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3/16/2020

Mr. Peter Campbell, Project Manager
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43335 Kalifornsky Beach Road, Suite 11
Soldotna, AK 99669-8250

Re: Work Plan for 2020 Activities
Swanson River Field
Compressor Plant 10

Dear whom it concerns,

Please find enclosed for your files, copies of the following report.

- Work Plan for 2020 Activities at Swanson River Field

The submittal was prepared by Stantec on behalf of Chevron Environmental Management Company (CEMC).

Please do not hesitate to contact Craig Wilson (907 266-1128) and/or Tom Madsen (801 743-4924) with Stantec or myself at 832-854-5601 should you have any questions.

Sincerely,

Jason Michelson

Jason Michelson

Encl.

2020 Work Plan

Work Plan for 2020 Activities at
Swanson River Field
Compressor Plant 10

March 26, 2020

Prepared for:

Chevron Environmental Management Company

Prepared by:

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Revision	Description	Author		Quality Check		Independent Review	
0	Draft	CHW	3/4/20	THM	3/5/20	MAZ	3/6/20
1	Final	CHW	3/26/20				

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Prepared by 
(signature)

Craig Wilson

Reviewed by 
(signature)

Michael Zidek

Approved by 
(signature)

Tom Madsen

Table of Contents

Acronyms

°C	degrees Celsius
%	percent
≥	greater than or equal to
≤	less than or equal to
±	plus or minus
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CEMC	Chevron Environmental Management Company
COBC	Compliance Order By Consent
COC	chain-of-custody
DTW	depth to water
EPA	United States Environmental Protection Agency
Hilcorp	Hilcorp Alaska, LLC
mL	milliliters
MS	matrix spike
MSD	matrix spike duplicate
ND	non-detect
PCB	polychlorinated biphenyl
PPE	personal protective equipment
QA	quality assurance
QC	quality control
RL	reporting limit
SRU	Swanson River Unit
SW	Solid Waste
UOCC	Union Oil Company of California
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

This groundwater monitoring work plan has been developed for Chevron Environmental Management Company (CEMC) to monitor and evaluate levels of polychlorinated biphenyls (PCBs) in groundwater at the Compressor Plant 10 site (Plant 10) located along Swanson River Road, Swanson River Unit (SRU), Sterling, Alaska.

This work plan was prepared in compliance with Title 18 of the Alaska Administrative Code (AAC), Chapter 75, Section 355 (18 AAC 75.355; ADEC 2018) and Alaska Department of Environmental Conservation's (ADEC) *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites* (ADEC 2009). The sampling procedures described in this work plan were developed in accordance with ADEC's *Field Sampling Guidance* (ADEC 2019) and relevant industry standards.

1.1 PROJECT OBJECTIVE

The 2020 project objective is to conduct groundwater monitoring in accordance with the Compliance Order by Consent (COBC) for the Swanson River Oil Field issued by the U.S. Fish and Wildlife Service (USFWS) on 06 August 1985, and amended in November 1987, June 1988, April 1990, and September 1990.

1.2 PROJECT SCHEDULE

2020 field sampling is scheduled to occur in July and September, in conjunction with other monitoring activities at SRU.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 SITE DESCRIPTION

Plant 10 is located within the SRU, an oil and gas production facility within the boundaries of the Kenai National Wildlife Refuge. The SRU is approximately 50 miles southwest of Anchorage, and 15 miles northeast of Kenai, Alaska (United States Geological Survey 1951) (**Figure 1**). The field is accessible by Swanson River Road, heading north from Sterling Highway for approximately 20 miles. The site is located within the eastern half of Section 28, Township 7 North, Range 9 West, Seward Meridian (**Figure 1**).

Union Oil Company of California (UOCC), an indirect wholly owned subsidiary of Chevron Corporation, is the former leaseholder and operator of the SRU. In 2011, UOCC sold the SRU assets along with other Cook Inlet assets, to Hilcorp Alaska, LLC (Hilcorp). However, UOCC retained obligation to monitor PCB-impacted groundwater at Plant 10 until the regulatory agencies grant closure, or a statement of no further corrective action necessary is issued (United States Fish and Wildlife Service 1985). This monitoring program is being managed by CEMC on behalf of UOCC.

2.2 SITE BACKGROUND & CONTAMINANTS OF CONCERN

PCBs have historically been used at the SRU as a component of electrical transformers and as a heat transfer fluid. Between 1962 and 1972, Aroclor 1248 was used as a heat transfer oil in the process heat system of the propane recovery unit. An explosion occurred at Plant 10 in January 1972, which is suspected to have resulted in the uncontrolled release of an unknown quantity of this PCB containing oil. If there was a release at the time of the explosion, any oil lost was probably contained in the snow and frozen soil near the plant (Ecology and Environment [E&E] 1987).

When the process heat transfer system was brought back into service following the explosion, Aroclor 1242 (Therminol FR-1) replaced Aroclor 1248 as the heat transfer fluid. The Therminol FR-1 was replaced with a non-PCB heat transfer oil, Therminol 66, in the 1976-77 timeframe (E&E 1987).

In accordance with the requirements of the 1985 COBC, PCBs (Aroclor 1248 and 1242) are the contaminants of concern for this work plan and the project.

2.3 SITE GEOLOGY AND HYDROGEOLOGY

Plant 10 groundwater has been sampled on average twice per year since 2000. Groundwater occurs between 3 feet below ground surface (bgs) in monitoring well CP-A and 24 feet bgs in monitoring well CP-BR (**Figure 2**), and generally flows to the north but fluctuates seasonally.

3.0 SAMPLING PLAN

This groundwater monitoring work plan has been developed to assess the groundwater quality at Plant 10 as it pertains to PCB impacts resulting from the Plant 10 explosion in 1972. Semiannual groundwater monitoring is anticipated to occur in July and September 2020.

3.1 GROUNDWATER SAMPLING

All field sampling will be conducted by Stantec personnel familiar with ADEC sampling requirements and who meet the requirements of a “qualified person” as defined in 18 AAC 75.900(100).

Groundwater samples will be collected from each of the four historical groundwater monitoring wells (CP-A, CP-BR, CP-C, and CP-F) located at Plant 10 (**Figure 2**). The samples will be analyzed for PCBs using United States Environmental Protection Agency (EPA) Solid Waste (SW) Method SW8082A, utilizing an ADEC-approved laboratory.

3.2 SAMPLE COLLECTION METHODS

Groundwater sample collection with be conducted using approved low-flow sampling techniques (EPA 1996) to remove stagnant water from the wells before sampling.

Purging will be completed with a peristaltic pump and a water quality meter with a flow-through-cell to measure water quality parameters of the groundwater. Prior to purging, the depth to water (DTW) in the well, the depth to the bottom of the well, and the inside diameter of the well will be measured and recorded. Turbidity will also be measured before the water enters the flow-through-cell. Well purge water will be collected and disposed of as described in Section 5.0.

The low-flow purge and sample collection technique involves purging the well at flow rates of 50 to 500 milliliters (mL) per minute to minimize drawdown. For low-flow sampling, the goal is minimum drawdown (less than 0.3 feet) during purging. If drawdown occurs, the flow rate will be decreased until the recharge is equivalent to the discharge. A review of Plant 10 field notes and past well development and purge and sample records indicate low-flow purge rates should be initiated immediately at the onset of purging at CP-BR and CP-C.

Per ADEC field sampling guidance (ADEC 2019), when purging wells prior to sampling:

- Remove at least three casing volumes, **or**
- Monitor water quality parameters until a minimum of three (minimum of four if using temperature as an indicator) of the parameters listed below stabilize, **or**
- For low-yield wells, the entire well casing is evacuated.

Additionally, the water level must be measured at each interval the water quality parameters are measured and recorded.

Water quality parameters, as measured in the field with a YSI water quality meter, are considered stable when three successive readings, collected 3 to 5 minutes apart, are within:

- Plus or minus (±) 3 percent (%) for temperature (minimum of ± 0.2 degrees Celsius [°C]);
- ± 0.1 for pH;
- ± 3% for conductivity;
- ± 10 millivolts for oxidation-reduction potential;
- ± 10% for dissolved oxygen; and
- ± 10% for turbidity, or at or below 10 Nephelometric Turbidity Units.

A minimum of three (minimum of four if using temperature as an indicator) of these parameters must be monitored and recorded (ADEC 2019). The removal of three well casing volumes is not necessary if stability is achieved earlier during the purge process, as evident from successive readings of the above parameters that are within the stated tolerances. If stability of the above parameters cannot be achieved, then removal of one additional well casing volume will be performed, at which time sampling will commence (i.e., a total of four well casing volumes will be removed if parameters do not stabilize). For wells that purge dry, the field team will return to the well once it has recharged to approximately 80% of its pre-purge volume, when practical. For these low-yield wells that purge dry, a sample will be collected without additional purging or water quality monitoring.

Collection of quality control field samples will be in accordance with ADEC guidance (ADEC 2019), summarized in Section 4.1 of this document.

3.3 SAMPLE CUSTODY

The primary objective of sample custody is to create an accurate, verifiable written record that may be used to trace the possession and handling of the samples from the moment of collection until receipt by the laboratory. Adequate sample custody will be achieved by means of appropriate field and analytical documentation. Samples will be accompanied by a chain-of-custody (COC) form.

3.3.1 Chain of Custody

A COC form will be completed and will accompany each shipment of samples to the laboratory to establish the documentation necessary to trace sample possession beginning at time of collection. The field team will send the original COC forms with the samples. The form will contain the following:

- Sample number;
- Signature of collector, sampler, or recorder;
- Date and time of collection;
- Place of collection;
- Sample type;
- Analysis requested;
- Signatures of persons involved in chain of possession; and
- Inclusive dates of possession.

The laboratory portion of each form will be completed by personnel at the analytical laboratory and will contain the following:

- Name of person receiving the sample;
- Laboratory sample number;
- Date of sample receipt; and
- Sample condition and temperature.

When transferring the samples, the individuals relinquishing and receiving the samples will sign, date, and note the time on the COC form. Samples will be properly packaged for shipment and delivered to the laboratory as soon as possible after collection. The analytical laboratory coordinators will be notified of when and how samples will be delivered.

3.4 DATA QUALITY OBJECTIVES

The overall data quality objective for the project is to develop and implement procedures for obtaining and evaluating data in an accurate, precise, and complete manner.

3.4.1 Quality Control Sample Objectives

Field quality control (QC) samples may include field duplicates, trip blanks, and temperature blanks. Laboratory QC samples include method blanks and matrix spike (MS) and matrix spike duplicate (MSD) samples. Field duplicate samples will be collected at a rate of at least 10% of the total number of field samples for a particular analysis. MS/MSD samples will be collected at a rate of at least 5% of the total number of field samples collected for a particular analysis. A field duplicate and MS/MSD sample will be collected such that the 10% and 5% rates, respectively, are maintained over each sampling event. Every sampling event will include a field duplicate and MS/MSD sample. A trip blank will travel along and be submitted for volatile analysis (if volatile analysis is requested) with each set of samples in each cooler.

QC samples will be collected to evaluate the precision of sampling and analytical procedures. Each field duplicate sample will be labeled with an independent sample identification, which will be indistinguishable to the laboratory and be submitted “blind” to conceal its identity as a duplicate to the laboratory. Therefore, it will be critical that the sampler documents the sample number and site identification number in the field notes. Samples collected for MS and MSD will be identified on the COC in the comments section as MS/MSD samples.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

4.1 QUALITY CONTROL SAMPLES

Quality control samples will be collected to assess potential errors introduced during sample collection, handling, and analyses. As part of the field Quality Assurance / Quality Control (QA/QC) program, field duplicate samples, trip blanks, and extra sample volume for MS/MSD procedures will be collected.

Quality control (QC) samples will be collected to assess potential errors introduced during sample collection, handling, and analyses. In summary, QC samples will include:

1. One trip blank for each cooler containing samples.
2. One duplicate field sample for every 10 samples collected per laboratory analysis.
3. Additional sample volumes for MS/MSD analysis for water samples at a rate of one per 20 samples collected per requested laboratory analysis.

4.2 FIELD INSTRUMENT CALIBRATION

All field instruments will be calibrated in accordance with the manufacturer's directions and recommendations. Instruments will be calibrated prior to mobilization by the supplier and will be checked and documented on-site daily. Meter model and serial numbers, calibration standard(s), standard expiration dates, date/time of calibration, and calibration results will be recorded in the field logbook or on calibration forms.

4.3 SAMPLE CONTAINERS, HOLD TIMES, AND PRESERVATION

Table 1 summarizes the sample containers, preservation, and holding times required.

Table 1, Sample Containers, Preservation, and Hold Times

Analytical Parameter	Analytical Method	Matrix	Preparation Holding Time (days)	Sample Size	Preservation
PCB	EPA Method SW8082A	Water	40 days to analysis of extract (recommended)	1 Liter Glass	Cool to 0-6˚C

4.4 FIELD DOCUMENTATION

Field documentation will include sample identification labels, photographs, laboratory analysis requests, and permanently bound field logs. A field logbook will be maintained by the field team lead to record a detailed description of all field activities and samples collected.

4.5 SAMPLE LABELING

Each sample container will be sealed and labeled immediately after collection. Sample labels will be completed using waterproof ink and will be affixed firmly to the sample containers. A sample code will be

assigned to each sample as an identification number to track collected samples. The sample label will provide the following information: sample identification number; date and time of collection; analysis required; and preservation method used. Field duplicate samples will be submitted as blind duplicates – that is they will be consecutively numbered and will not be identified on the chain-of-custody record (CoC) as being duplicates (but the fact that they are duplicates will be recorded in the field logbook).

4.6 CHAIN-OF-CUSTODY AND SAMPLE PACKAGING

A chain-of-custody (CoC) record will be completed and shipped with the samples. Proper sample custody is maintained through adherence to the procedures listed below:

1. If the samples are not hand delivered, a minimum of one custody seal will be placed over the lid/cooler edge and secured with clear packaging tape.
2. A CoC record must accompany the coolers in which the samples are packed. When transferring samples, the individuals relinquishing and receiving the coolers must sign, date, and note the time on the CoC record. This record documents sample custody transfer.

Samples must be packaged carefully to avoid breakage or contamination and must be shipped to the laboratory at proper temperatures. Adherence to the following sample package requirements is essential:

1. Sample container lids must never be mixed. All lids must remain with their original container.
2. Environmental samples must be cooled to 0 to 6 ˚C and packed to maintain this temperature to preserve many chemical constituents. All coolers will contain a temperature blank that the laboratory will use to document sample temperatures.
3. Any remaining space in the cooler should be filled with inert packing material.

4.7 DATA REDUCTION, VALIDATION AND REPORTING

Validation and review of all analytical data will be performed by a qualified professional experienced in data validation and review procedures. All data will be validated and reviewed in accordance with *ADEC Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling, Technical Memorandum* (ADEC 2017).

5.0 INVESTIGATION DERIVED WASTE MANAGEMENT

Investigation-derived waste includes well purge water from water sampling; personal protective equipment (PPE) such as nitrile gloves; and dedicated sampling equipment including polyethylene bailers, peristaltic pump tubing, and paper towels.

All well purge water will be collected in 5-gallon buckets that will be transported, labeled and stored inside the Pipe and Supply (P&S) Yard groundwater treatment system trailer until laboratory analytical results are received. If analytical results indicate that concentrations of PCBs are below ADEC cleanup levels the water will be disposed of as non-regulated water. If PCB concentrations exceed ADEC cleanup levels, then the water will be transported and disposed of as regulated waste at a permitted facility.

Personal protective equipment such as nitrile gloves and dedicated sampling equipment, including tubing and paper towels used to decontaminate the oil-water interface probe, will be disposed with general solid waste for disposal at the Kenai Peninsula Borough Landfill.

6.0 REFERENCES

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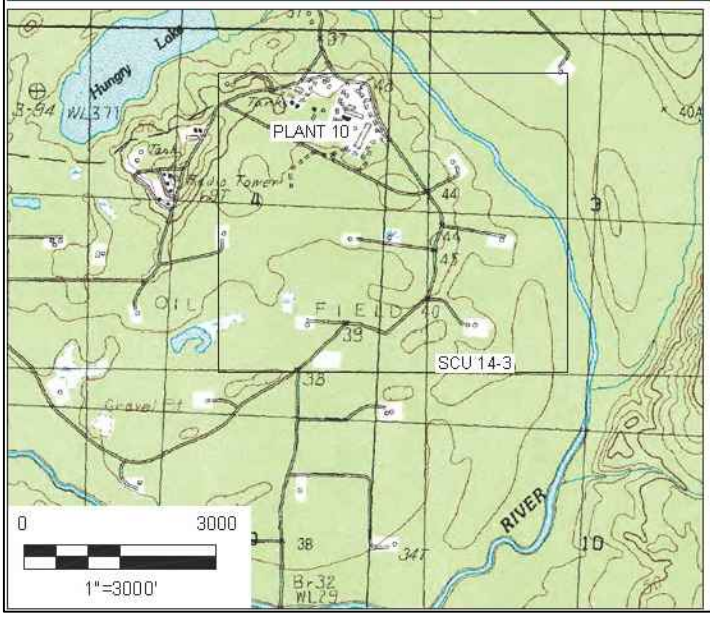
FIGURES

Figures



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FOR:
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COMPRESSOR PLANT 10
SWANSON RIVER FIELD
STERLING, ALASKA

SITE LOCATION MAP

FIGURE: 1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FOR:
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
COMPRESSOR PLANT 10
SWANSON RIVER FIELD
STERLING, ALASKA

PLANT 10 SITE AND WELL LOCATION MAP

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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