SAMPLING AND ANALYSIS PLAN FOR

North Star Terminal #2 DEC File No. 102.38.044 DEC Hazard No.: 1087

Revision 1.0

Prepared for



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PURPOSE OF THIS SAMPLING AND ANALYSIS PLAN

This Sampling and Analysis Plan (SAP) has been prepared for the Energy Coatings/North Star Terminal #2 by Travis/Peterson Environmental Consulting (TPEC). This SAP outlines the environmental tasks, including field screening and analytical sampling, required to ensure appropriate measures are taken to protect worker health and safety, prevent mixing of potentially contaminated media with uncontaminated media, document any encountered contamination, and ensure compliance with applicable hazardous waste designation, storage, and disposal regulations.

The objective of this SAP is to:

- Acquire and summarize existing environmental data;
- Assess chemical hazards at the site;
- Identify field screening, sampling, and analytical methods;
- Identify the methods for excavated soil handling and purge water.

This SAP is divided into the following main Parts:

- 1. Field Sampling Plan;
- 2. Site Specific Health and Safety Plan; and
- 3. Quality Assurance Project Plan.

PART 1

FIELD SAMPLING PLAN

FIELD SAMPLING PLAN

This Field Sampling Plan (FSP) will be implemented to ensure the appropriate measures are taken to protect worker health and safety, prevent mixing of potentially contaminated media with uncontaminated media, document any encountered contamination, and ensure compliance with applicable hazardous waste designation, storage, and disposal regulations. The project location, potentially responsible party(ies), project environmental background, and contaminants of potential concern (COPCs), proposed screening methods, and frequency are described in the following sections.

1.0 INTRODUCTION

The FSP is designed and intended for use by field personnel as a working document. To the extent practical, the information presented in the FSP has been deliberately minimized to include information related to field activities. Wherever possible, detailed information is provided in the quality assurance project plan (QAPP) and referenced in the FSP.

1.1 **PROJECT LOCATION**

The work described in this FSP will be conducted at the North Star Terminal #2 site located at 901 Bidwill Avenue, Tract B4 North Star Industrial Park, Fairbanks, Alaska (Figure 1). Access to the site is a driveway located off of Bidwill Avenue. The project site is located at 64° 49' 00.37", -147° 43' 31.39".

The property is located on alluvial sand and gravels deposited by the Tanana and Chena Rivers. Groundwater is measured at approximately 10 feet below ground surface. Currently, the site is vegetated but unpaved. There is one structure located within the project area.

The subject property is owned by the Golden Valley Electric Association (GVEA). Travis/Peterson environmental Consulting (TPEC) was contracted by GVEA to perform the activities described in this FSP.

1.2 <u>SITE HISTORY</u>

Field activities at the Energy Coatings/North Star Terminal #2 site have been performed starting in 1990 and have continued through 2020. Field activities included:

- Installation of groundwater monitoring wells (MW);
- Installations of groundwater probes;
- Semi-quantitative screening and sampling of soil cuttings from probe and well installations;
- Analytical sampling of soils and groundwater;
- Phase I Environmental Site Assessments; and
- Contaminated media management.

Based upon available sampling data and site investigations, data indicate that the tetrachloroethylene (PCE) and trichloroethene (TCE) groundwater plume has been fully delineated and chemical boundaries have been established as required by regulation.

PCE contamination appears to be stable or decreasing. The daughter products of Tetrachloroethylene (Trichloroethene and Cis-1,2-dichloroethylene [DCE]) appear to be increasing at the North Star Terminal #2 site suggesting that biologically mediated reductive dechlorination processes are occurring. The Harding Lawson Associates 1999 *Groundwater Monitoring Program Energy Coatings Company Site Report* details their use of the BIOCHLOR Natural Attenuation Model for Chlorinated Solvent Sites along with 1999 data from monitoring wells MW-1, MW-14, MW-18, MW-3, and MW-25 to model the chlorinated solvent plume at the site.

Data indicate that there are two potential downgradient receptor wells located outside the chemical boundary of the groundwater plume.

The closest potential receptor is the groundwater supply well located Holm Town Nursery (Figure 1). The groundwater supply well at Holm Town Nursery may be located within the area of affect. The results of analytical sampling in 2016 identified chlorinated solvents were present in the Holm Town Nursery groundwater supply well at estimated levels below the laboratory limit of quantitation but above the laboratory detection limit (J-flagged).

A second potential downgradient receptor is the water supply well at Miller Salvage, Inc. (Figure 1). Miller Salvage, Inc. is an active contaminated site with documented contamination dating back to the 1980s (Department of Environmental Conservation [DEC] file #102.23.017, Environmental Protection Agency [EPA] ID #AKD1033867)). The concentration of chlorinated solvents in the Miller Salvage Inc. well, while below DEC cleanup levels, are an order of magnitude higher than those found in the groundwater supply well at Holm Town Nursey and based on the contaminants detected, do not appear to be associated with the North Star Terminal #2 site.

Existing data indicate that the chlorinated solvent plume is stable or shrinking and ongoing contamination is not occurring pursuant to 18 Alaska Administrative Code (AAC) 75.335 (2). Existing environmental data and field investigations do not indicate that additional cleanup and/or evaluation is required and the existing data support site closure/long term-monitoring agreement in accordance with 18 AAC 75.335 (4).

2.0 FIELD ACTIVITIES

- Identify Project Objectives and Activities (FSP § 2.1);
- Identify Site Specific Contaminants of Concern and Conceptual Site Model (FSP § 2.2 and FSP § 2.3);
- Identify the Responsible Party, Project Schedule and Project Personnel (FSP § 2.4, 2.5, 2.6);
- Identify Well Maintenance Activities (FSP § 3.0) including:
 - Decommissioning methods; and
 - Monitoring well installation methods.
- Identify Analytical Sample Locations (FSP § 4.0);
- Identify Field Quality Control Samples (FSP § 5.0); and
- Identify the disposal methods for investigative derived waste including development water, purge water and excess soils from well installation (FSP 6.0)

Sections 2 through 5 detail the methods used to meet the project objectives described in this section.

2.1 PROJECT ACTIVITIES AND OBJECTIVES

Continual groundwater investigation in the form of long-term monitoring of chlorinated volatile organic compounds (PCE, TCE and cis-1,2-DCE) in groundwater has been conducted at the North Star Terminal #2 site since the 1990s to ensure the current groundwater plume does not migrate and to observe the natural attenuation process.

TPEC and GVEA plan to collect groundwater samples from monitoring wells in 2022 and compare 2022 results to the modeled results in the monitored natural attenuation closure plan to determine if the chlorinated solvent concentrations are falling as predicted.

2.2 <u>CONTAMINANTS OF POTENTIAL CONCERN</u>

The subject site is located within the boundaries of a chlorinated solvent contaminated site identified as North Star Terminal #2 (DEC File Number 102.38.044).¹ The contaminants of potential concern (COPCs) for the subject site include chlorinated solvents and breakdown compounds including:

- Tetrachloroethylene;
- Trichloroethene;
- Cis-1,2-dichloroethylene;
- Trans-1,2-dichloroethylene; and
- Vinyl chloride.

The COPCs for the site and their respective DEC Cleanup Levels are provided in Table 1.

Contaminant of Potential Concern	CAS Number	DEC Groundwater Cleanup Level ¹	DEC Soil Cleanup Level ²	Analytical Method
Tetrachloroethylene (PCE)	127-18-4	41 µg/L	0.19 mg/Kg	EPA 8260
Trichloroethene (TCE)	79-01-6	2.8 μg/L	0.011 m,g/Kg	EPA 8260
Cis 1,2-Dichloroethene (DCE)	156-59-2	36 µg/L	0.12 mg/Kg	EPA 8260
Trans-1,2-dichloroethylene (trans-DCE)	156-60-5	360 μg/L	1.3 mg/Kg	EPA 8260
Vinyl chloride (VC)	75-01-4	0.19 µg/L	0.00080 mg/Kg	EPA 8260
Notes:	•	•		1

Table 1: Project Specific Cleanup Levels for Contaminants of Potential Concern

 $CAS\ -\ Chemical\ Abstract\ Number;\ \mu g/L-micrograms\ per\ liter;\ mg/Kg-milligrams\ per\ Kilogram$

¹18 AAC 75.345 Groundwater and Surface Water Cleanup Levels Table C dated January 2022

²18 AAC 75.340 Method Two Soil Cleanup Levels Table B1 dated January 2022

¹ A diesel-contaminated site named North Star Terminal, Building #23 (DEC File Number 102.38.168) is located within the boundaries of the chlorinated solvent plume associated with DEC File No. 102.38.044. DEC issued a Cleanup Complete Status with Institutional Controls for the North Star Terminal, Building #23 site on January 17, 2012.

2.3 <u>CONCEPTUAL SITE MODEL</u>

A conceptual site model (CSM) has been developed and is provided on WS #10 in the QAPP. The DEC's CSM form and graphic follow WS #10.

The results of the CSM indicate that the following pathways are complete and require evaluation during construction activities:

- 2.a.1 Incidental soil ingestion;
- 2.b.1 Ingestion of groundwater;
- 2.c.1 Inhalation of outdoor air; and
- 2.c.2 Inhalation of indoor air.

The evaluation methods for this project will consist of groundwater analytical sampling as described in the following sections.

2.4 <u>RESPONSIBLE PARTY</u>

The potentially responsible parties pursuant to 18 AAC 75.205(a) include Bethlehem Steel Corporation which between 2001 and 2011 went bankrupt. As the current property owner, GVEA has taken over managing the site, and in turn the contamination present at the site.

2.5 **PROJECT SCHEDULE**

TPEC anticipates completing all activities detailed within this FSP during August and September 2022.

2.6 **PROJECT PERSONNEL**

The project organizational table is provided in QAPP worksheet 3 & 5. Personnel, roles, and qualifications are provided in QAPP WS# 4, 7, & 8.

3.0 MONITORING WELL DECOMMISSIONING AND INSTALLATION 3.1 <u>WELL INFORMATION</u>

On July 7, 2022, Jessica Knowles of TPEC inspected 17 monitoring wells located at and nearby the North Star Terminal #2 Site as shown on Figure 2. Mrs. Knowles recommendations are detailed in Table 2. Table 2 details information related to current groundwater wells present on site, decommissioned wells are not detailed.

Well Number	Flush Mount/ Stickup	Deep/ Shallow	Year last sampled ¹	Sample in 2022	Notes	
MW-1	Stick Up	Shallow	2016	Yes	Repairs needed	
101 00 - 1	Suck Op	Shanow	2010	105	Substantially damaged,	
MW-2	Stick Up	Shallow	1999	No	decommission	
MW-3	Stick Up	Shallow	2016	Yes	decommission	
MW-5	Stick Up	Shallow	1997	No	Up/cross gradient of plume area,	
					decommission	
MW-7	Flush Mount	Deep	2010	No	Substantially damaged,	
	1			decommission		
MW-9	Flush Mount	Deep	1997	Yes		
MW-11	Flush Mount	Deep	2016	No	Substantially damaged,	
		-			decommission	
MW-12	Flush Mount	Shallow	2009	Yes	Repairs required	
MW-17	Flush Mount	Deep	1997	No	Well compromised at surface,	
		1			decommission Damaged, decommission and	
MW-18	Stick Up	Deep	2016	No	replace	
MW-20	Stick Up	Deep	2016	Yes	Recommend decommissioning	
					following sampling	
MW-23	Stick Up	Shallow	1997	No	Severe jacking, decommission	
	•	Deer	2016	V	Recommend decommissioning	
MW-24	Stick Up	Deep	2016	Yes	following sampling	
MW-25	Stick Up	Deep	2016	Yes		
MW-26	Stick Up	Shallow	1999	No	Substantially damaged,	
WI W -20	Stick Op	Shanow	1777	110	decommission	
MW-27	Stick Up	Shallow	2001	Yes	Redevelopment planned prior to	
	Stick op Sha			105	sampling	
MW-29	Stick Up	Shallow	2011	Yes	Recommend decommissioning	
	1	r			following sampling	
MW-30	-30 Flush Mount Shallow 2009 No		No	Not part of plume area, not inspected		
					Not part of plume area, not	
MW-31	Flush Mount	Shallow	2004	No	inspected	
					Not part of plume area, not	
MW-32	Flush Mount	Shallow	2009	No	1 1 1 1 part of promo area, not	

Table 2: Monitoring Well Inventory

¹ Information obtained from the 2022 TPEC Closure Report which includes a detailed site history (TPEC, 2022).

3.2 WELL DECOMMISSIONING

Based on the 2022 inspection, multiple monitoring wells are recommended for or require decommissioning. Wells that are damaged and require decommissioning include MW-2, MW-7, MW-11, MW-17, MW-18, MW-23, and MW-26. Additionally, wells MW-5, MW-20, MW-24, MW-27, and MW-29 have been recommended for decommissioning (following sampling in 2022 of all wells excluding MW-5). These wells are recommended for decommissioning because they

are outside the main plume area and TPEC believes the necessary information has been obtained from these well locations.

All monitoring wells (excluding MW-17) will be decommissioned in accordance with TPEC standard operating procedure (SOP) GW 08 (Appendix A).

3.2.1 Monitoring Well MW-17

Monitoring well MW-17 is located within the GVEA Battery Energy Storage System Building. MW-17 has been compromised at the surface and can no longer be relied upon for the collection of groundwater data. The use of the building and issues with access prevent decommissioning using standard methods. As documented in reports from the 1990s, monitoring well installation was done under the supervision of an environmental consultant. TPEC believes MW-17 has a competent annular seal and plans to decommission this well by leaving the well casing and screen in place, filling the well with sand, and completely sealing access at the ground surface with concrete.

3.3 MONITORING WELL INSTALLATION

3.3.1 Location

Based on the 2022 inspection, MW-18 is recommended for replacement. MW-18 is located along the centerline of the plume and was used in the BIOCHLOR Modeling.

3.3.2 Monitoring Well Installation

A new monitoring well will be installed nearby MW-18 using a hollow-stem auger. A Geoprobe[™] sampler (TPEC SOP S 08, Appendix A) will be used to assess soil lithology and collect screening samples throughout the soil profile to groundwater.

The well will be installed using a hollow-stem auger. Monitoring well will consist of two-inch diameter schedule 40 PVC risers with a commercially manufactured well intake or screened section. The well screen will have precision machine cut slotted interval consisting of 10/1,000 inch screen slots. The slotted well screen will be placed such that a portion (at least half the 10 ft screen) is below the water table and a portion is placed above the upper limit of the water table. The well screen filter pack will consist of No. 10-20 silica sand and the remainder of the space between the top of the screen and the ground surface will be grouted to seal the well against the soil profile. Grout will consist of BensealTM and water to within one foot of the surface. The remaining one foot will be cemented up to the flush mount cover. The well riser will be capped or plugged using an expansion plug. The outer well monuments will consist of concrete and sealed to prevent runoff from running against the bore.

The screen of the well will be placed at the same elevation as the well being replaced. The new monitoring well will be identified as MW-18a.

3.3.3 Soil Screening During Monitoring Well Installation

Soils generated during monitoring well installation will be screened in accordance with TPEC SOP S 01 at five-foot intervals. TPEC will conduct visual, olfactory, and organic vapor screening (using

a photoionization detector [PID]) during well installation. Soil screening will be done using the heated headspace methodology in accordance with TPEC SOP S 01 (Appendix A).

Soils will be classified based on heated headspace PID values as follows:

- Clean soils Headspace PID values <20 ppm; and
 - Soils classified as clean may be reused without restriction by GVEA or otherwise spread near the installation location.
- Nominally contaminated soils PID values ≥ 20 ppm.
 - Nominally contaminated soils will be containerized and analytical sampled as detailed in Section 4.2.

3.3.4 Monitoring Well Development

The DEC's Monitoring Well Guidance requires a wait period of 48 hours after installation before development may begin. Well development will be performed in accordance with TPEC SOP GW 01 (Appendix A). Development water will be containerized pending disposal.

3.3.5 Notification

If during monitoring well installation, screening indicates potential contamination (PID value >20 ppm) proper notification must be carried out. TPEC field staff will complete the DEC notification form in Appendix B if PID screening values that exceed 20 ppm are encountered. TPEC field staff will report to the GVEA project manager, who is then responsible for notifying DEC of the discovery.

4.0 ANALYTICAL SAMPLING

4.1 GROUNDWATER ANALYTICAL SAMPLING

4.1.1 Location

Based on the 2022 well inspection, the following wells will be sampled, MW-1, MW-3, MW-9, MW-12, MW-20, MW-24, MW-25, MW-27, and MW-29.

Joe Kenabe of Holm Town Nursery has been contacted and agreed to allow analytical sample collection. Tom Carter of MSI has been contacted however, at the time of plan submission, TPEC has not received confirmation that sampling can be done. Details of sampling at MSI have been added to plan for sampling if allowed.

4.1.2 Analytical Sampling Procedure

Analytical samples will be collected in accordance with the following:

- TPEC SOP GW 02 Groundwater General Sampling
 - TPEC field staff will utilize the well purging using water quality monitoring technique detailed in SOP Section 3.2 for all wells.
- TPEC SOP GW 03 Peristaltic Pump Procedures
 - During the 2016 sampling event, MW-1 was determined to be damaged in such a way that the submersible pump could not be utilized. In addition, many wells included in this sampling event have not been sampled in many years, thus TPEC will utilize a peristaltic pump where a submersible pump is not possible.
- TPEC SOP GW 04 Submersible Pump Sampling Procedure

- Where possible a submersible pump will be utilized to sample wells.
- TPEC SOP GW 06 Groundwater Elevation Measurement Procedures
- DEC Field Sampling Guidance

Analytical samples collected from the businesses will not submit to specific sample procedures but will include direct collection from a designated location within the business.

During the 2022 site inspection, TPEC identified sediment in MW-27. TPEC plans to redevelop this well in accordance with TPEC SOP GW 01 prior to sampling.

4.1.3 Analytical Parameters

All wells and the sample from Holm Town Nursery will be sampled for volatile organic compounds by Method 8260B.

The water supply well at MSI is assumed to be used to supply potable water and the sample will be analyzed for volatile organic compounds by EPA Method 524.2.

Analyte specific information is provided on QAPP WS# 12 and 15.

4.2 SOIL ANALYTICAL SAMPLING

4.2.1 Location

Soil analytical samples will only be collected if PID readings above 20 ppm are encountered during well installation. No duplicate sampling will occur as soils will only be sampled for disposal classification.

4.2.2 Analytical Sampling Procedures

Analytical soil samples will be collected in accordance with TPEC SOP S 03 and SOP S 04 and ESS Lock N' Load Soil Core Sampler (Appendix A).

4.2.3 Analytical Parameters

Soils requiring analytical sampling will be sampled for:

- Diesel range organics (DRO) by method AK 101
- Gasoline range organics (GRO) by method AK 102
- Volatile organic compounds by method 8260B.

5.0 FIELD QUALITY CONTROL ACTIVITIES

Field quality control sampling for will consist of:

- Field duplicate collection;
- Trip blanks;
- Equipment blanks; and
- Cooler temperature blanks.

Field quality control sampling shall be performed in accordance with SOP QC 03 (Appendix A).

Based on the 2016 analytical data, TPEC plans to collect duplicate samples from well MW-3 (a shallow well with detected analytes in the last sampling event).

6.0 INVESTIGATIVE DERIVED WASTE HANDLING PLAN

The following sections describe how media will be handled during site activities. Investigative derived waste (IDW) requiring off-site disposal will be approved through DEC via the Transport, Treatment, & Disposal Approval Form for Contaminated Media included in Appendix C (DEC, 2022a).

6.1 <u>NOMINALLY CONTAMINATED SOIL (PID ≥20 PPM)</u>

Potentially contaminated soils may not be placed back in the hole. These soils will be containerized and characterized for disposal by analytical testing. Nominally contaminated soil cuttings will be consolidated into a single receptacle prior to characterization prior to the collection of characterization samples. The basis for requesting the DEC approve soils consolidation prior to characterization includes:

- All contamination is from the same point of origin;
- Only a small amount soils are expected to be generated from all borings; and
- Consolidation will reduce characterization and testing costs

6.2 <u>EXCESS SOIL DISPOSAL</u>

Disposal methods for potentially contaminated soils will be determined based on analytical results reviewed by the TPEC Project and Quality Assurance (QA) Managers and will be in accordance with applicable DEC regulations for this project. Potentially contaminated soil will not be removed from the site prior to the receipt of laboratory results and DEC approval.

6.3 <u>WATER</u>

Decontamination waste water, well purge water, and well development water will be collected in labeled 5-gallon buckets and left on site near Building 23 in a location coordinated with GVEA facility personnel. Other solid waste (disposable sampling equipment, gloves, etc) will be collected during sampling and disposed of as municipal waste. Ultimate wastewater characterization and disposal will be completed by GVEA. Neither transport nor disposal will occur until receipt of analytical sample results.

Well development or purge water determined to be below applicable DEC cleanup limits set out in 18 AAC 75.345 will be disposed of on site via discharge to the ground surface.

7.0 LABORATORY DATA QUALITY CONTROL ACTIVITIES

All laboratory results, including laboratory quality control sample results, will be reviewed and evaluated for quality and usability in accordance with the 2019 DEC Laboratory Data and Quality Assurance Policy Technical Memorandum (DEC, 2019). The laboratory data quality assessment will be a two-step process. The first step is to determine the quality of the data generated and identify any quality control problems. The second step is to determine if the data is sufficient for the intended purpose. A QA assessment narrative summary will be included as a specific text section of the final report for this project. The QA assessment will include a discussion of any effects on data quality and/or usability due to field sampling and laboratory quality control

discrepancies. The DEC laboratory review checklist will be the basis of the two-step assessment process (DEC 2020).

8.0 **REFERENCES CITED**

- DEC, 2019. *Laboratory Data and Quality Assurance Policy Technical Memorandum*. State of Alaska, Department of Environmental Conservation, Juneau, Alaska.
- DEC, 2020. *Laboratory Data Review Checklist*. State of Alaska, Department of Environmental Conservation, Juneau, Alaska. Available at dec.alaska.gov/spar/csp/guidance_forms.
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- TPEC, 2022. Draft Closure Report, Energy Coatings/North Star Terminal #2. Travis/Peterson Environmental Consulting, June 2022.

9.0 SUPPORTING DOCUMENTS

- 18 AAC 75 Oil and Other Hazardous Substances Pollution Control, as revised through November 2021. State of Alaska, Department of Environmental Conservation, Juneau, Alaska.
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- IDQTF, 2012. Uniform Federal Policy for Quality Assurance Project Plans Optimized UFP_QAPP Worksheets. Intergovernmental Data Quality Task Force.



