



## **Contaminated Soil and Water Management Plan for KGF Pad 14-6 Pig Launcher Excavations**

**Kenai Gas Field**

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**This document has been prepared by Jacobs Engineering Group Inc. The material and data in this report were prepared under the supervision and direction of the undersigned.**

A handwritten signature in black ink, appearing to read 'Andrew Tarnas-Raskin', is written over a horizontal line.

**Andrew Tarnas-Raskin**  
**Jacobs' Qualified Environmental Professional**

**July 2021**



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## ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
BMP	Best Management Practices
CS	(ADEC) Contaminated Site
DRO	diesel-range organics
E&P	exploration and production
ft	feet
G&I	grind and inject
GRO	gasoline-range organics
Hilcorp	Hilcorp Alaska, LLC
HVE	high-vacuum extraction
ID	identification
KGF	Kenai Gas Field
KNPL	Kenai Nikiski Pipeline
LNAPL	light non-aqueous phase liquid
Marathon	Marathon Oil Company
NGC	natural gas condensate
PAH	polycyclic aromatic hydrocarbon
PID	photoionization detector
ppmV	parts per million by volume
PPR	(ADEC) Prevention Preparedness and Response
QEP	qualified environmental professional
RCRA	Resource Conservation and Recovery Act
RRO	residual-range organics
SGS	SGS North America Inc.
SWMP	soil and water management plan
UOCC	Union Oil Company of California



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## 1.0 INTRODUCTION

This plan provides information to assist in the management of contaminated soil and water, if encountered, during excavation activities associated with pig launcher construction at the Hilcorp Alaska, LLC (Hilcorp) operated Kenai Gas Field (KGF). Originally developed in 1959 by Union Oil Company of California (UOCC), Marathon Oil Company (Marathon) acquired the KGF facilities in 1994. Hilcorp took over the KGF pads in 2013 and is the current operator. The KGF pads are located approximately 60 miles southwest of Anchorage, Alaska, and 10 miles south of Kenai (Figure A-1).

The KGF Pig Launcher Installation project will first require a series of pre-construction test pit excavations along the 13,175-foot section of the 20-inch-diameter gas pipeline running from KGF Pad 14-6 to its junction with the Kenai Nikiski Pipeline (KNPL) (Figure A-2). Prior to the installation of the pig launcher, at least five test pits will be excavated at strategic locations along the 20-inch-diameter pipeline: at the junction of the 20-inch-diameter pipeline and the KNPL, adjacent to KGF Pad 34-31 access road, at a bend along the central portion of the pipeline, and two on KGF Pad 14-6 (Figures A-3 through A-6, respectively).

Excavation of test pits will be performed by hand, primarily at bends and valves to locate and examine the pipeline. Pre-construction test pits are expected to be approximately 3 ft long by 3 ft wide. The exact depths of these test pits are unknown, but are not anticipated to reach groundwater, which is located at approximately 5.5 ft below ground surface. Only the top of the line will be exposed during excavation activities. If groundwater is intersected, excavation dewatering is not anticipated. Information acquired from test pitting will be applied to installation of the pig launcher and associated pipeline upgrades. Pig launcher installation activities are planned for Fall 2021 and will be captured in an addendum to this contaminated soil and water management plan (SWMP) prior to executing work.

Pre-construction test pits will occur within 1,500 ft of two Alaska Department of Environmental Conservation (ADEC) Contaminated Sites (CS) designated as Active; Kenai Gas Field Pad 14-6 (Hazard Identification [ID]: 2434/File Number: 2320.38.029) and Kenai Gas Field Pad 34-31 (Hazard ID: 3331/File Number: 2320.38.031), and two sites designated as cleanup complete; UNOCAL K-B Gas Field (Hazard ID: 23442 / File Number: 2333.26.044) and Old Keener Property (Hazard ID: 476 / File Number: 2320.38.041). All ADEC CSs within 1,500 ft of planned excavation activities are detailed in Section 2 of this management plan.

The primary objective of this contaminated SWMP is to ensure contaminated soil and water, if encountered during excavation activities, are managed in order to achieve the following:

- Protection of human health and the environment



- Minimization of waste generation to the extent practicable in compliance with applicable regulations
- Prevention of delays to construction activities

Activities to meet this objective include the following:

- Identifying areas with known contamination in the project vicinity
- Monitoring for contamination
- Segregation, investigation, and treatment and/or disposal of contaminated soil and water



## 2.0 CONTAMINATED SITES WITHIN 1,500 FEET OF EXCAVATION ACTIVITIES

Four ADEC contaminated sites are present within 1,500 ft of the proposed excavation activities as determined through a record search of the ADEC CS database (ADEC 2021). The following sections detail these CSs. Two sites are listed as active (red triangle) and two are cleanup complete (green triangle), as presented on Figures A-4 and A-6. Note that the ADEC locations for sites presented on the figures are approximate and may not align with the actual release locations.

### 2.1 KENAI GAS FIELD PAD 14-6

*Site Name: Kenai Gas Field Pad 14-6 / ADEC CS Hazard ID: 2434 / File Number: 2320.38.029 / CS Status: Active*

KGF Pad 14-6 (Figure A-6) was constructed in the late 1950s and consists of a 3- to 4-foot-thick gravel pad placed over native tundra, wetland, and spruce bog of the Kenai lowlands. A hydrocarbon sheen was observed on the western edge of KGF Pad 14-6 in 1995 following a season of abnormally high precipitation. The incident was reported to ADEC by Marathon as a historical release; Marathon elected to initiate remedial efforts. Site assessment activities in 1996 and 1997 indicated the source of the sheen was natural gas condensate (NGC) associated with an unrecorded release (SLR 2014a). The ADEC CS database lists a historical leak at the Arctic Pipeline Building as a potential source of contamination at this site (ADEC 2021).

Additional investigations at KGF Pad 14-6 have been conducted to delineate the impacted area and perform remedial actions. A light non-aqueous phase liquid (LNAPL) plume was discovered off the pad, south and west of the former Retention Basin. Between 1996 and 2006, 41 monitoring and recovery wells were installed at the site, with groundwater monitored at varying frequencies. In 1998, approximately 1,100 cubic yards of LNAPL-impacted soil were excavated from the source area and thermally treated. High-vacuum extraction (HVE) systems were installed to recover LNAPL in the source area and operated from 1998 to 2001 and 2003 to 2007. LNAPL-absorbent socks were installed in six wells in 2004 and 2005. Groundwater monitoring, surface water monitoring, and an HVE recoverability assessment between 2010 and 2019 concluded that the LNAPL plume is no longer migrating laterally, is naturally attenuating, and is not migrating to the ground surface in the wetland.

In 2019, groundwater monitoring results identified concentrations of diesel-range organics (DRO), residual-range organics (RRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene above ADEC Table C groundwater cleanup levels (ADEC 2020). Results for all other analytes were





either non-detect or were detected below ADEC Table C groundwater cleanup levels (Hilcorp 2019).

Excavation of proposed test pits at KGF Pad 14-6 will occur to the north and crossgradient of the most recently detected groundwater contamination plume at this active CS. Contaminated groundwater, including LNAPL, remains on site but groundwater is not anticipated to be intersected by test pits. There is currently no known soil contamination on the pad. Contamination is not anticipated to be encountered during excavation activities; however, field crews will monitor for contamination and will be prepared to respond, as described in Sections 3 and 4 of this SWMP.

## 2.2 KENAI GAS FIELD PAD 34-31

*Site Name: Kenai Gas Field Pad 34-31 / ADEC CS Hazard ID: 3331 / File Number: 2320.38.031 / CS Status: Active*

In 1999, an NGC hydrocarbon sheen and odor were observed at the water injection building along the southwest side of the pad, and in 2000, a soil and groundwater assessment detected concentrations of DRO in soil and groundwater exceeding ADEC cleanup levels published at the time. A 2007 site assessment determined that areas of concern were related to historical operations at KGF Pad 34-31, including produced fluid and diesel fuel impacts to the pad surface and subsurface (SLR 2014b).

Historically, DRO has been the only contaminant detected at concentrations exceeding the ADEC Table C groundwater cleanup levels. Annual monitoring of DRO conducted between 2010 and 2015 reported similar observations, with DRO as the only analyte with results exceeding the ADEC Table C groundwater cleanup levels.

In 2017 and 2019, petroleum-related volatile organic compounds (VOCs) (including benzene, toluene, ethylbenzene, and xylenes) and polycyclic aromatic hydrocarbons (PAH) were added to the analytical suite. Concentrations of DRO exceeded the ADEC Table C groundwater cleanup level in both years, but the petroleum-related VOC and PAH concentrations were less than the Table C cleanup levels (ADEC 2020). DRO is the only contaminant of concern at KGF Pad 34-31 (Hilcorp 2019).

Proposed test pitting near KGF Pad 34-31 will occur approximately 720 feet southwest and downgradient of the active CS, and within 1,500 ft southwest and downgradient of the two cleanup complete CS (Figure A-4). During the most recent groundwater sampling event in 2019, contaminated groundwater was located on western area of the pad and in wells up to 50 ft to the west of the pad. The groundwater contamination plume remains undelineated to the southwest, but groundwater is not anticipated to be intersected by test pits. There is no known soil



contamination on the pad or in the proposed test pitting location along Kalifornsky Beach Road. Contamination is not anticipated to be encountered during excavation activities; however, field crews will monitor for contamination and will be prepared to respond as described in Sections 3 and 4 of this SWMP.

### 2.3 UNOCAL K-B GAS FIELD

*Site Name: UNOCAL K-B Gas Field / ADEC CS Hazard ID: 23442 / File Number: 2333.26.044 / CS Status: Cleanup Complete*

During the removal of a 2,000-gallon gasoline underground storage tank on November 2, 1989, petroleum hydrocarbon contamination was encountered in soil and groundwater. The contaminated soil was reused in a cold emulsion asphalt mix and used in a slurry seal coat. The drinking water well from KGF Pad 34-31 was monitored for contamination, and the site was subsequently granted a cleanup complete designation in October 1997. The ADEC requires advance approval to transport soil or groundwater off this site. The proposed project will not include the transport of soil or groundwater from this site.

### 2.4 OLD KEENER PROPERTY

*Site Name: Old Keener Property / ADEC CS Hazard ID: 476 / File Number: 2320.38.041 / CS Status: Cleanup Complete*

Site investigations and long-term groundwater monitoring have been conducted at KGF Pad 34-31 (Figure A-4) in association with the eastern reserve pit since the 1980s. In 1986, disposal of an unknown amount of drilling muds (with possible NGC) occurred in wetlands adjacent the pad while a private person owned the site. The responsible party, Union Oil Company of California (UOCC), said materials were tested prior to disposal and weren't contaminated. Site closure was approved in September 1990.

UOCC initiated cleanup of the reserve pit and drilling muds in 1992, resulting in the removal of 12,000 cubic yards of soil. An unknown quantity of impacted soil was left in place along the western wall of the excavation due to existing active gas wells and infrastructure (SLR 2014b). As part of site closure stipulations, ADEC requires advance approval to transport soil or groundwater off this site. The proposed project will not include the transport of soil or groundwater from this site.



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### 3.0 EXCAVATION MONITORING

Based on the shallow nature of pre-construction test pits and lack of known soil contamination within 1,500 ft of proposed excavation locations, contaminated soil and/or groundwater is unlikely to be encountered. This SWMP will be implemented to assist project crews in monitoring and response efforts should contamination be encountered.

Field personnel will monitor for evidence of contaminated soil and/or water during excavation activities. Monitoring will include visual and olfactory observations. Evidence of contamination may include a hydrocarbon/chemical odor, stained soil, free product, or hydrocarbon sheen on the water. Upon encountering contamination, a qualified environmental professional (QEP) will be brought to the site to conduct screening and, potentially, analytical characterization sampling.

If excavated soil displays no sign of contamination, it may be staged adjacent to the dig site or other nonsegregated and unlined staging area and reused as backfill at project completion. Upon observing soil and/or groundwater contamination, the soil will be segregated and stockpiled as described in Section 4.1 and then screened and potentially sampled as described in Section 3.1. Soils will be designated as contaminated for segregation purposes if photoionization detector (PID) readings are greater than 20 parts per million by volume (ppmV), or if visual or olfactory indications of contamination such as sheening, odor, and/or staining exist. If needed, Section 4.2 describes the procedure for excavation dewatering.

Although unanticipated, if groundwater is encountered and dewatering is needed to gather the information necessary to finalize the pig launch installation project plan, dewatering will comply with the 2020 *Best Management Practices (BMP) Plan for Discharges and Disposals Under Alaska Department of Environmental Conservation General Permit for Statewide Oil and Gas Pipelines* (Hilcorp 2020) issued under the ADEC General Permit for Statewide Oil and Gas Pipelines and the Alaska Pollutant Discharge Elimination System (APDES) Hilcorp authorization AKG320004 issued under the Statewide Oil and Gas Pipeline General Permit AKG320000.

#### 3.1 SOIL AND WATER SCREENING AND SAMPLING

If field personnel identify contaminated soil and/or water, a QEP will be called to the site to assess the contamination, conduct field screening with a PID, and potentially collect analytical characterization samples following the methods described in this section.

To assess potential contamination in soils, the QEP will perform headspace organic vapor analysis using a PID as a field screening method. The ADEC's *Field Sampling Guidance* (ADEC 2019) will dictate the soil and water sample collection and screening procedures. When available, field screening samples will consist of freshly uncovered soil to minimize the potential



for volatilization. If freshly uncovered soil is unavailable, soil must be collected from a minimum of 6 inches below the soil surface.

Tables 2A and 2B in ADEC's *Field Sampling Guidance* (ADEC 2019) will dictate screening sampling frequency. Field sketches will record the locations of field screening samples. Collected soil samples may be from stockpiles or the sidewall or floor of the excavation. A numbered pin flag will mark the location of stockpile screening samples.

Soils with a PID reading of 20 ppmV or higher will be segregated and have at least one analytical sample collected. Field logbooks will be used to record the PID results and any evidence or observations to support the decision not to collect analytical samples. Analytical samples will also be collected if the QEP or ADEC deems it necessary based upon field observations and professional judgment. Following guidelines outlined in ADEC's *Field Sampling Guidance* (ADEC 2019) and considering field observations and PID screening results, the QEP will determine the collection frequency of analytical samples. The QEP will provide a PID for field screening as well as the necessary items to collect, package, and ship soil and water samples.

If contaminated groundwater is encountered and is suspected to be associated with a nearby CS that is part of a groundwater monitoring program, an analytical suite derived from the applicable monitoring program will be used to characterize samples.

Analytical samples from contaminated groundwater, if encountered during excavation activities near the active CS Kenai Gas Field Pad 14-6, will be submitted to SGS North America Inc. (SGS) for the following analyses:

- Gasoline-range organics (GRO) by Method AK101
- DRO/RRO by Method AK102/103
- Petroleum-related VOCs by Method SW8260
- PAH-selective ion monitoring by Method SW8270-SIM

Analytical samples from contaminated groundwater, if encountered during excavation activities near the active CS Kenai Gas Field Pad 34-31, will be submitted to SGS for the following analyses:

- DRO by Method AK102/103
- Petroleum-related VOCs by Method SW8260
- PAH-selective ion monitoring by Method SW8270-SIM



If contaminated soil or groundwater are not suspected to be associated with a known contaminated site, analytical samples will be submitted to SGS for the following analyses:

- GRO by Method AK101
- DRO/RRO by Method AK102/103
- Petroleum-related VOCs by Method SW8260
- PAH-selective ion monitoring by Method SW8270-SIM
- Resource Conservation and Recovery Act (RCRA) Metals

If non-petroleum-related contamination is suspected, additional analytical methods may be required and will be determined in coordination with ADEC.

### **3.2 NOTIFICATIONS**

If contamination is identified and is not associated with a known ADEC CS, Hilcorp will notify ADEC's Prevention Preparedness and Response (PPR) Program of the newly discovered contamination. In collaboration, the ADEC PPR and CS programs and Hilcorp will determine if the newly discovered contamination will be added to the PPR or CS program, and Hilcorp will address the site under that program's management.

The onsite QEP will track the location and quantity of contaminated soil and groundwater generated, document the results of the analytical samples collected, and summarize them in a report of the 2021 excavation activities (see Section 5 for additional details).

If construction activities cause a new release, the standard reporting procedures will be followed, and the necessary spill response activities will be employed. Hilcorp maintains spill response materials on site.



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## 4.0 CONTAINMENT OF CONTAMINATION

Standard soil and wastewater management procedures for pipeline excavation will be implemented to prevent the spread of contaminated soil and water from stormwater runoff, erosion, spillage from loads, or tracking of soils by heavy equipment. Additionally, Hilcorp will implement the BMP plan (Hilcorp 2020) to mitigate the spread of contamination during excavation dewatering activities, if dewatering is necessary. Soil and water will be contained and transported as described in Sections 4.1 and 4.2. If necessary, stockpiles will be covered, water will be removed from the stockpile containment area, and erosion control measures including silt fence, straw wattles, or similar will be installed to minimize runoff and erosion. Once excavation and backfill are complete, excess uncontaminated soil will be spread to match the existing grade or will be transported offsite for disposal or reuse.

Soil and groundwater that is deemed nonhazardous by RCRA regulations and/or was produced as part oil and gas exploration and production (E&P), may be considered exempt from RCRA Subtitle C regulation under the 1980 Solid Waste Disposal Act Amendments to RCRA, §3001(b)(2)(A) (U.S. Environmental Protection Agency 2019).

### 4.1 CONTAMINATED SOIL SEGREGATION, STORAGE, AND TRANSPORT

Soil that is known or suspected to be contaminated will be segregated and stockpiled in accordance with ADEC's *Field Sampling Guidance* (ADEC 2019) and the Alaska Administrative Code (AAC) Title 18, Chapter 75 (18 AAC 75) (ADEC 2020). Soil believed to be contaminated will be staged adjacent to the excavation or at a nearby staging area in lined and bermed soil stockpiles or other suitable waste storage containers. Special precautions will be needed for saturated soils. If necessary, the lined staging area will be retrofitted with a sump to prevent pooling of water within the storage area and potential spills of contaminated water to the ground surface.

Soil that had been excavated adjacent to potentially contaminated soils, but that did not initially display evidence of contamination, will be investigated to verify that contamination is not present using a PID and analytical sampling if PID readings exceed 20 ppmV. If contamination is found in this soil, the soil will also be transferred to the contaminated soil stockpiles or other suitable waste storage container.

In the event that contaminated soil was placed directly onto the ground surface, the QEP will conduct field screening once the contaminated soil has been transferred to containment to verify that the native ground surface was not impacted. The sample frequency will follow specifications provided in Table 2B of the *Field Sampling Guidance* (ADEC 2019). If all field screening samples





have PID readings less than 20 ppmV and there are no other indications of potential contamination, the native soil will be considered clean and no analytical samples will be collected. If the PID readings exceed 20 ppmV, analytical samples will be collected following the specifications provided in Table 2B of the *Field Sampling Guidance* (ADEC 2019). Additional removal will be needed if the samples from the native soil have concentrations exceeding ADEC cleanup levels.

Contaminated soil stockpiles will be constructed in accordance with 18 AAC 75.370 Soil storage and Disposal (ADEC 2020). Stockpiles will be located 100 ft or more from surface water bodies and any drinking water supply wells. The construction materials will meet the specifications listed in Table D of 18 AAC 75.370 (ADEC 2020). The stockpile will be covered when soil is not being added or removed and will be constructed to minimize water accumulation on the top cover.

If soil is suspected to be contaminated with a chemical other than hydrocarbons, that soil will be segregated into a separate stockpile or other suitable waste storage container. Waste characterization samples will be collected to determine what chemicals are present and the proper disposal/treatment method.

If the suspected contaminated soil shows no evidence of contamination (visual, olfactory, and PID less than 20 ppmV) during the excavation activities, the soil can be used to backfill the excavation and/or reused onsite.

#### **4.2 EXCAVATION DEWATERING**

Excavation dewatering is not expected to be needed during test pit excavation activities. If dewatering is needed as part of test pitting it will be minimal. Dewatering will be performed in accordance with the *Hilcorp Pipeline System Cook Inlet Area BMP Plan for Discharges and Disposals* (Hilcorp 2020) issued under the *ADEC General Permit for Statewide Oil and Gas Pipelines* and the APDES Hilcorp Alaska LLC Pipeline System Operations Permit AKG320004 issued under the Statewide Oil and Gas Pipeline General Permit AKG320000.

Excavation dewatering, if needed, will be conducted using a vac truck or other suitable pump(s). Water removed from the excavations that is suspected to contain contamination will be transported to the Grind and Inject (G&I) facility at KGF. If water is suspected to be contaminated with a chemical other than hydrocarbons, additional waste characterization samples may be needed to determine the proper disposal/treatment method. Uncontaminated water removed during excavation activities may also be discharged to the ground surface at the locations presented in the BMP plan (Hilcorp 2020).



### 4.3 WASTE TRANSPORT AND OFFSITE DISPOSAL

Contaminated soil and water that may be produced as part of test pit excavation activities is anticipated to be E&P exempt and therefore may be disposed of at the G&I facility. However, if water or soil is ineligible for disposal at the G&I facility, contaminated soil and groundwater may be transported offsite for disposal or treatment. Prior to offsite shipment of contaminated material, an ADEC Transport, Treatment, & Disposal Approval Form for Contaminated Media will be completed and submitted to ADEC for review and approval.

Contaminated soil and water will be managed dependent on waste classification and contaminant concentrations, as determined by visual and olfactory evidence and waste characterization sampling results:

- Contaminated soil or water that is E&P exempt will be disposed of at the KGF G&I facility.
- Contaminated soil that is nonhazardous and non-E&P exempt will be containerized and transported offsite for thermal treatment at Alaska Soil Recycling or other permitted facility.
- Contaminated soil or water that is considered hazardous under RCRA regulations will be containerized and transported offsite for disposal or treatment at a permitted facility.

Contaminated soil or water that must be transported offsite for disposal will be done so through U.S. Ecology or other permitted waste contractor.



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## 5.0 DOCUMENTATION AND REPORTING

Documentation and reporting in association with this plan will be conducted by the QEP only if contamination is encountered. If contamination is not encountered and analytical samples are not required, a summary report will not be prepared. The project QEP will maintain a field logbook to document daily project activities related to this plan. The QEP will take digital photographs to document site activities and conditions. When possible, the QEP will collect latitude and longitude coordinates around the perimeter of the excavation to document excavation dimensions of impacted areas. Approximate locations of field screening and analytical samples will be measured from the excavation perimeter and documented in the field logbook. If contamination is encountered, following the completion of applicable earthwork, sampling, and receipt of the analytical results, the QEP will prepare a summary report.

The report will include field screening and sampling results (including the laboratory reports) and figures with excavation and sampling locations. The report will also contain the analytical data, field notes, waste tracking, and photograph log. An ADEC Laboratory Data Review Checklist and quality assurance report will be prepared for all analytical data used for site characterization purposes following ADEC's Minimum Quality Assurance Requirements for Sampling Handling, Reports, and Laboratory Data guidance (ADEC 2019).



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## 6.0 REFERENCES

- ADEC (Alaska Department of Environmental Conservation). 2019 (October). *Field Sampling Guidance*.
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- U.S. Environmental Protection Agency. 2019 (April). *Management of Exploration Development and Production Wastes: Factors Information a Decision on the Need for Regulatory Action*.

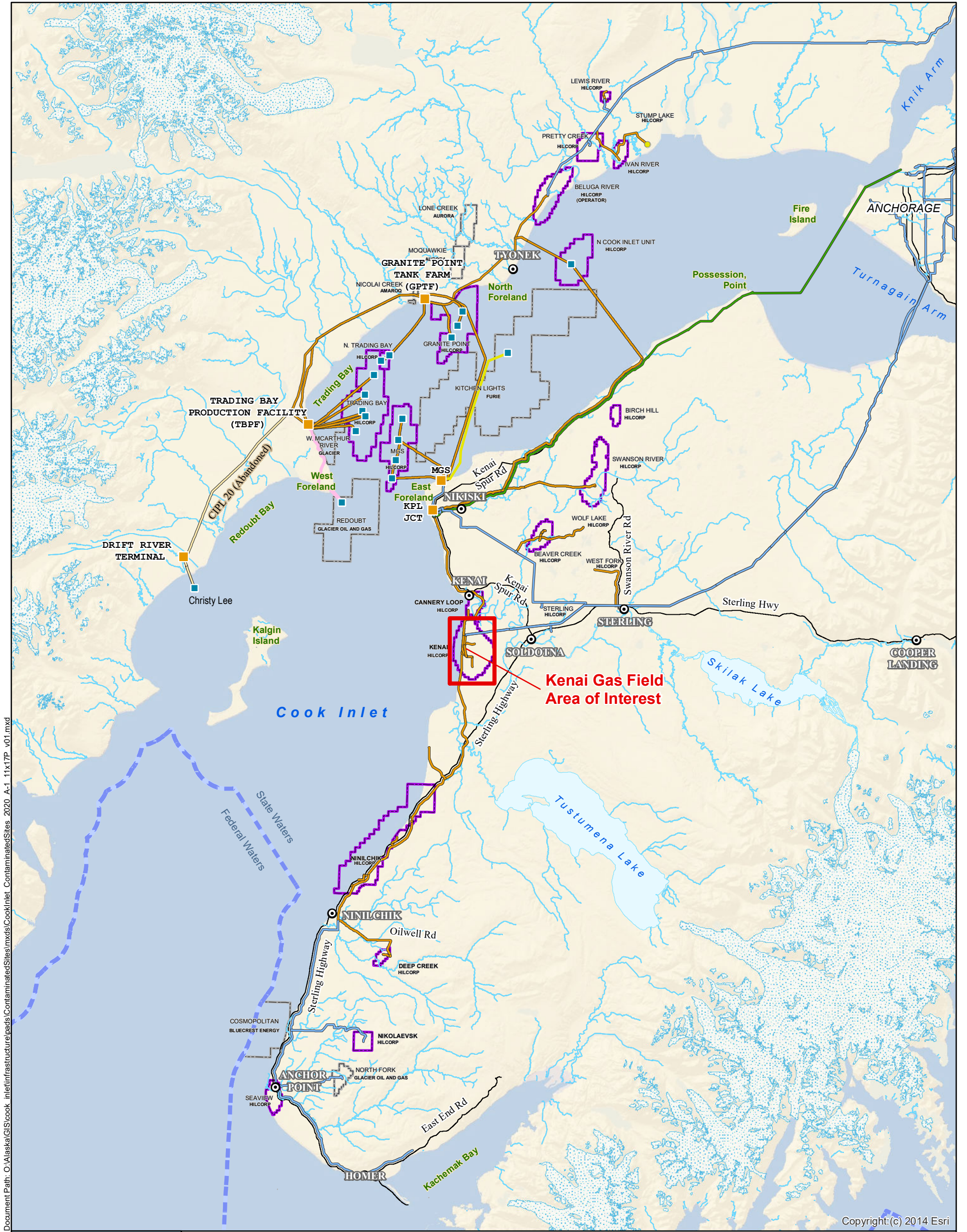


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## **Appendix A**

### **Figures**





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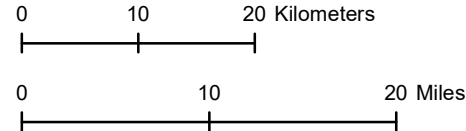
Copyright: (c) 2014 Esri



**Legend**

- Onshore Facilities
  - Offshore Platforms
  - State/Federal Boundary (3 Mile Limit)
  - Oil and Gas Units Operated by HAK
  - Oil and Gas Units - Other
  - Major Roads
- Hilcorp/Harvest
  - Glacier Oil and Gas
  - ENSTAR
  - Furie
  - Tesoro

Alaska State Plane Zone 4 NAD 1983 (feet)

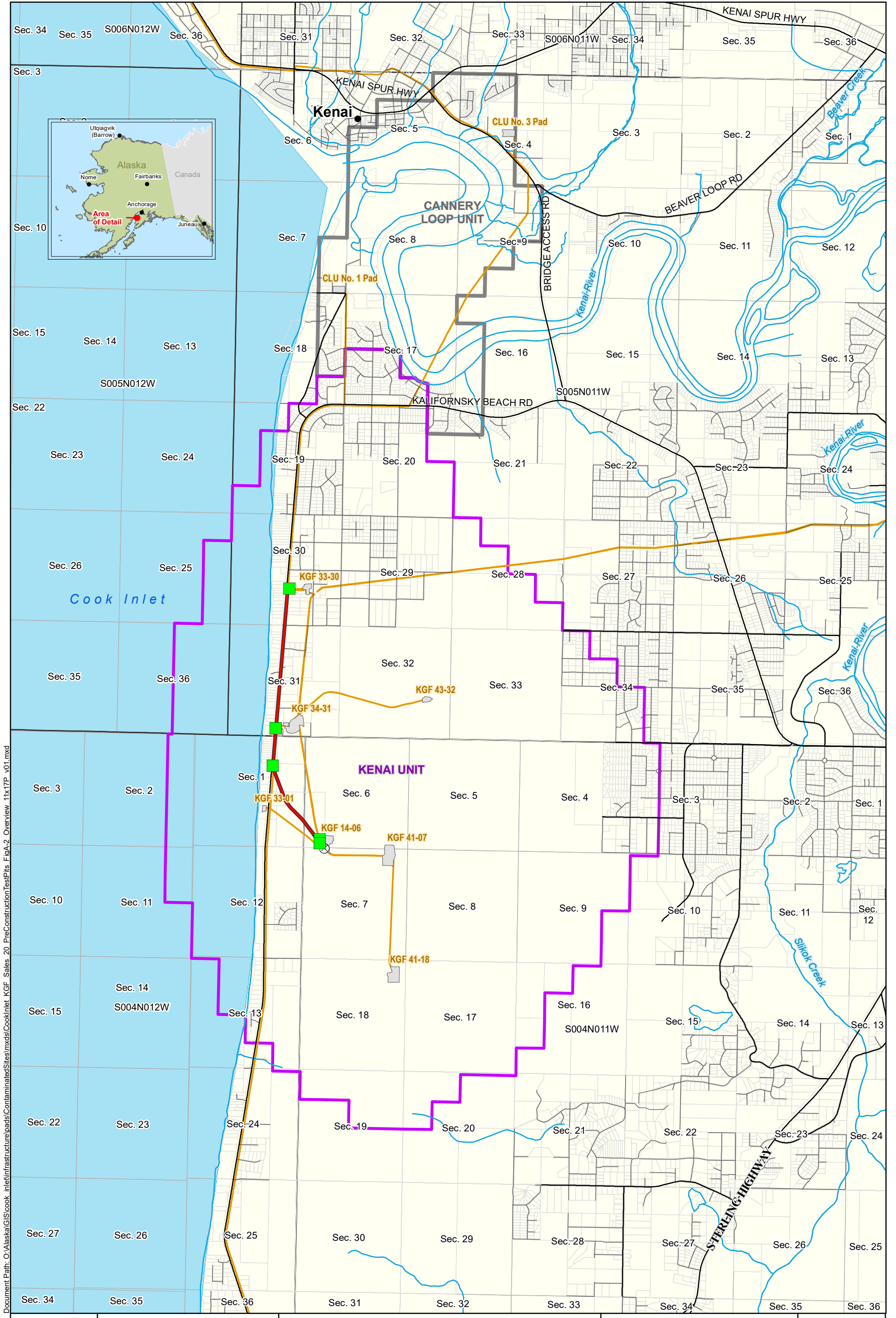


Date Prepared: 9/8/2020	Company Name: Hilcorp Alaska, LLC.	Drawn By: HAK - MRA
<b>LOCATION AND VICINITY</b>		
KENAI UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 10 miles	Figure No: <b>A-1</b>	



3800 Centerpoint Drive, Suite 1400  
Anchorage, AK 99503



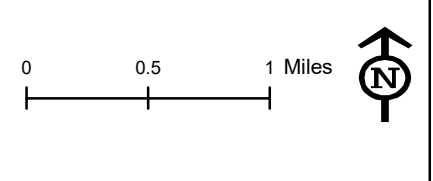


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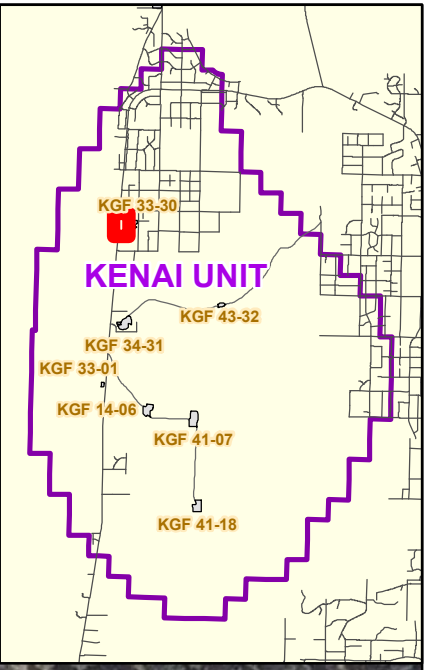
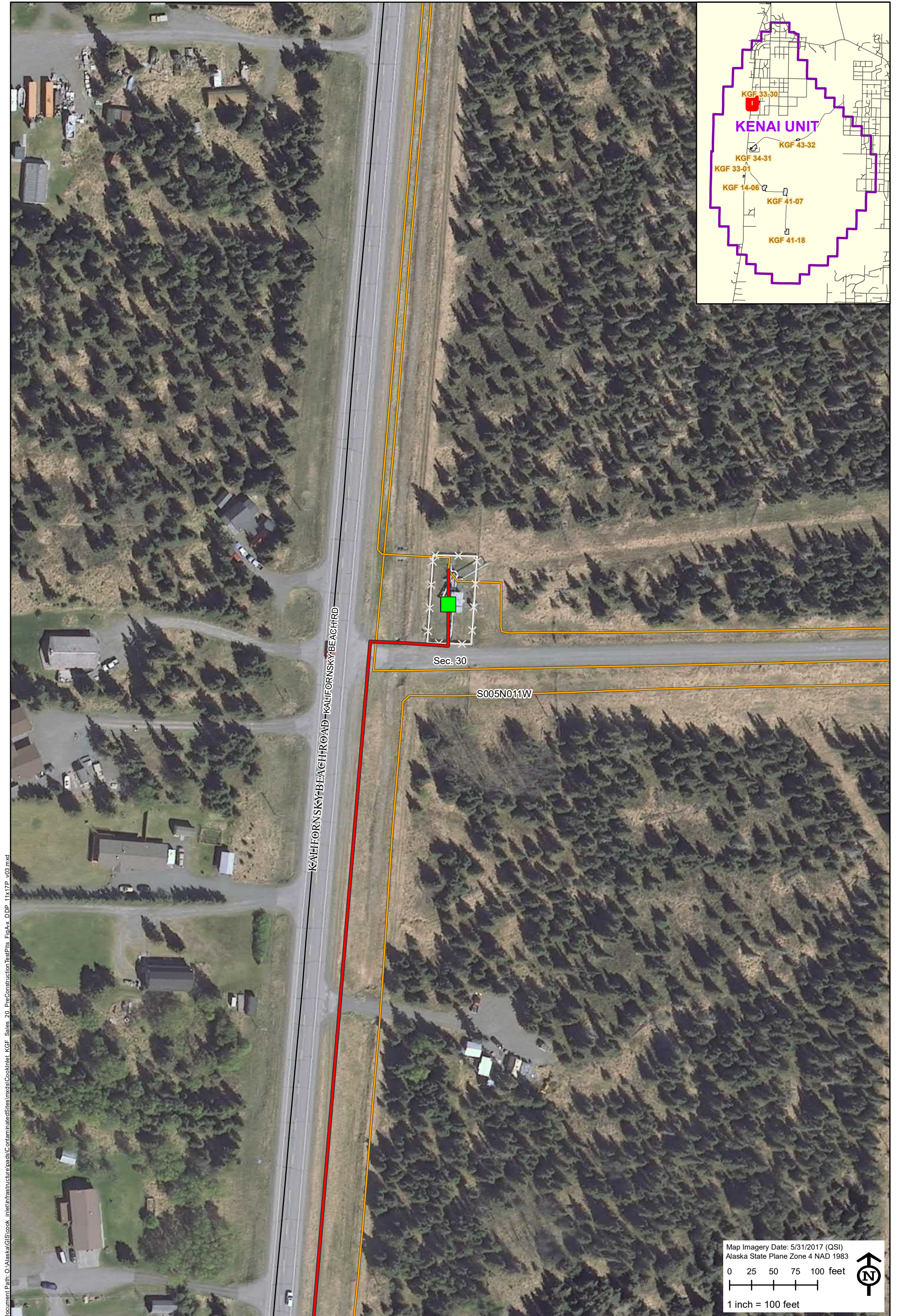
**KENAI UNIT**  
**KENAI GAS FIELD (KGF)**  
**20" Pipeline**  
**Pig Launcher Installation**  
**Pre-construction Test Pits**

- Legend**
- Pre-construction Test Pits (Approximate Location)
  - 20" Pipeline
  - Other Existing Pipelines
  - KPBC Parcels
  - Oil and Gas Unit Boundaries



**FIGURE:**  
**A-2**





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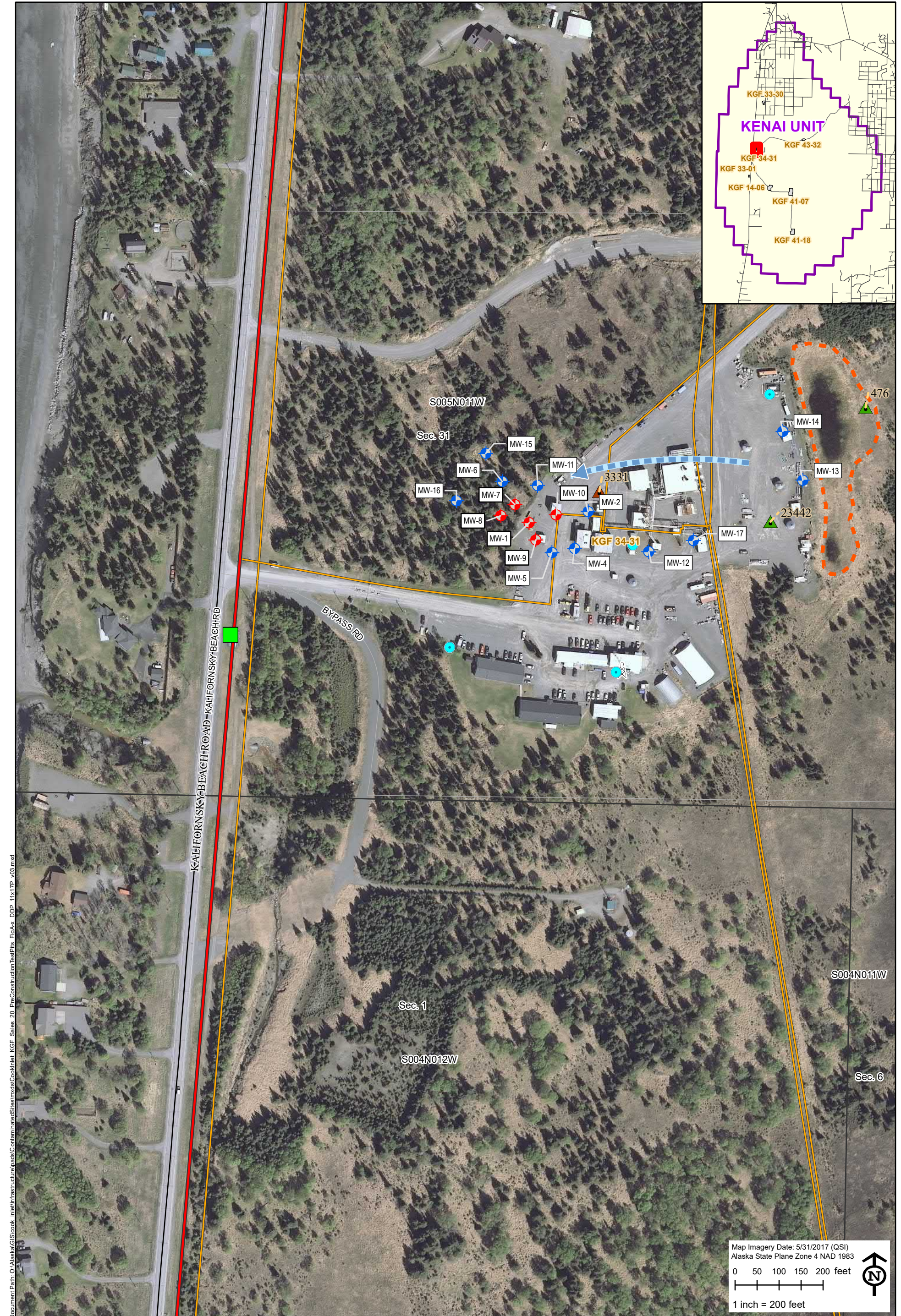


2021 SWMP for KGF Pad 14-6  
Pig Launcher Installation  
Pre-construction Test Pits -  
Kenai Nikiski Pipeline Junction

- Pre-construction Test Pits (Approximate Location)
- 20" Pipeline
- Other Pipelines

**FIGURE:**  
A-3





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Map Imagery Date: 5/31/2017 (QSI)  
 Alaska State Plane Zone 4 NAD 1983

0 50 100 150 200 feet

1 inch = 200 feet

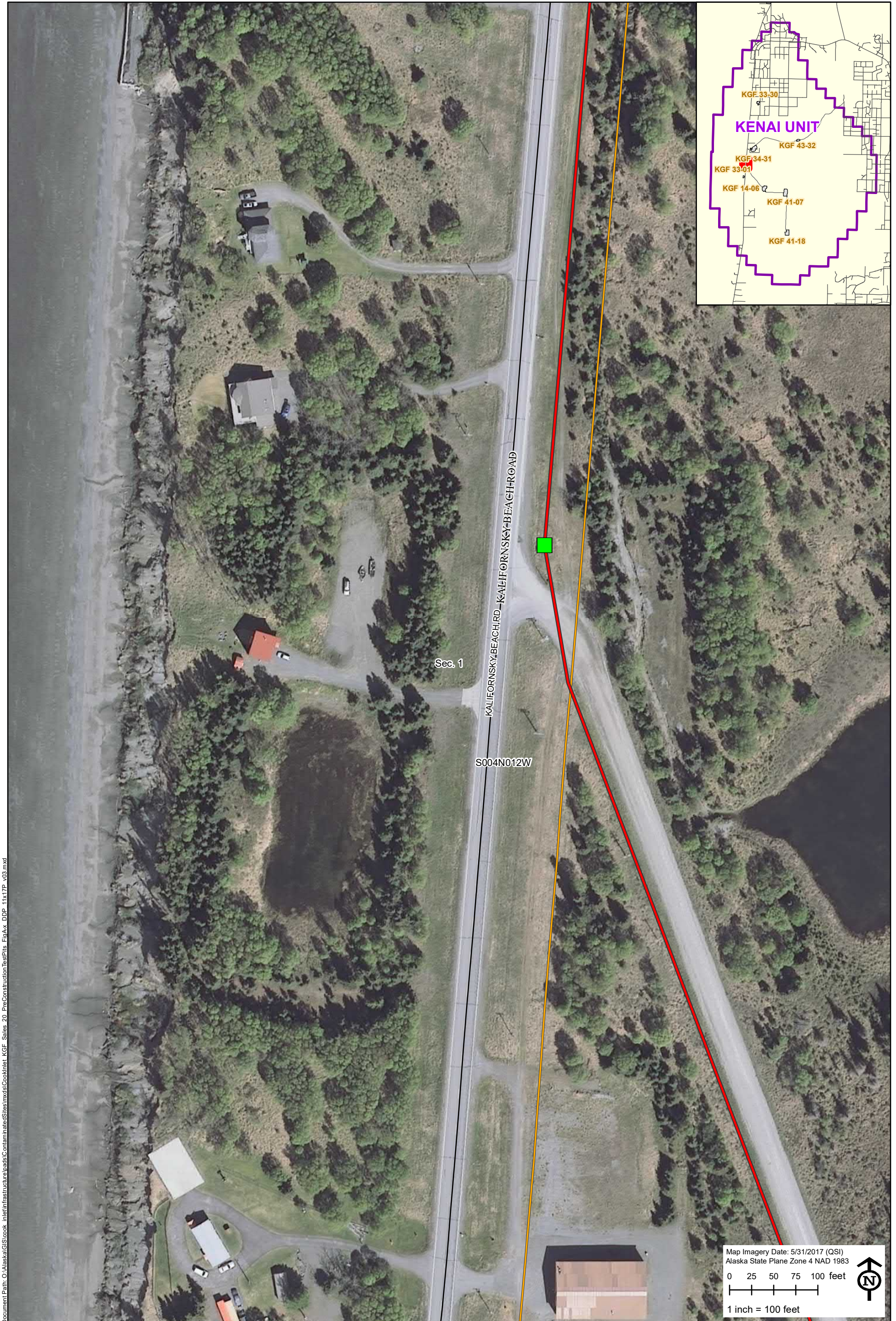
Hilcorp Alaska, LLC  
 3800 Centerpoint Dr. Ste. 1400  
 Anchorage, AK 99503  
 Map Date: 7/1/2021

2021 SWMP for KGF Pad 14-6  
 Pig Launcher Installation  
 Pre-construction Test Pits -  
 Adjacent to Kenai Gas Field Pad 34-31

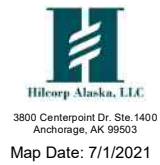
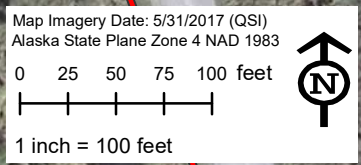
Pre-construction Test Pits (Approximate Location)	Water Well Location	Monitoring Well Gauged (Brice 2019)	ADEC Contaminated Sites - Status
20" Pipeline	Historic Reserve Pit Area	Monitoring Well Gauged Results Exceed Cleanup Levels (Brice 2019)	Cleanup Complete
Other Pipelines		Groundwater Flow Direction Approx. (Brice 2019)	

**FIGURE:**  
A-4





Document Path: O:\Alaska\GIS\cook\_inlet\Infrastructure\basis\ContaminatedSites\mxd\CookInlet\_KGF\_Sales\_20\_PreConstructionTestPits\_FigA-5\_DDP\_11x17P\_v03.mxd

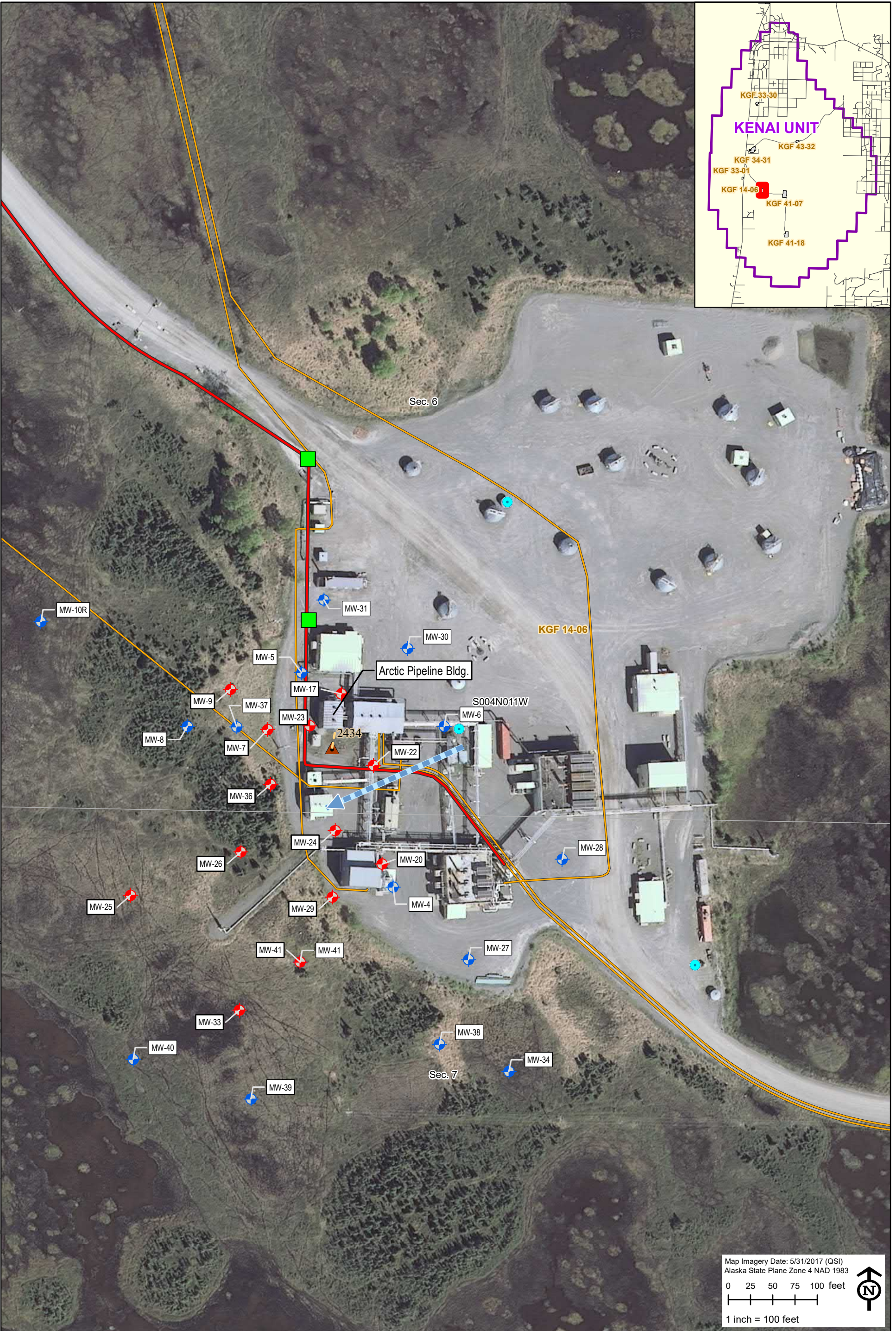


2021 SWMP for KGF Pad 14-6  
Pig Launcher Installation  
Pre-construction Test Pits -  
Central Pipeline Bend

- Pre-construction Test Pits (Approximate Location)
- 20" Pipeline
- Other Pipelines

**FIGURE:**  
A-5





Document Path: O:\Alaska\GIS\work\_in\infrastructure\basis\ContaminatedSites\mxd\Kenai\KGF\_Sales\_20\_PreConstructionTestPits\_FigA-6\_DDP\_11x17P\_v03.mxd

Map Imagery Date: 5/31/2017 (QSI)  
 Alaska State Plane Zone 4 NAD 1983

0 25 50 75 100 feet

1 inch = 100 feet

Hilcorp Alaska, LLC  
 3800 Centerpoint Dr. Ste. 1400  
 Anchorage, AK 99503  
 Map Date: 7/1/2021

2021 SWMP for KGF Pad 14-6  
 Pig Launcher Installation  
 Pre-construction Test Pits -  
 Kenai Gas Field Pad 14-6

- Pre-construction Test Pits (Approximate Location)
- 20" Pipeline
- Other Pipelines
- Water Well Location
- ⊕ Monitoring Well Gauged (Brice 2019)
- ⊕ Monitoring Well Gauged Results Exceed Cleanup Levels (Brice 2019)
- ➔ Groundwater Flow Direction Approx. (Brice 2019)
- ▲ ADEC Contaminated Sites - Status Active (Location Approx.)

**FIGURE:**  
 A-6