SUBMITTED TO:
Alaska Department of
Environmental Conservation
555 Cordova Street
Anchorage, Alaska 99501

BY:
Shannon & Wilson, Inc.
5430 Fairbanks Street
Anchorage, Alaska 99518

(907)561-2120
www.shannonwilson.com

SOIL LANDFARMING WORK PLAN

Icicle Seafoods Egegik Cannery

EGEGIK, ALASKA

SHANNON & WILSON

March 2022

Shannon & Wilson No: 103355-003

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Submitted To: Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, Alaska 99501
Attn: Ms. Naomi Mason

Subject: SOIL LANDFARMING WORK PLAN, ICICLE SEAFOODS EGEGIK CANNERY, EGEGIK, ALASKA

On behalf of our client, Icicle Seafoods, Inc. (Icicle), we are pleased to submit this work plan for soil landfarming activities at the Icicle Seafoods Egegik Cannery, Egegik, Alaska.

If you have questions or comments concerning this work plan, please contact the undersigned at (907) 433-3236.

Sincerely,

SHANNON & WILSON, INC.

LeeAnne Osgood
Digitally signed by LeeAnne Osgood, PE
Date: 2022.03.10 13:35:56 -09'00'

LeeAnne Osgood, P.E.
Associate

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ACRONYMS

AAC	Alaska Administrative Code
AK	Alaska Method
ADEC	Alaska Department of Environmental Conservation
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CUL	Cleanup Level
cy	Cubic Yards
DQO	Data Quality Objective
DRO	Diesel Range Organics
DU	Decision Unit
EPA	Environmental Protection Agency
GPS	Global Positioning System
GRO	Gasoline Range Organics
Icicle	Icicle Seafoods, Inc.
IDW	Investigation-Derived Waste
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LOQ	Limit of Quantitation
mg/kg	Milligrams per kilogram
MI	Multi-incremental
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MQO	Measurable Quality Objectives
PAH	Polycyclic Aromatic Hydrocarbon
PCBs	Polychlorinated Biphenyls
PID	Photoionization Detector
ppm	Parts Per Million
QEP	Qualified Environmental Professional
%R	Percent Recovery
RPD	Relative Percent Difference
RRO	Residual Range Organics
SGS	SGS North America Inc.
SIM	Selective Ion Method
VOCs	Volatile Organic Compounds

1 INTRODUCTION

The Icicle Seafoods Egegik Cannery in Egegik, Alaska (the Property) is an active Alaska Department of Environmental Conservation (ADEC) listed contaminated site (File number 2543.38.002). Icicle is pursuing closure of the two Egegik landfarms during the 2022 field season through excavation and off-site disposal of petroleum-impacted soil "hot spots" followed by confirmation sampling of the remaining landfarm soil, footprint, and perimeter. The goal is to reduce petroleum hydrocarbon concentrations in the landfarm soil to less than the ADEC most stringent Method Two standards listed in Tables B1 and B2, 18 Alaska Administrative Code (AAC) 75, for the "under 40-inch (precipitation) zone".

The purpose of this project is to progress towards a closure of the two landfarm areas. The project objectives are to prepare this revised landfarm work plan that is in compliance with ADEC guidance and regulations; reestablish the landfarm area boundaries; conduct a limited removal action of petroleum-impacted soil "hot spots"; collect landfill soil, footprint, and perimeter samples to characterize the remaining soil condition; and document the 2022 landfarm closure efforts in a summary report.

2 SUMMARY OF LANDFARM HISTORY

The following summarizes the historical landfarm construction and monitoring events conducted by BGES, Inc. and Shannon & Wilson.

2.1 Landfarm Areas Construction and Monitoring by BGES

Between 2005 and 2008, four isolated spills occurred at the Egegik Icicle Seafoods facility at locations which include the Freezer Plant day tank, the tank farm secondary containment system, the Generator Building day tank, and the Mechanics' Bunkhouse day tank. According to the February 2007 *Additional Assessment/Remediation Report* by BGES, Landfarm Area 1, designated as "Icicle Landfarm" in the BGES report, was established approximately 350 feet south-southeast from a three-way road junction located adjacent southeast of the Egegik Icicle Seafoods facility in 2006. Approximately 38 cubic yards of impacted soils excavated during 2005 to 2007 cleanup activities were stockpiled on liners at Landfarm Area 1.

According to the BGES *2009 Site Assessment and Remediation Activities Report* dated April 2010, in 2008 approximately 51 cubic yards of impacted soil generated during the tank farm secondary containment system and the Mechanics' Bunkhouse day tank cleanup activities

were landspread adjacent southeast of the "Icicle Landfarm", thus creating Landfarm Area 2. A berm of clean soil was constructed around the perimeter of Landfarm Area 2 by pushing up native soils to prevent the potential for runoff. Apparently, the stockpiled soil in Landfarm Area 1 was also landspread in 2008 thus creating the two distinct landfarm areas. As documented by BGES, the impacted soil within each landfarm area was initially tilled to promote biodegradation in 2009.

The landfarm areas were designated Decision Units DU1 (38 cubic yards in Landfarm Area 1) and DU2 (51 cubic yards in Landfarm Area 2) for sampling purposes by BGES. According to the BGES reports *2009 Site Assessment and Remediation Activities Report* and *2013 Landfarm Monitoring Activities*, DU1 measured 25-feet by 95-feet and DU2 measured as 50-feet by 100-feet. Based on correspondence with BGES in a February 20, 2020 email, BGES suggested the actual dimensions of the decision units may be less (DU1 – 20'x54.5'x0.67' and DU2 – 23'x110'x0.67'). BGES confirmed that baseline samples were not collected from the landfarm area footprints. Further, no documentation of the placement of liners beneath the landfarm areas was found by BGES.

Multi-incremental (MI) soil samples collected by BGES in 2013 from the landfarms contained diesel range organics (DRO) and residual range organics (RRO) concentrations greater than the ADEC Method Two cleanup levels as presented in the BGES report *2013 Landfarm Monitoring Activities*.

2.2 2019 Landfarm Area Monitoring

In August 2019, Shannon & Wilson conducted a visual assessment of the landfarm areas, MI soil sampling of the landfarm soil, and landfarm footprint sampling. The following conclusions were drawn based on the 2019 efforts:

- The presence of overgrown vegetation indicated the landfarm areas had not been routinely tilled as recommended. Further, the lateral extents of the decision units were not definitive due to the presence of the overgrown vegetation and insufficient availability of spatially accurate and/or consistent historical site maps.
- An 8-feet by 6-feet apparent petroleum stain was observed on the southwestern portion of DU2 (Landfarm Area 2). The origin and age of the stained soil was not known.
- Based on the results of the MI samples, DU1 and DU2 continue to exhibit concentrations of DRO above the ADEC cleanup level.
- The landfarm footprint samples suggest the surface soil beneath the landfarm areas contain DRO and benzene concentrations greater than the ADEC cleanup levels.

The results of the 2019 landfarm assessment and sampling efforts were summarized in Shannon & Wilson's November 4, 2019 *Landfarm Soil Sampling Report*. Based on the

information provided in the 2019 report, the ADEC concluded in their November 5, 2019 review letter, the landfarm was not being operated in accordance with cleanup operations requirement (18 AAC 75.360) and requested a new landfarm work plan be submitted that is in accordance with current guidelines and regulations.

2.3 2020 Work Plan for Soil Landfarming

In response to ADEC's request, a new work plan for soil landfarming was prepared and submitted to ADEC on March 26, 2020. As part of the work plan preparation and to evaluate the most probable lateral extent of each landfarm area, Shannon & Wilson georeferenced BGES-produced historical site maps and digitized the approximate landfarm areas/decision unit boundaries presented in each map. The digitized boundaries were overlaid on the Shannon & Wilson 2019 landfarm sampling site map to assess consistencies and determine the potential lateral extent of the landfarm areas for the purpose of reestablishing the boundaries of the two landfarm areas. The WAFCO Landfarm boundary was also approximated based on historical knowledge of Icicle representatives. The historical landfarm areas/decision unit boundaries and the 2019 MI sampled decision units are shown in the site plan included as Figure 1. The 2019 MI sampled decision units appear to fall within the footprint of Landfarm Area 2 (DU2).

In their April 8, 2020 review letter, the ADEC summarized the following questions/issues and requested revisions to the March 26, 2020 work plan:

1. What is the current estimated volume of detection unit one and detection unit two? Do you anticipate that they are still 38 cubic yards (cyd) and 51 cyd? Please add the information to your work plan.
2. In accordance with the 2019 ADEC Field Sampling Guidance, heated headspace samples should be agitated once they have been placed in the bag and directly before taking a photoionization detector (PID) reading. In addition, the samples must be heated to a minimum of 40 degree Fahrenheit and allowed to develop for at least 10 minutes. Please add these additional details to the work plan narrative.
3. At what point will you decommission the landfarm? Please add an endpoint to your work plan.
4. Additional tilling of the landfarm may accelerate natural attenuation of contamination in soil. If possible, till the soil more frequently than once per season.
5. A minimum of one polycyclic aromatic hydrocarbon (PAH) sample must be analyzed for each decision unit, decision unit footprint, and decision unit perimeter (total of six primary samples, not including duplicates). Please revise the work plan narrative.

6. In accordance with Appendix F of the 2019 ADEC Field Sampling Guidance, all samples must be analyzed for volatile organic compounds (VOCs) and not just BTEX (benzene, toluene, ethylbenzene, xylene). Please revise work plan.
7. Please discuss the data quality objectives of this proposed work. How will you determine if you accept or reject data? How will you treat any data biases?

ADEC requested a revised work plan be submitted by May 5, 2020. In email correspondence dated April 28, 2020, ADEC suspended the revised work plan submittal deadline due to COVID-19 issues and indicated an approved work plan must be in place prior to starting work at the Egegik landfarm.

3 PROJECT FIELD ACTIVITIES

The project activities will consist of reestablishing the landfarm boundaries, excavating petroleum-impacted soil "hot spots", sampling the remaining landfarm soil, perimeter, and footprint, and preparing a summary report. The field activities will be conducted in April and August 2022, prior to and following the Egegik Cannery processing season, respectively. Shannon & Wilson will provide a Qualified Environmental Professional (QEP), as defined by 18 AAC 75.333, to observe and document the field activities. Icicle will provide the manpower, equipment, and supplies to implement the reestablishment of the landfarm boundaries; conduct the excavation and off-site disposal of petroleum-impacted soil "hot spots"; and support collection of screening and confirmation soil samples from the landfarm remaining soil, footprint, and perimeter. Soil samples will be submitted to SGS North America Inc. (SGS) of Anchorage, Alaska for laboratory analysis. SGS will contract the analytical laboratory services directly to Icicle.

This project will be conducted in general accordance with ADEC regulations 18 AAC 75 and 18 AAC 78; *ADEC Landfarming at Site in Alaska Technical Memorandum (January 2018)*; and ADEC's January 2022 *Field Sampling Guidance* document. The ADEC Landfarming checklist is included in Appendix A.

3.1 April 2022 Landfarm Field Activities

A Shannon & Wilson representative will mobilize to Egegik in April 2022 to observe and document the activities conducted by Icicle to remove metal, surface debris, and vegetation within the landfarm areas. Our field representative will help reestablish the landfarm area boundaries using historical aerial photographs, site plans, and remnants of the original soil berms, if present. Icicle will mark the reestablished boundaries with the installation of a snow fence / posts (or equivalent). In addition, a characterization sample will be collected

from the stained soil observed in Landfarm Area 2 in 2019 and soil grid sampling will be conducted if the near surface soil is not frozen.

3.1.1 Landfarm Boundary Reestablishment

Historical documentation indicates 38 cubic yards (cy) and 51 cy of petroleum-impacted soil were landspread in Landfarm Area 1 (also referenced as DU1) and Landfarm Area 2 (also referenced as DU2), respectively. BGES noted in their February 20, 2020 email, "*The most accurate dimensions and representative location of the Icicle landfarm decision units (DU) 1 and 2 are shown in Figure 3 included in the 2013 LandFarm Monitoring Activities Report*". BGES also indicated "*However, the exact dimensions of the landfarm areas have been more difficult to verify. Assuming the thickness of the landfarm areas is approximately 8 inches, we determined that the dimensions of the landfarm areas may be closer to the following based on a map in the 2008 field notes:*

- *DU1 (20′ x 54.5′ x 0.67′)*
- *DU2 (23′ x 110′ x 0.67′)*".

Copies of the referenced 2008 field notes map and Figure 3 are included in Appendix B.

The original thickness of each landfarm area is assumed to have been approximately 6 to 8 inches. However, based on information provided by BGES, "*The actual thickness of the soils in the landfarm areas was likely an estimate and it probably varied from 6 to 8 inches and the actual dimensions probably varied because they were having problems spreading the soils because of heavy rains during the field work. Then after tilling soils by Icicle personnel, the dimensions and thicknesses probably changed.*" Further, the contaminated landfarm soil was expected to be mingled with the underlying soils during tilling efforts. During Shannon & Wilson's 2019 landfarm area sampling effort, petroleum impacted soil was documented at 1.5 feet below the landfarm area surface. Based on this information, we are assuming the originally landspread contaminated soil has been mingled with the underlying soil to a depth of 1.5 feet below the landfarm area surface.

Based on the information provided by BGES, the actual dimensions of the landfarm areas are uncertain. Using the information provided by BGES, a review of historical site photographs, and field observations, the landfarm area boundaries will be reestablished, most likely within the proposed reestablishment boundary shown in Figure 1.

After reestablishment of the landfill area boundaries, 4-foot-tall wooden posts (or equivalent) will be installed at the four corners and on 10-foot centers along the perimeter of each landfarm area. Signs warning persons to stay out will be attached to the posts at each landfarm corner. A snow fence will be installed around the wooden posts to minimize the

potential exposure to illegal dumping or other activities that may interfere with the objectives of this project. Global positioning system (GPS) coordinates will be taken at each corner of the reestablished landfill area boundaries. Additionally, if needed, berms composed of clean adjacent soils will be constructed in low lying areas to minimize the potential of soil and/or surface water from migrating outside the established perimeters.

To document the 2022 landfarm boundary reestablishment activities, the Shannon & Wilson QEP will take photographs of each landfarm area 1) before, 2) during, and 3) following the boundary reestablishment. Photographs will also be taken of the berms, warning signs, and fencing.

3.1.2 Metal Debris and Vegetation Removal

Metal and other surface debris located within the landfarm areas will be relocated outside of their lateral extents. Following removal of the metal and surface debris, the vegetation within the landfarm areas will be removed by scraping the ground surface with a Caterpillar 928F Wheel Loader (or equivalent) bucket. The removed vegetation will be placed outside of the lateral extents of the landfarm areas. Care will be taken to minimize disturbance of the soil within the landfarms while removing the vegetation. In addition, the vegetation will be placed back within the respective landfarm area following the August 2022 field efforts. The loader will be decontaminated using a dry brush prior to leaving and arriving at the project site.

3.1.3 Stained Soil Characterization

An 8-feet by 6-feet apparent petroleum stain was observed in Landfarm Area 2 in August 2019. The origin and age of the stained soil is not known. The stained soil will be relocated and sampled during the April 2022 field efforts to characterize the contaminated soil for disposal.

A field screening and analytical sample will be collected from the visually most impacted location within the stained soil area using a new, clean, stainless-steel spoon. The analytical sample jars for volatile analyses will be collected first, followed by the field screening sample, and finally the non-volatile analytical sample jars. The soil sample will be visually described and "screened" for VOCs using a PID and ADEC-approved headspace screening techniques. The field screening sample will be collected in re-sealable plastic bags, warmed to at least 40 degrees Fahrenheit, and tested within 60 minutes of collection. To screen, the sample will be agitated for about 15 seconds, then permitted to develop for a minimum of 10 minutes before screening. Prior to screening, the sample will be agitated a second time, the seal of the bag will be opened slightly, the instrument probe will be inserted into the air space above the soil, and the bag held closed around the probe. The maximum ionization

response as the PID draws vapor from the sample bag will be recorded. The PID will be calibrated with 100 parts per million (ppm) isobutylene in air standard gas prior to mobilization to Egegik.

The analytical sample will be collected by quickly and completely filling laboratory-provided glass jars in decreasing order of volatility. For each volatile sample, at least 25 grams of soil, but no more than what can be completely submerged with 25-milliliters of methanol, will be placed into a pre-weighed, 4-ounce jar with a septa lid. A 25-milliliter aliquot of methanol containing laboratory-added surrogates will be added to the sample jar to submerge the soil sample. For each non-volatile sample, the laboratory-supplied jar will be completely filled with soil, taking care to exclude gravel. Sample jars will be placed in coolers with ice packs and transferred to the laboratory using chain of custody procedures.

The characterization soil sample will be analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101; DRO by AK 102; RRO by AK 103; VOCs by Environmental Protection Agency (EPA) Method 8260D; PAHs by EPA Method 8270D selective ion method (SIM); polychlorinated biphenyls (PCBs) by EPA 8082; and total metals including arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver by EPA 6010/6020. A sample duplicate and trip blank will not be collected for the stained soil characterization effort.

3.1.4 Landfarm Grid Sampling

Grid sampling will be conducted within the two landfarm areas in April 2022 if site conditions allow. The purpose of the grid sampling is to collect characterization soil samples from the landfarm areas to identify "hot spots" to be removed during the August 2022 field efforts. The grid sampling will be conducted if soil samples can be collected from 12 inches below the ground surface using hand tools. If the soil is frozen, preventing collection of near surface soil samples, the landfarm grid sampling will be conducted during the August 2022 mobilization. Note that only headspace screening samples will be collected to identify "hot spots" if grid sampling is postponed to August 2022.

The two landfarm areas will be divided into approximately 10-foot by 10-foot grids using field measuring tapes and flagging. Landfarm Area 1 is assumed to be approximately 20 feet by 55 feet for 1,100 square feet. Landfarm Area 2 is assumed to be approximately 23 feet by 110 feet for 2,530 square feet. Based on these dimensions, an estimated 37 grids will be established for screening and sampling. The actual landfarm dimensions and number of grids will be refined in the field following reestablishment of the landfarm boundaries. A screening and analytical sample will be collected from approximately 12 inches below the landfarm surface from the center of each grid.

Each soil sample will be visually described and "screened" for VOCs using a PID as described in Section 3.1.3. One analytical soil sample will be collected as described in Section 3.1.3 from each grid and analyzed for DRO by AK 102. In addition, we plan to collect one field duplicate per 10 primary samples. Results of the headspace screening and DRO analyses will be used to identify "hot spots" to be excavated in August 2022.

3.2 August 2022 Landfarm Field Activities

A Shannon & Wilson representative will mobilize to Egegik a second time in August 2022 to observe excavation of identified "hot spots" and collect confirmation soil samples from the soil remaining in each landfarm area. In addition, confirmation samples will be collected from the landfarm footprints and perimeters.

3.2.1 Soil Excavation Monitoring

During the August 2022 field efforts, soil will be excavated from the following areas:

- The stained soil observed in Landfarm Area 2 during the August 2019 landfarm characterization efforts.
- Grid areas identified during the April 2022 sampling effort with DRO concentrations exceeding 250 milligrams per kilogram (mg/kg).

Soil removal down to 1.5 feet below the landfarm surface will occur within the stained soil area and each grid square containing a characterization soil sample with a DRO concentration greater than the ADEC Method Two cleanup level (CUL) of 250 mg/kg. An estimated 5.5 cy of petroleum-contaminated soil will be generated from each excavated grid square. An estimated 1 cy of contaminated soil will be excavated from the stained soil area. The excavated soil will be placed directly into 1 cy plastic-lined cardboard totes. The soil excavated from the stained soil area will be containerized in a separate tote(s) from the remaining excavated soil. Soil will not be removed from grids containing DRO concentrations less than the ADEC cleanup level.

The volume of contaminated soil to be excavated will depend on the number of grid squares with soil exhibiting DRO concentrations exceeding the ADEC CUL. Note that a portion of the soil with DRO concentrations exceeding the ADEC CUL may be excavated if the total volume is cost prohibited for transport and offsite disposal. In this case, the grids exhibiting the highest DRO concentrations will be excavated and tilling of the landfarm areas will be resumed to further reduce the residual DRO concentrations in the remaining soil.

3.2.2 Landfarm Soil Confirmation Sampling

Following the excavation of "hot spots" from the landfarm areas, confirmation soil samples will be collected to determine if the cleanup goals have been achieved. Field screening samples will be collected every 100 square feet from each landfarm area. A field screening soil sample will be collected from the center of each 10 feet by 10 feet grid established in the April 2022 field effort. Each field screening sample will be collected between 6 to 18 inches below the landfarm surface using a new or decontaminated sampling spoon. The soil samples will be "screened" for VOCs using a PID and ADEC-approved headspace screening techniques as presented in Section 3.1.3. The PID will be calibrated before mobilizing to Egegik with 100 ppm isobutylene standard gas.

Based on PID readings and visual/olfactory observations, two analytical soil samples from each landfarm will be collected from the field screening locations with highest potential to contain target analytes over the ADEC cleanup levels. In addition, one duplicate soil sample will be collected for quality control purposes. The five analytical samples including one duplicate will be submitted to SGS and analyzed for GRO by AK 101, DRO by AK 102, RRO by AK 103, and VOCs by EPA Method 8260D. In addition to the listed suite of parameters, the sample from each landfarm area assumed to have the highest potential to contain target analytes over the ADEC cleanup levels will also be analyzed for PAHs by EPA Method 8270D SIM. A duplicate soil sample will be analyzed for PAHs by EPA 8270D SIM. For quality control purposes, a trip blank will accompany the samples to the laboratory and be analyzed for GRO by AK 101 and VOCs by EPA Method 8260D.

Note that additional soil removal and/or tilling efforts may be necessary depending on the confirmation sample results.

3.2.3 Landfarm Footprint Soil Sampling

Five spatially representative field screening samples will be collected from within the footprint and beneath each of the landfarm areas to evaluate whether the underlying soil has been impacted. Each soil sample will be collected from approximately 1 foot below an assumed 1.5 feet tilled depth (approximately 2.5-feet below the landfarm surface) using a clean, decontaminated hand shovel. The soil samples will be "screened" for VOCs using a PID and ADEC-approved headspace screening techniques as presented in Section 3.1.3.

Based on PID readings and visual/olfactory observations, two analytical soil samples from each landfarm area will be collected from the field screening locations with highest potential to contain target analytes over the ADEC cleanup levels. In addition, one duplicate soil sample will be collected for quality control purposes. The five analytical samples including one duplicate will be submitted to SGS and analyzed for GRO by AK 101, DRO by AK 102,

RRO by AK 103, and VOCs by EPA Method 8260D. In addition to the listed suite of parameters, the samples from each landfarm area assumed to have the highest potential to contain target analytes over the ADEC cleanup levels will also be analyzed for PAHs by EPA 8270D SIM. For quality control purposes, a trip blank will accompany the samples to the laboratory and be analyzed for GRO by AK 101 and VOC by EPA Method 8260D.

3.2.4 Landfarm Perimeter Soil Sampling

Field screening and analytical samples will be collected from the surface soil outside of the reestablished boundaries of the landfarm areas to evaluate whether the soil has been impacted by soil and/or surface water migrating from the landfarm areas. Field screening soil samples will be collected on 10-foot centers along both landfarm area perimeters from approximately 6 inches below the ground surface using a clean, decontaminated hand shovel. The soil samples will be "screened" for VOCs using a PID and ADEC-approved headspace screening techniques as presented in Section 3.1.3.

Based on PID readings and visual/olfactory observations, four analytical soil samples, two from each of the two landfarm area perimeters, will be collected from the field screening locations with highest potential to contain target analytes over the ADEC cleanup levels. The four analytical samples will be submitted to SGS and analyzed for GRO by AK 101, DRO by AK 102, RRO by AK 103, and VOCs by EPA Method 8260D. In addition to the listed suite of parameters, the sample from each landfarm area perimeter assumed to have the highest potential to contain target analytes over the ADEC cleanup levels will also be analyzed for PAHs by EPA 8270D SIM. For quality control purposes, a trip blank will accompany the samples to the laboratory and be analyzed for GRO by AK 101 and VOC by EPA Method 8260D.

4 INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW) will consist of the excavated soil from the August 2022 "hot spot" excavation activities. ADEC approval will be obtained prior to moving the contaminated soil off site for disposal including completion of a Contaminated Media Transport and Treatment or Disposal Approval Form included in Appendix C. The 1 cy plastic-lined cardboard totes of excavated soil will be transported via barge from Egegik to Lehigh Cement Company in Everett, Washington for disposal. Icicle will target transportation from Egegik to the disposal site in August 2022, depending on the barge schedule. If off-site transport and disposal is not feasible prior to the end of the 2022 operating season, the totes of excavated soil will be stored inside a secured building at the

Egegik Cannery during the winter then transported to the disposal site in spring 2023. The labelled totes will be covered by a tarp and notification signs will be affixed for safety.

5 SUMMARY REPORT

Following the field activities, Shannon & Wilson will prepare a report documenting the site activities, results of analytical testing, and volume of excavated soil. The report will include a description of field observations; a scaled site plan showing the reestablished landfarm area locations with GPS coordinates, the "hot spot" excavated areas; and soil sample locations; tabulated laboratory data; photographs taken during field activities; ADEC laboratory data review checklists for each data package; and the completed ADEC landfarming checklist. Based on the data collected, we will provide conclusions regarding the landfarms' regulatory status and potential eligibility for a closure determination. Recommendations for future operations will be presented in the summary report if the landfarmed soils have not met the target cleanup goals.

6 CHEMICAL QUALITY CONTROL PROCEDURES

6.1 Quality Control Samples

Chemical data quality for this project will be assessed by comparing quality control sample results to pre-established numerical data quality objectives (DQOs).

6.1.1 Field Samples

Soil trip blank samples, prepared by the project laboratory, will accompany, as appropriate, each sample cooler containing soil samples for volatile analysis. The trip blank samples will remain in the cooler during the entire sampling process. Evaluation of the analytical results of the trip blank samples will determine if volatile contaminants have been introduced to the samples from an external source or from cross-contamination during sample transport and analyses.

6.1.2 Laboratory Samples

Laboratory quality control samples include method blanks, laboratory control samples/laboratory control sample duplicates (LCS/LCSD), matrix spikes/matrix spike duplicates (MS/MSD), and surrogates. The MS/MSD samples will be selected by the laboratory and separate project samples specifically for MS/MSD analysis will not be collected. LCS/LCSD, MS/MSD, surrogate quality assurance data, and qualifiers not meeting laboratory's DQOs will be noted in the laboratory reports.

6.2 Measurement Quality Objectives for Chemical Data

Data quality for this project will be assessed using internal laboratory procedures and field quality control data, in general accordance with the EPA's National Functional Guidelines for Inorganic Data Review and National Functional Guidelines for Organic Data Review. The quantitative Measurement Quality Objectives (MQOs) for this project will be used to assess precision and accuracy.

6.2.1 Precision

Precision is the mutual agreement of discrete measurements of the same property, under similar conditions. For the purposes of this program, precision will be expressed as the relative percent difference (RPD) between primary and duplicate quality control samples, including the MS/MSD and LCS/LCSD results.
The RPD will be calculated by dividing the absolute difference between the values by their mean and multiplying by 100:

$$RPD = \frac{(|X_1 - X_2|)}{\frac{(X_1 + X_2)}{2}} \times 100$$

Where X_1 and X_2 are the primary and duplicate values, respectively.

6.2.2 Accuracy

Accuracy is the degree of agreement of a measured value with the true or expected value of the measured quantity. The accuracy of control sample measurements is generally expressed as a percent recovery (%R).
For surrogates and samples without a background level of the analyte in the sample matrix, such as reference materials and LCS, the percent recovery is calculated from:

$$\%R = \frac{X}{T} \times 100$$

Where X is the measured concentration and T is the true or expected concentration.
The percent recovery for measurements in which a known amount of analyte is added to an environmental sample (such as MS/MSD) is calculated from:

$$\%R = \frac{X - B}{T} \times 100$$

Where B is the background concentration of the spiked analyte in environmental sample and X and T are as defined above.
Accuracy will be determined for surrogate, MS/MSD, and LCS/LCSD spike recoveries and results will be included in the laboratory report. The data from each analytical batch will be compared to the laboratory control limits that are provided in each laboratory report, and the method-specified control limits for certain analytes (e.g. DRO).

6.2.3 Sensitivity

Sensitivity is the ability of the laboratory methods to detect the analyte in the samples. Because the method detection limit is not generally practicable for environmental samples, sensitivity is evaluated using the laboratory limit of quantitation. The limit of quantitation (LOQ) values are effective reporting limits and are based on the method detection limits adjusted for dilutions, matrix inference, and other sample-specific considerations. Note that concentrations less than the LOQ are reported as estimates and concentrations not detected at the maximum detection limit are reported as non-detect at the level of detection.

6.2.4 Comparability/Representativeness

For the purpose of obtaining quality data, the sampling program design facilitates collection of sample data representative of environmental conditions at the project site. Comparability will be maintained by consistency in sampling conditions, selection of sampling equipment and procedures, sample preservation methods, analytical methods, trip blank analysis, and data reporting units.

6.3 Data Assessment

For each chain-of-custody, the project labs will provide a Level II data deliverables package. The data will be reviewed and compared to the project's numerical MQOs. Any MQOs not met, through our evaluation, will be identified in the report and the effects, if any, on the usability of the data will be described. Data may be rejected for use, based on the results of our review.

7 SCHEDULE

The tentative schedule is summarized below:

- March 2022 – Work plan submitted to ADEC
- Mid-April 2022: Implement April 2022 field activities
- May 2022: Analytical results available from April 2022 activities
- August 1-10, 2022: Implement August 2022 field activities
- August 2022: Off-site contaminated soil transport / disposal
- September 2022: Analytical results available from August 2022 activities
- October 2022: Summary Report submitted to ADEC

8 REFERENCES

BGES, 2007, Icicle Seafoods Fish Processing Facility, Egegik, Alaska, Additional Assessment/Remediation Report, February.

BGEX, 2010, Icicle Seafoods, Inc., Egegik, Alaska, 2009 Site Assessment and Remediation Activities Report, April.

BGES, 2015, 2013 Land-Farm Monitoring Activities, February.

Shannon & Wilson, 2019, Landfarm Soil Sampling, Icicle Seafoods Egegik Cannery, Egegik, Alaska (File No. 2543.38.002) letter report, November 4.

Shannon & Wilson, 2020, Work Plan for Soil Landfarming, Icicle Seafoods Egegik Cannery, Egegik, Alaska (File No. 2543.38.002), March 26.

State of Alaska Department of Environmental Conservation, 2018, Landfarming at Sites in Alaska Technical Memorandum, January.

State of Alaska Department of Environmental Conservation, 2019, 18 AAC 78, Underground Storage Tanks, September 29.

State of Alaska Department of Environmental Conservation, 2019, Egegik Icicle Seafood - Landfarm Soil Sampling Report letter, November 5.

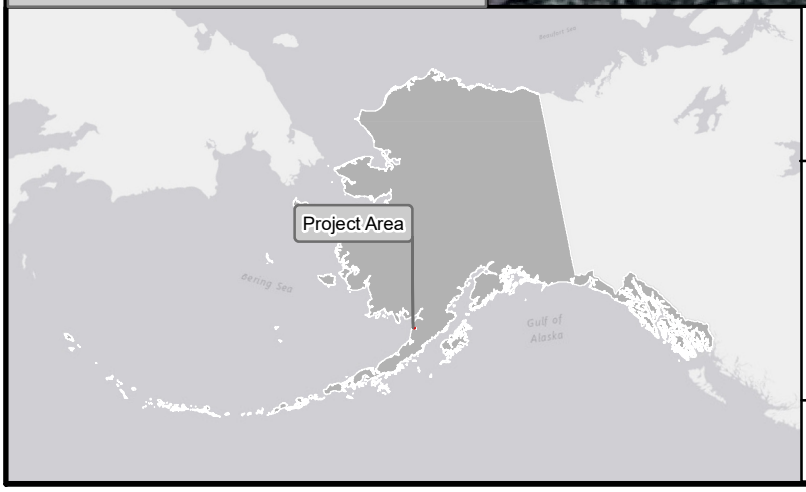
State of Alaska Department of Environmental Conservation, 2020, Egegik Icicle Seafoods Land Farm Work Plan letter, April 8.

State of Alaska Department of Environmental Conservation, 2021, 18 AAC 75, Oil and Other Hazardous Substances Pollution Control, June 24.

State of Alaska Department of Environmental Conservation, 2022, Field Sampling Guidance, January.

Legend

- Approximate Location of Stockpiled Soil in 2006
- Approximate Location of Landfarm Areas 1 and 2 (DU1 and DU2) Sampled By BGES in 2009 and 2013
- Approximate Location of Landfarm Areas Sampled in 2019
- Approximate Location of Landfarm Areas 1 and 2 to be Reestablished in 2022
- Approximate Location of Contaminated Soil Sign as Observed in 2019



Icicle Seafoods Egegik Cannery
Egegik, Alaska

SITE PLAN

Lat: 58.2156 North
Long: 157.3758 West

March 2022

103355-003

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

Appendix A

Landfarming Checklist

APPENDIX A: LANDFARMING CHECKLIST

Attachment A-Landfarming Checklist

Project Name Icicle Seafoods Egegik Cannery

- ✓ Workplan with detailed specifications for the landfarming project (18 AAC 78.250(e)(3)).
- ✓ Adequate site characterization data that identifies contaminants of concern and target cleanup levels.
- ✓ Design plan that will provide prevention of contamination migration to previously unaffected areas unless otherwise approved by the department in a corrective action plan (18 AAC 78.250(e)(4)).
- ✓ Workplan schedule for conducting field work, monitoring, corrective action performance, and submittal of interim and final corrective action reports (18 AAC 78.250(e)(1)).
- ✓ Site control plan (18 AAC 78.250(e)(8)).

NA Wastewater discharge permit for any discharge of regulated wastewater (18 AAC 72).

- ✓ Project complies with air quality standards and requirements (18 AAC 78.250(e)(9) and 18 AAC 50).

NA Nondomestic wastewater system plan approval for the construction, alteration, installation, modification, or operation of any nondomestic wastewater treatment works or disposal system under 18 AAC 72.600 (18 AAC 78.250(e)(11) and 18 AAC 72).

- ✓ Project maintains appropriate separation distance from surface water, water supply wells, and groundwater (18 AAC 78.274(a)(2)).

NA If applicable, description of cultured microbes, any additives, breakdown products, and oxygen source with their rate of application and biodegration (18 AAC 78.250(e)(12)(E)).

- ✓ If landfarm is constructed off-site, department approval before moving contaminated soil to the treatment site (18 AAC 78.274(b)).
- ✓ If applicable, compliance with the treatment facility requirements (18 AAC 78.273).

NA Information submitted that addresses leachate (18 AAC 78.250(e)(12)(A)).

____ Post-treatment sampling to ensure cleanup standards have been met (18 AAC 78.605(b)).

____ Cleanup standards achieved (18 AAC 78.600 - 18 AAC 78.625).

____ Treated soils returned to original site or disposed of properly in accordance with department approval (18 AAC 78.274(b)).

I certify that I have personally reviewed the above checklist and that all information noted is contained in the attached report.

Name_____ Signature_____

Title_____ Date_____

Appendix B

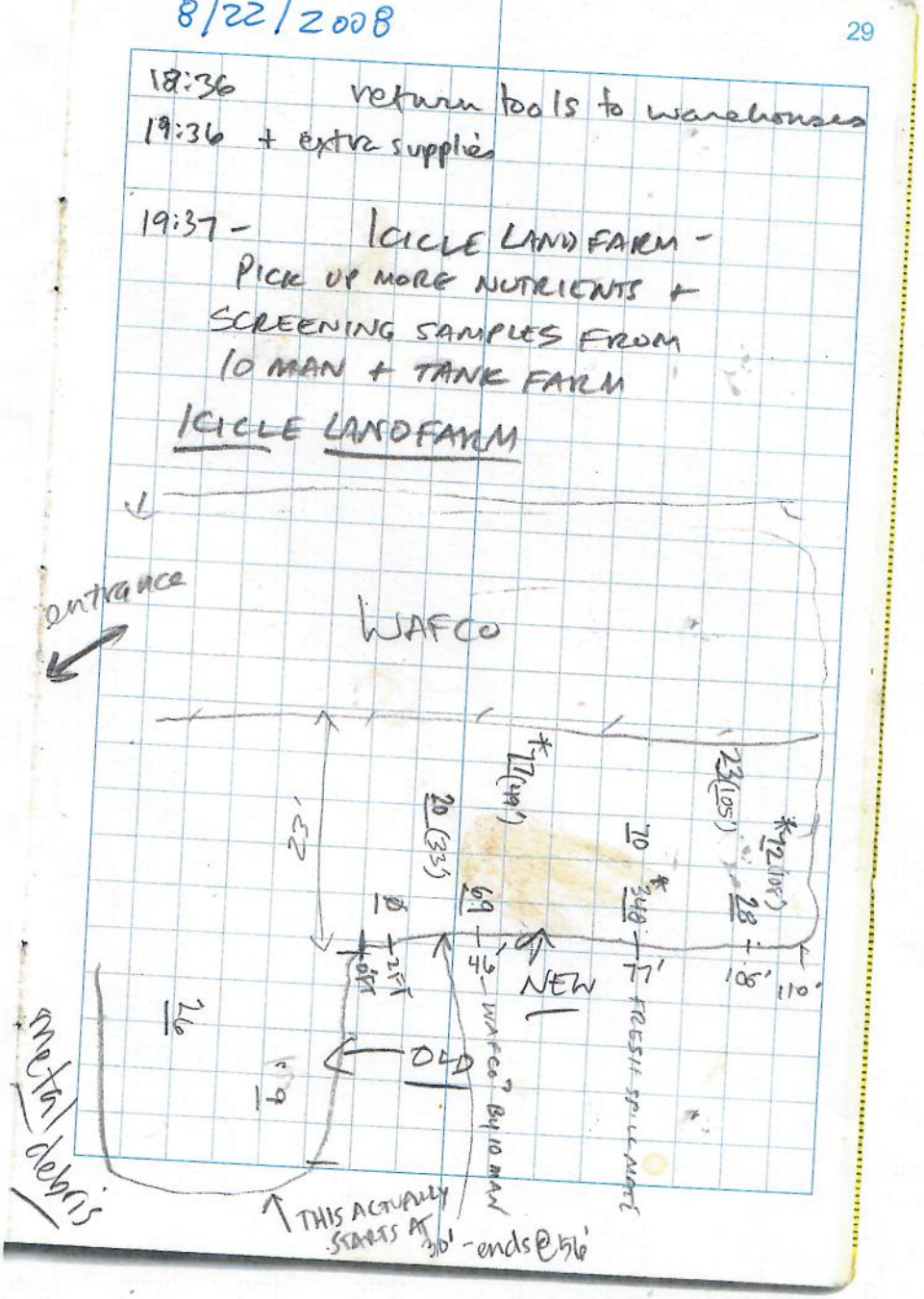
BGES Site Plans / Maps

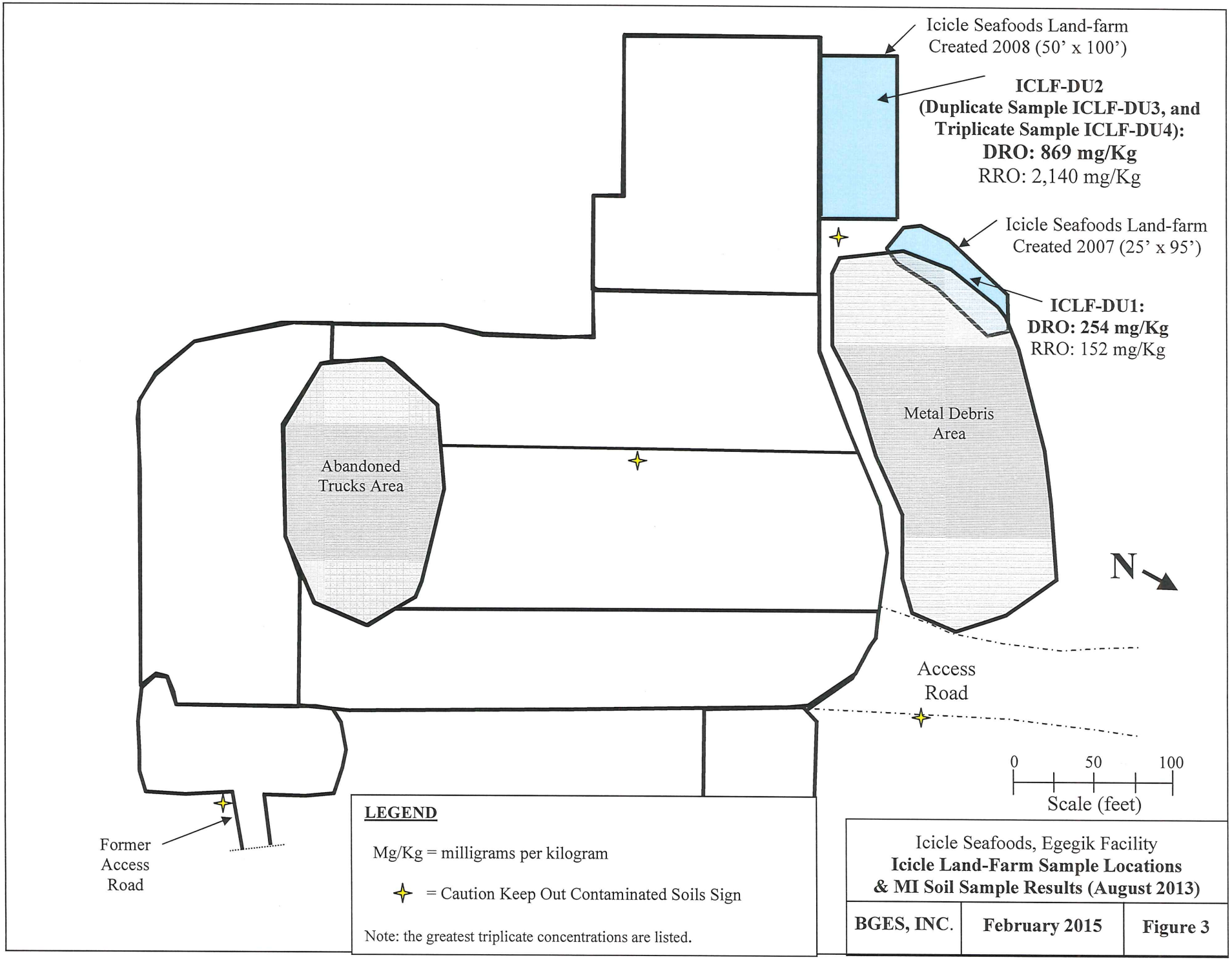
APPENDIX B: BGES SITE PLANS / MAPS

8/22/2008

18:36 return tools to warehouses
19:36 + extra supplies

19:37 - ICICLE LAND FARM -
PICK UP MORE NUTRIENTS +
SCREENING SAMPLES FROM
10 MAN + TANK FARM




Icicle Seafoods Land-farm
Created 2008 (50' x 100')
ICLF-DU2
(Duplicate Sample ICLF-DU3, and
Triplicate Sample ICLF-DU4):
DRO: 869 mg/Kg
RRO: 2,140 mg/Kg
Icicle Seafoods Land-farm
Created 2007 (25' x 95')
ICLF-DU1:
DRO: 254 mg/Kg
RRO: 152 mg/Kg
Metal Debris
Area
Abandoned
Trucks Area
N
Access
Road
0
50
100
Scale (feet)
Former
Access
Road
LEGEND
Mg/Kg = milligrams per kilogram
= Caution Keep Out Contaminated Soils Sign
Note: the greatest triplicate concentrations are listed.
Icicle Seafoods, Egegik Facility
Icicle Land-Farm Sample Locations
& MI Soil Sample Results (August 2013)
BGES, INC.
February 2015
Figure 3

Appendix C

Contaminated Media Transport and Treatment or Disposal (TTD) Approval Form

APPENDIX C: TTD APPROVAL FORM

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL

CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION

CURRENT PHYSICAL LOCATION OF MEDIA	SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)

CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED

POST TREATMENT ANALYSIS REQUIRED *(such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)*

COMMENTS OR OTHER IMPORTANT INFORMATION

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
RESPONSIBLE PARTY	**ADDRESS/PHONE NUMBER**
WASTE MANAGEMENT CO. / ORGANIZER	**ADDRESS/PHONE NUMBER**

***Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.**

Name of the Person Requesting Approval (printed) | Title/Association

Signature | Date | Phone Number

----------DEC USE ONLY----------

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

DEC Project Manager Name (printed) | Project Manager Title

Signature | Date | Phone Number