

ALPINE PIPELINE RIVER CROSSINGS 2010 MONITORING REPORT



Submitted to


ConocoPhillips

Alaska

ConocoPhillips Alaska, Inc.

Submitted by

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ACRONYMS AND ABBREVIATIONS

Baker - Michael Baker Jr., Inc.

BPMSL - British Petroleum Mean Sea Level

HDD - Horizontal Directional Drilled

LCMF - Kuukpik/LCMF, LLC

NPS - Nominal Pipe Size

VSM - Vertical Support Member

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1.0 INTRODUCTION/OBJECTIVES

Originally constructed during the winter of 1998/1999, the Alpine Pipeline System crosses three major rivers between the Alpine Development CD1 facility and the tie-in to the Kugaruk Pipeline. The three river crossings are the aboveground crossings of the Kachemach River and the Miluveach River; and the horizontal directionally drilled (HDD) crossing of the East Channel of the Colville River.

In 2001, initial monitoring of the HDD crossing was conducted (Baker 2002). Annual monitoring of the HDD, Kachemach River, and the Miluveach River crossings was conducted from 2003 through 2006 (Baker 2003, 2004, 2005, 2006). Over the course of these five years of monitoring, no significant scour, erosion, or VSM (vertical support member) tilt were observed at the Kachemach and Miluveach River crossings. As a result, in the fall of 2006, a five-year monitoring interval was recommended. In 2007, monitoring was therefore limited to the HDD crossing (Baker 2007).

The 2008 monitoring was conducted at all three crossing locations (Baker 2008) and included surveying by Kuukpik/LCMF, LLC (LCMF). In both 2009 and 2010, LCMF surveying was conducted only at the HDD crossing location. Baker conducted visual observations and tilt measurements at all three crossing locations. It is anticipated that LCMF will continue to provide annual bank erosion survey data for the HDD crossing, and that bank erosion surveying of the Kachemach and Miluveach will occur again in 2013.

Monitoring allows for a historic comparison between observed conditions and the design criteria, as required by the Right-of-Way Lease/Grant Stipulations and the Alpine Surveillance and Monitoring Program. Monitoring is conducted to document the condition of the pipelines and channel morphology at each of the river crossings. The primary objective is documentation of the state of the pipeline at each crossing, as well as the pipeline's effect on each channel.

1.1 MONITORING CRITERIA

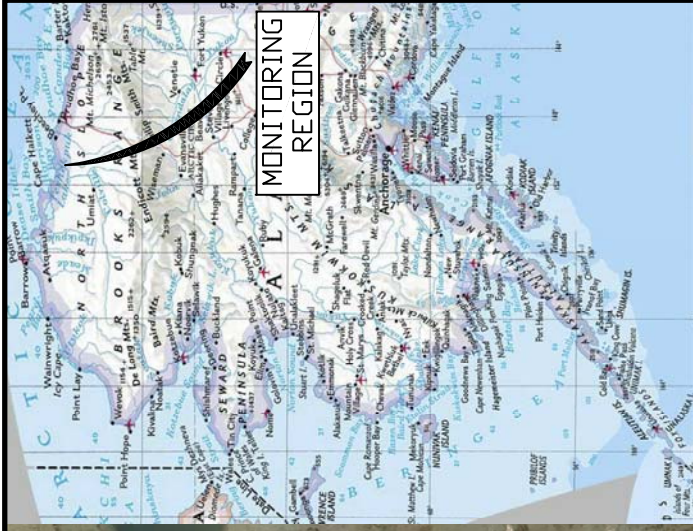
The 2010 monitoring event included visual observations at all three crossings, as well as LCMF bank erosion surveys at the HDD crossing. Figure 1 illustrates the location of the crossings.

Data collected in 2010 included the following:

- Photographs at each crossing location
- Evaluation of the condition of VSM: measured tilt, as well as observable settling, scouring, or jacking; particular attention was paid to the following:
 - Miluveach River – VSM Nos. 2047 A/B and 2048 A/B and other VSM within 15 feet of the channel
 - Kachemach River – VSM Nos. 1714 and 1715 A/B and other VSM within 15 feet of the channel
- Evaluation of bank erosion at HDD 50 feet upstream and downstream from the NPS 14 (nominal pipe size 14) oil pipeline
- Survey of the top and bottom bank elevations and identification of locations of bank caving at the HDD crossing (LCMF)
- Topographic survey from the Colville River to the HDD east pad to document bank and ground stability (LCMF)
- Measurement of depth and width of scour around VSM in Kachemach and Miluveach River channels
- Observation of localized scour near river crossings

The following physical conditions were specifically evaluated during the site visits:

- Obstructions, ice dams, new river channels, or changes in flow in the channels
- Signs of flooding threatening a facility or pipeline, or where water could not be diverted and there was:
 - Evidence of water concentrated longitudinally on or along the pipeline centerline, or
 - Gullying that threatened the buried pipeline at the HDD crossing
- Soil pressure ridges parallel to the pipe axis exceeding one foot in height and 60 feet in length
- Ponding extending over the pipe axis deeper than one foot and more than 100 feet long
- Cracks located within ten feet of the pipeline centerlines at least ten feet long with vertical displacement exceeding six inches, or wider than two inches parallel to the pipe axis and longer than 60 feet
- Depressions occurring longitudinally over the pipe axis deeper than one foot and more than 100 feet long
- Pipeline leaks
- Presence or absence of erosion of the HDD facility gravel pads
- Evidence of any settlement and jacking of the HDD building foundation (LCMF)



MONITORING REGION



2010
ALPINE PIPELINE RIVER CROSSING
 MONITORING SITES
 FIGURE 1

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DATE:	8/20/2010	PROJECT:	120259 ALPINE PIPELINE
DRAWN:	EJK	FILE:	FIGURE 1
CHECKED:	JMS	SCALE:	AS SHOWN

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2.0 METHODS

During the 2010 spring breakup, observations and photographs were collected at each of the three river crossing locations. On July 30, 2010, Baker personnel visited each site to make visual observations and to take measurements at all three river crossings. During the July 2010 visit, channels were clear of ice and snow allowing full access to both the channels and pipelines. Visual observations at the HDD crossing began from the points of pipeline casing entry into the ground, and extended to the riverbanks. Observations at the Kachemach and Miluveach Rivers were conducted to within 15 feet outside the active channel banks on each side. The observations extended upstream and downstream several hundred feet on both banks. In addition to visual observations, aerial and ground photographs were taken and are provided in Appendix A. The observations and measurements were then compared to established design criteria.

2.1 BANK EROSION

LCMF surveyed the local topography at the HDD crossing in July 2010. LCMF incorporated the data into figures and provided a tabulation of historical migration since 2001 for each bank. This is available in Appendix B for HDD West and Appendix C for HDD East. Arbitrary scour control points serve as the origin for the baseline stationing, beginning at 100 feet along each bank, and establish a means of comparing annual measurements.

The HDD West top of bank setback allows for 105 feet of bank erosion and the HDD East top of bank setback allows for 115 feet of bank erosion (Baker 1997). Design setbacks for the Kachemach River allow for 25 feet of bank migration on either bank, while setbacks for the Miluveach River allow for 35 feet of bank migration on either bank (Baker 1999). Setbacks were based on a 30-year design life.

2.2 VSM TILT, SETTLEMENT, AND JACKING

A plumb bob and pocket rod tape measure were used to measure the tilt of VSM adjacent to the river crossings. Tilt was measured perpendicular to the oil pipeline (north/south) and parallel to the pipeline (east/west). Tilt of each VSM was documented by measuring the horizontal distance from plumb in feet per vertical foot (ft/ft). The VSM axis was considered plumb if the tilt was measured to be less than or equal to 0.00125 ft/ft. If tilt was measurable, the direction of tilt was also recorded (N, S, E, or W). Approximate conversions between ft/ft and in/ft are provided in Table 1.

TABLE 1 VSM TILT UNIT CONVERSION

ft/ft	in/ft
<0.00125	<1/64
0.00250	1/32
0.00500	1/16
0.00750	3/32
0.01000	1/8
0.01250	5/32
0.01750	27/128

The 1999 Alpine VSM installation specification states that “the plumb of each VSM shall vary no more than +/- 0.5% (1/16 inch per 12 inches) in any direction” (ARCO 1999). The 2004 CPAI North Slope VSM specification states that “the slope of any support beam in the direction parallel to the pipeline centerline shall not exceed 1/2 inch (0.042 feet) in ten feet (0.004 ft/ft or 1/16 inch per foot)” (CPAI 2004). Based on these VSM specifications and for comparison purposes, the plumb (tilt) tolerance was accepted to be 0.005 ft/ft (1/16 in/ft). Bold values in Table 1 indicate the VSM tilt tolerance for the purpose of this study.

2.3 VSM SCOUR

Streambed scour in the Miluveach and Kachemach Rivers was evaluated using visual methods at each in-stream VSM. As presented in the *Mechanical Analysis of Aboveground Pipeline and Aboveground River Crossings* (Baker 1999), the VSM within the floodplain of the Kachemach and Miluveach River crossings were designed to withstand both local pier scour and channel scour during a 200-year flood. Scour limits for VSM located in the floodplain and in the active channel are shown in Table 2. These values include both local pier scour as well as anticipated channel scour.

TABLE 2 VSM DESIGN SCOUR LIMITS

River	Minimum Scour Hole Elevations (feet – BPMSL)	
	Floodplain	Main Channel
Kachemach	9.5	6.9
Miluveach	36.7	35.1

2.4 FOUNDATION SETTLEMENT AND JACKING (HDD WEST)

LCMF surveyed the elevation of the HDD building foundation piles (bottom of pile cap) and developed tabulations of historic elevations for each pile, available in Appendix B.

2.5 POLYGON TROUGH SUBSIDENCE (HDD EAST)

As in past years, a polygon trough located between the Colville River and the HDD East gravel pad was also monitored for subsidence. Historic profiles and tabulated elevations of selected cross sections over the length of the trough are presented in Appendix C.

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3.0 RESULTS

3.1 HDD WEST BANK

The west bank of the Colville River HDD crossing was evaluated by visual observation, review of ground and aerial photography (Photo A.1 through Photo A.5; Appendix A), as well as both field and topographic surveys.

While floodwaters reached the west bank, the 2010 Colville River breakup floodwaters did not overtop the west bank of the channel. Some erosion was evident along the west bank. Two distinct debris lines, composed of mainly sticks and small timber, were observed on the bank of the HDD West pipeline crossing. One debris line was located at the toe of the HDD west bank and was most likely deposited following peak stage on the Colville River. A second, lower, debris line was noted approximately 25 feet east of the bottom toe of the bank, between the toe of the bank and the present edge of water. This lower elevation debris line is most likely due to a secondary smaller peak event in the East Channel.

3.1.1 BANK AND PAD EROSION (HDD WEST)

The greatest bank erosion observed between the 2009 and 2010 monitoring events was 5.0 feet, occurring at Station 1+95, approximately 55 feet upstream (south) of the oil pipeline centerline, as identified on the LCMF topographic survey. The oil pipeline centerline is located at Station 2+50 on the topographic survey (Appendix B).

A maximum cumulative erosion of 18.7 feet, between April 2002 and August 2010, was measured along the top of bank at Station 3+70, located 120 feet north of the oil pipeline centerline (STA 2+50). This erosion value has remained unchanged since 2006. This value yields a maximum average rate of 2.2 feet/year at this location over the monitoring period.

The average rate of erosion for the 2009-2010 period along the 440-foot top of bank was measured to be 0.34 feet/year. This is less than the observed historic average rate of 0.45 feet/year, and less than the estimated maximum erosion rate used for design of 2.3 feet/year (Baker 1997). A graphic and tabular summary of the LCMF surveying results for the HDD West Bank crossing is presented in Appendix B.

In 1997, Baker established a scour control point at the centerline of the NPS 14 oil pipeline, as shown on HDD Bank Monitoring HDD Site-West, as provided in Appendix B. Comparing the location of the 1997 scour control point to the 2010 LCMF survey data, approximately 9.0 feet of bank erosion has occurred over the 13-year period since 1997 (0.69 feet/year). This bank erosion comprises approximately 9% of the total 105-foot design setback. The west bank erosion has not yet reached the 50% design setback. If in the future, the bank “migrates 50% of the design setback, erosion rates or possible mitigation measures will be evaluated” (Baker 1999).

Based on visual observations, bank erosion does not appear to be significant, although some erosion was evident upon visual inspection. Flow direction is largely unchanged. The pipelines appeared to be in good condition with no apparent leaks.

In 2009, Baker identified three “pits” in the gravel pads near the buildings at HDD West (Baker 2009). These pits were still present during the 2010 survey and did not change significantly from the 2009 visual survey. Photo A.5 in Appendix A shows an example of one of the three pits in the gravel pad. All three pits are located west of the large propane tanks, and generally east of the two CP Module buildings, and do not appear to affect the integrity of the pad.

3.1.2 VSM TILT (HDD WEST)

The six VSM directly adjacent to the HDD West pad and crossing were found to be adequately supporting the pipeline based on observations and measurements. A summary of the HDD West Bank VSM tilt survey results is presented in Table 3. Italicized tilt measurement values in Table 3 indicate VSM tilt exceeded the project tolerance of 0.005 ft/ft, but not by more than the accuracy of the survey method of 0.001 ft/ft.

TABLE 3 HDD WEST VSM TILT MEASUREMENT RESULTS (2010)

VSM Number	Tilt Measurement Orientation (ft/ft)		Comment
	North/South	East/West	
783	0.0028 N	< 0.00125	
784N (784A)	<i>0.0051 N</i>	< 0.00125	N/S: exceeded project tolerance; not survey accuracy
784S (784B)	0.0023 N	0.0030 W	
788	0.0024 N	0.0027 E	
789N (789A)	0.0048 N	< 0.00125	
789S (789B)	<i>0.0056 N</i>	< 0.00125	N/S: exceeded project tolerance; within survey accuracy

Four VSM (783; 784S; 788; 789N) were generally plumb. Two VSM, 784N and 789S, exceeded the project tolerance, but did not exceed the project tolerance by more than the survey accuracy. The maximum tilt was measured to be 0.0056 ft/ft for VSM 789S. Although this value exceeds the project tolerance, it is within the accuracy of the survey method.

Table 4 illustrates the change in tilt measurements collected between the 2009 and 2010 monitoring events.

TABLE 4 HDD WEST VSM CHANGE IN TILT FROM 2009 TO 2010

VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
783	0.0062 N	0.0043 W
784N (784A)	< 0.00125	< 0.00125
784S (784B)	0.0018 N	< 0.00125
788	< 0.00125	0.0029 E
789N (789A)	< 0.00125	0.0013E
789S (789B)	< 0.00125	0.0014E

3.1.3 FOUNDATION PILE CAP SURVEY (HDD WEST)

LCMF has conducted a pile cap elevation survey annually since 2004. Based on the surveys, no single pile cap has experienced a cumulative change of more than 0.026 feet of movement vertically over the span of six years. A summary of the LCMF surveying results for the HDD West Bank crossing is presented in Appendix B.

3.1.4 SUMMARY

Since the 2009 monitoring event, the HDD West bank crossing eroded at an average rate of 0.34 ft/yr. This rate is less than both the long-term historic (0.45 ft/yr) and design erosion (2.3 ft/yr) rates over the 8-year study period (2002-2010). The observed erosion of the west bank, as measured at the NPS 14 oil centerline (STA 2+50), represents approximately 9% of the 105-foot design setback, while the pipeline construction was in 1998/1999, approximately 11 years ago, or 37% of the original 30-year design life.

Four of the HDD West VSM (783; 784S; 788; 789N) were within the project tolerances. The tilt of VSM 784N and VSM 789S were measured to be 0.0051N ft/ft and 0.0056 N ft/ft respectively, which did not exceed the project tolerance by more than the accuracy of the survey method.

Based on visual observations, measurements, and survey results, no settling or jacking of VSM or foundation piles was apparent. The HDD west bank gravel pad is largely free from erosion, although three large pits are present on the pad. The origin of the pits is not known. The pipelines appeared to be in good, stable condition with no leaks. No ponding, cracks, depressions, or pressure ridges were evident over the pipeline axis, as defined by the monitoring criteria.

3.2 HDD EAST BANK

The east bank of the Colville River HDD crossing was evaluated by visual observation, review of ground and aerial photography (Photo A.6 through Photo A.13 in Appendix A), as well as both field and topographic surveys. The 2010 Colville River breakup floodwaters did not overtop the east bank of the channel.

3.2.1 BANK AND PAD EROSION (HDD EAST)

The greatest bank erosion observed between the 2009 and 2010 monitoring events was 7.6 feet occurring at Station 1+95, approximately 85 feet south of the NPS 14 oil pipeline centerline (STA 2+80).

Between August 2001 and August 2010, a maximum erosion of 33.2 feet at the top of bank was measured at Station 4+15. This location is approximately 135 feet north of the oil pipeline centerline (STA 2+80). This value yields an average erosion rate at this specific point of 3.7 feet/year over the 9-year monitoring period at this location.

The average rate of erosion for the 2009-2010 period, as measured along the entire 450-foot top of bank, is approximately 0.57 feet/year. This value averages both erosion and deposition, and is less than both the observed long-term historical average erosion rate of 1.3 feet/year, and the estimated maximum design erosion rate of 2.5 feet/year (Baker 1997). A graphic and tabular summary of the LCMF surveying results for the HDD East Bank crossing is presented in Appendix C.

Approximately 11.1 feet of bank erosion near the oil pipeline centerline (STA 2+88) has occurred since 1997. This represents an average of 0.9 feet/year over the 13-year period, based on a comparison of 2010 survey data and the 1997 scour control point shown on the figure HDD Bank Erosion Topo/Monitoring HDD Site-East, as provided in Appendix C. As of 2010, the observed bank erosion of 11.1 feet at this location equals 9.7% of the 115-foot design setback. The east bank erosion has not yet reached the 50% design setback. If in the future, the bank “migrates 50% of the design setback, erosion rates or possible mitigation measures will be evaluated” (Baker 1999).

As noted in 2009, some erosion and sloughing has occurred along the east bank, with exposed sandbags and Styrofoam evident. While the date of that placement is not known, it is our understanding that the sandbags and Styrofoam were placed in the bank to combat further erosion. As noted during the field visit, some large pieces of tundra have collapsed down the embankment into the channel. (Photo A.11 through Photo A.12 in Appendix A).

3.2.2 POLYGON TROUGH SUBSIDENCE (HDD EAST)

In addition to bank erosion surveys, since 2001, subsidence monitoring has been conducted by LCMF at eight cross sections of the polygon trough (cross section A through cross section

H). The cumulative subsidence measured at any of the cross sections was less than 3.5 feet. Maximum cumulative subsidence at cross section E was 3.3 feet. The maximum incremental change since 2009 was at cross section F with a drop of 2.3 feet. A graphic and tabular summary of these cross sections is provided in Appendix C. (Photo A.10 through Photo A.13 in Appendix A).

3.2.3 VSM TILT

The five VSM directly adjacent to the HDD East pad and crossing were found to be adequately supporting the pipelines based on observations and measurements. Four VSM (883; 884; 889; 890) were found to be generally plumb, within the project tolerance of less than or equal to 0.005 ft/ft (1/16 in/ft) based on measured tilt. The maximum tilt was measured to be 0.0057 S (ft/ft) for VSM 885. This value exceeded the project tolerance, but did not exceed the project tolerance by more than the survey accuracy of ±0.001 ft/ft.

A summary of the HDD East Bank VSM tilt survey results is presented in Table 5. Italicized tilt measurement orientation values in Table 5 indicate VSM tilt exceeded the project tolerance but not by more than the accuracy of the survey method.

TABLE 5 HDD EAST VSM TILT MEASUREMENT RESULTS (2010)

VSM Number	Tilt Measurement Orientation (ft/ft)		Comment
	North/South	East/West	
883	< 0.00125	< 0.00125	
884	< 0.00125	< 0.00125	
885	<i>0.0057 S</i>	0.0045 W	N/S: exceeded project tolerance; within survey accuracy
889	0.0014 N	< 0.00125	
890	0.0028 S	< 0.00125	

Table 6 presents the difference in tilt measurements collected during the 2009 and 2010 monitoring events.

TABLE 6 HDD EAST VSM CHANGE IN TILT FROM 2009 TO 2010

VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
883	< 0.00125	< 0.00125
884	< 0.00125	< 0.00125
885	0.0014 S	< 0.00125
889	< 0.00125	0.0014 W
890	< 0.00125	0.0016 W

3.2.4 SUMMARY

Since the 2009 monitoring event, the HDD East bank crossing eroded at an average rate of 0.57 ft/yr. The 9-year (2001-2010) average erosion rate of 1.3 feet/year is less than the design erosion rate of 2.5 feet/year (Baker 1997). The observed erosion of the east bank at the NPS 14 oil centerline represents approximately 9.7% of the 115-foot design setback, while the pipeline construction was in 1999, approximately 11 years ago, or 37% of the original 30-year design life.

Four of the HDD east pad VSM (883; 884; 889; 890) were within the project tolerances of less than or equal to 0.005 ft/ft (1/16 in/ft). The tilt of VSM 885 was measured to be 0.0057S ft/ft, which exceeded the tolerance of 0.005 ft/ft (1/16 inch per foot), but it was within the accuracy of the survey method.

Based on visual observations, measurements, and field survey results, settling or jacking of VSM was not apparent. The HDD East Bank gravel pad is free from erosion and the pipelines appeared to be in good, stable condition with no leaks. No ponding, cracks, depressions, or pressure ridges were evident over the pipeline axis, as defined by the monitoring criteria. A polygon trough does pass over the seawater casing axis; however, features of the trough do not meet or exceed the allowable physical conditions listed in Section 1.1 Monitoring Criteria, relative to the pipeline axis.

3.3 KACHEMACH RIVER

The Kachemach River crossing was evaluated by visual observation, review of ground and aerial photography (Photo A.14 through Photo A.20; Appendix A), and field surveys. At the time of the field visit, flow was observed within and across the gravel channel bottom at a depth of generally less than four feet.

3.3.1 BANK EROSION

Based on visual observations, no significant bank erosion was evident at the crossing nor immediately upstream or downstream from the pipelines.

3.3.2 VSM TILT

The eight VSM located within the vicinity of the Kachemach River were adequately supporting the pipelines based on visual observations. Three VSM (1714; 1715A; 1715B) were found to be generally plumb, within the project tolerance of less than or equal to 0.005 ft/ft (1/16 in/ft) based on measured tilt. The maximum tilt was measured to be 0.0058 E for VSM 1716. This value exceeded the project tolerance, but not by more than the survey accuracy of 0.001 ft/ft.

The reportedly abandoned VSM 1714A and 1715C both exceeded the 0.005 ft/ft \pm 0.001 ft/ft project tolerance, based on field measurements. The maximum measured tilt was 0.0161E

ft/ft, measured at VSM 1715C. Maximum tilt at VSM 1714A was 0.0131 E. Both of these tilt measurements exceeded the project tolerance (including survey accuracy) and were tilting towards the east.

VSM 1714A and 1715C (originally identified as 1715A and 1715B during construction) do not have sufficient depth to meet scour design. The pipeline saddles are unbolted to ensure no pipeline damage should the VSM fail during a scour event (Baker 2006 Appendix D LCMF Drawing CE-CP00-145).

A summary of the 2010 Kachemach River VSM tilt survey results are presented in Table 7. Bold, italicized tilt measurement orientation values in Table 7 indicate VSM tilt exceeded the project tolerance by more than the accuracy of the survey method. Italicized tilt measurement orientation values in Table 7 indicate VSM tilt exceeded the project tolerance, but not by more than the accuracy of the survey technique.

TABLE 7 KACHEMACH RIVER VSM TILT MEASUREMENT RESULTS (2010)

VSM Number	Tilt Measurement Orientation (ft/ft)		Comments
	North/South	East/West	
1713	Greater than 15' from channel		
1714	0.0043 N	0.0049 E	
<i>1714A (Abandoned)</i>	<i>0.0060 S</i>	<i>0.0131 E</i>	E/W and N/S: exceeded project tolerance & survey accuracy
1715A	< 0.00125	< 0.00125	
1715B	0.0023 N	0.0014 W	
<i>1715C (Abandoned)</i>	< 0.00125	<i>0.0161 E</i>	E/W: exceeded project tolerance & survey accuracy
1716	0.0047 S	<i>0.0058 E</i>	E/W: exceeded project tolerance; within survey accuracy
1717	Greater than 15' from channel		

VSM 1715C was measured to have the greatest change in tilt since 2009, a change of 0.0304 ft/ft to the east. Of the VSM that are not abandoned, VSM 1716 was measured to have the greatest change in tilt, a change of 0.0101 to the east. Table 8 presents the difference in tilt measurements collected during the 2009 and 2010 monitoring events.

TABLE 8 KACHEMACH RIVER VSM CHANGE IN TILT FROM 2009 TO 2010

VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
1713	Greater than 15' from channel	
1714	< 0.00125	< 0.00125
1714A (Abandoned)	< 0.00125	< 0.00125
1715A	< 0.00125	< 0.00125
1715B	< 0.00125	< 0.00125
1715C (Abandoned)	0.0021 S	0.0304 E
1716	< 0.00125	0.0101 E
1717	Greater than 15' from channel	

3.3.3 VSM SCOUR

Visual observations and measurements were collected to evaluate pier scour for those VSM located within the active Kachemach River channel. No excessive scour was observed at the base of any VSM located within the channel or floodplain. The design scour limit for the main channel of the Kachemach River is 6.9 feet BPMSL (Baker, 1999); however, a topographic survey was not conducted this monitoring cycle. Table 9 contains the field scour measurements.

TABLE 9 KACHEMACH RIVER VSM SCOUR (2010)

VSM	Location Description	Depth of Scour, ft	Notes
1714	Grassy floodplain	2.2 ft below existing ground	Approximately 30 feet from edge of water
1714A	Channel	No scour hole	Abandoned VSM
1715A	Channel	3.6 ft below water surface	Approximately 2.5 foot diameter scour casing
1715B	Channel	4.2 ft below water surface	Approximately 2.5 foot diameter scour casing
1715C	Grassy floodplain	1.0 ft below existing ground	Abandoned VSM; Approximately 2.5 feet from edge of water
1716	Grassy floodplain	0.6 ft below existing ground	Approximately 30 feet from edge of water

3.3.4 SUMMARY

The tilt of VSM 1714A (abandoned) and 1715C (abandoned) both exceed the project tolerance by more than the accuracy of the survey method. VSM 1716 was measured to have a tilt of 0.0058 E, which exceeded the tolerance, but not by more than the accuracy of the survey method. Of the VSM not reported to be abandoned, VSM 1716 exhibited the largest change in tilt, with a change of 0.0101 ft/ft E.

Based on visual observations, bank erosion or channel scour at the VSM crossing is not significant. The VSM have no apparent visual effect on the channel at the crossing location. The pipelines appear to be in good condition with no observed leaks.

3.4 MILUVEACH RIVER

The Miluveach River crossing was evaluated by visual observation, review of ground and aerial photography (Photo A.21 through Photo A.28; Appendix A), and field surveys. At the time of the field visit, flow was observed to be confined to the east side of the channel, approximately 11.0 feet in width, and 0.55 feet deep. Based on visual observation, flow from the 2010 breakup was confined to the main channel and did not appear to have reached the overbank regions adjacent to the river crossing.

3.4.1 BANK EROSION

Based on visual observations, no bank erosion was evident at the crossing nor immediately upstream or downstream from the pipelines.

3.4.2 VSM TILT

The four VSM located within the vicinity of the Miluveach River were adequately supporting the pipelines based on visual observations. One VSM, 2048N, was found to be generally plumb, within the project tolerance of less than or equal to 0.005 ft/ft (1/16 in/ft) based on measured tilt. One VSM, 2047S, exceeded the project tolerance of 0.005 ft/ft but not by more than the accuracy of the survey method (± 0.001 ft/ft). The remaining two VSM, 2047N and 2048S, exceeded the project tolerance by more than the accuracy of the survey method based on field measurements.

A summary of the Miluveach River VSM tilt survey results is presented in Table 10. The maximum measured tilt was 0.0077ft/ft E, measured at VSM 2048S.

Bold, italicized tilt measurement orientation values in Table 10 indicate VSM tilt exceeded the project tolerance by more than the accuracy of the survey method. Italicized tilt measurement orientation values in Table 10 indicate VSM tilt exceeded the project tolerance, but not by more than the accuracy of the survey method.

TABLE 10 MILUVEACH RIVER VSM TILT MEASUREMENT RESULTS (2010)

VSM Number	Tilt Measurement Orientation (ft/ft)		Comment
	North/South	East/West	
2046	Greater than 15' from channel		
2047N (A)	0.0064 N	0.0019 E	N/S: exceeded project tolerance & survey accuracy
2047S (B)	0.0051 S	< 0.00125	N/S: exceeded project tolerance; within survey accuracy
2048N (A)	0.0026 N	0.0047 W	
2048S (B)	0.0043 S	0.0077 E	E/W: exceeded project tolerance & survey accuracy
2049	Greater than 15' from channel		

Table 11 presents the difference in tilt measurements collected during the 2009 and 2010 monitoring events.

TABLE 11 MILUVEACH RIVER VSM TILT CHANGE IN TILT FROM 2009 TO 2010

VSM Number	Change in Tilt Measurement Orientation (ft/ft)	
	North/South	East/West
2046	Greater than 15' from channel	
2047N (A)	0.0133 N	< 0.00125
2047S (B)	0.0116 S	< 0.00125
2048N (A)	< 0.00125	0.0020 W
2048S (B)	< 0.00125	0.0019 W
2049	Greater than 15' from channel	

3.4.3 VSM SCOUR

Visual observations and measurements were collected to evaluate pier scour for the VSM located within the active Miluveach River channel. No excessive scour was observed at the base of any VSM located within the channel or floodplain. The design scour limit for the main channel of the Miluveach River is 35.1 feet BPMSL (Baker, 1999); however, a topographic survey was not conducted this monitoring cycle. Table 12 illustrates the field scour measurements.

TABLE 12 MILUVEACH RIVER VSM SCOUR (2010)

VSM	Location Description	Depth of Scour Hole, ft	Notes
2046	Grassy bank above floodplain	No scour hole	Outside channel floodplain
2047N (A)	Dry Gravel Channel Bed	No scour hole	Dry
2047S (B)	Dry Gravel Channel Bed	No scour hole	Dry
2048N (A)	Dry Gravel Channel Bed	1.0 ft below water surface	Ponded water in scour hole, 3 ft diameter scour hole
2048S (B)	Dry Gravel Channel Bed	1.4 ft below water surface	Ponded water in scour hole, 5.5 ft diameter scour hole
2049	Grassy bank above floodplain	No scour hole	Outside channel floodplain

3.4.4 SUMMARY

During the 2009 survey of the Miluveach River crossing, the tilt of VSM 2047N, 2047S, and 2048S exceeded the project tolerance, including survey accuracy. The 2010 measurements indicate the tilt of these VSM has decreased in tilt severity and, while the tilt of VSM 2047S exceeds project tolerance, it is now within survey accuracy. Based on visual observations, bank erosion or channel scour at the VSM crossing is not significant. The VSM have no apparent visual effect on the channel at the crossing location. The pipelines appear to be in good condition with no observed leaks.

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4.0 CONCLUSIONS

Floodwaters did not overtop any banks and no significant erosion or scour occurred at any of the Alpine Pipeline system river crossing sites during the 2010 spring breakup.

At the east and west bank HDD crossing sites, continuing natural erosion along the banks was noted to be within design estimates and not negatively impacting the safe operation of the pipeline. No signs of pressure ridges, depressions, ponding, or cracking, meeting the monitoring criteria, were evident. The condition of the VSM and pipelines was determined to be stable despite VSM tilt measurements being outside of the project tolerance at the Kachemach River and Miluveach River crossings.

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5.0 REFERENCES

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Appendix A Photographs

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N 70° 14.542' W 150° 51.659'

05/13/2010 8:49:15 AM

PHOTO A.1 HDD WEST, MAY 13, 2010: PRE-BREAKUP LOOKING NORTH



N 70° 14.676' W 150° 51.479'

06/02/2010 4:29:06 PM

PHOTO A.2 HDD WEST, JUNE 2, 2010: ONE DAY AFTER ESTIMATED PEAK STAGE, LOOKING SOUTH



07/30/2010 8:58:18 AM

PHOTO A.3 HDD WEST, JULY 30, 2010: WEST BANK, LOOKING NORTH



N 70° 14.670' W 150° 51.459'

07/30/2010 5:28:50 PM

PHOTO A.4 HDD WEST, JULY 30, 2010: WEST BANK, LOOKING SOUTHWEST



PHOTO A.5 HDD WEST, JULY 30, 2010: PIT IN GRAVEL PAD EAST OF CP MODULE BUILDINGS



PHOTO A.6 HDD EAST, MAY 27, 2010: FIVE DAYS BEFORE PEAK STAGE, LOOKING WEST



N 70° 14.752' W 150° 49.873'

06/02/2010 4:33:04 PM

PHOTO A.7 HDD EAST, JUNE 2, 2010: AERIAL VIEW ONE DAY AFTER PEAK STAGE, LOOKING SOUTHEAST



N 70° 14.742' W 150° 49.882'

06/12/2010 9:34:16 AM

PHOTO A.8 HDD EAST, JUNE 12, 2010: EAST BANK, LOOKING EAST



PHOTO A.9 HDD EAST, JUNE 12, 2010: CLOSE-UP EAST BANK, LOOKING NORTHEAST



PHOTO A.10 HDD EAST, JULY 30, 2010: AERIAL VIEW OF TROUGH FROM WATER, LOOKING EAST



PHOTO A.11 HDD EAST, JULY 30, 2010: TROUGH FROM TOE OF BANK, LOOKING SOUTHEAST



PHOTO A.12 HDD EAST, JULY 30, 2010: EAST BANK, LOOKING SOUTH



PHOTO A.13 HDD EAST, JULY 30, 2010: LOOKING WEST THROUGH THERMOSIPHONS WITH TROUGH IN FOREGROUND



PHOTO A.14 KACHEMACH RIVER CROSSING, JUNE 10, 2010: LOOKING SOUTHEAST



PHOTO A.15 KACHEMACH RIVER CROSSING, JULY 30, 2010: LOOKING NORTH



PHOTO A.16 KACHEMACH RIVER CROSSING, JULY 30, 2010: LOOKING SOUTH



PHOTO A.17 KACHEMACH RIVER CROSSING, JULY 30, 2010: WEST BANK LOOKING EAST



PHOTO A.18 KACHEMACH RIVER CROSSING, JULY 30, 2010: EAST BANK LOOKING WEST



PHOTO A.19 KACHEMACH RIVER CROSSING, JULY 30, 2010: EAST BANK, LOOKING SOUTH



PHOTO A.20 KACHEMACH RIVER CROSSING, JULY 30, 2010: WEST BANK, LOOKING SOUTH



PHOTO A.21 MILUVEACH RIVER CROSSING, JUNE 5, 2010: PRE-BREAKUP, LOOKING NORTH

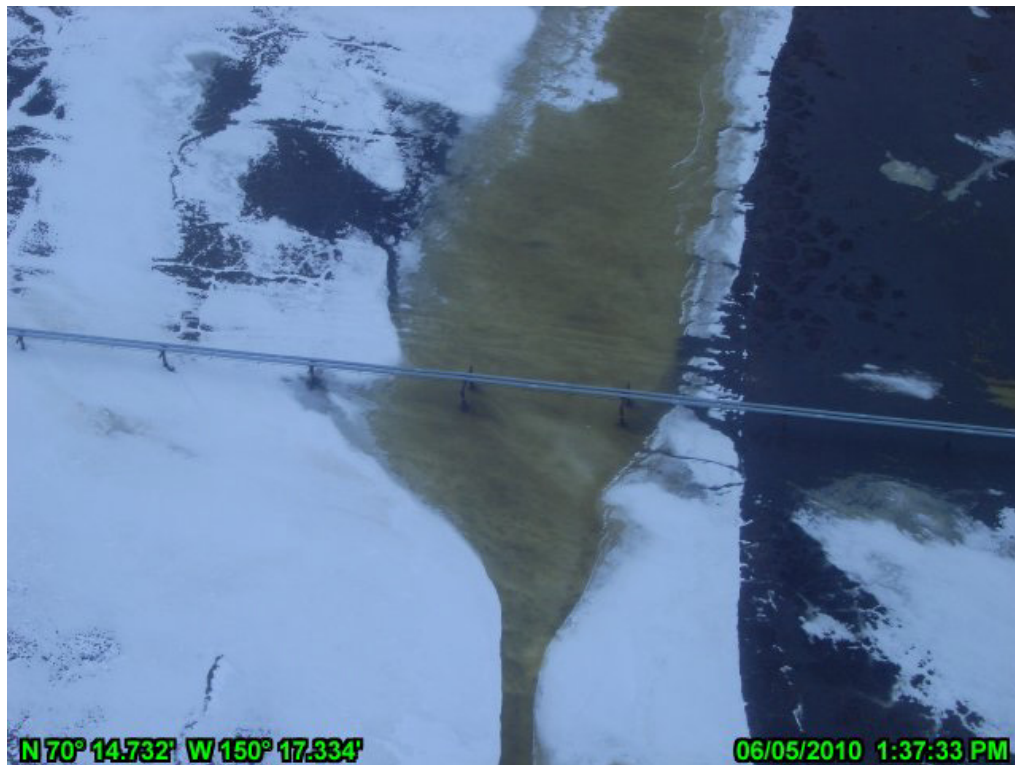


PHOTO A.22 MILUVEACH RIVER CROSSING, JUNE 5, 2010: PRE-BREAKUP, LOOKING SOUTH



PHOTO A.23 MILUVEACH RIVER CROSSING, JUNE 12, 2010: LOOKING NORTHEAST



PHOTO A.24 MILUVEACH RIVER CROSSING, JUNE 12, 2010: LOOKING SOUTHEAST



PHOTO A.25 MILUVEACH RIVER CROSSING, JULY 30, 2010: LOOKING NORTHEAST



PHOTO A.26 MILUVEACH RIVER CROSSING, JULY 30, 2010: LOOKING SOUTH



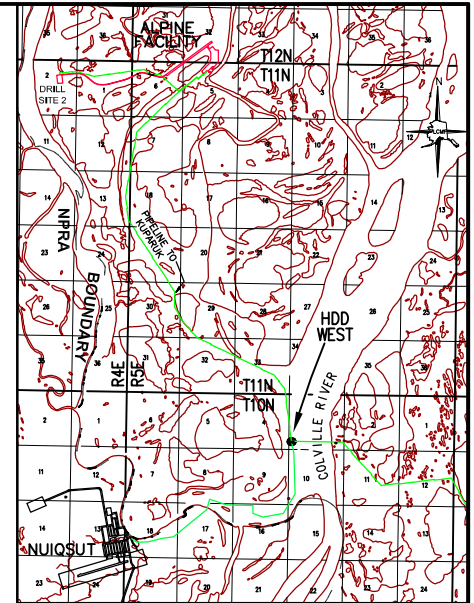
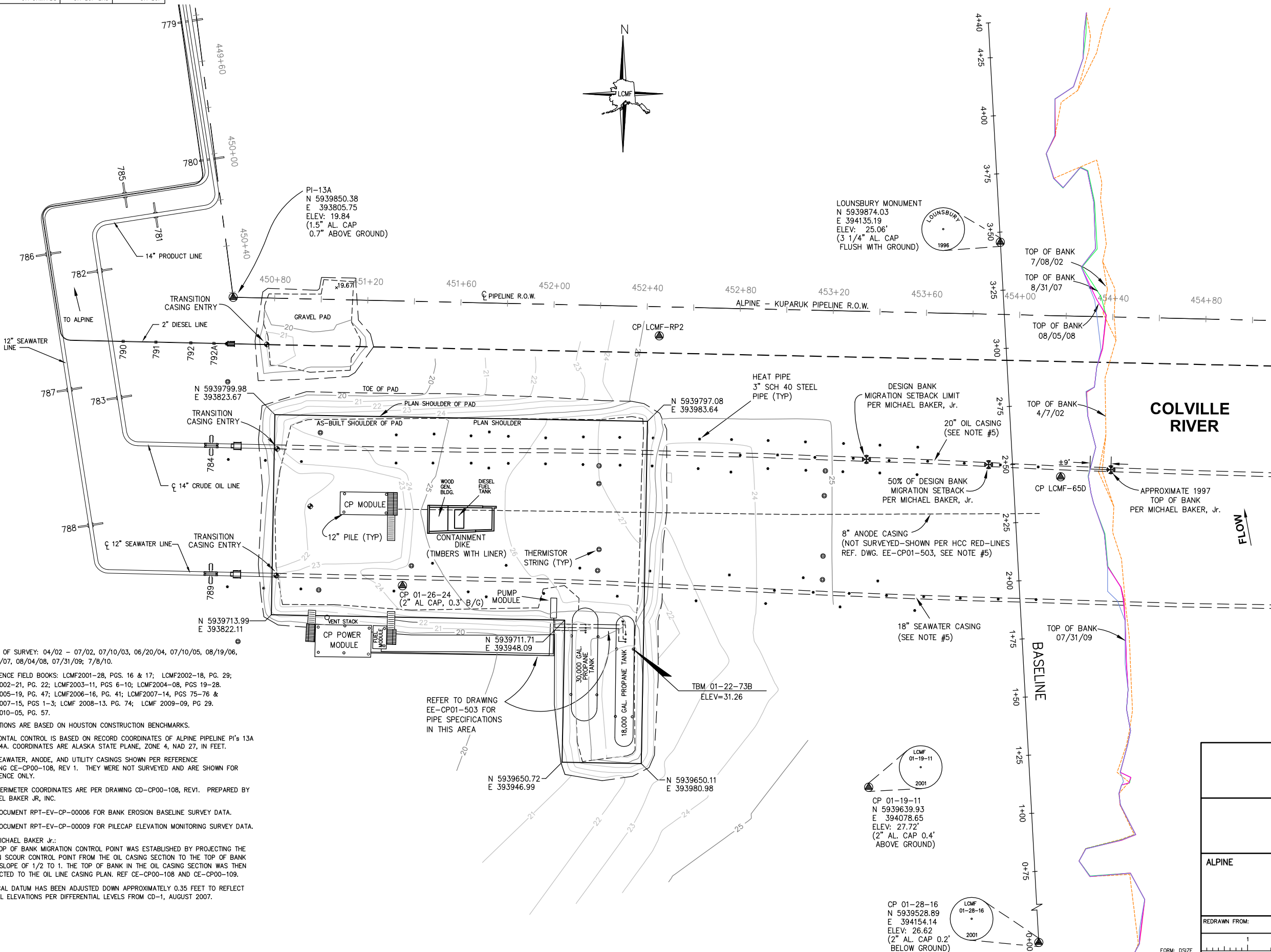
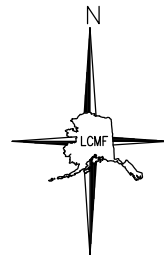
PHOTO A.27 MILUVEACH RIVER CROSSING, JULY 30, 2010: WEST BANK, LOOKING EAST



PHOTO A.28 MILUVEACH RIVER CROSSING, JULY 30, 2010: EAST BANK, LOOKING WEST

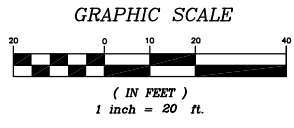
Appendix B HDD West

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VICINITY MAP
NO SCALE

- LEGEND**
- HEAT PIPE
 - ⊕ THERMISTOR STRING
 - ⊕ TRANSITION CASING ENTRY POINT
 - 21- 1' CONTOUR LINES
 - PILE
 - ⊕ SURVEY CONTROL
 - ⊕ MICHAEL BAKER JR. MIGRATION POINT
 - TOE OF PAD
 - SHOULDER OF PAD
 - TOP OF BANK 7/8/02
 - TOP OF BANK 8/31/07
 - TOP OF BANK 8/05/08
 - TOP OF BANK 7/31/09
 - TOP OF BANK 7/08/10



- NOTES:**
- DATES OF SURVEY: 04/02 - 07/02, 07/10/03, 06/20/04, 07/10/05, 08/19/06, 08/31/07, 08/04/08, 07/31/09; 7/8/10.
 - 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. LCMF2005-19, PG. 47; LCMF2006-16, PG. 41; LCMF2007-14, PGS 75-76 & LCMF2007-15, PGS 1-3; LCMF 2008-13, PG. 74; LCMF 2009-09, PG 29. LCMF2010-05, PG. 57.
 - 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.
 - PER MICHAEL BAKER JR.: THE TOP OF BANK MIGRATION CONTROL POINT WAS ESTABLISHED BY PROJECTING THE DESIGN SCOUR CONTROL POINT FROM THE OIL CASING SECTION TO THE TOP OF BANK AT A SLOPE OF 1/2 TO 1. THE TOP OF BANK IN THE OIL CASING SECTION WAS THEN PROJECTED TO THE OIL LINE CASING PLAN. REF CE-CP00-108 AND CE-CP00-109.
 - VERTICAL DATUM HAS BEEN ADJUSTED DOWN APPROXIMATELY 0.35 FEET TO REFLECT ACTUAL ELEVATIONS PER DIFFERENTIAL LEVELS FROM CD-1, AUGUST 2007.

KUUKPIK LCMF
Alpine Survey Office

ConocoPhillips
Alaska, Inc.

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: JZ	ECM NO: 1870227ACS
SCALE: 1"=20'	CHECKED: JZ	APPROVAL: ML	CC NO:
JOB NO: 02-205	SUB JOB NO:	DRAWING NO: CE-CP00-143	CADD FILE NO: 01-12-05-1WEST
		PART: 1 of 1	REV: 9

REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP
6	8/31/07	UPDATED PER 4810351ACS						6	8/31/07	UPDATED PER 4810351ACS	CZ	DB			
5	8/21/06	UPDATED PER 4116808ACS						5	8/21/06	UPDATED PER 4116808ACS	AG	GD			
4	7/10/05	UPDATED PER 3391755ACS						4	7/10/05	UPDATED PER 3391755ACS	CZ	DB			
3	6/25/04	UPDATED PER 2390460ACS						3	6/25/04	UPDATED PER 2390460ACS	CZ	BD			
2	11/15/03	ISSUED PER 2094387ACS						2	11/15/03	ISSUED PER 2094387ACS	GD	JZ			
1	11/5/02	ISSUED PER 1870227ACS						1	11/5/02	ISSUED PER 1870227ACS	CZ	JZ			

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

Pile Cap Designation	Pile Cap Monitor - Bottom of Pile Cap Locations								Description	
	See Drawing CE-CP00-143 Rev 8 for Survey Baseline Location									
	6/20/2004	8/4/2005	8/19/2006	8/31/2007	8/7/2008	8/3/2009	7/8/2010	Future	Future	Date
W-01 NE Cor	26.389	26.389	26.391	26.398	26.397	26.401	26.401			Bottom of Pile Cap (In Feet)
		0.000	0.002	0.007	-0.001	0.004	0.000			Incremental Change
		0.000	0.002	0.009	0.008	0.012	0.012			Cumulative Change
W-02 NE Cor	26.391	26.390	26.390	26.400	26.397	26.403	26.401			Bottom of Pile Cap (In Feet)
		-0.001	0.000	0.010	-0.003	0.006	-0.002			Incremental Change
		-0.001	-0.001	0.009	0.006	0.012	0.010			Cumulative Change
W-03 NE Cor	26.391	26.391	26.394	26.400	26.398	26.403	26.401			Bottom of Pile Cap (In Feet)
		0.000	0.003	0.006	-0.002	0.005	-0.002			Incremental Change
		0.000	0.003	0.009	0.007	0.012	0.010			Cumulative Change
W-04 NE Cor	26.389	26.388	26.390	26.394	26.394	26.396	26.397			Bottom of Pile Cap (In Feet)
		-0.001	0.002	0.004	0.000	0.002	0.001			Incremental Change
		-0.001	0.001	0.005	0.005	0.007	0.008			Cumulative Change
W-05 NE Cor	26.383	26.378	26.386	26.390	26.389	26.393	26.393			Bottom of Pile Cap (In Feet)
		-0.005	0.008	0.004	-0.001	0.004	0.000			Incremental Change
		-0.005	0.003	0.007	0.006	0.010	0.010			Cumulative Change
W-06 NE Cor	26.395	26.391	26.394	26.400	26.397	26.401	26.401			Bottom of Pile Cap (In Feet)
		-0.004	0.003	0.006	-0.003	0.004	0.000			Incremental Change
		-0.004	-0.001	0.005	0.002	0.006	0.006			Cumulative Change
W-07 NE Cor	26.397	26.393	26.402	26.406	26.404	26.408	26.405			Bottom of Pile Cap (In Feet)
		-0.004	0.009	0.004	-0.002	0.004	-0.003			Incremental Change
		-0.004	0.005	0.009	0.007	0.011	0.008			Cumulative Change

Alpine CP 00
HDD West Site
Pilecap Monitor

Pile Cap Designation	Pile Cap Monitor - Bottom of Pile Cap Locations								Description	
	See Drawing CE-CP00-143 Rev 8 for Survey Baseline Location									
	6/20/2004	8/4/2005	8/19/2006	8/31/2007	8/7/2008	8/3/2009	7/8/2010	Future	Future	Date
W-08 NE Cor	26.403	26.401	26.404	26.408	26.406	26.412	26.410			Bottom of Pile Cap (In Feet)
		-0.002	0.003	0.004	-0.002	0.006	-0.002			Incremental Change
		-0.002	0.001	0.005	0.003	0.009	0.007			Cumulative Change
W-09 NE Cor	31.291	31.294	31.292	31.290	31.292	31.294	31.296			Bottom of Pile Cap (In Feet)
		0.003	-0.002	-0.002	0.002	0.002	0.002			Incremental Change
		0.003	0.001	-0.001	0.001	0.003	0.005			Cumulative Change
W-10 NE Cor	31.266	31.261	31.261	31.264	31.263	31.263	31.262			Bottom of Pile Cap (In Feet)
		-0.005	0.000	0.003	-0.001	0.000	-0.001			Incremental Change
		-0.005	-0.005	-0.002	-0.003	-0.003	-0.004			Cumulative Change
W-11 NE Cor	31.299	31.300	31.288	31.294	31.299	31.304	31.299			Bottom of Pile Cap (In Feet)
		0.001	-0.012	0.006	0.005	0.005	-0.005			Incremental Change
		0.001	-0.011	-0.005	0.000	0.005	0.000			Cumulative Change
W-12 NE Cor	31.301	31.301	31.298	31.294	31.297	31.298	31.296			Bottom of Pile Cap (In Feet)
		0.000	-0.003	-0.004	0.003	0.001	-0.002			Incremental Change
		0.000	-0.003	-0.007	-0.004	-0.003	-0.005			Cumulative Change
W-13 NE Cor	27.377	27.373	27.383	27.393	27.389	27.391	27.394			Bottom of Pile Cap (In Feet)
		-0.004	0.010	0.010	-0.004	0.002	0.003			Incremental Change
		-0.004	0.006	0.016	0.012	0.014	0.017			Cumulative Change
W-14 NE Cor	27.428	27.423	27.433	27.439	27.442	27.442	27.454			Bottom of Pile Cap (In Feet)
		-0.005	0.010	0.006	0.003	0.000	0.012			Incremental Change
		-0.005	0.005	0.011	0.014	0.014	0.026			Cumulative Change

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

Pile Cap Designation	Pile Cap Monitor - Bottom of Pile Cap Locations								Description	
	See Drawing CE-CP00-143 Rev 8 for Survey Baseline Location									
	6/20/2004	8/4/2005	8/19/2006	8/31/2007	8/7/2008	8/3/2009	7/8/2010	Future	Future	Date
W-15 NE Cor	27.413	27.407	27.407	27.425	27.428	27.425	27.434			Bottom of Pile Cap (In Feet)
		-0.006	0.000	0.018	0.003	-0.003	0.009			Incremental Change
		-0.006	-0.006	0.012	0.015	0.012	0.021			Cumulative Change
W-16 NE Cor	27.389	27.385	27.392	27.416	27.400	27.404	27.410			Bottom of Pile Cap (In Feet)
		-0.004	0.007	0.024	-0.016	0.004	0.006			Incremental Change
		-0.004	0.003	0.027	0.011	0.015	0.021			Cumulative Change
W-17 NE Cor	28.940	28.947	28.944	28.940	28.945	28.946	28.942			Bottom of Pile Cap (In Feet)
		0.007	-0.003	-0.004	0.005	0.001	-0.004			Incremental Change
		0.007	0.004	0.000	0.005	0.006	0.002			Cumulative Change
W-18 NE Cor	28.965	28.972	28.968	28.965	28.970	28.969	28.968			Bottom of Pile Cap (In Feet)
		0.007	-0.004	-0.003	0.005	-0.001	-0.001			Incremental Change
		0.007	0.003	0.000	0.005	0.004	0.003			Cumulative Change
W-19 NE Cor	28.959	28.962	28.960	28.956	28.958	28.958	28.955			Bottom of Pile Cap (In Feet)
		0.003	-0.002	-0.004	0.002	0.000	-0.003			Incremental Change
		0.003	0.001	-0.003	-0.001	-0.001	-0.004			Cumulative Change
W-20 NE Cor	28.964	28.965	28.965	28.965	28.966	28.964	28.964			Bottom of Pile Cap (In Feet)
		0.001	0.000	0.000	0.001	-0.002	0.000			Incremental Change
		0.001	0.001	0.001	0.002	0.000	0.000			Cumulative Change
Note: 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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
0+00	39.5	39.5	39.5	39.5	39.3	39.3	39.3	39.3	39.4	39.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.1	-0.1	Incremental Change
			0.0	0.0	0.0	-0.3	-0.2	-0.2	-0.2	-0.1	-0.2
0+05	39.3	39.3	39.3	39.3	37.6	37.6	37.6	37.6	37.7	37.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.7	0.0	0.0	0.0	0.1	-0.1	Incremental Change
			0.0	0.0	0.0	-1.7	-1.7	-1.7	-1.7	-1.6	-1.7
0+10	39.4	39.4	39.4	39.4	38.5	38.5	38.5	38.5	38.7	38.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.9	0.0	0.0	0.0	0.2	-0.2	Incremental Change
			0.0	0.0	0.0	-0.9	-0.9	-0.9	-0.9	-0.7	-0.9
0+20	45.8	45.8	45.8	45.8	41.9	41.9	41.9	41.9	39.9	39.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	-3.8	0.0	0.0	0.0	-2.0	0.0	Incremental Change
			0.0	0.0	0.0	-3.8	-3.9	-3.9	-3.9	-5.9	-5.9
0+25	41.5	41.5	41.5	41.5	39.1	39.1	39.1	39.1	37.6	37.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.4	0.0	0.0	0.0	-1.5	0.0	Incremental Change
			0.0	0.0	0.0	-2.4	-2.4	-2.4	-2.4	-3.9	-3.9
0+30	37.7	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.8	37.9	Baseline Offset (In Feet)
		0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	Incremental Change
		0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.2	Cumulative Change
0+40	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	42.2	41.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.3	Incremental Change
			0.0	0.0	0.0	0.0	0.0	0.0	0.3	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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
0+50	42.0	42.0	42.0	42.0	42.0	42.0	44.5	44.5	44.5	44.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	-0.5	Incremental Change
		0.0	0.0	0.0	0.0	0.0	2.5	2.5	2.5	2.0	Cumulative Change
0+60	41.4	41.4	41.4	41.4	41.4	41.4	46.4	46.4	46.3	46.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	5.0	0.0	-0.1	0.1	Incremental Change
		0.0	0.0	0.0	0.0	0.0	5.0	5.0	4.9	5.0	Cumulative Change
0+70	40.7	40.7	40.7	40.7	40.7	40.7	41.9	41.9	41.9	41.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	Cumulative Change
0+75	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.3	21.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	Cumulative Change
0+80	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
0+85	29.0	29.0	29.0	29.0	29.0	29.0	29.7	29.7	30.3	29.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.6	-0.6	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.7	0.7	1.3	0.7	Cumulative Change
0+90	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	43.3	42.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-0.5	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
1+00	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.9	38.7	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.2	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	Cumulative Change
1+05	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.8	37.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	Cumulative Change
1+10	41.4	41.4	41.4	41.4	39.2	39.2	39.2	39.2	39.2	39.2	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.2	0.1	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	Cumulative Change
1+15	38.2	38.2	38.2	38.2	38.2	38.2	39.9	39.9	39.9	39.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	-0.8	Incremental Change
		0.0	0.0	0.0	0.0	0.0	1.7	1.7	1.7	0.9	Cumulative Change
1+20	39.4	39.4	39.4	39.4	39.4	39.4	40.4	40.4	40.4	40.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	Cumulative Change
1+25	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	42.1	41.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	-0.7	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	Cumulative Change
1+30	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.5	43.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-0.5	Incremental Change
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
1+35	44.2	44.2	44.2	44.2	43.8	43.8	43.8	43.8	44.1	43.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.4	0.0	0.0	0.0	0.3	-0.3	Incremental Change
		0.0	0.0	0.0	-0.4	-0.4	-0.4	-0.4	-0.1	-0.4	Cumulative Change
1+40	45.3	45.3	45.3	45.3	43.4	43.4	43.4	43.4	43.4	43.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.9	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	Cumulative Change
1+45	45.7	45.7	45.7	45.7	43.4	43.4	43.4	43.4	43.4	43.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.3	0.0	0.0	0.0	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-2.3	-2.3	-2.3	-2.3	-2.3	-2.3	Cumulative Change
1+50	45.7	45.7	45.7	45.7	43.9	43.9	43.9	43.9	44.1	43.9	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.8	0.0	0.0	0.0	0.2	-0.2	Incremental Change
		0.0	0.0	0.0	-1.8	-1.8	-1.8	-1.8	-1.6	-1.8	Cumulative Change
1+60	45.8	45.8	45.8	44.9	44.2	44.3	44.3	44.3	44.2	43.7	Baseline Offset (In Feet)
		0.0	0.0	-1.0	-0.6	0.0	0.0	0.0	-0.1	-0.5	Incremental Change
		0.0	0.0	-1.0	-1.6	-1.6	-1.5	-1.5	-1.6	-2.1	Cumulative Change
1+65	45.9	45.9	45.9	45.0	44.3	44.4	44.4	44.4	44.2	43.8	Baseline Offset (In Feet)
		0.0	0.0	-0.9	-0.7	0.1	0.0	0.0	-0.2	-0.4	Incremental Change
		0.0	0.0	-0.9	-1.6	-1.5	-1.5	-1.5	-1.7	-2.1	Cumulative Change
1+75	45.9	45.9	45.9	45.9	44.4	44.4	44.4	44.4	44.4	44.3	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.5	0.0	0.0	0.0	0.0	-0.1	Incremental Change
		0.0	0.0	0.0	-1.5	-1.5	-1.5	-1.5	-1.5	-1.6	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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
1+90	45.0	45.0	44.1	44.1	44.1	44.1	44.1	44.1	44.2	40.9	Baseline Offset (In Feet)
		0.0	-0.9	0.0	0.0	0.0	0.0	0.0	0.1	-3.3	Incremental Change
			0.0	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.8	-4.1
1+95	44.9	44.9	42.8	42.8	42.8	42.8	42.8	42.8	42.8	37.8	Baseline Offset (In Feet)
		0.0	-2.1	0.0	0.0	0.0	0.0	0.0	0.0	-5.0	Incremental Change
			0.0	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-2.1	-7.1
2+00	44.7	44.7	41.8	41.8	41.1	40.4	40.4	40.4	40.6	38.1	Baseline Offset (In Feet)
		0.0	-2.9	0.0	-0.8	-0.6	0.0	0.0	0.2	-2.5	Incremental Change
			0.0	-2.9	-2.9	-3.6	-4.3	-4.3	-4.3	-4.1	-6.6
2+05	44.6	44.6	40.4	40.4	39.7	38.4	38.4	38.4	38.3	38.4	Baseline Offset (In Feet)
		0.0	-4.2	0.0	-0.7	-1.4	0.0	0.0	-0.1	0.1	Incremental Change
			0.0	-4.2	-4.2	-4.8	-6.2	-6.2	-6.2	-6.3	-6.2
2+10	43.7	43.7	40.4	40.2	40.2	38.3	38.3	38.3	38.1	38.3	Baseline Offset (In Feet)
		0.0	-3.2	-0.3	0.0	-1.9	0.0	0.0	-0.2	0.2	Incremental Change
			0.0	-3.2	-3.5	-3.5	-5.4	-5.4	-5.4	-5.6	-5.4
2+20	41.5	41.5	41.5	40.6	40.6	37.5	37.5	37.5	37.2	37.5	Baseline Offset (In Feet)
		0.0	0.0	-0.9	0.0	-3.1	0.0	0.0	-0.3	0.3	Incremental Change
			0.0	0.0	-0.9	-0.9	-3.9	-4.0	-4.0	-4.3	-4.0
2+25	42.0	42.0	42.0	40.7	40.7	35.9	35.9	35.9	35.7	35.9	Baseline Offset (In Feet)
		0.0	0.0	-1.3	0.0	-4.8	0.0	0.0	-0.2	0.2	Incremental Change
			0.0	0.0	-1.3	-1.3	-6.1	-6.1	-6.1	-6.3	-6.1

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

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-143 Rev 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
2+30	42.4	42.3	42.2	40.9	40.9	34.2	34.2	34.2	34.2	34.2	Baseline Offset (In Feet)
		0.0	-0.1	-1.4	0.0	-6.6	0.0	0.0	0.0	0.0	Incremental Change
		0.0	-0.1	-1.5	-1.5	-8.1	-8.2	-8.2	-8.2	-8.2	Cumulative Change
2+35	41.0	40.4	40.4	40.4	40.4	33.1	33.1	33.1	33.1	33.1	Baseline Offset (In Feet)
		-0.6	0.0	0.0	0.0	-7.3	0.0	0.0	0.0	0.0	Incremental Change
		-0.6	-0.6	-0.6	-0.6	-7.9	-7.9	-7.9	-7.9	-7.9	Cumulative Change
2+45	38.3	36.8	36.8	36.8	36.8	32.7	32.7	32.7	32.7	32.7	Baseline Offset (In Feet)
		-1.5	0.0	0.0	0.0	-4.1	0.0	0.0	0.0	0.0	Incremental Change
		-1.5	-1.5	-1.5	-1.5	-5.6	-5.6	-5.6	-5.6	-5.6	Cumulative Change
2+50	39.0	38.1	37.8	37.5	37.1	34.3	34.3	34.3	34.3	34.3	Baseline Offset (In Feet)
		-1.0	-0.3	-0.3	-0.4	-2.8	0.0	0.0	0.0	0.0	Incremental Change
		-1.0	-1.2	-1.5	-1.9	-4.7	-4.7	-4.7	-4.7	-4.7	Cumulative Change
2+55	39.9	39.3	38.2	38.2	37.4	35.9	35.9	35.9	35.9	35.9	Baseline Offset (In Feet)
		-0.5	-1.1	0.0	-0.8	-1.5	0.0	0.0	0.0	0.0	Incremental Change
		-0.5	-1.6	-1.6	-2.4	-4.0	-4.0	-4.0	-4.0	-4.0	Cumulative Change
2+60	40.7	40.7	40.7	40.7	38.3	35.1	35.1	35.1	35.2	35.1	Baseline Offset (In Feet)
		0.0	0.0	0.0	-2.4	-3.1	0.0	0.0	0.1	-0.1	Incremental Change
		0.0	0.0	0.0	-2.4	-5.5	-5.6	-5.6	-5.5	-5.6	Cumulative Change
2+65	40.9	40.9	40.9	40.6	39.2	34.1	34.1	34.1	34.2	34.1	Baseline Offset (In Feet)
		0.0	0.0	-0.4	-1.3	-5.1	0.0	0.0	0.1	-0.1	Incremental Change
		0.0	0.0	-0.4	-1.7	-6.8	-6.8	-6.8	-6.7	-6.8	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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
2+70	41.1	41.1	41.1	40.3	40.3	33.3	33.3	33.3	33.4	33.3	Baseline Offset (In Feet)
		0.0	0.0	-0.8	0.0	-7.0	0.0	0.0	0.1	-0.1	Incremental Change
			0.0	0.0	-0.8	-0.8	-7.8	-7.8	-7.8	-7.7	-7.8
2+75	41.3	41.3	41.3	39.9	39.9	33.3	33.3	33.3	33.3	33.3	Baseline Offset (In Feet)
		0.0	0.0	-1.4	0.0	-6.6	0.0	0.0	0.0	0.0	Incremental Change
			0.0	0.0	-1.4	-1.4	-8.0	-8.0	-8.0	-8.0	-8.0
2+80	41.5	41.5	41.5	39.4	39.4	34.6	34.6	34.6	34.2	34.6	Baseline Offset (In Feet)
		0.0	0.0	-2.2	0.0	-4.8	0.0	0.0	-0.4	0.4	Incremental Change
			0.0	0.0	-2.2	-2.2	-6.9	-6.9	-6.9	-7.3	-6.9
2+85	41.7	41.7	41.7	39.6	39.6	37.8	37.8	37.8	37.6	37.8	Baseline Offset (In Feet)
		0.0	0.0	-2.1	0.0	-1.8	0.0	0.0	-0.2	0.2	Incremental Change
			0.0	0.0	-2.1	-2.1	-3.9	-3.9	-3.9	-4.1	-3.9
2+90	43.5	43.5	41.5	40.8	40.8	38.5	38.5	38.5	38.5	38.5	Baseline Offset (In Feet)
		0.0	-1.9	-0.7	0.0	-2.3	0.0	0.0	0.0	0.0	Incremental Change
			0.0	-1.9	-2.6	-2.6	-5.0	-5.0	-5.0	-5.0	-5.0
3+00	47.0	47.0	46.1	46.1	44.8	41.6	41.6	41.6	41.6	40.5	Baseline Offset (In Feet)
		0.0	-0.9	0.0	-1.3	-3.2	0.0	0.0	0.0	-1.1	Incremental Change
			0.0	-0.9	-0.9	-2.2	-5.4	-5.4	-5.4	-5.4	-6.5
3+10	47.1	43.6	43.6	43.6	43.6	43.2	43.2	43.2	43.2	39.8	Baseline Offset (In Feet)
		-3.5	0.0	0.0	0.0	-0.4	0.0	0.0	0.0	-3.4	Incremental Change
			-3.5	-3.5	-3.5	-3.5	-3.8	-3.8	-3.8	-3.8	-7.3

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

Baseline Station	Streambank Monitor - Top of Bank Locations										Description
	See Drawing CE-CP00-143 Rev 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
3+15	47.4	42.9	42.9	42.9	42.3	42.9	42.9	42.0	42.0	39.4	Baseline Offset (In Feet)
		-4.5	0.0	0.0	-0.6	0.6	0.0	-0.9	0.0	-2.6	Incremental Change
		-4.5	-4.5	-4.5	-5.2	-4.6	-4.5	-5.4	-5.4	-8.0	Cumulative Change
3+25	47.3	44.6	44.6	44.4	42.3	38.9	38.9	37.4	37.4	36.9	Baseline Offset (In Feet)
		-2.7	0.0	-0.2	-2.1	-3.4	0.0	-1.5	0.0	-0.5	Incremental Change
		-2.7	-2.7	-2.9	-5.0	-8.4	-8.4	-9.9	-9.9	-10.4	Cumulative Change
3+30	45.4	44.0	44.0	43.2	42.7	36.2	36.2	35.4	35.4	35.2	Baseline Offset (In Feet)
		-1.4	0.0	-0.9	-0.5	-6.5	0.0	-0.8	0.0	-0.2	Incremental Change
		-1.4	-1.4	-2.2	-2.7	-9.2	-9.2	-10.0	-10.0	-10.2	Cumulative Change
3+35	43.4	43.4	43.4	43.4	42.0	36.4	36.4	35.8	35.8	35.8	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.4	-5.6	0.0	-0.6	0.0	0.0	Incremental Change
		0.0	0.0	0.0	-1.4	-7.0	-7.0	-7.6	-7.6	-7.6	Cumulative Change
3+40	44.8	44.8	44.0	44.0	41.3	41.1	41.1	40.1	40.1	40.1	Baseline Offset (In Feet)
		0.0	-0.8	0.0	-2.6	-0.3	0.0	-1.0	0.0	0.0	Incremental Change
		0.0	-0.8	-0.8	-3.4	-3.7	-3.7	-4.7	-4.7	-4.7	Cumulative Change
3+45	45.2	45.2	44.2	44.2	42.8	41.5	41.5	40.7	40.7	40.7	Baseline Offset (In Feet)
		0.0	-1.0	0.0	-1.5	-1.3	0.0	-0.8	0.0	0.0	Incremental Change
		0.0	-1.0	-1.0	-2.5	-3.8	-3.7	-4.5	-4.5	-4.5	Cumulative Change
3+50	44.9	44.9	44.2	44.2	42.3	41.4	41.4	40.8	40.8	40.8	Baseline Offset (In Feet)
		0.0	-0.6	0.0	-1.9	-0.9	0.0	-0.6	0.0	0.0	Incremental Change
		0.0	-0.6	-0.6	-2.6	-3.4	-3.5	-4.1	-4.1	-4.1	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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
3+60	44.1	44.1	44.1	44.1	43.4	41.4	41.4	41.4	41.0	41.4	Baseline Offset (In Feet)
		0.0	0.0	0.0	-0.7	-2.0	0.0	0.0	-0.4	0.4	Incremental Change
			0.0	0.0	0.0	-0.7	-2.7	-2.7	-2.7	-3.1	-2.7
3+70	44.7	44.7	42.8	41.8	41.0	26.0	26.0	26.0	26.0	26.0	Baseline Offset (In Feet)
		0.0	-1.9	-1.1	-0.8	-15.0	0.0	0.0	0.0	0.0	Incremental Change
			0.0	-1.9	-2.9	-3.7	-18.7	-18.7	-18.7	-18.7	-18.7
3+75	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Incremental Change
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Cumulative Change
3+85	23.1	23.1	23.1	23.1	23.1	23.0	23.0	23.0	23.1	23.0	Baseline Offset (In Feet)
		0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.1	-0.1	Incremental Change
			0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	-0.1
4+00	28.4	28.4	28.4	28.4	26.5	26.5	26.5	26.5	26.4	26.5	Baseline Offset (In Feet)
		0.0	0.0	0.0	-1.8	0.0	0.0	0.0	-0.1	0.1	Incremental Change
			0.0	0.0	0.0	-1.8	-1.8	-1.9	-1.9	-2.0	-1.9
4+10	37.4	37.1	37.1	37.1	33.0	33.0	33.0	33.0	34.0	34.0	Baseline Offset (In Feet)
		-0.3	0.0	0.0	-4.1	0.0	0.0	0.0	1.0	0.0	Incremental Change
		-0.3	-0.3	-0.3	-4.4	-4.4	-4.4	-4.4	-3.4	-3.4	Cumulative Change
4+25	45.9	42.2	42.2	42.2	40.4	40.3	40.2	40.0	40.0	40.0	Baseline Offset (In Feet)
		-3.7	0.0	0.0	-1.9	0.0	-0.1	-0.2	0.0	0.0	Incremental Change
		-3.7	-3.7	-3.7	-5.5	-5.6	-5.7	-5.9	-5.9	-5.9	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 8 for Survey Baseline Location										
	4/7/2002	7/8/2002	7/10/2003	6/20/2004	7/10/2005	8/19/2006	8/31/2007	8/5/2008	7/31/2009	7/8/2010	Date
4+30	47.3	43.2	43.2	42.1	41.2	41.1	41.1	40.5	40.5	40.5	Baseline Offset (In Feet)
		-4.2	0.0	-1.1	-0.9	-0.1	0.0	-0.6	0.0	0.0	Incremental Change
		-4.2	-4.2	-5.2	-6.2	-6.2	-6.2	-6.8	-6.8	-6.8	Cumulative Change
4+35	48.8	43.1	43.1	41.9	41.9	41.8	41.8	41.1	41.1	41.1	Baseline Offset (In Feet)
		-5.7	0.0	-1.3	0.0	-0.1	0.0	-0.7	0.0	0.0	Incremental Change
		-5.7	-5.7	-7.0	-7.0	-7.1	-7.0	-7.7	-7.7	-7.7	Cumulative Change
4+40	50.9	42.5	42.5	42.1	42.1	42.1	42.1	41.9	41.9	41.9	Baseline Offset (In Feet)
		-8.4	0.0	-0.4	0.0	0.0	0.1	-0.2	0.0	0.0	Incremental Change
		-8.4	-8.4	-8.9	-8.9	-8.9	-8.8	-9.0	-9.0	-9.0	Cumulative Change
***Note: Survey completed on 4/7/02 was used for baseline data to compute Incremental/Cumulative Change. Negative numbers indicate erosion.											

Appendix C HDD East

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NOTES:

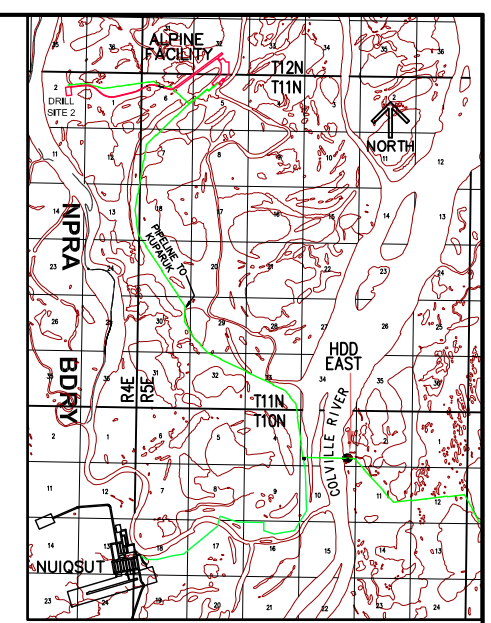
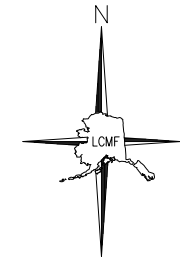
1. DATES OF SURVEY: JULY & SEPTEMBER, 2001, 2002 AND 2003; JUNE & JULY 2004; JULY 10, 2005; AUGUST 21, 2006; AUGUST 30, 2007; AUGUST 6, 2008; AUGUST 3, 2009; JULY 19-20, 2010.
2. REFERENCE FIELD BOOKS: LCMF2001-22, PGS. 2-6; LCMF2001-22, PG. 41; LCMF2001-23, PGS. 4-6; LCMF2001-23, PGS. 48-54; LCMF2001-25, PGS. 6-9; LCMF2002-21, PGS. 23, 27-29 & 35; LCMF2002-24, PGS. 35-41; LCMF2003-11, PGS. 1-5; LCMF2003-12, PGS. 67-69; LCMF2004-08, PGS. 12-19, 47, 52; LCMF2005-19, PG 46; LCMF2006-16, PG 44-46; LCMF2007-14, PGS. 70-72; LCMF 2008-13, PG. 75; LCMF2009-10, PGS 39-42; LCMF2010-06 PGS. 12-14.
3. ELEVATIONS ARE BASED ON HOUSTON CONSTRUCTION BENCHMARKS.
4. HORIZONTAL CONTROL IS BASED ON RECORD COORDINATES OF ALPINE PI'S 13A AND 14A. COORDINATES ARE ALASKA STATE PLANE, ZONE 4, NAD 27, IN FEET.
5. OIL, SEAWATER, ANODE AND UTILITY CASINGS ARE SHOWN PER REFERENCE DRAWING CE-CP00-109. THEY WERE NOT SURVEYED AND ARE SHOWN FOR REFERENCE ONLY.
6. SEE REPORT RPT-EV-CP-0001 REV 5 FOR SURVEY DATA ON THE STREAM BANK EROSION. SEE REPORT RPT-EV-CP-0002 REV 4 FOR SURVEY DATA ON THE POLYGON TROUGH CROSS-SECTIONS.
7. PER MICHAEL BAKER Jr.: THE TOP OF BANK MIGRATION CONTROL POINT WAS ESTABLISHED BY PROJECTING THE DESIGN SCOUR CONTROL POINT FROM THE OIL CASING SECTION TO THE TOP OF BANK AT A SLOPE OF 1/2 TO 1. THE TOP OF BANK IN THE OIL CASING SECTION WAS THEN PROJECTED TO THE OIL LINE CASING PLAN. REF CE-CP00-108 AND CE-CP00-109.
8. POLYGON TROUGH SECTION STATIONING IS FROM NORTH TO SOUTH.
9. VERTICAL DATUM HAS BEEN ADJUSTED DOWN APPROXIMATELY 0.5 FEET TO REFLECT ACTUAL ELEVATIONS PER DIFFERENTIAL LEVELS FROM CD-1, AUGUST 2007.

LCMF 02-21-30
2002
CP 02-21-30
N 5939885.96
E 397776.84
ELEV: 18.83
(2" AL. CAP
0.6" A/G)

LCMF 01-19-02
2001
DESTROYED
CP 01-19-02
N 5939829.30
E 397745.14
ELEV: 18.83
(2" AL. CAP 0.4"
ABOVE GROUND)

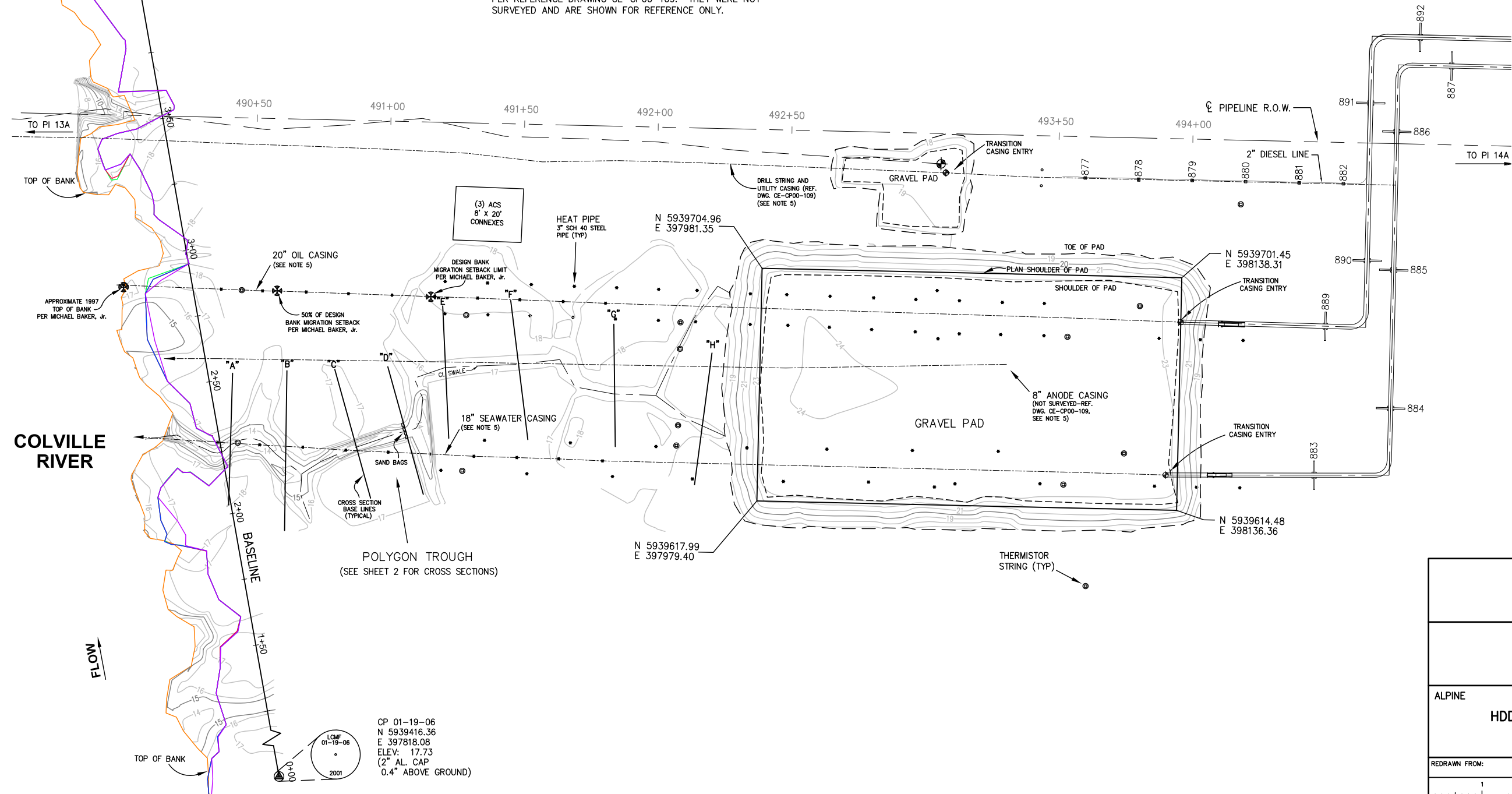
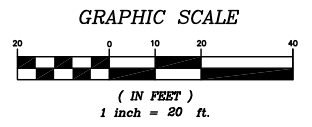
APPROXIMATE 1997
TOP OF BANK
PER MICHAEL BAKER, Jr.


CP 01-19-06
N 5939416.36
E 397818.08
ELEV: 17.73
(2" AL. CAP
0.4" ABOVE GROUND)




VICINITY MAP
NO SCALE

- LEGEND
- HEAT PIPE
 - ⊙ THERMISTOR STRING
 - ⊕ TRANSITION CASING ENTRY POINT
 - 21- 1' CONTOUR LINES
 - PILE
 - ⊗ SURVEY CONTROL
 - ⊗ MICHAEL BAKER Jr. MIGRATION POINT
 - TOP OF BANK 9/8/01
 - TOP OF BANK 8/30/07
 - TOP OF BANK 8/6/08
 - TOP OF BANK 8/3/09
 - TOP OF BANK 7/20/10





**KUUKPIIK
LCMF**
Alpine Survey Office



ConocoPhillips
Alaska, Inc.

ALPINE		MODULE: CP00		UNIT: CP
HDD BANK EROSION TOPO/MONITORING HDD SITE - EAST ALPINE FACILITY				
REDRAWN FROM:		CONSTRUCTION SHEET		
1 2 3 4 5 6		OF		
DO NOT SCALE		ABOVE SCALE FOR REFERENCE ONLY		
DATE:	7/31/01	DRAWN:	GD/CZ	DESIGN:
SCALE:	1"=20'	CHECKED:	JZ	ECM NO:
JOB NO:	02-205	APPROVAL:	CD	A01007ACS
SUB JOB NO:		DRAWING NO:	CE-CP00-134	CC NO:
		PART:	1 of 2	CADD FILE NO: 01-12-05-1EAST
		REV:	9	

REV	DATE	REVISIONS	BY	CHK	ENGR	PROJ	CUST	REV	DATE	REVISIONS	BY	CHK	ENGR	PROJ	CUST
								5	8/25/06	UPDATED PER 4116808ACS					
								4	7/11/05	UPDATED PER 3391755ACS					
								3	6/27/04	ISSUED PER 2390460ACS					
								2	12/31/03	ISSUED PER 2094387ACS--ADDED SHEET 2 AND 2003 DATA					
								1	11/1/02	ISSUED PER 1870227ACS					
								0	7/31/01	ISSUED PER A01007ACS					

**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
0+10	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
0+20	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
0+25	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
0+30	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
0+40	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
0+50	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
0+60	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
0+65	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
0+70	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
0+75	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
0+80	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
0+90	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
1+00	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
1+10	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
1+15	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
1+20	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
1+25	-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
1+30	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
1+40	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
1+45	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
1+50	-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
1+55	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
1+60	-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
1+65	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
1+70	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
1+75	-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
1+80	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
1+85	-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
1+90	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
1+95	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
2+00	-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
2+05	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
2+10	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
2+15	-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
2+20	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
2+25	-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
2+30	-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	-11.3	0.0	Incremental Change
			-0.8	0.1	-0.2	-3.7	-9.7	-9.7	-21.0	-21.0	Cumulative Change
2+35	-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
2+40	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
2+50	-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
2+60	-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
2+70	-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
2+75	-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
2+85	-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
2+90	-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
3+00	-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
3+10	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
3+15	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
3+20	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
3+25	-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
3+30	-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
3+35	-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
3+40	-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
3+45	-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
3+52	-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
3+60	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
3+65	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
3+70	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
3+75	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
3+80	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
3+85	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
3+95	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
4+00	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
4+05	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
4+15	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
4+25	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
4+35	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
4+45	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
4+50	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	-8.1	-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
 Streambank Monitor**

Baseline Station	Streambank Monitor - Top of Bank Locations									Description	
	See Drawing CE-CP00-134 Rev 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
0+10	-25.3	-25.3	-25.3	-25.3	-25.3	-25.6	-25.6				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.3	0.0				Incremental Change
	0.0	0.0	0.0	0.0	0.0	0.3	0.3				Cumulative Change
0+20	-30.9	-30.9	-30.9	-30.9	-30.9	-31.0	-29.1				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.1	-1.9				Incremental Change
	-1.2	-1.2	-1.2	-1.2	-1.2	-1.1	-3.0				Cumulative Change
0+25	-38.2	-37.0	-37.0	-37.0	-37.0	-34.1	-29.9				Baseline Offset (In Feet)
	0.0	-1.2	0.0	0.0	0.0	-2.9	-4.2				Incremental Change
	0.0	-1.2	-1.2	-1.2	-1.2	-4.1	-8.3				Cumulative Change
0+30	-41.1	-36.9	-36.9	-36.9	-36.9	-34.3	-31.4				Baseline Offset (In Feet)
	0.0	-4.2	0.0	0.0	0.0	-2.6	-2.9				Incremental Change
	0.0	-4.2	-4.2	-4.2	-4.2	-6.8	-9.7				Cumulative Change
0+40	-37.7	-36.5	-35.1	-35.1	-35.1	-34.8	-34.3				Baseline Offset (In Feet)
	0.0	-1.2	-1.4	0.0	0.0	-0.3	-0.5				Incremental Change
	0.0	-1.2	-2.6	-2.6	-2.6	-2.9	-3.4				Cumulative Change
0+50	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	0.0				Incremental Change
	0.0	0.0	0.0	0.0	0.0	0.0	0.0				Cumulative Change
0+60	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-0.5	-0.5	-0.5	-0.5	-0.5	-0.4	-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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
0+65	-23.9	-23.4	-23.4	-23.4	-23.4	-23.4	-23.4				Baseline Offset (In Feet)
	0.0	-0.5	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-16.0	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4				Cumulative Change
0+70	-20.0	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2				Baseline Offset (In Feet)
	0.0	-3.8	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-12.4	-16.2	-16.2	-16.2	-16.2	-16.2	-16.2				Cumulative Change
0+75	-21.0	-18.0	-18.0	-18.0	-18.0	-18.0	-18.0				Baseline Offset (In Feet)
	-0.1	-3.0	0.1	0.0	0.0	0.0	0.0				Incremental Change
	-6.1	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1				Cumulative Change
0+80	-22.4	-22.4	-22.4	-22.4	-22.4	-22.4	-22.1				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	-0.3				Incremental Change
	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.3				Cumulative Change
0+90	-27.8	-27.8	-27.2	-27.2	-27.2	-27.2	-26.5				Baseline Offset (In Feet)
	-1.5	0.0	-0.6	0.0	0.0	0.0	-0.7				Incremental Change
	-1.5	-1.5	-2.0	-2.0	-2.0	-2.0	-2.7				Cumulative Change
1+00	-26.7	-26.7	-26.7	-26.7	-26.7	-26.7	-25.5				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	-1.2				Incremental Change
	0.0	0.0	0.0	0.0	0.0	0.0	-1.2				Cumulative Change
1+10	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.7				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	-0.2				Incremental Change
	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.9				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
1+15	-20.8	-20.2	-20.2	-20.2	-20.2	-20.2	-20.2				Baseline Offset (In Feet)
	0.0	-0.7	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-6.8	-7.4	-7.4	-7.4	-7.4	-7.4	-7.4				Cumulative Change
1+20	-21.4	-18.2	-18.2	-18.2	-18.2	-18.8	-18.5				Baseline Offset (In Feet)
	0.0	-3.2	0.0	0.0	0.0	0.6	-0.3				Incremental Change
	-14.1	-17.3	-17.3	-17.3	-17.3	-16.7	-17.0				Cumulative Change
1+25	-18.1	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4				Baseline Offset (In Feet)
	0.0	-1.7	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-20.6	-22.3	-22.3	-22.3	-22.3	-22.3	-22.3				Cumulative Change
1+30	-17.3	-17.0	-17.0	-17.0	-17.0	-17.0	-17.0				Baseline Offset (In Feet)
	0.0	-0.3	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-20.5	-20.8	-20.8	-20.8	-20.8	-20.8	-20.8				Cumulative Change
1+40	-17.1	-15.8	-15.8	-15.8	-15.8	-16.0	-16.0				Baseline Offset (In Feet)
	0.0	-1.3	0.0	0.0	0.0	0.2	0.0				Incremental Change
	-16.7	-18.1	-18.0	-18.0	-18.0	-17.8	-17.8				Cumulative Change
1+45	-16.1	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3				Baseline Offset (In Feet)
	0.0	-1.8	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-12.1	-13.9	-13.9	-13.9	-13.9	-13.9	-13.9				Cumulative Change
1+50	-13.8	-13.4	-13.4	-13.4	-13.4	-13.4	-13.4				Baseline Offset (In Feet)
	0.0	-0.4	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-9.9	-10.3	-10.3	-10.3	-10.3	-10.3	-10.3				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
1+55	-11.5	-7.1	-7.1	-7.1	-7.1	-7.5	-7.5				Baseline Offset (In Feet)
	0.0	-4.4	0.0	0.0	0.0	0.4	0.0				Incremental Change
	-10.7	-15.1	-15.1	-15.1	-15.1	-14.7	-14.7				Cumulative Change
1+60	-9.0	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2				Baseline Offset (In Feet)
	0.0	-4.8	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-12.6	-17.4	-17.4	-17.4	-17.4	-17.4	-17.4				Cumulative Change
1+65	-9.7	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9				Baseline Offset (In Feet)
	-1.7	-2.8	0.1	0.0	0.0	0.0	0.0				Incremental Change
	-16.6	-19.4	-19.3	-19.3	-19.3	-19.3	-19.3				Cumulative Change
1+70	-13.0	-10.8	-10.8	-10.8	-10.8	-10.8	-10.8				Baseline Offset (In Feet)
	-2.7	-2.2	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-17.1	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3				Cumulative Change
1+75	-14.4	-12.0	-12.0	-12.0	-12.0	-12.0	-12.0				Baseline Offset (In Feet)
	-1.7	-2.5	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-16.3	-18.7	-18.7	-18.7	-18.7	-18.7	-18.7				Cumulative Change
1+80	-13.9	-12.8	-12.8	-12.8	-12.8	-12.8	-12.8				Baseline Offset (In Feet)
	0.0	-1.1	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-16.4	-17.4	-17.4	-17.4	-17.4	-17.4	-17.4				Cumulative Change
1+85	-12.7	-12.3	-12.3	-12.3	-12.3	-12.3	-12.3				Baseline Offset (In Feet)
	0.0	-0.4	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-11.8	-12.2	-12.2	-12.2	-12.2	-12.2	-12.2				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
1+90	-16.9	-16.9	-16.9	-16.9	-16.9	-16.9	-16.6				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	-0.3				Incremental Change
	4.1	4.1	4.1	4.1	4.1	4.1	3.8				Cumulative Change
1+95	-27.7	-27.7	-26.3	-26.3	-26.3	-26.3	-18.7				Baseline Offset (In Feet)
	0.0	0.0	-1.4	0.0	0.0	0.0	-7.6				Incremental Change
	0.1	0.1	-1.3	-1.3	-1.3	-1.3	-8.9				Cumulative Change
2+00	-27.8	-27.8	-26.4	-26.4	-26.4	-26.4	-20.4				Baseline Offset (In Feet)
	0.0	0.0	-1.4	0.0	0.0	0.0	-6.0				Incremental Change
	-5.9	-5.9	-7.3	-7.3	-7.3	-7.3	-13.3				Cumulative Change
2+05	-27.3	-27.3	-26.8	-26.8	-26.8	-26.8	-23.1				Baseline Offset (In Feet)
	0.0	0.0	-0.5	0.0	0.0	0.0	-3.7				Incremental Change
	-5.6	-5.6	-6.1	-6.1	-6.1	-6.1	-9.8				Cumulative Change
2+10	-26.0	-26.0	-26.0	-26.0	-26.0	-26.5	-26.0				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.5	-0.5				Incremental Change
	-7.7	-7.7	-7.7	-7.7	-7.7	-7.2	-7.7				Cumulative Change
2+15	-23.2	-23.2	-23.2	-23.2	-23.7	-23.7	-23.7				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.5	0.0	0.0				Incremental Change
	-11.7	-11.7	-11.7	-11.7	-11.2	-11.2	-11.2				Cumulative Change
2+20	-20.4	-17.4	-17.3	-17.3	-17.3	-18.2	-18.2				Baseline Offset (In Feet)
	-0.6	-3.0	0.0	0.0	0.0	0.9	0.0				Incremental Change
	-14.0	-17.0	-17.1	-17.1	-17.1	-16.2	-16.2				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
2+25	-5.2	-5.2	-5.2	-1.0	-1.0	-1.0	-1.0				Baseline Offset (In Feet)
	-2.9	0.0	0.0	-4.2	0.0	0.0	0.0				Incremental Change
	-26.8	-26.8	-26.8	-31.0	-31.0	-31.0	-31.0				Cumulative Change
2+30	-2.4	-2.4	-2.4	-2.4	-2.4	-2.8	-2.8				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.4	0.0				Incremental Change
	-21.0	-21.0	-21.0	-21.0	-21.0	-20.6	-20.6				Cumulative Change
2+35	-7.1	-7.1	-7.1	-7.1	-7.1	-7.9	-7.9				Baseline Offset (In Feet)
	0.1	0.0	0.0	0.0	0.0	0.8	0.0				Incremental Change
	-13.5	-13.5	-13.5	-13.5	-13.5	-12.7	-12.7				Cumulative Change
2+40	-8.3	-8.3	-8.3	-8.3	-8.2	-8.2	-8.2				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	-0.1	0.0	0.0				Incremental Change
	-10.8	-10.8	-10.9	-10.9	-11.0	-11.0	-11.0				Cumulative Change
2+50	-14.6	-14.6	-13.6	-13.3	-13.3	-13.3	-13.3				Baseline Offset (In Feet)
	0.0	0.0	-1.0	-0.3	0.0	0.0	0.0				Incremental Change
	-7.2	-7.2	-8.2	-8.5	-8.5	-8.5	-8.5				Cumulative Change
2+60	-20.5	-19.8	-17.7	-17.7	-17.7	-17.4	-16.3				Baseline Offset (In Feet)
	-0.1	-0.7	-2.1	0.0	0.0	-0.3	-1.1				Incremental Change
	-6.0	-6.7	-8.8	-8.8	-8.8	-9.1	-10.2				Cumulative Change
2+70	-20.8	-20.8	-20.6	-20.0	-20.0	-20.0	-17.4				Baseline Offset (In Feet)
	0.0	0.0	-0.2	-0.6	0.0	0.0	-2.6				Incremental Change
	-9.6	-9.6	-9.8	-10.4	-10.4	-10.4	-13.0				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
2+75	-20.9	-20.8	-19.7	-19.7	-19.7	-19.4	-17.6				Baseline Offset (In Feet)
	0.0	-0.1	-1.1	0.0	0.0	-0.3	-1.8				Incremental Change
	-10.5	-10.6	-11.7	-11.7	-11.7	-12.0	-13.8				Cumulative Change
2+85	-22.8	-20.4	-17.9	-17.9	-17.9	-17.9	-17.9				Baseline Offset (In Feet)
	0.0	-2.4	-2.5	0.0	0.0	0.0	0.0				Incremental Change
	-4.1	-6.5	-9.1	-9.0	-9.0	-9.0	-9.0				Cumulative Change
2+90	-21.3	-21.3	-17.3	-16.5	-15.1	-15.1	-12.0				Baseline Offset (In Feet)
	-0.1	0.0	-4.1	-0.8	-1.4	0.0	-3.1				Incremental Change
	-3.2	-3.2	-7.2	-8.0	-9.4	-9.4	-12.5				Cumulative Change
3+00	-6.0	0.3	0.3	0.3	0.3	0.3	0.3				Baseline Offset (In Feet)
	0.0	-6.3	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-3.1	-9.4	-9.4	-9.4	-9.4	-9.4	-9.4				Cumulative Change
3+10	-11.4	-6.9	-5.2	-5.2	-5.2	-5.0	-5.0				Baseline Offset (In Feet)
	0.0	-4.4	-1.7	0.0	0.0	-0.2	0.0				Incremental Change
	-0.1	-4.5	-6.2	-6.2	-6.2	-6.4	-6.4				Cumulative Change
3+15	-15.9	-10.5	-9.6	-9.6	-9.6	-9.6	-9.6				Baseline Offset (In Feet)
	0.0	-5.4	-0.9	0.0	0.0	0.0	0.0				Incremental Change
	-0.3	-5.7	-6.6	-6.6	-6.6	-6.6	-6.6				Cumulative Change
3+20	-11.8	-11.8	-8.9	-8.9	-8.9	-8.9	-8.9				Baseline Offset (In Feet)
	0.0	0.0	-2.9	0.0	0.0	0.0	0.0				Incremental Change
	-4.1	-4.1	-7.0	-7.0	-7.0	-7.0	-7.0				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
3+25	-11.1	-10.3	-9.5	-9.5	-9.5	-9.5	-9.5				Baseline Offset (In Feet)
	0.0	-0.8	-0.8	0.0	0.0	0.0	0.0				Incremental Change
	-6.0	-6.8	-7.6	-7.6	-7.6	-7.6	-7.6				Cumulative Change
3+30	-11.5	-11.2	-11.2	-11.2	-11.2	-11.2	-11.0				Baseline Offset (In Feet)
	0.0	-0.3	0.0	0.0	0.0	0.0	-0.2				Incremental Change
	-23.9	-24.2	-24.2	-24.2	-24.2	-24.2	-24.4				Cumulative Change
3+35	-23.5	-23.5	-23.5	-23.5	-23.5	-24.6	-24.6				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	1.1	0.0				Incremental Change
	-12.2	-12.2	-12.2	-12.2	-12.2	-11.1	-11.1				Cumulative Change
3+40	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4	-25.4				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8				Cumulative Change
3+45	-26.4	-24.1	-24.1	-24.1	-24.1	-24.6	-24.6				Baseline Offset (In Feet)
	-1.0	-2.3	0.0	0.0	0.0	0.5	0.0				Incremental Change
	-6.0	-8.3	-8.3	-8.3	-8.3	-7.8	-7.8				Cumulative Change
3+52	-8.4	-8.4	2.4	2.4	2.4	3.1	3.1				Baseline Offset (In Feet)
	0.0	0.0	-10.8	0.0	0.0	-0.7	0.0				Incremental Change
	-1.7	-1.7	-12.5	-12.5	-12.5	-13.2	-13.2				Cumulative Change
3+60	-10.8	-10.8	3.0	3.0	3.0	3.0	3.0				Baseline Offset (In Feet)
	-0.4	0.0	-13.8	0.0	0.0	0.0	0.0				Incremental Change
	-1.1	-1.1	-14.9	-14.9	-14.9	-14.9	-14.9				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
3+65	-18.4	-18.4	-3.3	-13.8	-13.8	-13.8	-13.8				Baseline Offset (In Feet)
	-0.3	0.0	-15.1	10.5	0.0	0.0	0.0				Incremental Change
	-0.4	-0.4	-15.5	-5.0	-5.0	-5.0	-5.0				Cumulative Change
3+70	-24.1	-21.2	-9.6	-11.9	-11.9	-11.9	-11.9				Baseline Offset (In Feet)
	0.1	-2.9	-11.6	2.3	0.0	0.0	0.0				Incremental Change
	0.2	-2.8	-14.3	-12.0	-12.0	-12.0	-12.0				Cumulative Change
3+75	-20.2	-19.3	-11.3	-10.1	-10.1	-10.1	-10.1				Baseline Offset (In Feet)
	0.0	-0.9	-8.0	-1.2	0.0	0.0	0.0				Incremental Change
	-3.0	-3.9	-11.9	-13.1	-13.1	-13.1	-13.1				Cumulative Change
3+80	-11.6	-11.6	-9.0	-9.0	-9.0	-9.0	-9.0				Baseline Offset (In Feet)
	-1.3	0.0	-2.6	0.0	0.0	0.0	0.0				Incremental Change
	-8.0	-8.0	-10.6	-10.6	-10.6	-10.6	-10.6				Cumulative Change
3+85	-12.0	-12.0	-11.1	-11.1	-11.1	-11.1	-11.1				Baseline Offset (In Feet)
	-0.3	0.0	-0.9	0.0	0.0	0.0	0.0				Incremental Change
	-7.9	-7.9	-8.9	-8.8	-8.8	-8.8	-8.8				Cumulative Change
3+95	-21.9	-21.9	-16.1	-16.1	-16.1	-16.1	-16.1				Baseline Offset (In Feet)
	-0.5	0.0	-5.8	0.0	0.0	0.0	0.0				Incremental Change
	-4.2	-4.2	-10.1	-10.0	-10.0	-10.0	-10.0				Cumulative Change
4+00	-21.9	-21.9	-18.6	-18.6	-18.6	-18.6	-18.6				Baseline Offset (In Feet)
	0.7	0.0	-3.3	0.0	0.0	0.0	0.0				Incremental Change
	-8.0	-8.0	-11.3	-11.3	-11.3	-11.3	-11.3				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 9 for Survey Baseline Stations										
	6/19/2004	7/10/2005	8/21/2006	8/30/2007	8/6/2008	8/3/2009	7/20/2010	Future	Future	Future	Date
4+05	-19.5	-19.5	-21.7	-21.7	-21.7	-21.3	-21.3				Baseline Offset (In Feet)
	0.0	0.0	2.2	0.0	0.0	-0.4	0.0				Incremental Change
	-10.3	-10.3	-8.1	-8.1	-8.1	-8.5	-8.5				Cumulative Change
4+15	2.6	2.6	2.7	2.7	2.5	2.5	2.5				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.2	0.0	0.0				Incremental Change
	-33.3	-33.3	-33.4	-33.4	-33.2	-33.2	-33.2				Cumulative Change
4+25	5.1	5.1	5.1	5.1	5.1	4.7	4.7				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.4	0.0				Incremental Change
	-13.7	-13.7	-13.7	-13.7	-13.7	-13.3	-13.3				Cumulative Change
4+35	4.5	4.5	4.5	4.5	4.5	4.9	4.9				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	-0.4	0.0				Incremental Change
	-10.0	-10.0	-10.1	-10.1	-10.1	-10.5	-10.5				Cumulative Change
4+45	1.9	1.9	1.9	1.9	1.9	1.6	1.6				Baseline Offset (In Feet)
	-0.7	0.0	0.0	0.0	0.0	0.3	0.0				Incremental Change
	-7.0	-7.0	-7.0	-7.0	-7.0	-6.7	-6.7				Cumulative Change
4+50	4.1	4.1	4.1	4.1	4.1	4.1	4.1				Baseline Offset (In Feet)
	0.0	0.0	0.0	0.0	0.0	0.0	0.0				Incremental Change
	-10.4	-10.4	-10.4	-10.4	-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 A								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
0+00	Tundra	17.9	18.0	18.0	17.8	17.8	17.8	17.8	17.7	Elevation (In Feet)
			0.1	0.0	-0.2	0.0	0.0	0.0	-0.1	Incremental Change
			0.1	0.1	-0.1	-0.1	-0.1	-0.1	-0.2	Cumulative Change
0+09	Tundra		17.9	18.0	17.8	17.8	17.8	17.8	17.7	Elevation (In Feet)
				0.1	-0.2	0.0	0.0	0.0	-0.1	Incremental Change
				0.1	-0.1	-0.1	-0.1	-0.1	-0.2	Cumulative Change
0+18	Tundra	17.6	17.6	17.5	17.3	17.5	17.4	17.4	17.2	Elevation (In Feet)
			0.0	-0.1	-0.2	0.2	-0.1	0.0	-0.2	Incremental Change
			0.0	-0.1	-0.3	-0.1	-0.2	-0.2	-0.4	Cumulative Change
0+21	Top Bank	16.8	16.7	16.7	16.6	16.5	16.8	16.8	16.4	Elevation (In Feet)
			-0.1	0.0	-0.1	-0.1	0.3	0.0	-0.4	Incremental Change
			-0.1	-0.1	-0.2	-0.3	0.0	0.0	-0.4	Cumulative Change
0+22.5	Gradebreak		15.4	15.4	14.9	14.8	14.8	14.8	14.8	Elevation (In Feet)
				0.0	-0.5	-0.1	0.0	0.0	0.0	Incremental Change
				0.0	-0.5	-0.6	-0.6	-0.6	-0.6	Cumulative Change
0+25	Toe Bank	13.6	14.1	13.9	13.6	13.6	13.7	13.7	13.0	Elevation (In Feet)
			0.5	-0.2	-0.3	0.0	0.1	0.0	-0.7	Incremental Change
			0.5	0.3	0.0	0.0	0.1	0.1	-0.6	Cumulative Change
0+27	CL Swale		13.3	13.5	13.3	12.5	13.1	13.1	11.7	Elevation (In Feet)
				0.2	-0.2	-0.8	0.6	0.0	-1.4	Incremental Change
				0.2	0.0	-0.8	-0.2	-0.2	-1.6	Cumulative Change
0+29	Toe Bank	13.3	13.6	13.5	13.5	14.2	14.5	14.5	13.9	Elevation (In Feet)
			0.3	-0.1	0.0	0.7	0.3	0.0	-0.6	Incremental Change
			0.3	0.2	0.2	0.9	1.2	1.2	0.6	Cumulative Change

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

Baseline Station	Point Description	Subsidence Monitor - Cross-Section A								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
0+34	Gradebreak		15.6	15.6	15.2	15.2	15.5	15.5	14.8	Elevation (In Feet)
				0.0	-0.4	0.0	0.3	0.0	-0.7	Incremental Change
				0.0	-0.4	-0.4	-0.1	-0.1	-0.8	Cumulative Change
0+35	Top Bank	17.6	17.6	17.6	17.4	17.4	17.4	17.4	17.6	Elevation (In Feet)
			0.0	0.0	-0.2	0.0	0.0	0.0	0.2	Incremental Change
			0.0	0.0	-0.2	-0.2	-0.2	-0.2	0.0	Cumulative Change
0+42	Tundra		18.3	18.4	18.1	18.1	18.1	18.1	18.0	Elevation (In Feet)
				0.1	-0.3	0.0	0.0	0.0	-0.1	Incremental Change
				0.1	-0.2	-0.2	-0.2	-0.2	-0.3	Cumulative Change
0+50	Tundra	18.0	18.0	18.1	17.9	17.8	17.8	17.8	17.7	Elevation (In Feet)
			0.0	0.1	-0.2	-0.1	0.0	0.0	-0.1	Incremental Change
			0.0	0.1	-0.1	-0.2	-0.2	-0.2	-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 A								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+00	Tundra	17.7	17.9	18.0	17.3	17.3	17.2	17.1		Elevation (In Feet)
		-0.1	0.2	0.1	-0.7	0.0	-0.1	-0.1		Incremental Change
		-0.2	0.0	0.1	-0.6	-0.6	-0.7	-0.8		Cumulative Change
0+09	Tundra	17.7	17.8	17.9	17.2	17.3	17.2	17.0		Elevation (In Feet)
		-0.1	0.1	0.1	-0.7	0.1	-0.1	-0.1		Incremental Change
		-0.2	-0.1	0.0	-0.7	-0.6	-0.8	-0.9		Cumulative Change
0+18	Tundra	17.2	17.4	17.4	16.7	16.7	16.7	16.4		Elevation (In Feet)
		-0.2	0.2	0.0	-0.7	0.0	0.0	-0.3		Incremental Change
		-0.4	-0.2	-0.2	-0.9	-0.9	-0.9	-1.2		Cumulative Change
0+21	Top Bank	16.4	16.6	16.6	15.8	15.9	15.8	15.3		Elevation (In Feet)
		-0.4	0.2	0.0	-0.8	0.1	-0.1	-0.5		Incremental Change
		-0.4	-0.2	-0.2	-1.0	-0.9	-1.0	-1.5		Cumulative Change
0+22.5	Gradebreak	14.8	14.6	14.4	13.5	13.6	13.7	13.4		Elevation (In Feet)
		0.0	-0.2	-0.2	-0.9	0.1	0.2	-0.3		Incremental Change
		-0.6	-0.8	-1.0	-1.9	-1.9	-1.7	-2.0		Cumulative Change
0+25	Toe Bank	13.0	13.3	13.0	12.3	12.3	12.3	12.0		Elevation (In Feet)
		-0.7	0.3	-0.3	-0.7	0.0	0.0	-0.3		Incremental Change
		-0.6	-0.3	-0.6	-1.3	-1.3	-1.3	-1.6		Cumulative Change
0+27	CL Swale	11.7	12.2	12.8	12.3	12.0	12.1	11.9		Elevation (In Feet)
		-1.4	0.5	0.6	-0.5	-0.3	0.1	-0.2		Incremental Change
		-1.6	-1.1	-0.5	-1.0	-1.3	-1.2	-1.4		Cumulative Change
0+29	Toe Bank	13.9	14.1	14.0	13.4	13.5	13.3	13.3		Elevation (In Feet)
		-0.6	0.2	-0.1	-0.6	0.1	-0.2	0.0		Incremental Change
		0.6	0.8	0.7	0.1	0.2	0.0	0.0		Cumulative Change

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

Baseline Station	Point Description	Subsidence Monitor - Cross-Section A								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+34	Gradebreak	14.8	15.3	15.3	14.6	14.6	14.4	14.3		Elevation (In Feet)
		-0.7	0.5	0.0	-0.7	0.0	-0.2	-0.1		Incremental Change
		-0.8	-0.3	-0.3	-1.0	-1.0	-1.2	-1.3		Cumulative Change
0+35	Top Bank	17.6	17.2	17.2	16.5	16.5	16.3	16.3		Elevation (In Feet)
		0.2	-0.4	0.0	-0.7	0.0	-0.2	0.0		Incremental Change
		0.0	-0.4	-0.4	-1.1	-1.1	-1.3	-1.3		Cumulative Change
0+42	Tundra	18.0	18.1	18.1	17.5	17.5	17.4	17.3		Elevation (In Feet)
		-0.1	0.1	0.0	-0.6	0.0	-0.1	-0.1		Incremental Change
		-0.3	-0.2	-0.2	-0.8	-0.8	-0.9	-1.0		Cumulative Change
0+50	Tundra	17.7	17.8	17.8	17.1	17.1	16.9	16.6		Elevation (In Feet)
		-0.1	0.1	0.0	-0.7	-0.1	-0.2	-0.3		Incremental Change
		-0.3	-0.2	-0.2	-0.9	-0.9	-1.1	-1.4		Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.										
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007										

**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
0+00	Tundra	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
0+10	Tundra		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
0+23	Tundra	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
0+25	Top of Bank	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
0+27	Gradebreak		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
0+32	Toe Bank	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
0+35	CL Swale		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
0+37	Toe Bank	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
0+38	Gradebreak		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
0+40	Gradebreak		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
0+42	Gradebreak		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
0+49	Gradebreak	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
0+52	Top Bank	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
0+60	Tundra	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 B								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+00	Tundra	17.5	17.4	17.5	16.8	16.9	16.8	16.7		Elevation (In Feet)
		0.1	-0.1	0.1	-0.7	0.1	-0.1	-0.1		Incremental Change
		0.0	-0.1	0.0	-0.7	-0.6	-0.7	-0.8		Cumulative Change
0+10	Tundra	17.7	17.7	17.8	17.1	17.1	16.9	16.9		Elevation (In Feet)
		0.0	0.0	0.1	-0.6	0.0	-0.1	0.0		Incremental Change
		-0.2	-0.2	-0.1	-0.8	-0.8	-1.0	-1.0		Cumulative Change
0+23	Tundra	17.3	17.4	17.5	16.8	16.8	16.8	16.6		Elevation (In Feet)
		-0.1	0.1	0.1	-0.7	0.0	0.0	-0.1		Incremental Change
		-0.2	-0.1	0.0	-0.7	-0.7	-0.8	-0.9		Cumulative Change
0+25	Top of Bank	15.9	16.0	16.1	15.4	15.4	15.3	15.0		Elevation (In Feet)
		-0.1	0.1	0.1	-0.7	0.0	-0.1	-0.3		Incremental Change
		-1.3	-1.2	-1.1	-1.8	-1.8	-1.9	-2.2		Cumulative Change
0+27	Gradebreak	16.4	16.4	16.5	15.8	15.7	15.6	14.9		Elevation (In Feet)
		-0.1	0.0	0.1	-0.7	-0.1	-0.2	-0.7		Incremental Change
		-0.3	-0.3	-0.2	-0.9	-1.0	-1.2	-1.8		Cumulative Change
0+32	Toe Bank	14.5	14.7	14.6	13.9	13.9	13.8	13.6		Elevation (In Feet)
		0.0	0.2	-0.1	-0.7	3.0	3.0	3.0		Incremental Change
		0.3	0.5	0.4	-0.3	-0.3	-0.4	-0.6		Cumulative Change
0+35	CL Swale	14.2	14.6	14.6	13.9	13.9	13.7	13.4		Elevation (In Feet)
		0.0	0.4	0.0	-0.7	0.0	-0.2	-0.3		Incremental Change
		-0.2	0.2	0.2	-0.5	-0.5	-0.7	-1.0		Cumulative Change
0+37	Toe Bank	13.7	14.4	14.5	13.5	13.8	13.4	13.3		Elevation (In Feet)
		-0.7	0.7	0.0	-0.9	0.3	-0.4	-0.1		Incremental Change
		-0.2	0.5	0.5	-0.4	-0.1	-0.5	-0.6		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								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+38	Gradebreak	14.9	15.0	15.1	14.4	14.5	14.4	14.2		Elevation (In Feet)
		0.0	0.1	0.1	-0.7	0.1	-0.1	-0.2		Incremental Change
		-0.3	-0.2	-0.1	-0.8	-0.7	-0.8	-1.0		Cumulative Change
0+40	Gradebreak	15.4	15.5	15.5	14.9	14.9	13.8	13.6		Elevation (In Feet)
		0.0	0.1	0.0	-0.6	0.0	-1.0	-0.2		Incremental Change
		0.9	1.0	1.0	0.4	0.4	-0.7	-0.9		Cumulative Change
0+42	Gradebreak	15.8	15.9	15.9	15.3	15.2	15.0	14.7		Elevation (In Feet)
		0.0	0.1	0.0	-0.6	-0.1	-0.3	-0.3		Incremental Change
		0.0	0.1	0.1	-0.5	-0.6	-0.9	-1.1		Cumulative Change
0+49	Gradebreak	16.0	16.2	16.2	15.6	15.6	15.6	15.4		Elevation (In Feet)
		0.0	0.2	0.0	-0.6	0.0	-0.1	-0.2		Incremental Change
		-0.2	0.0	0.0	-0.6	-0.6	-0.6	-0.8		Cumulative Change
0+52	Top Bank	17.6	17.7	17.8	17.2	17.2	17.1	16.9		Elevation (In Feet)
		-0.1	0.1	0.1	-0.6	0.0	-0.1	-0.2		Incremental Change
		0.3	0.4	0.5	-0.1	-0.1	-0.2	-0.4		Cumulative Change
0+60	Tundra	17.6	17.8	17.9	17.2	16.9	17.2	17.1		Elevation (In Feet)
		-0.1	0.2	0.1	-0.7	-0.3	0.3	-0.1		Incremental Change
		-0.2	0.0	0.1	-0.6	-0.9	-0.6	-0.7		Cumulative Change

***Note: Baseline Stationing Runs from North to South along Cross-Sections.
 ***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007

**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
0+00	Tundra	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
0+13	Tundra		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
0+27	Top Bank	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
0+29	Toe Bank	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
0+31	Toe Bank	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
0+32	Gradebreak	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
0+33	Top Bank	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
0+42	Tundra		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
0+50	Tundra	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
0+60	Tundra	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 C								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+00	Tundra	16.7	16.7	16.8	16.1	16.1	16.0	15.8		Elevation (In Feet)
		-0.1	0.0	0.1	-0.7	0.0	-0.1	-0.2		Incremental Change
		-0.2	-0.2	-0.1	-0.8	-0.8	-0.9	-1.1		Cumulative Change
0+13	Tundra	16.6	16.7	16.8	16.1	16.2	16.0	15.9		Elevation (In Feet)
		-0.1	0.1	0.1	-0.7	0.0	-0.2	-0.1		Incremental Change
		-0.2	-0.1	0.0	-0.7	-0.7	-0.8	-0.9		Cumulative Change
0+27	Top Bank	16.8	16.8	16.9	16.2	16.2	16.2	16.0		Elevation (In Feet)
		0.0	0.0	0.1	-0.7	0.0	0.0	-0.2		Incremental Change
		-0.2	-0.2	-0.1	-0.8	-0.8	-0.8	-1.0		Cumulative Change
0+29	Toe Bank	13.5	13.7	13.8	13.2	13.5	13.4	13.1		Elevation (In Feet)
		0.3	0.2	0.1	-0.6	0.3	-0.1	-0.3		Incremental Change
		0.7	0.9	1.0	0.4	0.7	0.6	0.3		Cumulative Change
0+31	Toe Bank	13.5	13.6	13.9	13.2	13.3	13.2	13.0		Elevation (In Feet)
		-0.1	0.1	0.3	-0.7	0.1	-0.1	-0.2		Incremental Change
		-0.4	-0.3	0.0	-0.7	-0.6	-0.7	-0.9		Cumulative Change
0+32	Gradebreak	16.6	16.7	16.7	16.0	16.0	15.8	15.9		Elevation (In Feet)
		-0.1	0.1	0.0	-0.7	0.0	-0.2	0.1		Incremental Change
		-0.1	0.0	0.0	-0.7	-0.7	-0.9	-0.8		Cumulative Change
0+33	Top Bank	17.1	17.1	17.5	16.7	16.7	16.5	16.5		Elevation (In Feet)
		-0.1	0.0	0.4	-0.8	0.0	-0.1	0.0		Incremental Change
		-0.2	-0.2	0.2	-0.6	-0.6	-0.8	-0.8		Cumulative Change
0+42	Tundra	17.0	17.0	17.1	16.5	16.7	16.5	16.3		Elevation (In Feet)
		0.1	0.0	0.1	-0.6	0.2	-0.2	-0.1		Incremental Change
		0.0	0.0	0.1	-0.5	-0.3	-0.6	-0.7		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								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+50	Tundra	17.1	17.2	17.3	16.7	16.8	16.6	16.5		Elevation (In Feet)
		-0.1	0.1	0.1	-0.6	0.1	-0.1	-0.1		Incremental Change
		-0.1	0.0	0.1	-0.5	-0.4	-0.6	-0.7		Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.										
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007										

**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
0+00	Tundra	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
0+10	Tundra		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
0+20	Gradebreak		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
0+22	Top Bank		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
0+24	Toe Bank	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
0+25	CL Swale		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
0+27	Toe Bank	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
0+29	Top Bank	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
0+38	Tundra		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
0+50	Tundra	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 D								Description
		See Drawing CE-CP00-134 for Survey Cross-Section Locations								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+00	Tundra	17.5	17.4	17.5	16.8	16.9	16.6	16.5		Elevation (In Feet)
		0.0	-0.1	0.1	-0.7	0.1	-0.4	-0.1		Incremental Change
		-0.1	-0.2	-0.1	-0.8	-0.4	-0.9	-1.0		Cumulative Change
0+10	Tundra	17.6	17.6	17.6	16.9	16.9	16.9	16.7		Elevation (In Feet)
		0.0	0.0	0.0	-0.7	0.0	0.0	-0.2		Incremental Change
		-0.1	-0.3	-0.3	-0.7	-0.7	-0.7	-0.9		Cumulative Change
0+20	Gradebreak	N/A	17.2	17.2	16.4	16.5	16.0	15.9		Elevation (In Feet)
		N/A	0.6	-0.1	-0.8	0.1	-0.5	-0.1		Incremental Change
		-0.8	-0.2	-0.5	-1.1	-0.9	-1.4	-1.7		Cumulative Change
0+22	Top Bank	16.8	16.5	16.5	15.7	15.7	14.9	14.9		Elevation (In Feet)
		0.0	-0.3	-0.1	-0.8	0.0	-0.8	0.0		Incremental Change
		0.0	-0.2	-0.4	-0.9	-1.1	-1.9	-1.9		Cumulative Change
0+24	Toe Bank	14.8	13.9	14.9	14.2	14.5	14.2	13.9		Elevation (In Feet)
		0.0	-0.9	1.0	-0.7	0.3	-0.3	-0.3		Incremental Change
		0.1	-0.7	0.2	-0.6	0.2	-0.6	-0.9		Cumulative Change
0+25	CL Swale	14.1	13.7	14.0	13.4	13.9	13.6	13.9		Elevation (In Feet)
		0.0	-0.4	0.3	-0.6	0.4	-0.3	0.3		Incremental Change
		0.0	-0.5	-0.1	-0.3	-0.3	-0.5	-0.2		Cumulative Change
0+27	Toe Bank	14.2	16.2	16.5	15.8	15.8	15.6	15.5		Elevation (In Feet)
		0.0	2.0	0.3	-0.7	0.0	-0.1	-0.1		Incremental Change
		-0.2	1.6	1.9	1.5	1.8	1.4	1.3		Cumulative Change
0+29	Top Bank	17.0	17.0	17.0	16.4	16.5	15.9	15.8		Elevation (In Feet)
		-0.1	0.0	0.0	-0.6	0.1	-0.5	-0.1		Incremental Change
		-0.3	-0.3	-0.4	-0.7	-0.4	-1.2	-1.3		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								
		7/9/2004	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Future	Date
0+38	Tundra	17.2	17.2	17.1	16.4	16.4	14.8	14.7		Elevation (In Feet)
		-0.1	0.0	-0.1	-0.7	0.0	-1.6	-0.1		Incremental Change
		-0.4	-0.5	-0.4	-0.9	-0.9	-2.5	-2.5		Cumulative Change
0+50	Tundra	17.4	17.4	17.4	16.7	16.8	14.9	14.7		Elevation (In Feet)
		0.6	0.0	0.0	-0.7	0.1	-1.9	-0.2		Incremental Change
		-0.3	-0.2	-0.2	-0.8	-0.5	-1.9	-2.1		Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.										
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007										

**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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+00	Tundra	17.5	17.5	17.4	17.5	16.8	16.8	16.8	16.6	Elevation (In Feet)
			0.0	-0.1	0.1	-0.7	0.0	-0.1	-0.2	Incremental Change
			0.0	-0.1	0.0	-0.7	-0.7	-0.7	-0.9	Cumulative Change
0+9	Tundra	17.3	17.3	17.3	17.8	17.1	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	0.5	-0.7				Incremental Change
			0.0	0.0	0.5	-0.2				Cumulative Change
0+12	Gradebreak	17.8	17.8	17.4	17.9	17.2	17.3	17.1	17.1	Elevation (In Feet)
			0.0	-0.4	0.5	-0.7	0.1	-0.1	0.0	Incremental Change
			0.0	-0.4	0.1	-0.6	-0.6	-0.7	-0.7	Cumulative Change
0+20	Top Bank	17.3	17.3	17.3	17.3	16.2	15.8	15.8	15.5	Elevation (In Feet)
			0.0	0.0	0.0	-1.1	-0.4	0.0	-0.3	Incremental Change
			0.0	0.0	0.0	-1.1	-1.5	-1.5	-1.8	Cumulative Change
0+21	Toe Bank	16.5	16.5	16.5	16.2	14.8	14.3	13.4	15.0	Elevation (In Feet)
			0.0	0.0	-0.3	-1.4	-0.5	-0.9	1.6	Incremental Change
			0.0	0.0	-0.3	-1.7	-2.2	-3.1	-1.5	Cumulative Change
0+23	CL Swale	16.0	16.0	16.0	14.7	13.8	13.2	13.0	12.7	Elevation (In Feet)
			0.0	0.0	-1.3	-0.9	-0.6	-0.2	-0.3	Incremental Change
			0.0	0.0	-1.3	-2.2	-2.8	-3.0	-3.3	Cumulative Change
0+24	Toe Bank	16.2	16.4	16.3	14.8	13.1	13.8	13.1	13.1	Elevation (In Feet)
			0.2	-0.1	-1.5	-1.7	0.7	-0.7	0.0	Incremental Change
			0.2	0.1	-1.4	-3.1	-2.4	-3.1	-3.1	Cumulative Change
0+27	Top Bank	17.3	17.4	17.4	16.3	14.5	14.5	14.3	14.2	Elevation (In Feet)
			0.1	0.0	-1.2	-1.8	0.0	-0.2	-0.1	Incremental Change
			0.1	0.1	-1.1	-2.8	-2.8	-3.0	-3.1	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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+38	Tundra	17.4	17.4	17.5	17.5	16.8	16.8	16.7	16.7	Elevation (In Feet)
			0.0	0.1	0.0	-0.7	0.0	-0.1	0.0	Incremental Change
			0.0	0.1	0.1	-0.6	-0.6	-0.7	-0.7	Cumulative Change
0+49	Tundra	17.4	17.4	17.4	17.4	16.7	16.8	16.7	16.6	Elevation (In Feet)
			0.0	0.0	0.0	-0.7	0.1	-0.1	0.0	Incremental Change
			0.0	0.0	0.0	-0.7	-0.6	-0.8	-0.8	Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.										
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007										

**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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+00	Tundra	17.9	17.9	18.2	18.3	17.7	17.7	17.3	17.3	Elevation (In Feet)
			0.0	0.3	0.1	-0.6	0.0	-0.4	0.0	Incremental Change
			0.0	0.3	0.4	-0.2	-0.2	-0.6	-0.6	Cumulative Change
0+10	Tundra	17.3	17.2	17.2	17.3	16.6	16.6	16.6	16.6	Elevation (In Feet)
			-0.1	0.0	0.1	-0.7	0.0	0.0	0.0	Incremental Change
			-0.1	-0.1	0.0	-0.7	-0.7	-0.7	-0.7	Cumulative Change
0+14	Gradebreak	18.0	18.0	18.0	18.0	16.6	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	0.0	-1.4				Incremental Change
			0.0	0.0	0.0	-1.4				Cumulative Change
0+20	Top Bank	17.5	17.5	17.6	17.6	16.6	16.6	16.4	16.3	Elevation (In Feet)
			0.0	0.1	0.0	-1.0	0.0	-0.2	-0.1	Incremental Change
			0.0	0.1	0.1	-0.9	-0.9	-1.1	-1.2	Cumulative Change
0+21	Toe Bank	16.5	16.3	16.3	16.0	15.1	15.0	14.7	14.4	Elevation (In Feet)
			-0.2	0.0	-0.3	-0.9	-0.1	-0.3	-0.3	Incremental Change
			-0.2	-0.2	-0.5	-1.4	-1.5	-1.8	-2.1	Cumulative Change
0+24	CL Swale	15.0	12.5	15.0	13.8	13.4	13.7	13.7	13.4	Elevation (In Feet)
			-2.5	2.5	-1.2	-0.4	0.3	0.0	-0.3	Incremental Change
			-2.5	0.0	-1.2	-1.6	-1.4	-1.4	-1.6	Cumulative Change
0+26	Toe Bank	16.1	12.5	13.1	13.6	15.2	13.6	15.8	13.5	Elevation (In Feet)
			-3.6	0.6	0.5	1.6	-1.6	2.2	-2.3	Incremental Change
			-3.6	-3.0	-2.5	-0.9	-2.5	-0.3	-2.6	Cumulative Change
0+28	Top Bank	17.8	17.9	17.9	17.3	16.4	16.1	16.2	15.6	Elevation (In Feet)
			0.1	0.0	-0.6	-0.9	-0.3	0.1	-0.6	Incremental Change
			0.1	0.1	-0.5	-1.4	-1.7	-1.6	-2.2	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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+34	Gradebreak	17.9	17.9	18.0	18.0	17.4	17.5	17.4	17.3	Elevation (In Feet)
			0.0	0.1	0.0	-0.6	0.1	-0.1	-0.1	Incremental Change
			0.0	0.1	0.1	-0.5	-0.4	-0.5	-0.6	Cumulative Change
0+43	Gradebreak	17.2	17.3	17.2	17.4	16.8	16.8	16.7	16.7	Elevation (In Feet)
			0.1	-0.1	0.2	-0.6	0.0	-0.1	0.0	Incremental Change
			0.1	0.0	0.2	-0.4	-0.4	-0.5	-0.5	Cumulative Change
0+46	Gradebreak	17.8	17.8	17.8	17.6	17.0	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	-0.2	-0.6				Incremental Change
			0.0	0.0	-0.2	-0.8				Cumulative Change
0+52	Tundra	17.8	17.9	17.9	18.0	17.3	17.4	17.3	17.1	Elevation (In Feet)
			0.1	0.0	0.1	-0.7	0.1	-0.1	-0.2	Incremental Change
			0.1	0.1	0.2	-0.5	-0.4	-0.5	-0.7	Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.										
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007										

**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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+00	Tundra	17.1	17.3	17.4	17.5	16.8	16.9	16.4	16.3	Elevation (In Feet)
			0.2	0.1	0.1	-0.7	0.1	-0.5	-0.1	Incremental Change
			0.2	0.3	0.4	-0.3	-0.2	-0.7	-0.8	Cumulative Change
0+09	Tundra	17.2	17.1	17.2	17.3	16.6	16.9	16.5	16.4	Elevation (In Feet)
			-0.1	0.1	0.1	-0.7	0.3	-0.4	-0.1	Incremental Change
			-0.1	0.0	0.1	-0.6	-0.3	-0.7	-0.8	Cumulative Change
0+16	Gradebreak	17.9	17.9	17.9	17.5	16.8	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	-0.4	-0.7				Incremental Change
			0.0	0.0	-0.4	-1.1				Cumulative Change
0+22	Top Bank	17.6	17.7	17.7	17.8	17.0	17.1	16.9	16.9	Elevation (In Feet)
			0.1	0.0	0.1	-0.8	0.1	-0.1	0.0	Incremental Change
			0.1	0.1	0.1	-0.6	-0.5	-0.7	-0.7	Cumulative Change
0+24	Toe Bank	16.9	17.0	17.0	17.0	16.2	16.3	16.2	16.3	Elevation (In Feet)
			0.1	0.0	0.0	-0.8	0.1	0.0	0.1	Incremental Change
			0.1	0.1	0.1	-0.7	-0.6	-0.7	-0.6	Cumulative Change
0+26	CL Swale	16.5	16.5	16.5	16.5	16.3	16.1	16.0	16.0	Elevation (In Feet)
			0.0	0.0	0.0	-0.2	-0.2	-0.1	0.0	Incremental Change
			0.0	0.0	0.0	-0.2	-0.4	-0.5	-0.5	Cumulative Change
0+28	Toe Bank	16.8	16.7	16.9	16.9	16.3	16.3	16.3	16.1	Elevation (In Feet)
			-0.1	0.2	0.0	-0.6	-0.1	0.0	-0.2	Incremental Change
			-0.1	0.1	0.1	-0.5	-0.6	-0.5	-0.7	Cumulative Change
0+30	Top Bank	17.7	17.8	17.8	17.9	17.3	17.3	17.2	17.1	Elevation (In Feet)
			0.1	0.0	0.1	-0.6	0.0	-0.1	-0.1	Incremental Change
			0.1	0.1	0.2	-0.4	-0.4	-0.5	-0.6	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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+37	Tundra	17.6	17.6	17.6	17.7	17.0	17.3	17.1	16.9	Elevation (In Feet)
			0.0	0.0	0.1	-0.7	0.3	-0.2	-0.2	Incremental Change
			0.0	0.0	0.1	-0.6	-0.3	-0.6	-0.7	Cumulative Change
0+46	Tundra	17.3	17.3	17.3	17.4	16.8	16.8	16.7	16.6	Elevation (In Feet)
			0.0	0.0	0.1	-0.6	0.0	-0.1	-0.1	Incremental Change
			0.0	0.0	0.1	-0.5	-0.5	-0.6	-0.7	Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.										
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007										

**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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+00	Tundra	17.0	16.8	16.6	16.7	16.0	16.0	16.1	15.9	Elevation (In Feet)
			-0.2	-0.2	0.1	-0.7	0.0	0.1	-0.2	Incremental Change
			-0.2	-0.4	-0.3	-1.0	-1.0	-0.9	-1.1	Cumulative Change
0+09	Tundra	17.1	16.9	16.9	17.0	16.4	16.5	16.3	16.2	Elevation (In Feet)
			-0.2	0.0	0.1	-0.6	0.1	-0.1	-0.1	Incremental Change
			-0.2	-0.2	-0.1	-0.7	-0.7	-0.8	-0.9	Cumulative Change
0+18	Gradebreak	17.8	17.8	17.8	17.3	16.6	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.0	-0.5	-0.7				Incremental Change
			0.0	0.0	-0.5	-1.2				Cumulative Change
0+24	Top Bank	17.3	17.4	17.4	17.5	16.8	16.8	16.7	16.6	Elevation (In Feet)
			0.1	0.0	0.1	-0.6	0.0	-0.1	-0.1	Incremental Change
			0.1	0.1	0.1	-0.5	-0.5	-0.6	-0.7	Cumulative Change
0+25	Toe Bank	16.8	16.4	16.6	16.6	15.9	15.9	15.7	15.3	Elevation (In Feet)
			-0.4	0.2	0.0	-0.7	0.0	-0.3	-0.4	Incremental Change
			-0.4	-0.2	-0.2	-0.9	-0.9	-1.1	-1.5	Cumulative Change
0+28	CL Swale	16.3	16.3	16.3	16.3	15.8	15.6	15.5	15.0	Elevation (In Feet)
			0.0	0.0	0.0	-0.5	-0.3	-0.1	-0.5	Incremental Change
			0.0	0.0	0.0	-0.5	-0.8	-0.8	-1.3	Cumulative Change
0+30	Toe Bank	16.6	16.6	16.4	16.5	15.8	15.9	15.9	15.5	Elevation (In Feet)
			0.0	-0.2	0.1	-0.7	0.1	0.0	-0.4	Incremental Change
			0.0	-0.2	-0.1	-0.8	-0.7	-0.7	-1.1	Cumulative Change
0+32	Top Bank	17.6	17.7	17.6	17.6	16.9	17.0	16.8	16.8	Elevation (In Feet)
			0.1	-0.1	0.0	-0.7	0.1	-0.2	0.0	Incremental Change
			0.1	0.0	0.0	-0.7	-0.6	-0.8	-0.8	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	7/28/2005	8/21/2006	8/30/2007	8/7/2008	8/3/2009	7/19/2010	Date
0+40	Gradebreak	18.2	18.2	18.2	18.3	17.6	17.7	17.6	17.5	Elevation (In Feet)
			0.0	0.0	0.1	-0.7	0.1	-0.1	-0.1	Incremental Change
			0.0	0.0	0.1	-0.6	-0.5	-0.6	-0.7	Cumulative Change
0+42	Gradebreak	17.7	17.7	17.8	17.9	17.2	N/A	N/A	N/A	Elevation (In Feet)
			0.0	0.1	0.1	-0.7				Incremental Change
			0.0	0.1	0.2	-0.5				Cumulative Change
0+50	Tundra	17.2	17.2	17.3	17.4	16.7	16.7	16.7	16.7	Elevation (In Feet)
			0.0	0.1	0.1	-0.7	0.0	0.0	0.0	Incremental Change
			0.0	0.1	0.2	-0.5	-0.5	-0.5	-0.5	Cumulative Change
***Note: Baseline Stationing Runs from North to South along Cross-Sections.										
***Note: Vertical Datum Adjusted Down Approximately 0.5 feet to reflect Actual Elevation per Differential Levels from CD-1, ran August 2007										

