	-0.1	Incremental Change
			0.4	0.3	0.5	0.3	0.4	0.4	0.3	Cumulative Change
<b>0+60</b>	<b>Tundra</b>	17.8	17.8	17.8	17.6	17.7	17.7	17.7	17.6	Elevation (In Feet)
			0.0	0.0	-0.2	0.1	0.0	0.0	-0.1	Incremental Change
			0.0	0.0	-0.2	-0.1	-0.1	-0.1	-0.2	Cumulative Change

\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section C								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+00</b>	<b>Tundra</b>	16.9	16.9	16.9	16.9	16.8	16.8	16.8	16.7	Elevation (In Feet)
			0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	Incremental Change
			0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2	Cumulative Change
<b>0+13</b>	<b>Tundra</b>		16.8	16.7	16.7	16.6	16.7	16.7	16.6	Elevation (In Feet)
				-0.1	0.0	-0.1	0.1	0.0	-0.1	Incremental Change
				-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	Cumulative Change
<b>0+27</b>	<b>Top Bank</b>	17.0	17.0	16.8	16.8	16.8	16.8	16.8	16.8	Elevation (In Feet)
			0.0	-0.2	0.0	0.0	0.0	0.0	0.0	Incremental Change
			0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	Cumulative Change
<b>0+29</b>	<b>Toe Bank</b>	12.8	12.8	12.9	12.5	12.4	13.2	13.2	13.5	Elevation (In Feet)
			0.0	0.1	-0.4	-0.1	0.8	0.0	0.3	Incremental Change
			0.0	0.1	-0.3	-0.4	0.4	0.4	0.7	Cumulative Change
<b>0+31</b>	<b>Toe Bank</b>	13.9	13.6	13.9	13.6	13.4	13.6	13.6	13.5	Elevation (In Feet)
			-0.3	0.3	-0.3	-0.2	0.2	0.0	-0.1	Incremental Change
			-0.3	0.0	-0.3	-0.5	-0.3	-0.3	-0.4	Cumulative Change
<b>0+32</b>	<b>Gradebreak</b>	16.7	N/A	16.7	16.6	N/A	16.7	16.7	16.6	Elevation (In Feet)
				0.0	-0.1		0.1	0.0	-0.1	Incremental Change
				0.0	-0.1		0.0	0.0	-0.1	Cumulative Change
<b>0+33</b>	<b>Top Bank</b>	17.3	17.5	17.5	17.1	17.2	17.2	17.2	17.1	Elevation (In Feet)
			0.2	0.0	-0.4	0.1	0.0	0.0	-0.1	Incremental Change
			0.2	0.2	-0.2	-0.1	-0.1	-0.1	-0.2	Cumulative Change
<b>0+42</b>	<b>Tundra</b>		17.0	17.1	17.0	16.9	16.9	16.9	17.0	Elevation (In Feet)
				0.1	-0.1	-0.1	0.0	0.0	0.1	Incremental Change
				0.1	0.0	-0.1	-0.1	-0.1	0.0	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section C								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+50</b>	<b>Tundra</b>	17.2	17.1	17.2	17.1	17.0	17.2	17.2	17.1	Elevation (In Feet)
			-0.1	0.1	-0.1	-0.1	0.2	0.0	-0.1	Incremental Change
			-0.1	0.0	-0.1	-0.2	0.0	0.0	-0.1	Cumulative Change
<b>0+60</b>	<b>Tundra</b>	N/A	N/A	N/A	17.8	N/A	N/A	N/A	N/A	Elevation (In Feet)
										Incremental Change
										Cumulative Change

\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section D								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+00</b>	<b>Tundra</b>	17.6	17.6	17.6	17.6	17.3	17.5	17.5	17.5	Elevation (In Feet)
			0.0	0.0	0.0	-0.3	0.2	0.0	0.0	Incremental Change
			0.0	0.0	0.0	-0.3	-0.1	-0.1	-0.1	Cumulative Change
<b>0+10</b>	<b>Tundra</b>		17.7	17.9	17.9	17.6	17.6	17.6	17.6	Elevation (In Feet)
				0.2	0.0	-0.3	0.0	0.0	0.0	Incremental Change
				0.2	0.2	-0.1	-0.1	-0.1	-0.1	Cumulative Change
<b>0+20</b>	<b>Gradebreak</b>		17.4	17.6	17.5	16.6	NA	NA	NA	Elevation (In Feet)
				0.2	-0.1	-0.9				Incremental Change
				0.2	0.1	-0.8				Cumulative Change
<b>0+22</b>	<b>Top Bank</b>		16.8	16.7	16.8	16.6	16.8	16.8	16.8	Elevation (In Feet)
				-0.1	0.1	-0.2	0.2	0.0	0.0	Incremental Change
				-0.1	0.0	-0.2	0.0	0.0	0.0	Cumulative Change
<b>0+24</b>	<b>Toe Bank</b>	14.7	14.6	14.7	14.8	14.3	14.8	14.8	14.8	Elevation (In Feet)
			-0.1	0.1	0.1	-0.5	0.5	0.0	0.0	Incremental Change
			-0.1	0.0	0.1	-0.4	0.1	0.1	0.1	Cumulative Change
<b>0+25</b>	<b>CL Swale</b>		14.1	14.2	14.1	13.7	14.1	14.1	14.1	Elevation (In Feet)
				0.1	-0.1	-0.4	0.4	0.0	0.0	Incremental Change
				0.1	0.0	-0.4	0.0	0.0	0.0	Cumulative Change
<b>0+27</b>	<b>Toe Bank</b>	14.4	14.6	14.6	14.3	14.0	14.2	14.2	14.2	Elevation (In Feet)
			0.2	0.0	-0.3	-0.3	0.2	0.0	0.0	Incremental Change
			0.2	0.2	-0.1	-0.4	-0.2	-0.2	-0.2	Cumulative Change
<b>0+29</b>	<b>Top Bank</b>	17.3	17.3	17.4	17.1	16.9	17.1	17.1	17.0	Elevation (In Feet)
				0.1	-0.3	-0.2	0.2	0.0	-0.1	Incremental Change
				0.1	-0.2	-0.4	-0.2	-0.2	-0.3	Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section D								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		8/15/2001	8/23/2001	9/8/2001	7/9/2002	9/14/2002	7/9/2003	9/8/2003	7/9/2004	Date
<b>0+38</b>	<b>Tundra</b>		17.6	17.7	17.5	17.3	17.3	17.3	17.2	Elevation (In Feet)
				0.1	-0.2	-0.2	0.0	0.0	-0.1	Incremental Change
				0.1	-0.1	-0.3	-0.3	-0.3	-0.4	Cumulative Change
<b>0+50</b>	<b>Tundra</b>	17.7	17.6	17.6	17.5	17.3	16.8	16.8	17.4	Elevation (In Feet)
			-0.1	0.0	-0.1	-0.2	-0.5	0.0	0.6	Incremental Change
			-0.1	-0.1	-0.2	-0.4	-0.9	-0.9	-0.3	Cumulative Change

\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section E						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
0+00	Tundra	17.5	17.5					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+9	Tundra	17.3	17.3					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+12	Gradebreak	17.8	17.8					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+20	Top Bank	17.3	17.3					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+21	Toe Bank	16.5	16.5					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+23	CL Swale	16.0	16.0					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+24	Toe Bank	16.2	16.4					Elevation (In Feet)
			0.2					Incremental Change
			0.2					Cumulative Change

**Alpine CP 00**  
**HDD East Site**  
**Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section E						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
<b>0+27</b>	<b>Top Bank</b>	17.3	17.4					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
<b>0+38</b>	<b>Tundra</b>	17.4	17.4					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
<b>0+49</b>	<b>Tundra</b>	17.4	17.4					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change

**\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.**

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section F						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
0+00	Tundra	17.9	17.9					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+10	Tundra	17.3	17.2					Elevation (In Feet)
			-0.1					Incremental Change
			-0.1					Cumulative Change
0+14	Gradebreak	18.0	18.0					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+20	Top Bank	17.5	17.5					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+21	Toe Bank	16.5	16.3					Elevation (In Feet)
			-0.2					Incremental Change
			-0.2					Cumulative Change
0+24	CL Swale	15.0	12.5					Elevation (In Feet)
			-2.5					Incremental Change
			-2.5					Cumulative Change
0+26	Toe Bank	16.1	12.5					Elevation (In Feet)
			-3.6					Incremental Change
			-3.6					Cumulative Change

**Alpine CP 00**  
**HDD East Site**  
**Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section F						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
<b>0+28</b>	<b>Top Bank</b>	17.8	17.9					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
<b>0+34</b>	<b>Gradebreak</b>	17.9	17.9					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
<b>0+43</b>	<b>Gradebreak</b>	17.2	17.3					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
<b>0+46</b>	<b>Gradebreak</b>	17.8	17.8					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
<b>0+52</b>	<b>Tundra</b>	17.8	17.9					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change

\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.

**Alpine CP 00**  
**HDD East Site**  
**Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section G						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
0+00	Tundra	17.1	17.3					Elevation (In Feet)
			0.2					Incremental Change
			0.2					Cumulative Change
0+09	Tundra	17.2	17.1					Elevation (In Feet)
			-0.1					Incremental Change
			-0.1					Cumulative Change
0+16	Gradebreak	17.9	17.9					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+22	Top Bank	17.6	17.7					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
0+24	Toe Bank	16.9	17.0					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
0+26	CL Swale	16.5	16.5					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+28	Toe Bank	16.8	16.7					Elevation (In Feet)
			-0.1					Incremental Change
			-0.1					Cumulative Change

**Alpine CP 00**  
**HDD East Site**  
**Subsidence Monitor - Seawater Line**

Baseline Station	Point Description	Subsidence Monitor - Cross-Section G						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
<b>0+30</b>	<b>Top Bank</b>	17.7	17.8					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
<b>0+37</b>	<b>Tundra</b>	17.6	17.6					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
<b>0+46</b>	<b>Tundra</b>	17.3	17.3					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change

**\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.**

**Alpine CP 00**  
**HDD East Site**  
**Subsidence Monitor - Seawater Line**

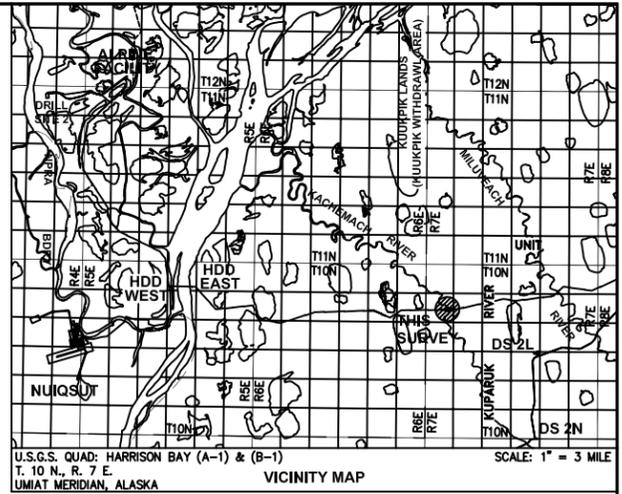
Baseline Station	Point Description	Subsidence Monitor - Cross-Section H						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
0+00	Tundra	17.0	16.8					Elevation (In Feet)
			-0.2					Incremental Change
			-0.2					Cumulative Change
0+09	Tundra	17.1	16.9					Elevation (In Feet)
			-0.2					Incremental Change
			-0.2					Cumulative Change
0+18	Gradebreak	17.8	17.8					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+24	Top Bank	17.3	17.4					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
0+25	Toe Bank	16.8	16.4					Elevation (In Feet)
			-0.4					Incremental Change
			-0.4					Cumulative Change
0+28	CL Swale	16.3	16.3					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
0+30	Toe Bank	16.6	16.6					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change

**Alpine CP 00  
 HDD East Site  
 Subsidence Monitor - Seawater Line**

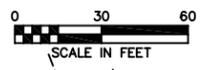
Baseline Station	Point Description	Subsidence Monitor - Cross-Section H						Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations						
		9/8/2003	7/9/2004	Future	Future	Future	Future	Date
<b>0+32</b>	<b>Top Bank</b>	17.6	17.7					Elevation (In Feet)
			0.1					Incremental Change
			0.1					Cumulative Change
<b>0+40</b>	<b>Gradebreak</b>	18.2	18.2					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
<b>0+42</b>	<b>Gradebreak</b>	17.7	17.7					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change
<b>0+50</b>	<b>Tundra</b>	17.2	17.2					Elevation (In Feet)
			0.0					Incremental Change
			0.0					Cumulative Change

**\*\*\*Note: Baseline Stationing Runs from North to South along Cross-Sections.**

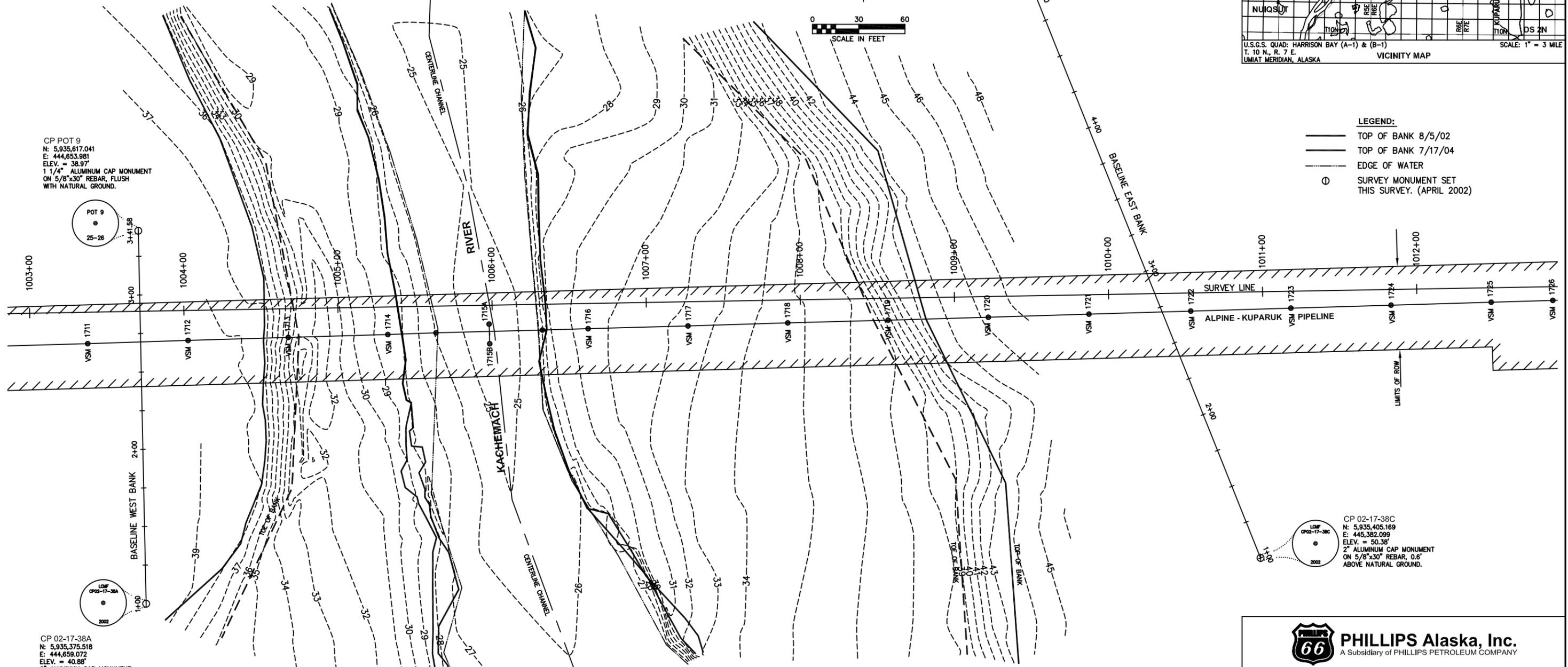
- NOTES:**
1. DATES OF SURVEY: APRIL 2002 - AUGUST 2002. JULY 11, 2003. JULY 17, 2004
  2. REFERENCE FIELD BOOKS: LCMF2002-17, PGS. 37-39, & 44; LCMF2002-23, PG. 22. LCMF2003-11, PGS. 15-17, LCMF2004-08, PGS 56-60.
  3. VERTICAL CONTROL IS BASED ON AS-BUILT TOP OF STEEL ELEVATIONS AT VSM 1712, 1713 AND 1724 PER DRAWING PD-CP00-109, SHEETS 31 AND 32.
  4. HORIZONTAL CONTROL IS BASED ON RECORD COORDINATES OF ALPINE PIPELINE PI 13A AND ALPINE MONUMENT No. 19. COORDINATES ARE ALASKA STATE PLANE, ZONE 4, NAD 27, IN FEET.
  5. SEE DOCUMENT RPT-EV-CP-00007 FOR STREAM BANK EROSION BASELINE SURVEY DATA.



CP 02-17-38D  
N: 5,935,771.077  
E: 445,235.464  
ELEV. = 51.78'  
2" ALUMINUM CAP MONUMENT  
ON 5/8"x30" REBAR, 0.5'  
ABOVE NATURAL GROUND.



- LEGEND:**
- TOP OF BANK 8/5/02
  - TOP OF BANK 7/17/04
  - EDGE OF WATER
  - SURVEY MONUMENT SET THIS SURVEY. (APRIL 2002)



CP POT 9  
N: 5,935,617.041  
E: 444,653.981  
ELEV. = 38.97'  
1 1/4" ALUMINUM CAP MONUMENT  
ON 5/8"x30" REBAR, FLUSH  
WITH NATURAL GROUND.

CP 02-17-38C  
N: 5,935,405.169  
E: 445,382.099  
ELEV. = 50.38'  
2" ALUMINUM CAP MONUMENT  
ON 5/8"x30" REBAR, 0.6'  
ABOVE NATURAL GROUND.

CP 02-17-38A  
N: 5,935,375.518  
E: 444,659.072  
ELEV. = 40.88'  
2" ALUMINUM CAP MONUMENT  
ON 5/8"x30" REBAR, 0.9'  
ABOVE NATURAL GROUND.



ALPINE MODULE: CP00 UNIT: CP

ALPINE PIPELINE KACHEMACH CROSSING  
STREAM BANK MONITOR  
ALPINE, ALASKA

**Kuukpik/LCMF**  
A subsidiary of The Phillips Petroleum Corporation  
Alpine Office (907) 670-4739  
Anchorage, Alaska (907) 273-1830  
Alpine Survey Office

REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
3	7/17/04	ISSUED PER 2390461ACS													
2	7/11/03	ISSUED PER 2094388ACS TOP OF BANK 2003 - RECONTOURED													
1	12/16/02	ISSUED PER 1870229ACS													

DATE:	12/16/02	DRAWN:	CZ	DESIGN:		FOR NO.:	1870229ACS
CHECKED:	JZ	AFC/CC NO.:	1870229	APPROVAL:		CADD FILE NO.:	02-04-06-2
SCALE:	1" = 30'	DRAWING NO.:	CE-CP00-145	SHEET:	1 of 1	REV:	3

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
		8/5/2002	7/11/2003	7/17/2004	Future	Future	Date
<b>1+80</b>		363.8	363.8	358.2			Baseline Offset (In Feet)
			0.0	-5.6			Incremental Change
			0.0	-5.6			Cumulative Change
<b>1+90</b>		367.8	367.8	357.7			Baseline Offset (In Feet)
			0.0	-10.1			Incremental Change
			0.0	-10.1			Cumulative Change
<b>2+00</b>		369.4	369.4	360.4			Baseline Offset (In Feet)
			0.0	-9.0			Incremental Change
			0.0	-9.0			Cumulative Change
<b>2+10</b>		370.7	370.7	363.9			Baseline Offset (In Feet)
			0.0	-6.8			Incremental Change
			0.0	-6.8			Cumulative Change
<b>2+20</b>		371.9	371.9	367.7			Baseline Offset (In Feet)
			0.0	-4.2			Incremental Change
			0.0	-4.2			Cumulative Change
<b>2+30</b>		373.0	373.0	371.6			Baseline Offset (In Feet)
			0.0	-1.4			Incremental Change
			0.0	-1.4			Cumulative Change
<b>2+40</b>		374.8	374.8	374.8			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
<b>2+50</b>	378.3	378.3	376.3				Baseline Offset (In Feet)
		0.0	-2.0				Incremental Change
		0.0	-2.0				Cumulative Change
<b>2+60</b>	381.8	381.8	377.9				Baseline Offset (In Feet)
		0.0	-3.9				Incremental Change
		0.0	-3.9				Cumulative Change
<b>2+70</b>	385.3	385.3	379.7				Baseline Offset (In Feet)
		0.0	-5.6				Incremental Change
		0.0	-5.6				Cumulative Change
<b>2+80</b>	388.9	388.9	381.4				Baseline Offset (In Feet)
		0.0	-7.5				Incremental Change
		0.0	-7.5				Cumulative Change
<b>2+90</b>	392.6	392.6	390.4				Baseline Offset (In Feet)
		0.0	-2.2				Incremental Change
		0.0	-2.2				Cumulative Change
<b>3+00</b>	394.0	394.0	394.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>3+10</b>	394.8	394.8	394.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
		8/5/2002	7/11/2003	7/17/2004	Future	Future	Date
<b>3+20</b>		395.5	395.5	395.5			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+30</b>		395.1	395.1	395.1			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+40</b>		394.8	394.8	394.8			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+50</b>		394.0	394.0	394.0			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+60</b>		392.6	392.6	392.6			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+70</b>		391.1	391.1	391.1			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+80</b>		389.4	389.4	389.4			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
		8/5/2002	7/11/2003	7/17/2004	Future	Future	Date
<b>3+90</b>		387.6	387.6	387.6			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+00</b>		381.6	381.6	381.6			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+10</b>		375.0	375.0	375.0			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+20</b>		371.3	371.3	371.3			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+30</b>		368.0	368.0	368.0			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+40</b>		365.4	365.4	365.4			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+50</b>		362.7	362.7	362.7			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
		8/5/2002	7/11/2003	7/17/2004	Future	Future	Date
<b>4+60</b>		358.5	358.5	358.5			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+70</b>		356.0	356.0	356.0			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+80</b>		352.4	352.4	352.4			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>4+90</b>		348.6	348.6	348.6			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+00</b>		344.8	344.8	344.8			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+10</b>		342.3	342.3	342.3			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+20</b>		341.0	341.0	341.0			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
		8/5/2002	7/11/2003	7/17/2004	Future	Future	Date
<b>5+30</b>		339.8	339.8	339.8			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+40</b>		335.5	335.5	335.5			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+50</b>		330.7	330.7	330.7			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+60</b>		325.6	325.6	325.6			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+70</b>		320.1	320.1	320.1			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+80</b>		314.6	314.6	314.6			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>5+90</b>		313.0	313.0	313.0			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
<b>6+00</b>	312.1	312.1	312.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>VSM 1716</b>	349.7	349.7	349.7				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>***Note:</b> Survey completed on 8/5/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.							

Calc'd By: AG  
Date: 7/16/2004

**Alpine CP 00**  
**Alpine Pipeline**  
**Kachemach Crossing**  
**Pile Monitor**

**Kuukpik/LCMF**  
Alpine Survey Office

<b>Location</b>	<b>7/16/2004</b>	<b>Future</b>	<b>Future</b>	<b>Future</b>	<b>Future</b>	<b>Future</b>	<b>Description</b>
<b>VSM 1715A</b>	42.272						Monitor Point Elev. at Bottom NE Cor Pile Cap
							Incremental Change
							Cumulative Change
<b>VSM 1715B</b>	42.263						Monitor Point Elev. at Bottom NE Cor Pile Cap
							Incremental Change
							Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
<b>0+40</b>	199.0	199.0	187.1				Baseline Offset (In Feet)
		0.0	-11.9				Incremental Change
		0.0	-11.9				Cumulative Change
<b>0+50</b>	196.3	196.3	186.5				Baseline Offset (In Feet)
		0.0	-9.8				Incremental Change
		0.0	-9.8				Cumulative Change
<b>0+60</b>	191.8	191.8	185.5				Baseline Offset (In Feet)
		0.0	-6.3				Incremental Change
		0.0	-6.3				Cumulative Change
<b>0+70</b>	189.0	189.0	185.3				Baseline Offset (In Feet)
		0.0	-3.7				Incremental Change
		0.0	-3.7				Cumulative Change
<b>0+80</b>	189.4	189.4	185.7				Baseline Offset (In Feet)
		0.0	-3.7				Incremental Change
		0.0	-3.7				Cumulative Change
<b>0+90</b>	194.4	194.4	185.8				Baseline Offset (In Feet)
		0.0	-8.6				Incremental Change
		0.0	-8.6				Cumulative Change
<b>1+00</b>	200.1	200.1	185.9				Baseline Offset (In Feet)
		0.0	-14.2				Incremental Change
		0.0	-14.2				Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
<b>1+10</b>	201.7	201.7	186.1				Baseline Offset (In Feet)
		0.0	-15.6				Incremental Change
		0.0	-15.6				Cumulative Change
<b>1+20</b>	199.2	199.2	186.4				Baseline Offset (In Feet)
		0.0	-12.8				Incremental Change
		0.0	-12.8				Cumulative Change
<b>1+30</b>	196.4	196.4	186.7				Baseline Offset (In Feet)
		0.0	-9.7				Incremental Change
		0.0	-9.7				Cumulative Change
<b>1+40</b>	190.4	190.4	188.6				Baseline Offset (In Feet)
		0.0	-1.8				Incremental Change
		0.0	-1.8				Cumulative Change
<b>1+50</b>	186.8	186.8	183.7				Baseline Offset (In Feet)
		0.0	-3.1				Incremental Change
		0.0	-3.1				Cumulative Change
<b>1+60</b>	185.1	185.1	178.6				Baseline Offset (In Feet)
		0.0	-6.5				Incremental Change
		0.0	-6.5				Cumulative Change
<b>1+70</b>	182.4	182.4	171.7				Baseline Offset (In Feet)
		0.0	-10.7				Incremental Change
		0.0	-10.7				Cumulative Change
<b>1+80</b>	179.1	179.1	167.7				Baseline Offset (In Feet)

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
		0.0	-11.4				Incremental Change
		0.0	-11.4				Cumulative Change
<b>1+90</b>	182.8	182.8	171.2				Baseline Offset (In Feet)
		0.0	-11.6				Incremental Change
		0.0	-11.6				Cumulative Change
<b>2+00</b>	174.2	174.2	170.8				Baseline Offset (In Feet)
		0.0	-3.3				Incremental Change
		0.0	-3.3				Cumulative Change
<b>2+10</b>	175.3	175.3	170.9				Baseline Offset (In Feet)
		0.0	-4.4				Incremental Change
		0.0	-4.4				Cumulative Change
<b>2+20</b>	175.1	175.1	173.1				Baseline Offset (In Feet)
		0.0	-2.0				Incremental Change
		0.0	-2.0				Cumulative Change
<b>2+30</b>	171.2	171.2	171.2				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>2+40</b>	169.5	169.5	169.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>2+50</b>	171.0	171.0	171.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
		8/5/2002	7/11/2003	7/17/2004	Future	Future	Date
			0.0	0.0			Cumulative Change
<b>2+60</b>		170.9	170.9	170.9			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>2+71</b>		169.4	169.4	169.4			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>2+80</b>		168.2	168.2	168.2			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>2+90</b>		166.8	166.8	166.8			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+00</b>		165.4	165.4	165.4			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+10</b>		163.7	163.7	163.7			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change
<b>3+20</b>		161.9	161.9	161.9			Baseline Offset (In Feet)
			0.0	0.0			Incremental Change
			0.0	0.0			Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
<b>3+30</b>	160.9	160.9	160.9				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>3+40</b>	160.3	160.3	160.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>3+50</b>	159.4	159.4	159.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>3+60</b>	158.1	158.1	158.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>3+70</b>	156.8	156.8	156.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>3+80</b>	154.8	154.8	154.8				Baseline Offset (In Feet)
		0.0	0.1				Incremental Change
		0.0	0.1				Cumulative Change
<b>3+90</b>	152.5	152.5	152.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
<b>4+00</b>	150.1	150.1	150.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>4+10</b>	146.5	146.5	146.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>4+20</b>	143.8	143.8	143.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>4+30</b>	144.0	144.0	144.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>4+40</b>	141.8	141.8	141.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>4+50</b>	138.7	138.7	138.7				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>4+60</b>	135.5	135.5	135.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP00**  
**Alpine Pipeline Kachemach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-145 Rev 3 for Survey Baseline Location						
	8/5/2002	7/11/2003	7/17/2004	Future	Future		Date
<b>4+70</b>	131.8	131.8	131.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>4+80</b>	128.1	128.1	128.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>VSM 1714</b>	160.5	160.5	160.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

\*\*\*Note: Survey completed on 8/5/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.



**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>8+80</b>	1196.2	1196.2	1196.2				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>8+90</b>	1190.3	1190.3	1190.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+00</b>	1184.3	1184.3	1184.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+10</b>	1178.3	1178.3	1178.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+20</b>	1172.4	1172.4	1172.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+30</b>	1166.4	1166.4	1166.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+40</b>	1160.3	1160.3	1160.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>9+50</b>	1154.3	1154.3	1154.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+60</b>	1148.2	1148.2	1148.2				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+70</b>	1142.0	1142.0	1142.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+80</b>	1135.5	1135.5	1135.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>9+90</b>	1129.0	1129.0	1129.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+00</b>	1122.5	1122.5	1122.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+10</b>	1116.0	1116.0	1116.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>10+20</b>	1110.7	1110.7	1110.7				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+30</b>	1105.7	1105.7	1105.7				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+40</b>	1100.6	1100.6	1100.6				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+50</b>	1095.5	1095.5	1095.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+60</b>	1090.5	1090.5	1090.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+70</b>	1086.2	1086.2	1086.2				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>10+80</b>	1082.3	1082.3	1082.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>10+90</b>	1078.4	1078.4	1078.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>11+00</b>	1074.4	1074.4	1074.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>11+10</b>	1070.5	1070.5	1070.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>11+20</b>	1065.1	1065.1	1065.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>11+30</b>	1058.3	1058.3	1058.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>VSM 2049</b>	1013.8	1013.8	1013.8				Baseline Offset (In Feet)
{11+38.57}		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>11+40</b>	1051.6	1051.6	1051.6				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>11+55</b>	1042.9	1042.9	1042.9				Baseline Offset (In Feet)
{Pipeline		0.0	0.0				Incremental Change
Crossing}		0.0	0.0				Cumulative Change
<b>11+70</b>	1033.0	1033.0	1033.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>11+80</b>	1027.5	1027.5	1027.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>11+90</b>	1024.0	1024.0	1024.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>12+00</b>	1017.6	1017.6	1017.6				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>12+10</b>	1012.1	1012.1	1010.9				Baseline Offset (In Feet)
		0.0	-1.1				Incremental Change
		0.0	-1.1				Cumulative Change
<b>12+20</b>	1007.1	1007.1	1004.8				Baseline Offset (In Feet)
		0.0	-2.3				Incremental Change
		0.0	-2.3				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>12+30</b>	1001.8	1001.8	999.4				Baseline Offset (In Feet)
		0.0	-2.4				Incremental Change
		0.0	-2.4				Cumulative Change
<b>12+40</b>	994.5	994.5	994.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>12+50</b>	993.8	993.8	993.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>12+60</b>	993.2	993.2	993.2				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>12+70</b>	998.0	998.0	998.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>12+80</b>	1001.9	1001.9	1001.9				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>12+90</b>	1001.1	1001.1	1001.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>13+00</b>	1000.3	1000.3	1000.3				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+10</b>	999.4	999.4	999.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+20</b>	998.8	998.8	998.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+30</b>	997.8	997.8	997.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+40</b>	996.8	996.8	996.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+50</b>	995.8	995.8	995.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+60</b>	994.7	994.7	994.7				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>13+70</b>	993.7	993.7	993.7				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+80</b>	992.6	992.6	992.6				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>13+90</b>	991.4	991.4	991.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+00</b>	988.1	988.1	988.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+10</b>	984.8	984.8	984.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+20</b>	981.5	981.5	981.5				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+30</b>	978.2	978.2	978.2				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**East Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of East Bank Locations						Description
	See Drawing CE-CP00-144 Rev 3 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>14+40</b>	976.2	976.2	976.2				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+50</b>	975.6	975.6	975.6				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+60</b>	975.0	975.0	975.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+70</b>	974.4	974.4	974.4				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+80</b>	973.8	973.8	973.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>14+90</b>	973.0	973.0	973.0				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>15+00</b>	972.1	972.1	972.1				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change

\*\*\*Note: Survey completed on 8/5/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.

Calc'd By: CZ  
Date: 6/20/2004

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**Pile Monitor**

**Kuukpik/LCMF**  
Alpine Survey Office

Location	6/18/2004	Future	Future	Future	Future	Future	Description
<b>VSM 2046</b>	57.611						Monitor Point Elev. at Bottom SE Cor Pile Cap
							Incremental Change
							Cumulative Change
<b>HSM 2046 (North)</b>	57.791						Monitor Point Elev. at North End, Bottom NE Cor.
							Incremental Change
							Cumulative Change
<b>HSM 2046 (South)</b>	57.631						Monitor Point Elev. at South End, Bottom SE Cor.
							Incremental Change
							Cumulative Change
<b>VSM 2047A</b>	57.528						Monitor Point Elev. at Bottom SE Cor Pile Cap
							Incremental Change
							Cumulative Change
<b>HSM 2047A (North)</b>	57.449						Monitor Point Elev. at North End, Bottom NE Cor.
							Incremental Change
							Cumulative Change
<b>VSM 2047B</b>	57.433						Monitor Point Elev. at South End, Bottom SE Cor.
							Incremental Change
							Cumulative Change
<b>HSM 2047B (South)</b>	57.527						Monitor Point Elev. at South End, Bottom SE Cor.
							Incremental Change
							Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**Pile Monitor**

<b>VSM 2048A</b>	57.635						Monitor Point Elev. at Bottom SE Cor Pile Cap
							Incremental Change
							Cumulative Change
<b>HSM 2048A (North)</b>	57.725						Monitor Point Elev. at North End, Bottom NE Cor.
							Incremental Change
							Cumulative Change
<b>VSM 2048B</b>	57.591						Monitor Point Elev. at South End, Bottom SE Cor.
							Incremental Change
							Cumulative Change
<b>HSM 2048B (South)</b>	57.691						Monitor Point Elev. at South End, Bottom SE Cor.
							Incremental Change
							Cumulative Change
<b>VSM 2049</b>	57.494						Monitor Point Elev. at Bottom SE Cor Pile Cap
							Incremental Change
							Cumulative Change
<b>HSM 2049 (North)</b>	57.564						Monitor Point Elev. at North End, Bottom NE Cor.
							Incremental Change
							Cumulative Change
<b>HSM 2049 (South)</b>	57.587						Monitor Point Elev. at South End, Bottom SE Cor.
							Incremental Change
							Cumulative Change

Calc'd By: BD  
Date 6/21/04

**MILUVEACH RIVER CROSSING**

**Kuukpik / LCMF**  
Alpine Survey Office

**VSM'S 2047 A and 2048 A PLUMB MONITOR**

<b>Plumb Data Is Azimuth And Distance From Center Bottom of VSM to Center Top Of VSM</b>							
VSM No.	Azimuth	Distance					
	2004	2004					
2047-A	337°29'10"	0.073'					
2047-B	115°10'19"	0.047'					
2048-A	278°12'43"	0.035'					
2048-B	76°43'35"	0.109'					

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>0+50</b>	859.5	859.5	858.0				Baseline Offset (In Feet)
		0.0	-1.5				Incremental Change
		0.0	-1.5				Cumulative Change
<b>0+60</b>	859.7	859.7	858.9				Baseline Offset (In Feet)
		0.0	-0.8				Incremental Change
		0.0	-0.8				Cumulative Change
<b>0+70</b>	859.0	859.0	856.2				Baseline Offset (In Feet)
		0.0	-2.7				Incremental Change
		0.0	-2.7				Cumulative Change
<b>0+80</b>	859.2	859.2	855.6				Baseline Offset (In Feet)
		0.0	-3.7				Incremental Change
		0.0	-3.7				Cumulative Change
<b>0+90</b>	858.7	858.7	855.9				Baseline Offset (In Feet)
		0.0	-2.9				Incremental Change
		0.0	-2.9				Cumulative Change
<b>1+00</b>	858.1	858.1	856.1				Baseline Offset (In Feet)
		0.0	-2.0				Incremental Change
		0.0	-2.0				Cumulative Change
<b>1+10</b>	857.4	857.4	855.8				Baseline Offset (In Feet)
		0.0	-1.6				Incremental Change
		0.0	-1.6				Cumulative Change
<b>1+20</b>	856.5	856.5	854.8				Baseline Offset (In Feet)

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
			0.0	-1.7			Incremental Change
			0.0	-1.7			Cumulative Change
<b>1+30</b>	854.6	854.6	852.5				Baseline Offset (In Feet)
			0.0	-2.2			Incremental Change
			0.0	-2.2			Cumulative Change
<b>1+40</b>	854.4	854.4	851.1				Baseline Offset (In Feet)
			0.0	-3.3			Incremental Change
			0.0	-3.3			Cumulative Change
<b>1+50</b>	584.0	584.0	849.7				Baseline Offset (In Feet)
			0.0	265.7			Incremental Change
			0.0	265.7			Cumulative Change
<b>1+60</b>	851.8	851.8	847.9				Baseline Offset (In Feet)
			0.0	-3.9			Incremental Change
			0.0	-3.9			Cumulative Change
<b>1+70</b>	850.3	850.3	845.9				Baseline Offset (In Feet)
			0.0	-4.4			Incremental Change
			0.0	-4.4			Cumulative Change
<b>1+80</b>	848.8	848.8	843.8				Baseline Offset (In Feet)
			0.0	-5.1			Incremental Change
			0.0	-5.1			Cumulative Change
<b>1+90</b>	846.4	846.4	841.7				Baseline Offset (In Feet)
			0.0	-4.7			Incremental Change
			0.0	-4.7			Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>2+00</b>	842.2	842.2	839.4				Baseline Offset (In Feet)
		0.0	-2.7				Incremental Change
		0.0	-2.7				Cumulative Change
<b>2+10</b>	838.1	838.1	837.2				Baseline Offset (In Feet)
		0.0	-0.9				Incremental Change
		0.0	-0.9				Cumulative Change
<b>2+20</b>	837.1	837.1	835.7				Baseline Offset (In Feet)
		0.0	-1.4				Incremental Change
		0.0	-1.4				Cumulative Change
<b>2+30</b>	836.1	836.1	834.1				Baseline Offset (In Feet)
		0.0	-2.0				Incremental Change
		0.0	-2.0				Cumulative Change
<b>2+40</b>	834.7	834.7	832.4				Baseline Offset (In Feet)
		0.0	-2.3				Incremental Change
		0.0	-2.3				Cumulative Change
<b>2+50</b>	830.5	830.5	829.3				Baseline Offset (In Feet)
		0.0	-1.1				Incremental Change
		0.0	-1.1				Cumulative Change
<b>2+60</b>	827.7	827.7	827.1				Baseline Offset (In Feet)
		0.0	-0.6				Incremental Change
		0.0	-0.6				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>2+70</b>	826.0	826.0	825.5				Baseline Offset (In Feet)
		0.0	-0.6				Incremental Change
		0.0	-0.6				Cumulative Change
<b>2+80</b>	824.6	824.6	823.8				Baseline Offset (In Feet)
		0.0	-0.8				Incremental Change
		0.0	-0.8				Cumulative Change
<b>2+90</b>	823.5	823.5	822.1				Baseline Offset (In Feet)
		0.0	-1.4				Incremental Change
		0.0	-1.4				Cumulative Change
<b>3+00</b>	822.3	822.3	820.4				Baseline Offset (In Feet)
		0.0	-1.9				Incremental Change
		0.0	-1.9				Cumulative Change
<b>3+10</b>	821.1	821.1	818.8				Baseline Offset (In Feet)
		0.0	-2.3				Incremental Change
		0.0	-2.3				Cumulative Change
<b>3+20</b>	818.9	818.9	816.8				Baseline Offset (In Feet)
		0.0	-2.2				Incremental Change
		0.0	-2.2				Cumulative Change
<b>3+30</b>	816.4	816.4	814.8				Baseline Offset (In Feet)
		0.0	-1.6				Incremental Change
		0.0	-1.6				Cumulative Change
<b>3+40</b>	814.9	814.9	812.7				Baseline Offset (In Feet)
		0.0	-2.3				Incremental Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
		0.0	-2.3				Cumulative Change
<b>3+50</b>	812.0	812.0	810.7				Baseline Offset (In Feet)
		0.0	-1.3				Incremental Change
		0.0	-1.3				Cumulative Change
<b>VSM 2046</b> {3+59.23}	793.8	793.8	793.8				Baseline Offset (In Feet)
		0.0	0.0				Incremental Change
		0.0	0.0				Cumulative Change
<b>3+60</b> {Pipeline Crossing}	810.3	810.3	809.1				Baseline Offset (In Feet)
		0.0	-1.2				Incremental Change
		0.0	-1.2				Cumulative Change
<b>3+70</b>	807.8	807.8	805.9				Baseline Offset (In Feet)
		0.0	-1.9				Incremental Change
		0.0	-1.9				Cumulative Change
<b>3+80</b>	805.2	805.2	804.3				Baseline Offset (In Feet)
		0.0	-0.9				Incremental Change
		0.0	-0.9				Cumulative Change
<b>3+90</b>	802.7	802.7	801.4				Baseline Offset (In Feet)
		0.0	-1.3				Incremental Change
		0.0	-1.3				Cumulative Change
<b>4+00</b>	801.7	801.7	800.4				Baseline Offset (In Feet)
		0.0	-1.2				Incremental Change
		0.0	-1.2				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>4+10</b>	799.2	799.2	798.4				Baseline Offset (In Feet)
		0.0	-0.8				Incremental Change
		0.0	-0.8				Cumulative Change
<b>4+20</b>	797.0	797.0	796.3				Baseline Offset (In Feet)
		0.0	-0.7				Incremental Change
		0.0	-0.7				Cumulative Change
<b>4+30</b>	794.9	794.9	793.8				Baseline Offset (In Feet)
		0.0	-1.1				Incremental Change
		0.0	-1.1				Cumulative Change
<b>4+40</b>	792.2	792.2	791.3				Baseline Offset (In Feet)
		0.0	-0.9				Incremental Change
		0.0	-0.9				Cumulative Change
<b>4+50</b>	789.9	789.9	789.1				Baseline Offset (In Feet)
		0.0	-0.8				Incremental Change
		0.0	-0.8				Cumulative Change
<b>4+60</b>	788.7	788.7	787.3				Baseline Offset (In Feet)
		0.0	-1.4				Incremental Change
		0.0	-1.4				Cumulative Change
<b>4+70</b>	786.3	786.3	784.8				Baseline Offset (In Feet)
		0.0	-1.5				Incremental Change
		0.0	-1.5				Cumulative Change
<b>4+80</b>	783.1	783.1	781.7				Baseline Offset (In Feet)

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
			0.0	-1.4			Incremental Change
			0.0	-1.4			Cumulative Change
<b>4+90</b>	780.0	780.0	778.6				Baseline Offset (In Feet)
			0.0	-1.3			Incremental Change
			0.0	-1.3			Cumulative Change
<b>5+00</b>	776.3	776.3	775.1				Baseline Offset (In Feet)
			0.0	-1.2			Incremental Change
			0.0	-1.2			Cumulative Change
<b>5+10</b>	772.4	772.4	771.3				Baseline Offset (In Feet)
			0.0	-1.1			Incremental Change
			0.0	-1.1			Cumulative Change
<b>5+20</b>	768.7	768.7	767.5				Baseline Offset (In Feet)
			0.0	-1.2			Incremental Change
			0.0	-1.2			Cumulative Change
<b>5+30</b>	765.1	765.1	763.7				Baseline Offset (In Feet)
			0.0	-1.4			Incremental Change
			0.0	-1.4			Cumulative Change
<b>5+40</b>	761.4	761.4	759.8				Baseline Offset (In Feet)
			0.0	-1.6			Incremental Change
			0.0	-1.6			Cumulative Change
<b>5+50</b>	757.0	757.0	755.8				Baseline Offset (In Feet)
			0.0	-1.2			Incremental Change
			0.0	-1.2			Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>5+60</b>	752.6	752.6	751.6				Baseline Offset (In Feet)
		0.0	-0.9				Incremental Change
		0.0	-0.9				Cumulative Change
<b>5+70</b>	748.0	748.0	747.0				Baseline Offset (In Feet)
		0.0	-1.0				Incremental Change
		0.0	-1.0				Cumulative Change
<b>5+80</b>	743.5	743.5	742.4				Baseline Offset (In Feet)
		0.0	-1.1				Incremental Change
		0.0	-1.1				Cumulative Change
<b>5+90</b>	739.4	739.4	738.4				Baseline Offset (In Feet)
		0.0	-1.1				Incremental Change
		0.0	-1.1				Cumulative Change
<b>6+00</b>	735.5	735.5	734.2				Baseline Offset (In Feet)
		0.0	-1.3				Incremental Change
		0.0	-1.3				Cumulative Change
<b>6+10</b>	731.5	731.5	730.0				Baseline Offset (In Feet)
		0.0	-1.5				Incremental Change
		0.0	-1.5				Cumulative Change
<b>6+20</b>	726.6	726.6	725.3				Baseline Offset (In Feet)
		0.0	-1.3				Incremental Change
		0.0	-1.3				Cumulative Change

**Alpine CP 00**  
**Alpine Pipeline Miluveach Crossing**  
**West Streambank Erosion Monitor**

Baseline Station	Streambank Monitor - Top of West Bank Locations						Description
	See Drawing CE-CP00-144 for Survey Baseline Location						
	8/4/2002	7/12/2003	6/18/2004	Future	Future		Date
<b>6+30</b>	721.7	721.7	720.5				Baseline Offset (In Feet)
		0.0	-1.3				Incremental Change
		0.0	-1.3				Cumulative Change
<b>6+40</b>	716.9	716.9	715.6				Baseline Offset (In Feet)
		0.0	-1.2				Incremental Change
		0.0	-1.2				Cumulative Change
<b>6+50</b>	712.0	712.0	710.8				Baseline Offset (In Feet)
		0.0	-1.2				Incremental Change
		0.0	-1.2				Cumulative Change
<b>6+60</b>	707.1	707.1	705.9				Baseline Offset (In Feet)
		0.0	-1.2				Incremental Change
		0.0	-1.2				Cumulative Change

\*\*\***Note:** Survey completed on 8/4/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.

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## Appendix B – Photographs



**Photo 1 – HDD crossing. June 17, 2004.**



**Photo 2 – HDD crossing, west bank. June 17, 2004.**



**Photo 3 – HDD crossing, west bank. June 17, 2004**



**Photo 4 – HDD crossing, west bank. June 17, 2004**



**Photo 5 – HDD crossing, west bank. Lathe showing probable high water mark on snow bank. June 17, 2004.**



**Photo 6 – HDD crossing, west bank. Detail of bluff at south pipeline alignment. June 17, 2004.**



**Photo 7 – HDD crossing, west bank. Detail of bluff at north pipeline alignment. June 17, 2004.**



**Photo 8 – HDD crossing, west bank. No gravel deterioration on pad. Note damaged protective CMP at thermistor string location. June 17, 2004.**



**Photo 9 – HDD crossing, east bank. June 17, 2004.**



**Photo 10 – HDD crossing, east bank. June 17, 2004.**



**Photo 11 – HDD crossing, east bank. Uneven settling of protective CMP at thermistor string. June 17, 2004.**



**Photo 12 – HDD crossing, east bank. Thermosiphons along south pipeline alignment, no settling or jacking noted. June 17, 2004.**



**Photo 13 – HDD crossing, east bank. Thermosiphons along north pipeline alignment, no settling or jacking noted. June 17, 2004.**



**Photo 14 – HDD crossing, east bank. ACS spill response container jacking due to uneven settling of on-grade support beams. June 17, 2004.**



**Photo 15 – Kachemach River. June 18, 2004.**



**Photo 16 – Kachemach River. June 18, 2004.**



**Photo 17 – On the left bank of the Kachemach River a short distance from the localized scour noted beneath the ice road route. June 18, 2004.**



**Photo 18 – Kachemach River, left bank looking downstream. Water depth increased rapidly within the scour hole at the ice road route. June 18, 2004.**



**Photo 19 – Kachemach River, left bank looking upstream. Minimal scour on gravel bar upstream from the scour hole suggests that scour was localized. Note minor bank sluffing just upstream from the ice road remnant. June 18, 2004.**



**Photo 20 – Kachemach River. Localized slumping on left bank was documented in 2003 investigation. 2004 bank deterioration in this area was minimal. June 18, 2004.**



**Photo 21 – Kachemach River. Wading through the thalweg portion of the channel. June 18, 2004.**



**Photo 22 – Kachemach River. All VSMs and HSMs appeared straight and level. June 18, 2004.**



**Photo 23 – Miluveach River. June 18, 2004.**



**Photo 24 – Miluveach River. June 18, 2004.**



**Photo 25 – Miluveach River. The mid-channel gravel bar documented during the 2003 appeared to have decreased in size. June 18, 2004.**



**Photo 26 – Miluveach River. The left bank appeared stable and well vegetated. June 18, 2004.**



**Photo 27 – Miluveach River. The right bank appeared stable and well vegetated. All VSMs and HSMs appeared straight and level. June 18, 2004.**



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