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**Company: Hilcorp**

**SLR International Corporation**

**Date: 10/20/23**

**Project No.:  
105.00874.23018**

**RE: Field Report for Trench Excavation, Kenai Gas Field 41-7 Facility**

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SLR International Corporation (SLR) was retained by Hilcorp Alaska, LLC (Hilcorp) to provide on-site support by an Alaska Department of Environmental Conservation (ADEC) qualified environmental professional (QEP) during trench excavation activities associated with the installation of electrical power lines at Kenai Gas Field (KGF) Pad 41-7 (Site) (Figure 1). The site is registered under Alaska Department of Environmental Conservation (ADEC) file number 2320.38.032 and Hazard Identification 276.

The Soil Management Plan (SMP) for this work written by SLR and approved by the ADEC on 10 October 2023 (SLR, 2023) and provided the procedure for the removal, assessment, and disposal of contaminated soil unrelated to gas production. Field activities were conducted from 11 to 13 October 2023. On October 11 natural gas condensate contaminated soil and water were encountered during the excavation. Hilcorp received approval from the ADEC on 12 October to deviate from the SMP by placing the soil and water back into the excavation and dispose of remaining soil and water at the KFG Grind and Inject Facility (G&I) without field screening or analytical sampling. This technical memorandum summarizes the completed field work.

## Field Work Completed

Field work consisted of the excavation and stockpiling of soil, dewatering of the excavation and stockpile containments, and environmental activities consisting of collecting screening level data and qualitative observations. SLR Associate Scientist Gerard Ganey was the onsite QEP.

## Excavation, Stockpiling, and Dewatering Activities

Excavation was conducted using a hydro excavator vacuum truck. Six loads were required to complete the trench each approximately (~) 4 cubic yards for a total of 24 cubic yards. The final trench length was~ 250 feet long, 1 to 2 feet wide, and 2 feet below ground surface (Figure 2).

Each load was managed as an individual stockpile (SP) designated SP-01 through SP-06. The management of each stockpile is summarized below.

- SP01: Stockpiled adjacent and upgradient to trench on the gravel pad.
- SP02 – SP05: Stockpiled in bermed containment with a 20-mil thick liner.
- SP06: Staged in hydro excavator.

Dewatering activities consisted of the removal of contaminated groundwater and water used for the hydro excavating. The stockpiles and trench were dewatered before backfilling. Dewatering generated 90 barrels of waste comprised of groundwater, water generated during hydro excavating, and a small quantity of soil. Backfilling consisted of returning excavated soil to the approximate origin location. Clean gravel fill with a maximum thickness of 6 inches was used to cap the trench.

## Environmental Activities

Environmental activities consisted of a collecting qualitative observation of conditions within the excavation and photoionization (PID) soil field screening. A photographic log is included as attachment 1. The field logbook and field forms are included in attachment 2.

### Field Screening and Qualitative Observations

Soil field screening procedures were conducted in accordance the ADEC Field Sampling Guidance (ADEC, 2022),

Five soil field screenings were collected from five stockpiles (SP01-SP05) for a total of 25 soil field screenings. Of the 25 field screenings, nine were greater than 20 parts per million (ppm) and collected from SP01, SP02 and SP04. The highest reading at the site was 118.9 ppm from SP01 (Table 1). SP06 was not field screened because the material was not stockpiled. Table 1 presents a summary of stockpile field screening results and the presence and absence of sheen below.

**Table 1. Stockpile Field Screening Results and Free Product (Sheen) Presence / Absence**

Stockpile ID	PID Results (ppm)					Sheen Present (Y/N)	
	#1	#2	#3	#4	#5	Stockpile	Trench
SP01	118.9	19.8	7.9	30.4	10.3	Y	Y
SP02	22.4	32.5	15.6	7.8	7.6	N	Y
SP03	32.1	23.1	8.8	15.1	16.3	Y	Y
SP04	19.9	36.4	17.2	58.6	5.4	Y	Y
SP05	17.8	40.3	11	18.5	9.1	Y	Y
SP06	-	-	-	-	-	-	Y

The QEP documented visual and olfactory observations indicating potential hydrocarbon contamination such petroleum hydrocarbon odors, soil staining, and free product (sheen) on water. These observations are summarized below.

- Odor: Petroleum hydrocarbon-like odors (odor) were noticed in all soil stockpiles with an odor strength from weak to moderate. There was a moderate odor in open air near the production building (SP01) that seemed to be a result of the trenching rather than the proximity to gas production.
- Soil Staining: There were no obvious signs of petroleum hydrocarbon related soil staining in the stockpiled soil, but a few observations of light staining of were made of in-situ soil in the trench.
- Free Product (sheen): Free product was identified as a thin petroleum hydrocarbon sheen on water in the trench and containment (Table 1).



## Conclusion

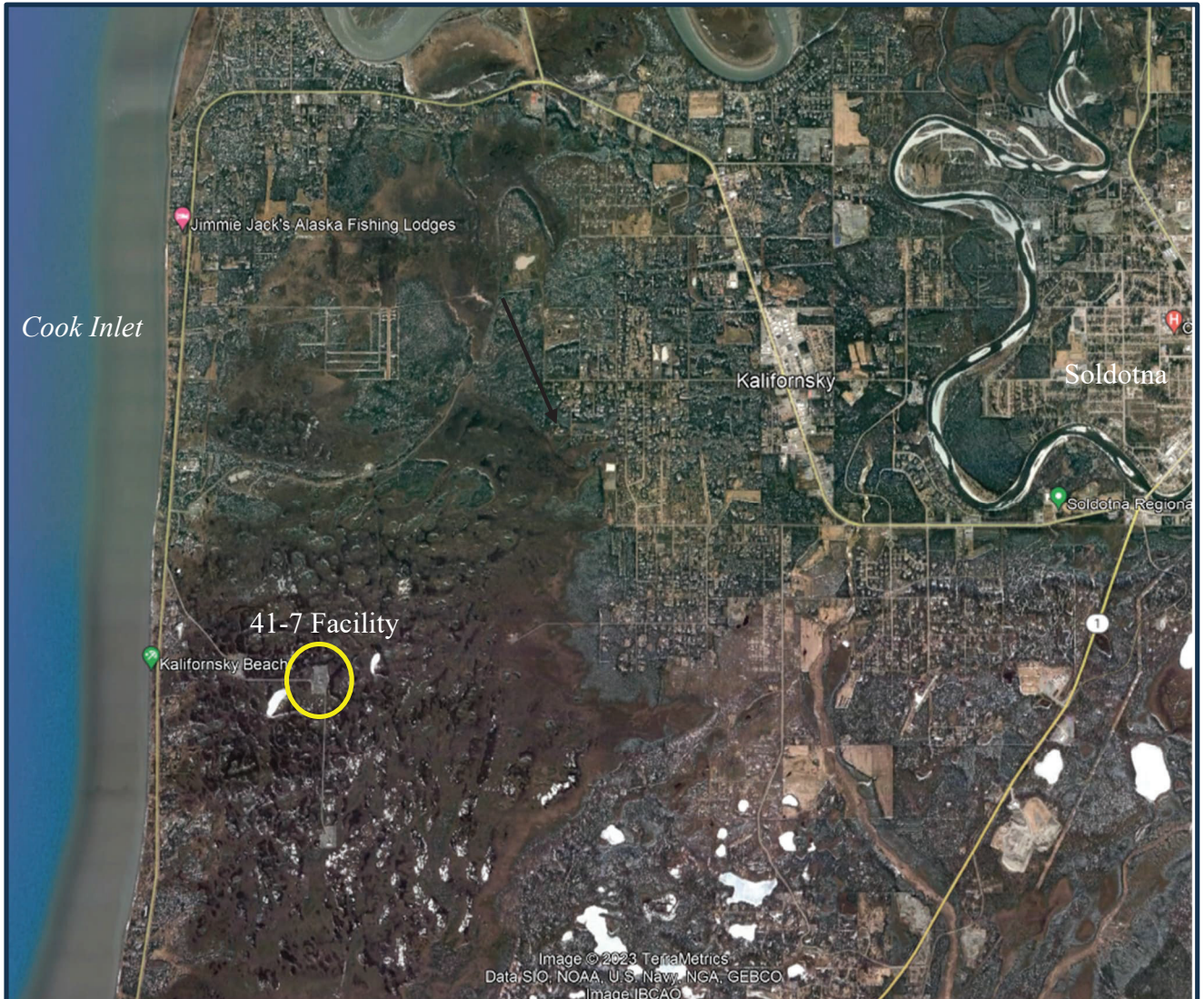
Project activities consisted of excavating approximately 250 feet of electrical line trench, managing contaminated soil, and managing contaminated groundwater. Soil field screening was conducted at the footprint of SP01 in accordance with the SMP (SLR, 2023) and ADEC Field Sampling Guidance (ADEC, 2022). Soil field screening and qualitative observations indicated that groundwater and soil the trench area is impacted from natural gas condensate. However, the PID screening of the stockpiles soil indicated the degree of impact was little to moderate with the majority of readings less than 50 ppm. The SPO1 stockpile generated from just west of the production building had the most impacted soil based on PID readings.

## References

Alaska Department of Environmental Conservation (ADEC), 2022. Field Sampling Guidance. January.  
SLR International Corporation (SLR). 2023. Soil Management Plan for Trench Excavations, Kenai Gas Field 41-7 and 41-18 Facilities. October 6

**Attachments:** Figure 1 – Stie Location Map  
Figure 2 – Pad 41-7 Facility Site and Soil Stockpile Origin Locations Map  
Attachment 1 – Field Logbook and Field Forms  
Attachment 2 – Photographic Log

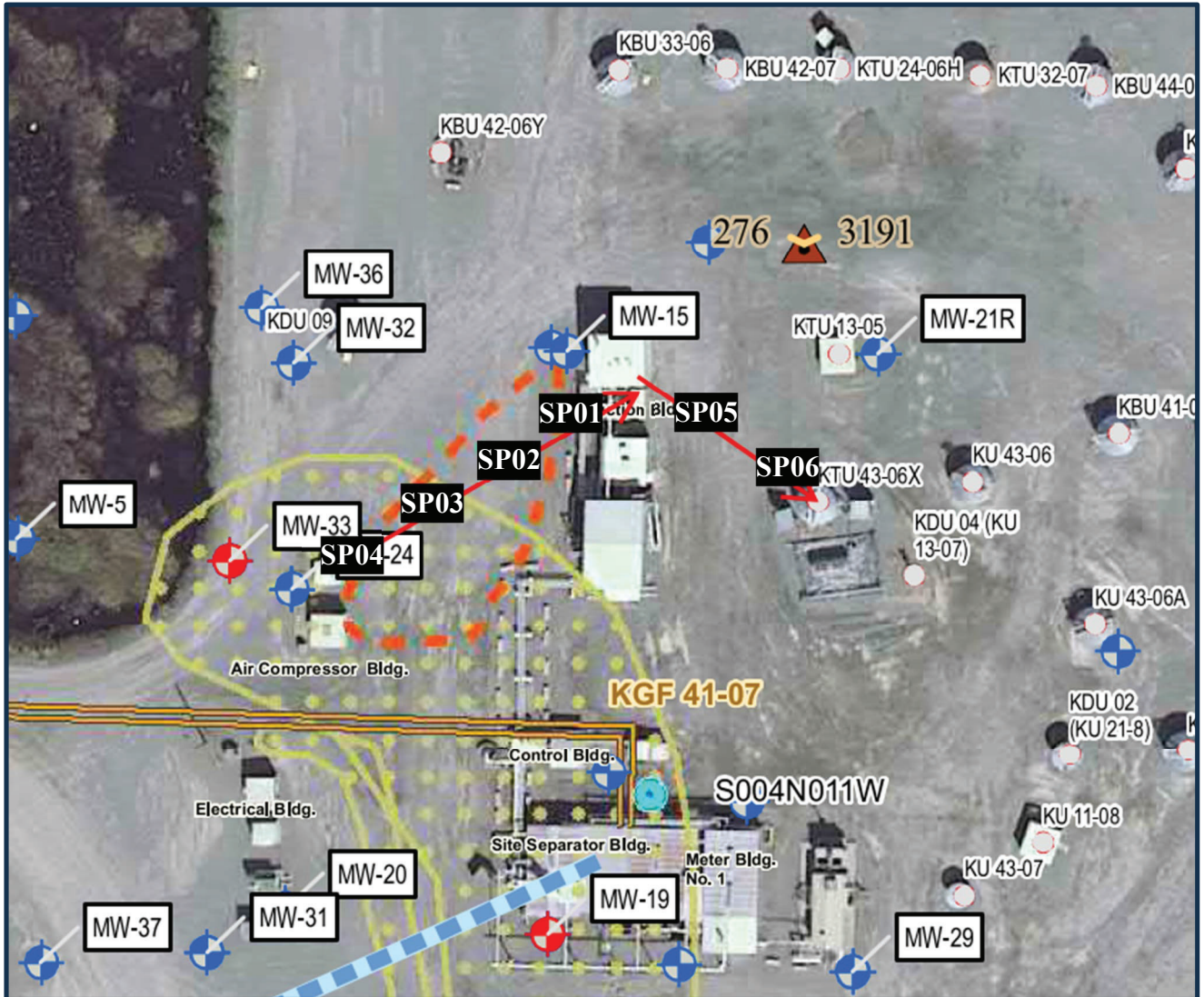




Field Report for Trench Excavation,  
Kenai Gas Field 41-7

Figure 1

41-7 Facility Location Map



Field Report for Trench Excavation,  
Kenai Gas Field 41-7

Figure 2

41-7 Facility Site and Soil Stockpile Location Origin Map

## Field Report for Trench Excavations

**Photo 1:** Trench excavation began on the southwest end of the Production Building. This is the origin of SP01. Taken facing north (October 11, 2023).



**Photo 2:** SP03 field screening locations (October 12, 2023).



**Photo 3:** View of sheen in SP03 containment cell (October 12, 2023).



**Photo 4:** View of water filled trench water with sheen west of the Production Building (October 12, 2023).



**Photo 5:** View of water filled trench water with sheen east of the Production Building (October 12, 2023).



**Photo 6:** View of water filled trench before dewatering activities. Photo taken facing south (October 13, 2023).





**Photo 7:** View of water dewatering activities. Photo taken facing south (October 13, 2023).



Date: 10/11/23

Weather: 38°F mostly cloudy

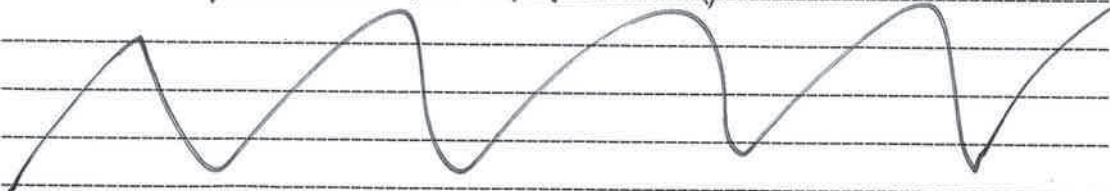
Daily Summary:

- Field screened and collected samples from SP01
- Sheen identified in exposed ground water.
- SLR advised Hilcorp to store saturated soil in lined (10mil+) bermed stockpiles with covers.

Chronology:

- 430 Calibrate PIDs w/ Cal Gas (Gas No: 115711, Lot-6791)  
SLR PID#1 Preval 100.9, post call 100.3  
SLR PID#2 not calibrated, bump test was 101.3, will use as back up.
- 510: Arrive LAUN check in  
620: Arrive Kenai  
700: Pickup cooler at LAUN or cargo  
800: On site @ 41-7 waiting to start work.  
740: Vacator 2100 series set up to begin trench on W side of Production Bldg.  
1120: collected 3 field screenings from 41-7-SP01. 52 feet of trench excavated. A slight sweet smell was observed, potentially a indicator of fuel contamination. Slight sheen noted in trench, source unidentified  
1155: Sample 41-7-SP01-01 @ 1155  
Duplicate 41-7-SP99-09 @ 1155  
1245: Hilcorp setting up containment for second load. First stockpile SP01 will be transferred to containment and stockpile footprint will be sampled in accordance w/ Field Sampling Guidance / Work Plan.  
1335: SLR advises Hilcorp to get new liner to avoid spreading contamination on the pad. Work is currently halted, while  
1455 Site activities continue to be shut down, will go home on 1600 flight to Anchorage and return tomorrow.  
1700 At SLR office, grabbed additional supplies from warehouse, and field forms. Done for day

10/11/23



Date: 10/12/23

Weather: >32° F, rain/snow showers

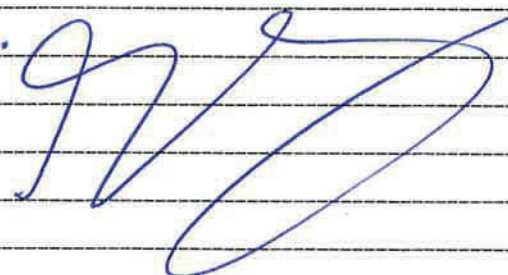
Daily Summary:

- Spent most of day at Swanson River
- Collected field screening for data purposes
- WP direction from DEC to put soil back in holes and collect observations for report.

Chronology:

- 1445: Depart Kenai Airport
- 1545: Stopped at Hilcorp field office on way to 41-7, arrived on site around 1530. Hilcorp has received permission from DEC to return soil to excavations and inject waste water GNI. Directed not to sample.
- 1655 Completed field discussions about plan for completing work. Will collect field screening samples of excavated stockpiles. Discussed origin of excavated material and marked on field figure.
- 1705 Bump test on PSD #1 w/ cal gas (10/11/23) 100.7, Calibrated in AM. See field screening sheet for field screening work.
- 1744 Finished collecting Field Screenings from SP03
- 1750 Walked the trench taking photographs of site conditions and shear
- 1800 Finished collecting field screening for SP04, Sheen observed in water at SP03, SP04, SP05 but not in SP01 or SP02.
- 1820 Finished reading for SP04. Leaving site.
- 1900 Checked into Agan Hotel.
- 1930 Reviewed field notes, organized gear. Dunder day.

10/12/23



Date: 10/13/23

Weather: 36°, mostly cloudy few showers,

Daily Summary: 10/13/23

- Field second <sup>SPO5 GG</sup> ~~SPO2-SPO1~~ for data purposes.
- SPO1 stockpile footprint field screened
- Hilcorp received approval (verbal at least) from DEC to put soil back into the holes.

Chronology:

6:00 Leave lodging  
08:35 Arrive 41-7, calibrate PSD 10/11/23 pre cal = 99.1, post cal = 100.9  
09:15: Water appears to have been removed from stockpiles.  
SPO1 has been backfilled back into place of origin. SLR recommends to site lead Andy to dewater trench before any additional backfill  
10:25 Trench is being dewatered into hydro excavator / vacuum trucks.  
11:05 finished field screening SPO5  
11:15 Collected field screening of 10 locations at former location of SPO1. Site was evaluated for olfactory indications of contamination, SPO1 field screenings were placed on dashboard at 11:17.  
#1 0.3 #4 0.0 #7 1.1 #10 0.7  
#2 1.7 #5 0.0 #8 0.6  
#3 2.3 #6 0.0 #9 0.2 11:40 - 11:50.  
Field screening readings occurred between 11:30 - 11:40. GG 10/13/23  
Footprint area was ~ 15 x 15 = 225 sq feet, requiring 10 field screenings.  
12:30 Summary of discussion with Andy  
~ 33% of fluids sent to GNI are from hydro excavator clean water while 66% is recovered trench water (groundwater from water, snow melt).  
~ backfilled soil returned to origin topped w/ 1.5 inches clean soil, lost from compaction / GNI injection.  
14:00: Leaving office area near 41-7, met with Jason Samples not to be submitted to laboratory.  
15:30: Caught an earlier flight home, will scan field notes and return equipment on Monday. Done at 16:00.



10/13/23

Field Screening ID	Time In	Time Out	Result (ppmV)	Sample Time	Sample ID
41- 7 SP01 -FS01	1116	1139	118.9	1155	41-7-SP01<01
41- 7 SP01 -FS02	1117	1138	22.4		
41- 7 SP01 -FS03	1118	1138	32.1		
41- 7 SP01 -FS04	1118	1143	19.9		
41- 7 SP01 -FS05	1118	1144	17.8		
41- 7 SP02 -FS01	1700	1720	19.8		
41- 7 SP02 -FS02	1701	1722	32.5		
41- 7 SP02 -FS03	1703	1724	23.1		
41- 7 SP02 -FS04	1704	1725	30.4		
41- 7 SP02 -FS05	1705	1727	40.3		
41- 7 SP03 -FS01	1739	1800	7.9		
41- 7 SP03 -FS02	1740	1801	15.6		
41- 7 SP03 -FS03	1742	1802	8.8		
41- 7 SP03 -FS04	1743	1803	17.2		
41- 7 SP03 -FS05	1744	1804	11.0		
41- 7 SP04 -FS01	1752	1813	30.4		
41- 7 SP04 -FS02	1753	1814	7.8		
41- 7 SP04 -FS03	1754	1815	15.1		
41- 7 SP04 -FS04	1756	1816	58.6		
41- 7 SP04 -FS05	1758	1818	18.5		
41- 7 SP05 -FS01	1040	1102	10.3		
41- 7 SP05 -FS02	1041	1102	7.9		
41- 7 SP05 -FS03	1042	1103	16.3		
41- 7 SP05 -FS04	1042	1104	5.4		
41- 7 SP05 -FS05	1043	1105	9.1		
41- 7 SP06 -FS01	NS	NS	NS		
41- SP -FS02					
41- SP -FS03					
41- SP -FS04					
41- SP -FS05					

10/11  
10/12

10/12/13



