# St. George Island Operable Unit

## Completion of Two-Party Agreement Activities

## Volume 2

NOAA Technical Memo 21

National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Pribilof Islands Environmental Restoration Project

October 2008

U.S. DEPARTMENT OF COMMERCE
Carlos M. Guttierrez, Secretary

National Oceanic and Atmospheric Administration
Vice Admiral Conrad C. Lautenbacher, Jr., U.S. Navy (Ret.),
Under Secretary for Oceans and Atmosphere

National Ocean Service
John H. Dunnigan, Assistant Administrator
for Ocean Services and Coastal Zone Management



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# Table of Contents

*Available in Volume 1*

Letter from John Lindsay to Jennifer Roberts RE: Closure of the St. George Island, Alaska Operable Unit. Dated September 26, 2008 .......... v

Table 1. Summary of Residual Soil Contamination and Buried Debris at NOAA Cleanup Sites on St. George Island, Alaska .......... ix

## Appendix I

Appendix I to the September 26, 2008 Request for Closure of the St. George Island, Alaska, Operable Unit under the Two-Party Agreement Between the Alaska Department of Environmental Conservation and the National Oceanic and Atmospheric Administration Signed January 1996 .......... 3

Site Closure Documents 1–14 .......... 11

*Available in Volume 2*

Letter from John Lindsay to Jennifer Roberts RE: Closure of the St. George Island, Alaska Operable Unit. Dated September 26, 2008 .......... v

Table 1. Summary of Residual Soil Contamination and Buried Debris at NOAA Cleanup Sites on St. George Island, Alaska .......... ix

## Appendix I

Site Closure Documents 15–29 .......... 373

*Available in Volume 3*

Letter from John Lindsay to Jennifer Roberts RE: Closure of the St. George Island, Alaska Operable Unit. Dated September 26, 2008 .......... v

Table 1. Summary of Residual Soil Contamination and Buried Debris at NOAA Cleanup Sites on St. George Island, Alaska .......... ix

## Appendix I

Site Closure Documents 30–36 .......... 747

## Appendix II

Appendix II to the September 26, 2008 Request for Closure of the St. George Island, Alaska, Operable Unit under the Two-Party Agreement Between the Alaska Department of Environmental Conservation and the National Oceanic and Atmospheric Administration Signed January 1996 .......... 985

Final LONG-TERM GROUNDWATER MONITORING PLAN, St. George Island, Alaska .......... 987

Letter from Louis Howard to John Lindsay RE: Draft Long Term Monitoring Plan St. George Island Alaska June 30, 2005. Dated August 8, 2005 .......... 1011

Residual Soil Contamination Report, St. George Island, Alaska .......... 1013

U.S. DEPARTMENT OF COMMERCE
**National Oceanic and Atmospheric Administration**
National Ocean Service
Office of Response and Restoration
Pribilof Project Office
7600 Sand Point Way N.E.
Seattle, Washington 98115

September 26, 2008

Jennifer Roberts
Federal Facilities Program Manager
Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501-2617

Subject: Closure of the St. George Island, Alaska Operable Unit.

Dear Ms. Roberts:

In accordance with paragraph 59 of the Pribilof Islands Environmental Restoration Agreement (Two-Party Agreement or TPA) signed in January 1996 by designated officials of the State of Alaska and the National Oceanic and Atmospheric Administration (NOAA), NOAA requests Alaska Department of Environmental Conservation (ADEC), as the duly authorized representative of the State of Alaska, certification of NOAA's completion of corrective action for the St. George Island Operable Unit (OU).

NOAA and the ADEC identified a total of thirty-six (36) sites at St. George Island (Table 1). This number (36) exceeded the twenty-five (25) source areas identified in the TPA (Attachment A, St. George Island) due to agreed upon changes in the manner of site designation and the finding of new sites during various phases of site investigation. NOAA notes that one site, TPA 11 Cottage C UST is not subject to the TPA, and will be evaluated under NOAA's environmental safety compliance program in coordination with ADEC. However, NOAA remediated contamination at Cottage C to the maximum extent practicable. NOAA also notes that Oceanfront Site 36 (Table 1) free-phase product (refer to: 18 AAC 75.990 (43)) expressed itself as a light sheen on the water table following removal of the overlying vadose zone. In the *Corrective Action Report and Conditional Closure Request for St. George Island TPA Site 1/Former Diesel Tank Farm, and the Former Drum Storage Area, TPA Site 2*, NOAA determined that it (NOAA) had met its obligation to recover the free-phase product to the maximum extent practicable (refer to: 18 AAC 75.325 (f) (1)). Consequently, NOAA in its closure request for TPA 1 and 2 requested that the contaminated groundwater at the site be considered not to have recoverable free phase product. Subsequently, on November 2, 2007, ADEC approved NOAA's request and granted a no further action planned (NFRAP) determination for TPA Sites 1 and 2, which included a determination on the contaminated groundwater that NOAA designated as its Site 36. Also, in a letter dated August 8, 2005. ADEC approved NOAA's *Draft Long-term Groundwater Monitoring Plan, St. George Island, Alaska*, (Plan). NOAA issued its Plan on August 19, 2005. The Plan included NOAA's long-term commitment to monitor groundwater at the aforementioned sites in addition to other sites on the island.

NOAA asserts that it has completed in accordance with the TPA all investigations and corrective actions approved by ADEC to the maximum extent practicable by:

- removing drums and debris
- removing underground storage tanks (USTs) and above ground storage tanks (ASTs)
- removing fuel pipelines
- removing contaminated soil
- closing solid waste sites,
- characterizing surface water, and
- characterizing and monitoring groundwater.

Table 1 summarizes specific environmental quality parameters at each site. Parameters in Table 1 include type of contamination (drums, surface debris and solid wastes), media contaminated (soil, surface water, and groundwater), presence or absence of residual contamination with succinct comments regards land use (aka institutional) controls, as appropriate, the date ADEC signed the NFRAP determination per TPA paragraph 59, and the current property owner.

Appendix I includes copies of all deed notices recorded with the Alaska Recorder's Office, Aleutian District, for twenty-seven (27) properties affected by residual contamination, and/or buried debris remaining in-situ at three (3) sites listed in Table 1. In addition, notice of residual contamination and/or buried debris will be identified in quitclaim deeds NOAA is drafting as it continues to transfer real property to St. George Island entities in accordance with the Transfer of Property Agreement signed by NOAA and various Pribilof Islands' entities in 1984.

Appendix II includes photocopies of the following three document types. (1) NFRAPs including signatures of both the ADEC and NOAA project managers (TPA paragraphs 42-47) for each site listed in Table 1; the photocopies are sorted in the same order as the site listing in Table 1, excepting NOAA Sites 11 (Cottage C) and 36, which do not have NFRAPs as discussed above. TPA paragraph 59 states: "ADEC shall not deny certification that corrective action is complete at any site(s) solely on the basis that post-remedial measures, such as monitoring, shall remain in place for a period of months or years." The NFRAP photocopies generally exclude report appendices containing items such as quantitative laboratory data and daily logs that are available to ADEC with NOAA's initial site submittals. (2) A St. George Village long-term groundwater monitoring plan. (3) A summary document describing in-situ residual soil and groundwater contamination.

In addition, pursuant to TPA paragraph 57, NOAA maintains an administrative record (AR) for the St. George Island OU at the following four locations: St. George Island Tribal Government Center; ARLIS, Anchorage, AK; NOAA Sand Point, Seattle, WA; and the National Archives and Records Administration, Seattle, WA. Currently, the AR is complete through fiscal year 2007. Fiscal year 2008 documents will be added to the AR by the end of November 2008.

Per this submission, including Appendices I and II, NOAA requests ADEC concurrence that all corrective actions pursuant to the TPA between ADEC and NOAA signed in 1996 for the St. George Island Operable Unit are complete. Enclosed are two copies of a signature page attesting to the fact that no further remedial action is planned ("conditional closure status") for the St. George Island Operable Unit. I have signed both copies as NOAA's project manager pursuant to TPA paragraph 42.

If you concur, please sign both copies on behalf of ADEC, returning one signed copy to me and retaining the other copy for ADEC's records.

If you have any questions, please do not hesitate to contact me either in writing, or at (206) 526-4560.

Sincerely,

John A. Lindsay, Manager
Pribilof Islands Environmental Restoration Project Office

Enclosures: Appendices I and II

cc: St. George RAB Members (DVD only)
David Kennedy, Pribilof Program Director
William Broglie, NOAA OCAO
James Barrows, NOAA OCAO
Nancy Briscoe, NOAA GCNR
Craig O'Connor, NOAA GCNR
Robert Taylor, NOAA GCNR
NOAA Administrative Record

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Manager, Pribilof Islands Environmental Restoration Project Office

Sept 26, 2008
Date

**Approvals:**

In accordance with Paragraph 59 of the Two Party Agreement (TPA), this is to confirm that all corrective action has been completed to the maximum extent practicable for all environmental media at NOAA's TPA and Non-TPA sites comprising the St. George Island Operable Unit, in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

**For the Alaska Department of Environmental Conservation**

Jennifer Roberts
Alaska Department of Environmental Conservation
Federal Facilities Program Manager

Sept 26 2008
Date

Table 1. Summary of Residual Soil Contamination and Buried Solid Wastes at NOAA Cleanup Sites on St. George Island, Alaska

| NOAA Site No. | TPA Site No. | Site Name | Drums | Surface Debris | Solid Waste | Soil | Ground-water | Surface Water | UST/AST/ Pipeline | Clean Closure | Site Conditions as of August 6, 2008 | Site Status as of September 26, 2008 | Property Owner(s) as of August 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Former Diesel Tank Farm | | X | | X | X | | X | | Diesel range organics (DRO) contaminated soil remains in the following locations: just north of and parallel to the City sewer system at depths of 5 feet below ground surface (bgs) and deeper; in an unexcavated buffer zone along the Bering Sea from the beach line inland approximately 10 to 15 feet at depths of 3 feet bgs and deeper; in the western portion of the site, at equipment refusal (due to bed rock) at depths of 7 to 14 feet bgs; and in the eastern portion of the site at the bottom of the vadose zone at 14 to 15 feet bgs. DRO, gasoline range organics (GRO), benzene, ethylbenzene and total xylene remain in one area in the western portion of the site at bed rock depth of 14 feet bgs. Groundwater is contaminated with DRO, GRO and benzene in this area; see Site 36 below for information. Deed notice. | NFRAP 11/2/07 | City of St. George; St. George Tanaq Corporation (Tanaq) |
| 2 | 2 | Former Drum Storage Area | X | X | | X | X | | X | | DRO contaminated soil remains in the western-most portion of the site only in the following locations: just north of and parallel to the City sewer system at depths of 8 feet bgs and deeper; at equipment refusal (due to bed rock) at a depth of 13 feet bgs; and at the bottom of the vadose zone (in areas of deeper bedrock) at 14 to 15 feet bgs.. Groundwater is contaminated with DRO, GRO and benzene in this area; see Site 36 below for information. Deed notice. | NFRAP 11/2/07 | City of St. George; Tanaq |
| 3 | 3 | Inactive Gas Station | | | | X | X | | X | | DRO contaminated soil remains just south of and parallel to the City sewer system at depths of 3.5 feet bgs and deeper. Perchloroethylene (PCE) remains in one location just south of the City sewer system from 2 to 4 feet bgs. DRO, GRO, benzene, toluene, ethylbenzene and total xylene remain in the area beneath the past location of the dispensing station at equipment refusal/bed rock depth of approximately 14 feet bgs. Groundwater is contaminated with DRO, GRO, and benzene in this area; see Site 36 below for information. Deed notice. | NFRAP 07/25/05 | City of St. George; Tanaq |

| NOAA Site No. | TPA Site No. | Site Name | Drums | Surface Debris | Solid Waste | Soil | Ground-water | Surface Water | UST/AST/ Pipeline | Clean Closure | Site Conditions as of August 6, 2008 | Site Status as of September 26, 2008 | Property Owner(s) as of August 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 4 | Active Landfill | X | X | X | X | | | | | Municipal solid waste (MSW) capped with geosynthetic clay and scoria throughout most of the landfill footprint; MSW open burning was conducted post-closure in the southern portion of the footprint until 2006 when this area and much of the rest of the landfill footprint was capped with petroleum-contaminated soil (PCS) from various Two-Party Agreement sites. DRO, GRO, residual range organics (RRO), benzene, toluene, ethylbenzene, and total xylenes are potential PCS cap contaminants. City of St. George is responsible for post-closure monitoring. Deed notice. | NFRAP 01/13/04 (City bears liability for long-term monitoring and O&M) | City of St. George |
| 5 | 5 | Ocean Dump Site | | X | | | | | | X | | NFRAP 03/11/03 | Tanaq; The Aleut Corporation (TAC) |
| 6 | 6 | Open Pits Site | X | X | X | X | | | | | DRO contaminated soil remains beyond 15 feet bgs at the coal subsite, and at refusal depth at the crane and coal subsites. Deed notice. | NFRAP 08/08/05 | City of St. George |
| 7 | 7 | Ballfield/ Former Landfill | X | X | X | X | X | X | | | MSW capped with scoria. Lead-contaminated soil remains at the north-northeast end of the landfill, beneath the 2 foot thick scoria cap, DRO contaminated soil can be found in areas at greater than 6 feet bgs; post-closure cap monitoring and maintenance until July 2010. Deed notice. | NFRAP 01/09/06 | City of St. George |
| 8 | 8 | Active Power Plant | | | | X | | | X | | DRO contaminated soil remains adjacent to and beneath the City Municipal Building and at refusal to the south of the building; deed notice; groundwater at the site is contaminated with DRO; see Site 35 below for information. Deed Notice. | NFRAP 08/31/05 | City of St. George |
| 9 | 9 | Old Power Plant | | | | X | | | X | | DRO contaminated soil remains near buried utilities, adjacent to and beneath the Old Power Plant building foundation, abutting a cliff to the north, and at equipment refusal encountered at between 1.5 and 4 feet bgs. RRO remains in an area next to the building foundation on the west side. Deed notice. | NFRAP 09/22/05 | St. George Community Council |
| 10 | 10 | Former Drum/AST Storage Area | X | | | | | | X | X | | NFRAP 08/18/97 | Tanaq/TAC |

| NOAA Site No. | TPA Site No. | Site Name | Drums | Surface Debris | Solid Waste | Soil | Ground-water | Surface Water | UST/AST/ Pipeline | Clean Closure | Site Conditions as of August 6, 2008 | Site Status as of September 26, 2008 | Property Owner(s) as of August 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 11 | Cottage C UST (Active Federal Facility) | | | | X | | | X | | DRO contaminated soil remains adjacent to the building and buried utilities at the south end of the building; this active NOAA facility was inadvertently included on the Two-Party Agreement list of sites in 1996. ADEC concurred that this site would be removed from the TPA, and would fall under NOAA NMFS responsibilities for complying with State of Alaska laws and regulations. | NFRAP 02/05/04 | NOAA |
| 12 | 12 | Former Hangar Bldg. | X | X | | X | | | | X | | NFRAP 03/11/03 | City of St. George |
| 13 | 13 | Makushin Pit | X | | | | | | | X | | NFRAP 08/18/97 | Tanaq/TAC |
| 14 | 14 | Oil Drum Dump | X | X | | X | | | | | DRO and RRO contaminated soil remains at refusal depths of 4 to 11 feet bgs. Deed notice. | NFRAP 11/17/04 | Tanaq/TAC |
| 15 | 15 | Boneyard B | X | X | | X | | | X | X | | NFRAP 02/11/05 | Tanaq/TAC |
| 16 | 16 | Boneyard C | X | X | | | | | | X | | NFRAP 09/14/04 | Tanaq/TAC |
| 17 | 17 | Cross-Hill Dump | X | | | | | | | X | | NFRAP 08/18/97 | Tanaq/TAC |
| 18 | 18 | Former Fuel Storage Area | X | | | X | | | | | DRO contaminated soil remains adjacent to the roads, a buried electrical line, and at refusal depths of 10 to 11 feet bgs. Deed notice. | NFRAP 04/18/05 | Tanaq/TAC |
| 19 | 19 | Old Carpenters Shop | | | | X | | | | | Lead-contaminated soil remains in one location at the southeast corner of the buried foundation at a refusal depth of 8.5 feet bgs. Deed notice | NFRAP 01/25/06 | Tanaq/TAC |
| 20 | 20 | Old Coal House | | X | | X | | | | X | | NFRAP 09/09/97 | Tanaq |
| 21 | 21 | Abandoned City Diesel Tank Disposal Site | | | | | | | X | X | | NFRAP 03/11/03 | City of St. George |
| 22 | 22-1 | School UST | | | | X | | | X | | DRO contaminated soil remains adjacent to the southwest corner of the school at a refusal depth of approximately 9 feet bgs, and potentially beneath the school building. Deed restriction to future landowner (State of Alaska). | NFRAP 04/08/04; NFRAP 02/11/05 | NOAA |
| 23 | 22-2 | Current Carpenter Shop USTs | | | | X | | | X | | DRO contaminated soil remains adjacent the east end of the Carpenter Shop building where further excavation could jeopardize foundation stability, and at depth exceeding 15 feet bgs. Deed notice. | NFRAP 08/19/03 | Tanaq/TAC |

| NOAA Site No. | TPA Site No. | Site Name | Drums | Surface Debris | Solid Waste | Soil | Ground-water | Surface Water | UST/AST/ Pipeline | Clean Closure | Site Conditions as of August 6, 2008 | Site Status as of September 26, 2008 | Property Owner(s) as of August 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | 22-3 | Shop/Store UST | | | | X | | | X | | DRO contaminated soil remains near northwest corner of the building's foundation, near a cliff edge and at refusal depths of 7 to 14 feet bgs. Deed notice. | NFRAP 10/08/04 | Tanaq/TAC |
| 25 | 22-4 | Old Airport Hangar UST | | X | | X | | | X | X | | NFRAP 03/10/03 | City of St. George |
| 26 | 22-5 | Gas Station #1 UST | | | | X | | | X | X | | NFRAP 03/10/03 | Tanaq |
| 27 | 23 | Abandoned Diesel Tank Farm | | | | X | | | X | | DRO contaminated soil remains at concentrations greater than ADEC's cleanup levels for the protection of groundwater at refusal depths varying between 4.5 and 16 feet bgs and in some locations shallower than refusal at depths varying between 2.5 and 9.1 feet bgs. Results from six groundwater monitoring events indicated groundwater was not impacted by this soil contamination. Residual PCS concentrations are less than ADEC's cleanup levels for ingestion and inhalation. Deed notice. | NFRAP 02/28/05 | Tanaq/TAC |
| 28 | 24 | Inactive Gas Tank Farm | | | | X | | | X | | DRO, GRO, Toluene, Ethylbenzene, and total xylenes contaminated soil remains at refusal depths varying between 9.6 and 16.5 feet bgs. Deed notice. | NFRAP 12/14/04 | City of St. George; Tanaq |
| 29 | 25-1 | Port Fuel Supply Line E-W | | | | X | | | X | | DRO contaminated soil remains in one location at a refusal depth of 11 feet bgs, and in an unexcavated buffer zone along the Bering Sea from the beach line inland approximately 10 to 15 feet at depths 6 feet bgs or greater. Deed notice. | NFRAP 12/18/07 | City of St. George; Tanaq; TAC |
| 30 | 25-2 | Port Fuel Supply Line N-S | | | | X | | | X | | DRO contaminated soil remains at equipment refusal depths varying from 3 to 10 bgs. Deed notice. | NFRAP 05/05/05 | Tanaq |
| 31 | NTPA | St. George Schoolyard/ landfill | X | | X | | | | | | PCE was detected in 1994 in one sample from 12 feet bgs at a concentration slightly above current ADEC Method Two criteria for migration to groundwater. Capped MSW may remain in areas not exposed after landfill operations ceased (date unknown); deed restriction to future landowner (State of Alaska). | NFRAP 11/21/95 | NOAA |
| 32 | NTPA | Petroleum Contaminated Stockpile | | | | X | | | | X | | NFRAP 01/08/08 | NOAA |

| NOAA Site No. | TPA Site No. | Site Name | Drums | Surface Debris | Solid Waste | Soil | Ground-water | Surface Water | UST/AST/ Pipeline | Clean Closure | Site Conditions as of August 6, 2008 | Site Status as of September 26, 2008 | Property Owner(s) as of August 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | NTPA | School AST | | | | X | | | X | X | | NFRAP 5/24/05, NFRAP 6/20/2005 | NOAA |
| 34 | NTPA | Public Health Service PCS –Open Pits Site | | | | X | | | | X | | NFRAP 2/11/05 | City of St. George/TAC |
| 35 | 8b | Active Power Plant Free Phase | | | | | X | | | | Groundwater is contaminated with free-phase and dissolved-phase DRO. Long-term groundwater monitoring is in progress, and a free-phase extraction system started removing product in September 2007. Deed notice. | NFRAP 09/18/08 | City of St. George |
| 36 | 1b & 25-1b | Oceanfront Sites Free Phase | | | | | X | | | | Petroleum sheen observed on the water table surface during excavation activities in 2006. Dissolved-phase contaminants include DRO, GRO, and benzene. Long-term groundwater monitoring is in progress. | NFRAP 11/2/07 | City of St. George; Tanaq |

Notes:
AST: Above ground storage tank
DRO: Diesel-range organics
FUDS: Formerly Used Defense Site
NFRAP: No Further Remedial Action Planned (received from State of Alaska Department of Environmental Conservation)
NMFS: National Marine Fisheries Service
NOAA: National Oceanic and Atmospheric Administration
NTPA: Non Two-Party Agreement site
PCS: Petroleum-contaminated soil
TAC: The Aleut Corporation (subsurface estate)
Tanaq: St. George Tanaq Corporation (surface estate)
TPA: Two-Party Agreement
UST: Underground storage tank

# Appendix I

## APPENDIX I TO THE SEPTEMBER 26, 2008 REQUEST FOR CLOSURE OF THE ST. GEORGE ISLAND, ALASKA, OPERABLE UNIT UNDER THE TWO-PARTY AGREEMENT BETWEEN THE ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION AND THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION SIGNED JANUARY 1996

In accordance with paragraph 59 of the Pribilof Islands Environmental Restoration Agreement (Two-Party Agreement or TPA) signed in January 1996 by designated officials of the State of Alaska and the National Oceanic and Atmospheric Administration (NOAA), NOAA requested Alaska Department of Environmental Conservation (ADEC), as the duly recognized representative of the State of Alaska, certification of NOAA's completion of corrective action for the St. George Island Operable Unit (OU). NOAA asserted in its September 26, 2008 cover letter to ADEC that it had completed in accordance with the TPA all investigations and corrective actions approved by ADEC, to the extent practicable by:

- removing drums and debris,
- removing underground storage tanks (USTs) and above ground, storage tanks (ASTs),
- removing fuel pipelines,
- removing contaminated soil,
- closing solid waste sites,
- characterizing surface water, and
- characterizing and monitoring groundwater.

Appendix I of two attachments to the request (cover letter) includes portable document format (PDF) versions of closure documents prepared in accordance with TPA paragraphs 42-47 for the thirty-six sites within the St. George Island OU. This number (36) exceeded the number (25) of source areas identified in TPA Attachment A concerning St. George Island, due to agreed upon changes in the manner of site designation and the discovery of new sites during various phases of site investigation. Appendix I herein does not include formal closure documents for Cottage C and Oceanfront Sites Free Phase (Sites, 11 and 36, respectively). Site 11 is a federally active facility and precluded from cleanup by NOAA under the TPA. Site 36 was eventually found not to have free phase and it was closed along with documentation for Sites 1 and 2. Conversion of the original documents to PDF resulted in a slight size reduction of the original document format (8.5 x 11 inches); this reduction was necessary to provide this bound printed copy created for archiving and future reference. The cleanup sites are presented in numerical order in accordance with Table 1 accompanying the cover letter. The documents herein generally exclude report appendices which include such items as final laboratory data deliverables, and contractor daily logs. These items are available to ADEC with NOAA's initial site submittals, such as corrective action plans and reports.

NOAA recorded twenty-seven deed notices with the Alaska Recorder's Office, Aleutian District located in Anchorage. Copies of these documents are included within Appendix I. Each deed notice accompanies the appropriate closure document for the applicable site. Notice of residual contamination or buried solid waste to be included with federal property transfer documents under a 1984 Transfer of Property Agreement between NOAA and St. George Island entities are not included herein as quitclaim deeds have not been issued at the time of this submission.

Appendix II includes copies of the St. George Island long-term groundwater monitoring plan, and a summary report of in-situ residual soil and groundwater contamination.

# Table of Contents

*The following sites are available in Volume 1*

**NOAA Sites 1, 2  TPA Site 1: Former Diesel Tank Farm; TPA Site 2: Former Drum Storage Area** ........ 11

Corrective Action Report/Conditional Closure Request, NOAA Site 1/Two Party Agreement Site 1 - Former Diesel Tank FarmNOAA Site 2/Two Party Agreement Site 2 - Former Drum Storage Area, St. George Island, Alaska ........ 13

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 1 and 2, St. George Island, Alaska (Lot 1 of the East Landing Subdivision Tract 43) ........ 59

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 1 and 2, St. George Island, Alaska (Lot 8, Tract 43) ........ 67

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 1 and 2, St. George Island, Alaska (Lot 10, Tract 43) ........ 75

**NOAA Site 3  TPA Site 3: Inactive Gas Station** ........ 83

Request for Conditional Closure, Inactive Gas Station, TPA Site 3/Site 3, St. George Island, Alaska ........ 85

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 3, St. George Island, Alaska (Tract 43) ........ 95

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 3, St. George Island, Alaska (Lot 8, Tract 43) ........ 103

**NOAA Site 4  TPA Site 4: Active Landfill** ........ 111

Final Report, St. George Landfill Closure (NOAA Award Number NA77AB052) for Interim Closure of a Community Dump on St. George Island, Alaska ........ 113

Letter from Laura Ogar to Chuck Eggener, P.E., Re: ADEC Approval of City of St. George, 2000 Interim Municipal Solid Waste Dump Closure Plan. Dated July 17, 2000 ........ 133

Letter from John Lindsay to Louis Howard RE: Request for Confirmation of Completion of Corrective Actions for Two Party Agreement Site 4, Active Landfill, St. George, Alaska. Dated December 12, 2003 ........ 135

Letter from Louis Howard to John Lindsay RE: Request for Confirmation of Completion of Corrective Action Two-Party Agreement Site 4, Active Landfill, St. George, Alaska. Dated January 13, 2003 ........ 137

Notice of Residual Soil Contamination and Municipal Solid Waste at Two Party Agreement Site 4, St. George Island, Alaska (Lot 1) ........ 139

Notice of Residual Soil Contamination and Municipal Solid Waste at Two Party Agreement Site 4, St. George Island, Alaska (Lot 2) ........ 147

Notice of Residual Soil Contamination and Municipal Solid Waste at Two Party Agreement Site 4, St. George Island, Alaska (Tract 38) ........ 153

**NOAA Site 5 TPA Site 5: Ocean Dump Site** ....159

St. George Island, Alaska, Request for No Further Action, Ocean Dump Site, TPA Site No. 5.....161

Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Ocean Dump Site TPA Site No. 5, Dated February 19, 2003. Dated March 11, 2003 .......167

**NOAA Site 6 TPA Site 6: Open Pits Site** ....169

Request for Conditional Closure Open Pits Site, TPA Site 6/NOAA Site 6, St. George Island, Alaska ....171

Letter from Louis Howard to John Lindsay RE: Draft Corrective Action Report Open Pits Two-Party Agreement Site 6, St. George, Alaska January 26, 2004. Dated March 3, 2004...........185

Notice of Residual Soil Contamination at Two Party Agreement Site 6, St. George Island, Alaska (Lot 42, Tract 52) ....187

**NOAA Site 7 TPA Site 7: Ballfield/Former Landfill Site** ....195

Conditional Closure Request Ballfield/Former Landfill, TPA Site 7/NOAA Site 7, St. George Island, Alaska....197

Letter from Ray Dronenburg to Mary Moloseau-Goetz, P.E. RE: Approval for Closure Request for St. George Island, Former Landfill/Ballfield Site. Dated September 9, 1997.............211

Notice of Residual Soil Contamination and Municipal Solid Waste at Two Party Agreement Site 7, St. George Island, Alaska (Lot 42, Tract 52) ....213

**NOAA Site 8 TPA Site 8: Active Power Plant** ....225

Request for Conditional Closure, Active Power Plant, TPA Site 8/Site 8, St. George Island, Alaska....227

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 8, St. George Island, Alaska (Lot 14, Tract 43) ....237

**NOAA Site 9 TPA Site 9: Old Power Plant** ....245

Conditional Closure Request, Old Power Plant, TPA Site 9/NOAA Site 9, St. George Island, Alaska....247

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 9, St. George Island, Alaska (Lot 2, Tract 43) ....259

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 9, St. George Island, Alaska (Lot 3, Tract 43) ....269

**NOAA Site 10 TPA Site 10: Former Drum/AST Storage Area** ....279

Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume 1 ....281

Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Former Kerosene/AST Storage Area. Dated July 15, 1997 ....301

Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E RE: Approval to close Former Kerosene/AST Storage Area, St. George Island. Dated August 18, 1997....303

**NOAA Site 11 TPA Site 11: Cottage C UST** .......... 305

Letter from John Lindsay to Louis Howard RE: Cottage C (TPA Site 11), St. George Island. Dated January 20, 2004 .......... 307

Letter from Louis Howard to John Lindsay RE: Cottage C (TPA Site 11) St. George Island, January 20, 2004. Dated February 5, 2004 .......... 309

**NOAA Site 12 TPA Site 12: Former Hangar Building** .......... 311

St. George Island, Alaska, Request for No Further Action, Former Hangar Building TPA Site No. 12 .......... 313

Letter from to John Lindsay RE: St. George Island Request for No Further Action Former Hangar Building Site No. 12, dated February 19, 2003. Dated March 11, 2003. .......... 321

**NOAA Site 13 TPA Site 13: Makushin Pit** .......... 323

Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume I .......... 325

Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Makushin Pit Site. Dated July 15, 1997 .......... 345

Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E. RE: Closure for Makushin Pit Site, St. George Island. Dated August 18, 1997. .......... 347

**NOAA Site 14 TPA Site 14: Oil Drum Dump** .......... 349

Request for Conditional Closure, Oil Drum Dump, TPA 14/Site 14, St. George, Alaska .......... 351

Notice of Residual Soil Contamination at Two Party Agreement Site 14, St. George Island, Alaska (Lot 2) .......... 361

Notice of Residual Soil Contamination at Two Party Agreement Site 14, St. George Island, Alaska (Section 36, Township 41 South, Range 130 West of the Seward Meridian, Alaska) .......... 367

***The following sites are available in Volume 2***

**NOAA Site 15 TPA Site 15: Boneyard B** .......... 373

Request for Conditional Closure, Boneyard B, TPA 15/Site 15, St. George Island, Alaska .......... 375

**NOAA Site 16 TPA 16 Site: Boneyard C** .......... 383

Request for NFRAP, Boneyard C, TPA Site 16/Site 16, St. George Island, Alaska .......... 385

**NOAA Site 17 TPA Site 17: Cross Hill Dump** .......... 389

Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume 1 .......... 391

Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Cross Hill Drum Dump site. Dated July 15, 1997 .......... 411

Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E. RE: Closure for Cross Hill Drum Dump site, St. George Island. Dated August 18, 1997 .......... 413

**NOAA Site 18 TPA Site 18: Former Fuel Storage Area**.....................................415
Request for Conditional Closure, Former Fuel Storage Area TPA Site 18/Site 18, St. George Island, Alaska.....................................417
Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 18, St. George Island, Alaska (Lot 42, Tract 52).....................................439

**NOAA Site 19 TPA Site 19: Old Carpenter Shop**.....................................445
Conditional Closure Request, Old Carpenter Shop TPA Site19/NOAA Site 19, St. George Island, Alaska.....................................447
Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 19, St. George Island, Alaska (Lot 42, Tract 52).....................................463

**NOAA Site 20 TPA Site 20: Old Coal House**.....................................469
Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume I.....................................471
Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Old Coal House site. Dated July 15, 1997.....................................497
Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E. RE: St. George Island, Old Coal House site; closure for. Dated September 9, 1997.....................................499

**NOAA Site 21 TPA Site 21: Abandoned City Diesel Tank Disposal Site**.....................................501
St. George Island, Alaska, Request for No Further Action, Abandoned City Diesel Tank Disposal Site TPA Site No. 21.....................................503
Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Abandoned City Diesel Tank Disposal Site TPA Site No. 21, dated February 19, 2003. Dated March 11, 2003.....................................509

**NOAA Site 22 TPA Site 22-1: School UST**.....................................511
Request for Conditional Closure, School UST, TPA 22-1/Site 22.....................................513

**NOAA Site 23 TPA Site 22-2: Current Carpenter Shop**.....................................525
St. George Island, Alaska, No Further Remedial Action Planned, Carpentry Shop UST, TPA Site No. 22-2.....................................527
Letter from Louis Howard to John Lindsay RE: Draft No Further Remdial Action Planned at TPA Site No. 22-2 Carpentry Shop UST St. George Island Dated August 6, 2003. Dated August 19, 2003.....................................535
Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 22-2, St. George Island, Alaska (Lot 9, Tract 43).....................................537

**NOAA Site 24 TPA Site 22-3: Shop/Store UST**.....................................545
Request for NFRAP, Tanaq Shop/Store Tank, TPA Site 22-3/NOAA Site 24.....................................547
Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 22-3, St. George Island, Alaska (Lot 1, Tract 43).....................................567

**NOAA Site 25 TPA Site 22-4: Old Airport Hangar UST**.....................................573
St. George Island, Alaska, Request for No Further Action, Old Airport Hangar UST, TPA Site No. 22-4.....................................575

Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Old Airport Hangar UST TPA Site No. 22-4, dated February 19, 2003. Dated March 11, 2003 ........ 585

**NOAA Site 26 TPA Site 22-5: Gas Station #1 UST** ........ 587

St. George Island, Alaska, Request for No Further Action, Gas Station #1 UST Site, TPA Site No. 22-5 ........ 589

Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Gas Station #1 UST TPA Site No. 22-5. Dated February 24, 2003 ........ 597

**NOAA Site 27 TPA Site 23: Abandoned Diesel Tank Farm** ........ 599

Request for Conditional Closure, Abandoned Diesel Tank Farm, TPA Site 23/ NOAA Site 27, St. George Island, Alaska ........ 601

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 23 and 25-2, St. George Island, Alaska(Tract 49) ........ 617

**NOAA Site 28 TPA Site 24: Inactive Gasoline Tank Farm** ........ 625

Request for Conditional Closure, Inactive Gasoline Tank Farm, TPA Site 24/ NOAA Site 28, St. George Island, Alaska ........ 627

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska (Lot 5 of the East Landing Subdivision) ........ 639

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska (Lot 42, Tract 52) ........ 647

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska (Tract 45) ........ 655

**NOAA Site 29 TPA Site 25-1: Port Fuel Supply Line East-West** ........ 663

Corrective Action Report/Conditional Closure Request, NOAA Site 29/Two Party Agreement Site 25-1, Port Fuel Supply Line East-West, St. George Island, Alaska ........ 665

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 25-1, St. George Island, Alaska (Lot 1 of the East Landing Subdivision) ........ 723

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 25-1, St. George Island, Alaska (Lot 2 of the East Landing Subdivision) ........ 731

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 25-1, St. George Island, Alaska (Lot 11, Tract 43) ........ 739

***The following sites are available in Volume 3***

**NOAA Site 30 TPA Site 25-2: Port Fuel Line North-South** ........ 747

Request for Conditional Closure, North-South Cargo Fuel Line TPA Site 25-2/Site 30, St. George Island, Alaska ........ 749

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 25-2, St. George Island, Alaska (Lot 4 of the East Landing Subdivision) ........ 767

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 23 and 25-2, St. George Island, Alaska (Lot 11, Tract 43) ....773

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska (Lot 5 of the East Landing Subdivision) ....781

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska (Lot 42, Tract 52)....789

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska (Tract 45) ....797

**NOAA Site 31 Non-TPA Site: St. George Schoolyard/landfill ....805**

Letter Report from Harold J. Marlow, Jr. and James D. Gill, P.E. of Hart Crowser, Inc. to Ray Dronenburg RE: Schoolyard Landfill Excavation, St. George, Alaska. Dated August 17, 1995....807

Letter from Ray Dronenburg to Richard Wilson, RE: Schoolyard Landfill Excavation, St. George, Alaska. Dated November 8, 1995 ....821

Letter from Ray Dronenburg to Richard Wilson, RE: St. George Schoolyard/landfill Excavation. Dated November 21, 1995 ....827

**NOAA Site 32 Petroleum-Contaminated Soil Stockpile and Enhanced Thermal Conduction Operations Area ....829**

Conditional Closure Request, NOAA Site 32/Non-Two Party Agreement, Petroleum-Contaminated Soil Stockpile and Enhanced Thermal Conduction Operations Area, St. George Island, Alaska....831

**NOAA Site 33 School AST....879**

Request for Conditional Closure, School AST, NOAA Site 33, St. George Island, Alaska ....881

**NOAA Site 34 Non-TPA Site: Public Health Service PCS – Open Pits Site ....891**

Letter Report from John Lindsay to Louis Howard RE: Letter Report and Conditional Closure Request, Public Health Service Project Soil Pile/non-TPA Site 34, St. George Island, Alaska. Dated February 7, 2005 ....893

Letter from Louis Howard to John Lindsay RE: Public Health Service Project Site 34, St. George Island, Alaska February 2005. Dated February 11, 2005....901

**NOAA Site 35 TPA Site 8b: Active Power Plant Free Phase....903**

St. George Island Two Party Agreement (TPA) Sites 1 and 8 Product Removal Testing Final Feasibility Study Report ....905

Letter from Louis Howard to John Lindsay RE: Feasibility Study-Product Removal Testing, TPA Sites 1 and 8, St. George Island, Alaska June 2005, and September 2005 Selected Alternative for Free Product Removal. Dated September 4, 2005....973

Letter from John Lindsay to Louis Howard RE: NOAA Selection of Free Phase Product Removal Alternative. Dated September 28, 2005 ....975

Letter from John Lindsay to Louis Howard RE: Closure of the St. George Island, Alaska Operable Unit. Dated September 17, 2008....977

**NOAA Site 36 TPA Sites 1b, 25-1b: Oceanfront Sites Free Phase....981**

# NOAA Site 15
# TPA Site 15: Boneyard B

Request for Conditional Closure, Boneyard B, TPA 15/Site 15,
St. George Island, Alaska ....................................................................................375

**Request for Conditional Closure**
**Boneyard B**
**TPA 15/Site 15**
**St. George Island, Alaska**

**Site:** Boneyard B, also known as Two-Party Agreement (TPA) Site 15 and National Oceanic and Atmospheric (NOAA) Site 15

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, Boneyard B is located southeast of the city landfill on a spur road that veers west from the landfill road (56° 34' 33.13" N latitude, 169° 35' 1.79" W longitude; Figures 1 and 2).

**Legal Property Description:** Boneyard B is located in Township 42 South, Range 130 West, Section 1 of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2). The St. George Tanaq Corporation owns the surface estate, and The Aleut Corporation owns the subsurface estate.

**Type of Release:** Abandoned materials including drums, vehicles, transformers, aboveground storage tanks (ASTs), vehicle batteries, and miscellaneous debris (Buckel 1990, NOAA 1996). Soil staining, presumably derived from the abandoned items, was identified (Polarconsult 1997a).

**History and Background:**
The site was primarily used for the disposal of abandoned vehicles, though other debris noted above were also disposed at the site.

**Summary of Site Investigations:**
Harding Lawson Associates (HLA; 1993) conducted a Phase I Environmental Assessment of the Pribilof Islands during September and October 1992. HLA found Boneyard B (also referred to as Vehicle Boneyard 1) to contain approximately 75 abandoned vehicles and three transformers. Drums were scattered between Boneyards B and C. HLA activities included draining and bulking vehicle fluids and locating and sampling transformers. Wipe samples collected from inside the transformers indicated the presence of polychlorinated biphenyls (PCBs) ranging from 0.10 to 1.39 $\mu g/cm^2$.

Ecology and Environment, Inc. (E&E) conducted a preliminary assessment for this site based on interviews, available literature and files, and an early October 1992 site visit (E&E 1993). They noted the western half of Boneyard B contained 15 vehicles and the eastern half contained approximately 35 vehicles, two motorcycles, three transformers, and other miscellaneous metal debris, including batteries. Thirteen drums were noted as being scattered between Boneyards B and C. One drum was filled with water, another contained an unknown solid; the others were empty. E&E did not note signs of stained soil or stressed vegetation during the site visit.

During 1993, Woodward-Clyde conducted a Phase 1B environmental assessment (Woodward-Clyde 1994). Drums were inventoried, and 20 were removed from Boneyard B as well as another 10 from between Boneyards B and C. Seven batteries and two of the three transformers previously identified were also removed. The remaining transformer was partly buried and pinned beneath a truck. The transformer did not appear to contain any liquid, and Woodward-Clyde did not observe staining or stressed vegetation around the transformer. Accessible vehicles were inspected for fluids and found to contain none.

Polarconsult Alaska, Inc. (Polarconsult) conducted a site investigation in 1996 and 1997 (Polarconsult 1997a and 1997b). Initial work involved the removal of debris items, including vehicles and equipment, revealing the presence of soil stains on the ground surface. Sixteen shallow test pits were excavated where soil discoloration suggested the presence of soil contamination and in other locations where debris items may have released fuel (Figure 3). Four individual soil samples were analyzed for gasoline-range organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX). Three composite samples were analyzed for metals, diesel-range organics

(DRO), and residual-range organics (RRO). Only DRO in one of the composite samples (group 2) was found to exceed its preliminary cleanup level of 200 mg/kg with a concentration of 3,620 mg/kg.

During August 2000, Polarconsult conducted site assessment activities at Boneyard B (Polarconsult 2001). Polarconsult located the test pits from which each of the individual 1997 composite group 2 samples (*i.e.*, samples SS 171 to SS 175) were collected. These test pits were resampled, and samples were individually analyzed for DRO and BTEX. BTEX was not detected. DRO results varied from not detected to a maximum concentration of 205 mg/kg, with only one sample, SS 256, exceeding the preliminary cleanup level of 200 mg/kg (Figure 3). This sample was collected from the same location as 1997 sample SS 172.

No groundwater monitoring wells have been installed at Boneyard B; thus, no groundwater data is available for the site. The site is located 2.3 miles from the St. George municipal drinking water wells.

**Summary of Applied Cleanup Levels:**
Alaska Department of Environmental Conservation (ADEC) Method I cleanup criteria (18 AAC 75.341 (a); ADEC 1999) were applied at this site. Site information gathered during the final cleanup action and applied to a Table A1 calculation indicates that this site falls under Method 1, Category C with GRO, DRO, and RRO cleanup levels of 500, 1,000, and 2,000 mg/kg, respectively (Polarconsult 2001). Accordingly, these are the levels applied to the final cleanup action. During the aforementioned site investigation and assessment activities, however, based on the best available information at that time, more stringent Method 1, Category B cleanup levels (*e.g.*, 200 mg/kg DRO) were used as the preliminary cleanup levels to guide decisions.

**Summary of Cleanup Actions:**
During September 2000, Polarconsult conducted removal activities at Boneyard B in the vicinity of the sample SS 256 location (Polarconsult 2001). Approximately 65 cubic yards of soil were removed (Figure 4). Polarconsult collected five confirmation samples following the soil removal action (Figure 4). The samples were analyzed for DRO and BTEX. DRO was detected in just one sample at a concentration of 15.9 mg/kg, below the site cleanup level. BTEX was not detected. The site was backfilled with clean scoria and regraded.

**Recommended Action:**
In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action, to the maximum extent practicable, at Boneyard B, TPA Site 15/Site 15 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

**References:**

Alaska Department of Environmental Conservation (ADEC). 1999. Title 18 of the *Alaska Administrative Code* 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska.

Buckel, Steven. 1990. *Environmental Compliance Survey Report – Pribilof Islands, Alaska*. National Oceanic and Atmospheric Administration. August 31.

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska*. February.

Harding Lawson Associates (HLA). 1993. *Final Report, Phase I Environmental Assessment, Pribilof Islands, Alaska*. March 5.

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Polarconsult Alaska, Inc. 1997b. *Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project, Volume III*. December.

Polarconsult Alaska, Inc. 2001. *Draft Environmental Site Investigation, St. George Environmental Cleanup, Pribilof Islands Environmental Restoration Project, Part II (Revision 2)*. December.

Woodward-Clyde Consultants, Inc. 1994. *Phase 1B Environmental Assessment, St. George Island, Alaska*. March.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

1/31/05
Date

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at Boneyard B, TPA Site 15/Site 15 in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

2/11/05
Date

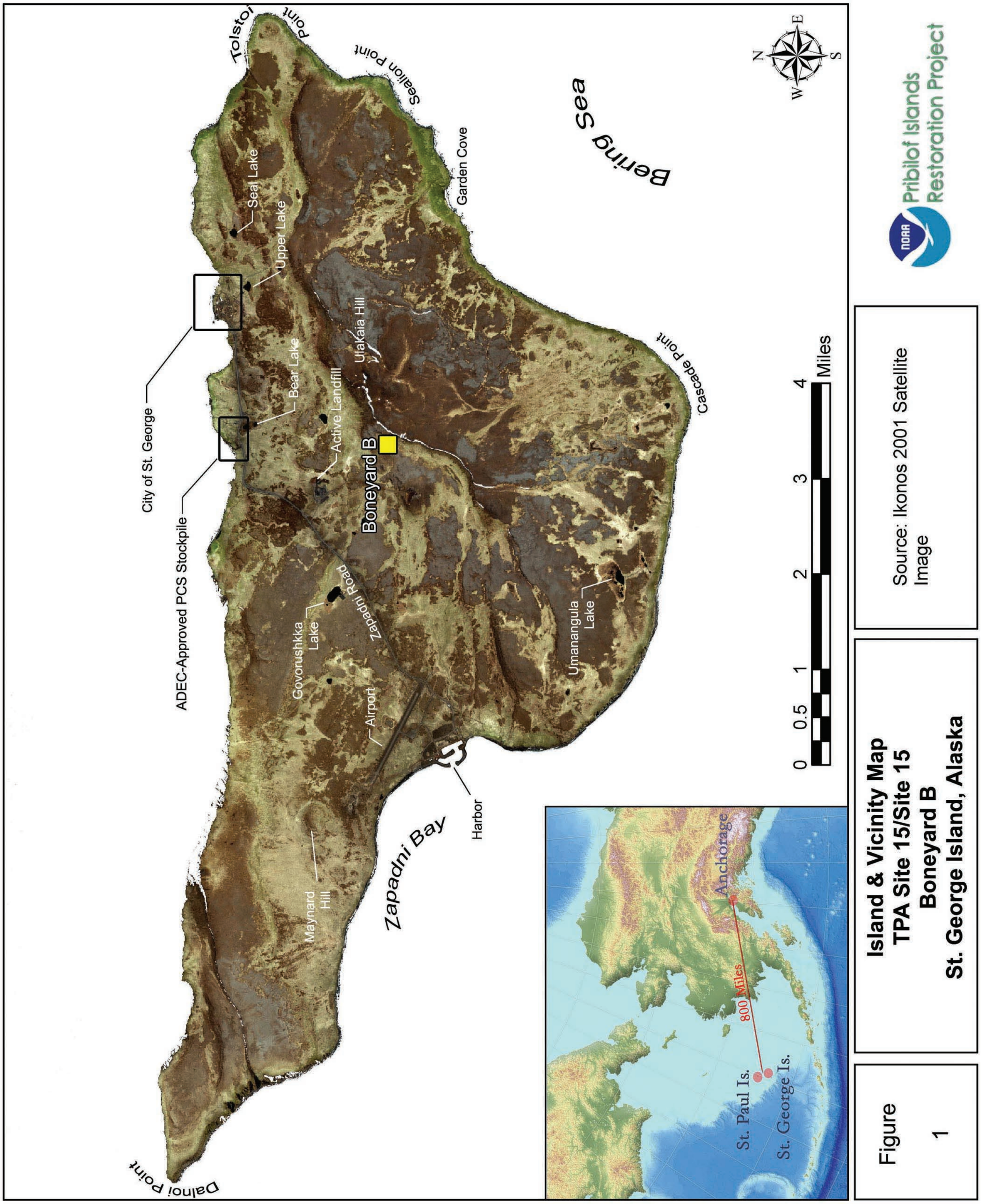


Figure 1

Island & Vicinity Map
TPA Site 15/Site 15
Boneyard B
St. George Island, Alaska


| Figure 2 | Legal Property Description Map<br>TPA Site 15/Site 15<br>Boneyard B<br>St. George Island, Alaska | Source: Ikonos 2001 Satellite Image; Bureau of Land Management Land Survey Filed February 15, 1985 | Pribilof Islands Restoration Project |
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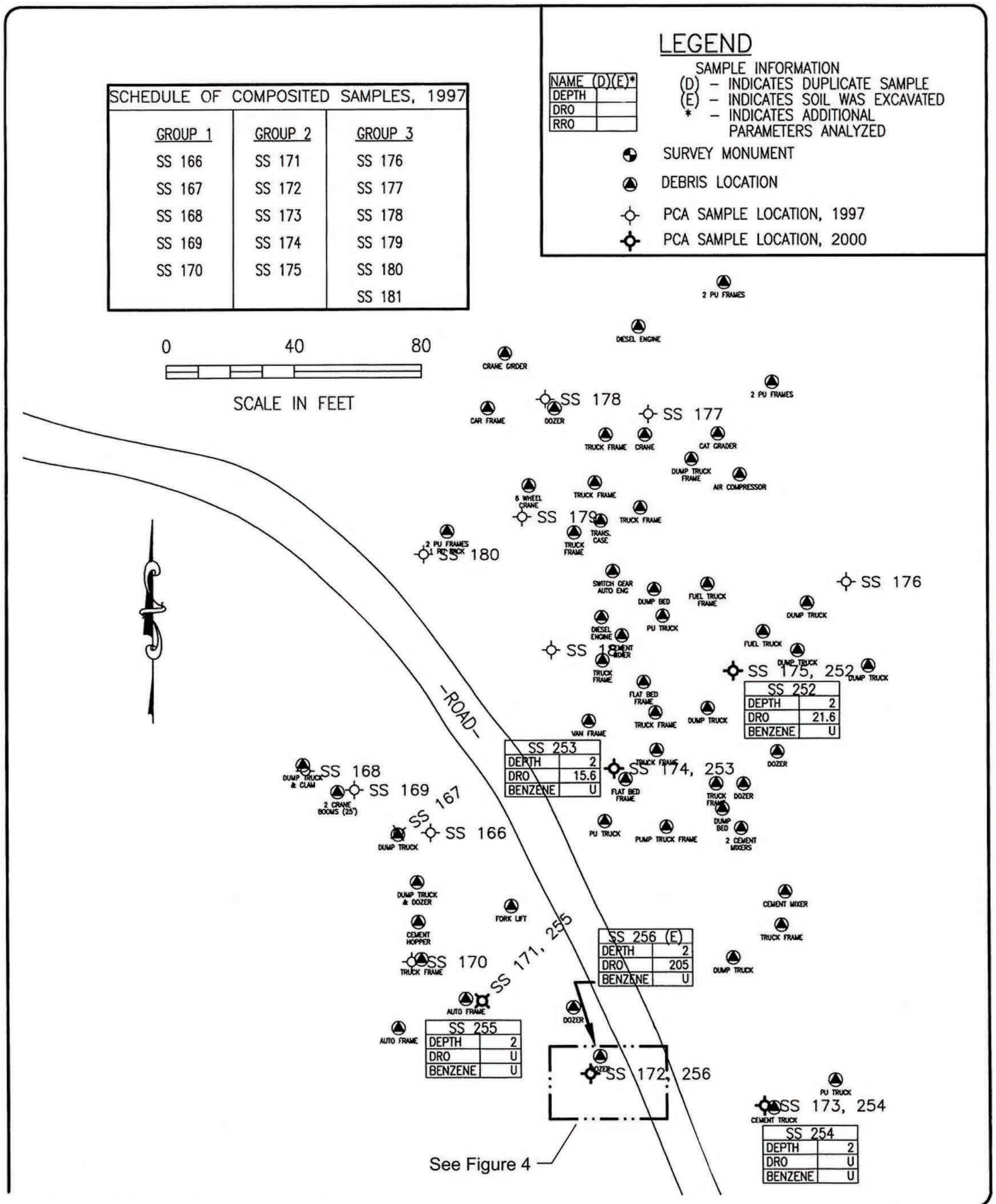


| Figure 3 | Sample & Debris Locations<br>1997 & 2000<br>TPA Site 15/Site 15, Boneyard B<br>St. George Island, Alaska | Source: Adapted from the Draft Environmental Site Investigation report, Polarconsult 12/31/2001 |
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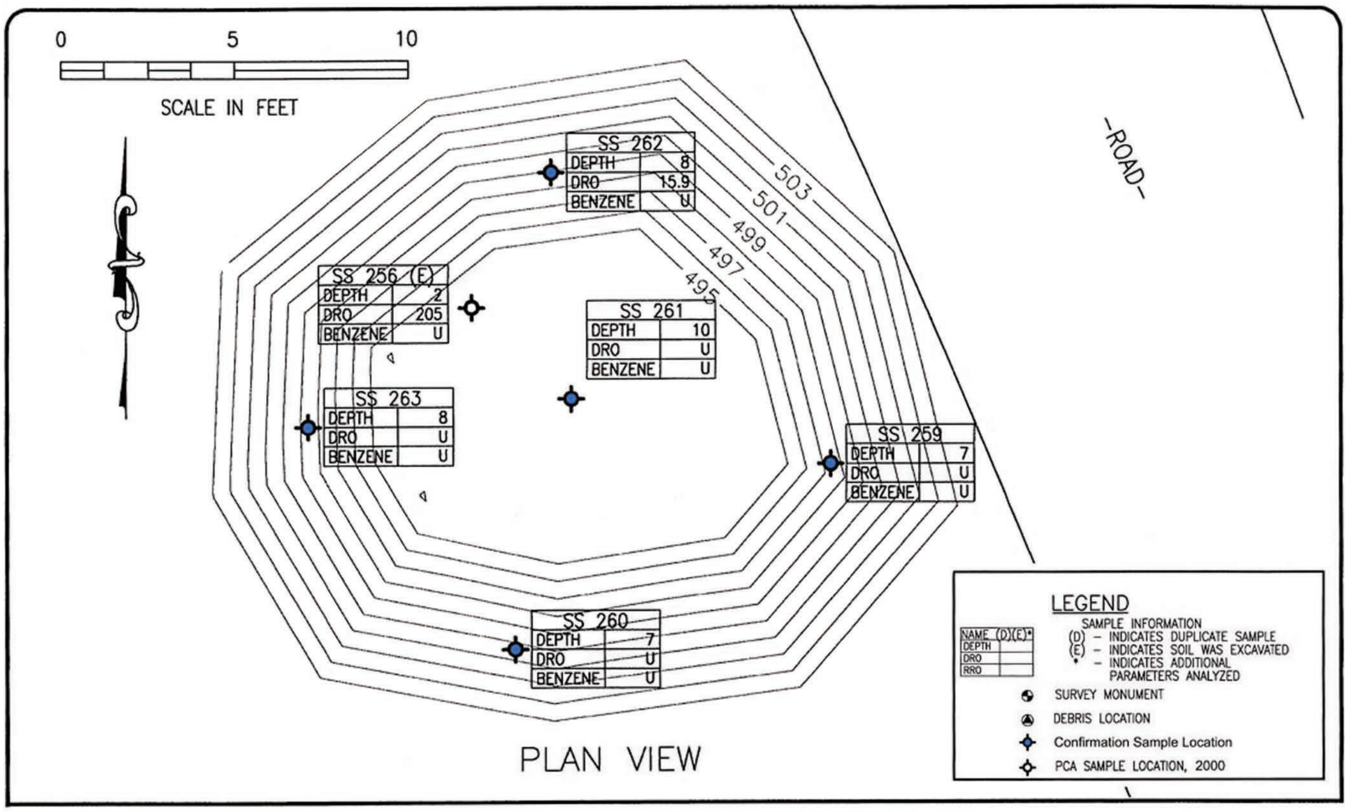
Pribilof Islands Restoration Project

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|---|---|---|
| Figure<br><br>4 | Excavation & Confirmation Sample Locations<br>2000 Remedial Action<br>TPA Site 15/Site 15, Boneyard B<br>St. George Island, Alaska | Source: Adapted from the<br>Draft Environmental Site<br>Investigation report,<br>Polarconsult 12/31/2001 |

Pribilof Islands Restoration Project

# NOAA Site 16
# TPA 16 Site: Boneyard C

Request for NFRAP, Boneyard C, TPA Site 16/Site 16,
St. George Island, Alaska ........................................................................385

# Request for NFRAP
# Boneyard C
# TPA Site 16/Site 16
# St. George Island, Alaska

## Request for No Further Remedial Action Planned

**Site:** Boneyard C, also known as Two Party Agreement (TPA) Site 16 and National Oceanic and Atmospheric Administration (NOAA) Site 16

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. Boneyard C is located on the island southeast of the city of St. George landfill on a spur road that veers west from the landfill road (latitude 56° 34' 31.47" N, longitude 169° 35' 3.00" W; Figure 1).

**Legal Property Description:** Boneyard C is within Township 42 South, Range 130 West, of the Seward Meridian, Section 1 (Figure 2).

**Type of Release:**
Disposal of vehicles, aboveground storage tanks (ASTs), an abandoned steel drum, and miscellaneous metal debris

**History:**
Boneyard C was used primarily for the disposal of abandoned vehicles.

**Summary of Site Investigations:**
A preliminary assessment of Boneyard C performed in 1992 found the site contained four dump trucks, one water-filled drum, two ASTs (approximately 1040 gallons each), and an engine block (Ecology & Environment 1993, Harding Lawson Associates 1993; Figure 3). Neither staining nor stressed vegetation were noted at the time. That same year, a phase 1A environmental assessment was conducted (Harding Lawson Associates 1993). Vehicle fluids were drained and bulked, and tanks were inventoried. The two ASTs present were positioned upside down; thus, their interiors were not inspected but both appeared empty.

In 1993, a phase 1B environmental assessment involving drum inventory and removal and limited debris removal was conducted (Woodward-Clyde 1994). One drum was removed from the site. The abandoned vehicles at Boneyard C were reinspected for the presence of automotive fluids and found not to contain any.

**Summary of Cleanup Actions:**
Debris removal and site assessment activities were conducted between November 1996 and August of 1997 (Polarconsult Alaska, Inc. 1997a and 1997b). Two dump trucks and two ASTs were removed for off-island disposal. A visual inspection of the tundra was conducted in an effort to identify discoloration or stains that could have indicated a fuel release. Because no such indications were found, collection of soil samples was not deemed necessary. Two of the four dump trucks previously noted by Ecology & Environment (1993) and Harding Lawson Associates (1993) were not specifically accounted for in the debris removal report. The fate of these two vehicles is unknown, however, they are no longer located at the Boneyard C site.

**Recommended Action:**
In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action at Boneyard C, TPA Site 16/NOAA Site 16 in accordance with the Agreement and that ADEC requires no further remedial action plan from NOAA.

**References:**

Ecology & Environment, Inc. 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska*. February.

Harding Lawson Associates. 1993. *Final Report, Phase 1 Environmental Assessment, Pribilof Islands Alaska*. Prepared for U.S. Army Corps of Engineers, Alaska District. March.

NOAA. 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*. Attorney General's Office File No. 66 1-95-0126, National Oceanic and Atmospheric Administration. January 26.

Polarconsult Alaska, Inc. 1997a. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project, Volume 1*. November.

Polarconsult Alaska, Inc. 1997b. *Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project, Volume 3*. December.

Woodward-Clyde. 1994. *Final Report, Phase 1B Environmental Assessment, St. George Island, Alaska*. Prepared for U.S. Army Corps of Engineers, Seattle District. March.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

9/9/04
Date

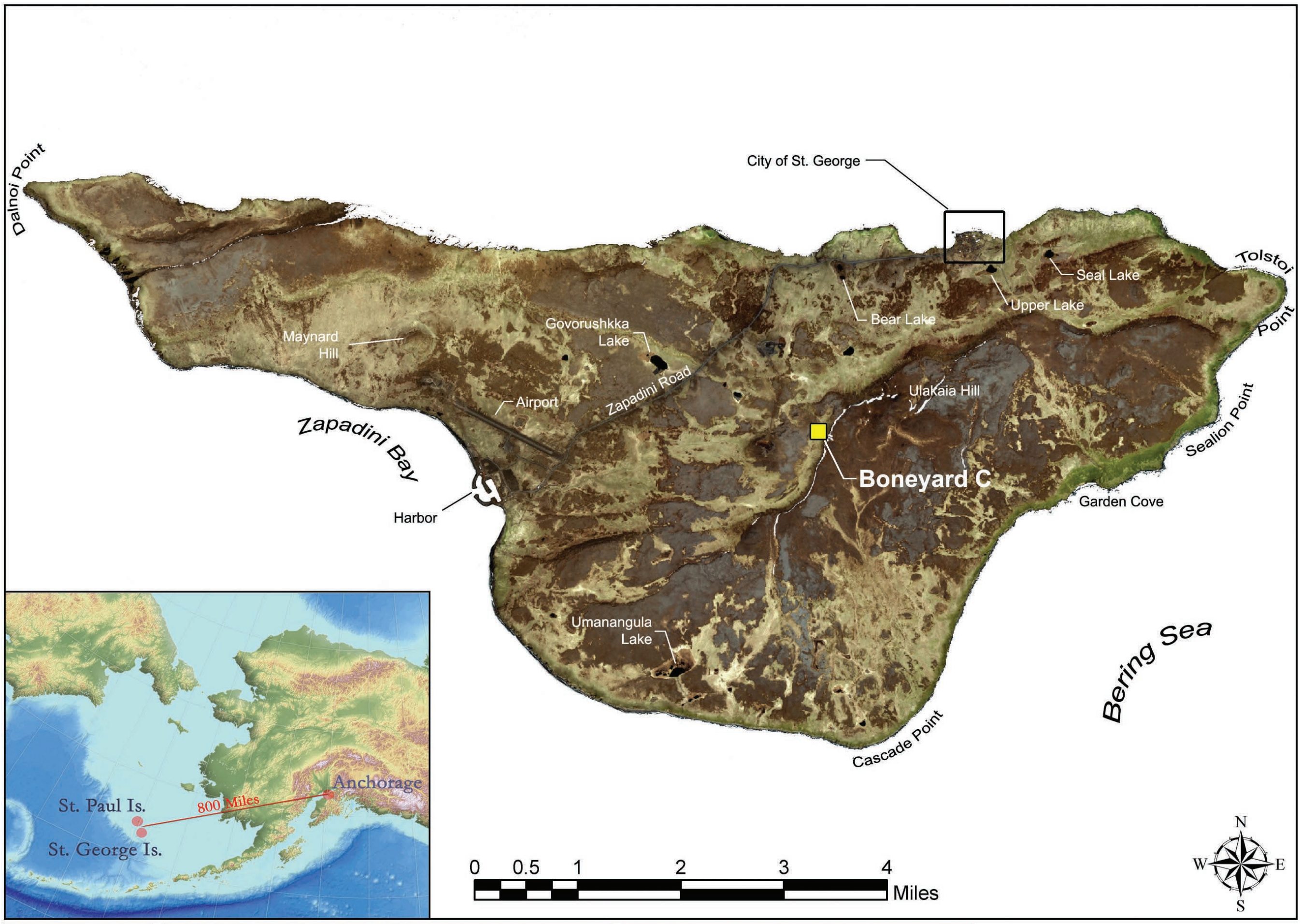
**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at Boneyard C, TPA Site 16/NOAA Site 16, in accordance with the Agreement and that no plan for further remedial action is required.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

9/14/04
Date

## Figures




| Figure 1 | St. George Island Vicinity Map<br>Boneyard C<br>TPA Site 16/Site 16<br>St.George Island, Alaska | Source: Ikonos 2001 Satellite Image |
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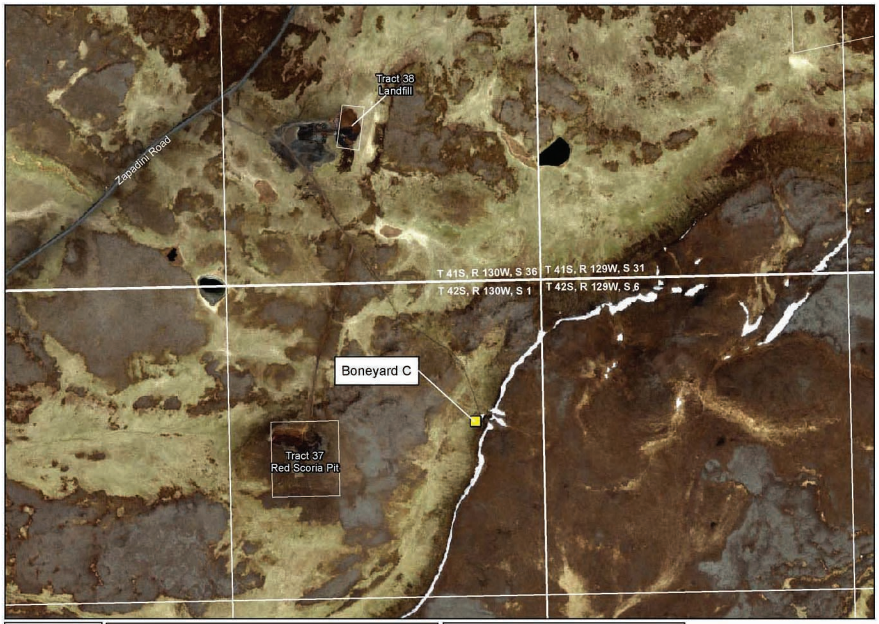
NOAA Pribilof Islands Restoration Project




| Figure 2 | Legal Property Description Map<br>Boneyard C<br>TPA Site 16/Site 16<br>St. George Island, Alaska | Source: Ikonos 2001 Satellite Image; Bureau of Land Management Land Survey Filed Febuary 15, 1985 | Pribilof Islands Restoration Project |
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# NOAA Site 17
# TPA Site 17: Cross Hill Dump

Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume 1 ....................391

Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Cross Hill Drum Dump site. Dated July 15, 1997 ..........411

Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E. RE: Closure for Cross Hill Drum Dump site, St. George Island. Dated August 18, 1997.......413

# Expanded Site Inspection
# St. George Island
# Pribilof Islands, Alaska

## Volume I

January 1997

Prepared for
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CONTENTS

| | Page |
|---|---|
| **VOLUME I** | |
| **ACRONYMS** | x |
| **EXECUTIVE SUMMARY** | ES-1 |
| *Site-Specific Results* | ES-1 |
| **1.0 INTRODUCTION** | 1-1 |
| *1.1 Report Organization* | 1-2 |
| *1.2 Island Historical Information* | 1-3 |
| *1.3 Environmental Setting* | 1-3 |
| **2.0 FIELD ACTIVITIES** | 2-1 |
| *2.1 General Approach* | 2-1 |
| *2.2 Soil Sampling Techniques* | 2-2 |
| *2.3 Modifications from the Management Plan* | 2-4 |
| **3.0 CHEMICAL TESTING PROGRAM AND DATA QUALITY REVIEW** | 3-1 |
| *3.1 Scope of Chemical Testing Program* | 3-1 |
| *3.2 Summary of Data Quality Review Results* | 3-2 |
| *3.3 Comparison of Field Laboratory and Project Laboratory Analytical Results* | 3-3 |
| **4.0 POTENTIAL SOIL CLEANUP LEVELS** | 4-1 |
| *4.1 ADEC Soil Matrix Cleanup Levels* | 4-2 |
| *4.2 EPA Region 3 RBC Soil Cleanup Levels* | 4-4 |
| *4.3 PCB Soil Cleanup Levels* | 4-5 |
| *4.4 Soil Background Concentrations for Metals* | 4-5 |
| **5.0 SITE-SPECIFIC EVALUATIONS** | 5-1 |
| *5.1 Open Pits Site* | 5.1-1 |
| *5.2 Inactive/Abandoned Diesel Tank Farm Site* | 5.2-1 |
| *5.3 Inactive Gasoline Tank Farm Site* | 5.3-1 |
| *5.4 Old Power Plant Site* | 5.4-1 |
| *5.5 Former Kerosene/AST Storage Area Site* | 5.5-1 |
| *5.6 Cross Hill Drum Dump Site* | 5.6-1 |

**CONTENTS (Continued)**

| | Page |
|---|---|
| *5.7 Former Fuel Storage Area Site* | 5.7-1 |
| *5.8 Old Carpenter Shop Site* | 5.8-1 |
| *5.9 Old Coal House Site* | 5.9-1 |
| *5.10 Port Fuel Supply Line—West Oceanfront Subarea* | 5.10-1 |
| *5.11 Port Fuel Supply Line—East Oceanfront Subarea* | 5.11-1 |
| *5.12 Port Fuel Supply Line—North Cargo Line Subarea* | 5.12-1 |
| *5.13 Port Fuel Supply Line—South Cargo Line Subarea* | 5.13-1 |
| *5.14 Active Power Plant Site* | 5.14-1 |
| *5.15 Makushin Pit Site* | 5.15-1 |
| **6.0 REFERENCES** | 6-1 |

**TABLES**

| | | |
|---|---|---|
| ES-1 | St. George Summary of Results and Recommendations | ES-3 |
| 2-1 | Contingency Soil Sampling Screening Levels | 2-6 |
| 3-1 | Summary of Planned and Completed Chemical Analyses | 3-9 |
| 3-2 | Summary of Field Laboratory and Project Laboratory Split Sample Results BTEX Analyses | 3-10 |
| 3-3 | Summary of Field Laboratory and Project Laboratory Split Sample Results TPH Analyses | 3-11 |
| 3-4 | Summary of Field Laboratory and Project Laboratory Split Sample Results Pesticide/PCB Analysis | 3-14 |
| 3-5 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Benzene Analysis | 3-16 |
| 3-6 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Total BTEX Analysis | 3-17 |
| 3-7 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Gasoline-Range Hydrocarbon Analysis | 3-18 |
| 3-8 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Diesel-Range Hydrocarbon Analysis | 3-19 |
| 3-9 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Total Petroleum Hydrocarbon Analysis | 3-20 |
| 4-1 | ADEC Soil Cleanup Level Matrix Table | 4-6 |
| 4-2 | Input Parameters and Matrix Scores for Sites on St. George Island | 4-7 |
| 4-3 | Potential Non-Petroleum Soil Cleanup Levels | 4-8 |
| 4-4 | Summary of Background Soil Analytical Results - St. George Island | 4-11 |
| 5.1-1 | Statistical Summary of Soil Quality Data - St. George Island - Open Pits Site | 5.1-7 |

**CONTENTS (Continued)**

Page

**TABLES (Continued)**

| | | |
|---|---|---|
| 5.1-2 | Screening Level Exceedences - St. George Island - Open Pits Site | 5.1-11 |
| 5.2-1 | Statistical Summary of Soil Quality Data - St. George Island - Inactive/Abandoned Diesel Tank Farm Site | 5.2-7 |
| 5.2-2 | Screening Level Exceedences - St. George Island - Inactive/Abandoned Diesel Tank Farm Site | 5.2-8 |
| 5.3-1 | Statistical Summary of Soil Quality Data St. George Island - Inactive Gasoline Tank Farm Site | 5.3-6 |
| 5.3-2 | Screening Level Exceedences - St. George Island - Inactive Gasoline Tank Farm Site | 5.3-7 |
| 5.4-1 | Statistical Summary of Soil Quality Data St. George Island - Old Power Plant Site | 5.4-7 |
| 5.4-2 | Screening Level Exceedences - St. George Island - Old Power Plant Site | 5.4-9 |
| 5.5-1 | Statistical Summary of Soil Quality Data St. George Island - Former Kerosene/AST Storage Area Site | 5.5-3 |
| 5.6-1 | Statistical Summary of Soil Quality Data St. George Island - Cross Hill Drum Dump Site | 5.6-3 |
| 5.7-1 | Statistical Summary of Soil Quality Data St. George Island - Former Fuel Storage Area Site | 5.7-7 |
| 5.7-2 | Screening Level Exceedences - St. George Island - Former Fuel Storage Area Site | 5.7-8 |
| 5.8-1 | Statistical Summary of Soil Quality Data St. George Island - Old Carpenter Shop Site | 5.8-3 |
| 5.9-1 | Statistical Summary of Soil Quality Data St. George Island - Old Coal House Site | 5.9-6 |
| 5.9-2 | Screening Level Exceedences - St. George Island - Old Coal House Site | 5.9-9 |
| 5.10-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - West Oceanfront Subarea | 5.10-4 |
| 5.11-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - East Oceanfront Subarea | 5.11-9 |
| 5.11-2 | Screening Level Exceedences - St. George Island - Port Fuel Supply Line - East Oceanfront Subarea | 5.11-10 |
| 5.12-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - North Cargo Line Subarea (North) | 5.12-11 |

**CONTENTS (Continued)**

Page

**TABLES (Continued)**

| | | |
|---|---|---|
| 5.12-2 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - North Cargo Line Subarea (South) | 5.12-12 |
| 5.12-3 | Screening Level Exceedences - St. George Island - Port Fuel Supply Line - North Cargo Line Subarea | 5.12-13 |
| 5.13-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - South Cargo Line Subarea (North) | 5.13-9 |
| 5.13-2 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - South Cargo Line Subarea (South) | 5.13-10 |
| 5.13-3 | Screening Level Exceedences - St. George Island - Port Fuel Supply Line - South Cargo Line Subarea | 5.13-11 |
| 5.14-1 | Statistical Summary of Soil Quality Data St. George Island - Active Power Plant Site | 5.14-7 |

**FIGURES**

| | |
|---|---|
| 1-1 | Location Map |
| 1-2 | Site Map |
| 1-3 | Sites in City of St. George, Alaska |
| 4-1 | Background Sample Location Plan |
| 5.1-1 | Site and Exploration Plan Showing TPH Concentrations Open Pit Sites |
| 5.1-2 | Generalized Subsurface Cross Section A-A' Open Pit Sites |
| 5.2-1 | Site and Exploration Plan Showing TPH Concentrations Inactive/Abandoned Diesel Tank Farm Site and Port Fuel Supply Line - South Cargo Line Subarea |
| 5.2-2 | Generalized Subsurface Cross Section A-A' Inactive/Abandoned Diesel Tank Farm Site |
| 5.3-1 | Site and Exploration Plan Showing TPH Concentrations Inactive Gasoline Tank Farm Site and Port Fuel Supply Line - North Cargo Line Subarea |
| 5.3-2 | Generalized Subsurface Cross Section A-A' Inactive Gasoline Tank Farm Site |
| 5.4-1 | Site and Exploration Plan Showing TPH Concentrations Old Power Plant Site |

**CONTENTS (Continued)**

Page

**FIGURES (Continued)**

5.4-2 Generalized Subsurface Cross Section A-A'
Old Power Plant Site
5.5-1 Site and Exploration Plan Showing TPH Concentrations
Former Kerosene/AST Storage Area Site
5.6-1 Site and Exploration Plan Showing TPH Concentrations
Cross Hill Drum Dump Site
5.7-1 Site and Exploration Plan Showing TPH Concentrations
Former Fuel Storage Area Site
5.7-2 Generalized Subsurface Cross Section A-A'
Former Fuel Storage Area Site
5.8-1 Site and Exploration Plan Showing TPH Concentrations
Old Carpenter Shop Site
5.9-1 Site and Exploration Plan Showing Hydrocarbon Concentrations
Old Coal House Site
5.10-1 Site and Exploration Plan Showing TPH Concentrations
Port Fuel Supply Line - West Oceanfront Subarea
5.11-1 Site and Exploration Plan Showing TPH Concentrations -
Port Fuel Supply Line - East Oceanfront Subarea
5.11-2 Generalized Subsurface Cross Section A-A'
Port Fuel Supply Line - East Oceanfront Subarea
5.12-1 Site and Exploration Plan Showing TPH Concentrations
Inactive Gasoline Tank Farm Site and
Port Fuel Supply Line - North Cargo Line Subarea
5.12-2 Generalized Subsurface Cross Section A-A'
Port Fuel Supply Line - North Cargo Line Subarea - North
5.12-3 Generalized Subsurface Cross Section B-B'
Port Fuel Supply Line - North Cargo Line Subarea - South
5.13-1 Site and Exploration Plan Showing TPH Concentrations
Inactive/Abandoned Diesel Tank Farm Site and
Port Fuel Supply Line - South Cargo Line Subarea
5.13-2 Generalized Subsurface Cross Section A-A'
Inactive/Abandoned Diesel Tank Farm Site and
Port Fuel Supply Line - South Cargo Line Subarea - South
5.14-1 Site and Exploration Plan Showing TPH Concentrations
Active Power Plant Site
5.14-2 Generalized Subsurface Cross Section A-A'
Active Power Plant Site
5.15-1 Site and Exploration Plan Showing TPH Concentrations
Makushin Pit

**CONTENTS (Continued)**

Page

**APPENDIX A**
**FIELD EXPLORATION PROCEDURES AND LOGS** A-1

*Surface and Subsurface Soil Sampling* A-1
*Decontamination Procedures* A-5
*Disposal of Investigation-Derived Wastes* A-5
*Field Documentation* A-6
*Sample Quality Handling* A-7
*Health and Safety Plan Assessment* A-12
*Hart Crowser Project Team* A-13

**TABLES**

A-1 Summary of Surface Samples and Visual Descriptions A-15
A-2 Logbook Format A-19

**FIGURES**

A-1 Key to Exploration Logs
A-2 through A-7 Test Pit Log TP-1 through TP-13, Open Pits
A-8 through A-12 Test Pit Log TP-1 through TP-13, Inactive/Abandoned Diesel Tank Farm
A-13 Hand-Auger Boring Log HA-1, Inactive/Abandoned Diesel Tank Farm
A-14 and A-15 Test Pit Log TP-1 through TP-4, Inactive Gasoline Tank Farm
A-16 Hand-Auger Boring Log HA-1 through HA-4, Inactive Gasoline Tank Farm
A-17 through A-19 Test Pit Log OP-TP-1 through OP-TP-7, Old Power Plant and Hand-Auger Boring Log HA-1, Old Power Plant
A-20 and A-21 Test Pit Log TP-1 through TP-4, Former Kerosene/AST Storage Area
A-22 and A-23 Test Pit Log TP-1 through TP-7, Former Fuel Storage Area
A-24 and A-25 Hand-Auger Boring Log HA-1 through HA-5, Old Coal House
A-26 Test Pit Log EO-TP-1 and EO-TP-2, Port Fuel Supply Line - East Ocean Front
A-27 through A-30 Test Pit Log NC-TP-1 through NC-TP-7, Port Fuel Supply Line - North Cargo Line
A-31 Test Pit Log TP-1, Port Fuel Supply Line - South Cargo Line
A-32 Test Pit Log TP-9 and TP-10, Active Power Plant
A-33 Hand-Auger Boring Log HA-1, Makushin Pit

CONTENTS (Continued)

Page

**APPENDIX B**
**FIELD LABORATORY SOIL QUALITY DATA**
**REVIEW AND SUMMARY TABLES**

| | |
|---|---|
| ***Hydrocarbon Identification (TPH-HCID)*** | B-1 |
| ***Aromatic Volatiles (BTEX)*** | B-1 |
| ***Pesticide/PCBs (Pesticide Screen)*** | B-1 |

**SUMMARY TABLES**

| | | |
|---|---|---|
| B-1 | Summary of Field Laboratory Analytical Results<br>St. George Island - Open Pits | B-3 |
| B-2 | Summary of Field Laboratory Analytical Results<br>St. George Island - Inactive/Abandoned Diesel Tank Farm | B-16 |
| B-3 | Summary of Field Laboratory Analytical Results<br>St. George Island - Inactive Gasoline Tank Farm | B-28 |
| B-4 | Summary of Field Laboratory Analytical Results<br>St. George Island - Old Power Plant | B-35 |
| B-5 | Summary of Field Laboratory Analytical Results<br>St. George Island - Former Kerosene/AST Storage Area | B-44 |
| B-6 | Summary of Field Laboratory Analytical Results<br>St. George Island - Cross Hill Drum Dump | B-48 |
| B-7 | Summary of Field Laboratory Analytical Results<br>St. George Island - Former Fuel Storage Area | B-52 |
| B-8 | Summary of Field Laboratory Analytical Results<br>St. George Island - Old Carpenter Shop | B-62 |
| B-9 | Summary of Field Laboratory Analytical Results<br>St. George Island - Old Coal House | B-64 |
| B-10 | Summary of Field Laboratory Analytical Results<br>St. George Island - Port Fuel Supply Line | B-68 |
| B-11 | Summary of Field Laboratory Analytical Results<br>St. George Island - Active Power Plant | B-87 |
| B-12 | Summary of Field Laboratory Analytical Results<br>St. George Island - Makushin Pit | B-89 |

**CONTENTS (Continued)**

Page

**APPENDIX C**
**PROJECT LABORATORY SOIL QUALITY DATA REVIEW AND SUMMARY TABLES**

| | |
|---|---|
| ***Hydrocarbon Identification (AK-DRO, AK-GRO, and 418.1)*** | C-1 |
| ***Volatiles (EPA Method 8020)*** | C-2 |
| ***Pesticide/PCBs (EPA Method 8080)*** | C-2 |
| ***Semivolatile Organics (EPA Method 8270)*** | C-2 |
| ***Total Metals (EPA Method 6000 and 7000 series)*** | C-3 |

**SUMMARY TABLES**

| | | |
|---|---|---|
| C-1 | Summary of Project Laboratory Analytical Results<br>St. George Island - Open Pits | C-4 |
| C-2 | Summary of Project Laboratory Analytical Results<br>St. George Island - Inactive/Abandoned Diesel Tank Farm | C-9 |
| C-3 | Summary of Project Laboratory Analytical Results<br>St. George Island - Inactive Gasoline Tank Farm | C-12 |
| C-4 | Summary of Project Laboratory Analytical Results<br>St. George Island - Old Power Plant | C-15 |
| C-5 | Summary of Project Laboratory Analytical Results<br>St. George Island - Former Kerosene/AST Storage Area | C-18 |
| C-6 | Summary of Project Laboratory Analytical Results<br>St. George Island - Cross Hill Drum Dump | C-19 |
| C-7 | Summary of Project Laboratory Analytical Results<br>St. George Island - Former Fuel Storage Area | C-20 |
| C-8 | Summary of Project Laboratory Analytical Results<br>St. George Island - Old Carpenter Shop | C-22 |
| C-9 | Summary of Project Laboratory Analytical Results<br>St. George Island - Old Coal House | C-23 |
| C-10 | Summary of Project Laboratory Analytical Results<br>St. George Island - Port Fuel Supply Line | C-27 |
| C-11 | Summary of Project Laboratory Analytical Results<br>St. George Island - Active Power Plant | C-30 |
| C-12 | Summary of Project Laboratory Analytical Results<br>St. George Island - Makushin Pit | C-31 |
| C-13 | Summary of Project Laboratory Analytical Results<br>St. George Island - Background Soil Samples | C-32 |
| C-14 | Summary of Laboratory Analytical Results<br>St. George Island, QA/QC Samples | C-34 |

**CONTENTS (Continued)**

Page

**VOLUME II**

**APPENDIX D**
**FIELD LABORATORY ANALYTICAL REPORTS**
**HART CROWSER *FAST* LABORATORY**

**VOLUME III**

**APPENDIX E**
**PROJECT LABORATORY CERTIFICATES OF ANALYSIS**
**ANALYTICAL TECHNOLOGIES, INC.**

**ACRONYMS**

| | |
|---|---|
| ADEC | Alaska Department of Environmental Conservation |
| ANCSA | Alaska Native Claims Settlement Act |
| AOI | Area of Investigation |
| ARARs | applicable or relevant and appropriate requirements |
| AST | Above-ground Storage Tank |
| ASTM | American Society for Testing and Materials |
| ATI | Analytical Technologies, Inc. |
| BTEX | Benzene, toluene, ethylbenzene, and total xylenes |
| CCV | continuing calibration verification |
| CDAP | Chemical Data Acquisition Plan |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Register |
| CLP | Contract Laboratory Program |
| Corps | U.S. Army Corps of Engineers |
| cPAH | carcinogenic polycyclic aromatic hydrocarbons |
| DRO | diesel-range organics |
| EPA | U.S. Environmental Protection Agency |
| ESI | Expanded Site Inspection |
| FS | Feasibility Study |
| GC/ECD | gas chromatograph/electron capture detector |
| GC/FID | gas chromatograph/flame ionization detector |
| GRO | gasoline-range organics |
| HSP | Health and Safety Plan |
| IEUBK | Integrated Exposure Uptake Biokinetic Model |
| LCS | laboratory control sample |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NPL | National Priorities List |
| NWS | National Weather Service |
| OSWER | Office of Solid Waste and Emergency Response |
| PA | Preliminary Assessment |
| PCB | polychlorinated biphenyl |
| PE | performance evaluation |
| PID | photoionization detector |
| PPE | personal protective equipment |
| QA/QC | Quality Assurance/Quality Control |
| RBCs | Risk-based Concentrations |
| RRO | residual-range organics |
| SARA | Superfund Amendments and Reauthorization Act |
| TBC | To be considered |
| TSCA | Toxic Substances Control Act |
| USGS | U.S. Coast Guard |

| | |
|---|---|
| UST | Underground Storage Tank |
| WASC | Western Administrative Support Center |
| mg/kg | milligrams per kilogram |
| mg/L | milligrams per liter |
| μg/kg | micrograms per kilogram |
| μg/L | micrograms per liter |

### *5.6 Cross Hill Drum Dump Site*

The Cross Hill Drum Dump Site is located immediately adjacent to the northwest side of Zapadni Road, which is the road running between the City of St. George and the airport (Figure 1-2). It is located about 2.8 miles southwest of the City and 0.3 mile southwest of the turnoff to the current landfill and Boneyards B and C. The site is identified by a small gravel turnout on the northwest side of the road.

The gravel turnout marks the approximate center of the southeastern boundary of the suspected site which parallels Zapadni Road. The suspected Cross Hill Drum Dump Site measures about 200 feet parallel to Zapadni Road and extends about 150 feet to the northwest of the road (Merculief, 1995). The ground surface is relatively flat from Zapadni Road to a point about 30 feet from the road, where it slopes down to the northwest. About 8 feet of fall over 150 feet of horizontal distance was estimated.

#### *5.6.1 Background*

Formal documentation was not available describing suspected drum staging activities on Cross Hill. The site came to the attention of NOAA during a site visit in August 1994 with NOAA, the Corps, Woodward-Clyde, Hart Crowser, and representatives from the City of St. George. During this site visit, local residents indicated the Cross Hill Drum Dump Site was used by the Department of Defense (DOD) as a storage area for petroleum drums. Thousands of petroleum drums were reportedly stored in the area before they were removed, and the area was reseeded in the late 1970s or early 1980s. No drum burial activities are thought to have occurred and the gravel turnout was constructed after the drums were removed from the site (Merculief, 1995).

While at the Cross Hill Drum Dump Site in April 1995 and again in October/November 1995, Hart Crowser observed no evidence of reported drum staging activities (e.g., grading, indentations, etc.). The area was covered with apparent healthy, native vegetation (moss, lichens, and grasses) and there were no visual indications of contamination (e.g., stains or stressed vegetation).

#### *5.6.2 ESI Objectives*

The objective of the ESI at the Cross Hill Drum Dump Site was to assess the presence, nature, and extent of possible petroleum hydrocarbon contamination.

#### *5.6.3 Sampling Activities*

The 200-foot by 150-foot site was gridded into twelve 50- by 50-foot quadrants (Figure 5.6-1). A surface soil sample (0- to 0.5-foot depth) was collected from each quadrant and analyzed in field laboratory using Method 8015 modified. In addition, three samples were submitted to the project laboratory for analysis of DRO.

## EXECUTIVE SUMMARY

The United States Army Corps of Engineers (Corps), Seattle District, on behalf of the U.S. Department of Commerce, Western Administrative Support Center (WASC), directed Expanded Site Inspections (ESIs) on soils at several sites on St. George Island, Alaska (see Figure 1-1). These sites are generally associated with National Oceanic and Atmospheric Administration (NOAA) activities at the island. NOAA managed the island prior to 1979 when the Alaska Native Claims Settlement Act (ANCSA) provide for transfer of property and management of the island to native corporations.

The work was conducted according to the Final Management Plan (Hart Crowser, 1995). The Management Plan was reviewed and commented upon by the Corps, NOAA, Alaska Department of Environmental Conservation (ADEC), the City of St. George, and the Aleut Corporation.

Twelve individual sites (Figures 1-2 and 1-3) were included in this ESI:

- ESIs were performed at the following ten sites: Open Pits, Inactive/Abandoned Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Former Fuel Storage Area, Old Carpenter Shop, Old Coal House, and the Port Fuel Supply Line which includes four subareas.

- Samples were also obtained at the Active Power Plant to supplement data collected during a prior investigation.

- At the Makushin Pit, samples were collected to verify that soil quality does not indicate that releases have occurred.

Surface and subsurface soil samples were collected at the sites to assess potential contamination resulting from past practices. The samples were analyzed in a field laboratory established on the island. As appropriate, the analytical results were used to direct additional sampling to assess the potential extent of affected soils. Confirmation samples were submitted for analysis to the project laboratory in Anchorage, Alaska, along with samples for metals and semivolatile organics analysis.

### *Site-Specific Results*

For each site, Table ES-1 presents a summary of the analytical results, along with ADEC cleanup levels and, as appropriate, an estimate of the volume of soil exceeding the ADEC level. Recommendations for future action are also presented. In general, the results were as follows:

**No Further Action.** Based on the field laboratory analytical results and consideration of potential contaminant exposure risks, no further action is recommended for the following five sites and one Port Fuel Supply Line subarea: Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Old Carpenter Shop, Old Coal House, and Makushin Pit sites, and Port Fuel Supply Line—West Oceanfront Subarea.

Recommendations regarding "no further action" are based on the absence of significant risks to human health or the environment derived from exposure to chemical constituents present in site soils. However, it is possible that physical hazards or other site issues are present and may need to be addressed. The need for addressing physical hazards and impediments for future development was not part of the ESI scope of work.

**Exceedences of ADEC Matrix Cleanup Levels.** The field laboratory analytical sample results for five sites and three subareas of the Port Fuel Supply Line indicate exceedences of the ADEC non-UST soil matrix cleanup levels, including: Open Pits, Inactive/Abandon Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, and Former Fuel Storage Area sites; and the East Oceanfront, North Cargo Line, and South Cargo Line subareas of the Port Fuel Supply Line. The following recommendations are made for these sites/subareas:

- Excavation and removal of soils exceeding cleanup levels are recommended at Open Pits, Inactive Gasoline Tank Farm, and Old Power Plant sites, and the South Cargo Line subarea.

- Removal of accessible and/or hotspot soils exceeding cleanup levels and backfilling is recommended at the Inactive/Abandon Diesel Tank Farm and Former Fuel Storage Area sites, and the East Oceanfront and North Cargo Line subareas.

**Active Power Plant.** A previous study indicates an area of petroleum hydrocarbon-affected soils near the northwest corner of the Active Power Plant building. Additional investigation was completed during this ESI to supplement previous work at the Active Power Plant. The results of this recent ESI work indicate that the petroleum-affected area identified in the previous study does not extend farther to the south. In conjunction with the removal of two USTs located at the Power Plant, it is recommended that accessible contaminated soil near the northwest corner of the building also be removed.

Recommendations for future actions provided in this ESI report are the result of a qualitative assessment of available information and criteria and did not involve a feasibility study evaluation. The selection and design of remedial actions for the St. George sites addressed in this report will be evaluated in greater detail prior to implementation of the remedial action. The final remedy selections will involve negotiations with ADEC and members of the Restoration Advisory Board (RAB).

### *5.6.4 Site Geology*

The surface soils were generally composed of silts and sands with occasional gravels. Surface vegetation was removed prior to sampling, however roots were still encountered during sample collection. Complete sample descriptions are presented in Table A-1 in Appendix A.

### *5.6.5 Soil Quality*

Figure 5.6-1 presents the basic sample results for each sampling location. Table 5.6-1 provides a statistical summary of the field laboratory analytical results. Results were as follows:

- No petroleum hydrocarbons were detected in any of the samples
- Based on a review of the chromatograms, biogenic compounds were identified in the twelve samples.

### *5.6.6 Potential Human Health and Ecological Considerations*

No petroleum hydrocarbons were detected at the site. No potential risks to human health and the environment have been identified.

### *5.6.7 Conclusions and Recommendations*

Petroleum hydrocarbons were not encountered in the soils samples collected from the Cross Hill Drum Dump Site. No human health or ecological risks were identified. Based on these results, no further action is recommended for this site.

**Table ES-1. St. George Island Summary of Results and Recommendations** Sheet 1 of 2

| Site / Subarea | Summary of Field Laboratory Analytical Results | ADEC Cleanup Level in mg/kg | Estimated Soil Volume Exceed. Cleanup Level in CY | Recommendations |
|---|---|---|---|---|
| Open Pits | Gasoline to 80 mg/kg<br>Kerosene/diesel to 6,800 mg/kg<br>Oil to 2,100 mg/kg<br>Non-detect BTEX and PCB/Pest. | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 620 | Excavation and Removal |
| Inactive/Abandoned Diesel Tank Farm | Non-detect gasoline<br>Kerosene/diesel to 11,000 mg/kg<br>Oil to 92 mg/kg<br>Non-detect BTEX | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 1,580 | Excavation and Removal except in vicinity of TP-3 |
| Inactive Gasoline Tank Farm | Non-detect gasoline<br>Diesel to 2,300 mg/kg<br>Oil to 240 mg/kg<br>Total Xylenes to 0.68 mg/kg | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | 80 | Stockpile Overburden for Reuse as Backfill<br>Excavation and Removal |
| Old Power Plant | Non-detect gasoline and PCB/Pest.<br>Diesel to 3,700 mg/kg<br>Oil to 13,000 mg/kg | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000 | 410 | Excavation and Removal |
| Former Kerosene/ AST Storage Area | Non-detect gasoline<br>Diesel/kerosene to 180 mg/kg<br>Oil to 200 mg/kg<br>Non-detect BTEX | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | None | No further action |
| Cross Hill Drum Dump | Non-detect gasoline<br>Non-detect diesel<br>Non-detect oil | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000 | None | No further action |
| Former Fuel Storage Area | Non-detect gasoline<br>Diesel to 10,000 mg/kg<br>Oil to 1,400 mg/kg | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000 | 2,000 | Excavation and Removal of Accessible Soil |
| Old Carpenter Shop | Non-detect gasoline<br>Diesel/kerosene to 50 mg/kg<br>Oil to 87 mg/kg<br>Non-detect BTEX | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000<br>BTEX 100 | None | No further action |
| Old Coal House | (Slightly elevated cPAHs) | N/A | None | No further action |
| Port Fuel Supply Line<br>West Oceanfront | Non-detect gasoline<br>Non-detect diesel/kerosene<br>Oil to 240 mg/kg | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000 | None | No further action |
| East Oceanfront | Non-detect gasoline<br>Diesel to 1,300 mg/kg<br>Oil to 240 mg/kg<br>Non-detect BTEX | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 700 | Excavation and Removal around EO-SS-5<br>Maintenance of vegetation |

**Table ES-1. St. George Island Summary of Results and Recommendations** Sheet 2 of 2

| Site / Subarea | Summary of Field Laboratory Analytical Results | ADEC Cleanup Level in mg/kg | Estimated Soil Volume Exceed. Cleanup Level in CY | Recommendations |
|---|---|---|---|---|
| Port Fuel Supply Line<br>North Cargo Line (North) | Gasoline to 1,400 mg/kg<br>Diesel/kerosene to 19,600 mg/kg<br>Non-detect oil<br>TEX to 210 mg/kg; Non-detect B | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 300 | Excavation and Removal |
| North Cargo Line (South) | Gasoline to 1,800 mg/kg<br>Diesel/kerosene to 11,000 mg/kg<br>Non-detect oil<br>TEX to 28 mg/kg; Non-detect B | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | 230 | Limited Excavation and Removal |
| South Cargo Line (North) | Non-detect gasoline<br>Diesel/kerosene to 5,800 mg/kg<br>Oil to 64 mg/kg | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000 | 1 | No further action |
| South Cargo Line (South) | Non-detect gasoline<br>Diesel/kerosene to 5,600 mg/kg<br>Non-detect oil<br>Non-detect BTEX | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | 440 | Stockpile Overburden for Reuse as Backfill<br>Excavation and Removal |
| Active Power Plant | Non-detect gasoline<br>Non-detect diesel<br>Non-detect oil | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000 | 150* | Excavation and Removal of Accessible Soil |
| Makushin Pit | Non-detect gasoline<br>Non-detect diesel<br>Non-detect oil<br>Non-detect BTEX | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000<br>BTEX 100 | None | No further action |

* Volume based on existing Woodward-Clyde data.

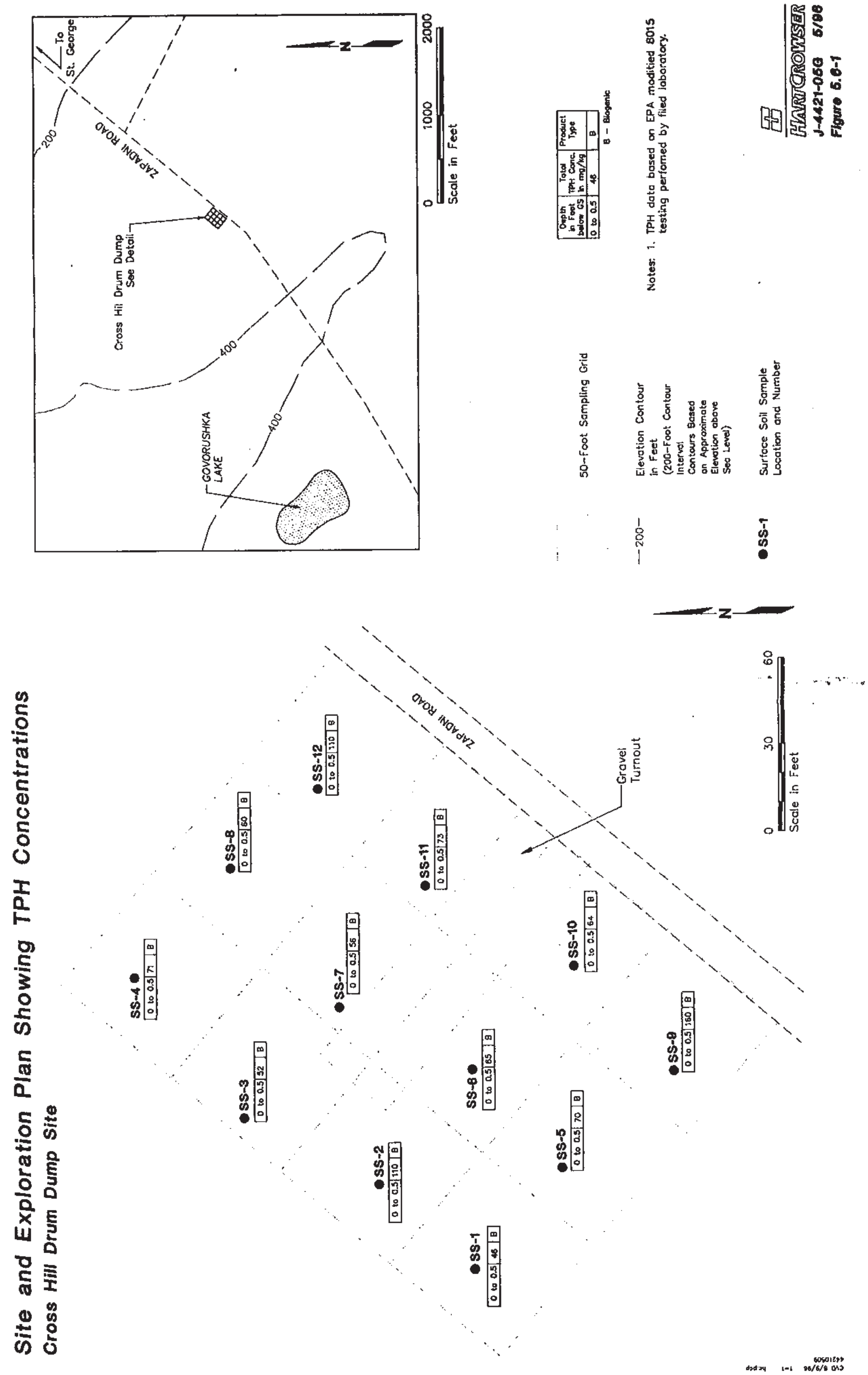
442105/STGEORGE/TBL-ES-1.xls

**Table 5.6-1 - Statistical Summary of Soil Quality Data**
**St. George Island- Cross Hill Drum Dump Site**

| Analyte | Detection Frequency | Concentration Range | Maximum Detection | Location of Maximum | Screening Level | Exceedence Frequency | Percent Exceedence |
|---|---|---|---|---|---|---|---|
| **Fuels in mg/kg** | | | | | | | |
| Diesel | 0/12 | 20 U to 20 U | N/A | | 2000 | 0/12 | 0 |
| Gasoline | 0/12 | 10 U to 10 U | N/A | | 1000 | 0/12 | 0 |
| Oil | 0/12 | 46 U to 160 U | N/A | | 2000 | 0/12 | 0 |

Notes: TPH, PCB, and BTEX data derived from Field Laboratory,
Metals and Semivolatile data derived from Project Laboratory
NA - Not Applicable
U - Not detected at detection limit indicated

442105/STGEORGE/T-5-6-1.XLS


Site and Exploration Plan Showing TPH Concentrations
Cross Hill Drum Dump Site
SS-1
0 to 0.5 | 46 | B
SS-2
0 to 0.5 | 110 | B
SS-3
0 to 0.5 | 52 | B
SS-4
0 to 0.5 | 71 | B
SS-5
0 to 0.5 | 70 | B
SS-6
0 to 0.5 | 85 | B
SS-7
0 to 0.5 | 56 | B
SS-8
0 to 0.5 | 60 | B
SS-9
0 to 0.5 | 160 | B
SS-10
0 to 0.5 | 64 | B
SS-11
0 to 0.5 | 73 | B
SS-12
0 to 0.5 | 110 | B
ZAPADNI ROAD
Gravel Turnout
0 30 60
Scale in Feet
N
GOVORUSHKA LAKE
400
200
Cross Hill Drum Dump See Detail
ZAPADNI ROAD
To St. George
0 1000 2000
Scale in Feet
50-Foot Sampling Grid
—200— Elevation Contour in Feet (200-Foot Contour Interval; Contours Based on Approximate Elevation above Sea Level)
SS-1 Surface Soil Sample Location and Number
Depth in Feet below GS | Total TPH Conc. in mg/kg | Product Type
0 to 0.5 | 46 | B
B - Biogenic
Notes: 1. TPH data based on EPA modified 8015 testing performed by filed laboratory.
HARTCROWSER
J-4421-05G 5/98
Figure 5.6-1

**National Oceanic and Atmospheric Administration,**
Host Agency serving:
Bureau of the census
Economic Development Administration
International Trade Administration
Minority Business *Development Agency*
Office of the Inspector General
Bureau of Export Administration

**U.S. DEPARTMENT OF COMMERCE**
**Western Administrative Support Center**
7600 Sand Point Way N.E.
SIN C15700
Seattle, Washington 98115-0070

July 15, 1997 1200-02

Mr. Ray Dronenburg
Contaminated Site Remediation Program
Site Remediation Section
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Subject: St. George Island, Cross Hill Drum Dump site

Dear Ray,

Paragraph 59 of the NOAA and ADEC Two-Party Agreement allows us to request written confirmation that all corrective action has been completed at a site. I am requesting written confirmation that no further action is required for the Cross Hill Drum Dump site on St. George Island. It is numbered as Site 17 in the Two-Party Agreement.

This site was investigated, and the results are documented in the St. George Expanded Site Investigation of January 1997. This report reviewed the findings and associated regulations, and recommended no further action be taken on the site.

I appreciate your assistance in this matter, and look forward to your response. If you have any questions, I can be reached at (206)526-6295.

Sincerely,

Mary Moloseau Goetz

Mary Moloseau Goetz. P.E.
Pribilof Project Manager

cc: NOAA General Counsel

121

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION & RESPONSE
CONTAMINATED SITES REMEDIATION PROGRAM
555 CORDOVA STREET, SECOND FLOOR
ANCHORAGE, AK 99501-2617

TELEPHONE: (907) 269-7659
FAX: (907) 269-7649
http://www.state.ak.us/dec/home.htm

August 18, 1997

Ms. Mary Moloseau Goetz, P.E.
U.S. Department of Commerce
Western Administrative Support Center
7600 Sand Point Way, NE
BIN C15700
Seattle, Washington 98 115-0070

Re: Closure for Cross Hill Drum Site, St. George Island

Dear Ms. Goetz:

The Department has reviewed your letter request of July 15, 1997 and has the following comments:

- The Department agrees that the site is free of hydrocarbon contamination based on the results of an Extended Site Investigation performed by Hart Crowser in June 1996.

In accordance with the two party agreement, specifically paragraph 59, and based on the findings of the Hart Crowser Investigation, a determination of "No Further Action" is hereby assigned to Site number 17 for the Island of St. George (attachment A- Source Areas). This letter constitutes approval to list site 17 as a "No Further Action Site" only and should not be construed or implied for any other site.

Sincerely,

for Ray Dronenburg
Project Manager

RD:el

cc: Attorney General's Office, Anchorage
Tanaq Corporation

265

# NOAA Site 18
# TPA Site 18: Former Fuel Storage Area

Request for Conditional Closure, Former Fuel Storage Area
TPA Site 18/Site 18, St. George Island, Alaska ....................................................417

Notice of Environmental Cleanup and Residual Soil Contamination at
Two Party Agreement Site 18, St. George Island, Alaska
(Lot 42, Tract 52) .............................................................................................439

## Request for Conditional Closure
## Former Fuel Storage Area
## TPA Site 18/Site 18
## St. George Island, Alaska

**Site:** Former Fuel Storage Area Site, also known as Two-Party Agreement (TPA) Site 18 and National Oceanic and Atmospheric (NOAA) Site 18. The site is referred to as the "site" herein.

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, the site is located within the City of St. George, approximately 50 feet southeast of the village store and 260 feet southeast of the Bering Sea (56° 36' 7.22" N latitude, 169° 32' 55.60" W longitude; Figures 1 and 2). The site is also directly south of the Old Power Plant, TPA Site 9, southwest of the St. George Russian Orthodox Church, and west of the Aikow Hotel.

**Legal Property Description:** The Former Fuel Storage Area is located in Tract 52, Township 41 South, Range 129 West, Section 29 of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2). The City of St. George owns the surface estate.

**Type of Release:** Petroleum products released from drums or pipes during past operations at the site and mercury from unknown sources and activities.

**History and Background:**

Beginning in the late 1930s, drums of diesel, gasoline, and lubricating oil were stored on the hillside west of the hotel on a concrete support berm (Polarconsult 2004). Fuel from the drums was piped via steel, aboveground piping to eleven 1,000-gallon aboveground storage tanks (ASTs) formerly located west of the Old Power Plant, TPA Site 9 (NOAA 2004). Fuel distribution to the ASTs operated on a gravity feed system. The ASTs and fuel distribution system were incrementally removed with final removal completed by 1967 (BLM 1967, NOAA 1961).

Anecdotal information indicates that the site was used as a rookery and fur seal killing ground prior to the development of the City of St. George (Polarconsult 2004). Prior to the development of the Old Power Plant, the site also served as a fenced pasture and the location of one of the guyed radio antennas from the St. George Island U.S. Navy Radio Station (*circa* 1914-1917; USNRS 1917).

Site investigations, as discussed below, have detected mercury contamination in site soils. No documentation has been found to identify a potential source of mercury at this site or on St. George Island with the possible exceptions of thermometers and other scientific or medical instrumentation.

**Summary of Site Investigations:**

In 1993, Ecology and Environment, Inc. (E&E) conducted a preliminary assessment on St. George Island. E&E made no observations of contamination at the Former Fuel Storage Area. Based on historical uses of the site, E&E recommended soil sampling to determine the nature and extent of contamination should it exist (E&E 1993).

In 1996, Hart Crowser conducted an expanded site investigation that included the Former Fuel Storage Area Site (Hart Crowser 1997). Hart Crower took surface soil samples and excavated test pits in the vicinity of the site to determine whether petroleum releases occurred and, if so, the nature and extent of contamination (Figure 3). [Note: Hart Crowser's investigation of the Former Fuel Storage Area Site included land that NOAA now considers part of the Old Power Plant Site. Only samples collected from the south side of the road, in the area NOAA currently defines as the Former Fuel Storage Area Site, are discussed herein (Figure 2).] Basalt bedrock encountered 2 to 5 ft below ground surface (bgs) limited the depth of test pits. Hart Crowser analyzed samples for gasoline range organics (GRO), diesel range organics (DRO), and residual range organics (RRO). Field and project laboratory data indicated DRO exceeded the ADEC 1991 cleanup level of 200 mg/kg in 12 of the 22 soil samples with a maximum concentration of 10,000 mg/kg. RRO did not exceed the ADEC 1991 cleanup level of 2,000 mg/kg, though it was detected in 9 of 29 samples with a maximum concentration of 1,400 m/kg. GRO was not detected in any of the soil samples. Hart Crowser recommended removal of an estimated 1,700 cubic yards ($yd^3$) of diesel-contaminated soil.

Tetra Tech EM, Inc. (Tetra Tech) collected 19 samples from 14 soil borings at the Former Fuel Storage Area Site during a 2001 site characterization effort (Tetra Tech 2002; Figure 4). [Note: Tetra Tech's site characterization included the collection of additional samples from land that NOAA now considers part of the Old Power Plant Site. Only samples collected from the south side of the road, in the area NOAA currently defines as the Former Fuel Storage Area Site, are discussed herein.] Samples were analyzed for DRO, RRO, GRO, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals, including lead, mercury, selenium, chromium, arsenic, and barium.

DRO exceeded the Method Two cleanup level of 250 mg/kg in 12 samples from 6 locations with a maximum concentration of 32,000 mg/kg (Figure 4). GRO and RRO did not exceed their Method Two cleanup criteria of 300 mg/kg and 10,000 mg/kg, respectively, at any of the 14 sampling locations. The maximum GRO value was 24 mg/kg. The maximum RRO value was 750 mg/kg. Mercury concentrations were at or above the Method Two cleanup criterion of 1.4 mg/kg at three locations. Arsenic, chromium, and selenium concentrations also exceeded Method Two cleanup levels; however, the concentrations were within background levels determined for St. George Island (Tetra Tech 2002). VOCs and SVOCs did not exceed Method Two cleanup criteria.

Tetra Tech estimated 600 $yd^3$ of soil exceeded the Method Two DRO cleanup level of 250 mg/kg. This estimate included approximately 50 $yd^3$ of soils that NOAA now considers part of the Old Power Plant Site. Tetra Tech also estimated there were 46 $yd^3$ of mercury-contaminated soil within the site.

In 2001, Tetra Tech installed three groundwater monitoring wells in the vicinity of the site. Wells TPA18-MW-1 and TPA18-MW-2 are down gradient of the site, and TPA11-MW-1 is up gradient of the site (Figure 2). Tetra Tech sampled these wells during September 2001 and October 2002 (Tetra Tech 2002, 2003). No ADEC Table C exceedances occurred in the three wells. GRO and VOCs were not detected above reporting limits in any of the wells. DRO was detected in TPA18-MW-1 in 2001 but not 2002. DRO was detected in TPA18-MW-2 in 2001 and 2002. Bis(2-Ethylhexyl)phthalate, detected in TPA11-MW-1 and TPA18-MW-2, was the only SVOC detected. Barium and selenium were detected in all three wells. Lead was detected in TPA11-MW-1 in 2001 but not 2002.

Tetra Tech (2002) prepared a preliminary groundwater flow net for the City of St. George. Groundwater contours indicated that groundwater flow by the Former Fuel Storage Area Site is northwesterly. Groundwater in the city is subjected to tidal influences.

Tetra Tech conducted quarterly groundwater monitoring on St. George Island from August 2003 to May 2004 (Tetra Tech 2004). The three wells in the vicinity of the Former Fuel Storage Area Site were sampled four times during this period. No ADEC Table C exceedances occurred in the three wells. GRO and VOCs were not detected above reporting limits in any of the wells. In TPA18-MW-1, DRO was detected in two quarters. In TPA18-MW-2, DRO was detected in one quarter. With the exception of bis(2-Ethylhexyl)phthalate, SVOCs were not detected. Barium, chromium, mercury, and selenium were detected in some or all of the wells.

**Summary of Applied Cleanup Levels:**
NOAA employed ADEC Method Two cleanup criteria, discussed at 18 AAC 75.341(c) (ADEC 2003) when evaluating site conditions relative to the need for remedial action. Cleanup criteria were applied to the maximum extent practicable (18 AAC 75.325(f), 18 AAC 75.990).

**Summary of Cleanup Actions:**
Cleanup actions at the site were carried out in accordance with the site's corrective action plan (NOAA 2003) and are documented in detail in the site's corrective action report (Polarconsult 2004).

Initial site activities commenced on August 12, 2003 and involved determining the sampling locations documented during previous investigations, performing utility locates, and recovering mercury-contaminated soil. Mercury-contaminated soil was excavated from three locations at the site (Figure 5). The removal process involved recovery of approximately 1 $yd^3$ from each location and placement directly into polyethylene-lined, flexible individual bulk containers (lined FIBCs) for off-island disposal. An additional margin of approximately 1 to 3 $yd^3$ of surrounding soil was excavated and stockpiled prior to the collection of confirmation samples from the excavations.

On September 4, 2003, excavation of petroleum-contaminated soil (PCS) was initiated following receipt of analytical data indicating the successful recovery of mercury-contaminated soil. Recovery of PCS continued vertically downward and horizontally outward until soil exceeding the cleanup levels was no longer evident (as determined by field screening or interim confirmation sampling) or until the excavator encountered refusal, roads, or utilities. Thin layer chromatography (TLC) was the primary field screening method. PCS was transported directly to NOAA's long-term PCS stockpile (Figure 1). At the conclusion of the excavation process on October 3, 2003, a total volume of 2,426 $yd^3$ of contaminated soil had been removed from the site (Figure 6). Final excavation depth at refusal varied between 5 and 11 feet bgs.

This project required temporary staging of the potentially mercury-contaminated soil prior to placement back into the excavation or packaging for off-island disposal. This process resulted in the creation of three stockpiles with a total volume of approximately 9 $yd^3$. All soil was placed onto impermeable plastic membrane. The stockpiles were sampled and analyzed for petroleum and mercury contaminants. Based on laboratory analyses, one stockpile exceeded the cleanup levels for mercury and DRO, and one exceeded the cleanup level for mercury. These soils were placed in lined FIBCs. The third stockpile was used to backfill the excavation. A total of 15 lined FIBCs containing mercury-contaminated soil were collected from the excavations and associated soil stockpiles.

One soil sample was analyzed for leachable mercury in accordance with the U.S. Environmental Protection Agency (EPA) Toxicity Characteristic Leaching Procedure (TCLP). This sample was selected because it had been identified as having the highest total mercury level at the site. The results were used to determine whether mercury-contaminated soil from the site is a characteristic hazardous waste. It was determined that the mercury-contaminated soil is not a characteristic hazardous waste.

Excavation activities near the northwest edge of the site required the removal of approximately 50 linear feet of abandoned, 6-inch nominal diameter, asbestos-concrete sewer line. The sewer pipe remnants were placed into two lined FIBCs.

During the excavation process, several areas of unusually discolored blue-tinted soil were discovered at the site. The areas were primarily located on the northwest and southeast corners of the site. The distinct blue coloration would appear after the soil was exposed to the air, indicating an oxidation reaction. On September 15, 2003, one location (SG-18-CH-021-030) at the southeast corner of the site was sampled. Results for metal analyses indicated the presence of arsenic, chromium, and selenium above ADEC Method Two cleanup levels and background levels (as determined during the 2001 site characterization [Tetra Tech 2002]). Despite these exceedances, ADEC determined that metals in the site's soil (with the exception of mercury) may be considered background concentrations and that no action is needed for the arsenic, chromium, and selenium (ADEC 2004).

Following the removal of contaminated soil to the extent practicable, Polarconsult collected 26 confirmation samples from the final extent of the excavation and analyzed them for benzene, toluene, ethylbenzene, and xylenes (BTEX), DRO, and polycyclic aromatic hydrocarbons (PAHs). Only two of the samples were collected from the floor of the excavation due to the absence of available soil and the inability to remove 18 inches of overlying material from the basalt flow. Confirmation sample results indicated that DRO remains above the ADEC Method Two cleanup level of 250 mg/kg along the east excavation wall, along the southern portion of the northwest excavation wall, and on the excavation bottom (Table 1, Figure 6). DRO remaining above its cleanup level ranges from 467 mg/kg to 21,000 mg/kg. Along the eastern wall, the presence of a road and associated stability concerns limited excavation. Along the northwestern wall, the presence of a power line inhibited further excavation. On the excavation bottom, refusal was encountered using available equipment. Confirmation sample results did not reveal Method Two exceedances for any other constituents.

After consultation with the City of St. George, the site was restored to grade, stabilized, and revegetated following excavation and confirmation sampling activities. Additionally, basalt boulders were placed along the north side of the site. At the request of island residents, a clean scoria footpath was emplaced across the site.

The FIBCs of mercury-contaminated soil and asbestos-concrete pipe were respectively shipped off St. George Island to Chemical Waste Management of the Northwest (Arlington, OR) and Waste Management Inc. (Arlington, OR) for disposal in August 2004 with final disposition occurring in November 2004 (CWMNW 2004a, CWMNW 2004b, WM 2005). The PCS removed from the site remains at NOAA's long-term PCS stockpile, awaiting final disposition.

**Recommended Action:**
In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action, to the maximum extent practicable, at the Former Fuel Storage Area Site, TPA Site 18/Site 18 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

**References:**
Alaska Department of Environmental Conservation (ADEC). 2003. Title 18 of the *Alaska Administrative Code* 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through January 30.

ADEC. 2004. Letter from Louis Howard to John Lindsay regarding the acceptance of the draft corrective action report for the Former Fuel Storage Area, Two-Party Agreement Site 18, St. George Island, and the determination that no further site investigation or sampling is required. July 12.

Bureau of Land Management (BLM). 1967. Aerial photograph, Village of St. George Island. U.S. Department of the Interior.

Chemical Waste Management of the Northwest, Inc. (CWMNW). 2004a. Certificate of Disposal 119286. Stabilization followed by landfill, mercury-contaminated soil. Landfill 14, November 12, 2004. Arlington, Oregon. November 30.

CWMNW. 2004b. Certificate of Disposal 119526. Macroencapsulation followed by landfill, mercury-contaminated soil. Landfill 14, November 10, 2004. Arlington, Oregon. December 8.

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites. Pribilof Islands, Alaska*. February.

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NOAA. 2003. *Final Corrective Action Plan for Petroleum and Mercury Contaminated Soil Removal at the Former Fuel Storage Area Site (Site 18), St. George Island, Alaska*. July 24.

NOAA. 2004. *Final Corrective Action Plan for Petroleum and Lead Contaminated Soil Removal at the Old Power Plant (Two-Party Agreement Site 9), St. George Island, Alaska*. June 4.

Polarconsult Alaska, Inc. (Polarconsult). 2004. *Final Corrective Action Report, Former Fuel Storage Area, TPA Site 18, Remedial Corrective Action Project, St. George Island, Alaska.* Volumes 1 & 2. July 26.

Tetra Tech EM Inc. (Tetra Tech). 2002. *Draft Site Characterization Report, Former Fuel Storage Area, Two-Party Agreement Site No. 18, Pribilof Islands Environmental Restoration, St. George Island, Alaska*. April 19.

Tetra Tech. 2003. *Draft Field Investigation Report. Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. May 6.

Tetra Tech. 2004. *Initial Draft, Field Investigation Report, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. August 11. In review, draft and final pending.

U.S. Naval Radio Station (USNRS). 1917. *Site Plan, U.S. Naval Radio Station, St. George Village, St. George Island, (Territory of) Alaska*. Drawing *circa* 1911-1917. Revised in 1918.

Waste Management Inc. dba Columbia Ridge Landfill (WM). 2005. Certificate of Disposal, manifest TUK04060. Landfill of 2,240 pounds asbestos-concrete material, November 10, 2004. Arlington, Oregon. April 8.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

4/18/05
Date

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Former Fuel Storage Area Site, TPA Site 18/Site 18 in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

4/18/05
Date

Table 1. Soil Analytical Results for the Former Fuel Storage Area, TPA Site 18 Corrective Action

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-001-030 | SG18-CS-002-030 | SG18-CS-004-060 | SG18-CS-005-060 | SG18-CS-006-025 | SG18-CS-007-030 | SG18-SS-008-015 | SG18-SS-009-015 | SG18-SS-010-015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8/12/02 | 8/12/02 | 8/12/02 | 8/12/02 | 8/12/02 | 8/12/02 | 8/13/03 | 8/13/03 | 8/13/03 |
| **BTEX** | | | | | | | | | | | | |
| AK101 | Benzene | 0.02 | mg/Kg | - | - | - | - | - | - | 0.0153 (J) | 0.00813 (UJ) | **0.0517** |
| AK101 | Ethylbenzene | 5.5 | mg/Kg | - | - | - | - | - | - | 0.0474 (J) | 0.0440 (J) | 0.155 (U) |
| AK101 | o-Xylene | 0 | mg/Kg | - | - | - | - | - | - | 0.0665 (J) | 0.0654 (J) | 0.155 (U) |
| AK101 | P & M -Xylene | 0 | mg/Kg | - | - | - | - | - | - | 0.0959 | 0.0731 (J) | 0.0516 (J) |
| AK101 | Toluene | 5.4 | mg/Kg | - | - | - | - | - | - | 0.0465 (J) | 0.0498 (J) | 0.0800 (J) |
| AK101 | Total Xylene | 78 | mg/Kg | - | - | - | - | - | - | 0.162 | 0.139 (J) | 0.207 (J) |
| GRO | | | | | | | | | | | | |
| AK101 | Gasoline-Range Organics | 300 | mg/Kg | - | - | - | - | - | - | - | - | - |
| **DRO** | | | | | | | | | | | | |
| AK102 | Diesel-Range Organics | 250 | mg/Kg | - | - | - | - | - | - | **2,580** | **1,630** | 87.3 |
| AK102 SILICA GEL - DRO Silica Gel | | 250 | mg/Kg | - | - | - | - | - | - | - | - | - |
| **RRO** | | | | | | | | | | | | |
| AK103 | Residual-Range Organics | 10,000 | mg/Kg | - | - | - | - | - | - | - | - | - |
| **PAH SIM** | | | | | | | | | | | | |
| EPA 8270 | Acenaphthene | 210,000 | ug/Kg | - | - | - | - | - | - | 108 | 69.6 | 14.2 (U) |
| EPA 8270 | Acenaphthylene | - | ug/Kg | - | - | - | - | - | - | 15.9 (U) | 9.20 (U) | 14.2 (U) |
| EPA 8270 | Anthracene | 4,300,000 | ug/Kg | - | - | - | - | - | - | 21.2 | 11.8 | 5.88 (J) |
| EPA 8270 | Benzo(a)Anthracene | 6,000 | ug/Kg | - | - | - | - | - | - | 20.0 | 19.1 | 21.7 |
| EPA 8270 | Benzo[a]pyrene | 1,000 | ug/Kg | - | - | - | - | - | - | 24.1 | 33.5 | 23.4 |
| EPA 8270 | Benzo[b]Fluoranthene | 11,000 | ug/Kg | - | - | - | - | - | - | 88.2 | 87.8 | 67.9 |
| EPA 8270 | Benzo[g,h,i]perylene | - | ug/Kg | - | - | - | - | - | - | 60.5 | 69.2 | 50.7 |
| EPA 8270 | Benzo[k]fluoranthene | 110,000 | ug/Kg | - | - | - | - | - | - | 15.9 (U) | 9.20 (U) | 22.0 |
| EPA 8270 | Chrysene | 620,000 | ug/Kg | - | - | - | - | - | - | 58.0 | 30.9 | 66.0 |
| EPA 8270 | Dibenzo[a,h]anthracene | 1,000 | ug/Kg | - | - | - | - | - | - | 8.52 (J) | 8.98 (J) | 10.6 (J) |
| EPA 8270 | Fluoranthene | 2,100,000 | ug/Kg | - | - | - | - | - | - | 55.6 | 41.4 | 32.9 |
| EPA 8270 | Fluorene | 270,000 | ug/Kg | - | - | - | - | - | - | 600 | 318 | 4.34 (J) |
| EPA 8270 | Indeno[1,2,3-c,d] pyrene | 11,000 | ug/Kg | - | - | - | - | - | - | 41.5 | 48.6 | 27.8 |
| EPA 8270 | Naphthalene | 43,000 | ug/Kg | - | - | - | - | - | - | 259 | 138 | 22.9 |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-001-030 | SG18-CS-002-030 | SG18-CS-004-060 | SG18-CS-005-060 | SG18-CS-006-025 | SG18-CS-007-030 | SG18-SS-008-015 | SG18-SS-009-015 | SG18-SS-010-015 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8/12/02 | 8/12/02 | 8/12/02 | 8/12/02 | 8/12/02 | 8/12/02 | 8/13/03 | 8/13/03 | 8/13/03 |
| EPA 8270 | Phenanthrene | - | ug/Kg | - | - | - | - | - | - | 987 | 473 | 29.7 |
| EPA 8270 | Pyrene | 1,500,000 | ug/Kg | - | - | - | - | - | - | 95.7 | 60.3 | 42.4 |
| **Metals** | | | | | | | | | | | | |
| SW6020 | Arsenic | 2 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Barium | 1,100 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Cadmium | 5 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Chromium | 26 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Lead | 400 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Selenium | 2 | mg/kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Silver | 21 | mg/Kg | - | - | - | - | - | - | - | - | - |
| **Mercury** | | | | | | | | | | | | |
| SW7470A TCLP - Mercury by Cold Vapor (TCLP) | | 0.2 | mg/L | - | - | - | - | - | - | - | - | - |
| SW7471A | Mercury by Cold Vapor | 1.4 | mg/Kg | 0.168 | 0.128 | 0.0665 | 0.679 | 0.966 | 0.193 | **2.10** | **2.95** | 0.692 |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-SS-011-015 | SG18-SS-011-020 | SG18-SS-012-015 | SG18-SS-013-015 | SG18-SS-013-020 | SG18-SS-014-015 | SG18-SS-015-015 | SG18-SS-015-020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8/13/03 | 8/13/03 | 8/13/03 | 8/13/03 | 8/13/03 | 8/14/03 | 8/14/03 | 8/14/03 |
| **BTEX** | | | | | | | | | | | |
| AK101 | Benzene | 0.02 | mg/Kg | 0.0107 (UJ) | 0.0115 (UJ) | 0.00925 (UJ) | 0.0126 (J) | 0.0106 (UJ) | - | - | - |
| AK101 | Ethylbenzene | 5.5 | mg/Kg | 0.133 (U) | 0.144 (U) | 0.116 (U) | 0.150 (U) | 0.132 (U) | - | - | - |
| AK101 | o-Xylene | 0 | mg/Kg | 0.133 (U) | 0.144 (U) | 0.116 (U) | 0.150 (U) | 0.132 (U) | - | - | - |
| AK101 | P & M -Xylene | 0 | mg/Kg | 0.133 (U) | 0.0443 (J) | 0.116 (U) | 0.150 (U) | 0.132 (U) | - | - | - |
| AK101 | Toluene | 5.4 | mg/Kg | 0.0800 (J) | 0.0756 (J) | 0.0467 (J) | 0.270 | 0.0747 (J) | - | - | - |
| AK101 | Total Xylene | 78 | mg/Kg | 0.266 (U) | 0.188 (J) | 0.232 (U) | 0.300 (U) | 0.264 (U) | - | - | - |
| **GRO** | | | | | | | | | | | |
| AK101 | Gasoline-Range Organics | 300 | mg/Kg | - | - | - | - | - | - | - | - |
| **DRO** | | | | | | | | | | | |
| AK102 | Diesel-Range Organics | 250 | mg/Kg | 65.9 | 61.0 | 204 | 107 | 63.5 | - | - | - |
| AK102 SILICA GEL - DRO Silica Gel | | 250 | mg/Kg | - | - | 63.8 | - | - | - | - | - |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-SS-011-015 | SG18-SS-011-020 | SG18-SS-012-015 | SG18-SS-013-015 | SG18-SS-013-020 | SG18-SS-014-015 | SG18-SS-015-015 | SG18-SS-015-020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **8/13/03** | **8/13/03** | **8/13/03** | **8/13/03** | **8/13/03** | **8/14/03** | **8/14/03** | **8/14/03** |
| **RRO** | | | | | | | | | | | |
| AK103 | Residual-Range Organics | 10,000 | mg/Kg | - | - | - | - | - | - | - | - |
| PAH SIM | | | | | | | | | | | |
| EPA 8270 | Acenaphthene | 210,000 | ug/Kg | 11.1 (U) | 13.3 (U) | 126 (U) | 127 (U) | 118 (U) | - | - | - |
| EPA 8270 | Acenaphthylene | - | ug/Kg | 11.1 (U) | 4.13 (J) | 126 (U) | 127 (U) | 118 (U) | - | - | - |
| EPA 8270 | Anthracene | 4,300,000 | ug/Kg | 3.72 (J) | 5.18 (J) | 44.5 (J) | 127 (U) | 118 (U) | - | - | - |
| EPA 8270 | Benzo(a)Anthracene | 6,000 | ug/Kg | 15.1 | 16.6 | 88.9 (J) | 75.6 (J) | 78.5 (J) | - | - | - |
| EPA 8270 | Benzo[a]pyrene | 1,000 | ug/Kg | 14.2 | 17.0 | 72.1 (J) | 57.0 (J) | 73.7 (J) | - | - | - |
| EPA 8270 | Benzo[b]Fluoranthene | 11,000 | ug/Kg | 44.0 | 48.9 | 210 | 186 | 239 | - | - | - |
| EPA 8270 | Benzo[g,h,i]perylene | - | ug/Kg | 22.8 | 27.1 | 95.3 (J) | 66.3 (J) | 101 (J) | - | - | - |
| EPA 8270 | Benzo[k]fluoranthene | 110,000 | ug/Kg | 9.95 (J) | 14.2 | 126 (U) | 127 (U) | 118 (U) | - | - | - |
| EPA 8270 | Chrysene | 620,000 | ug/Kg | 32.0 | 31.5 | 128 | 97.1 (J) | 115 (J) | - | - | - |
| EPA 8270 | Dibenzo[a,h]anthracene | 1,000 | ug/Kg | 5.14 (J) | 6.33 (J) | 126 (U) | 127 (U) | 118 (U) | - | - | - |
| EPA 8270 | Fluoranthene | 2,100,000 | ug/Kg | 24.6 | 29.8 | 157 | 119 (J) | 131 | - | - | - |
| EPA 8270 | Fluorene | 270,000 | ug/Kg | 11.1 (U) | 13.3 (U) | 59.5 (J) | 127 (U) | 118 (U) | - | - | - |
| EPA 8270 | Indeno[1,2,3-c,d] pyrene | 11,000 | ug/Kg | 16.1 | 19.3 | 68.9 (J) | 56.6 (J) | 82.3 (J) | - | - | - |
| EPA 8270 | Naphthalene | 43,000 | ug/Kg | 11.7 | 25.0 | 69.1 (J) | 127 (U) | 52.1 (J) | - | - | - |
| EPA 8270 | Phenanthrene | - | ug/Kg | 19.4 | 26.3 | 188 | 69.1 (J) | 96.3 (J) | - | - | - |
| EPA 8270 | Pyrene | 1,500,000 | ug/Kg | 29.4 | 30.1 | 199 | 128 | 146 | - | - | - |
| **Metals** | | | | | | | | | | | |
| SW6020 | Arsenic | 2 | mg/Kg | - | - | - | - | - | - | - | - |
| SW6020 | Barium | 1,100 | mg/Kg | - | - | - | - | - | - | - | - |
| SW6020 | Cadmium | 5 | mg/Kg | - | - | - | - | - | - | - | - |
| SW6020 | Chromium | 26 | mg/Kg | - | - | - | - | - | - | - | - |
| SW6020 | Lead | 400 | mg/Kg | - | - | - | - | - | - | - | - |
| SW6020 | Selenium | 2 | mg/kg | - | - | - | - | - | - | - | - |
| SW6020 | Silver | 21 | mg/Kg | - | - | - | - | - | - | - | - |
| **Mercury** | | | | | | | | | | | |
| SW7470A TCLP - Mercury by Cold Vapor (TCLP) | | 0.2 | mg/L | - | - | - | - | - | - | 0.00114 (J) | - |
| SW7471A | Mercury by Cold Vapor | 1.4 | mg/Kg | 0.822 | 0.876 | **1.92** | 1.08 | 1.13 | **1.83** | **8.95** | **2.44** |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-SS-016-015 | SG18-SS-017-015 | SG18-SS-018-015 | SG18-CH-019-015 | SG18-CH-020-015 | SG18-CH-021-030 | SG18-CS-022-030 | SG18-CS-023-030 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8/14/03 | 8/14/03 | 8/14/03 | 9/4/03 | 9/4/03 | 9/15/03 | 9/19/03 | 9/19/03 |
| **BTEX** | | | | | | | | | | | |
| AK101 | Benzene | 0.02 | mg/Kg | - | - | - | 0.0117 (U) | 0.0129 (U) | - | 0.0142 (U) | 0.0144 (U) |
| AK101 | Ethylbenzene | 5.5 | mg/Kg | - | - | - | 0.0162 (J) | 0.0515 (U) | - | 0.0569 (U) | 0.126 |
| AK101 | o-Xylene | 0 | mg/Kg | - | - | - | 0.0361 (J) | 0.0540 | - | 0.0569 (U) | 0.0901 |
| AK101 | P & M -Xylene | 0 | mg/Kg | - | - | - | 0.0321 (J) | 0.0165 (J) | - | 0.0275 (J) | 0.0793 |
| AK101 | Toluene | 5.4 | mg/Kg | - | - | - | 0.0168 (J) | 0.0515 (U) | - | 0.0243 (J) | 0.0424 (J) |
| AK101 | Total Xylene | 78 | mg/Kg | - | - | - | 0.0682 (J) | 0.0705 | - | 0.0844 (J) | 0.169 |
| GRO | | | | | | | | | | | |
| AK101 | Gasoline-Range Organics | 300 | mg/Kg | - | - | - | 2.34 (U) | 2.58 (U) | - | - | - |
| **DRO** | | | | | | | | | | | |
| AK102 | Diesel-Range Organics | 250 | mg/Kg | - | - | - | 3.44 (J) | 3.98 (J) | - | **556** | **2,090** |
| AK102 SILICA GEL - DRO Silica Gel | | 250 | mg/Kg | - | - | - | - | - | - | - | - |
| **RRO** | | | | | | | | | | | |
| AK103 | Residual-Range Organics | 10,000 | mg/Kg | - | - | - | 7.43 (J) | 14.0 (J) | - | - | - |
| **PAH SIM** | | | | | | | | | | | |
| EPA 8270 | Acenaphthene | 210,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 240 |
| EPA 8270 | Acenaphthylene | - | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |
| EPA 8270 | Anthracene | 4,300,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 73.3 (U) |
| EPA 8270 | Benzo(a)Anthracene | 6,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 6.00 (J) |
| EPA 8270 | Benzo[a]pyrene | 1,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |
| EPA 8270 | Benzo[b]Fluoranthene | 11,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |
| EPA 8270 | Benzo[g,h,i]perylene | - | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 3.70 (J) |
| EPA 8270 | Benzo[k]fluoranthene | 110,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |
| EPA 8270 | Chrysene | 620,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 19.3 |
| EPA 8270 | Dibenzo[a,h]anthracene | 1,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 2.58 (J) |
| EPA 8270 | Fluoranthene | 2,100,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |
| EPA 8270 | Fluorene | 270,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 1,080 |
| EPA 8270 | Indeno[1,2,3-c,d] pyrene | 11,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |
| EPA 8270 | Naphthalene | 43,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 465 |
| EPA 8270 | Phenanthrene | - | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |
| EPA 8270 | Pyrene | 1,500,000 | ug/Kg | - | - | - | 5.47 (U) | 5.57 (U) | - | 5.81 (U) | 7.33 (U) |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-SS-016-015 | SG18-SS-017-015 | SG18-SS-018-015 | SG18-CH-019-015 | SG18-CH-020-015 | SG18-CH-021-030 | SG18-CS-022-030 | SG18-CS-023-030 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **8/14/03** | **8/14/03** | **8/14/03** | **9/4/03** | **9/4/03** | **9/15/03** | **9/19/03** | **9/19/03** |
| **Metals** | | | | | | | | | | | |
| SW6020 | Arsenic | 2 | mg/Kg | - | - | - | - | - | **18.1** | - | - |
| SW6020 | Barium | 1,100 | mg/Kg | - | - | - | - | - | 52.4 | - | - |
| SW6020 | Cadmium | 5 | mg/Kg | - | - | - | - | - | 0.520 (U) | - | - |
| SW6020 | Chromium | 26 | mg/Kg | - | - | - | 15.8 | **26.5** | **187** | - | - |
| SW6020 | Lead | 400 | mg/Kg | - | - | - | 0.414 | 0.799 | 10.4 | - | - |
| SW6020 | Selenium | 2 | mg/kg | - | - | - | 0.529 (U) | 0.519 (U) | **4.14** | - | - |
| SW6020 | Silver | 21 | mg/Kg | - | - | - | - | - | 0.248 (J) | - | - |
| **Mercury** | | | | | | | | | | | |
| SW7470A TCLP - Mercury by Cold Vapor (TCLP) | | 0.2 | mg/L | - | - | - | - | - | - | - | - |
| SW7471A | Mercury by Cold Vapor | 1.4 | mg/Kg | 0.542 | 1.06 | **3.88** | 0.0412 (U) | 0.0427 (U) | 0.260 | - | - |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-024-030 | SG18-CS-025-030 | SG18-CS-027-020 | SG18-CS-028-020 | SG18-CS-029-030 | SG18-CS-030-025 | SG18-CS-030-030 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **9/19/03** | **9/19/03** | **9/19/03** | **9/19/03** | **9/22/03** | **9/22/03** | **9/22/03** |
| **BTEX** | | | | | | | | | | |
| AK101 | Benzene | 0.02 | mg/Kg | 0.0128 (U) | 0.0129 (U) | 0.0106 (U) | 0.0113 (U) | 0.0140 (U) | 0.0157 (U) | 0.0146 (U) |
| AK101 | Ethylbenzene | 5.5 | mg/Kg | 0.0511 (U) | 0.0517 (U) | 0.0423 (U) | 0.0451 (U) | 0.0561 (U) | 0.0626 (U) | 0.0584 (U) |
| AK101 | o-Xylene | 0 | mg/Kg | 0.0511 (U) | 0.0517 (U) | 0.0423 (U) | 0.0451 (U) | 0.0561 (U) | 0.0626 (U) | 0.0584 (U) |
| AK101 | P & M -Xylene | 0 | mg/Kg | 0.0305 (J) | 0.0517 (U) | 0.0423 (U) | 0.0451 (U) | 0.0561 (U) | 0.149 | 0.102 |
| AK101 | Toluene | 5.4 | mg/Kg | 0.0265 (J) | 0.0216 (J) | 0.0423 (U) | 0.0451 (U) | 0.0561 (U) | 0.0626 (U) | 0.0584 (U) |
| AK101 | Total Xylene | 78 | mg/Kg | 0.0816 (J) | 0.103 (U) | 0.0846 (U) | 0.0902 (U) | 0.112 (U) | 0.212 | 0.160 |
| GRO | | | | | | | | | | |
| AK101 | Gasoline-Range Organics | 300 | mg/Kg | - | - | - | - | - | - | - |
| **DRO** | | | | | | | | | | |
| AK102 | Diesel-Range Organics | 250 | mg/Kg | 11.0 (J) | 9.14 (J) | 16.4 (J) | 11.3 (J) | **3,300** | **17,500** | **14,200** |
| AK102 SILICA GEL - DRO Silica Gel | | 250 | mg/Kg | - | - | - | - | - | - | - |
| **RRO** | | | | | | | | | | |
| AK103 | Residual-Range Organics | 10,000 | mg/Kg | - | - | - | - | - | - | - |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-024-030 | SG18-CS-025-030 | SG18-CS-027-020 | SG18-CS-028-020 | SG18-CS-029-030 | SG18-CS-030-025 | SG18-CS-030-030 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 9/19/03 | 9/19/03 | 9/19/03 | 9/19/03 | 9/22/03 | 9/22/03 | 9/22/03 |
| **PAH SIM** | | | | | | | | | | |
| EPA 8270 | Acenaphthene | 210,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 756 | 809 |
| EPA 8270 | Acenaphthylene | - | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Anthracene | 4,300,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 163 | 109 |
| EPA 8270 | Benzo(a)Anthracene | 6,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Benzo[a]pyrene | 1,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Benzo[b]Fluoranthene | 11,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Benzo[g,h,i]perylene | - | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Benzo[k]fluoranthene | 110,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Chrysene | 620,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 109 | 114 |
| EPA 8270 | Dibenzo[a,h]anthracene | 1,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Fluoranthene | 2,100,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 309 | 312 |
| EPA 8270 | Fluorene | 270,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 4,220 | 4,300 |
| EPA 8270 | Indeno[1,2,3-c,d] pyrene | 11,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 88.7 (U) | 80.9 (U) |
| EPA 8270 | Naphthalene | 43,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 2,530 | 2,560 |
| EPA 8270 | Phenanthrene | - | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 72.6 (U) | 2,670 | 2,860 |
| EPA 8270 | Pyrene | 1,500,000 | ug/Kg | 6.44 (U) | 6.30 (U) | 8.31 (U) | 7.16 (U) | 98.7 | 385 | 367 |
| **Metals** | | | | | | | | | | |
| SW6020 | Arsenic | 2 | mg/Kg | - | - | - | - | - | - | - |
| SW6020 | Barium | 1,100 | mg/Kg | - | - | - | - | - | - | - |
| SW6020 | Cadmium | 5 | mg/Kg | - | - | - | - | - | - | - |
| SW6020 | Chromium | 26 | mg/Kg | - | - | - | - | - | - | - |
| SW6020 | Lead | 400 | mg/Kg | - | - | - | - | - | - | - |
| SW6020 | Selenium | 2 | mg/kg | - | - | - | - | - | - | - |
| SW6020 | Silver | 21 | mg/Kg | - | - | - | - | - | - | - |
| **Mercury** | | | | | | | | | | |
| SW7470A TCLP - Mercury by Cold Vapor (TCLP) | | 0.2 | mg/L | - | - | - | - | - | - | - |
| SW7471A | Mercury by Cold Vapor | 1.4 | mg/Kg | - | - | - | - | - | - | - |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-034-050 | SG18-CS-035-025 | SG18-CS-035-110 | SG18-CS-036-100 | SG18-CS-037-060 | SG18-CS-038-030 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **9/22/03** | **9/22/03** | **9/22/03** | **9/22/03** | **9/26/03** | **9/29/03** |
| **BTEX** | | | | | | | | | |
| AK101 | Benzene | 0.02 | mg/Kg | 0.00886 (U) | 0.00613 (U) | 0.00531 (U) | 0.00620 (U) | 0.0105 (U) | 0.0169 (U) |
| AK101 | Ethylbenzene | 5.5 | mg/Kg | 0.0354 (U) | 0.0245 (U) | 0.0257 | 0.0248 (U) | 0.0420 (U) | 0.0412 (J) |
| AK101 | o-Xylene | 0 | mg/Kg | 0.0413 | 0.0245 (U) | 0.0212 (U) | 0.0248 (U) | 0.0137 (J) | 0.600 |
| AK101 | P & M -Xylene | 0 | mg/Kg | 0.130 | 0.0245 (U) | 0.0212 (U) | 0.0248 (U) | 0.0420 (U) | 0.232 |
| AK101 | Toluene | 5.4 | mg/Kg | 0.117 | 0.0446 | 0.0457 | 0.0564 | 0.0146 (J) | 0.0667 (J) |
| AK101 | Total Xylene | 78 | mg/Kg | 0.171 | 0.0490 (U) | 0.0424 (U) | 0.0496 (U) | 0.0557 (J) | 0.832 |
| GRO | | | | | | | | | |
| AK101 | Gasoline-Range Organics | 300 | mg/Kg | - | - | - | - | - | - |
| **DRO** | | | | | | | | | |
| AK102 | Diesel-Range Organics | 250 | mg/Kg | **635** | **489** | **467** | **753** | **1,550** | **21,000** |
| AK102 SILICA GEL - DRO Silica Gel | | 250 | mg/Kg | - | - | - | - | **1,140** | - |
| **RRO** | | | | | | | | | |
| AK103 | Residual-Range Organics | 10,000 | mg/Kg | - | - | - | - | - | - |
| **PAH SIM** | | | | | | | | | |
| EPA 8270 | Acenaphthene | 210,000 | ug/Kg | 5.47 (U) | 8.65 | 8.28 | 5.68 (U) | 64.1 (U) | 104 (U) |
| EPA 8270 | Acenaphthylene | - | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 64.1 (U) | 104 (U) |
| EPA 8270 | Anthracene | 4,300,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 64.1 (U) | 104 (U) |
| EPA 8270 | Benzo(a)Anthracene | 6,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 35.9 (J) | 104 (U) |
| EPA 8270 | Benzo[a]pyrene | 1,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 36.2 (J) | 104 (U) |
| EPA 8270 | Benzo[b]Fluoranthene | 11,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 34.3 (J) | 104 (U) |
| EPA 8270 | Benzo[g,h,i]perylene | - | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 35.8 (J) | 104 (U) |
| EPA 8270 | Benzo[k]fluoranthene | 110,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 42.2 (J) | 104 (U) |
| EPA 8270 | Chrysene | 620,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 8.13 | 44.9 (J) | 50.8 (J) |
| EPA 8270 | Dibenzo[a,h]anthracene | 1,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 40.3 (J) | 104 (U) |
| EPA 8270 | Fluoranthene | 2,100,000 | ug/Kg | 5.47 (U) | 6.33 | 6.43 | 12.9 | 40.6 (J) | 125 |
| EPA 8270 | Fluorene | 270,000 | ug/Kg | 5.47 (U) | 37.5 | 35.8 | 19.7 | 64.1 (U) | 104 (U) |
| EPA 8270 | Indeno[1,2,3-c,d] pyrene | 11,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 37.2 (J) | 104 (U) |
| EPA 8270 | Naphthalene | 43,000 | ug/Kg | 5.47 (U) | 5.60 (U) | 5.51 (U) | 5.68 (U) | 64.1 (U) | 104 (U) |
| EPA 8270 | Phenanthrene | - | ug/Kg | 5.47 (U) | 29.6 | 29.2 | 15.2 | 47.1 (J) | 104 (U) |
| EPA 8270 | Pyrene | 1,500,000 | ug/Kg | 5.47 (U) | 8.84 | 9.26 | 18.2 | 58.4 (J) | 169 |
| **Metals** | | | | | | | | | |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-034-050 | SG18-CS-035-025 | SG18-CS-035-110 | SG18-CS-036-100 | SG18-CS-037-060 | SG18-CS-038-030 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 9/22/03 | 9/22/03 | 9/22/03 | 9/22/03 | 9/26/03 | 9/29/03 |
| SW6020 | Arsenic | 2 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Barium | 1,100 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Cadmium | 5 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Chromium | 26 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Lead | 400 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Selenium | 2 | mg/kg | - | - | - | - | - | - |
| SW6020 | Silver | 21 | mg/Kg | - | - | - | - | - | - |
| **Mercury** | | | | | | | | | |
| SW7470A TCLP - Mercury by Cold Vapor (TCLP) | | 0.2 | mg/L | - | - | - | - | - | - |
| SW7471A | Mercury by Cold Vapor | 1.4 | mg/Kg | - | - | - | - | - | - |

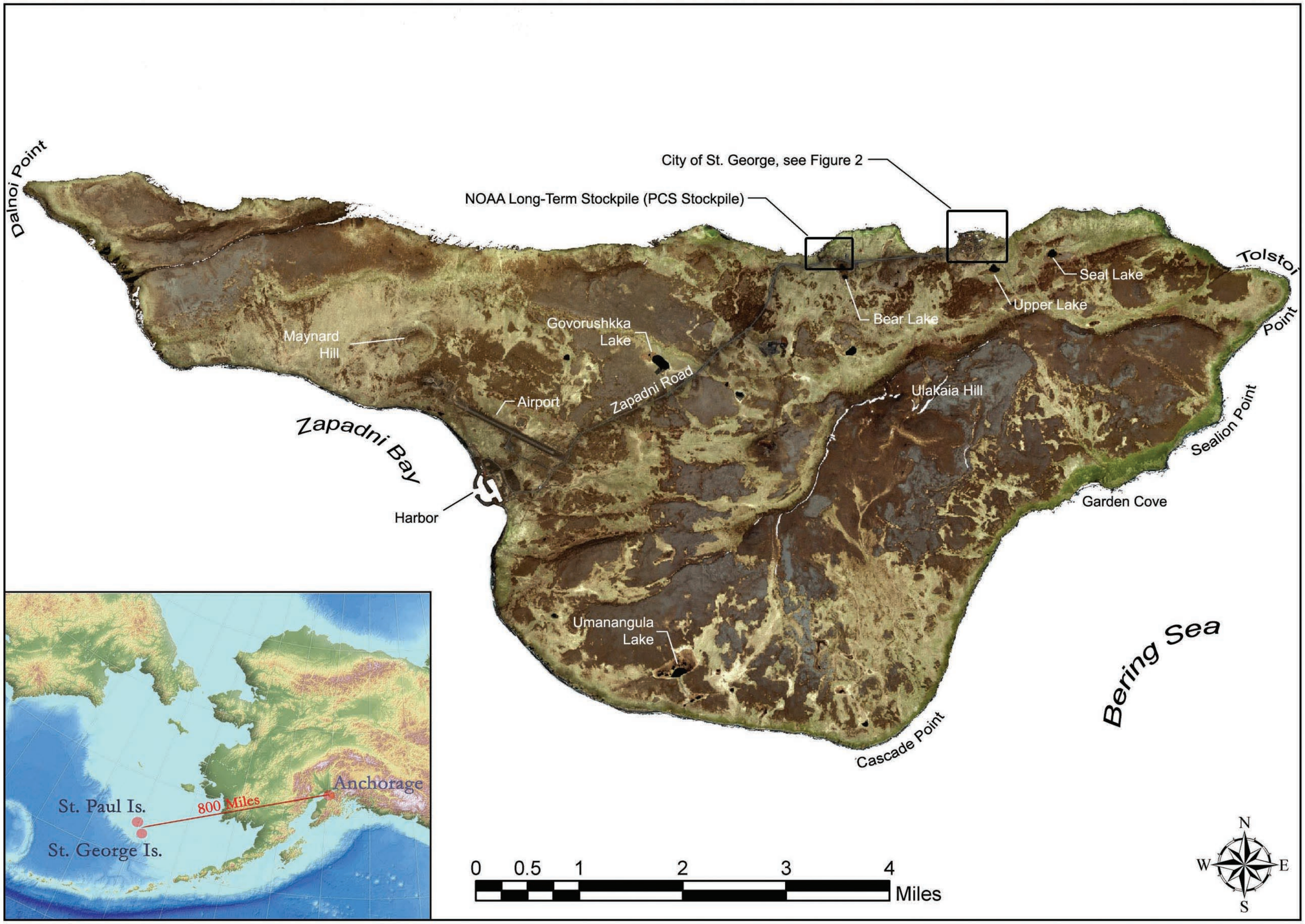
| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-039-040 | SG18-CS-040-020 | SG18-CS-041-045 | SG18-CS-042-050 | SG18-CS-043-070 | SG18-CS-044-040 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 9/29/03 | 9/29/03 | 9/29/03 | 9/29/03 | 10/1/03 | 10/1/03 |
| **BTEX** | | | | | | | | | |
| AK101 | Benzene | 0.02 | mg/Kg | 0.00955 (U) | 0.0143 (U) | 0.0113 (U) | 0.00329 (J) | 0.00750 (U) | 0.00875 (U) |
| AK101 | Ethylbenzene | 5.5 | mg/Kg | 0.0476 | 0.0572 (U) | 0.0451 (U) | 0.0364 (J) | 0.0300 (U) | 0.0350 (U) |
| AK101 | o-Xylene | 0 | mg/Kg | 0.156 | 0.172 | 0.0881 | 0.0512 | 0.0300 (U) | 0.0142 (J) |
| AK101 | P & M -Xylene | 0 | mg/Kg | 0.0554 | 0.211 | 0.0336 (J) | 0.0182 (J) | 0.0300 (U) | 0.0485 |
| AK101 | Toluene | 5.4 | mg/Kg | 0.0417 | 0.154 | 0.115 | 0.0336 (J) | 0.0300 (U) | 0.0122 (J) |
| AK101 | Total Xylene | 78 | mg/Kg | 0.211 | 0.383 | 0.122 | 0.0694 | 0.0600 (U) | 0.0627 |
| GRO | | | | | | | | | |
| AK101 | Gasoline-Range Organics | 300 | mg/Kg | - | - | - | - | - | - |
| **DRO** | | | | | | | | | |
| AK102 | Diesel-Range Organics | 250 | mg/Kg | **1,560** | **4,140** | **2,550** | 7.63 (J) | 103 | 5.47 (J) |
| AK102 SILICA GEL - DRO Silica Gel | | 250 | mg/Kg | - | - | - | - | - | - |
| **RRO** | | | | | | | | | |
| AK103 | Residual-Range Organics | 10,000 | mg/Kg | - | - | - | - | - | - |
| **PAH SIM** | | | | | | | | | |
| EPA 8270 | Acenaphthene | 210,000 | ug/Kg | 68.8 | 68.2 (J) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-039-040 | SG18-CS-040-020 | SG18-CS-041-045 | SG18-CS-042-050 | SG18-CS-043-070 | SG18-CS-044-040 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 9/29/03 | 9/29/03 | 9/29/03 | 9/29/03 | 10/1/03 | 10/1/03 |
| EPA 8270 | Acenaphthylene | - | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Anthracene | 4,300,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Benzo(a)Anthracene | 6,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Benzo[a]pyrene | 1,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Benzo[b]Fluoranthene | 11,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Benzo[g,h,i]perylene | - | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Benzo[k]fluoranthene | 110,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Chrysene | 620,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Dibenzo[a,h]anthracene | 1,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Fluoranthene | 2,100,000 | ug/Kg | 33.6 (J) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Fluorene | 270,000 | ug/Kg | 405 | 418 | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Indeno[1,2,3-c,d] pyrene | 11,000 | ug/Kg | 60.4 (U) | 84.1 (U) | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Naphthalene | 43,000 | ug/Kg | 79.8 | 84.1 (U) | 59.2 (U) | 5.56 (U) | 2.07 (J) | 2.13 (J) |
| EPA 8270 | Phenanthrene | - | ug/Kg | 570 | 447 | 59.2 (U) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| EPA 8270 | Pyrene | 1,500,000 | ug/Kg | 33.3 (J) | 32.4 (J) | 30.7 (J) | 5.56 (U) | 5.36 (U) | 5.44 (U) |
| **Metals** | | | | | | | | | |
| SW6020 | Arsenic | 2 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Barium | 1,100 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Cadmium | 5 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Chromium | 26 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Lead | 400 | mg/Kg | - | - | - | - | - | - |
| SW6020 | Selenium | 2 | mg/kg | - | - | - | - | - | - |
| SW6020 | Silver | 21 | mg/Kg | - | - | - | - | - | - |
| **Mercury** | | | | | | | | | |
| SW7470A TCLP - Mercury by Cold Vapor (TCLP) | | 0.2 | mg/L | - | - | - | - | - | - |
| SW7471A | Mercury by Cold Vapor | 1.4 | mg/Kg | - | - | - | - | - | - |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-045-020 | SG18-CS-045-100 | SG18-CS-046-090 | SG18-CS-047-090 | SG18-CS-048-050 | SG18-CS-049-030 | SG18-CS-050-020 | SG18-CS-051-050 | SG18-CS-052-040 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 10/1/03 | 10/1/03 | 10/1/03 | 10/1/03 | 10/2/03 | 10/2/03 | 10/2/03 | 10/3/03 | 10/3/03 |
| **BTEX** | | | | | | | | | | | | |
| AK101 | Benzene | 0.02 | mg/Kg | 0.00710 (U) | 0.00778 (U) | 0.00662 (U) | 0.00906 (U) | 0.00849 (U) | 0.0194 (U) | 0.0168 (U) | 0.00684 (U) | 0.00633 (U) |
| AK101 | Ethylbenzene | 5.5 | mg/Kg | 0.0284 (U) | 0.0311 (U) | 0.0265 (U) | 0.0362 (U) | 0.0340 (U) | 0.0775 (U) | 0.0672 (U) | 0.0274 (U) | 0.0253 (U) |
| AK101 | o-Xylene | 0 | mg/Kg | 0.0284 (U) | 0.0311 (U) | 0.0265 (U) | 0.0362 (U) | 0.0115 (J) | 0.0775 (U) | 0.0672 (U) | 0.0274 (U) | 0.0253 (U) |
| AK101 | P & M -Xylene | 0 | mg/Kg | 0.0206 (J) | 0.0330 | 0.0255 (J) | 0.0362 (U) | 0.0327 (J) | 0.0381 (J) | 0.0672 (U) | 0.0274 (U) | 0.0253 (U) |
| AK101 | Toluene | 5.4 | mg/Kg | 0.00941 (J) | 0.0107 (J) | 0.0265 (U) | 0.0362 (U) | 0.0120 (J) | 0.0775 (U) | 0.0672 (U) | 0.0274 (U) | 0.0253 (U) |
| AK101 | Total Xylene | 78 | mg/Kg | 0.0490 (J) | 0.0641 | 0.0520 (J) | 0.0724 (U) | 0.0442 (J) | 0.116 (J) | 0.134 (U) | 0.0548 (U) | 0.0506 (U) |
| **GRO** | | | | | | | | | | | | |
| AK101 | Gasoline-Range Organics | 300 | mg/Kg | - | - | - | - | - | - | - | - | - |
| DRO | | | | | | | | | | | | |
| AK102 | Diesel-Range Organics | 250 | mg/Kg | 30.5 | 20.7 (J) | 4.20 (J) | 36.7 | 73.0 | 45.1 | 10.6 (J) | 5.24 (J) | 106 |
| AK102 SILICA GEL - DRO Silica Gel | | 250 | mg/Kg | - | - | - | - | - | - | - | - | - |
| **RRO** | | | | | | | | | | | | |
| AK103 | Residual-Range Organics | 10,000 | mg/Kg | - | - | - | - | - | - | - | - | - |
| **PAH SIM** | | | | | | | | | | | | |
| EPA 8270 | Acenaphthene | 210,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Acenaphthylene | - | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Anthracene | 4,300,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 2.78 (J) |
| EPA 8270 | Benzo(a)Anthracene | 6,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Benzo[a]pyrene | 1,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Benzo[b]Fluoranthene | 11,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Benzo[g,h,i]perylene | - | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 2.47 (J) | 2.98 (J) | 3.63 (J) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Benzo[k]fluoranthene | 110,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 2.52 (J) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Chrysene | 620,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Dibenzo[a,h]anthracene | 1,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Fluoranthene | 2,100,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Fluorene | 270,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Indeno[1,2,3-c,d] pyrene | 11,000 | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Naphthalene | 43,000 | ug/Kg | 2.25 (J) | 2.53 (J) | 1.76 (J) | 1.75 (J) | 2.68 (J) | 3.41 (J) | 2.47 (J) | 2.17 (J) | 1.85 (J) |
| EPA 8270 | Phenanthrene | - | ug/Kg | 5.45 (U) | 5.53 (U) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |
| EPA 8270 | Pyrene | 1,500,000 | ug/Kg | 5.45 (U) | 1.85 (J) | 5.43 (U) | 5.47 (U) | 6.38 (U) | 7.89 (U) | 7.80 (U) | 6.44 (U) | 6.12 (U) |

| Method/Analyte | | Method Two Cleanup Level | units | SG18-CS-045-020 | SG18-CS-045-100 | SG18-CS-046-090 | SG18-CS-047-090 | SG18-CS-048-050 | SG18-CS-049-030 | SG18-CS-050-020 | SG18-CS-051-050 | SG18-CS-052-040 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **10/1/03** | **10/1/03** | **10/1/03** | **10/1/03** | **10/2/03** | **10/2/03** | **10/2/03** | **10/3/03** | **10/3/03** |
| **Metals** | | | | | | | | | | | | |
| SW6020 | Arsenic | 2 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Barium | 1,100 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Cadmium | 5 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Chromium | 26 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Lead | 400 | mg/Kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Selenium | 2 | mg/kg | - | - | - | - | - | - | - | - | - |
| SW6020 | Silver | 21 | mg/Kg | - | - | - | - | - | - | - | - | - |
| **Mercury** | | | | | | | | | | | | |
| SW7470A TCLP - Mercury by Cold Vapor (TCLP) | | 0.2 | mg/L | - | - | - | - | - | - | - | - | - |
| SW7471A | Mercury by Cold Vapor | 1.4 | mg/Kg | - | - | - | - | - | - | - | - | - |

Notes to Table 1
Units shown in mg/kg except as noted.
D Following sample ID indicates duplicate sample.
U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
GRO gasoline-range organics
DRO diesel-range organics
RRO residual-range organics
BTEX benzene, toluene, ethylbenzene, xylenes
PAH polynuclear aromatic hydrocarbons
EPA U.S. Environmental Protection Agency
TCLP Toxicity Characteristic Leaching Procedure
Result in (**bold**) type exceeds ADEC Method Two cleanup levels.




| Figure 1 | Island and Vicinity Map<br>Former Fuel Storage Area<br>TPA Site 18/Site 18<br>St. George Island, Alaska | Source: Ikonos 2001 Satellite Image | Pribilof Islands Restoration Project |
| --- | --- | --- | --- |


| Figure 2 | Legal Property Description Map<br>Former Fuel Storage Area<br>TPA Site 18/Site 18<br>St. George Island, Alaska | Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985 |
|---|---|---|

Pribilof Islands Restoration Project

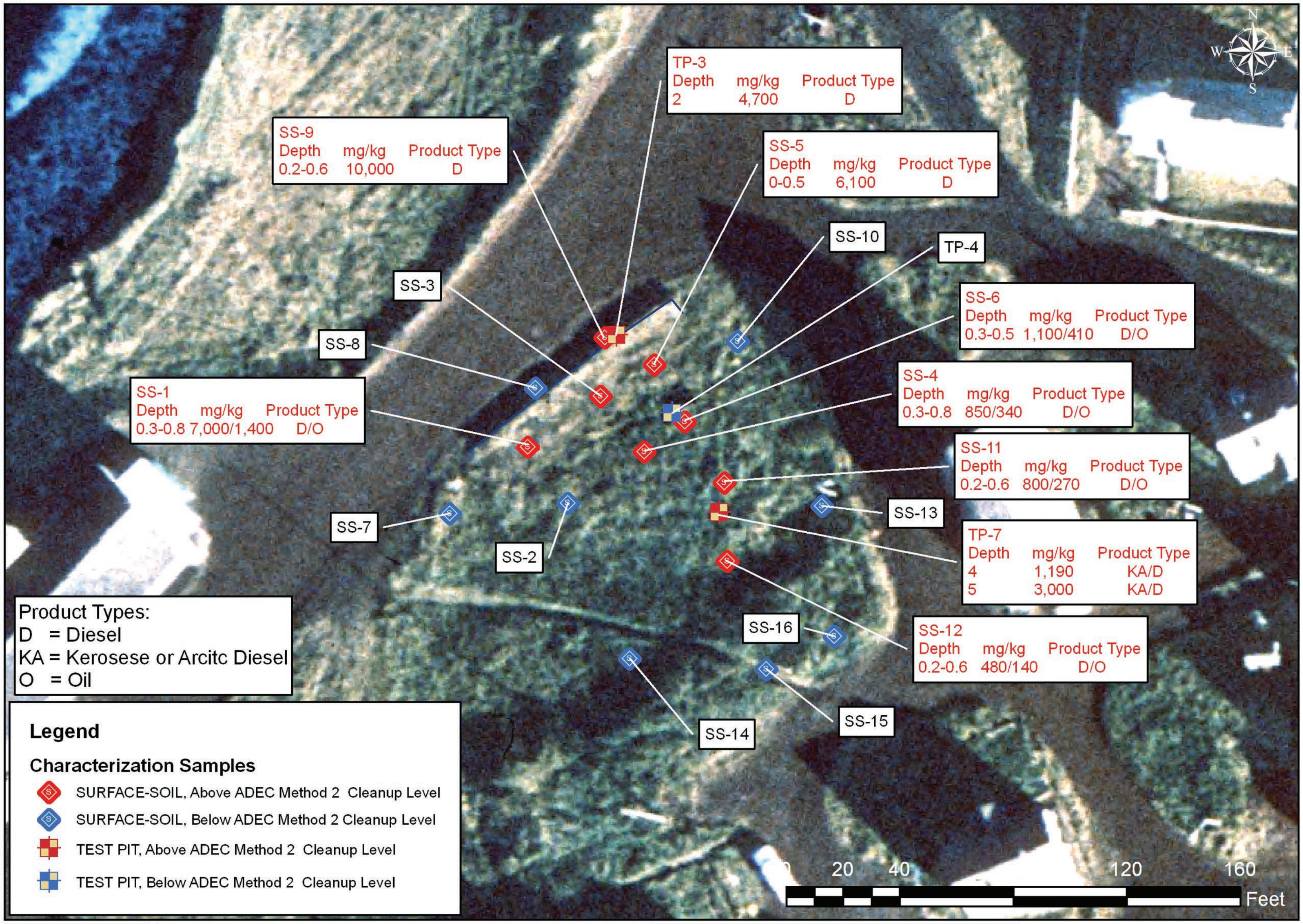



Figure 3

**Expanded Site Inspection**
**Hart Crowser 1996**
**Former Fuel Storage Area**
**TPA Site 18/Site 18**
**St. George Island, Alaska**

Source: Arero Map US 1996 Aerial Photograph; Expanded Site Inspection St. George. Hart Crowser Jan. 1997.

Note: Hart Crowser's investigation included additional samples from test pits on land that NOAA now considers part of the Old Power Plant Site, TPA Site 9.

Pribilof Islands Restoration Project

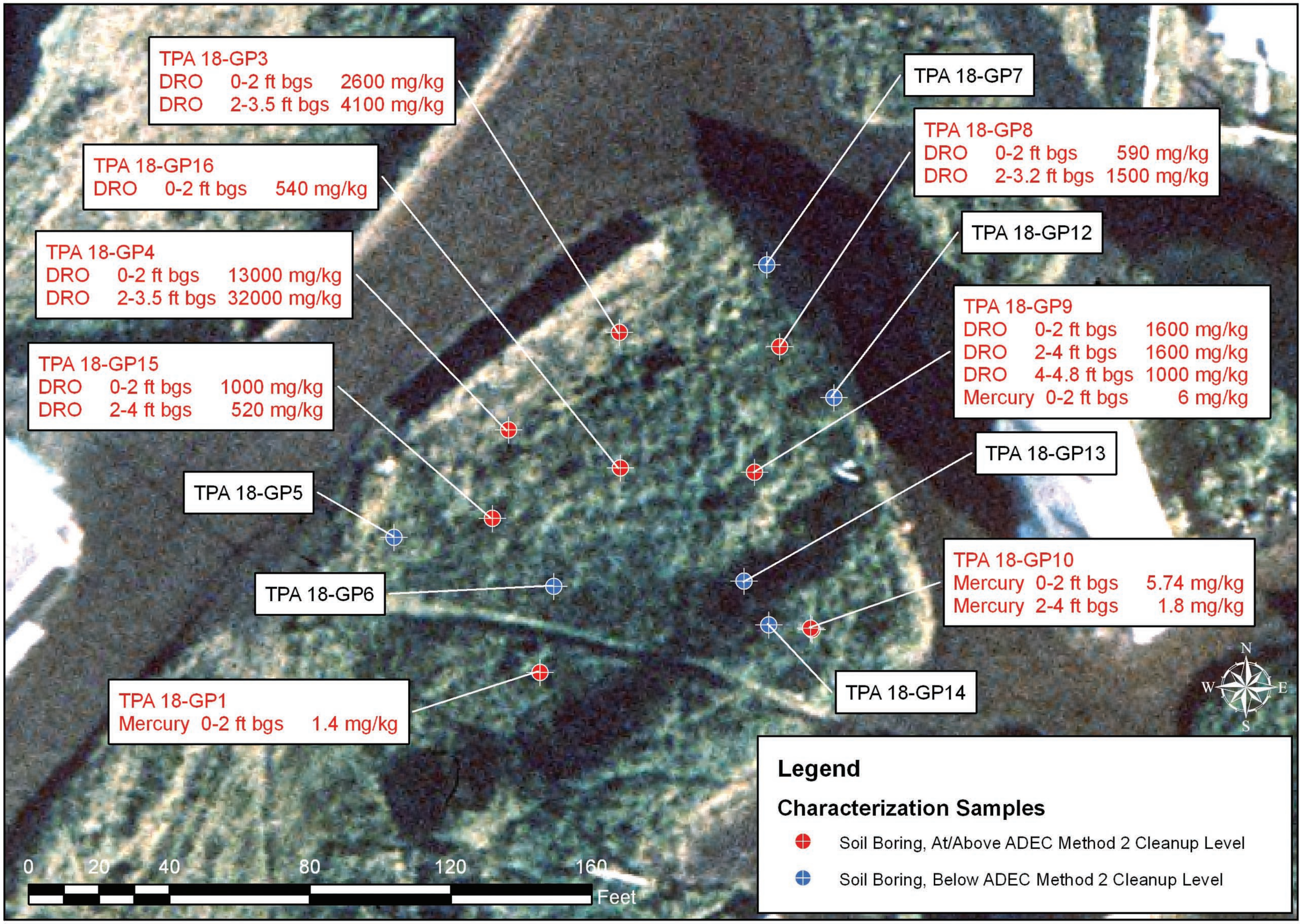


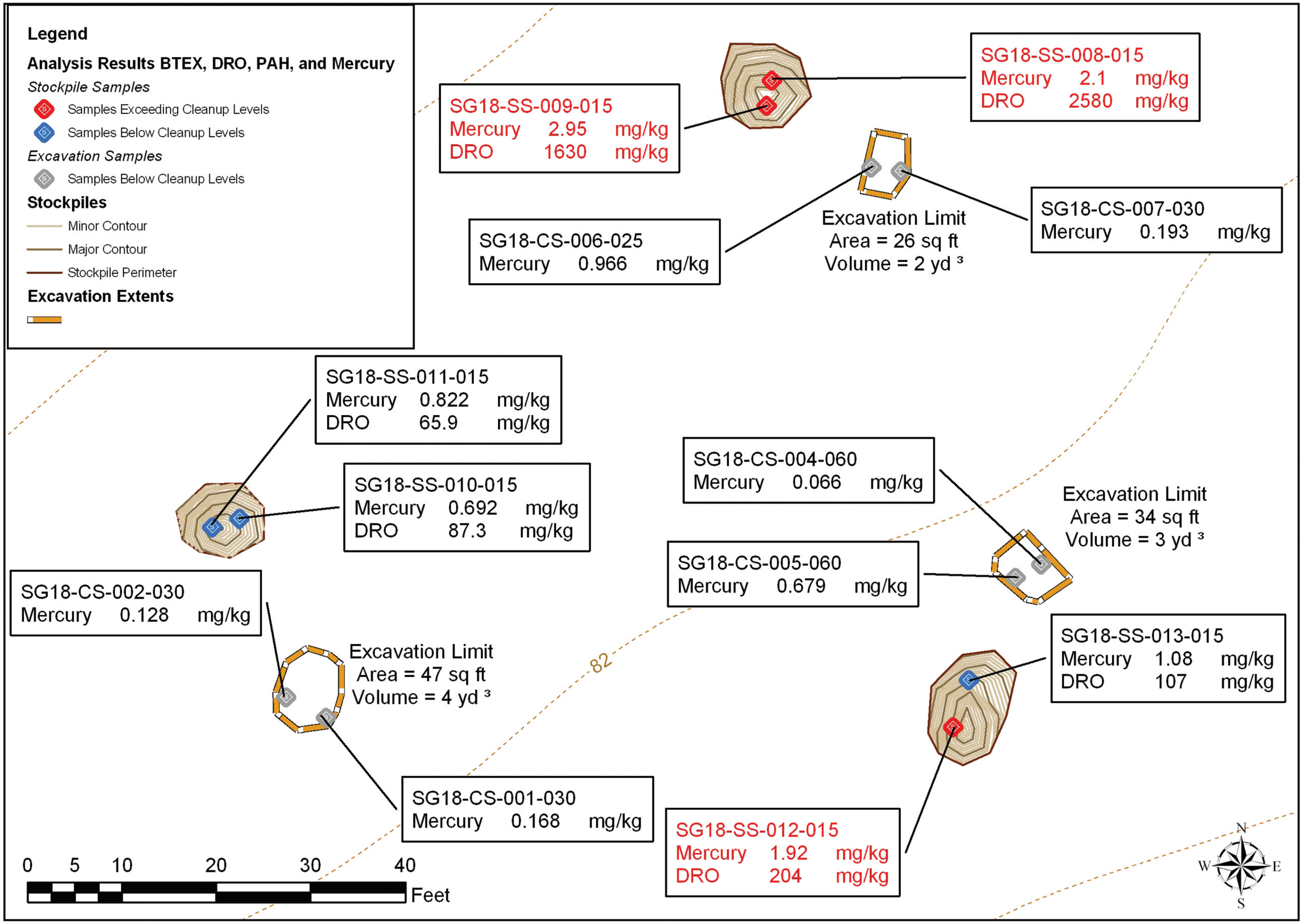

Figure 4

**Site Characterization**
**Tetra Tech 2001**
**Former Fuel Storage Area**
**TPA Site 18/Site 18**
**St. George Island, Alaska**

Source: Aero Map U.S. 1996 Aerial Photograph; Survey Data from Pribilof Project Database.

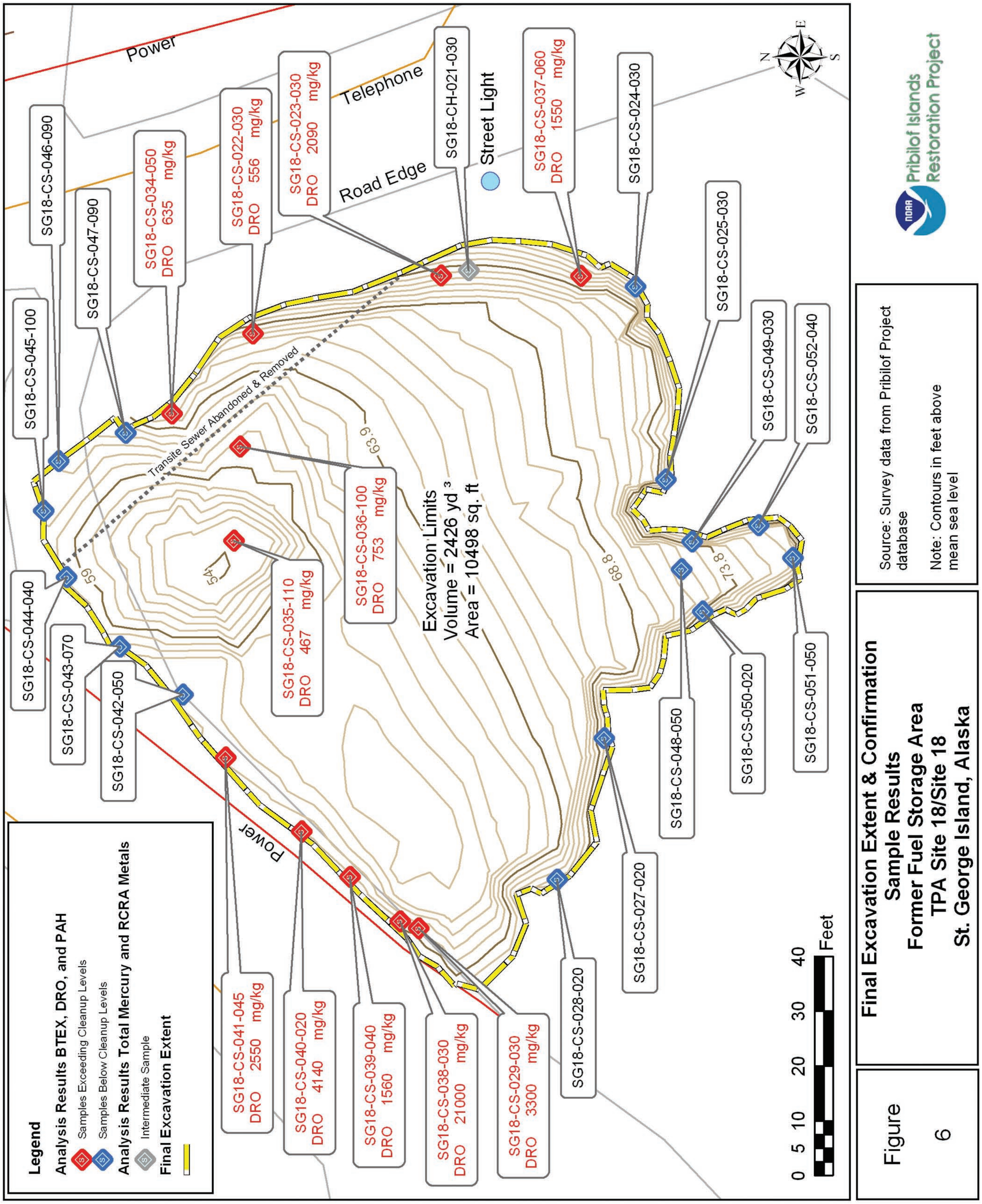
Note: Tetra Tech's site characterization included the collection of additional samples from land that NOAA now considers part of the Old Power Plant Site, TPA Site 9.

NOAA Pribilof Islands Restoration Project




| Figure 5 | Mercury-Contaminated Soil Removal<br>Former Fuel Storage Area<br>TPA Site 18/Site 18<br>St. George Island, Alaska | Source: Survey data from Pribilof Project database.<br><br>Note: Contours in feet above mean sea level; Mercury concentrations shown are total mercury. |
|---|---|---|

Pribilof Islands Restoration Project


Final Excavation Extent & Confirmation
Sample Results
Former Fuel Storage Area
TPA Site 18/Site 18
St. George Island, Alaska
Figure
6
Source: Survey data from Pribilof Project database
Note: Contours in feet above mean sea level
Pribilof Islands Restoration Project
NOAA
Legend
Analysis Results BTEX, DRO, and PAH
Samples Exceeding Cleanup Levels
Samples Below Cleanup Levels
Analysis Results Total Mercury and RCRA Metals
Intermediate Sample
Final Excavation Extent
0 5 10 20 30 40
Feet
Power
Telephone
Road Edge
Street Light
Transite Sewer Abandoned & Removed
Excavation Limits
Volume = 2426 yd ³
Area = 10498 sq. ft
54
59
63.9
68.8
73.8
SG18-CS-046-090
SG18-CS-045-100
SG18-CS-047-090
SG18-CS-034-050 DRO 635 mg/kg
SG18-CS-022-030 DRO 556 mg/kg
SG18-CS-023-030 DRO 2090 mg/kg
SG18-CH-021-030
SG18-CS-037-060 DRO 1550 mg/kg
SG18-CS-024-030
SG18-CS-025-030
SG18-CS-049-030
SG18-CS-052-040
SG18-CS-036-100 DRO 753 mg/kg
SG18-CS-035-110 DRO 467 mg/kg
SG18-CS-044-040
SG18-CS-043-070
SG18-CS-042-050
SG18-CS-048-050
SG18-CS-050-020
SG18-CS-051-050
SG18-CS-027-020
SG18-CS-028-020
SG18-CS-041-045 DRO 2550 mg/kg
SG18-CS-040-020 DRO 4140 mg/kg
SG18-CS-039-040 DRO 1560 mg/kg
SG18-CS-038-030 DRO 21000 mg/kg
SG18-CS-029-030 DRO 3300 mg/kg

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2008-000319-0
Recording Dist: 305 - Aleutian Islands
7/15/2008 10:20 AM Pages: 1 of 6

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITE 18
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation and The Aleut Corporation as the owners, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property located on the hillside north of Cottage C, southeast of the Tanaq Building, and west of Aikow Hotel, in the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Lot 42, Tract 52**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 7.22" North Latitude, 169° 32' 55.71" West Longitude**

This property, hereafter referred to as Site 18 (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge, or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135442; File ID 2643.38.024.

This site was identified as *Site 18 Former Fuel Storage Area* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 18 and NOAA Site 18. Following corrective action, NOAA submitted a request for conditional closure for Site 18 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 18 cleanup has been performed to the maximum extent practicable even though residual diesel range organics (DRO) contaminated soils remained on the property (NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a).

| | |
|---|---|
| Grantor: | U.S. Bureau of Land Management |
| Grantee (subsurface estate): | The Aleut Corporation<br>4000 Old Seward Highway, Suite 300<br>Anchorage, AK 99503 |
| Grantee (surface estate): | St. George Tanaq Corporation<br>4141 B Street, Suite 301<br>Anchorage, AK 99503 |

6

**Recording District:** Aleutian Islands

**Remedial Actions and Residual Contamination**

Site 18 was used by the federal government to store petroleum products in drums from the 1930s until the 1960s. Fuel was transferred from the drums to storage tanks located west of the Old Power Plant, TPA Site 9, via aboveground piping. The drums, drum platform and transfer piping were removed during the 1960s. Environmental investigations performed in 1996 (Hart Crowser 1997) and 2001 (Tetra Tech 2002) found that fuel storage and transfer operations had contaminated Site 18's soil with DRO. The 2001 investigation also found that mercury concentrations in the soil were above cleanup standards at three Site 18 locations (Tetra Tech 2002). The source of the mercury is unknown. In 2003, NOAA excavated the mercury contaminated soil from the three locations; this soil was subsequently shipped off-island for disposal (Polarconsult 2004, NOAA 2005a). Also in 2003, after confirmation sample analytical results indicated that the mercury contaminated soil had been removed, NOAA removed approximately 2,426 cubic yards of DRO contaminated soil from Site 18. Contaminated soil removal continued until field screening indicated that DRO cleanup requirements had been met or further excavation was not practicable due to reaching equipment refusal, endangering road beds, and/or the presence of buried utilities (Polarconsult 2004). The excavated area was backfilled with clean material. Attached is a diagram (Figure 3) drawn to scale that shows the area that has been cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2001, NOAA installed one groundwater monitoring well up-gradient of Site 18, and two monitoring wells down-gradient. Groundwater samples collected from these wells from 2001 through 2004 had analytical results indicating all contaminants either non-detect or detected at concentrations well below ADEC cleanup standards (Tetra Tech 2005). Based on a determination that groundwater in the vicinity of Site 18 had not been adversely impacted, these monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b).

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

Hart Crowser. 1997. *Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska.* January

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2005a. *Request for Conditional Closure, Former Fuel Storage Area, TPA Site 18/Site 18 – St. George Island, Alaska*. Signed by John Lindsay (NOAA) and submitted April 14 (cover letter dated April 14, 2005). Signed by Louis Howard of ADEC Contaminated Sites Program, April 18, 2005.

NOAA. 2005b. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult Alaska, Inc. (Polarconsult). 2004. *Final Corrective Action Report, Former Fuel Storage Area, TPA Site 18, Remedial Corrective Action Project, St. George Island, Alaska*. Volumes 1 and 2. July 26.

Tetra Tech EM Inc. (Tetra Tech). 2002. *Draft Final Site Characterization Report, Former Fuel Storage Area, Two-Party Agreement Site No. 18, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska.* Prepared for National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration, 7600 Sand Point Way NE, Seattle, WA. 98115. September 20.

Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

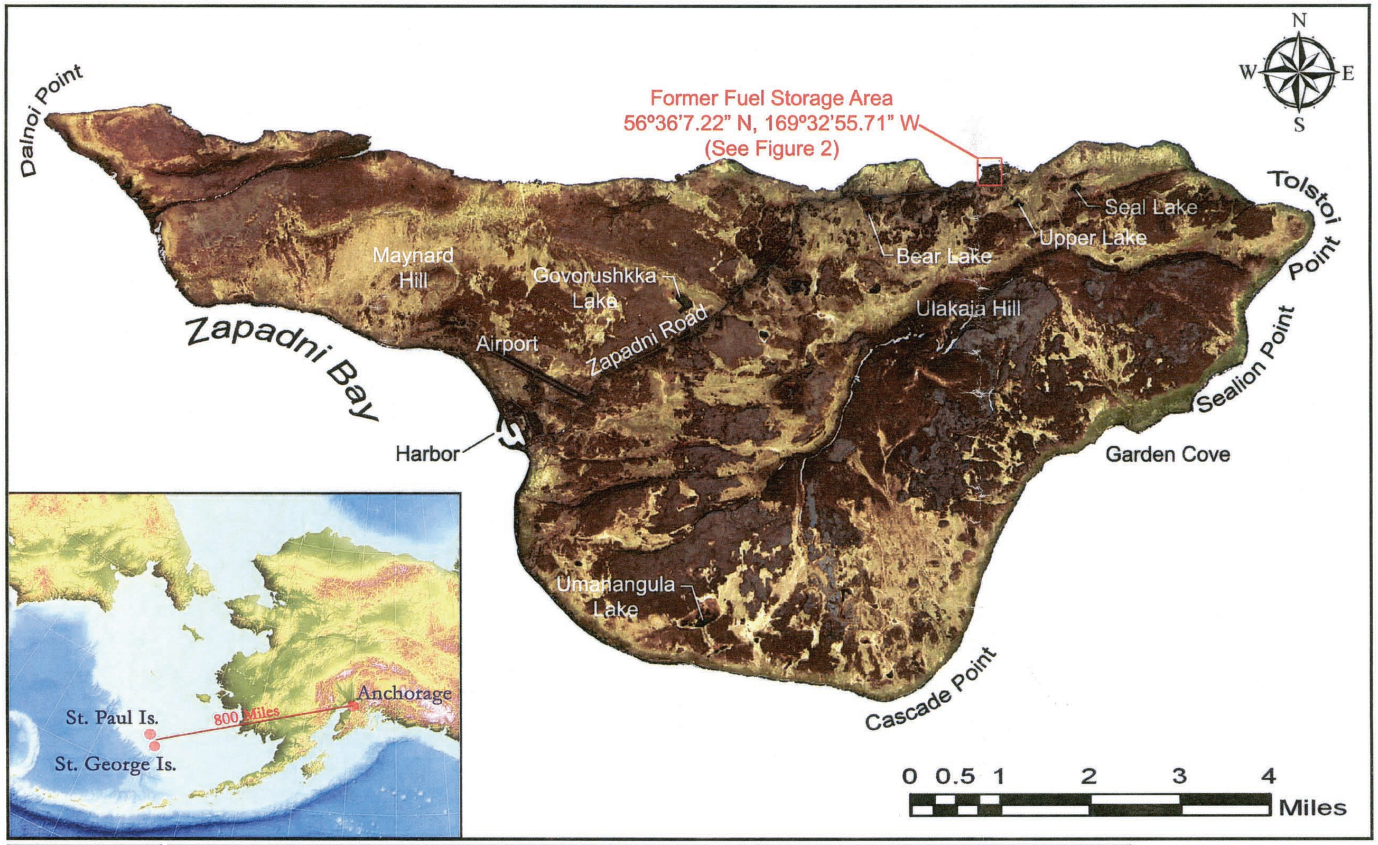
Signature:

Printed Name: John A. Lindsay

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 6
2008-000319-0




| Figure 1 | St. George Island Vicinity Map<br>Former Fuel Storage Area<br>NOAA Site 18/TPA Site 18<br>St. George Island, Alaska | **Source:** Ikonos Satellite Imagery (Space Imaging 2001)<br>**Path:** C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Former Fuel Storage Area\Fig 1 STG Standard - TPA 18.psd<br>**Date:** 06/26/2008 |
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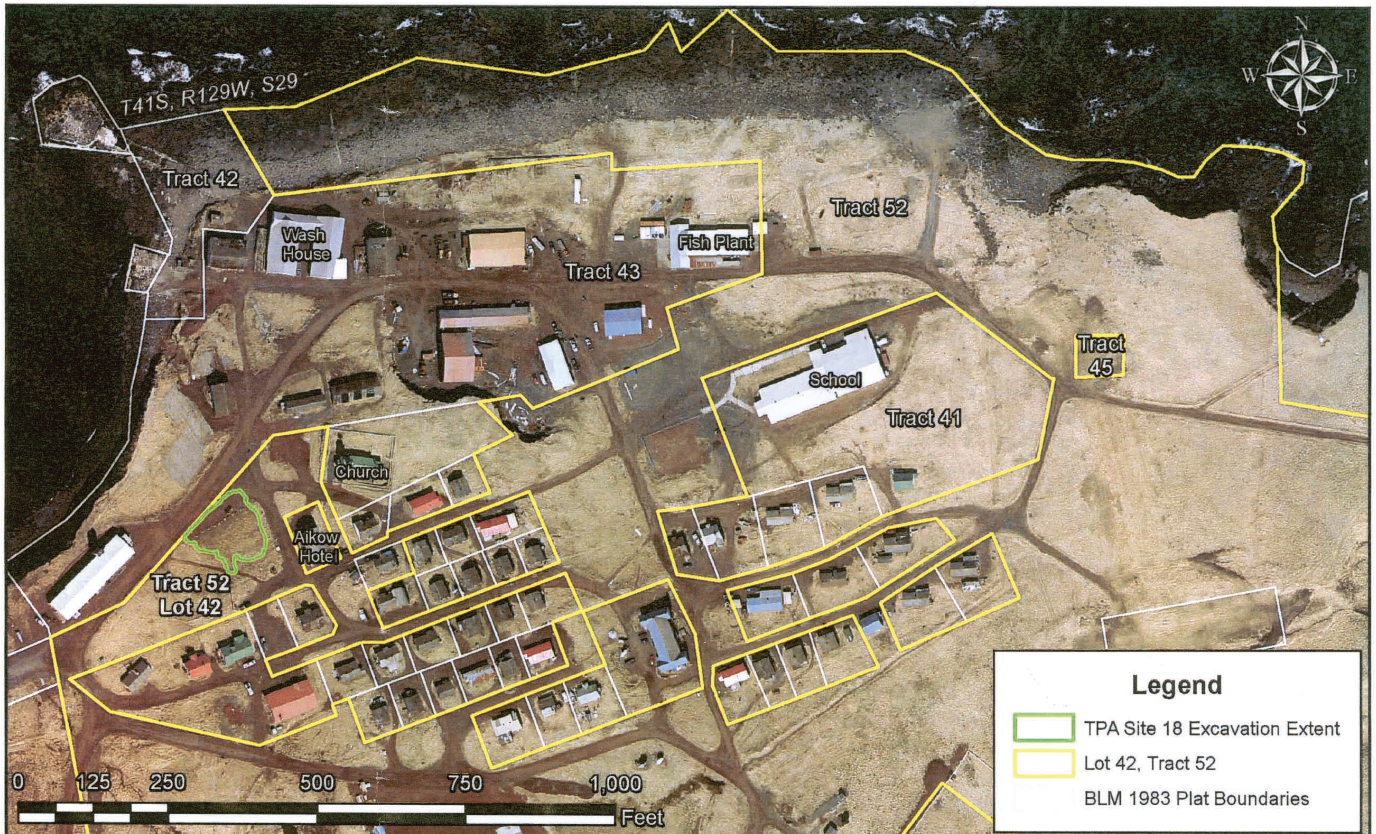
Pribilof Islands Restoration Project

4 of 6
2008-000319-0




| Figure 2 | Legal Property Description Map<br>Lot 42, Tract 52 of T41S, R129W, S29<br>Former Fuel Storage Area<br>NOAA Site 18/TPA Site 18<br>St. George Island, Alaska | Sources: Excavation Extent (NOAA PPO GIS 2003), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985.<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Former Fuel Storage Area\Fig2_TPA18_PropDescription.mxd<br>Date: 7/8/2008 @ 1:25:31 PM |
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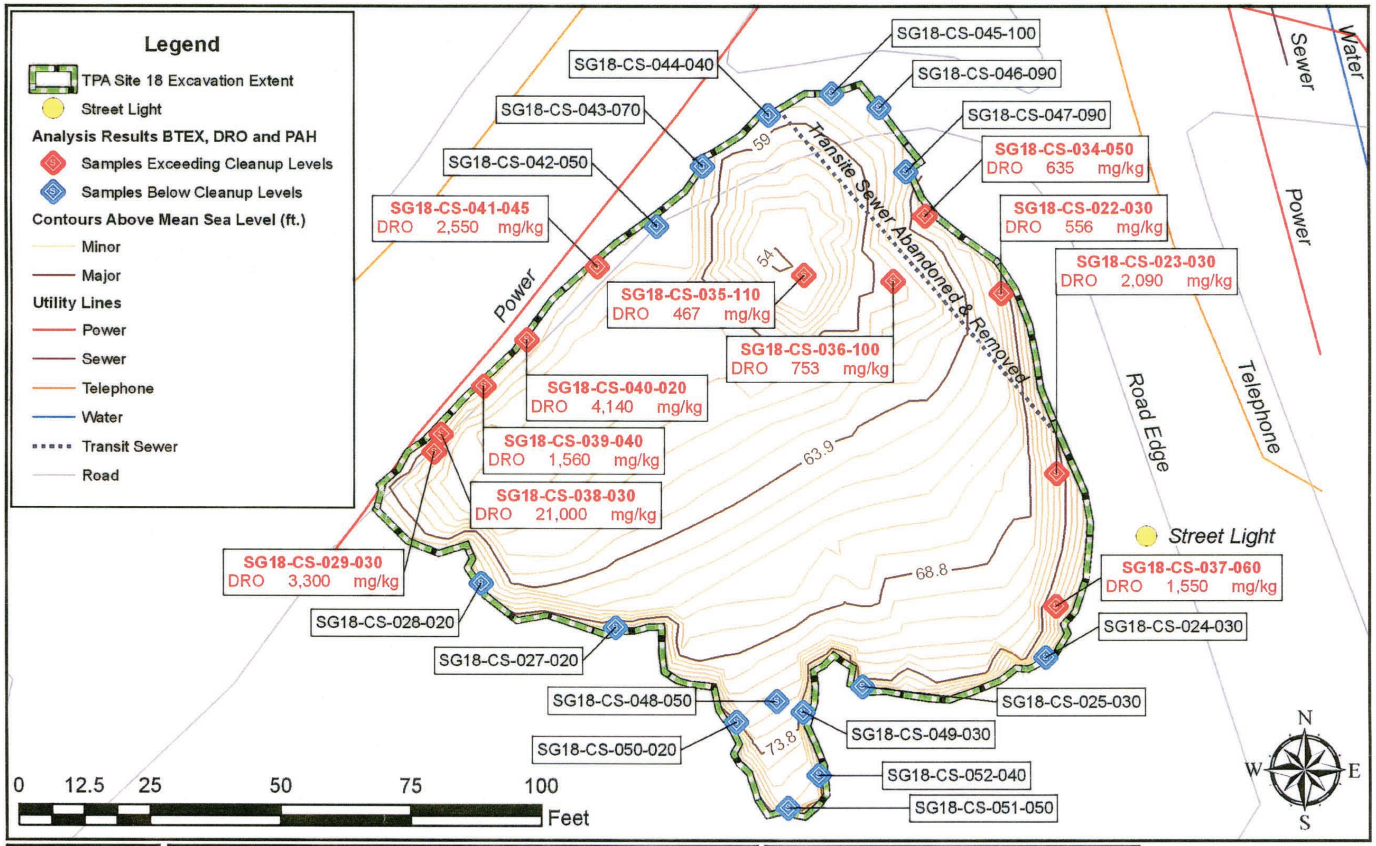
Pribilof Islands Restoration Project

5 of 6
2008-000319-0




| Figure 3 | Final Excavation Extent & Confirmation Sampling Results<br>Former Fuel Storage Area<br>NOAA Site 18/TPA Site 18<br>St. George Island, Alaska | Sources: Excavation & TPA Site 18 layers (NOAA PPO GIS), Survey & Confirmation data from Pribilof Project Chemical database ('03-'07).<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Former Fuel Storage Area\Fig3_TPA18_Sample&Excavation.mxd<br>Date: 7/8/2008 @ 1:29:11 PM |
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Pribilof Islands Restoration Project

6 of 6
2008-000319-0

# NOAA Site 19
# TPA Site 19: Old Carpenter Shop

Conditional Closure Request, Old Carpenter Shop
TPA Site19/NOAA Site 19, St. George Island, Alaska ........................................447

Notice of Environmental Cleanup and Residual Soil Contamination at
Two Party Agreement Site 19, St. George Island, Alaska
(Lot 42, Tract 52) ...........................................................................................463

**Conditional Closure Request**
**Old Carpenter Shop**
**TPA Site19/NOAA Site 19**
**St. George Island, Alaska**

**Site:** Old Carpenter Shop, also known as St. George Island Two Party Agreement (TPA) Site 19 and as National Oceanic and Atmospheric Administration (NOAA) Site 19.

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea (Figure 1). TPA Site 19 is located in the City of St. George at 56° 36' 8.54'' N latitude, 169° 32' 53.89" W longitude (Figure 2).

**Legal Property Description:** TPA Site 19 is in Tract 52, Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2). The property is owned by the City of St. George.

**Type of Release:** Soil at TPA Site 19 was contaminated with lead, largely found in a distinct soil layer located from 0.5 to 3 feet below the ground surface (bgs) outside the perimeter of the abandoned carpenter shop foundation.

**History and Background:** The Old Carpenter Shop was constructed in 1921 as a two and one-half story structure with a basement. Two aboveground storage tanks (ASTs), reportedly used for kerosene storage, were located just north of the building. Aerial photographs indicate that between 1954 and 1960 the building was demolished with the exception of its foundation, which was covered with backfill. The ASTs were moved to a location southwest of the Tanaq Office/Store (Polarconsult 2004a). The site is currently used as a parking area for a nearby church (Figure 2).

**Summary of Site Investigations and Corrective Actions**

**Site Investigations**

In 1996, Hart Crowser conducted an environmental investigation on St. George Island that included TPA Site 19. The site was divided into four quadrants and a surface soil sample (0 to 0.5 feet bgs) was collected from each quadrant (Figure 3). Each sample was analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO), and residual range organics (RRO). Analytical results indicated detection of DRO and RRO below Alaska Department of Environmental Conservation (ADEC) cleanup standards, with no detection of GRO and BTEX (Hart Crowser 1997). Hart Crowser's investigation report recommended no further action at TPA Site 19.

In 2001, Tetra Tech EM Inc. (Tetra Tech) conducted an environmental site characterization at TPA Site 19 which consisted of searching for underground storage tanks (USTs) and advancing seven soil borings up to 4 feet bgs (Figure 4). No USTs were located at the site. Thirteen samples were collected from the borings and analyzed at a fixed laboratory for GRO, DRO, RRO, volatile organic compounds (VOC), semi-volatile organic compounds (SVOC) and metals. Analytical results indicated either no detection, or detection well below ADEC cleanup standards for GRO, DRO, RRO, VOC and SVOC. All metals were detected at or below natural background levels with the exception of lead. Lead was detected at one boring location (TPA19-GP1, Figure 4) at 1,210 milligrams per kilogram (mg/kg), which is above the ADEC Method Two residential cleanup criterion of 400 mg/kg (Tetra Tech 2002). The elevated concentration of lead found at TPA19-GP1 came from the 0 to 2 feet bgs sampling interval. The lead concentration from the 2 to 3.5 feet bgs was 16 mg/kg, indicating a fairly narrow band of lead contaminated soil. Tetra Tech's site characterization report recommended removal of the lead contaminated soil, the volume of which was estimated to be 3.7 cubic yards (Tetra Tech 2002).

**Final Corrective Actions**
NOAA performed corrective action at TPA Site 19, in accordance with 18 AAC 75, Articles 3, 6, and 9, during the 2002, 2003 and 2004 field seasons. The objectives of this action were to remove soil contaminated with lead in concentrations above the ADEC Method Two cleanup criterion for residential areas (400 mg/kg), perform Resource Conservation and Recovery Act (RCRA) characterization sampling of the removed soil, backfill excavations with clean material, and ship the contaminated soil off-island for proper final disposal.

2002 Field Season

On August 30, 2002, NOAA excavated the area surrounding the location of Tetra Tech sample TPA19-GP1 (Figure 4) to approximately 5 feet bgs and collected soil samples to facilitate delineation of the extent of lead-contaminated soil. In the excavation, a dark layer of soil 1 to 4 inches thick was observed approximately 0.5 to 1.5 feet bgs (Polarconsult 2004a). This distinct soil layer contained glass, paint chips and other debris, and appeared to be the original ground surface prior to demolition of the building. Eleven (plus one duplicate) discrete samples were collected from the excavation bottom and side walls (Figure 5); sample analyses included total lead, Toxicity Characteristic Leaching Procedure (TCLP) lead, GRO, DRO, and BTEX. Analytical results indicated lead was the only contaminant present in concentrations above ADEC cleanup requirements. Five of the eleven samples were collected from the dark layer; of these, four samples had lead concentrations above the ADEC cleanup criterion. All of the samples collected outside of the dark layer had lead concentrations well below the cleanup criterion. Based on these results, the project team decided that the dark layer of soil was a good field indicator for the presence of lead contamination. This excavation produced approximately one cubic yard (CY) of contaminated soil which was placed in a flexible individual bulk container (FIBC) and stored for future off-island disposal.

On October 18, 23, and 24, 2002, NOAA used a Geoprobe to advance 20 boreholes to depths of between 3.5 and 5.5 feet bgs. The boreholes were driven in the area around the August 2002 excavation site and the buried shop foundation. Continuous core samples were collected from each location with the thought that the extent and volume of the dark layer could be determined by examination of the soil within the acetate collection tubes. However, the dark layer was not easily distinguishable within the collection tubes, most likely due to cross section distortion produced during the boring (Polarconsult 2004a).

On October 26, 2002, soil removal recommenced at the site previously excavated in August, and continued radially until the dark soil layer was visually judged to be removed (Figure 6). The southern side of the excavation abutted and exposed the northern shop foundation. Approximately 8 CY of soil containing the dark layer was placed directly into eight FIBCs. Approximately 11 CY of overburden soils, which appeared not to include material from the dark layer, were stockpiled on an impermeable plastic membrane and sampled to determine proper disposition (Polarconsult 2004a). Analytical results indicated that the stockpiled soil was also contaminated with lead; subsequently, this soil was placed in 14 FIBCs for storage and eventual shipment off-island. Twelve confirmation samples, plus two duplicates, were collected from the excavation and analyzed for total lead concentration. Analytical results indicated lead concentrations were below the ADEC criterion at all sample locations with the exception of SG-19-015-0 (Figure 6), where a concentration of 1,550 mg/kg was found (Polarconsult 2004a). Table 1 summarizes confirmation sampling results.

On October 30, 2002, NOAA collected 15 additional soil samples to determine if lead or petroleum contamination was present beyond the extent of the excavation dug on October 26, 2002. Eight boreholes were advanced, using a Geoprobe, to depths up to 7 feet bgs. The boreholes were located in a grid pattern (Figure 7), with two borings placed in the former AST locations. After boring/sampling was completed, the excavation was backfilled with thermally treated soil (Polarconsult 2004b). Boring samples were analyzed for GRO, DRO, RRO, total lead, and BTEX. Analytical results for the boring samples indicated all analyte concentrations were below applicable ADEC cleanup criteria (Polarconsult 2004a).

**2003 Field Season**
On September 16, 2003, NOAA resumed excavation of lead contaminated soil at the 2002 sample location SG-19-15-0 (Figure 8). Visual indicators of discolored soil and debris were used to determine what soil to remove. However, the “dark layer” of soil that was present in previous excavations was only slightly evident (Polarconsult 2004a). Approximately 3.4 CY of soil was removed and either placed directly into two FIBCs, or stockpiled on

an impermeable plastic membrane for characterization sampling. A confirmation sample was collected from the excavation and sent to an off-site laboratory for lead analysis. The analytical result indicated that soil in the excavation was still contaminated with 2,010 mg/kg lead.

From October 20 through 22, 2003, soil excavation continued on the north side of the old building footprint (Figure 9). In addition to visual surveillance for discolored soil, a commercial field screening kit, Hybrivet Systems Inc. LeadCheck For Soil™ (LeadCheck), was used to direct soil removal. LeadCheck uses a dye/lead chemical reaction to produce soil sample color changes to indicate lead concentrations above 300 to 400 mg/kg. As soil excavation proceeded, field samples were collected in areas of highest discoloration or debris content, and LeadCheck was used to determine where lead contamination was still present at concentrations above the cleanup criterion, and/or where soil removal was completed. Approximately 15.4 CY of contaminated soil was removed from the north side of the abandoned foundation and placed directly into FIBCs; overburden soil was stockpiled on an impermeable plastic membrane for characterization sampling. After LeadCheck results indicated that the excavation had lead concentrations below 400 mg/kg, six confirmation samples were shipped for fixed laboratory analyses. Analytical results indicated that soil in the excavation was below 400 mg/kg at all locations with the exception of SG19-CS-023-020 (Figure 9), where a concentration of 10,400 mg/kg was found (Polarconsult 2004a).

On October 23, NOAA excavated a trench along the south and west sides of the foundation (Figure 9) to check for lead contamination. Field notes indicate that a large amount of building debris was encountered during excavation (Polarconsult 2004a). Approximately 12.6 CY was removed and stockpiled on an impermeable plastic membrane for characterization sampling. Seven field samples were collected in the trench from areas where visual observation indicated discolored and/or debris-containing soil. LeadCheck results indicated soil within the trench had lead concentrations below 400 mg/kg; subsequently, five confirmation samples (plus one duplicate) were shipped for fixed laboratory analysis.

On October 25, six field samples were collected from the approximately 16 CY of stockpiled soil (from the north side excavation and south/west side trench), and analyzed using LeadCheck. LeadCheck results indicated that the stockpiled soil had lead concentrations below 400 mg/kg; subsequently, six characterization samples were shipped to an off-site laboratory for analysis.

Analytical results for the trench confirmation samples indicated that soil remained contaminated with lead in concentrations above 400 mg/kg at two locations (Figure 9). Further excavation in 2003 was not practicable due to weather conditions, therefore the north side excavation and south/west side trench were backfilled with clean scoria (Polarconsult 2004b). The stockpile characterization sample analytical results indicated that the stockpiles were also contaminated with lead; subsequently the stockpiled soil was placed in FIBCs for future off-island disposal (Polarconsult 2004a).

**2004 Field Season**

From June 7 through June 11, 2004, NOAA excavated the locations where 2003 confirmation sampling indicated that lead contaminated soil still remained. To improve field screening for lead, NOAA obtained a Niton 700 Series x-ray fluorescence (XRF) analyzer from the Environmental Protection Agency (EPA). EPA also detailed to NOAA an employee who was experienced in the use of XRF for field screening (NOAA 2004). The XRF, which directly measures lead concentrations in soil, was used to direct excavation. Soil removal continued until XRF readings indicated that the remaining lead concentrations were less than 400 mg/kg; confirmation samples were collected from excavation locations where the XRF indicated the highest remaining levels of lead (Tetra Tech 2005). Approximately 3 CY of soil was removed from the north side of the foundation around Polarconsult sample location SG19-CS-023-020 (Figure10), with one confirmation sample collected. Approximately 33 CY of soil was removed from the south and west sides of the foundation around Polarconsult sample locations SG19-CS-030-020 and SG19-CS-031-030 (Figure10), three confirmation samples were collected (plus one duplicate). The south/west excavation extended to depths of 6 to 8.5 bgs where equipment refusal was encountered due to large boulders (Tetra Tech 2005). All excavated soil was placed into FIBCs.

Analytical results for three of the four confirmation samples indicated lead concentrations below 400 mg/kg (see Table 1); however sample location SG19-CS-213-250 had a concentration of 464 mg/kg (Figure 10). Based on an assessment of the site conditions, it was determined that further excavation in this location was not practicable due to equipment refusal (Tetra Tech 2005). All soil excavated from the site (approximately 36 CY) was placed in FIBCs with characterization samples collected for total lead and TCLP lead. The excavations were backfilled and the site capped with clean scoria (Polarconsult 2004b). Analytical results for the FIBC characterization samples ranged from 135 to 273 mg/kg total lead. TCLP results were well below 5 mg/L, indicating that the excavated soil was not a RCRA hazardous waste.

**Final Soil Disposal**

In 2002, 2003 and 2004 a total of approximately 90 CY of lead contaminated soil was removed from TPA Site 19, placed into approximately 120 FIBCs, and staged for shipment off-island. The containerized soil had elevated concentrations of lead, however, RCRA TCLP analytical results indicated that it was not a hazardous waste (Polarconsult 2004, Tetra Tech 2005). In September 2004, TPA Site 19's FIBCs, along with FIBCs containing non-RCRA soil from other TPA sites, were shipped to Columbia Ridge Landfill in Arlington, Oregon. Attachment 1 provides manifests and Certificates of Disposal for this soil.

**Conclusions and Recommendations**

TPA Site 19 is the location of a historic St. George Island carpenter shop. This shop, demolished and removed with the exception of its foundation, was the source of lead contamination of the soil surrounding part of its perimeter. The lead contamination may have resulted from paint flaking from the building's siding, from island boat (Bidar) repairs that are said to have taken place at the shop, or other unknown activities. The lead contaminated soil was largely discernable as a "dark" layer located below the backfill that was used to cover the foundation. This dark layer has been removed, and confirmation sample analytical results indicate that remaining soil at the site is below ADEC cleanup levels with the exception of one location (Tetra Tech sample location SG19-CS-213-250, Figure 10). At 464 mg/kg, the remaining lead concentration at this location is just slightly above the ADEC residential cleanup criterion of 400 mg/kg, and is found at a depth of over eight feet bgs at excavation equipment refusal. NOAA believes it has mitigated the potential for exposure to lead to the extent practicable, and therefore has completed all remedial actions necessary at TPA Site 19.

**Recommended Action:** In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate and corrective action, to the maximum extent practicable, at the Old Carpenter Shop, TPA Site 19/NOAA Site 19 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

TABLE 1. EXCAVATION CONFIRMATION SAMPLING RESULTS

| Sample ID | Sample Depth (ft) | Field Screen Method | Date Collected | Fixed Lab Results For Total Lead Concentration (mg/kg) |
|---|---|---|---|---|
| **Final Excavation, 2002, Figure 6, Polarconsult Alaska, Inc.** | | | | |
| SG-19-014-0 | Not Noted | Visual | 10/30/2002 | 182 |
| SG-19-015-0 | Not Noted | Visual | 10/30/2002 | **1,550** (Removed in 2003) |
| SG-19-016-0 | Not Noted | Visual | 10/30/2002 | 259 |
| SG-19-017-0 | Not Noted | Visual | 10/30/2002 | 18.5 |
| SG-19-018-0 | Not Noted | Visual | 10/30/2002 | 394 |
| SG-19-019-0 | Not Noted | Visual | 10/30/2002 | 37.4 |
| SG-19-019-0 D | | | 10/30/2002 | 72.9 |
| SG-19-020-0 | Not Noted | Visual | 10/30/2002 | 41 |
| SG-19-021-0 | Not Noted | Visual | 10/30/2002 | 14.5 |
| SG-19-022-0 | Not Noted | Visual | 10/30/2002 | 109 |
| SG-19-023-0 | Not Noted | Visual | 10/30/2002 | 41.5 |

| Sample ID | Sample Depth (ft) | Field Screen Method | Date Collected | Fixed Lab Results For Total Lead Concentration (mg/kg) |
|---|---|---|---|---|
| SG-19-024-0 | Not Noted | Visual | 10/30/2002 | 15.4 |
| SG-19-025-0 | Not Noted | Visual | 10/30/2002 | 313 |
| SG-19-025-0 D | | | 10/30/2002 | 306 |
| **Final Excavation, 2003, Figure 9, Polarconsult Alaska, Inc.** | | | | |
| SG19-CS-022-015 | 1.5 | Visual/LeadCheck™ | 10/22/2003 | 24.5 |
| SG19-CS-023-020 | 2.0 | Visual/LeadCheck™ | 10/22/2003 | **10,400** (Removed in 2004) |
| SG19-CS-024-015 | 1.5 | Visual/LeadCheck™ | 10/22/2003 | 116 |
| SG19-CS-025-030 | 3.0 | Visual/LeadCheck™ | 10/22/2003 | 74.4 |
| SG19-CS-026-020 | 2.0 | Visual/LeadCheck™ | 10/22/2003 | 30 |
| SG19-CS-027-020 | 2.0 | Visual/LeadCheck™ | 10/22/2003 | 201 |
| SG19-CS-028-010 | 1.0 | Visual/LeadCheck™ | 10/24/2003 | 110 |
| SG19-CS-029-025 | 2.5 | Visual/LeadCheck™ | 10/24/2003 | 17.5 |
| SG19-CS-030-020 | 2.0 | Visual/LeadCheck™ | 10/24/2003 | **989** (Removed in 2004) |
| SG19-CS-030-dup | | | 10/24/2003 | **1,420** (Removed in 2004) |
| SG19-CS-031-030 | 3.0 | Visual/LeadCheck™ | 10/24/2003 | **451** (Removed in 2004) |
| SG19-CS-032-015 | 1.5 | Visual/LeadCheck™ | 10/24/2003 | 347 |
| **Final Excavation, 2004, Figure 10, Tetra Tech EM, Inc.** | | | | |
| SG19-CS-201-030 | 3.0 | XRF | 06/07/2004 | 89.3 |
| SG19-CS-203-065 | 6.5 | XRF | 06/07/2004 | 109 |
| SG19-CS-213-085 | 8.5 | XRF | 06/10/2004 | 375 |
| SG19-CS-213-dup | | | 06/10/2004 | **464 (Left in place)** |
| SG19-CS-214-060 | 6.0 | XRF | 06/11/2004 | 277 |

**References:**


ADEC 2005. *18 AAC 75, Articles 3, 6 and 9. Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through January 30, 2005.

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NOAA 1996. *Pribilof Islands Environmental Restoration Two-Party Agreement*, Attorney General's Office File No. 66 1-95-0126. January 26.

NOAA 2004. Letter from Mr. John Lindsay (NOAA Pribilof Project Office) to Mr. Louis Howard (ADEC) Subject: *Field Screening for Lead Contaminated Soil Using a Field Portable X-Ray Fluorescence Analyzer (XRF), Various Sites, Pribilof Islands, Alaska*. May 17.

Polarconsult 2004a. *Draft Interim Corrective Action Report, Old Carpenter Shop, TPA Site 19, Remedial Corrective Action Project, St. George Island, Alaska*. Polarconsult Alaska, Inc., Anchorage, Alaska. May 28.

Polarconsult 2004b. *Source Area Letter Report of Environmental Findings, 2003 Field Season, St. George Island, Pribilof Islands, Alaska*. Polarconsult Alaska, Inc., Anchorage, Alaska. June 22.

Tetra Tech 2002. *Final Site Characterization Report, Old Carpenter Shop, Two-Party Agreement Site No. 19, Pribilof Islands Site Restoration, St. George Island, Alaska*. Tetra Tech EM Inc., Mountlake Terrace, Washington. March 12.

Tetra Tech 2005. *Final Letter Report, Removal of Lead-Contaminated Soils from TPA Sites 3,9, and 19 and PCB Sampling at TPA Site 9, St. George Island, Alaska*. Tetra Tech EM Inc., Mountlake Terrace, Washington. July 6.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

January 23, 2006
Date

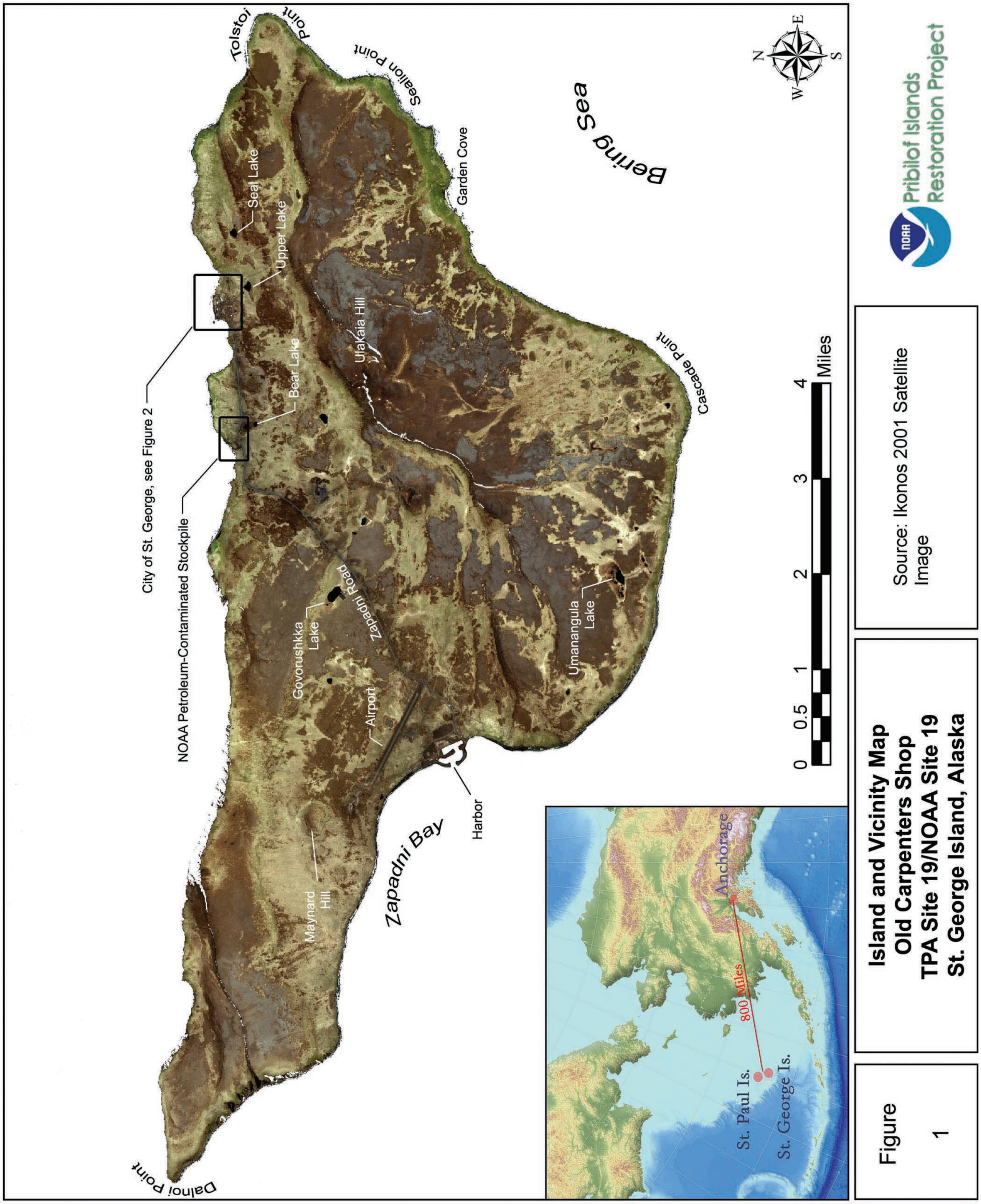
**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at the Old Carpenter Shop, St. George TPA Site 19/NOAA Site 19, in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

January 25, 2006
Date

**Figures**


Tolstoi
Point
Sealion Point
Garden Cove
Bering Sea
Seal Lake
Upper Lake
Bear Lake
Ulakaia Hill
Cascade Point
City of St. George, see Figure 2
NOAA Petroleum-Contaminated Stockpile
Govorushkka Lake
Zapadni Road
Airport
Umanangula Lake
Harbor
Zapadni Bay
Maynard Hill
Dalnoi Point
N
E
S
W
0 0.5 1 2 3 4 Miles
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Pribilof Islands Restoration Project
NOAA
Source: Ikonos 2001 Satellite Image
Figure 1
Island and Vicinity Map
Old Carpenters Shop
TPA Site 19/NOAA Site 19
St. George Island, Alaska


| | | |
|---|---|---|
| Figure 2 | **Site Location Map<br>Old Carpenter Shop<br>TPA Site 19/NOAA Site 19<br>St. George Island, Alaska** | Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985 |

Pribilof Islands Restoration Project

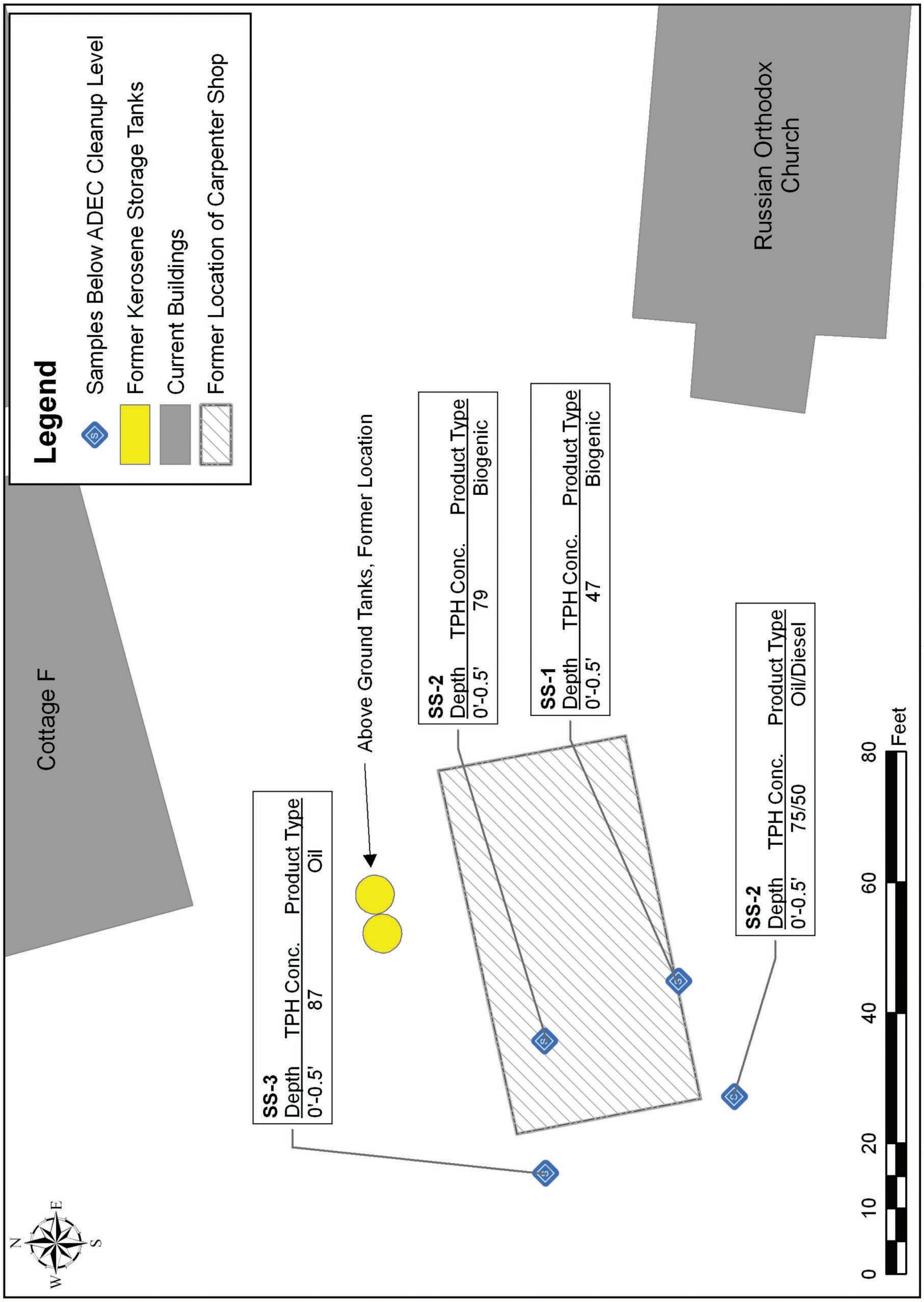
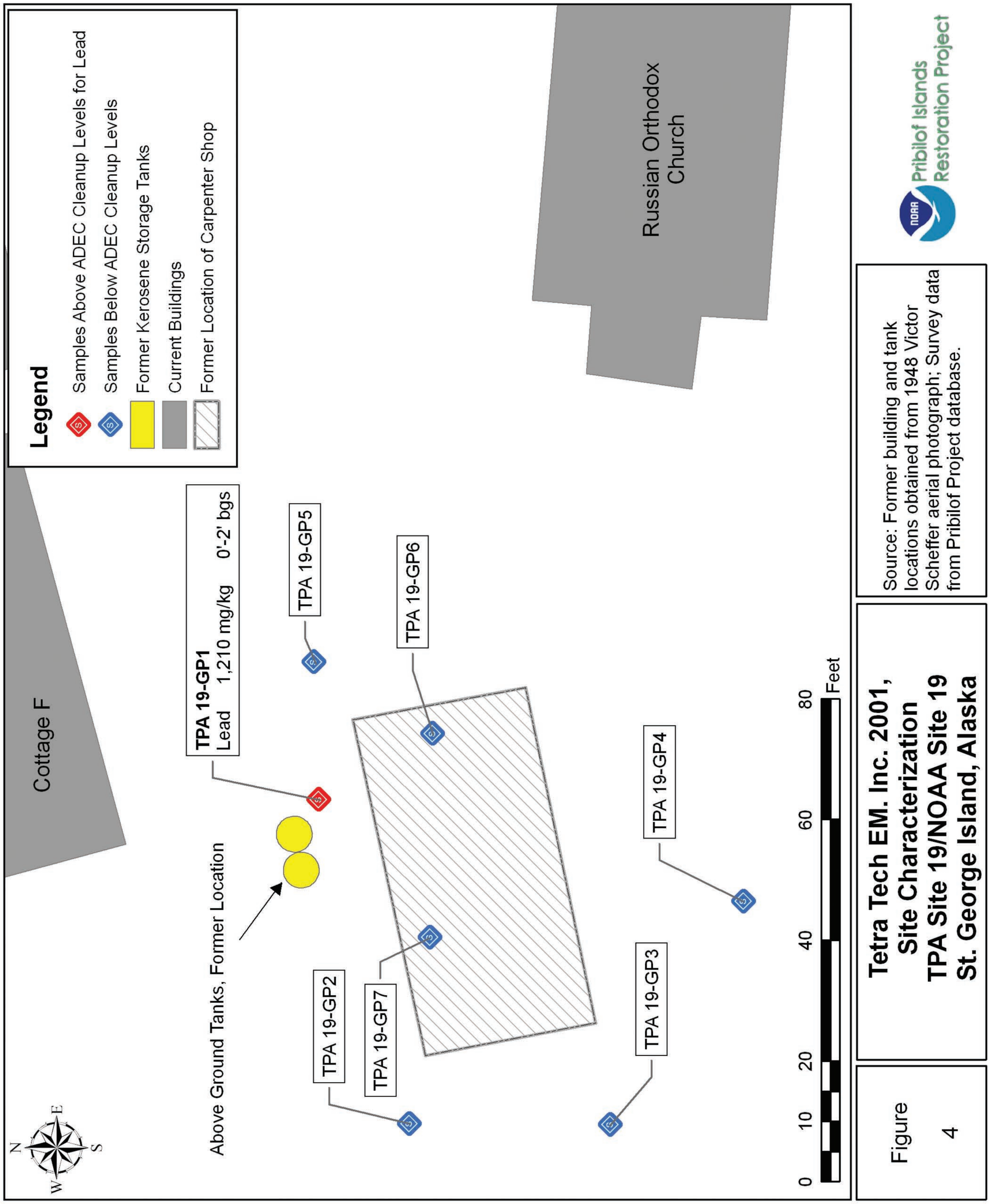


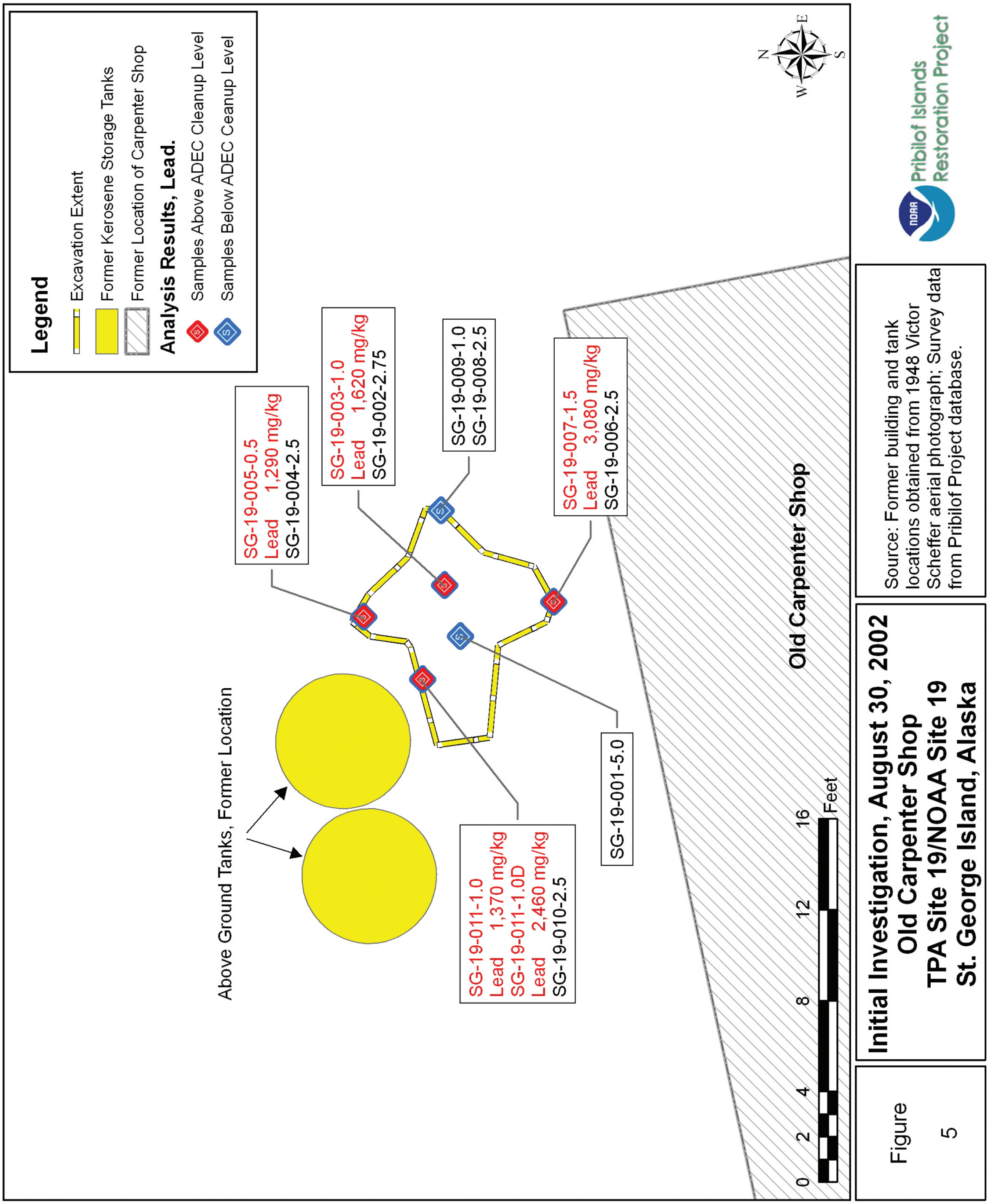

Figure 3

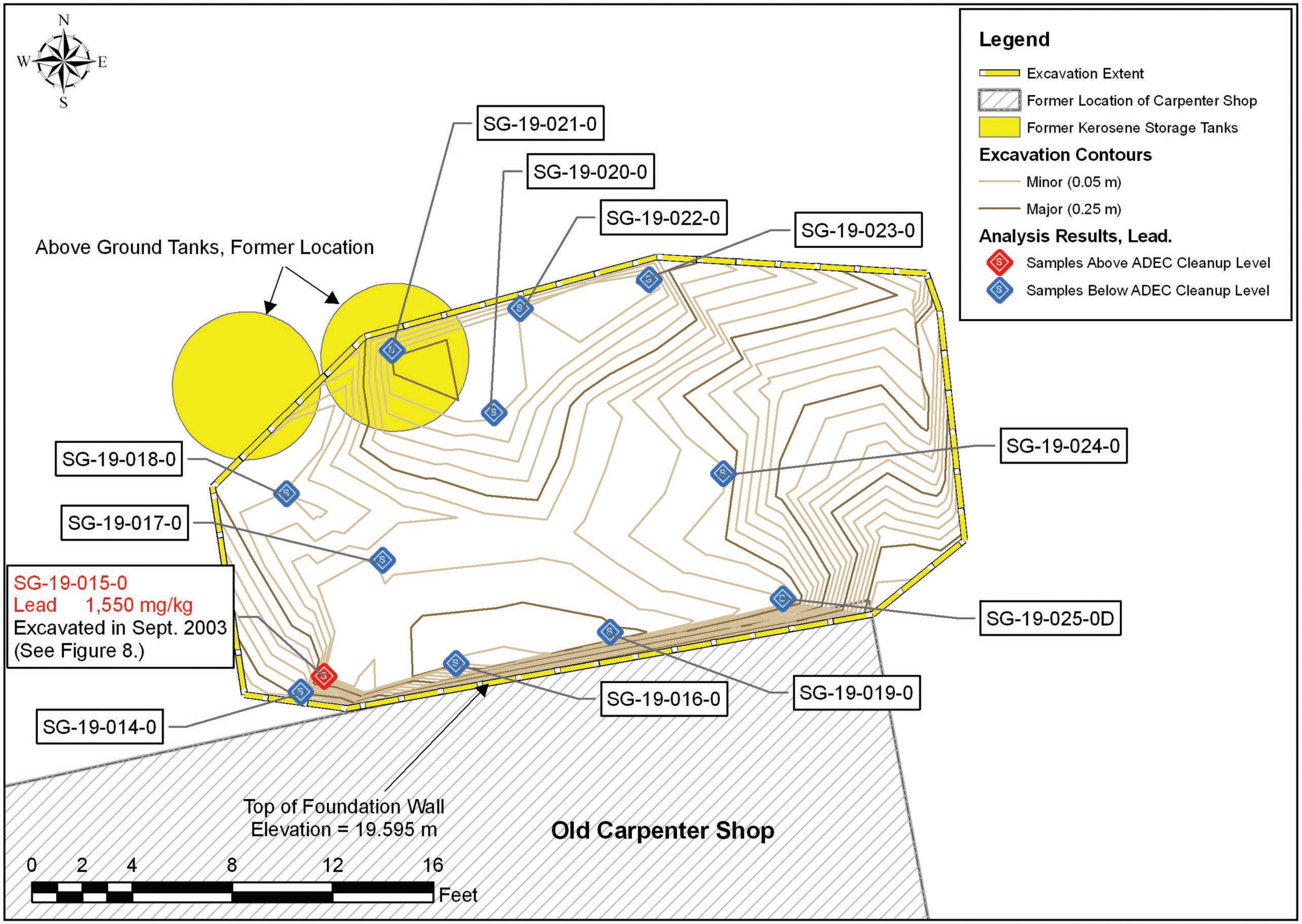
**Hart Crowser 1996, Site Characterization TPA Site 19/NOAA Site 19 St. George Island, Alaska**

Source: Former building and tank locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database.



Legend
Samples Above ADEC Cleanup Levels for Lead
Samples Below ADEC Cleanup Levels
Former Kerosene Storage Tanks
Current Buildings
Former Location of Carpenter Shop
Cottage F
Russian Orthodox Church
Above Ground Tanks, Former Location
TPA 19-GP1
Lead 1,210 mg/kg 0'-2' bgs
TPA 19-GP2
TPA 19-GP3
TPA 19-GP4
TPA 19-GP5
TPA 19-GP6
TPA 19-GP7
0 10 20 40 60 80 Feet
Figure 4
Tetra Tech EM. Inc. 2001, Site Characterization TPA Site 19/NOAA Site 19 St. George Island, Alaska
Source: Former building and tank locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database.
Pribilof Islands Restoration Project


Legend
Excavation Extent
Former Kerosene Storage Tanks
Former Location of Carpenter Shop
Analysis Results, Lead.
Samples Above ADEC Cleanup Level
Samples Below ADEC Ceanup Level
Above Ground Tanks, Former Location
SG-19-011-1.0
Lead 1,370 mg/kg
SG-19-011-1.0D
Lead 2,460 mg/kg
SG-19-010-2.5
SG-19-005-0.5
Lead 1,290 mg/kg
SG-19-004-2.5
SG-19-003-1.0
Lead 1,620 mg/kg
SG-19-002-2.75
SG-19-009-1.0
SG-19-008-2.5
SG-19-007-1.5
Lead 3,080 mg/kg
SG-19-006-2.5
SG-19-001-5.0
Old Carpenter Shop
0 2 4 8 12 16 Feet
N E S W
Figure 5
Initial Investigation, August 30, 2002
Old Carpenter Shop
TPA Site 19/NOAA Site 19
St. George Island, Alaska
Source: Former building and tank locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database.
Pribilof Islands Restoration Project




| Figure 6 | **Excavation and Sample Location Plan, October 26, 2002. TPA Site 19/NOAA Site 19 St. George Island, Alaska** | Source: Former building and tank locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database. |
|---|---|---|

Pribilof Islands Restoration Project

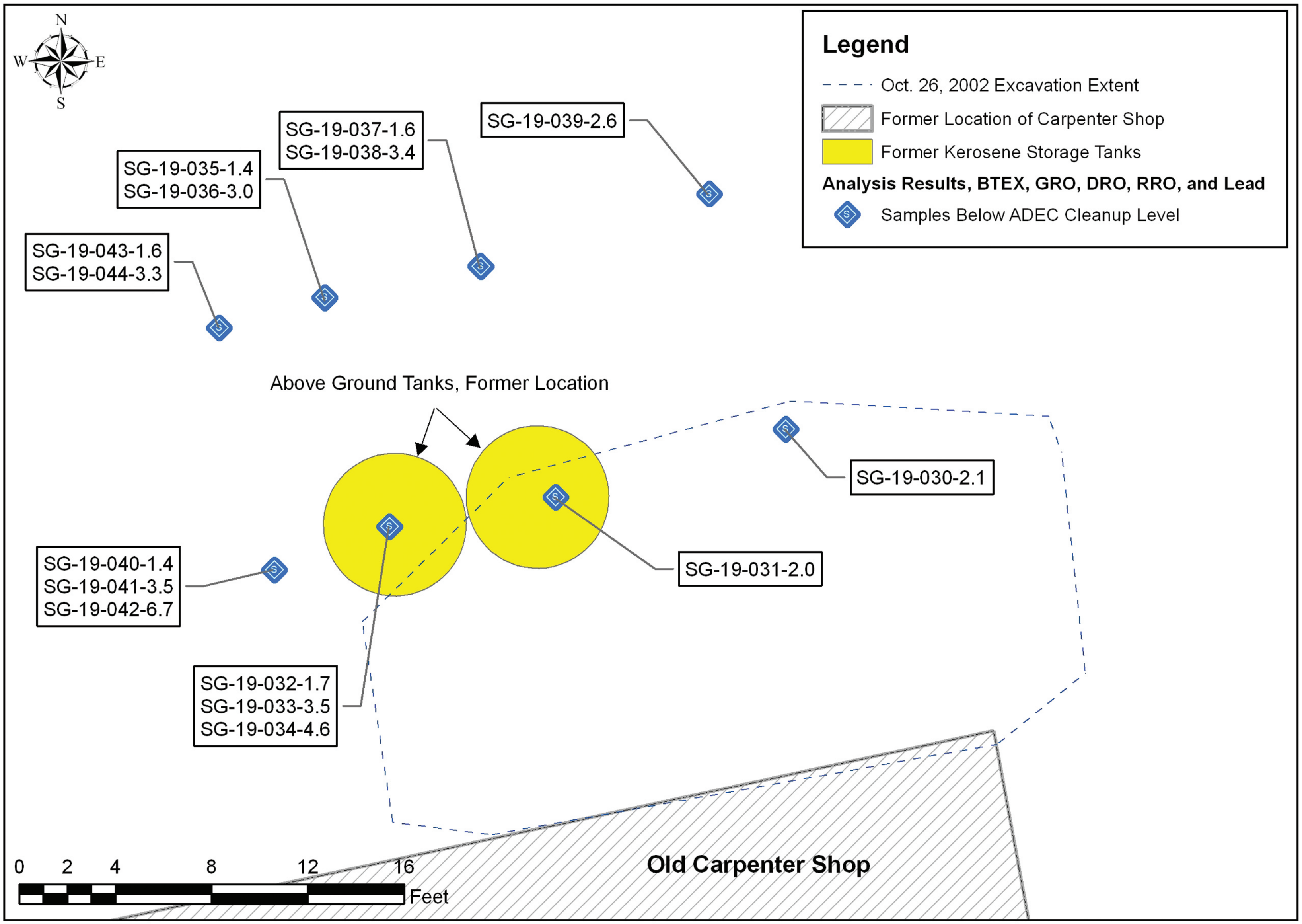



Figure 7

**Soil Boring and Sample Location Plan, October 30, 2002.**
**TPA Site 19/NOAA Site 19**
**St. George Island, Alaska**

Source: Former building and tank locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database.

Pribilof Islands Restoration Project

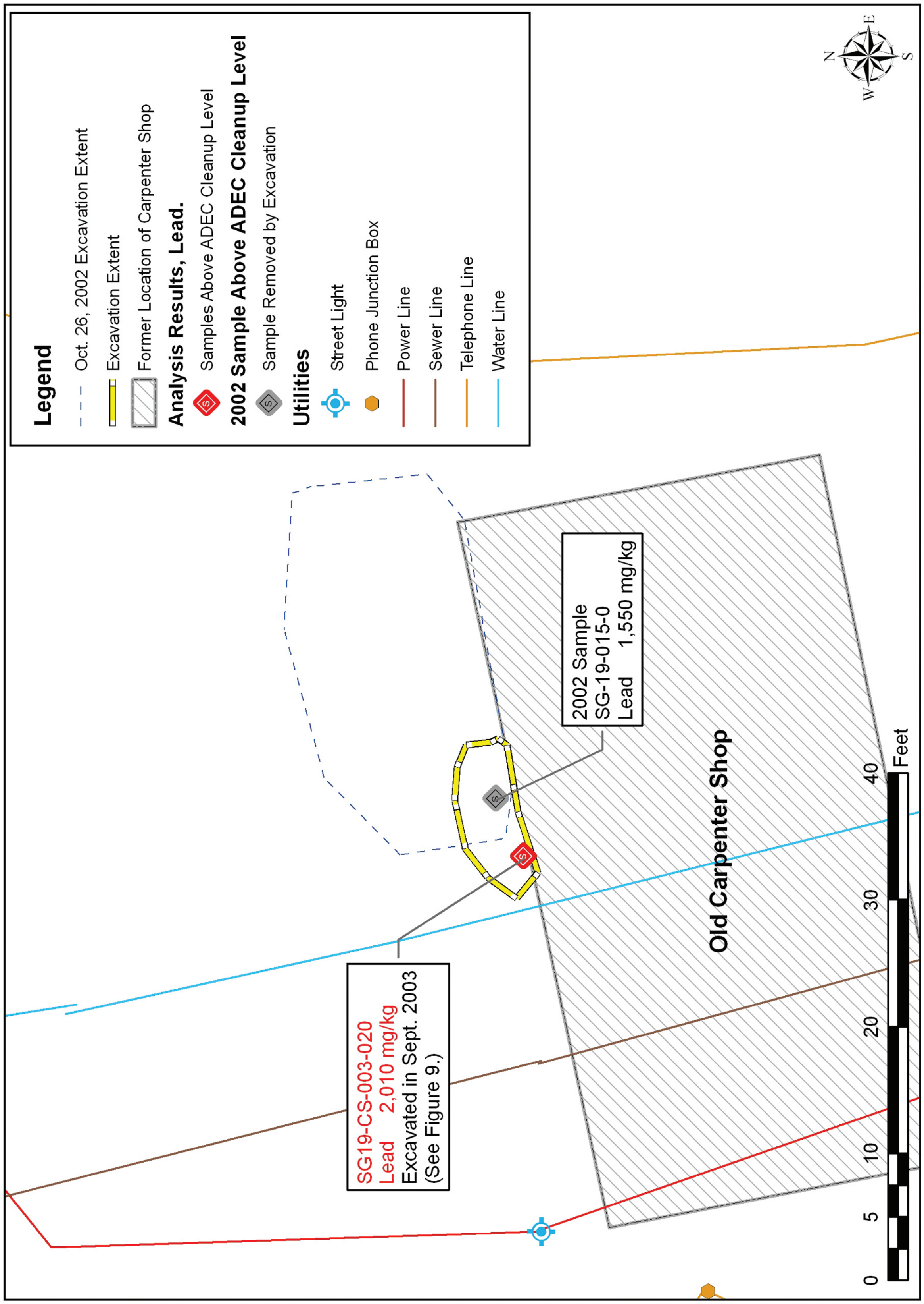



Figure 8

**Excavation and Sample Location Plan, September 16, 2003. TPA Site 19/NOAA Site 19 St. George Island, Alaska**

Source: Former building locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database.

Pribilof Islands Restoration Project

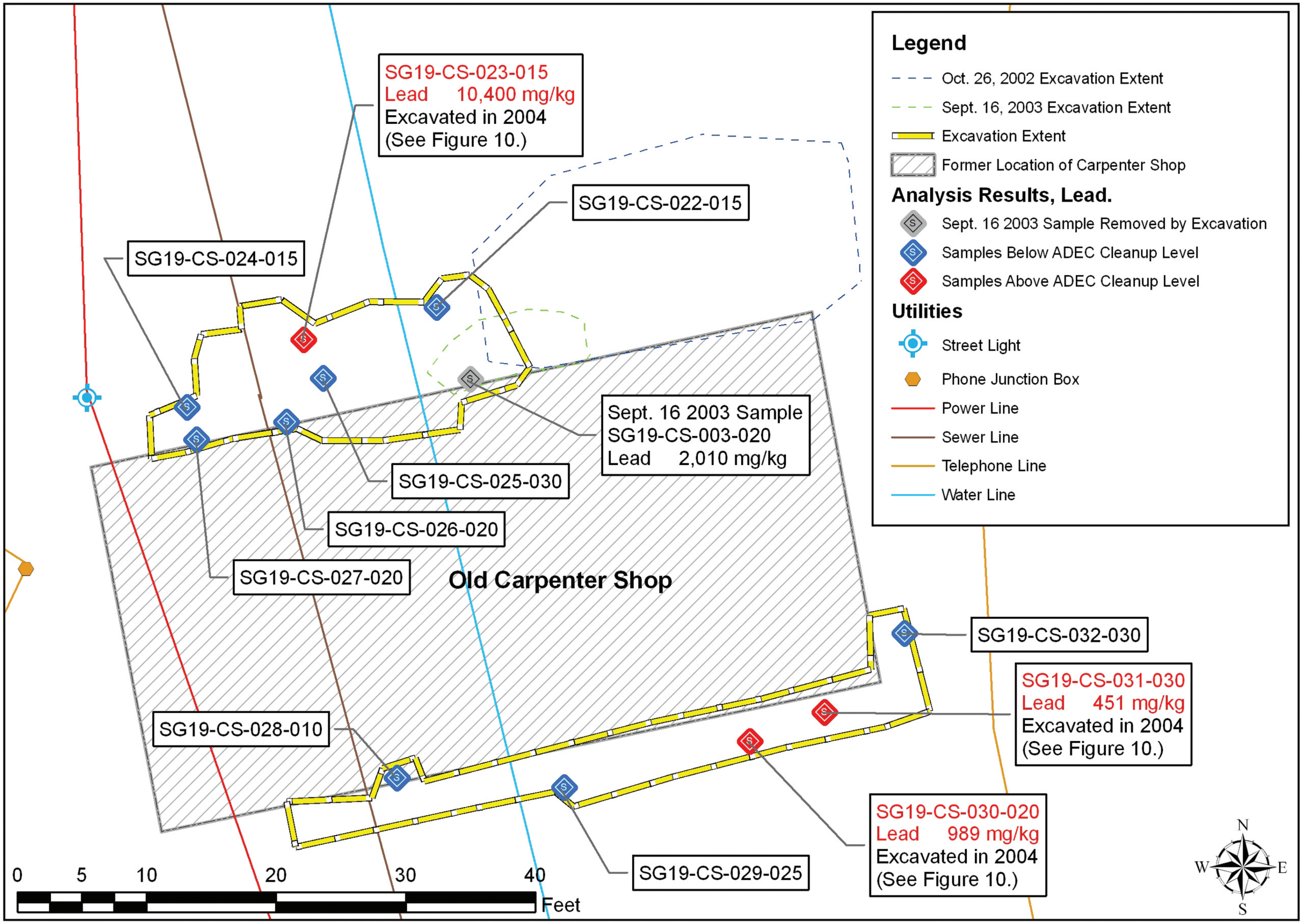
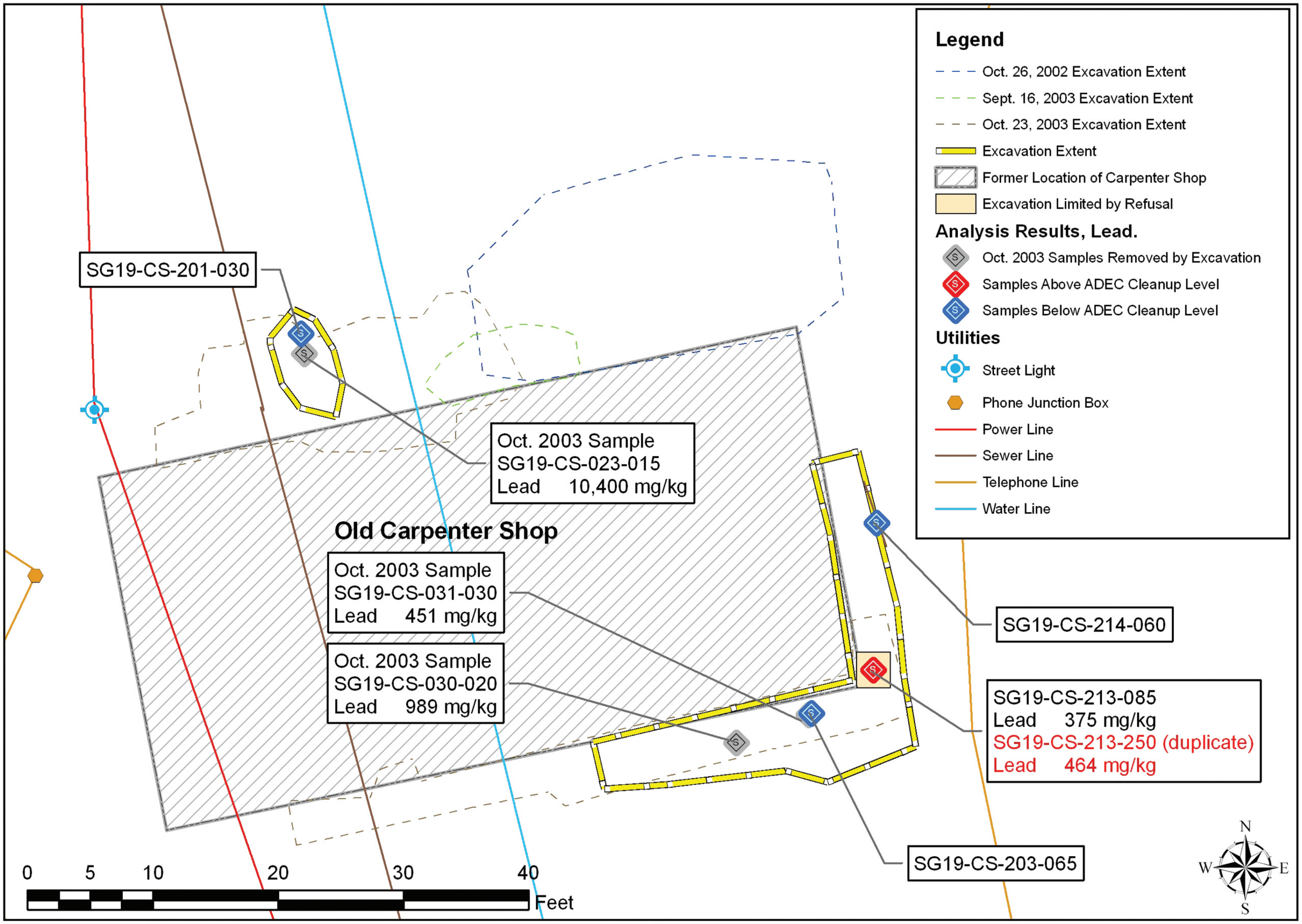



Figure 9

**Excavation and Sample Location Plan, October 22 & 23, 2003. TPA Site 19/NOAA Site 19 St. George Island, Alaska**

Source: Former building locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database.

Pribilof Islands Restoration Project




Figure

10

**Excavation and Sample Location Plan, June 2004.**
**TPA Site 19/NOAA Site 19**
**St. George Island, Alaska**

Source: Former building locations obtained from 1948 Victor Scheffer aerial photograph; Survey data from Pribilof Project database.

Pribilof Islands Restoration Project

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2008-000320-0

Recording Dist: 305 - Aleutian Islands
7/15/2008 10:21 AM Pages: 1 of 6

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 19
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation and The Aleut Corporation as the owners, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property located west of the St. George Orthodox Church and north of the Aikow Hotel, in the City of St. George, St George Island, Alaska 99591 is contaminated with lead. More specifically, the property is described as follows:

**Lot 42, Tract 52**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 8.44" North Latitude, 169° 32' 53.51" West Longitude**

This property, hereafter referred to as Site 19 (Figures 1 and 2), has been subject to lead contaminated soil from a discharge, or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual lead contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135454; File ID 2643.38.025.

This site was identified as *Site 19 Old Carpenter Shop* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 19 and NOAA Site 19. Following corrective action, NOAA submitted a request for conditional closure for Site 19 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2006). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 19 cleanup has been performed to the maximum extent practicable even though residual lead contaminated soil remained on the property (NOAA 2006). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2006).

| | |
|---|---|
| Grantor: | U.S. Bureau of Land Management |
| Grantee (subsurface estate): | The Aleut Corporation<br>4000 Old Seward Highway, Suite 300<br>Anchorage, AK 99503 |
| Grantee (surface estate): | St. George Tanaq Corporation<br>4141 B Street, Suite 301<br>Anchorage, AK 99503 |

**Recording District:** Aleutian Islands

6

## Remedial Actions and Residual Contamination

The federal government constructed a wood-sided carpentry building at Site 19 in 1921. Aerial photos indicate the building was demolished, with the exception of its foundation, between 1954 and 1960. The site, including the foundation, was subsequently backfilled and used as a parking area for the community church. An environmental investigation conducted in 2001 (Tetra Tech 2002) found lead contaminated soil at one sample location outside the north foundation. In 2002, 2003, and 2004, NOAA excavated and removed a total of approximately 90 cubic yards of lead contaminated soil from around the outside of the building's foundation. Given the location of the lead contamination, i.e. subsurface and around the perimeter of the building, it is likely the source of the contamination was pealing lead-based paint from the former building exterior siding. All removed lead contaminated soil was shipped off-island for disposal (NOAA 2006). Contaminated soil removal continued until ADEC lead cleanup requirements were met or further excavation was not practicable due to reaching equipment refusal. Equipment refusal was encountered at one location in the southeast corner of the foundation at 8.5 feet below the ground surface (Tetra Tech 2005a). The excavated areas were backfilled with clean material. Attached is a diagram (Figure 3) drawn to scale that shows the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate location of remaining soil contamination based on confirmation sample results.

Groundwater samples collected from 2001 through 2004 from monitoring wells installed down-gradient of Site 19, within TPA Site 9 - Old Power Plant, had analytical results indicating lead concentrations either non-detect or detected at concentrations well below ADEC cleanup standards (Tetra Tech 2005b). These monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005).

### Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2005. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

NOAA. 2006. *Conditional Closure Request, Old Carpenter Shop, TPA Site 19/Site 19 – St. George Island, Alaska*. Signed by John Lindsay (NOAA) and submitted January 23, 2006. Signed by Louis Howard of ADEC Contaminated Sites Program, January 25, 2006.

Tetra Tech EM Inc. (Tetra Tech). 2002. *Final Site Characterization Report, Old Carpenter Shop, Two-Party Agreement Site No. 19, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska.* Prepared for National Oceanic and Atmospheric Administration, National Ocean Service, Office of Response and Restoration, 7600 Sand Point Way NE, Seattle, WA. 98115. March 12.

Tetra Tech. 2005a. *Final Letter Report, Removal of Lead-Contaminated Soils from TPA Sites 3, 9, and 19 and PCB Sampling at TPA Site 9, St. George Island, Alaska.* July 6.

Tetra Tech. 2005b. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

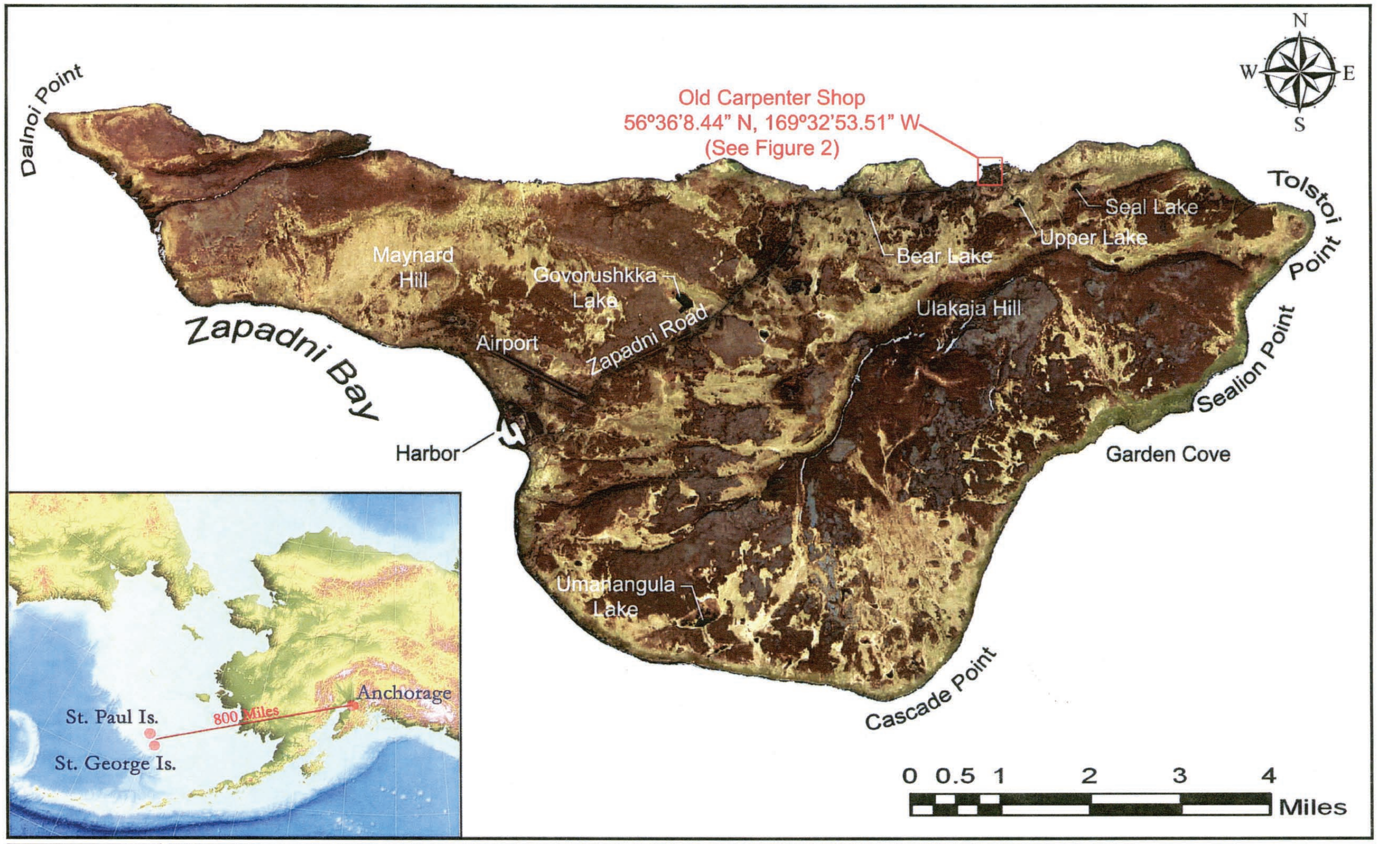
Signature: ______________________________

Printed Name: ____________John A. Lindsay____________

Mailing Address:

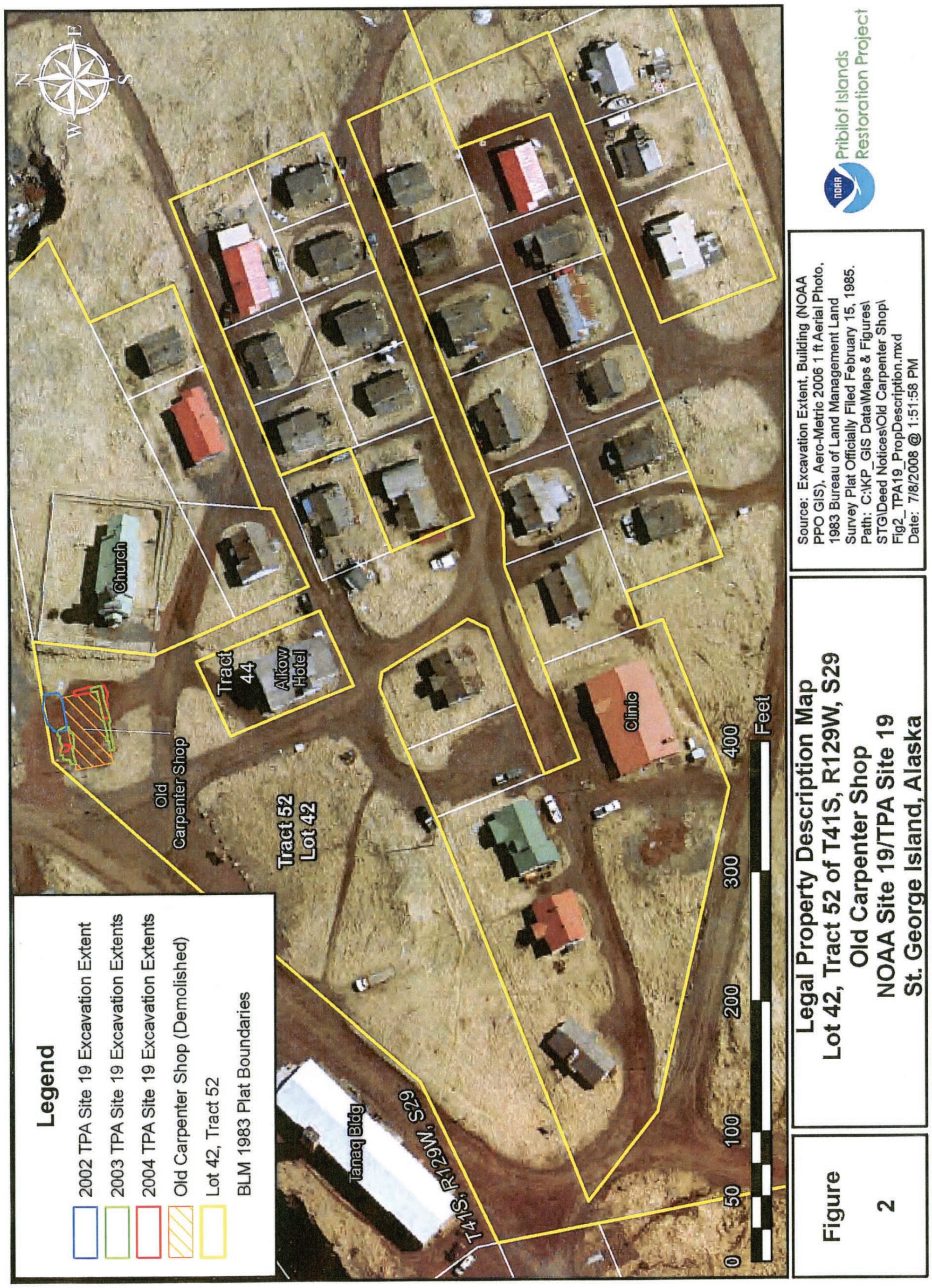
Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 6
2008-000320-0



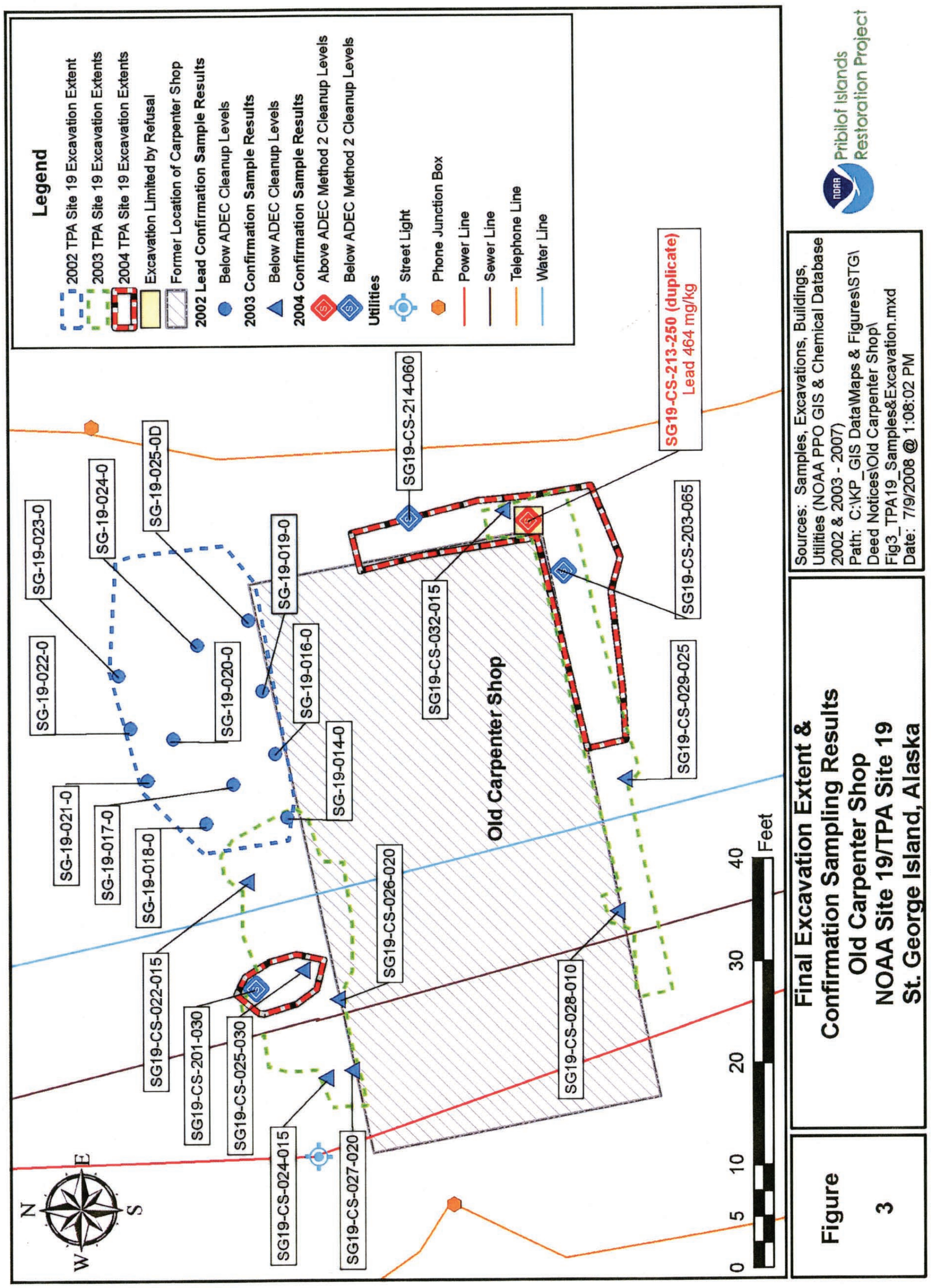

| Figure 1 | St. George Island Vicinity Map<br>Old Carpenter Shop<br>NOAA Site 19/TPA Site 19<br>St. George Island, Alaska | **Source:** Ikonos Satellite Imagery (Space Imaging 2001)<br>**Path:** C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Old Carpenter Shop\Fig 1 STG Standard - TPA 19.psd<br>**Date:** 06/26/2008 |
|---|---|---|

Pribilof Islands Restoration Project




5 of 6

2008-000320-0




6 of 6
2008-000320-0

# NOAA Site 20
# TPA Site 20: Old Coal House

Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska, Volume I ........................................471

Letter from Mary Moloseau Goetz, P.E. to Ray Dronenburg RE: St. George Island, Old Coal House site. Dated July 15, 1997 ........................................497

Letter from Ray Dronenburg to Mary Moloseau Goetz, P.E. RE: St. George Island, Old Coal House site; closure for. Dated September 9, 1997....................499

# Expanded Site Inspection
# St. George Island
# Pribilof Islands, Alaska

## Volume I

January 1997

Prepared for
U.S. Army Corps of Engineers
Seattle District
4735 East Marginal Way South
Seattle, Washington 98124-2255

Hart Crowser
1910 Fairview Avenue East
Seattle, Washington 98102-3699

CONTENTS

| | Page |
|---|---|
| **VOLUME I** | |
| **ACRONYMS** | x |
| **EXECUTIVE SUMMARY** | ES-1 |
| *Site-Specific Results* | ES-1 |
| **1.0 INTRODUCTION** | 1-1 |
| *1.1 Report Organization* | 1-2 |
| *1.2 Island Historical Information* | 1-3 |
| *1.3 Environmental Setting* | 1-3 |
| **2.0 FIELD ACTIVITIES** | 2-1 |
| *2.1 General Approach* | 2-1 |
| *2.2 Soil Sampling Techniques* | 2-2 |
| *2.3 Modifications from the Management Plan* | 2-4 |
| **3.0 CHEMICAL TESTING PROGRAM AND DATA QUALITY REVIEW** | 3-1 |
| *3.1 Scope of Chemical Testing Program* | 3-1 |
| *3.2 Summary of Data Quality Review Results* | 3-2 |
| *3.3 Comparison of Field Laboratory and Project Laboratory Analytical Results* | 3-3 |
| **4.0 POTENTIAL SOIL CLEANUP LEVELS** | 4-1 |
| *4.1 ADEC Soil Matrix Cleanup Levels* | 4-2 |
| *4.2 EPA Region 3 RBC Soil Cleanup Levels* | 4-4 |
| *4.3 PCB Soil Cleanup Levels* | 4-5 |
| *4.4 Soil Background Concentrations for Metals* | 4-5 |
| **5.0 SITE-SPECIFIC EVALUATIONS** | 5-1 |
| *5.1 Open Pits Site* | 5.1-1 |
| *5.2 Inactive/Abandoned Diesel Tank Farm Site* | 5.2-1 |
| *5.3 Inactive Gasoline Tank Farm Site* | 5.3-1 |
| *5.4 Old Power Plant Site* | 5.4-1 |
| *5.5 Former Kerosene/AST Storage Area Site* | 5.5-1 |
| *5.6 Cross Hill Drum Dump Site* | 5.6-1 |

CONTENTS (Continued)

| | Page |
|---|---|
| *5.7 Former Fuel Storage Area Site* | 5.7-1 |
| *5.8 Old Carpenter Shop Site* | 5.8-1 |
| *5.9 Old Coal House Site* | 5.9-1 |
| *5.10 Port Fuel Supply Line—West Oceanfront Subarea* | 5.10-1 |
| *5.11 Port Fuel Supply Line—East Oceanfront Subarea* | 5.11-1 |
| *5.12 Port Fuel Supply Line—North Cargo Line Subarea* | 5.12-1 |
| *5.13 Port Fuel Supply Line—South Cargo Line Subarea* | 5.13-1 |
| *5.14 Active Power Plant Site* | 5.14-1 |
| *5.15 Makushin Pit Site* | 5.15-1 |
| **6.0 REFERENCES** | 6-1 |

**TABLES**

| | | |
|---|---|---|
| ES-1 | St. George Summary of Results and Recommendations | ES-3 |
| 2-1 | Contingency Soil Sampling Screening Levels | 2-6 |
| 3-1 | Summary of Planned and Completed Chemical Analyses | 3-9 |
| 3-2 | Summary of Field Laboratory and Project Laboratory Split Sample Results BTEX Analyses | 3-10 |
| 3-3 | Summary of Field Laboratory and Project Laboratory Split Sample Results TPH Analyses | 3-11 |
| 3-4 | Summary of Field Laboratory and Project Laboratory Split Sample Results Pesticide/PCB Analysis | 3-14 |
| 3-5 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Benzene Analysis | 3-16 |
| 3-6 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Total BTEX Analysis | 3-17 |
| 3-7 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Gasoline-Range Hydrocarbon Analysis | 3-18 |
| 3-8 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Diesel-Range Hydrocarbon Analysis | 3-19 |
| 3-9 | Comparison of Field and Project Laboratory Split Sample Detection and Cleanup Level Exceedence Frequencies-Total Petroleum Hydrocarbon Analysis | 3-20 |
| 4-1 | ADEC Soil Cleanup Level Matrix Table | 4-6 |
| 4-2 | Input Parameters and Matrix Scores for Sites on St. George Island | 4-7 |
| 4-3 | Potential Non-Petroleum Soil Cleanup Levels | 4-8 |
| 4-4 | Summary of Background Soil Analytical Results - St. George Island | 4-11 |
| 5.1-1 | Statistical Summary of Soil Quality Data - St. George Island - Open Pits Site | 5.1-7 |

## CONTENTS (Continued)

Page

### TABLES (Continued)

| | | |
|---|---|---|
| 5.1-2 | Screening Level Exceedences - St. George Island - Open Pits Site | 5.1-11 |
| 5.2-1 | Statistical Summary of Soil Quality Data - St. George Island - Inactive/Abandoned Diesel Tank Farm Site | 5.2-7 |
| 5.2-2 | Screening Level Exceedences - St. George Island - Inactive/Abandoned Diesel Tank Farm Site | 5.2-8 |
| 5.3-1 | Statistical Summary of Soil Quality Data St. George Island - Inactive Gasoline Tank Farm Site | 5.3-6 |
| 5.3-2 | Screening Level Exceedences - St. George Island - Inactive Gasoline Tank Farm Site | 5.3-7 |
| 5.4-1 | Statistical Summary of Soil Quality Data St. George Island - Old Power Plant Site | 5.4-7 |
| 5.4-2 | Screening Level Exceedences - St. George Island - Old Power Plant Site | 5.4-9 |
| 5.5-1 | Statistical Summary of Soil Quality Data St. George Island - Former Kerosene/AST Storage Area Site | 5.5-3 |
| 5.6-1 | Statistical Summary of Soil Quality Data St. George Island - Cross Hill Drum Dump Site | 5.6-3 |
| 5.7-1 | Statistical Summary of Soil Quality Data St. George Island - Former Fuel Storage Area Site | 5.7-7 |
| 5.7-2 | Screening Level Exceedences - St. George Island - Former Fuel Storage Area Site | 5.7-8 |
| 5.8-1 | Statistical Summary of Soil Quality Data St. George Island - Old Carpenter Shop Site | 5.8-3 |
| 5.9-1 | Statistical Summary of Soil Quality Data St. George Island - Old Coal House Site | 5.9-6 |
| 5.9-2 | Screening Level Exceedences - St. George Island - Old Coal House Site | 5.9-9 |
| 5.10-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - West Oceanfront Subarea | 5.10-4 |
| 5.11-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - East Oceanfront Subarea | 5.11-9 |
| 5.11-2 | Screening Level Exceedences - St. George Island - Port Fuel Supply Line - East Oceanfront Subarea | 5.11-10 |
| 5.12-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - North Cargo Line Subarea (North) | 5.12-11 |

**CONTENTS (Continued)**

Page

**TABLES (Continued)**

| | | |
|---|---|---|
| 5.12-2 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - North Cargo Line Subarea (South) | 5.12-12 |
| 5.12-3 | Screening Level Exceedences - St. George Island - Port Fuel Supply Line - North Cargo Line Subarea | 5.12-13 |
| 5.13-1 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - South Cargo Line Subarea (North) | 5.13-9 |
| 5.13-2 | Statistical Summary of Soil Quality Data St. George Island - Port Fuel Supply Line - South Cargo Line Subarea (South) | 5.13-10 |
| 5.13-3 | Screening Level Exceedences - St. George Island - Port Fuel Supply Line - South Cargo Line Subarea | 5.13-11 |
| 5.14-1 | Statistical Summary of Soil Quality Data St. George Island - Active Power Plant Site | 5.14-7 |

**FIGURES**

| | |
|---|---|
| 1-1 | Location Map |
| 1-2 | Site Map |
| 1-3 | Sites in City of St. George, Alaska |
| 4-1 | Background Sample Location Plan |
| 5.1-1 | Site and Exploration Plan Showing TPH Concentrations Open Pit Sites |
| 5.1-2 | Generalized Subsurface Cross Section A-A' Open Pit Sites |
| 5.2-1 | Site and Exploration Plan Showing TPH Concentrations Inactive/Abandoned Diesel Tank Farm Site and Port Fuel Supply Line - South Cargo Line Subarea |
| 5.2-2 | Generalized Subsurface Cross Section A-A' Inactive/Abandoned Diesel Tank Farm Site |
| 5.3-1 | Site and Exploration Plan Showing TPH Concentrations Inactive Gasoline Tank Farm Site and Port Fuel Supply Line - North Cargo Line Subarea |
| 5.3-2 | Generalized Subsurface Cross Section A-A' Inactive Gasoline Tank Farm Site |
| 5.4-1 | Site and Exploration Plan Showing TPH Concentrations Old Power Plant Site |

**CONTENTS (Continued)**

Page

**FIGURES (Continued)**

| | |
|---|---|
| 5.4-2 | Generalized Subsurface Cross Section A-A' Old Power Plant Site |
| 5.5-1 | Site and Exploration Plan Showing TPH Concentrations Former Kerosene/AST Storage Area Site |
| 5.6-1 | Site and Exploration Plan Showing TPH Concentrations Cross Hill Drum Dump Site |
| 5.7-1 | Site and Exploration Plan Showing TPH Concentrations Former Fuel Storage Area Site |
| 5.7-2 | Generalized Subsurface Cross Section A-A' Former Fuel Storage Area Site |
| 5.8-1 | Site and Exploration Plan Showing TPH Concentrations Old Carpenter Shop Site |
| 5.9-1 | Site and Exploration Plan Showing Hydrocarbon Concentrations Old Coal House Site |
| 5.10-1 | Site and Exploration Plan Showing TPH Concentrations Port Fuel Supply Line - West Oceanfront Subarea |
| 5.11-1 | Site and Exploration Plan Showing TPH Concentrations - Port Fuel Supply Line - East Oceanfront Subarea |
| 5.11-2 | Generalized Subsurface Cross Section A-A' Port Fuel Supply Line - East Oceanfront Subarea |
| 5.12-1 | Site and Exploration Plan Showing TPH Concentrations Inactive Gasoline Tank Farm Site and Port Fuel Supply Line - North Cargo Line Subarea |
| 5.12-2 | Generalized Subsurface Cross Section A-A' Port Fuel Supply Line - North Cargo Line Subarea - North |
| 5.12-3 | Generalized Subsurface Cross Section B-B' Port Fuel Supply Line - North Cargo Line Subarea - South |
| 5.13-1 | Site and Exploration Plan Showing TPH Concentrations Inactive/Abandoned Diesel Tank Farm Site and Port Fuel Supply Line - South Cargo Line Subarea |
| 5.13-2 | Generalized Subsurface Cross Section A-A' Inactive/Abandoned Diesel Tank Farm Site and Port Fuel Supply Line - South Cargo Line Subarea - South |
| 5.14-1 | Site and Exploration Plan Showing TPH Concentrations Active Power Plant Site |
| 5.14-2 | Generalized Subsurface Cross Section A-A' Active Power Plant Site |
| 5.15-1 | Site and Exploration Plan Showing TPH Concentrations Makushin Pit |

**CONTENTS (Continued)**

| | Page |
|---|---|
| **APPENDIX A**<br>**FIELD EXPLORATION PROCEDURES AND LOGS** | A-1 |
| *Surface and Subsurface Soil Sampling* | A-1 |
| *Decontamination Procedures* | A-5 |
| *Disposal of Investigation-Derived Wastes* | A-5 |
| *Field Documentation* | A-6 |
| *Sample Quality Handling* | A-7 |
| *Health and Safety Plan Assessment* | A-12 |
| *Hart Crowser Project Team* | A-13 |

**TABLES**

| | | |
|---|---|---|
| A-1 | Summary of Surface Samples and Visual Descriptions | A-15 |
| A-2 | Logbook Format | A-19 |

**FIGURES**

| | |
|---|---|
| A-1 | Key to Exploration Logs |
| A-2 through A-7 | Test Pit Log TP-1 through TP-13, Open Pits |
| A-8 through A-12 | Test Pit Log TP-1 through TP-13, Inactive/Abandoned Diesel Tank Farm |
| A-13 | Hand-Auger Boring Log HA-1, Inactive/Abandoned Diesel Tank Farm |
| A-14 and A-15 | Test Pit Log TP-1 through TP-4, Inactive Gasoline Tank Farm |
| A-16 | Hand-Auger Boring Log HA-1 through HA-4, Inactive Gasoline Tank Farm |
| A-17 through A-19 | Test Pit Log OP-TP-1 through OP-TP-7, Old Power Plant and Hand-Auger Boring Log HA-1, Old Power Plant |
| A-20 and A-21 | Test Pit Log TP-1 through TP-4, Former Kerosene/AST Storage Area |
| A-22 and A-23 | Test Pit Log TP-1 through TP-7, Former Fuel Storage Area |
| A-24 and A-25 | Hand-Auger Boring Log HA-1 through HA-5, Old Coal House |
| A-26 | Test Pit Log EO-TP-1 and EO-TP-2, Port Fuel Supply Line - East Ocean Front |
| A-27 through A-30 | Test Pit Log NC-TP-1 through NC-TP-7, Port Fuel Supply Line - North Cargo Line |
| A-31 | Test Pit Log TP-1, Port Fuel Supply Line - South Cargo Line |
| A-32 | Test Pit Log TP-9 and TP-10, Active Power Plant |
| A-33 | Hand-Auger Boring Log HA-1, Makushin Pit |

## CONTENTS (Continued)

| | Page |
|---|---|
| **APPENDIX B FIELD LABORATORY SOIL QUALITY DATA REVIEW AND SUMMARY TABLES** | |
| *Hydrocarbon Identification (TPH-HCID)* | B-1 |
| *Aromatic Volatiles (BTEX)* | B-1 |
| *Pesticide/PCBs (Pesticide Screen)* | B-1 |
| **SUMMARY TABLES** | |
| B-1 Summary of Field Laboratory Analytical Results St. George Island - Open Pits | B-3 |
| B-2 Summary of Field Laboratory Analytical Results St. George Island - Inactive/Abandoned Diesel Tank Farm | B-16 |
| B-3 Summary of Field Laboratory Analytical Results St. George Island - Inactive Gasoline Tank Farm | B-28 |
| B-4 Summary of Field Laboratory Analytical Results St. George Island - Old Power Plant | B-35 |
| B-5 Summary of Field Laboratory Analytical Results St. George Island - Former Kerosene/AST Storage Area | B-44 |
| B-6 Summary of Field Laboratory Analytical Results St. George Island - Cross Hill Drum Dump | B-48 |
| B-7 Summary of Field Laboratory Analytical Results St. George Island - Former Fuel Storage Area | B-52 |
| B-8 Summary of Field Laboratory Analytical Results St. George Island - Old Carpenter Shop | B-62 |
| B-9 Summary of Field Laboratory Analytical Results St. George Island - Old Coal House | B-64 |
| B-10 Summary of Field Laboratory Analytical Results St. George Island - Port Fuel Supply Line | B-68 |
| B-11 Summary of Field Laboratory Analytical Results St. George Island - Active Power Plant | B-87 |
| B-12 Summary of Field Laboratory Analytical Results St. George Island - Makushin Pit | B-89 |

CONTENTS (Continued)

Page

**APPENDIX C**
**PROJECT LABORATORY SOIL QUALITY DATA**
**REVIEW AND SUMMARY TABLES**

| | |
|---|---|
| ***Hydrocarbon Identification (AK-DRO, AK-GRO, and 418.1)*** | C-1 |
| ***Volatiles (EPA Method 8020)*** | C-2 |
| ***Pesticide/PCBs (EPA Method 8080)*** | C-2 |
| ***Semivolatile Organics (EPA Method 8270)*** | C-2 |
| ***Total Metals (EPA Method 6000 and 7000 series)*** | C-3 |

**SUMMARY TABLES**

| | | |
|---|---|---|
| C-1 | Summary of Project Laboratory Analytical Results<br>St. George Island - Open Pits | C-4 |
| C-2 | Summary of Project Laboratory Analytical Results<br>St. George Island - Inactive/Abandoned Diesel Tank Farm | C-9 |
| C-3 | Summary of Project Laboratory Analytical Results<br>St. George Island - Inactive Gasoline Tank Farm | C-12 |
| C-4 | Summary of Project Laboratory Analytical Results<br>St. George Island - Old Power Plant | C-15 |
| C-5 | Summary of Project Laboratory Analytical Results<br>St. George Island - Former Kerosene/AST Storage Area | C-18 |
| C-6 | Summary of Project Laboratory Analytical Results<br>St. George Island - Cross Hill Drum Dump | C-19 |
| C-7 | Summary of Project Laboratory Analytical Results<br>St. George Island - Former Fuel Storage Area | C-20 |
| C-8 | Summary of Project Laboratory Analytical Results<br>St. George Island - Old Carpenter Shop | C-22 |
| C-9 | Summary of Project Laboratory Analytical Results<br>St. George Island - Old Coal House | C-23 |
| C-10 | Summary of Project Laboratory Analytical Results<br>St. George Island - Port Fuel Supply Line | C-27 |
| C-11 | Summary of Project Laboratory Analytical Results<br>St. George Island - Active Power Plant | C-30 |
| C-12 | Summary of Project Laboratory Analytical Results<br>St. George Island - Makushin Pit | C-31 |
| C-13 | Summary of Project Laboratory Analytical Results<br>St. George Island - Background Soil Samples | C-32 |
| C-14 | Summary of Laboratory Analytical Results<br>St. George Island, QA/QC Samples | C-34 |

CONTENTS (Continued)

Page

VOLUME II

APPENDIX D
FIELD LABORATORY ANALYTICAL REPORTS
HART CROWSER *FAST* LABORATORY

VOLUME III

APPENDIX E
PROJECT LABORATORY CERTIFICATES OF ANALYSIS
ANALYTICAL TECHNOLOGIES, INC.

## ACRONYMS

| | |
|---|---|
| ADEC | Alaska Department of Environmental Conservation |
| ANCSA | Alaska Native Claims Settlement Act |
| AOI | Area of Investigation |
| ARARs | applicable or relevant and appropriate requirements |
| AST | Above-ground Storage Tank |
| ASTM | American Society for Testing and Materials |
| ATI | Analytical Technologies, Inc. |
| BTEX | Benzene, toluene, ethylbenzene, and total xylenes |
| CCV | continuing calibration verification |
| CDAP | Chemical Data Acquisition Plan |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Register |
| CLP | Contract Laboratory Program |
| Corps | U.S. Army Corps of Engineers |
| cPAH | carcinogenic polycyclic aromatic hydrocarbons |
| DRO | diesel-range organics |
| EPA | U.S. Environmental Protection Agency |
| ESI | Expanded Site Inspection |
| FS | Feasibility Study |
| GC/ECD | gas chromatograph/electron capture detector |
| GC/FID | gas chromatograph/flame ionization detector |
| GRO | gasoline-range organics |
| HSP | Health and Safety Plan |
| IEUBK | Integrated Exposure Uptake Biokinetic Model |
| LCS | laboratory control sample |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NPL | National Priorities List |
| NWS | National Weather Service |
| OSWER | Office of Solid Waste and Emergency Response |
| PA | Preliminary Assessment |
| PCB | polychlorinated biphenyl |
| PE | performance evaluation |
| PID | photoionization detector |
| PPE | personal protective equipment |
| QA/QC | Quality Assurance/Quality Control |
| RBCs | Risk-based Concentrations |
| RRO | residual-range organics |
| SARA | Superfund Amendments and Reauthorization Act |
| TBC | To be considered |
| TSCA | Toxic Substances Control Act |
| USGS | U.S. Coast Guard |

| | |
|---|---|
| UST | Underground Storage Tank |
| WASC | Western Administrative Support Center |
| | |
| mg/kg | milligrams per kilogram |
| mg/L | milligrams per liter |
| μg/kg | micrograms per kilogram |
| μg/L | micrograms per liter |

## EXECUTIVE SUMMARY

The United States Army Corps of Engineers (Corps), Seattle District, on behalf of the U.S. Department of Commerce, Western Administrative Support Center (WASC), directed Expanded Site Inspections (ESIs) on soils at several sites on St. George Island, Alaska (see Figure 1-1). These sites are generally associated with National Oceanic and Atmospheric Administration (NOAA) activities at the island. NOAA managed the island prior to 1979 when the Alaska Native Claims Settlement Act (ANCSA) provide for transfer of property and management of the island to native corporations.

The work was conducted according to the Final Management Plan (Hart Crowser, 1995). The Management Plan was reviewed and commented upon by the Corps, NOAA, Alaska Department of Environmental Conservation (ADEC), the City of St. George, and the Aleut Corporation.

Twelve individual sites (Figures 1-2 and 1-3) were included in this ESI:

- ESIs were performed at the following ten sites: Open Pits, Inactive/Abandoned Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Former Fuel Storage Area, Old Carpenter Shop, Old Coal House, and the Port Fuel Supply Line which includes four subareas.

- Samples were also obtained at the Active Power Plant to supplement data collected during a prior investigation.

- At the Makushin Pit, samples were collected to verify that soil quality does not indicate that releases have occurred.

Surface and subsurface soil samples were collected at the sites to assess potential contamination resulting from past practices. The samples were analyzed in a field laboratory established on the island. As appropriate, the analytical results were used to direct additional sampling to assess the potential extent of affected soils. Confirmation samples were submitted for analysis to the project laboratory in Anchorage, Alaska, along with samples for metals and semivolatile organics analysis.

### *Site-Specific Results*

For each site, Table ES-1 presents a summary of the analytical results, along with ADEC cleanup levels and, as appropriate, an estimate of the volume of soil exceeding the ADEC level. Recommendations for future action are also presented. In general, the results were as follows:

**No Further Action.** Based on the field laboratory analytical results and consideration of potential contaminant exposure risks, no further action is recommended for the following five sites and one Port Fuel Supply Line subarea: Former Kerosene/AST Storage Area, Cross Hill Drum Dump, Old Carpenter Shop, Old Coal House, and Makushin Pit sites, and Port Fuel Supply Line—West Oceanfront Subarea.

**Table ES-1. St. George Island Summary of Results and Recommendations** Sheet 1 of 2

| Site / Subarea | Summary of Field Laboratory Analytical Results | ADEC Cleanup Level in mg/kg | Estimated Soil Volume Exceed. Cleanup Level in CY | Recommendations |
|---|---|---|---|---|
| Open Pits | Gasoline to 80 mg/kg<br>Kerosene/diesel to 6,800 mg/kg<br>Oil to 2,100 mg/kg<br>Non-detect BTEX and PCB/Pest. | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 620 | Excavation and Removal |
| Inactive/Abandoned Diesel Tank Farm | Non-detect gasoline<br>Kerosene/diesel to 11,000 mg/kg<br>Oil to 92 mg/kg<br>Non-detect BTEX | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 1,580 | Excavation and Removal except in vicinity of TP-3 |
| Inactive Gasoline Tank Farm | Non-detect gasoline<br>Diesel to 2,300 mg/kg<br>Oil to 240 mg/kg<br>Total Xylenes to 0.68 mg/kg | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | 80 | Stockpile Overburden for Reuse as Backfill<br>Excavation and Removal |
| Old Power Plant | Non-detect gasoline and PCB/Pest.<br>Diesel to 3,700 mg/kg<br>Oil to 13,000 mg/kg | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000 | 410 | Excavation and Removal |
| Former Kerosene/ AST Storage Area | Non-detect gasoline<br>Diesel/kerosene to 180 mg/kg<br>Oil to 200 mg/kg<br>Non-detect BTEX | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | None | No further action |
| Cross Hill Drum Dump | Non-detect gasoline<br>Non-detect diesel<br>Non-detect oil | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000 | None | No further action |
| Former Fuel Storage Area | Non-detect gasoline<br>Diesel to 10,000 mg/kg<br>Oil to 1,400 mg/kg | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000 | 2,000 | Excavation and Removal of Accessible Soil |
| Old Carpenter Shop | Non-detect gasoline<br>Diesel/kerosene to 50 mg/kg<br>Oil to 87 mg/kg<br>Non-detect BTEX | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000<br>BTEX 100 | None | No further action |
| Old Coal House | (Slightly elevated cPAHs) | N/A | None | No further action |
| Port Fuel Supply Line<br>West Oceanfront | Non-detect gasoline<br>Non-detect diesel/kerosene<br>Oil to 240 mg/kg | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000 | None | No further action |
| East Oceanfront | Non-detect gasoline<br>Diesel to 1,300 mg/kg<br>Oil to 240 mg/kg<br>Non-detect BTEX | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 700 | Excavation and Removal around EO-SS-5<br>Maintenance of vegetation |

Recommendations regarding "no further action" are based on the absence of significant risks to human health or the environment derived from exposure to chemical constituents present in site soils. However, it is possible that physical hazards or other site issues are present and may need to be addressed. The need for addressing physical hazards and impediments for future development was not part of the ESI scope of work.

**Exceedences of ADEC Matrix Cleanup Levels.** The field laboratory analytical sample results for five sites and three subareas of the Port Fuel Supply Line indicate exceedences of the ADEC non-UST soil matrix cleanup levels, including: Open Pits, Inactive/Abandon Diesel Tank Farm, Inactive Gasoline Tank Farm, Old Power Plant, and Former Fuel Storage Area sites; and the East Oceanfront, North Cargo Line, and South Cargo Line subareas of the Port Fuel Supply Line. The following recommendations are made for these sites/subareas:

- Excavation and removal of soils exceeding cleanup levels are recommended at Open Pits, Inactive Gasoline Tank Farm, and Old Power Plant sites, and the South Cargo Line subarea.

- Removal of accessible and/or hotspot soils exceeding cleanup levels and backfilling is recommended at the Inactive/Abandon Diesel Tank Farm and Former Fuel Storage Area sites, and the East Oceanfront and North Cargo Line subareas.

**Active Power Plant.** A previous study indicates an area of petroleum hydrocarbon-affected soils near the northwest corner of the Active Power Plant building. Additional investigation was completed during this ESI to supplement previous work at the Active Power Plant. The results of this recent ESI work indicate that the petroleum-affected area identified in the previous study does not extend farther to the south. In conjunction with the removal of two USTs located at the Power Plant, it is recommended that accessible contaminated soil near the northwest corner of the building also be removed.

Recommendations for future actions provided in this ESI report are the result of a qualitative assessment of available information and criteria and did not involve a feasibility study evaluation. The selection and design of remedial actions for the St. George sites addressed in this report will be evaluated in greater detail prior to implementation of the remedial action. The final remedy selections will involve negotiations with ADEC and members of the Restoration Advisory Board (RAB).

**Table ES-1. St. George Island Summary of Results and Recommendations** Sheet 2 of 2

| Site<br>Subarea | Summary of Field Laboratory Analytical Results | ADEC Cleanup Level in mg/kg | Estimated Soil Volume Exceed. Cleanup Level in CY | Recommendations |
|---|---|---|---|---|
| Port Fuel Supply Line<br>North Cargo Line (North) | Gasoline to 1,400 mg/kg<br>Diesel/kerosene to 19,600 mg/kg<br>Non-detect oil<br>TEX to 210 mg/kg; Non-detect B | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000<br>BTEX 15 | 300 | Excavation and Removal |
| North Cargo Line (South) | Gasoline to 1,800 mg/kg<br>Diesel/kerosene to 11,000 mg/kg<br>Non-detect oil<br>TEX to 28 mg/kg; Non-detect B | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | 230 | Limited Excavation and Removal |
| South Cargo Line (North) | Non-detect gasoline<br>Diesel/kerosene to 5,800 mg/kg<br>Oil to 64 mg/kg | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000 | 1 | No further action |
| South Cargo Line (South) | Non-detect gasoline<br>Diesel/kerosene to 5,600 mg/kg<br>Non-detect oil<br>Non-detect BTEX | Category C<br>GRO 500<br>DRO 1,000<br>RRO 2,000<br>BTEX 50 | 440 | Stockpile Overburden for Reuse as Backfill<br>Excavation and Removal |
| Active Power Plant | Non-detect gasoline<br>Non-detect diesel<br>Non-detect oil | Category B<br>GRO 100<br>DRO 200<br>RRO 2,000 | 150* | Excavation and Removal of Accessible Soil |
| Makushin Pit | Non-detect gasoline<br>Non-detect diesel<br>Non-detect oil<br>Non-detect BTEX | Category D<br>GRO 1,000<br>DRO 2,000<br>RRO 2,000<br>BTEX 100 | None | No further action |

* Volume based on existing Woodward-Clyde data.

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## 5.9 *Old Coal House Site*

The Old Coal House Site is located within the City of St. George, approximately 100 feet north of the Church (Figure 1-3). It is bounded on three sides by roads and to the east by a steep slope and the City Maintenance Facility. The Coal House is a rectangular concrete building approximately 80 feet long by 30 feet wide. It was built into the hillside with the ground surface on the south side of the building approximately 8 feet higher than on the north side. The south side, or back of the building, is underground up to nearly the roof line. The front, or northern side of the building, contains three large doors and a relatively flat yard which extends approximately 90 feet north of the building. At that point the ground begins to slope downward toward the ocean again. With the exception of a driveway which accesses the site from the northwest corner, the east and west sides of the yard are bermed by the north sloping hillside.

### *5.9.1 Background*

Reportedly, the Old Coal House building was once used to store coal, but is currently used for crab pot storage. The building has a concrete floor (Max Malavansky, 1995). During the Hart Crowser spring 1996 visit, metal debris (e.g., pipe fittings) was observed at several locations in the yard along with coal fragments scattered on the ground, especially just northwest of the building.

### *5.9.2 ESI Objectives*

The objectives of the ESI were to determine whether polycyclic aromatic hydrocarbons (PAHs) may have been released to near-surface soils from coal stored in the yard north of the Old Coal House Site, and to evaluate the nature and extent of contamination.

### *5.9.3 Field Activities*

Six surface soil samples (SS-1 through SS-6) were collected at the Old Coal House Site as indicated on Figure 5.9-1. The surface samples were screened in the field laboratory for the presence of PAHs using PAH immunoassay test kits and EPA Method 8015 Modified. Scattered coal fragments were observed in the samples but no positive detections of PAHs were encountered using the immunoassay test kits. Additional explorations were installed based on the positive detections of hydrocarbons using the Method 8015 Modified test and visual indications of coal occurrences. Five hand-auger explorations (HA-1 through HA-5) were installed to further delineate the spatial and vertical extent of coal occurrences at the site. Hand-auger boring HA-1 was installed at the SS-5 sample location to define the vertical extent of coal fragments. However, the hand-auger exploration could not be advanced beyond 0.5 foot and no samples were collected from HA-1.

Twelve soil samples (excluding duplicate samples) were collected from the explorations at depths ranging from 0 to 2 feet below ground surface. Hand-auger explorations could only be advanced to depths ranging from 0.5 to 2 feet below ground surface because the presence of basalt bedrock (see exploration logs presented in Appendix A).

Seven soil samples were submitted to the project laboratory for semivolatile organics analysis (including PAHs) using EPA Method 8270.

### *5.9.4 Site Geology*

Soils encountered in the Old Coal House Site generally consisted of 0.5 to 2 feet of gravelly silty sand over basalt bedrock. Scattered fragments of anthracitic-type coal were observed in surface soils covering the area shown on Figure 5.9-1. No continuous layers of coal were observed at the site. In addition, no seeps or groundwater were encountered in the site explorations.

### *5.9.5 Soil Quality*

Figure 5.9-1 presents the field laboratory Method 8015 modified hydrocarbon screening results for the collected samples. Table 5.9-1 presents a statistical summary of the field laboratory analytical results, indicating the frequency and magnitude of detections and exceedences of RBCs. Table 5.9-2 provides additional concentration and location information on the samples which exceeded the cleanup levels. Analytical results for the Old Coal House Site are summarized below:

- Diesel was encountered in only one surface sample at an estimated concentration (200 to 250 mg/kg) that is well below the ADEC Category C (1,000 mg/kg) or D (2,000 mg/kg) cleanup levels that would likely apply to the site.

- PAHs were not detected (at a detection limit of 10 mg/kg) in the six surface samples screened in the field laboratory using the PAH immunoassay test kits.

- Low concentrations of PAHs (less than 1 mg/kg for individual compounds) were detected in seven soil samples analyzed by the project laboratory. The benzo(a)pyrene concentration (0.46 mg/kg) detected in the HA-4 surface sample was the only PAH compound to exceed the conservative EPA Region 3 RBCs.

**Petroleum Hydrocarbons.** Petroleum hydrocarbons were encountered in one of twelve samples analyzed by the field laboratory for Method 8015 Modified. Diesel was encountered in surface sample SS-2 at an estimated concentration of 200 to 250 mg/kg. The quantitation of the diesel-derived hydrocarbons was complicated by the presence of coal which also contained compounds that fell within the diesel range. Significant concentrations of diesel were not detected in any of the other site samples. The occurrence of diesel at the SS-2 sample location was likely associated with vehicles using this area.

The occurrence of diesel at SS-2 appears to be limited in extent and at concentrations are well below the ADEC Category C (1,000 mg/kg) or D (2,000 mg/kg) cleanup levels that would likely apply to the site.

**PAHs.** PAHs were not detected in the six surface samples screened in the field laboratory using the PAH immunoassay test kits. A discrete sample of the coal was also analyzed using the immunoassay test kit. No PAHs were detected in the coal sample at a detection limit of 10 mg/kg. Since the immunoassay kit could not detect the presence of coal based on PAH content, its use as a field screening method was discontinued at the Old Coal House Site. As discussed below, project laboratory confirmation analysis confirms that PAH detections in soil were less than 10 mg/kg, the detection limit for the field immunoassay test.

Method 8015 Modified results were used to provide an indication of coal content in soils and direct the field sampling program. These results are presented on Figure 5.9-1. The anthracitic coal produced a distinctive signature on the GC-FID chromatograms. The coal-derived hydrocarbons occurred primarily in the oil-range but were also present in the gasoline- and diesel-ranges. Because compounds other than PAHs are also quantified using the Method 8015 Modified test, these results cannot be compared to PAH risk-based cleanup levels. However, they are useful in conjunction with visual observations for delineating the extent of coal occurrences.

To assess the environmental and human health risks associated with the coal-containing soils, samples were submitted to the project laboratory for semivolatile organic analysis. Low concentrations of PAHs (less than 1 mg/kg for individual compounds) were detected in the seven soil samples. Benzo(a)pyrene was the only PAH compound to exceed the conservative EPA Region 3 RBC (Tables 5.9-1 and 5.9-2). The benzo(a)pyrene concentration (0.46 mg/kg) detected in the HA-4 surface sample exceeded the EPA 3 RBC of 0.088 mg/kg.

Despite this exceedence, PAH concentrations detected in site soils are relatively low compared to most residential or industrial areas. For example, average background levels for benzo(a)pyrene established in a study conducted in several northeastern cities in the United States ranged from 2.1 to 2.8 mg/kg (Bradley et al., 1994). The authors attributed the source of these background concentrations of PAHs to primarily deposition of vehicle exhaust particles and runoff from asphalt and motor oil-stained surfaces.

### *5.9.6 Potential Human Health and Ecological Considerations*

As discussed previously, benzo(a)pyrene (BAP) was the only constituent analyzed that exceeded site cleanup levels. The primary potential risk from BAP at the Old Coal House Site is associated with direct contact exposure to the soil. The following discussion evaluates the potential risks from the BAP exceedence using the EPA Region 3 exposure assumptions.

**Direct Contact.** The primary potential route of exposure to PAH-impacted soil at the Old Coal House Site is through direct contact with the soil. Access to the site is not restricted, and humans, foxes, and birds can come into contact with impacted soil. Direct contact risks posed by the coal-containing soils are likely to be limited because of the nature of PAH-containing matrix. The hard anthracitic coal is not very friable and will not easily break down into smaller particles that can be ingested by humans or animals.

The risk-based residential cleanup level based on EPA Region 3 RBCs is based on direct contact assumptions that could theoretically result in one excess cancer in a population of 1 million, over a lifetime. Under these conservative residential exposure assumptions, the individual BAP concentration associated with the surface sample collected from hand-auger HA-4 represents a potential excess cancer risk of approximately 5 in a million.

The residential exposure assumptions are overly conservative for this site given the industrial nature of the surrounding area and the non-friable nature of the coal. Children would not frequently play (i.e., daily) for extended periods of time at this site and would not likely ingest coal at the rate used in the RBC residential exposure algorithm. Under CERCLA, cleanup levels at nominated National Priorities List (NPL) sites (Superfund Sites) are generally established at concentrations that could result in between one in a million and one in 10,000 excess cancers. NPL candidate sites (i.e., those that have not been formally put on the list) with cumulative cancer risks of less than one in 10,000 are not generally placed on the NPL (EPA, 1991). As noted, thê excess cancer risk from BAP at this site is about 0.05 in 10,000. Thus, under current CERCLA procedures, the detection of BAP in only one sample at a concentration slightly exceeding the Region 3 RBC would not likely trigger action at this site because the concentration, in effect, already substantially meets the cleanup levels that could be established for the site. Based on available data, the risk from direct exposure to benzo(a)pyrene is low and within generally accepted levels under CERCLA.

**Groundwater Effects.** Direct impacts to shallow groundwater quality are unlikely at this site. The uppermost aquifer likely exists approximately 45 to 55 feet below the coal-containing soils at an elevation near sea level. No groundwater was encountered in the hand-auger explorations installed at the Old Coal House Area. Soils encountered in the Old Coal House Area typically consisted of 0.5 to 2 feet of gravelly silty sand over basalt bedrock. Because the site slopes fairly steeply to the northwest toward the Bering Sea, heavy precipitation that falls on areas where coal-containing soils were encountered would likely infiltrate the upper sandy soils, flow laterally along the shallow soil/basalt contact, and discharge rapidly downhill to the northwest towards the Bering Sea.

It is unlikely that discharge of this near-surface water could impact off-site areas, primarily the Old Power Plant and Wash House sites located to the northwest of the Old Coal House (Figure 5.9-1). Exposure of BAP-containing soils to water will not likely result in any significant impacts. BAP is relatively insoluble in water and is present at low concentrations in Old Coal House Area soils. Because of the low affinity for water, and high affinity for soil and organic matter, BAP and other carcinogenic PAHs are not very mobile in soil and rarely present a groundwater problem, unless concentrations are extremely high and large quantities of an organic solvent are present to act as a carrier. The conditions that could enhance BAP movement are not present in the Old Coal House area.

**Surface Water Runoff and Air Dispersion.** Surface water runoff and transport of BAP from the impacted soils are likely to be minimal. A thick vegetative cover present immediately downhill of the coal-containing soils will likely prevent any significant surface water runoff from occurring. The vegetative cover and large particle size of most coal fragments will also prevent airborne transport of coal-containing soils. Since BAP is essentially non-volatile, volatilization is not a significant route of exposure at this site.

Further, inhalation hazards are considered unlikely because of the frequent high winds at St. George which would disperse contaminants preventing elevated ambient concentrations.

### *5.9.7 Conclusions and Recommendations*

Based on the analytical results, it does not appear that the soils at the Old Coal House Site pose a significant risk to human health or the environment. It is recommended that no further action be taken at this site.

**Table 5.9-1 - Statistical Summary of Soil Quality Data**
**St. George Island- Old Coal House Site**



| Analyte | Detection Frequency | Concentration Range | Maximum Detection | Location of Maximum | Screening Level | Exceedence Frequency | Percent Exceedence |
|---|---|---|---|---|---|---|---|
| **Semivolatiles in mg/kg** | | | | | | | |
| 1,2,4-Trichlorobenzene | 0/7 | .19 U to .25 U | NA | | 780 | 0/7 | 0 |
| 1,2-Dichlorobenzene | 0/7 | .19 U to .25 U | NA | | 7000 | 0/7 | 0 |
| 1,3-Dichlorobenzene | 0/7 | .19 U to .25 U | NA | | | | |
| 1,4-Dichlorobenzene | 0/7 | .19 U to .25 U | NA | | 27 | 0/7 | 0 |
| 2,4,5-Trichlorophenol | 0/7 | .98 U to 1.3 U | NA | | 7800 | 0/7 | 0 |
| 2,4,6-Trichlorophenol | 0/7 | .19 U to .25 U | NA | | 58 | 0/7 | 0 |
| 2,4-Dichlorophenol | 0/7 | .19 U to .25 U | NA | | 230 | 0/7 | 0 |
| 2,4-Dimethylphenol | 0/7 | .19 U to .25 U | NA | | 1600 | 0/7 | 0 |
| 2,4-Dinitrophenol | 0/7 | .98 U to 1.3 U | NA | | 160 | 0/7 | 0 |
| 2,4-Dinitrotoluene | 0/7 | .19 U to .25 U | NA | | 160 | 0/7 | 0 |
| 2,6-Dinitrotoluene | 0/7 | .19 U to .25 U | NA | | 78 | 0/7 | 0 |
| 2-Chloronaphthalene | 0/7 | .19 U to .25 U | NA | | 6300 | 0/7 | 0 |
| 2-Chlorophenol | 0/7 | .19 U to .25 U | NA | | 390 | 0/7 | 0 |
| 2-Methylnaphthalene | 7/7 | .015 J to .69 J | 0.69 J | SS-6 | | | |
| 2-Methylphenol | 0/7 | .19 U to .25 U | NA | | 3900 | 0/7 | 0 |
| 2-Nitroaniline | 0/7 | .98 U to 1.3 U | NA | | | | |
| 2-Nitrophenol | 0/7 | .19 U to .25 U | NA | | | | |
| 3,3'-Dichlorobenzidine | 0/7 | .39 U to .52 U | NA | | 1.4 | 0/7 | 0 |
| 3-Nitroaniline | 0/7 | .98 U to 1.3 U | NA | | | | |
| 4,6-Dinitro-2-Methylphenol | 0/7 | .98 U to 1.3 U | NA | | | | |
| 4-Bromophenyl-Phenylether | 0/7 | .19 U to .25 U | NA | | | | |
| 4-Chloro-3-Methylphenol | 0/7 | .19 U to .25 U | NA | | | | |
| 4-Chloroaniline | 0/7 | .19 U to .25 U | NA | | 310 | 0/7 | 0 |
| 4-Chlorophenyl-Phenylether | 0/7 | .19 U to .25 U | NA | | | | |
| 4-Methylphenol | 0/7 | .19 U to .25 U | NA | | | | |
| 4-Nitroaniline | 0/7 | .98 U to 1.3 U | NA | | | | |
| 4-Nitrophenol | 0/7 | .98 U to 1.3 U | NA | | | | |
| Acenaphthene | 0/7 | .19 U to .25 U | NA | | 4700 | 0/7 | 0 |
| Acenaphthylene | 1/7 | .11 J to .24 U | 0.11 J | HA-4/S-1 | | | |
| Aniline | 0/7 | .98 U to 1.3 U | NA | | 110 | 0/7 | 0 |
| Anthracene | 4/7 | .011 J to .24 U | 0.2 | SS-6 | 23000 | 0/7 | 0 |

442105/STGEORGE/T-5-9-1.XLS

**Table 5.9-1 - Statistical Summary of Soil Quality Data**
**St. George Island- Old Coal House Site**

| Analyte | Detection Frequency | Concentration Range | Maximum Detection | Location of Maximum | Screening Level | Exceedence Frequency | Percent Exceedence |
|---|---|---|---|---|---|---|---|
| **Semivolatiles in mg/kg** | | | | | | | |
| Benzidine | 0/7 | 1.9 U to 2.5 U | NA | | | | |
| Benzo(a)Anthracene | 3/7 | .056 J to .44 | 0.44 | HA-4/S-1 | 880 | 0/7 | 0 |
| Benzo(a)Pyrene | 2/7 | .028 J to .46 | 0.46 | HA-4/S-1 | .088 | 1/2 | 50 |
| Benzo(b)Fluoranthene | 2/7 | .065 J to .59 | 0.59 | HA-4/S-1 | .88 | 0/7 | 0 |
| Benzo(g,h,i)Perylene | 2/7 | .054 J to .41 | 0.41 | HA-4/S-1 | | | |
| Benzo(k)Fluoranthene | 2/7 | .064 J to .48 | 0.48 | HA-4/S-1 | 8.8 | 0/7 | 0 |
| Benzoic Acid | 0/7 | .98 U to 1.3 U | NA | | 310000 | 0/7 | 0 |
| Benzyl Alcohol | 1/7 | .064 J to .25 U | 0.064 J | HA-2/S-1 | | | |
| Bis(2-Chloroethoxy)Methane | 0/7 | .19 U to .25 U | NA | | | | |
| Bis(2-Chloroisopropyl)Ether | 0/7 | .19 U to .25 U | NA | | | | |
| Bis(2-Ethylhexyl)Phthalate | 5/7 | .045 J to .2 U | 0.18 J | SS-2 | 46 | 0/7 | 0 |
| Butylbenzylphthalate | 0/7 | .19 U to .25 U | NA | | 16000 | 0/7 | 0 |
| Chrysene | 3/7 | .088 J to .66 | 0.66 | HA-4/S-1 | 88 | 0/7 | 0 |
| Di-N-Butylphthalate | 0/7 | .19 U to .25 U | NA | | 7800 | 0/7 | 0 |
| Di-N-Octylphthalate | 0/7 | .19 U to .25 U | NA | | 1600 | 0/7 | 0 |
| Dibenzo(a,h)Anthracene | 1/7 | .039 J to .24 U | 0.039 J | HA-4/S-1 | .088 | 0/1 | 0 |
| Dibenzofuran | 4/7 | .021 J to .25 U | 0.23 | SS-6 | 310 | 0/7 | 0 |
| Diethylphthalate | 0/7 | .19 U to .25 U | NA | | 63000 | 0/7 | 0 |
| Dimethylphthalate | 0/7 | .19 U to .25 U | NA | | 780000 | 0/7 | 0 |
| Fluoranthene | 6/7 | .021 J to .93 | 0.93 | HA-4/S-1 | 3100 | 0/7 | 0 |
| Fluorene | 1/7 | .04 J to .24 U | 0.04 J | HA-4/S-1 | 3100 | 0/7 | 0 |
| Hexachlorobenzene | 0/7 | .19 U to .25 U | NA | | .4 | 0/7 | 0 |
| Hexachlorobutadiene | 0/7 | .19 U to .25 U | NA | | 8.2 | 0/7 | 0 |
| Hexachlorocyclopentadiene | 0/7 | .98 U to 1.3 U | NA | | 550 | 0/7 | 0 |
| Hexachloroethane | 0/7 | .19 U to .25 U | NA | | 46 | 0/7 | 0 |
| Indeno(1,2,3-cd)Pyrene | 2/7 | .049 J to .43 | 0.43 | HA-4/S-1 | .88 | 0/7 | 0 |
| Isophorone | 0/7 | .19 U to .25 U | NA | | 670 | 0/7 | 0 |
| N-Nitroso-Di-N-Propylamine | 0/7 | .19 U to .25 U | NA | D.L > S.L. | .091 | 0/0 | 0 |
| N-Nitrosodimethylamine | 0/7 | .19 U to .25 U | NA | | | | |
| N-Nitrosodiphenylamine | 0/7 | .19 U to .25 U | NA | | 130 | 0/7 | 0 |
| Naphthalene | 7/7 | .015 J to .48 J | 0.48 J | SS-6 | 3100 | 0/7 | 0 |
| Nitrobenzene | 0/7 | .19 U to .25 U | NA | | 39 | 0/7 | 0 |

442105/STGEORGE/T-5-9-1.XLS

Hart Crowser
J-4421-05G

**Table 5.9-1 - Statistical Summary of Soil Quality Data**
**St. George Island- Old Coal House Site**

| Analyte | Detection Frequency | Concentration Range | Maximum Detection | Location of Maximum | Screening Level | Exceedence Frequency | Percent Exceedence |
|---|---|---|---|---|---|---|---|
| PAH Immunoassay | 0/6 | 10 U to 10 U | NA | | | | |
| Pentachlorophenol | 0/7 | .98 U to 1.3 U | NA | | 5.3 | 0/7 | 0 |
| Phenanthrene | 5/7 | .05 J to .66 | 0.66 | HA-4/S-1 | | | |
| Phenol | 1/7 | .19 U to .9 | 0.9 | HA-2/S-1 | 47000 | 0/7 | 0 |
| Pyrene | 6/7 | .023 J to .91 | 0.91 | HA-4/S-1 | 2300 | 0/7 | 0 |

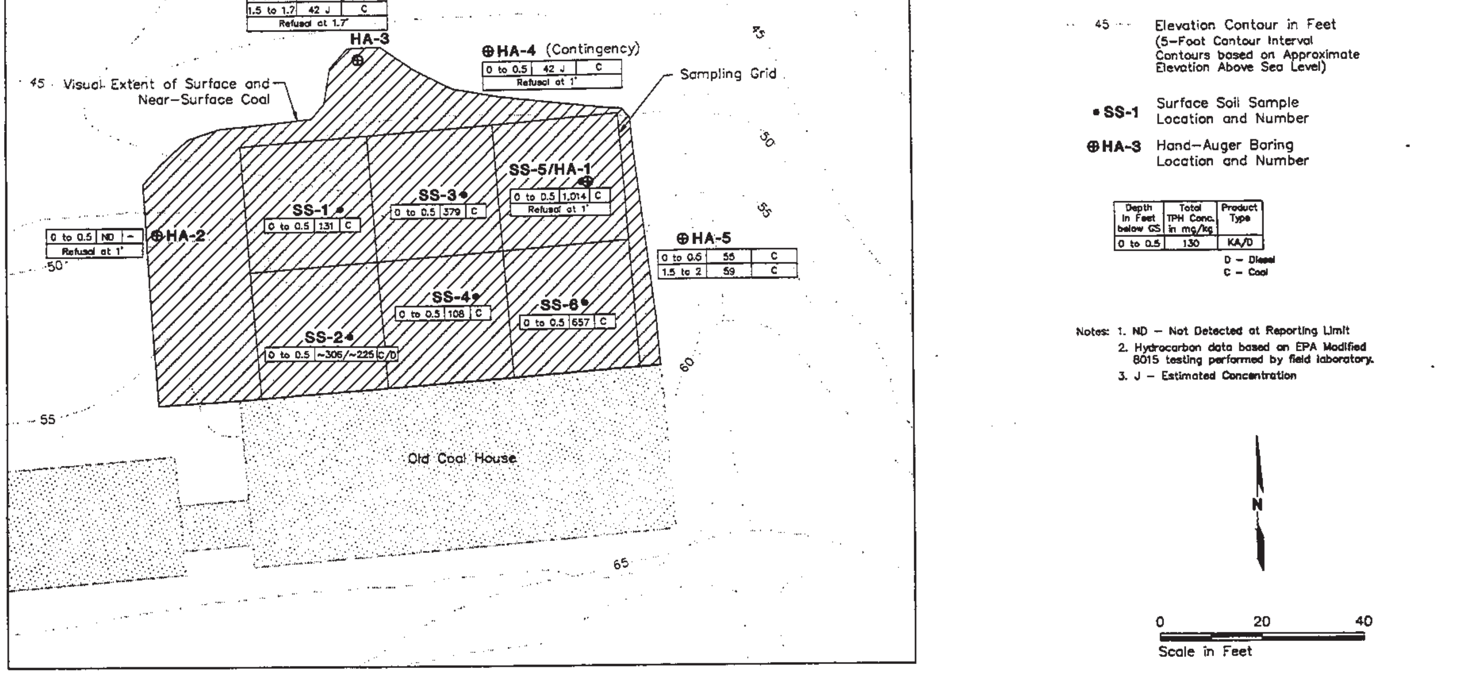
Notes: TPH, PCB, and BTEX data derived from Field Laboratory,
Metals and Semivolatile data derived from Project Laboratory
NA - Not Applicable
U - Not detected at detection Limit Indicated
J - Estimated value

**Table 5.9-2 - Screening Level Exceedences -**
**St. George Island - Old Coal House Site**

| Station ID | Sample ID | Depth in Feet | Analyte | Result | Qualifier | Screening Level | E-Ratio |
|---|---|---|---|---|---|---|---|
| SGI95S106L | HA-4/S-1 | 0 - 0.5 | Benzo(a)Pyrene | 0.46 | | 0.088 | 5.23 |

## Site and Exploration Plan Showing Hydrocarbon Concentrations

### Old Coal House Site




HARTCROWSER
J-4421-05G 6/96
Figure 5.9-1

G. 20.015 (C. : C. 2. . )

**National Oceanic and Atmospheric Administration,**
Host Agency serving:
Bureau of the Census
Economic Development Administration
International Trade Administration
Minority Business Development Agency
Office of the Inspector General
Bureau of Export Administration

**U.S. DEPARTMENT OF COMMERCE**
**Western Administrative Support Center**
7600 Sand Point Way N.E.
BIN C15700
Seattle, Washington 98115-0070

100-15

July 15, 1997

Mr. Ray Dronenburg
Contaminated Site Remediation Program
Site Remediation Section
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Subject: St. George Island, Old Coal House site

Dear Ray,

Paragraph 59 of the NOAA and ADEC Two-Party Agreement allows us to request written confirmation that all corrective action has been completed at a site. I am requesting written confirmation that no further action is required for the Old Coal House site on St. George Island. It is numbered as Site 20 in the Two-Party Agreement.

This site was investigated, and the results are documented in the St. George Expanded Site Investigation of January 1997. This report reviewed the findings and associated regulations, and recommended no further action be taken on the site.

I appreciate your assistance in this matter, and look forward to your response. If you have any questions, I can be reached at (206)526-6295.

Sincerely,

Mary Moloseau Goetz

Mary Moloseau Goetz. P.E.
Pribilof Project Manager

cc: NOAA General Counsel

1200-01-G0020-I.015-0001

# STATE OF ALASKA

TONY KNOWLES, GOVERNOR

**DEPT. OF ENVIRONMENTAL CONSERVATION**

DIVISION OF SPILL PREVENTION & RESPONSE
CONTAMINATED REMEDIATION PROGRAM
555 CORDOVA STREET, SECOND FLOOR
ANCHORAGE, AK 99501-2617

TELEPHONE: (907) 269-7659
FAX: (907) 269-7649
http://www.state.ak.us/dec/home.htm

September 9, 1997

Ms. Mary Moloseau Goetz, P.E.
U.S. Department of Commerce
Western Administrative Support Center
7600 Sand Point Way, NE
BIN C15700
Seattle, Washington 98 115

RECD SEP 15 1997

Re: St. George Island, Old Coal House site; closure for

Dear Mary,

The Department has reviewed your letter request of July 15, 1997 regarding the requested closure for the above referenced site and has the following comments:

Background:

1. The site (number 20) for attachment A to the two party agreement (St. George Island) is identified as a coal house where benzo(a)pyrene is or could be expected to exist or be present.
2. Attachment A, the column entitled Remaining Activities, does indicate that "if contamination is found, cleanup by NOAA will be conducted in accordance with the two party agreement requirements."
3. Page 5.9.2 of the Hart Crowser report(J-4421-05G) entitled Expanded Site Investigation for St. George Island and specifically section 5.9.5 indicates that low levels ofPAH's (Polyaeromatichydrocarbons) (less than 1 mg/kg for individual compounds) were detected by laboratory analyses and that a single detection of.46 mg/kg for benzo(a)pyrene exceeded (BAP) EPA Region 3 RBCs.

Analysis:

The Department agrees that based on information contained in the ESI, groundwater contamination is unlikely to occur with groundwater at approximately 55 feet. Also the Department agrees that runoff and air dispersion are highly unlikely as exposure pathways. Consequently with the single "hit" or excedence for BAP the Department does not feel that further investigation 'or remedial actions beyond the Expanded Site Investigation is warranted.

268

Decision:
A determination that "No Further Action" has been assigned for this site effective this date. This determination applies to site 20 only and should not be implied as affecting any other site or location. It is suggested that NOAA notify the landowner (St. George Traditional Council) to inform them that the single sample did result in an excedence and that future land use should take this fact into consideration.

Sincerely,

Ray Dronenburg

Ray Dronenburg
Project Manager

RD:el

cc: File
Breck Tostevin, AG's Office
St. George Traditional Council
NOAA RAB Members

# NOAA Site 21
# TPA Site 21: Abandoned City Diesel Tank Disposal Site

St. George Island, Alaska, Request for No Further Action, Abandoned City Diesel Tank Disposal Site TPA Site No. 21 ....................................................503

Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Abandoned City Diesel Tank Disposal Site TPA Site No. 21, dated February 19, 2003. Dated March 11, 2003 .............509

## St. George Island, Alaska
## Request for No Further Action
## Abandoned City Diesel Tank Disposal Site
## TPA Site No. 21

**Site:** Abandoned City Diesel Tank Disposal Site, Two-Party Agreement (TPA) Site Number 21

**Location:** St. George Island, Alaska, approximately 800 miles southwest of Anchorage in the Bering Sea. TPA Site Number 21 ("the site") is located along the village waterfront northeast of the St. George Tanaq Corporation Fish Plant in the City of St. George. (Figures 1 and 2) The site is also east of TPA Site 2, the Former Drum Storage Area.

**Type of Release:** Petroleum fuel hydrocarbons from decommissioned diesel fuel aboveground storage tanks (ASTs).

**History:** Eleven ASTs removed from TPA Site Number 1, the Former Diesel Tank Farm, were relocated to TPA Site Number 21 in the 1970s. Two ASTs removed from TPA Site Number 1 were also relocated to TPA Site Number 2, west of the site, in the 1970s. (Figure 2) The site was undeveloped prior to the tank relocation.

**Summary of Site Investigations:**
A preliminary assessment (PA) of the site performed in 1992 observed the eleven ASTs at the site. (Figure 2) The tanks appeared to be empty, though one of the tank atmospheres had a photoionization detector reading of 12 parts per million, vapor (ppmv). Ten unlabeled, rusted drums were also observed during the PA (E&E 1993).

Site investigation activities were performed for TPA Site 21 in 2001 (TTEMI 2003) as part of an overall investigation of TPA Sites 1, 2, and 3. Eight soil samples were collected from four locations corresponding to the locations of the eleven ASTs removed from TPA Site 21 in 1997 (Polarconsult 1997a). (Figure 3) The samples were analyzed for gasoline-range, diesel-range, and residual-range organics (GRO, DRO, RRO), as well as volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and heavy metals. Note that samples collected from the former locations of the two ASTs on TPA Site Number 2 had contamination above site cleanup levels (TTEMI 2003). Contamination associated with those two ASTs will be addressed at a later date with TPA Site Number 2.

GRO, DRO, RRO, VOCs and SVOCs analytical results from the TPA Site Number 21 samples did not exceed the Alaska Department of Environmental Conservation (ADEC) Method Two regulatory cleanup levels. While seven of the eight TPA Site Number 21 samples exceeded the regulatory cleanup level for arsenic and all eight site samples exceeded the regulatory cleanup level for total chromium, the observed levels of arsenic and total chromium were consistent with natural background levels for St. George Island (TTEMI 2003). (Table 1) Further, all samples were analyzed for hexavalent chromium and were below the detection limit of 0.12 mg/kg. Nearly all of the chromium in site soil is the trivalent form with an ADEC Method Two regulatory cleanup level of 100,000 mg/kg. As a result, site samples are considered below the cleanup levels for heavy metals.

**Summary of Clean up Actions:**
In accordance with a May 1997 work plan (Polarconsult 1997b), AST and drum removal and disposal activities were performed in 1997 (Polarconsult 1997a). (Figure 4) No soil removal was performed at this site, since soil concentrations were below the regulatory cleanup levels.

**Recommended Action:**
In accordance with paragraph 59 of the Two-Party Agreement (NOAA 1996), NOAA submits written confirmation that all corrective action has been completed and that no further action is required at TPA Site Number 21.

**References:**
E&E. 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska*. Ecology and Environment. February 1993.

NOAA. 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*. Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26, 1996.

Polarconsult. 1997a. *Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project*. Polarconsult Alaska, Inc. December 31, 1997.

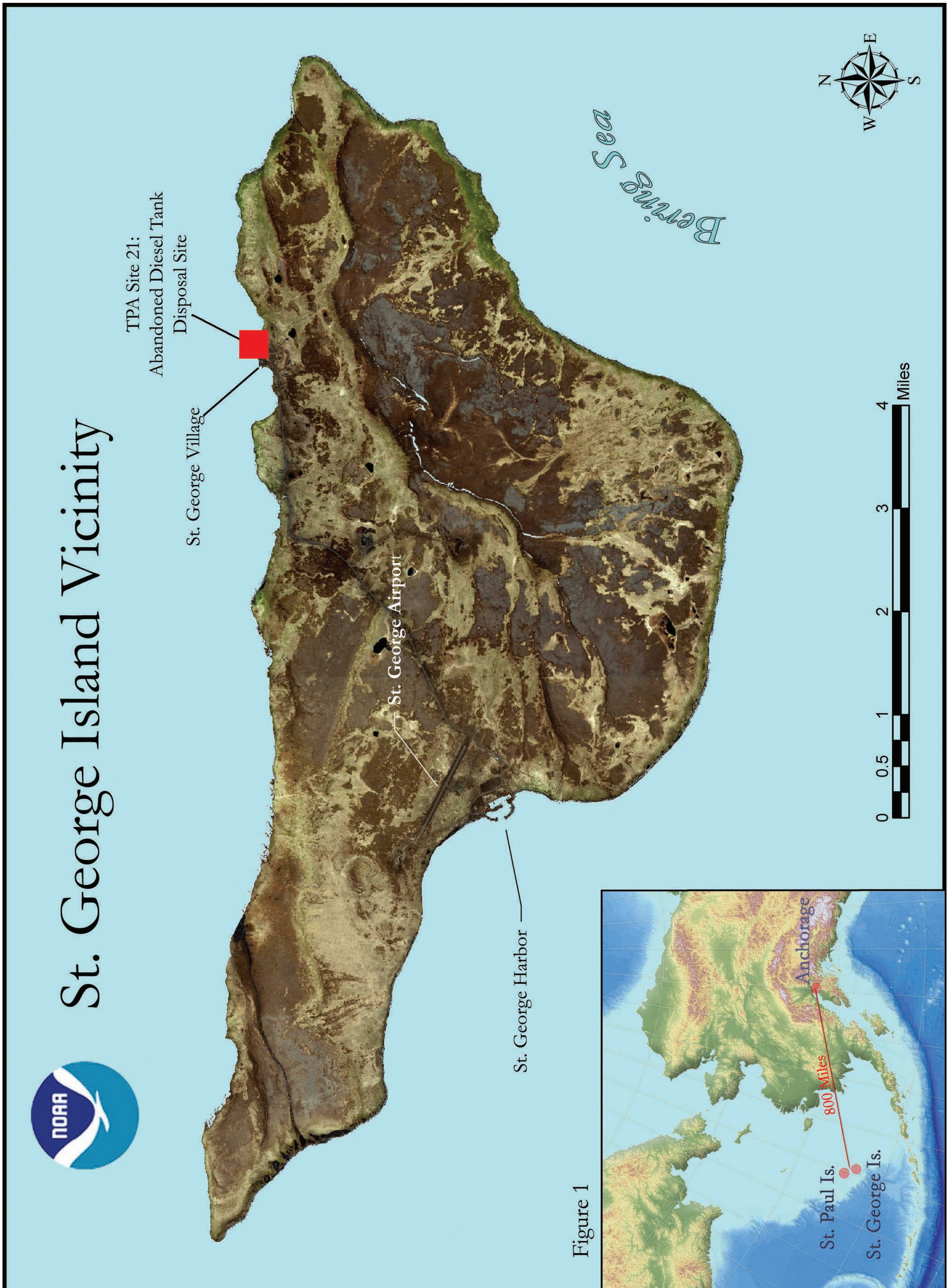
Polarconsult. 1997b. *Work Plan for Site Assessment and Contaminated Soil Removal*. Polarconsult Alaska, Inc. May 1, 1997.

TTEMI. 2003. *Draft Site Characterization Report, Oceanfront Sites, Two-Party Agreement Sites No. 1, 2, and 3, Pribilof Environmental Restoration Project, St. George Island, Alaska*. Tetra Tech EM Inc. January 20, 2003.

Table 1: Summary of Heavy Metals Data for Abandoned City Diesel Tank Disposal Site

| **Analyte** | **ADEC Regulatory Level[a]** | **TPA2-GP8-0-2 08/08/2001 (0 to 2)** | **TPA2-GP9-0-2 08/08/2001 (0 to 2)** | **TPA2-GP9-2-3.5 08/08/2001 (2 to 3.5)** | **TPA2-GP10-0-2 10/20/2001 (0 to 2)** | **TPA2-GP10-0-2C[c] 10/20/2001 (0 to 2)** |
|---|---|---|---|---|---|---|
| Arsenic | 2 | **6.4** | **11.8** | **5.2** | **6.7** | **4.3** |
| Barium | 1,100 | 52.8 J | 83.4 J | 186 J | **92.2** | **79.5** |
| Cadmium | 5 | 0.2 U | **1** | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 26 | **35.5** | **43.2** | **39** | **29.8** | **28.7** |
| Hexavalent Chromium | 26 | 0.12 U | 0.12 U | 0.13 U | 0.13 U | 0.12 U |
| Lead | 400/1,000[b] | **18** | **62** | **7** | **260** | **16** |
| Mercury | 1.4 | **0.07** | **0.75** | 0.05 U | **0.08** | **0.07** |
| Selenium | 3.5 | 0.8 U | **1.9** | 0.6 U | 0.7 U | 0.6 U |
| **Analyte** | **ADEC Cleanup Level[a]** | **TPA2-GP10-2-4 10/20/2001 (2 to 4)** | **TPA2-GP10-4-6 10/20/2001 (4 to 6)** | **TPA2-GP11-0-2 10/20/2001 (0 to 2)** | **TPA2-GP11-2-4 10/20/2001 (2 to 4)** | |
| Arsenic | 2 | **3.7** | **1.9** | **4.4** | **3.3** | |
| Barium | 1,100 | **116** | **159** | **91.8** | **71.9** | |
| Cadmium | 5 | 0.2 U | 0.3 U | 0.2 U | 0.2 U | |
| Chromium | 26 | **32.2** | **34** | **28.4** | **33.4** | |
| Hexavalent Chromium | 26 | 0.12 U | 0.13 U | 0.12 U | 0.12 U | |
| Lead | 400/1,000[b] | **4** | **3** | **13** | **3** | |
| Mercury | 1.4 | 0.05 U | 0.05 U | **0.05** | 0.06 U | |
| Selenium | 3.5 | 0.6 U | 0.7 U | 0.6 U | 0.6 U | |

Notes:
**BOLD** Indicates detection (concentration exceeds reporting limit).
GRAY Shaded cell indicates detected concentration above the ADEC cleanup level.
(a) Regulatory cleanup levels shown are the more stringent of the applicable ADEC method two cleanup levels in 18 Alaska Administrative Code 75.341 for the site
(b) Lead cleanup levels are 400 mg/kg for residential sites and 1,000 mg/kg for commercial sites.
(c) Field duplicate sample
(U) Analyte was not detected at or above its reporting limit; reporting limit listed.
(J) The analyte was positively identified, but the associated numerical value is an estimated concentration. The result is considered to be qualitatively acceptable, but quantitatively unreliable.
Background: St. George Island background levels of arsenic and total chromium range from 0.3 mg/kg to 6.0 mg/kg and 11.3 mg/kg to 45.6 mg/kg, respectively


St. George Island Vicinity
TPA Site 21:
Abandoned Diesel Tank
Disposal Site
St. George Village
St. George Airport
St. George Harbor
Bering Sea
N
E
S
W
0
0.5
1
2
3
4
Miles
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Figure 1

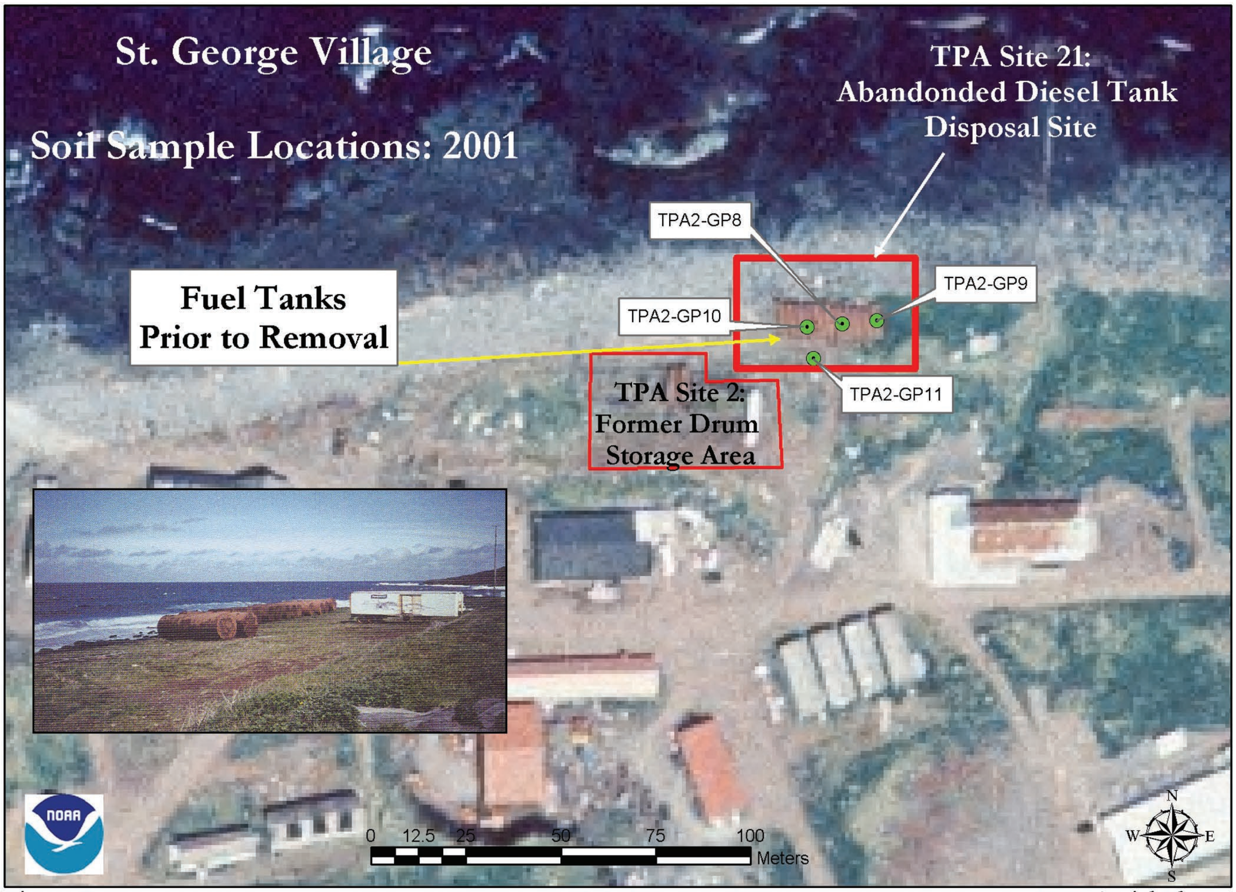



Figure 2 Source: Pribilof Project GIS 1993 Aerial Photo

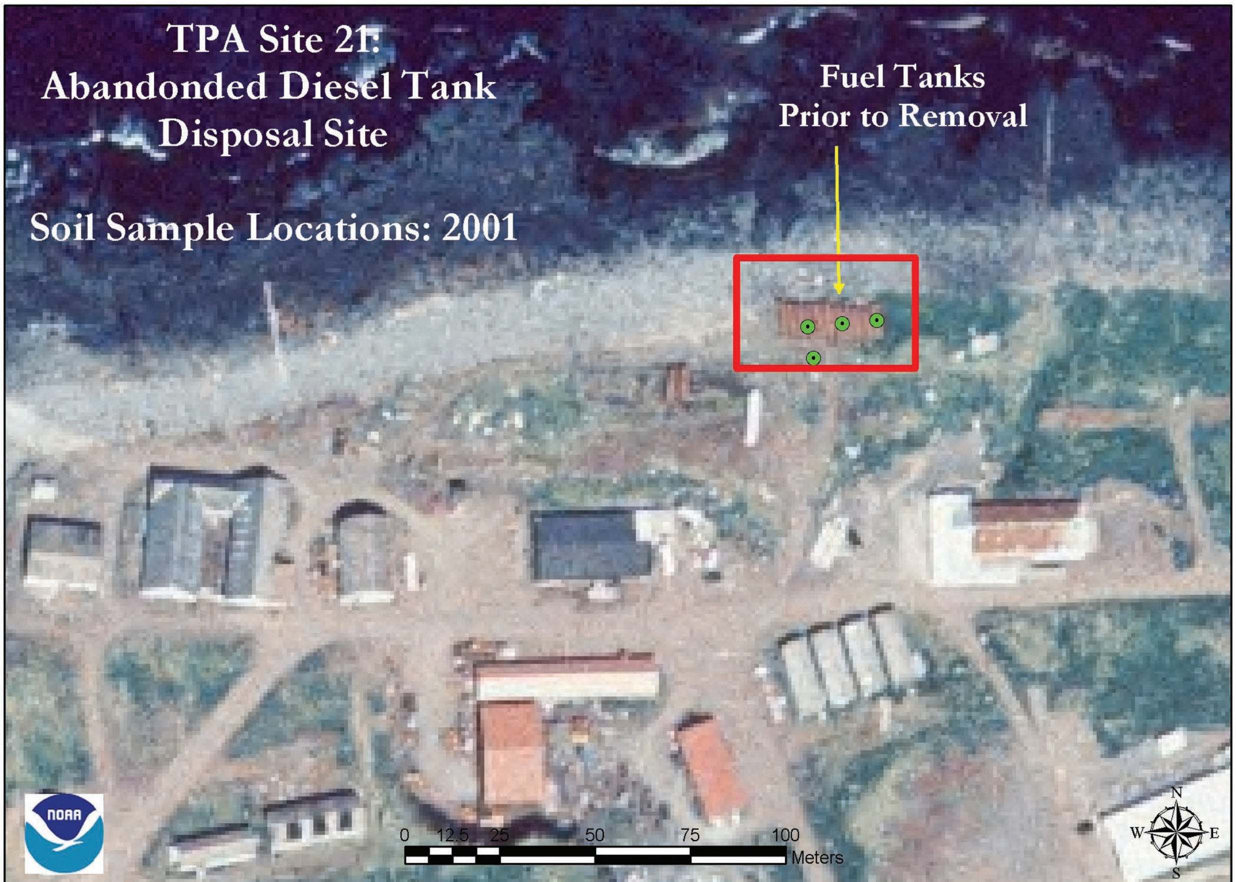



Figure 3 Source: Pribilof Project GIS 1993 Aerial Photo

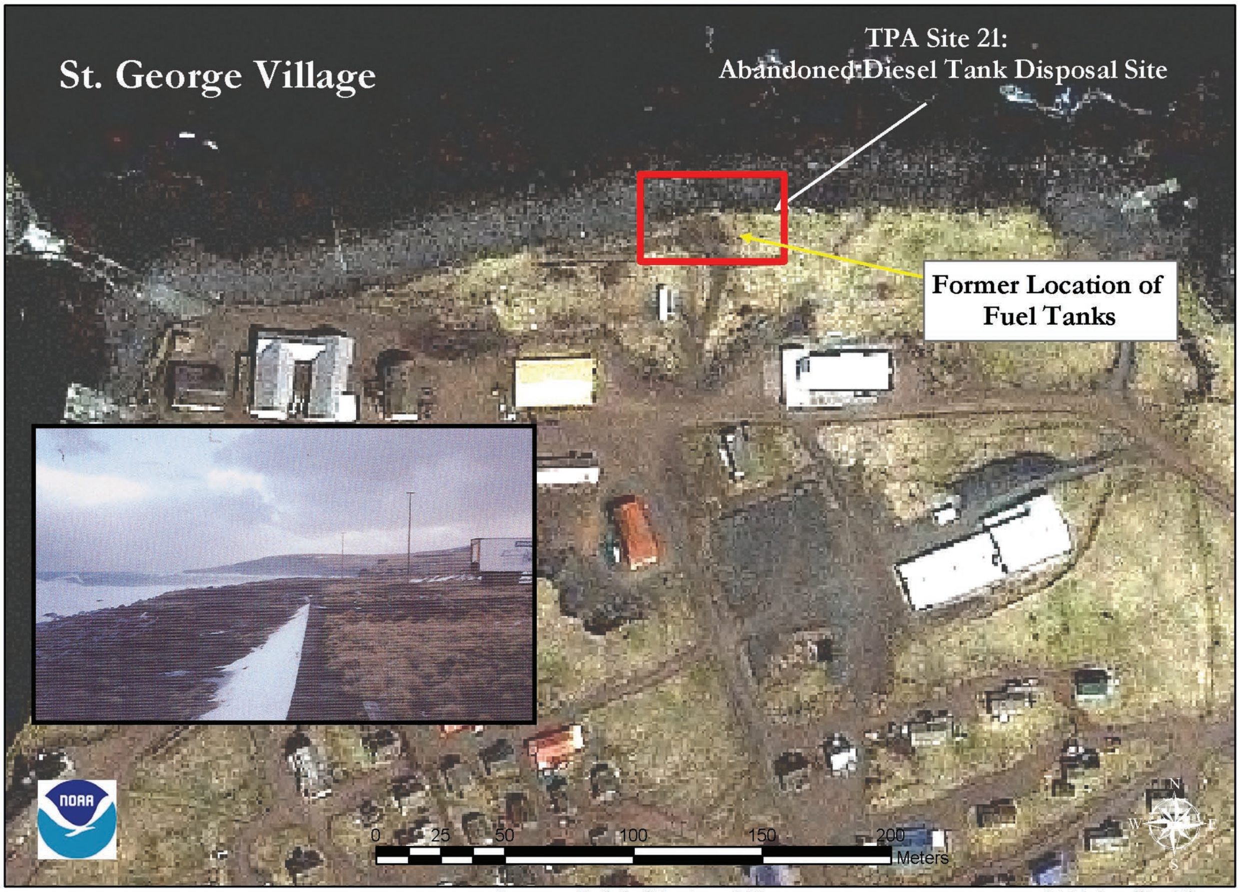



Figure 4 Source: Pribilof Project GIS 2001 Satellite Photo

For the National Oceanic and Atmospheric Administration

John Lindsay
NOAA, Pribilof Project Office

2/24/03
Date

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at TPA Site Number 21, the Abandoned City Diesel Tank Disposal Site, in accordance with the Agreement and that no further action is required.

For the Alaska Department of Environmental Conservation

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

3/10/03
Date

* with conditions, see attached letter

# STATE OF ALASKA

**DEPT. OF ENVIRONMENTAL CONSERVATION**
**DIVISION OF SPILL PREVENTION AND RESPONSE**
**CONTAMINATED SITES PROGRAM**

*FRANK H. MURKOWSKI, GOVERNOR*
555 Cordova Street
Anchorage, AK 99501
PHONE: (907) 269-7503
FAX: (907) 269-7649
http://www.state.ak.us/dec/home.htm

March 11, 2003

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE BIN C15700
Seattle, WA 98115-6349

RE: St. George Island Request for No Further Action Abandoned City Diesel Tank Disposal Site TPA Site No. 21, dated February 19, 2003

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on February 26, 2003. Based on our review of the information provided, the Department finds the Abandoned City Diesel Tank Disposal Site listed in the Two Party Agreement (TPA) as Site No. 21, does not pose a significant threat to human health or safety, or the environment and will not require further remedial action or investigation.

The Department is basing its decision on the most current and complete information provided by NOAA. The Department reserves its rights, under 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations and AS 46.03 to require the National Oceanic and Atmospheric Administration to perform additional investigation, cleanup, or containment if subsequent information indicates that

(1) the cleanup is not protective of human health, safety, or welfare, or of the environment; or

(2) the information the Department relied upon for its decision was invalid, incomplete, or fraudulent.

The Department requests NOAA attach a copy of this letter with the document. Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard

Louis Howard
Project Manager

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Printed on Recycled Paper

# NOAA Site 22
# TPA Site 22-1: School UST

Request for Conditional Closure, School UST, TPA 22-1/Site 22........................513

**Request for Conditional Closure**
**School UST**
**TPA 22-1/Site 22**
**St. George Island, Alaska**

**Site:** St. George School underground storage tank (UST) site, also known as Two-Party Agreement (TPA) Site 22-1 and National Oceanic and Atmospheric (NOAA) Site 22. The site is referred to as the "site" herein.

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, the site is located in the eastern section of the City of St. George, approximately 620 feet (ft) south of the Bering Sea (56° 36' 8.87" N latitude, 169° 32' 38.98" W longitude; Figures 1 and 2).

**Legal Property Description:** The St. George School UST site is located in Tract 41 of Township 41 south, Range 129 west, Section 29 of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2). The federal government currently owns the surface and subsurface estate of this site.

**Type of Release:** Potential release mechanisms include diesel fuel spills associated with the filling of the school's UST and leaks associated with fuel storage in the UST.

**History and Background:**
The site was the former location of a 1,000-gallon diesel fuel UST, located immediately adjacent to the south side of the St. George School (Figure 3). Construction of the St. George School began in 1954 with completion of the brick section (main classroom area) in September 1955 (*Agent's 1955 Annual Report for St. George Island, Alaska for the year ending December 31, 1995* (submitted January 27, 1956)). The date of the UST installation is unknown but presumably occurred some time between the initiation of school construction and the early 1960s (Polarconsult 2002). The UST was used until the late 1970s (Polarconsult 2002). It was unregulated and did not have an Alaska Department of Environmental Conservation (ADEC) UST facility identification number. Prior to the UST removal, the tank was replaced by an aboveground storage tank (AST).

**Summary of Site Investigations:**
Under a grant from NOAA, the St. George Tanaq Corporation (Tanaq) retained Polarconsult Alaska, Inc. (Polarconsult) during 1996 and 1997 to conduct a St. George Island environmental site investigation (Polarconsult 1997a and 1997b). As such, Polarconsult conducted the St. George School site assessment and UST removal activities during the summer of 1997. Initial observations at the site indicated the presence of soil stains around the UST fill and vent pipes. During the UST removal, a light fuel odor and elevated field instrumentation readings indicated a fuel release had occurred. Observations and field measurements suggested that the release probably originated from the ground surface and was likely the result of over filling the tank. Superficially, the tank appeared in fair condition and exhibited moderate surface corrosion.

One excavation and sampling episode was conducted in an effort to remove the contaminated soil. The final extent of the excavation was the result of removing contaminated soil until further excavation was impracticable. Polarconsult noted that fuel contamination appeared to continue under the school. Additionally, an immediately adjacent sewer line impeded further horizontal and vertical excavation (Figure 3). A total of approximately 10 cubic yards (CY) of soil was removed from this site.

Three soil samples were collected from the excavation sidewalls and bottom. Given the known use of diesel fuel at this site and the observed relationship of diesel-range organics (DRO) and benzene, toluene, ethylbenzene, and xylenes (BTEX) at other St. George Island sites, samples were only analyzed for DRO. Two of the three samples contained DRO at concentrations greater than the 1997 preliminary cleanup level of 200 milligrams/kilogram (mg/kg). Sample SS 052/145 contained 5,000 mg/kg DRO, and sample SS 053/146 contained 1,360 mg/kg DRO (Figure 3).

Polarconsult recommended further investigation to determine the horizontal and vertical extent of contamination and to determine a remediation approach. Polarconsult also recommended removing or relocating the sewer line before attempting further excavation.

One groundwater monitoring well, TPA22.1-MW-1, exists at the St. George School, near the school's northwest corner and roughly up gradient from the former UST location (Figure 4). It was sampled once in 2001, once in 2002, twice in 2003, and twice in 2004 (Tetra Tech 2003, Tech Tech 2004). DRO was detected in this well below the ADEC Table C (18 AAC 75.345) cleanup level of 1,500 µg/L. A maximum concentration of 860 µg/L was detected during the sampling events. GRO and benzene were not detected, and all other analytes, including volatile organic compounds, semivolatile organic compounds, and heavy metals, with the exception of cadmium, were either not detected or did not exceed Table C cleanup levels. Cadmium was detected above the Table C cleanup level of 5 µg/L during the January 2004 sampling event only. During the other five sampling events, cadmium was detected below the Table C cleanup level in the 2001 sample and was not detected in the remaining four samples.

Several other monitoring wells (*i.e.*, TPA24-MW-1 to MW-3) exist down gradient of the school (Figure 4). DRO and GRO were either not detected or detected below ADEC Table C cleanup levels in these wells.

The approximate water table elevation at well TPA22.1-MW-1 is 5.47 ft above mean sea level (Tetra Tech 2003). Based on a ground elevation of 43.46 ft above mean sea level (Tetra Tech 2003), groundwater is estimated to occur at approximately 38 ft below ground surface (bgs).

**Summary of Applied Cleanup Levels:**
NOAA employed ADEC Method Two cleanup criteria, discussed at 18 AAC 75.341(c) (ADEC 2000) when evaluating site conditions relative to the need for remedial action. Cleanup criteria were applied to the maximum extent practicable (18 AAC 75.325(f), 18 AAC 75.990).

**Summary of Cleanup Actions:**
One UST and approximately 10 CY of petroleum-contaminated soil (PCS) were removed from this site during the 1997 environmental site investigation (see Summary of Site Investigations section above). In 2002, NOAA retained St. George Chadux Corporation (Chadux) and its subcontractor, Polarconsult, to remove additional PCS in the area of the former UST (Polarconsult 2002 and 2004).

The 2002 removal action utilized field screening and previous analytical results (Polarconsult 1997a) to delineate the extent of contamination. Field screening techniques included visual observations and the use of a photoionization detector (PID). Soil that clearly exceeded cleanup levels (i.e., was saturated with petroleum) was transported to NOAA's ADEC-approved PCS stockpile without further analysis. Field samples with PID readings above background levels (residual threshold levels) resulted in the collection of samples for analytical analyses or transportation of the represented soil to the PCS stockpile.

Prior to excavation activities, the locations of buried utilities and previous samples were determined. Chadux initiated excavation on July 30, 2002, completing it on August 1, 2002. Other associated site activities continued through August 5, 2002. Chadux removed previously placed backfill and placed it on a liner. Excavation then continued in the vicinity of former sample locations SS 052/145 and SS 053/146 to remove visibly contaminated soil exhibiting a strong diesel odor (Figure 3). During separate incidences, the water and sewer lines traversing the excavation were breached. Both were cut and removed from the excavation and reinstalled following excavation activities (NOAA 2002a, 2002b, 2002c). Removal of the former UST fuel lines was also performed. Previously, the two 1/2-inch diameter copper supply and return fuel lines had been disconnected at both ends, drained, and sealed by crimping and folding. When uncovered in 2002, both lines were intact and in good condition with minor surface patina. There was no visual or olfactory evidence of any release, and seven samples from along the approximately 65 ft fuel line length did not indicate any contamination when field screened using a PID.

Soil excavation was conducted downward and outward until soil exceeding site cleanup levels was no longer evident or until the building foundation or refusal (*i.e.*, competent scoria) was encountered. A total volume of 29 CY of PCS was removed. Final excavation depth at refusal was 9 ft bgs. According to Polarconsult observations, contamination continued vertically downward into the competent scoria and horizontally under the building foundation where it could not be removed with the available equipment.

Soil that was obviously contaminated was transported directly to the ADEC-approved PCS stockpile (Figure 1). This soil was sampled and analyzed, in accordance with the sampling requirements and procedures presented in the site's corrective action plan (CAP; Polarconsult 2002) and master quality assurance plan (QAP; IT Alaska, Inc. 2001), to verify its suitability for enhanced thermal conduction (ETC) remediation. Two samples were collected for fixed-laboratory analyses (NOAA 2002c, Polarconsult 2004).

At times, this project required staging of excavated soil prior to reuse as backfill material or transport to the ADEC-approved PCS stockpile. Chadux stockpiled 129 CY of soil on-site adjacent to the excavation (Figure 5). All soil was placed onto impermeable plastic membrane in accordance with the requirements presented in the CAP (Polarconsult 2002). The pile was sampled and analyzed consistent with the CAP (Polarconsult 2002) and the QAP (IT Alaska, Inc. 2001). Four soil samples were collected for fixed-laboratory analyses. Sample results were used to determine whether stockpile soil was suitable for use as backfill material.

Following removal of the contaminated soil from the site, confirmation samples were collected from the extent of the excavation for off-site laboratory analyses to verify that the remaining soil did not exceed ADEC Method Two cleanup levels. Ten soil samples were first field-screened using a PID to determine, in accordance with the soil sample selection protocol described the corrective action report (Polarconsult 2004), which should be submitted for fixed-laboratory analyses. Six samples were submitted as confirmation samples (Figure 5). The number of samples required for the confirmation analyses followed the CAP (Polarconsult 2002).

[Note: The collection of samples involved a modified approach that deviated from the method described in the QAP (IT Alaska, Inc. 2001, Polarconsult 2004). The QAP calls for the collection of samples from a minimum depth of 18 inches for an excavation surface that has been exposed for more than one hour. Based on the difficulty of collecting samples from the volcanic materials, a request was made to the ADEC to allow the removal of 6 inches of surface material, followed by the collection of laboratory samples. The ADEC project manager approved the request (ADEC 2002). Picks and electric chisels were used to chip away the first 6 inches of surface material. The remaining material was collected from the bottom of each hole with stainless-steel sampling spoons.]

Site confirmation and stockpile characterization sample locations were recorded using survey-grade, Trimble Real-Time Kinematic (RTK) 5700 global positioning system (GPS) equipment or a Nikon DTM-430 transit.

Soil samples were analyzed at SGS-CTE Environmental Services, Inc. (SGS-CTE), an ADEC-approved analytical laboratory, for gasoline-range organics (GRO) and BTEX using Method AK101 and for DRO using Method AK102.

The analytical data for confirmation samples collected from the final extent of excavation indicated that DRO remained at one location (Table 2, Figure 5). Sample SG-22.1-004-0.5, collected at refusal, in scoria at the bottom of the excavation (8.6 ft bgs), contained 551 mg/kg DRO. GRO and BTEX constituents were not detected in any excavation confirmation samples.

The analytical data for the samples collected from the soil stockpiled on-site were compared to the ADEC Method Two cleanup levels and found not to exceed cleanup levels (Table 1). Subsequently, this soil was used as backfill material at another TPA site (NOAA 2002b).

Laboratory results for the two samples collected from soils transported to the ADEC-approved PCS stockpile indicated that GRO and BTEX were not detected in either sample. DRO was detected in one sample, with a concentration of 37.9 mg/kg. As a result of the commingling of various TPA sites' soils at the PCS stockpile, it is uncertain whether the soil from TPA 22-1 was treated in the ETC system or if it remains stockpiled, awaiting final disposition.

The excavation was backfilled with ETC-treated soil followed by a scoria cover (NOAA 2002b). Final site grading was completed in accordance with the corrective action plan (Polarconsult 2002). Site revegetation was not pursued due to school district plans to renovate the school in 2003.

**Recommended Action:**
In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action, to the maximum extent practicable, at the St. George School UST site, TPA Site 22-1/Site 22 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

**References:**
Alaska Department of Environmental Conservation (ADEC). 2000. Title 18 of the *Alaska Administrative Code* 75, Articles 3 and 9. *Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through October 28, 2000.

ADEC. 2002. E-mail correspondence from Louis Howard to David Ausman (Polarconsult) re: TPA Site 24 Modified Sampling Procedure. June 24.

IT Alaska, Inc. 2001. *Master Quality Assurance Plan, Pribilof Islands Site Restoration, St. George and St. Paul Islands, Alaska*. Prepared for the National Oceanic and Atmospheric Administration, Pribilof Project Office, Seattle, WA.

National Oceanic and Atmospheric Administration (NOAA). 1996. Pribilof Islands Environmental Restoration Two-Party Agreement, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2002a. *Daily Log, St. George Island, Alaska, 31 July 2002*. Prepared by D. Winandy.

NOAA. 2002b. *Daily Log, St. George Island, Alaska, 2 August 2002*. Prepared by D. Winandy.

NOAA. 2002c. *Daily Log, St. George Island, Alaska, 5 August 2002*. Prepared by D. Winandy.

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Polarconsult. 1997b. *Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project, Volume III*. December.

Polarconsult. 2002. *Corrective Action Plan, Remedial Corrective Action Project, School UST Site, TPA Site 22-1, St. George Island, Alaska*. August 23.

Polarconsult. 2004. *Final Corrective Action Report, School UST Site, TPA Site 22-1, Remedial Corrective Action Project, St. George Island, Alaska*. Volumes 1 & 2. April 14.

Tetra Tech EM Inc. (Tetra Tech). 2003. *Draft Field Investigation Report. Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. May 6.

Tech Tech. 2004. *Initial Draft, Field Investigation Report, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project, St. George Island, Alaska*. August 11. In review, draft and final pending.

**For the National Oceanic and Atmospheric Administration**

1/31/05

John Lindsay
NOAA, Pribilof Project Office

Date

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the St. George School UST site, TPA Site 22-1/Site 22 in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

**For the Alaska Department of Environmental Conservation**

2-11-05

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

Date

## Tables and Figures

Table 1. Soil Analytical Results, Excavation Confirmation Samples

| Sample ID | Date Collected | Depth (ft bgs) | GRO | VOC, EPA 8010 | | | | DRO |
|---|---|---|---|---|---|---|---|---|
| | | | AK101 | Benzene | Toluene | Ethylbenzene | Xylene, Total | AK102 |
| SG-22.1-001-0.5 | 01-Aug-02 | 7.5 | 1.82 (U) | 0.00908 (U) | 0.0363 (U) | 0.0363 (U) | 0.0726 (U) | 23.0 (U) |
| SG-22.1-002-0.5 | 01-Aug-02 | 9.0 | 1.67 (U) | 0.00833 (U) | 0.0333 (U) | 0.0333 (U) | 0.0666 (U) | 23.5 (U) |
| SG-22.1-003-0.5 | 01-Aug-02 | 5.4 | 1.89 (U) | 0.00946 (U) | 0.0378 (U) | 0.0378 (U) | 0.0756 (U) | 24.4 (U) |
| SG-22.1-004-0.5 | 01-Aug-02 | 8.6 | 1.88 (U) | 0.00940 (U) | 0.0376 (U) | 0.0376 (U) | 0.0752 (U) | **551** |
| SG-22.1-005-0.5 | 01-Aug-02 | 6.7 | 1.88 (U) | 0.00939 (U) | 0.0376 (U) | 0.0376 (U) | 0.0752 (U) | 23.1 (U) |
| SG-22.1-006-0.5 | 01-Aug-02 | 7.1 | 1.72 (U) | 0.00859 (U) | 0.0344 (U) | 0.0344 (U) | 0.0688 (U) | 23.2 (U) |

**NOTES**
Units shown in mg/kg except as noted.
Result in **bold** type exceeds ADEC Method Two cleanup levels.
bgs  below ground surface
DRO  diesel-range organics
GRO  gasoline-range organics
VOC  volatile organic compound
U  The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

Table 2. Soil Analytical Results, On-Site Stockpile Characterization Samples

| Sample ID | Date Collected | Depth (ft bgs) | GRO | VOC, EPA 8010 | | | | DRO |
|---|---|---|---|---|---|---|---|---|
| | | | AK101 | Benzene | Toluene | Ethylbenzene | Xylene, Total | AK102 |
| SG-22.1-007-2.0 | 02-Aug-02 | 1.5 | 1.82 (U) | 0.00912 (U) | 0.0365 (U) | 0.0365 (U) | 0.0730 (U) | 23.6 (U) |
| SG-22.1-008-1.5 | 02-Aug-02 | 1.5 | 1.71 (U) | 0.00853 (U) | 0.0341 (U) | 0.0341 (U) | 0.0682 (U) | 22.3 (U) |
| SG-22.1-009-1.5 | 02-Aug-02 | 1.5 | 1.91 (U) | 0.00953 (U) | 0.0381 (U) | 0.0381 (U) | 0.0762 (U) | 22.5 (U) |
| SG-22.1-009-1.5D | 02-Aug-02 | 1.5 | 1.62 (U) | 0.00812 (U) | 0.0325 (U) | 0.0325 (U) | 0.0650 (U) | 22.2 (U) |
| SG-22.1-010-1.5 | 02-Aug-02 | 1.5 | 1.89 (U) | 0.00945 (U) | 0.0378 (U) | 0.0378 (U) | 0.0756 (U) | 24.2 (U) |
| SG-22.1-FB | 02-Aug-02 | - | 2.53 (U) | 0.0126 (U) | 0.0505 (U) | 0.0505 (U) | 0.101 (U) | - |
| SG-22.1-TB | 02-Aug-02 | - | 2.57 (U) | 0.0129 (U) | 0.0515 (U) | 0.0515 (U) | 0.103 (U) | - |

NOTES

Units shown in mg/kg except as noted.

Result in **bold** type exceeds ADEC Method Two cleanup levels.

bgs below ground surface

DRO diesel-range organics

GRO gasoline-range organics

VOC volatile organic compound

D Following sample ID indicates duplicate sample.

FB Following Sample ID indicates field blank sample.

TB Following Sample ID indicates trip blank sample.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

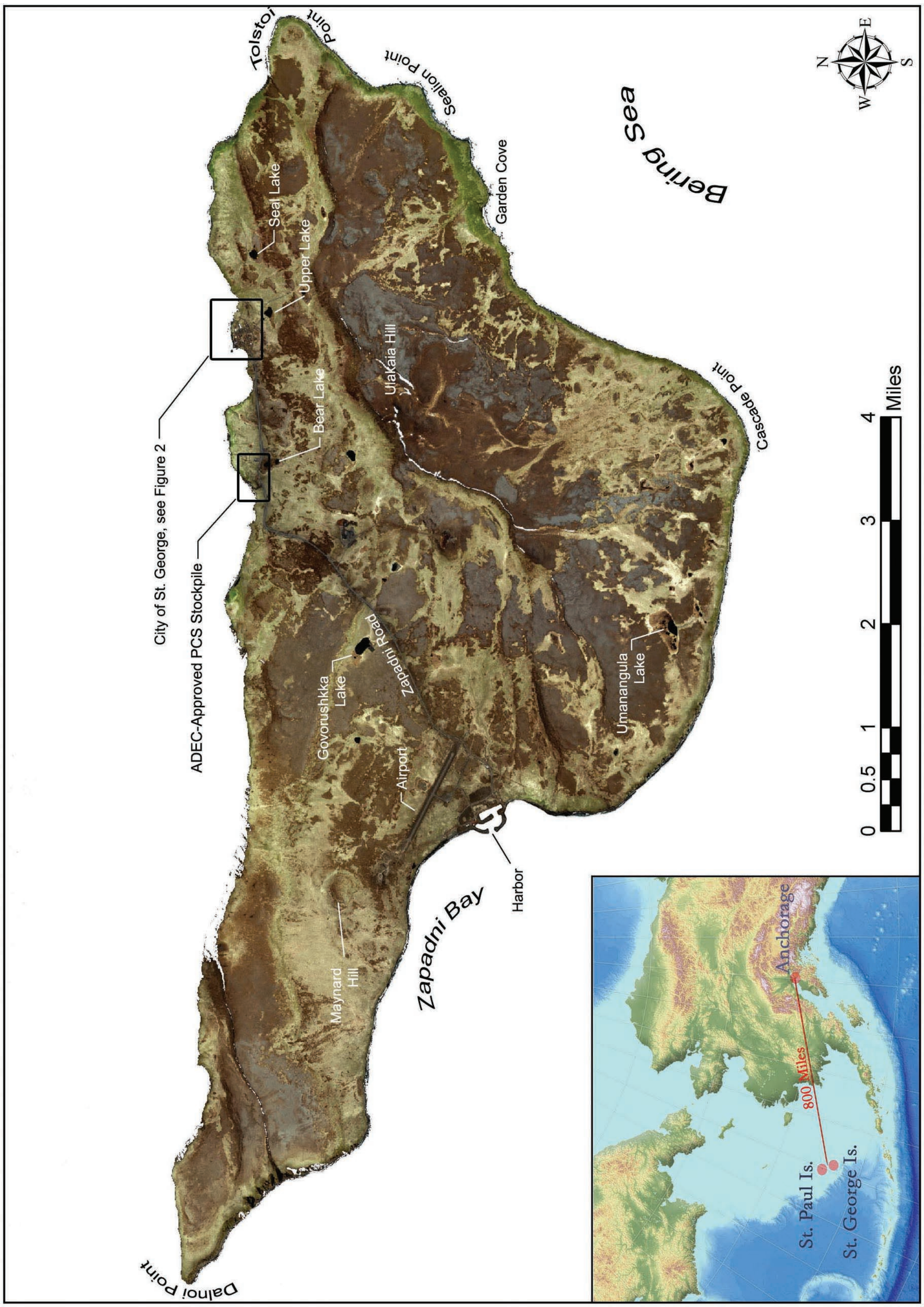



Figure 1

**Island and Vicinity Map**
**St. George Island, Alaska**

Source: Ikonos 2001 Satellite Image

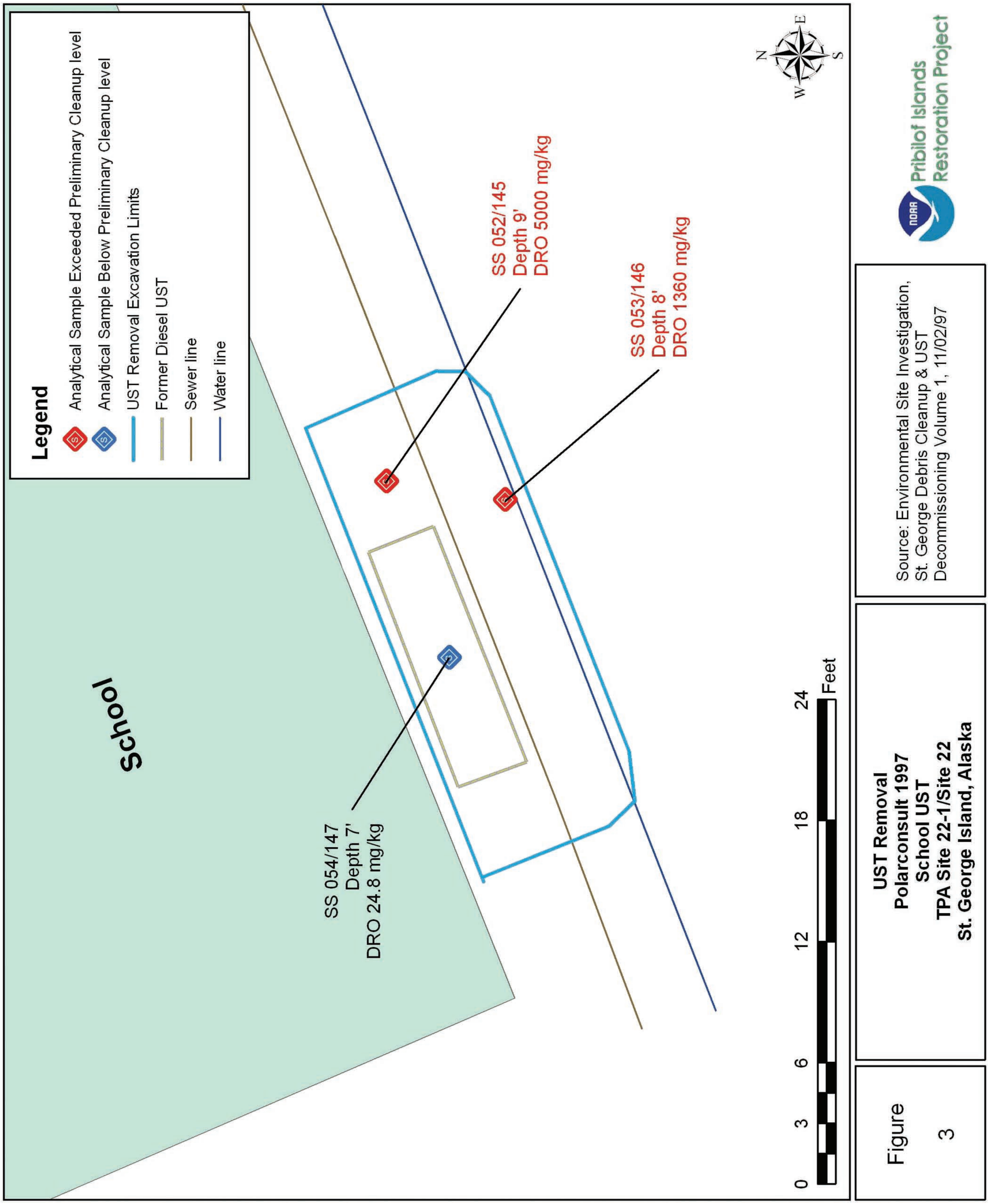
Pribilof Islands Restoration Project

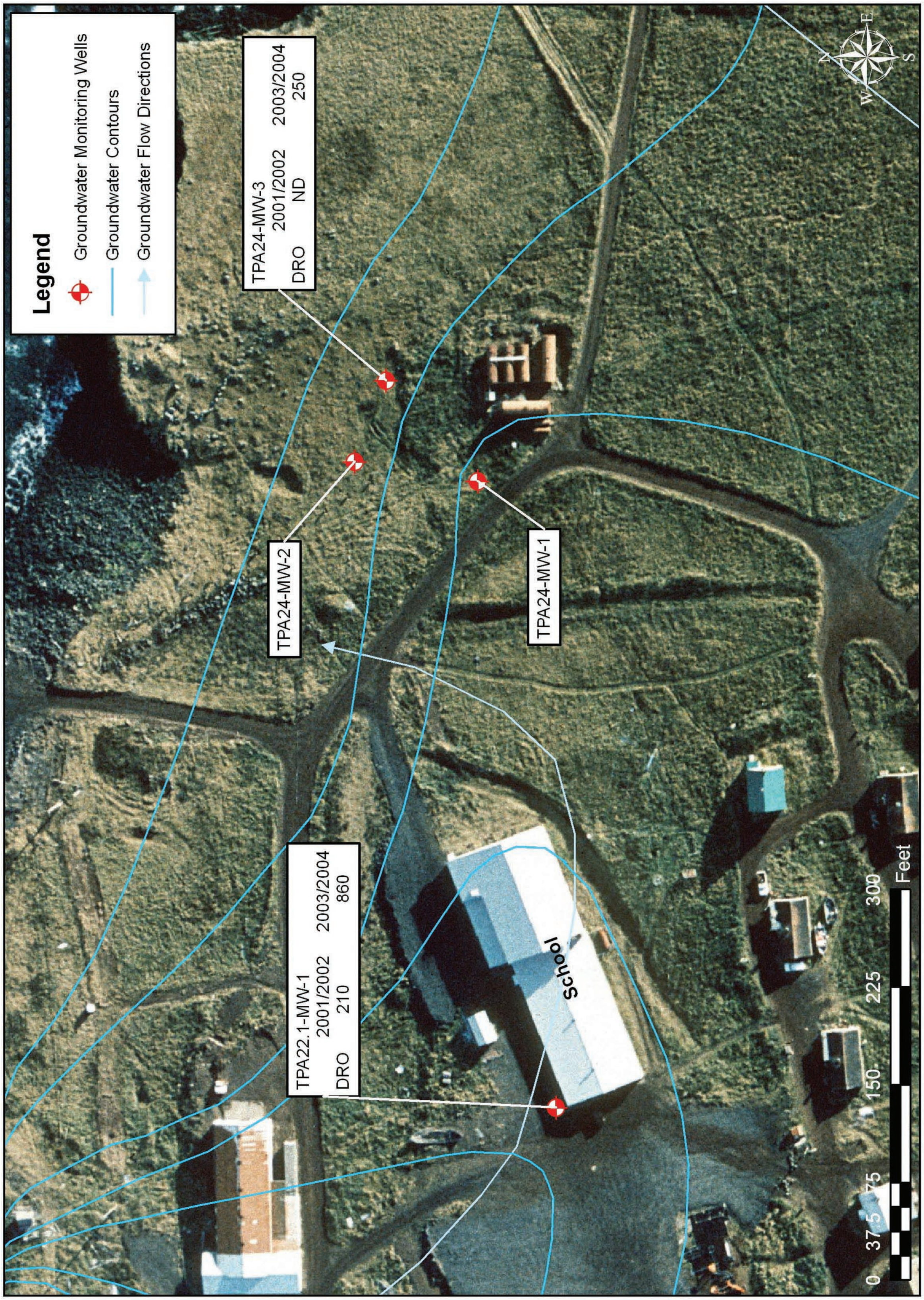

Figure 2

**Legal Property Description Map**
**School UST**
**TPA Site 22-1/Site 22**
**St. George Island, Alaska**

Source: AeroMap U.S. 9/28/96 Aerial Photograph; Bureau of Land Management Land Survey Filed Febuary 15, 1985

Pribilof Islands Restoration Project


Legend
Analytical Sample Exceeded Preliminary Cleanup level
Analytical Sample Below Preliminary Cleanup level
UST Removal Excavation Limits
Former Diesel UST
Sewer line
Water line
School
SS 052/145
Depth 9'
DRO 5000 mg/kg
SS 053/146
Depth 8'
DRO 1360 mg/kg
SS 054/147
Depth 7'
DRO 24.8 mg/kg
N
E
S
W
0
3
6
12
18
24
Feet
Figure
3
UST Removal
Polarconsult 1997
School UST
TPA Site 22-1/Site 22
St. George Island, Alaska
Source: Environmental Site Investigation,
St. George Debris Cleanup & UST
Decommissioning Volume 1, 11/02/97
NOAA
Pribilof Islands
Restoration Project




Source: TTEMI Initial Draft Field Investiagtion Report St. George Island, Alaska August 11, 2004;AeroMap U.S. 9/28/96 Aerial Photograph

Note: Results in µg/L (Microgram per liter); ND (analyte was analyzed for but was not detected); Resluts presented represent the maximum detection for the sampling cycle. Where no results are listed, DRO, GRO & BTEX were not detected.

Pribilof Islands Restoration Project

Figure 4

**Groundwater Sampling Results for Petroleum Hydrocarbons School UST TPA Site 22-1/Site 22 St. George Island, Alaska**

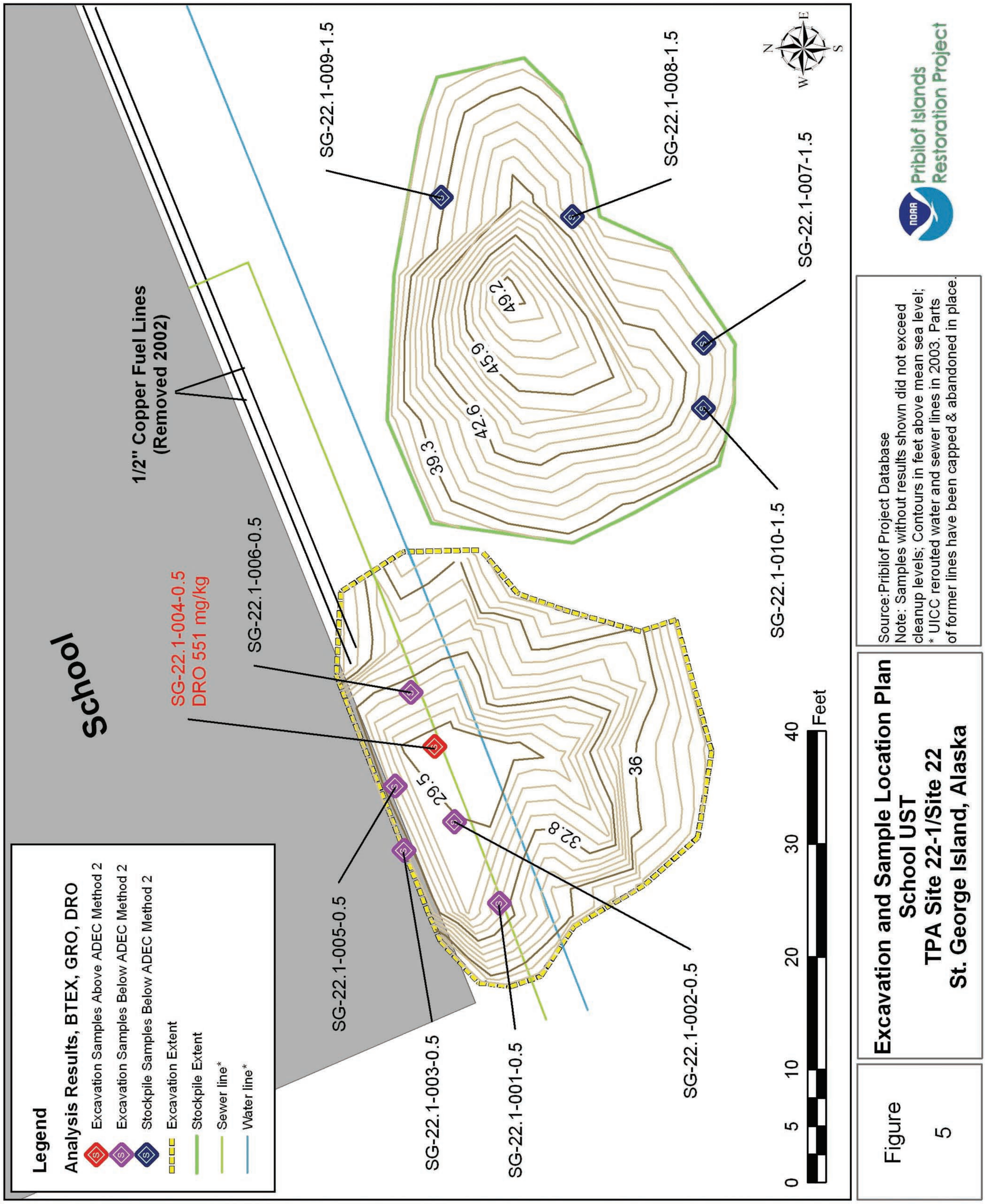



Figure 5

Excavation and Sample Location Plan
School UST
TPA Site 22-1/Site 22
St. George Island, Alaska

# NOAA Site 23
# TPA Site 22-2: Current Carpenter Shop

St. George Island, Alaska, No Further Remedial Action Planned, Carpentry Shop UST, TPA Site No. 22-2 .......... 527

Letter from Louis Howard to John Lindsay RE: Draft No Further Remdial Action Planned at TPA Site No. 22-2 Carpentry Shop UST St. George Island Dated August 6, 2003. Dated August 19, 2003 .......... 535

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 22-2, St. George Island, Alaska (Lot 9, Tract 43) .......... 537

# St. George Island, Alaska
# No Further Remedial Action Planned
# Carpentry Shop UST
# TPA Site No. 22-2

**Site:** Carpentry Shop Underground Storage Tank (UST), Two-Party Agreement (TPA) Site Number 22-2

**Location:** Lot 9 of Tract 43, Qawax Subdivision, Seward Meridian on St. George Island, Alaska. TPA 22-2 is on the east side of the current St. George Tanaq Corporation Carpentry Shop in the City of St. George. (Figures 1 and 2)

**Type of Release: Diesel fuel.**

History: A 500-gallon UST was installed in the early 1960s to supply diesel heating fuel to the carpentry shop constructed at that time. In the 1970s, this UST was replaced by an above ground storage tank and taken out of service. In 1997 St. George Tanaq Corporation and subcontractors per a contract with the National Oceanic and Atmospheric Administration (NOAA) removed the UST and approximately 341 $yd^3$ of diesel-contaminated soil. (Polarconsult 1997a)

**Summary of Site Investigations:**

No investigations were performed apart from the UST removal and site assessment. Surface contamination was noted around the tank fill and vent pipes. During tank removal, heavy fuel odor, soil stains, and elevated field instrumentation readings indicated a release had occurred.

**Summary of Clean up Actions:**

UST removal and site remediation was conducted in accordance with the Project Work Plan (Polarconsult 1997b), and was carried out in June and August of 1997. Upon removal, the tank was found to be in poor condition with corrosion holes. Areas of contaminated soil surrounding and immediately under the tank confirmed that the majority of the site contamination was attributable to subsurface fuel leakage. Due to the non-homogenous nature of the fill and surrounding soils, leaking fuel traveled in discrete vertical and lateral paths. Visual, olfactory, and field instruments were used to direct digging of contaminated soil. Additionally, soil samples from the excavation sidewalls and bottom were collected for fixed lab analyses to determine areas requiring further soil removal. Excavation continued until soil diesel range organic (DRO) concentrations were confirmed below 200 mg/kg, further vertical excavation was deemed impracticable due to equipment limitations, or the stability of the carpentry shop foundation was threatened (Figure 3). A total of approximately 341 $yd^3$ of DRO contaminated soil was removed and transported to NOAA's Petroleum Contaminated Soil (PCS) stockpile, about one mile west of the City of St. George. The PCS stockpile was treated using NOAA's enhanced thermal conduction system in 2000 and 2001 (Polarconsult 2001). The excavation was backfilled with soil from the local scoria mine. An impermeable plastic sheet was placed over the excavation and covered with scoria to reduce surface water infiltration.

Figure 4 shows the former UST location, horizontal extents of the excavation, sample locations, sample depths, and fixed lab sample results. Samples SS 124/131 (SS 131 is a duplicate), SS 125, and SS 129 indicate that soil contaminated with DRO above the Under 40 Inch Zone, Method 2 cleanup concentration of 250 mg/kg was left in portions of the site. Soil at sample locations SS 125 and SS 129 was not removed due to concerns about undermining the carpentry shop foundation. Soil at sample location 124 was judged to be at the maximum excavation depth achievable at this site. Analyses for other potential contaminants were not conducted due to the tank history of storing only diesel fuel, and the knowledge that DRO contamination levels would drive cleanup decisions. Sample results are shown in Table 1.

In summary, the contamination source and all contaminated soil that is practicably accessible has been removed from TPA Site 22-2. Contamination due to diesel fuel migrating to the water table is being addressed in a separate action that is inclusive of groundwater throughout the City of St. George (TTEMI 2003).

**Recommended Action:**
In accordance with paragraph 59 of the Two Party Agreement (1996), NOAA requests written confirmation that all corrective action has been completed at the TPA 22-2 site in accordance with the Agreement and that no further remedial action is planned ("No Further Remedial Action Planned Letter").

**References:**

NOAA 1996. Pribilof Islands Environmental Restoration Two Party Agreement, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26, 1996.

Polarconsult 1997a. Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning Report, Pribilof Islands Environmental Restoration Project. Polarconsult Alaska, Inc. November 2, 1997.

Polarconsult 1997b. Work Plan for Site Assessment and Contaminated Soil Removal. Polarconsult Alaska, Inc. May 1, 1997.

Polarconsult 2001. Draft Report Revision 1, Remediation of Petroleum Contaminated Soil, NOAA Part II Pribilof Islands Environmental Cleanup Project, St. George Island, Alaska. Polarconsult Alaska, Inc. December 27, 2001.

TTEMI 2003. Field Investigation Report Pribilof Environmental Restoration Project St. George Island, Alaska. Tetra Tech EM Inc., Mountlake Terrace, Washington. Draft report May 2003.


Table 1: Summary of Analytical Data for TPA 22-2 Excavation

| Sample ID | Sample Type | Sample Depth BGS (ft) | OVM Analysis Result (ppm) | DRO by AK-102 Result (mg/kg) |
|---|---|---|---|---|
| SS 120 | E | 18.0 | 26 | ND |
| SS 121 | E | 14.0 | 16 | 10 |
| SS 122 | E | 17.0 | 6 | 8 |
| SS 123 | E | 9.0 | 4 | ND |
| SS 124 | E | 18.0 | 186 | **7330** |
| SS 125 | E | 10.0 | 190 | **4360** |
| SS 126 | E | 19.0 | 3 | ND |
| SS 127 | E | 14.0 | 2 | ND |
| SS 128 | E | 18.0 | 3 | 45 |
| SS 129 | E | 14.0 | 177 | **712** |
| SS 130 | E | 15.0 | 1 | ND |
| SS 131 | E | 18.0 | Duplicate | **6890** |
| SS 142 | E | 5.0 | 1 | 175 |
| SS 143 | E | 10 | 0 | 57.6 |
| SS 144 | E | 5.0 | 1 | 197 |
| ***Cleanup Level (mg/kg)*** | **--** | **--** | **--** | ***200*** |

**Notes:**
ND = Soil not detected above the Practical Quantitation Limit
Sample Types: E = excavation confirmation sample
Source of Analytical Data: Polarconsult 1997a.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

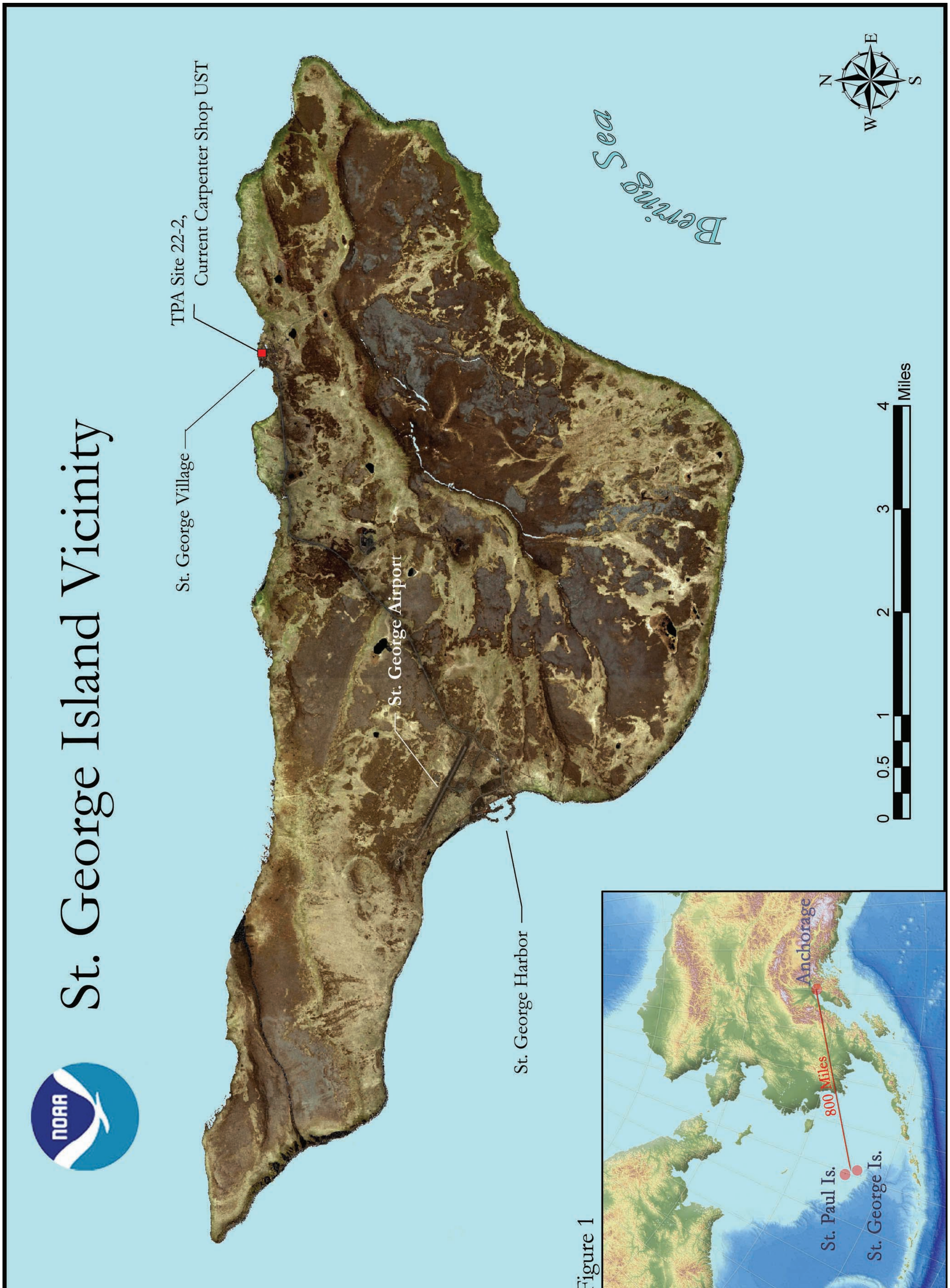
8/8/03
Date

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at TPA Site Number 22-2, the Carpentry Shop UST, in accordance with the Agreement and that no further remedial action is planned. * see ADEC closure letter

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

8/19/03
Date


St. George Island Vicinity
TPA Site 22-2,
Current Carpenter Shop UST
St. George Village
St. George Airport
St. George Harbor
Bering Sea
N
E
S
W
0
0.5
1
2
3
4
Miles
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Figure 1

# TPA Site 22-2, Current Carpenter Shop UST


Figure 2

0 85 170 340 510 680 Feet

Pribilof Islands Restoration Project

# TPA Site 22-2, Current Carpenter Shop UST

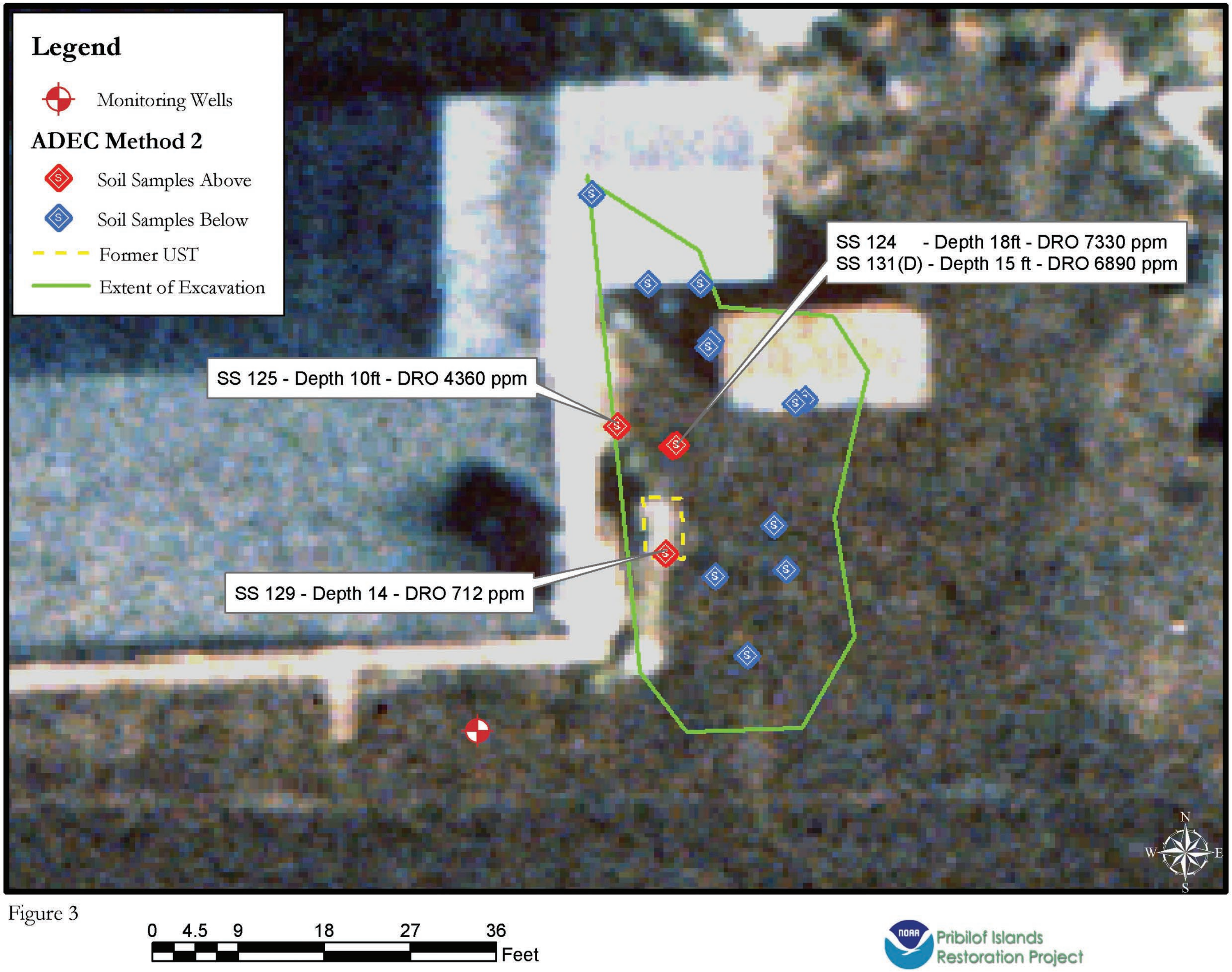



Figure 3

# TPA Site 22-2, Current Carpenter Shop UST
## Proximate Monitoring Wells


Figure 4

# STATE OF ALASKA


FRANK H. MURKOWSKI, GOVERNOR

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http://www.state.ak.us/dec/home.htm


**DEPT. OF ENVIRONMENTAL CONSERVATION**
**DIVISION OF SPILL PREVENTION AND RESPONSE**
**CONTAMINATED SITE PROGRAM**

August 19, 2003

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE BIN C15700
Seattle, WA 98115-6349

RE: Draft No Further Remedial Action Planned at TPA Site No. 22-2 Carpentry Shop UST St. George Island Dated August 6, 2003

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on August 13, 2003. Based on our review of the document, the Department finds the residual contamination beneath the Carpentry Shop foundation at TPA Site No. 22-2, does not pose a significant threat to human health or safety, or the environment. The Department has, therefore, determined that no further remedial action or soil sampling is required for this site which is equivalent to certification by the Department that corrective action is complete under TPA section 59 Closure of Sites of Operable Units.

It states: "… NOAA may request from ADEC written confirmation that *all corrective action has been completed* at a site(s) or operable unit(s) in accordance with this Agreement. Within thirty (30) Days of its receipt of such request, ADEC shall: (1) provide *written confirmation that no further corrective action is required at the subject site*(s) or operable unit(s). ADEC shall not deny certification that *corrective action is complete at any site*(s) or operable unit(s) solely on the basis that post-remedial measures, such as monitoring, *shall remain in place for a period of months or years.*"

In the event that the remaining contaminated soil becomes accessible by the removal of the foundation at the Carpentry Shop, or other information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator will be required under 18 AAC 75.300 to notify the Department. Also, any transport or disposal of contaminated soil excavated from the site requires approval from the Department in accordance with 18 AAC 75.325(i).

The Department reserves all of its rights, under A.S. 46.03 and 18 AAC 75 to require NOAA to conduct additional site assessment, remediation, and/or other necessary actions at TPA 22-2 if information becomes available that contamination is found at this site which is poses a risk to human health or safety, welfare, or the environment. The Department understands that impacts to groundwater will be addressed by NOAA in a separate groundwater monitoring effort as part of a more regional groundwater monitoring program for the City of St. George area.

Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard

Louis Howard
Project Manager

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**2008-000321-0**
Recording Dist: 305 - Aleutian Islands
7/15/2008 10:22 AM Pages: 1 of 7

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 22-2
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation and The Aleut Corporation as the owners, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property on the east side of the St. George Tanaq Corporation Carpenter Shop in the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Lot 9, Tract 43**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 11.48" North Latitude, 169° 32' 46.07" West Longitude**

This property, hereafter referred to as Site 22-2 (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time.

This site was identified as *Site 22-2 Current Carpenter Shop USTs* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 22-2 and NOAA Site 23. Following corrective action, NOAA submitted a request for No Further Remedial Action Planned for Site 22-2 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2003). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 22-2 cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2003, ADEC 2003). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (ADEC 2003).

| | |
|---|---|
| Grantor: | U.S. Bureau of Land Management |
| Grantee (subsurface estate): | The Aleut Corporation<br>4000 Old Seward Highway, Suite 300<br>Anchorage, AK 99503 |
| Grantee (surface estate): | St. George Tanaq Corporation<br>4141 B Street, Suite 301<br>Anchorage, AK 99503 |

<u>**Recording District:**</u> Aleutian Islands

7

**Remedial Actions and Residual Contamination**

The carpentry shop at Site 22-2, constructed in the early 1960s, was served by an underground storage tank (UST) used for storing diesel fuel for the building's furnace. The UST was replaced by an aboveground storage tank and taken out of service in the 1970s. In 1997, the UST and approximately 341 cubic yards of diesel range organics (DRO) contaminated soil was removed from the site (Polarconsult 1997). Contaminated soil removal continued until field screening indicated ADEC cleanup requirements were met or further excavation was not practicable due to reaching equipment depth limits and/or the stability of the building's foundation was threatened. DRO contaminated soil remains at 18 feet below the ground surface or greater and adjacent to/beneath the building's east foundation (Polarconsult 1997). The excavation was backfilled with clean material. Attached is a diagram (Figure 3) drawn to scale that shows the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater in the general vicinity of Site 22-2 is known to be contaminated with petroleum products due to fuel storage and transfer operations at multiple TPA sites in the area (Tetra Tech 2005). Groundwater in this area is monitored for contaminant concentration trends in accordance an ADEC approved long-term groundwater monitoring plan (NOAA 2005). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions.

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil or water from the site or use of the groundwater at or near the contaminated area requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

Alaska Department of Environmental Conservation (ADEC). 2003. Letter addressed to Mr. John Lindsay; *RE: Draft No Further Remedial Action Planned at TPA Site No. 22-2 Carpentry Shop UST St. George Island Dated August 6, 2003.* Dated August 19, 2003.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2003. *No Further Remedial Action Planned, Carpenter Shop UST, TPA Site No. 22-2, St. George Island, Alaska.* Signed by John Lindsay (NOAA) and submitted with cover letter August 8, 2003. Signed by Louis Howard of ADEC Contaminated Sites Program, August 19, 2003.

NOAA. 2005. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volumes 1 through 3. November 2.

Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

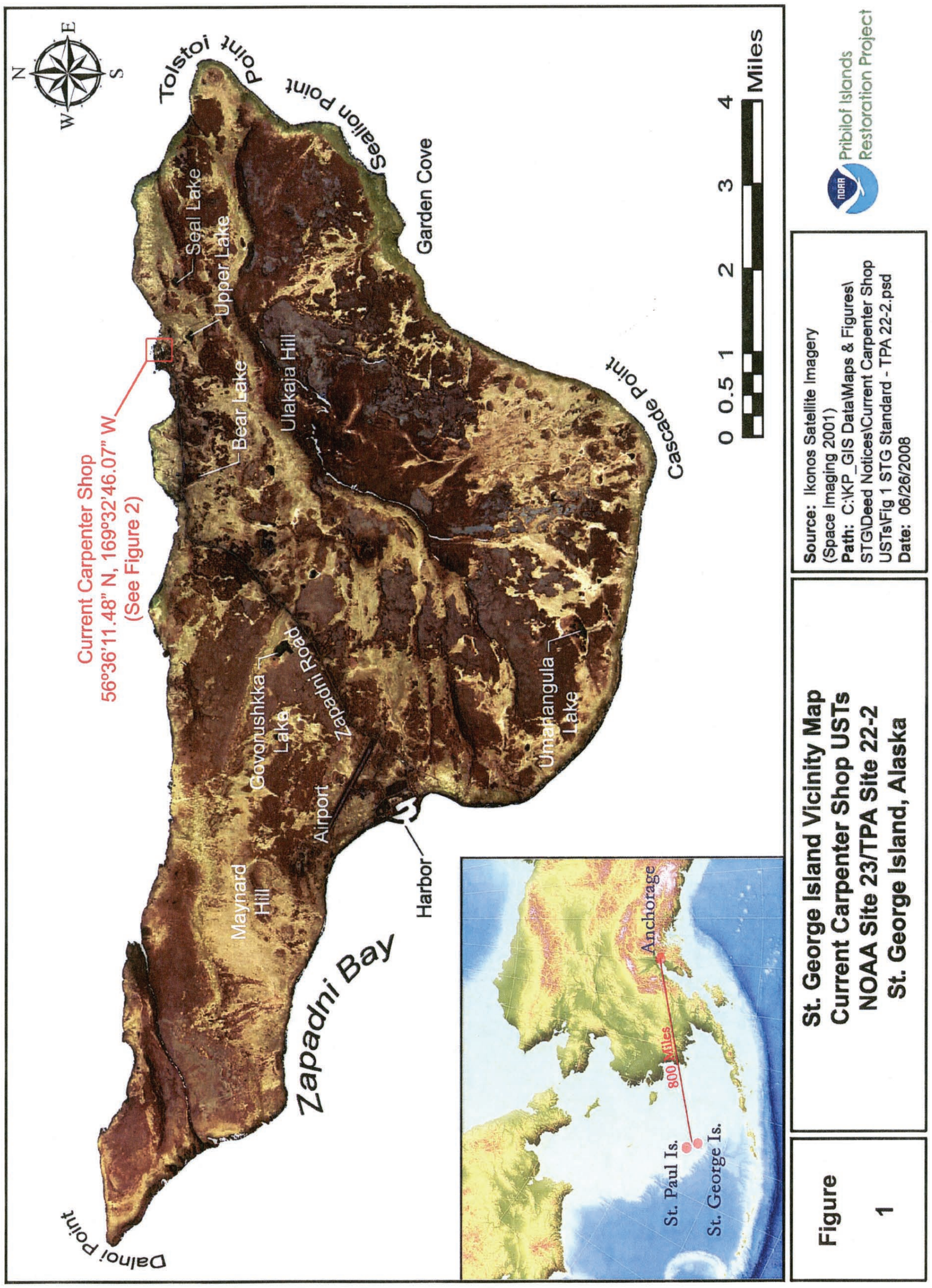
Signature: ____________________

Printed Name: ____________John A. Lindsay____________

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 7
2008-000321-0

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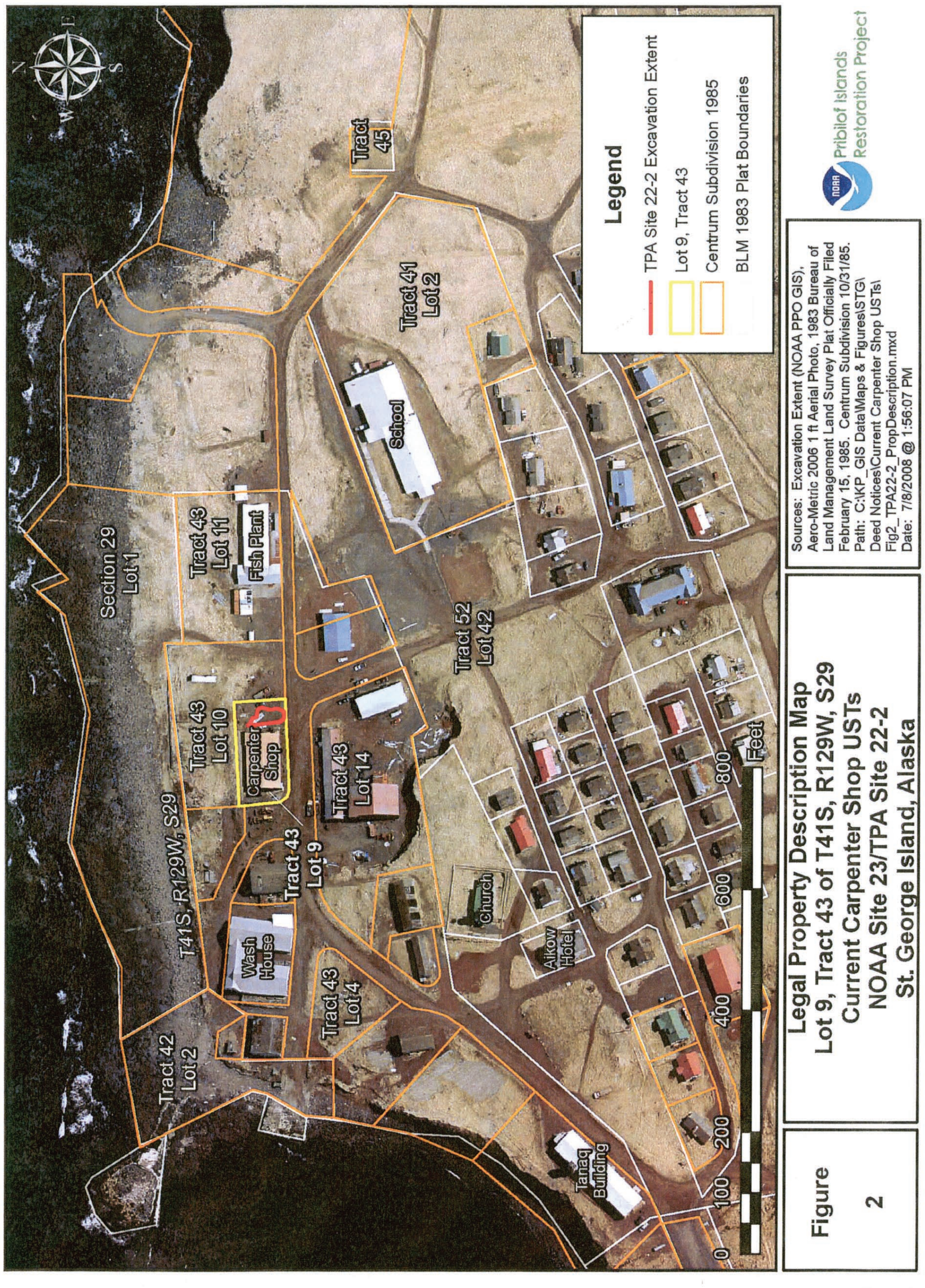


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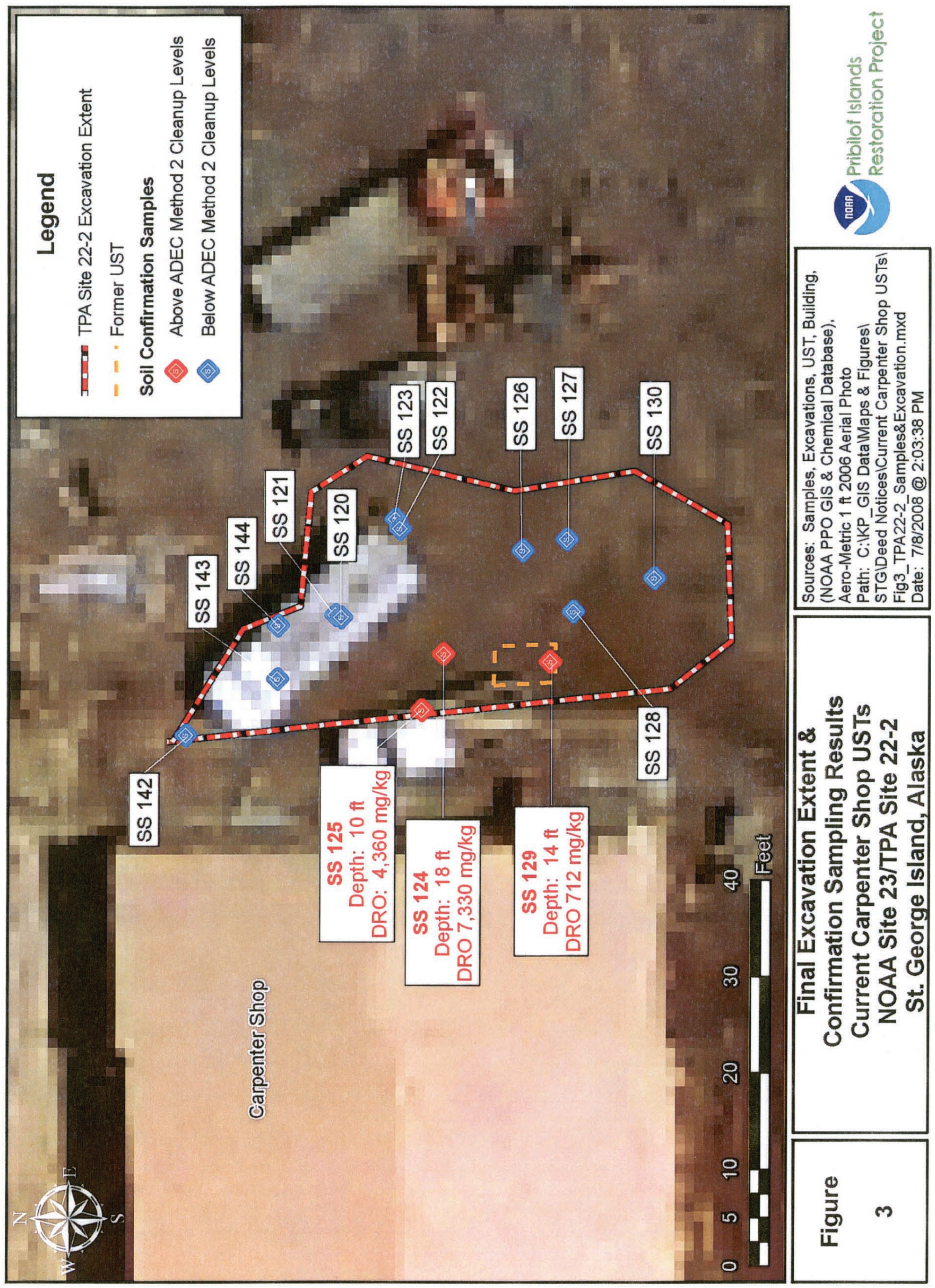


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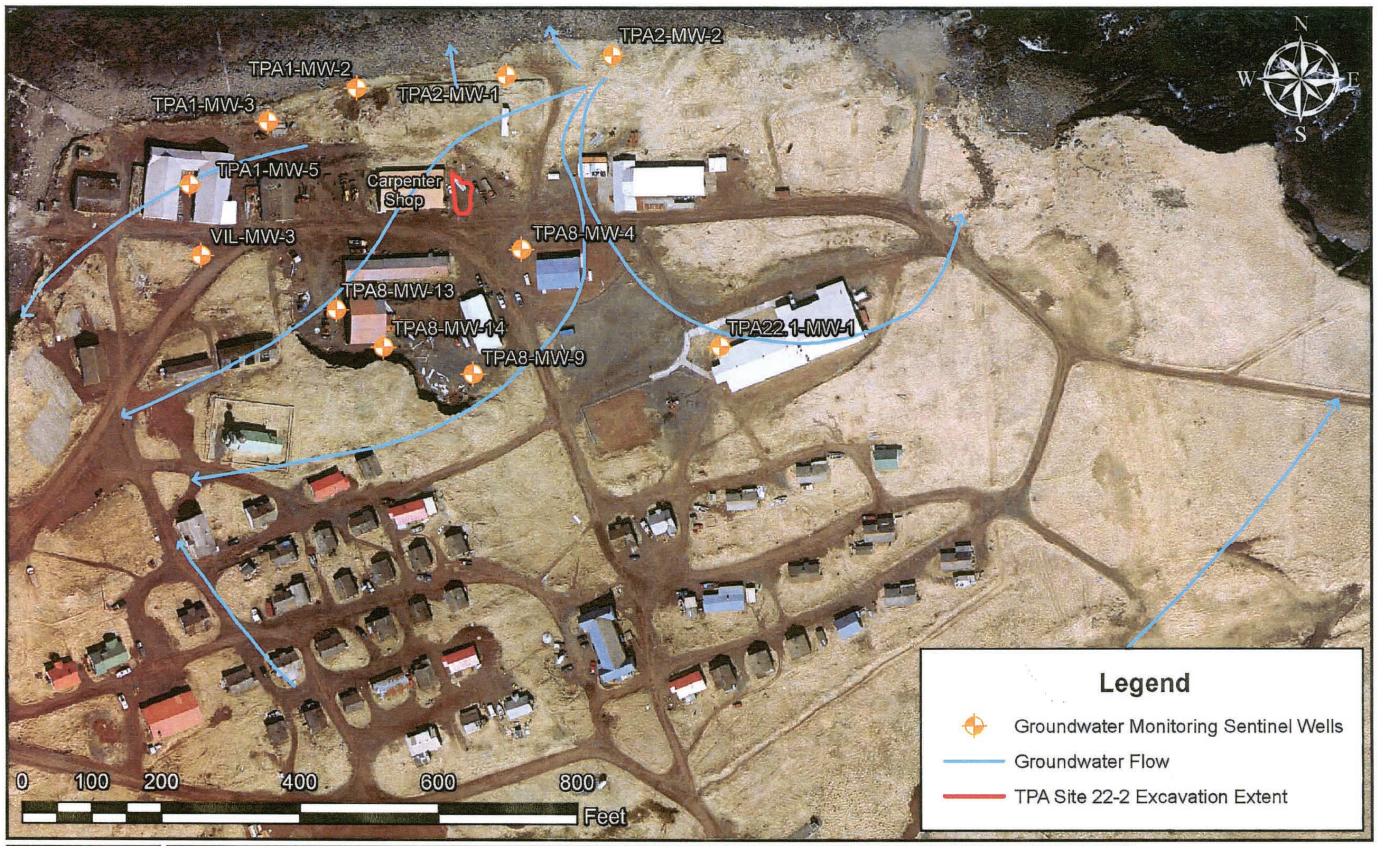
2008-000321-0




| Figure 4 | Location of Groundwater Wells & Gradient<br>Current Carpenter Shop USTs<br>NOAA Site 23/TPA Site 22-2<br>St. George Island, Alaska | Sources: Excavation, GW Wells, (NOAA PPO GIS Database), GW Flow (TTEMI 2005), Aero-Metric 2006 1 ft Aerial Photo<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Current Carpenter Shop USTs\Fig4_TPA22-2_Wells&Gradient.mxd<br>Date: 7/8/2008 @ 1:59:51 PM |
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Pribilof Islands Restoration Project

7 of 7
2008-000321-0

# NOAA Site 24
# TPA Site 22-3: Shop/Store UST

Request for NFRAP, Tanaq Shop/Store Tank,
TPA Site 22-3/NOAA Site 24 ....................................................................547

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Site 22-3, St. George Island, Alaska
(Lot 1, Tract 43) ....................................................................................567

## Request for No Further Remedial Action Planned

**Site:** Tanaq Shop/Store Tank, also known as St. George Island Two Party Agreement (TPA) Site 22-3/National Oceanic and Atmospheric Administration (NOAA) Site 24. This site is also referred to as Tanaq Shop/Store Underground Storage Tank (UST).

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On St. George Island, TPA Site 22-3/Site 24 is located at the NW corner of the building that houses the St. George Canteen, the post office, and the St. George Tanaq Corporation (Tanaq) offices (56°36'6" N latitude, 169°33'1" W longitude; Figure 1).

**Legal Property Description:** TPA Site 22-3/Site 24 is in Tract 43, Township 41 South, Range 129 West, of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985. See Figure 2.

**Type of Release:** Soil and groundwater in the area of TPA Site 22-3/Site 24 were contaminated by diesel fuel as a result of spillage during tank fueling operations and leakage from subsurface corrosion holes in the same tank.

**History and Background:** The Tanaq Shop/Store Tank was a 1,000-gallon underground UST that stored diesel fuel for heating the Tanaq building. Its installation date is thought to have been in the early 1960s when the Tanaq building was constructed, with discontinuation of use in the late 1970s (Polarconsult 1997).

**Summary of Site Investigations and Cleanup Actions:** In 1997, as part of a multi-site environmental investigation, debris removal, and UST decommissioning effort, Tanaq, with Polarconsult Alaska, Inc. providing environmental consultation, removed the Tanaq Shop Store Tank. Site assessment at the time of removal determined that the soil surrounding the UST was contaminated with diesel range organics (DRO). Subsequently, approximately 402 cubic yards of contaminated soil was excavated from the site. The excavation started at the UST location and expanded horizontally until further excavation was not possible due to the risk of undermining building foundations, interference from nearby septic tanks, and concerns about excavating adjacent to the nearby cliff (Polarconsult 1997). The excavation expanded vertically until equipment refusal was reached due to an underlying basalt layer. Per the report, the soil became progressively more solid with depth, until further excavation was not practicable. Figure 3 shows the extent of the 1997 excavation.

Polarconsult collected eleven soil samples and one duplicate from locations and depths shown on Figure 3. All samples were analyzed for DRO using AK-102 protocols. Two samples, SS 025 and SS 028, were also analyzed for benzene, toluene, ethylbenzene , and total xylenes (BTEX). The BTEX results were below action levels (benzene was not detected), however analyses results for DRO ranged from non-detect at sample location SS 027, to 20,500 mg/kg at sample location SS 022. Samples were collected from the excavation bottom at refusal and along sidewalls, with depths ranging from 6.7 feet to 14.4 feet. Surface contamination due to fuel spillage was removed during excavation. As would be expected, diesel fuel flowing from the subsurface holes in the tank traveled down through the soil, therefore remaining contamination at the site is found at depths near and past refusal. Although these results indicate DRO contamination was left at the site above the most restrictive applicable ADEC Method Two (ADEC 2003) cleanup level of 250 mg/kg (migration to groundwater), the samples were collected when further excavation was deemed impracticable.

Figure 3 shows approximate test pit locations (TP-1, TP-2, TP-3, TP-4) from a 1995 Hart Crowser investigation of a nearby historic kerosene storage area (Hart Crowser 1997). The Hart Crowser report states that these test pits were excavated to equipment refusal depth, which ranged from 7 to 9 feet. Sixteen samples were taken from the pits and analyzed for DRO, gasoline range organics (GRO), petroleum hydrocarbons, and BTEX. Analyses results indicate that GRO and BTEX were not detected, and the maximum DRO concentration was 180 mg/kg at refusal depth (9 feet) in TP-1. All sample results were below ADEC cleanup standards, and Hart Crowser's recommendation was for no further action in the area of their investigation. For TPA Site 22-3/Site 24, the Hart Crowser results indicate that the DRO contamination drops to concentrations below cleanup requirements by the time it reaches the test pit locations, just beyond the 1997 excavation extents.

Figure 3 also shows groundwater analyses results for samples taken from monitoring well TPA22.3-MW-1 in 2001 through 2004 (TTEMI 2004). The highest DRO concentration detected was in August 2003 at 240 µg/L. The 18 AAC 75, Article 3, Table C, cleanup standard for ground water is 1500 µg/L for DRO (1300 µg/L for GRO). The analyses results show that, although DRO/GRO concentrations at TPA Site 22-3/Site 24 meet ADEC groundwater cleanup requirements, the groundwater has been impacted by the UST leakage. However, DRO concentrations between 2001 and 2004 do not show an increasing trend, indicating that the remaining contamination is not substantially moving to the groundwater. Further excavation will not likely provide additional reduction in groundwater DRO levels. The GRO detected in May 2004 at 50 µg/L seems to be an anomaly as it has not been detected before in this area, and there is no known source. Future sample results will be reviewed to determine GRO trends, if any.

**ADEC Soil Cleanup Requirements:** Method Two cleanup levels specified in 18 AAC 75, Article 3, Table B2, have been used to determine soil cleanup criteria at TPA sites on St. George Island. Per Table B2, "Under 40 inch Zone", which is applicable to St. George, the DRO cleanup concentration requirements are 10,250 mg/kg for the ingestion exposure pathway; 12,500 mg/kg for the inhalation exposure pathway; and 250 mg/kg for migration to groundwater. These concentration requirements were established to minimize risk to humans and wildlife through direct ingestion of contaminated soil, inhalation of volatized organic substances, and ingestion of groundwater contaminated by pollutants moving through the soil. As shown on Figure 3, sample results indicate that remaining soils meet the inhalation and ingestion criteria in all locations except in the area of sample SS 022 (at 20,500 mg/kg). Per Polarconsult's report, SS 022 was taken from an area where further excavation is not possible due to interference from the nearby septic tank (Polarconsult 1997). All but one of the sample results exceed the 250 mg/kg migration to groundwater criteria. However, sampling results from groundwater in this area have never exceeded ADEC groundwater cleanup criteria, and there is little likelihood of any impact to current or future island drinking water supplies by leaving the remaining contamination in place at this site.

**Other Considerations:** Figure 4 shows the cliff edge as photographed in 2001 versus the cliff edge as surveyed by NOAA in 2003. Other evaluations of cliff loss, accomplished by comparing rectified aerial photographs of the cliff edge with a fixed inland survey point, indicate that the cliff is receding at an average rate of six inches per year. Cliff loss appears to occur in sections rather than on a steady incremental basis; this loss is evidenced by the dramatic slough that occurred during the winter of 2003, shown on Figure 4. The cliff loss is a result of the natural undercutting of the cliff base by Bering Sea wave action, coupled with probable freeze/thaw accelerated separation of the basalt cliff face. Potential areas of future cliff face separation are discernable as elongated depressions near the cliff edge. The situation is serious enough that signs have recently been posted in town along the cliff edge warning of its instability.

NOAA believes that excavation of the remaining contaminated soil at TPA Site 22-3/Site 24 has a potential for further accelerating the natural cliff loss, and the landowner, St. George Tanaq Corporation, (NOAA 2004) also acknowledges this concernThis induced cliff loss would occur due to new or increased crack formation in the area of the cliff as a result of ground vibrations associated with nearby excavation activities. These cracks would aid the natural freeze/thaw cycle of breaking down the cliff face. Vibrations would be caused somewhat by the movement of heavy excavation equipment, such as Tanaq's 30-ton Caterpillar 325 BL Track Excavator, in the area between the building and the cliff edge; but much more damaging would be the extreme ground vibration caused by the excavator bucket scraping against the consolidated basalt at its refusal point in the bottom of the excavation pit. This contact by the bucket with the dense basalt is unavoidable because the retrievable contaminated soil is located just above this basalt layer. The use of smaller excavation equipment such as Tanaq's Case 590 Loader/Backhoe is not practicable due to its limited horizontal and vertical reach, and lack of heft for digging through soil that becomes progressively more solid with depth. Use of lighter excavation equipment would also produce heavy ground vibration when the bucket meets solid basalt.

**Recommended Action:** NOAA believes that the limited benefit derived from removing the remaining contaminated soil at TPA Site 22-3/Site 24 is not worth the potential cost of accelerating cliff loss and the loss of a currently utilized commercial building that includes a U.S. Post Office and community grocery. Soil contaminated with DRO above ADEC cleanup levels based on direct ingestion and inhalation criteria will likely never pose a threat to humans and wildlife due to its location and depth below ground surface. Impact to area groundwater was mitigated with the removal of the leaking UST and the bulk of the contaminated soil. Current DRO concentration in the groundwater, always well below ADEC cleanup criteria, would not likely improve significantly as a result of additional excavation. On the other hand, there is a plausible risk that continued excavation, with its inherent ground vibration, would contribute to cliff loss near the Tanaq building. In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate and practicable corrective action at the Tanaq Shop Store Tank, TPA Site 22-3/Site 24 in accordance with the Agreement, and that ADEC requires no plan for further remedial action from NOAA.

**References:**

ADEC 2003. Alaska Department of Environmental Conservation Title 18 of the *Alaska Administrative Code* 75, Articles 3 and 9. Oil and Hazardous Substances Pollution Control Regulations. State of Alaska. Effective date January 30, 2003.

Hart Crowser 1997. *Expanded Site Inspection*, St. George Island, Pribilof Islands, Alaska. Hart Crowser. January 1997.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement.* Attorney General's Office File No. 66 1-95-0126, National Oceanic and Atmospheric Administration. January 26.

NOAA 2004. Jointly signed letter by NOAA (John Lindsay, Pribilof Project Manager) and St. George Tanaq Corp. (Leland Little, CEO) dated September 13 and 23, 2004.

Polarconsult 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Polarconsult Alaska, Inc. November 2, 1997.

TTEMI 2004. *Initial Draft Field Investigation Report*, St. George Island, Alaska. Tetra Tech EM Inc. August 11, 2004.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

10/6/04
Date

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at the Tanaq Shop Store Tank, St. George TPA Site 22-3/Site 24, in accordance with the Agreement and that no plan for further remedial action is required.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

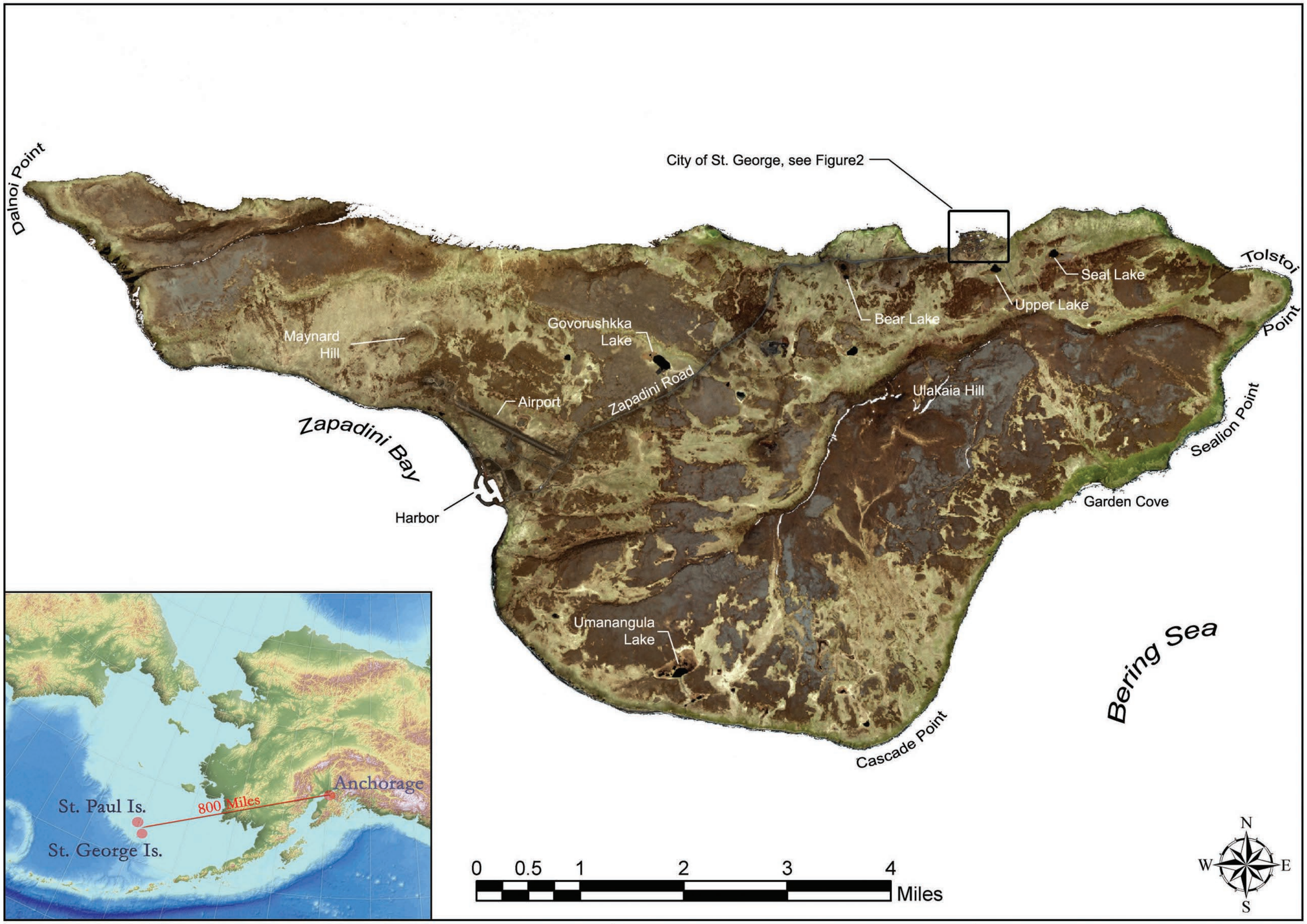
10/8/04
Date

# Tables and Figures

**Table 1. Analytical Data Summary for Samples from the Tanaq Shop Store Tank, TPA Site 22-3/Site 24, St. George Island, Alaska**

| Polarconsult Sample ID Number | DRO (mg/kg) | Benzene (mg/kg) | BTEX (mg/kg) | Sample Depth (feet) |
|---|---|---|---|---|
| SS 021 | 4000 | NA | NA | 8.3 |
| SS 022 | 20500 | NA | NA | 9.4 |
| SS 023 | 1040 | NA | NA | 12.8 |
| SS 024 | 758 | NA | NA | 14.4 |
| SS 025 | 2730 | ND | 13 | 8.5 |
| SS 026 | 3730 | NA | NA | 8.4 |
| SS 027 | ND | NA | NA | 11.9 |
| SS 028 | 1530 | ND | 4 | 7.3 |
| SS 029 | 997 | NA | NA | 10.7 |
| SS 030 | 2070 | NA | NA | 6.7 |
| SS 031 | 730 | NA | NA | 8.0 |
| SS 032 (Note 1) | 2780 | NA | NA | 6.7 |
| Method Two Cleanup Level See Note 2 | 250 | 0.02 | Note 3 | |

NA Not Analyzed
ND Not Detected
Note 1 Duplicate of SS 030
Note 2 Clean up levels are those for "Migration to Groundwater", Under 40 Inch Zone, as specified in 18 AAC 75, Article 3, Table B2.
Note 3 Individual cleanup levels are: Benzene 0.02 mg/kg; Toluene 5.4 mg/kg; Ethylbenzene 5.5 mg/kg; Total Xylenes 78 mg/kg.




| Figure 1 | Island and Vicinity Map<br>Shop/Store UST<br>TPA Site 22-3/Site 24<br>St. Geroge Island, Alaska | Source: Ikonos 2001 Satellite Image | Pribilof Islands Restoration Project |
|---|---|---|---|


| | | |
|---|---|---|
| Figure<br><br>2 | **Legal Property Description Map**<br>**Shop/Store UST**<br>**TPA Site 22-3/Site 24**<br>**St. George Island, Alaska** | Source: Ikonos 2001 Satellite Image;<br>Bureau of Land Management Land<br>Survey Filed Febuary 15, 1985 |

Pribilof Islands Restoration Project

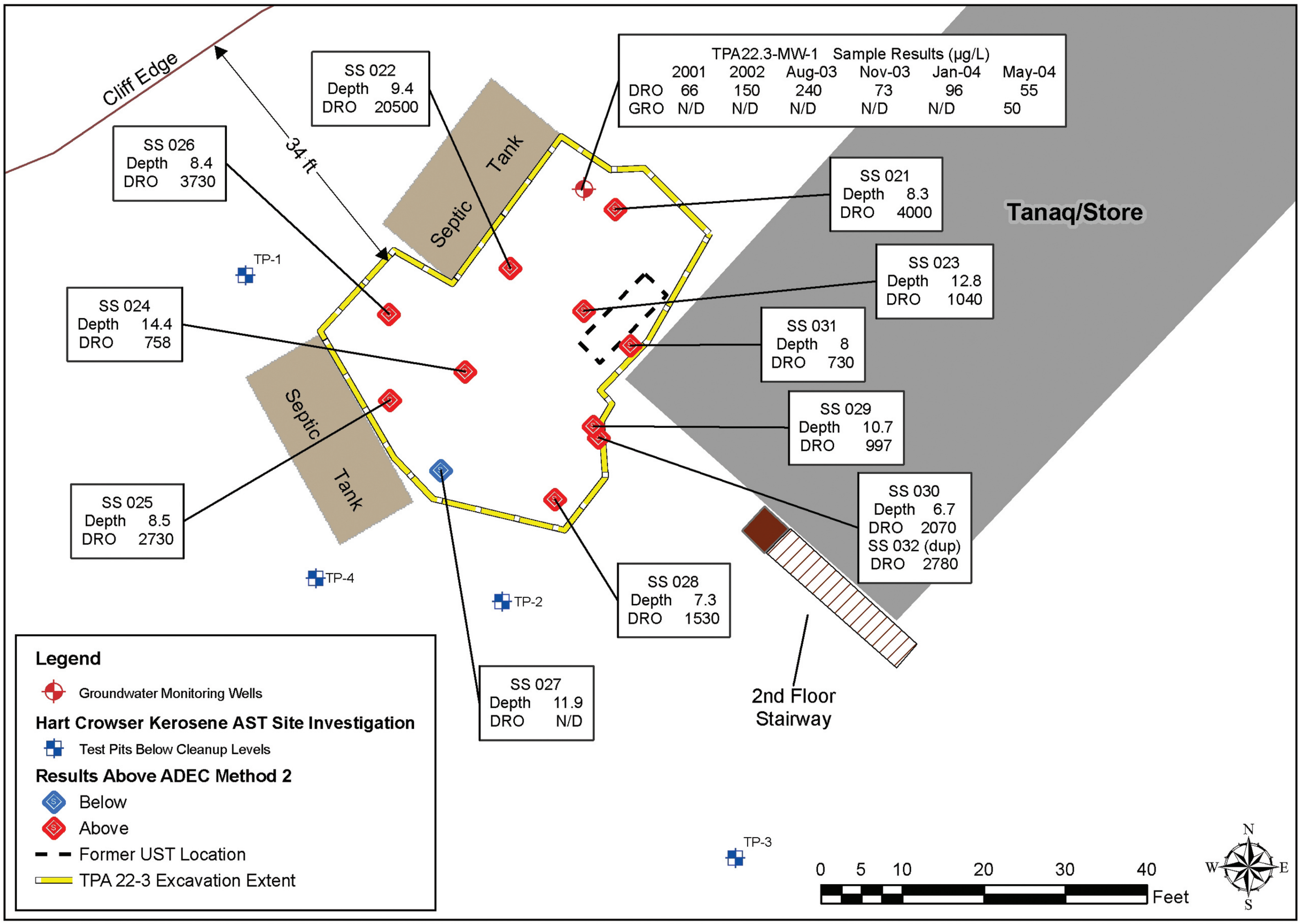


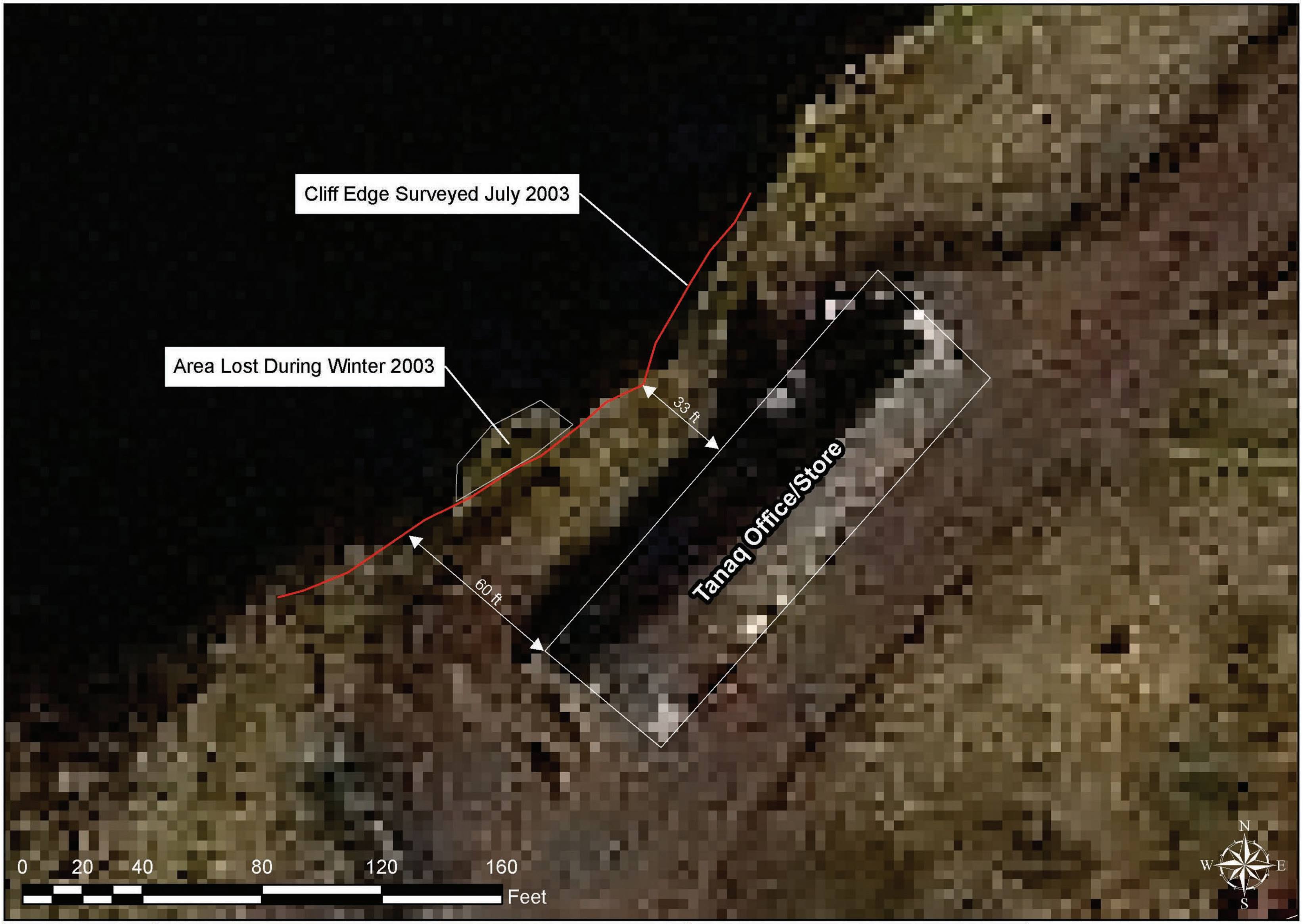

Figure 3

**Excavation & Sample Location Plan**
**Polarconsult, 1997 UST Decommissioning**
**Shop/Store UST**
**TPA Site 22-3/Site 24**
**St. George Island, Alaska**

Source: Polar Consult 1997 Corrective Action Report
TTEMI Field Investigation Report 2/14/2003 & Initial Draft Field Ivestigation Report 8/11/2004.

Note: Soil Levels reported in mg/kg; Groundwater Levels Reported in µg/L

Pribilof Islands Restoration Project




| Figure 4 | **Cliff Erosion Winter 2003**<br>**Shop/Store UST**<br>**TPA Site 22-3/Site 24**<br>**St. George Island, Alaska** | Source: Ikonos 2001 Orthorectified Satellite Image; Survey Data Collected by Pribilof Project Contractor July 2003 |
|---|---|---|

Pribilof Islands Restoration Project

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Pribilof Project Office
7600 Sand Point Way N.E
Seattle, Washington 98115
Ph: 206-526-6965, fax: 206-526-4819

September 13, 2004

Leland Little
Chief Executive Officer
St. George Tanaq Corporation
9135 King Street, Suite 201
Anchorage, AK 99515

RE: Two Party Agreement Site 22-3, Tanaq Store UST

Dear Mr. Little:

The National Oceanic and Atmospheric Administration (NOAA) desires to seek a "No Further Remedial Action Planned" (NFRAP) determination from Alaska Department of Environmental Conservation (ADEC) for Two Party Agreement (TPA) Site 22-3, Tanaq Store Underground Storage Tank (UST). This request will be based on the relatively low additional environmental risk associated with leaving the remaining diesel range organics (DRO) contaminated soil in place compared to the risk of causing accelerated sloughing of the nearby cliff as a result of the use of excavation equipment to remove the soil. As property owner, it is important that St. George Tanaq Corporation (Tanaq) understands and concurs with NOAA's reasoning behind seeking this determination. This letter provides background information about the site, and hopefully will serve as documentation of Tanaq's concurrence with requesting a NFRAP.

**Site History and Remediation Activities To Date**

The following historic and site remediation information is based on the Polarconsult Alaska, Inc. report "*Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project*", dated 11/2/1997.

The Tanaq Store UST was a 1,000-gallon diesel fuel tank, located at Lot 1 of Tract 43, Qawax Subdivision, Seward Meridian, Alaska. Its installation date is thought to have been in the early 1960s when the Tanaq building was constructed, with discontinuation of use in the late 1970s. In 1997, the UST was removed by St. George Tanaq Corporation, with Polarconsult Alaska, Inc. providing environmental consultation. Site assessment at the time of removal determined that the soil surrounding the UST was contaminated with DRO. Subsequently, approximately 402 cubic yards of contaminated soil was excavated from the site. The excavation started at the UST location and expanded horizontally until further excavation was not possible due to the risk of undermining building foundations, interference from nearby septic tanks, and concerns about excavating adjacent to the nearby cliff. The excavation expanded vertically until equipment refusal was reached due to an underlying basalt layer. Per the report, the soil became progressively more solid with depth. Enclosure (1) is four draft figures that will be included in the proposed NFRAP request. Figure 4 shows the extent of the 1997 excavation; 1997 soil sample locations and results; groundwater monitoring well TPA22.3-MW-1 location and water analyses results for DRO/GRO; and approximate test pit locations from a 1995 Hart Crowser expanded site inspection.

**Remaining Site Contamination**

Enclosure (1), Figure 4, shows DRO analytical results ranging from non-detect at sample location SS 027 to 20,500 ppm at sample location SS 022. Samples were collected from the excavation bottom at refusal and along sidewalls, with depths ranging from 6.7 feet to 14.4 feet. As would be expected, diesel fuel flowed from the leaking tank down through the soil, therefore contaminated soil is found at depths near refusal, not at the surface. Although these results indicate DRO contamination was left at the site above the most restrictive applicable ADEC Method Two cleanup level of 250 ppm (migration to groundwater), the samples were collected when further excavation was deemed impracticable.

Figure 4 shows approximate test pit locations (TP-1, TP-2, TP-3, TP-4) from a 1995 Hart Crowser investigation of a nearby historic kerosene storage area (*Draft Hart Crowser Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska*, dated June 1996). The Hart Crowser report states that these test pits were excavated to equipment refusal depth, which ranged from 7 to 9 feet. Sixteen samples were taken from the pits and analyzed for DRO, gasoline range organics (GRO), petroleum hydrocarbons, benzene, toluene, ethylbenzene, and total xylenes (BTEX). Analytical results indicate that GRO and BTEX were not detected, and the maximum DRO concentration was 180 ppm at refusal depth (9 feet) in TP-1. All sample results were below ADEC cleanup standards, and Hart Crowser's recommendation was for no further action in the area of their investigation. For TPA Site 22-3, the Hart Crowser results indicate that the DRO contamination drops to concentrations below cleanup requirements by the time it reaches the test pit locations, just beyond the 1997 excavation extents.

Figure 4 also shows groundwater analytical results for samples taken from monitoring well TPA22.3-MW-1 in 2001 through 2004. The highest DRO concentration detected was in August 2003 at 240 parts per billion (ppb). The 18 AAC 75, Table C, cleanup standard for ground water is 1500 ppb for DRO (1300 ppb for GRO). The analytical results show that, although DRO/GRO concentrations at TPA Site 22-3 meet ADEC groundwater cleanup requirements, the groundwater has been impacted by the UST leakage. However, DRO concentrations between 2001 and 2004 do not show an increasing trend, therefore further excavation would not likely provide additional reduction in groundwater DRO levels. The GRO detected in May 2004 at 50 ppb seems to be an anomaly as it has not been detected before in this area, and there is no known source. Future sample results will be reviewed to determine GRO trends, if any.

**ADEC Soil Cleanup Requirements**

Method Two cleanup levels, Table B2 of 18 AAC 75, have been used to determine soil cleanup criteria at TPA sites on St. George Island. Per Table B2, "Under 40 inch Zone", which is applicable to St. George, the DRO cleanup concentration requirements are 10,250 ppm for the ingestion exposure pathway; 12,500 ppm for the inhalation exposure pathway; and 250 ppm for migration to groundwater. These concentration requirements were established to minimize risk to humans and wildlife through direct ingestion of contaminated soil, inhalation of volatized organic substances, and ingestion of groundwater contaminated by pollutants moving through the soil. As shown on Figure 4, sample results indicate that remaining soils meet the inhalation and ingestion criteria in all locations except in the area of sample SS 022 (at 20,500 ppm). Per Polarconsult's report, SS 022 was taken from an area where further excavation was not possible due to interference from the nearby septic tank. All but one of the sample results exceed the 250 ppm migration to groundwater criteria. However, sampling results from groundwater in this area have never exceeded ADEC groundwater cleanup criteria, and there is little likelihood of any impact to current or future island drinking water supplies.

**Cliff Sloughing**

Enclosure (1), Figure 3, shows the cliff edge as photographed in 2001 versus the cliff edge as surveyed by NOAA in 2003. Other evaluations of cliff loss, accomplished by comparing rectified aerial photographs of the cliff edge with a fixed inland survey point, indicate that the cliff is receding at an average rate of six inches per year. Cliff loss appears to occur in sections rather than on a steady incremental basis; this loss is evidenced by the dramatic slough that occurred during the winter of 2003, shown on Figure 3. The cliff loss is a result of the natural undercutting of the cliff base by Bering Sea wave action, coupled with probable freeze/thaw accelerated separation of the basalt cliff face. Potential areas of future cliff face separation are discernable as elongated depressions near the cliff edge. The situation is serious enough that signs have recently been posted in town along the cliff edge warning of its instability.

NOAA believes that excavation of the remaining contaminated soil at TPA Site 22-3 has a potential for further accelerating the natural cliff loss. This induced cliff loss would occur due to new or increased crack formation in the cliff face as a result of ground vibrations associated with nearby excavation activities. These cracks would aid the natural freeze/thaw cycle of breaking down the cliff face. Vibrations would be caused somewhat by the movement of heavy excavation equipment, such as Tanaq's 30-ton Caterpillar 325 BL Track

Excavator, in the area between the building and the cliff edge; but much more damaging would be the extreme ground vibration caused by the excavator bucket scraping against the consolidated basalt at its refusal point in the bottom of the excavation pit. This contact by the bucket with the dense basalt is unavoidable because the retrievable contaminated soil is located just above this basalt layer. The use of smaller excavation equipment such as Tanaq's Case 590 Loader/Backhoe is not practicable due to its limited horizontal and vertical reach, and lack of heft for digging through soil that becomes progressively more solid with depth. Use of lighter excavation equipment will still produce heavy ground vibration when the bucket meets solid basalt.

**Summary**

NOAA does not believe that the benefit derived by removing the remaining contaminated soil at TPA Site 22-3 is worth the potential cost of accelerating cliff loss. Soil contaminated with DRO above ADEC cleanup levels based on direct ingestion and inhalation criteria will likely never pose a threat to humans and wildlife due to its location and depth below ground surface. Impact to area groundwater was mitigated with the removal of the leaking UST and the bulk of the contaminated soil. Current DRO concentration in the groundwater, always well below ADEC cleanup criteria, would not likely improve significantly as a result of additional excavation. On the other hand, there is a plausible risk that continued excavation, with its inherent ground vibration, would contribute to cliff loss near the Tanaq building.

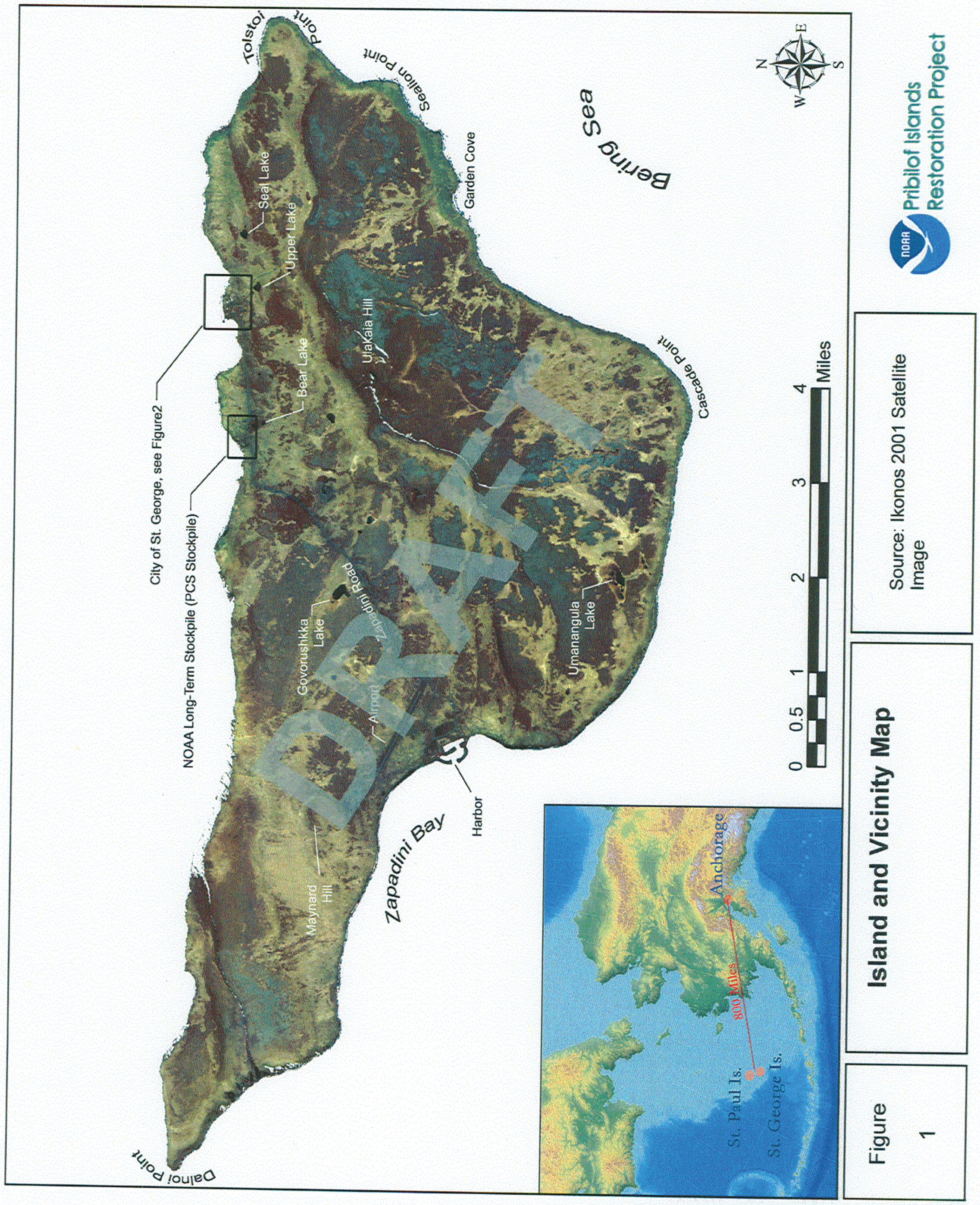
NOAA requests that Tanaq, as property owner, concur with the approach of requesting a NFRAP designation from ADEC for TPA Site 22-3 without further excavation at the site. Upon your signature and return of this letter affirming your concurrence as the rightful representative of Tanaq, NOAA will proceed with the NFRAP request. Two copies are provided; one each for Tanaq's and NOAA's files; please retain one and return the other.

I can be reached at 206-526-4560 (fax: -4819); by e-mail at john.lindsay@noaa.gov.

John Lindsay________________________________ Date: 9/13/04
NOAA Pribilof Project Manager

Leland Little________________________________ Date: 9/23/04
St. George Tanaq Corp. Chief Executive Officer

Enclosures: as stated
Cc: Jim Malchow, NOAA
Greg Gervais, NOAA
File



Tolstoi Point
Sealion Point
Garden Cove
Bering Sea
Seal Lake
Upper Lake
Bear Lake
Ulakaia Hill
Cascade Point
City of St. George, see Figure2
NOAA Long-Term Stockpile (PCS Stockpile)
Govorushkka Lake
Zapadini Road
Airport
Umanangula Lake
Harbor
Zapadini Bay
Maynard Hill
Dalnoi Point
DRAFT
N
E
S
W
0 0.5 1 2 3 4 Miles
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Pribilof Islands Restoration Project
Source: Ikonos 2001 Satellite Image
Island and Vicinity Map
Figure 1

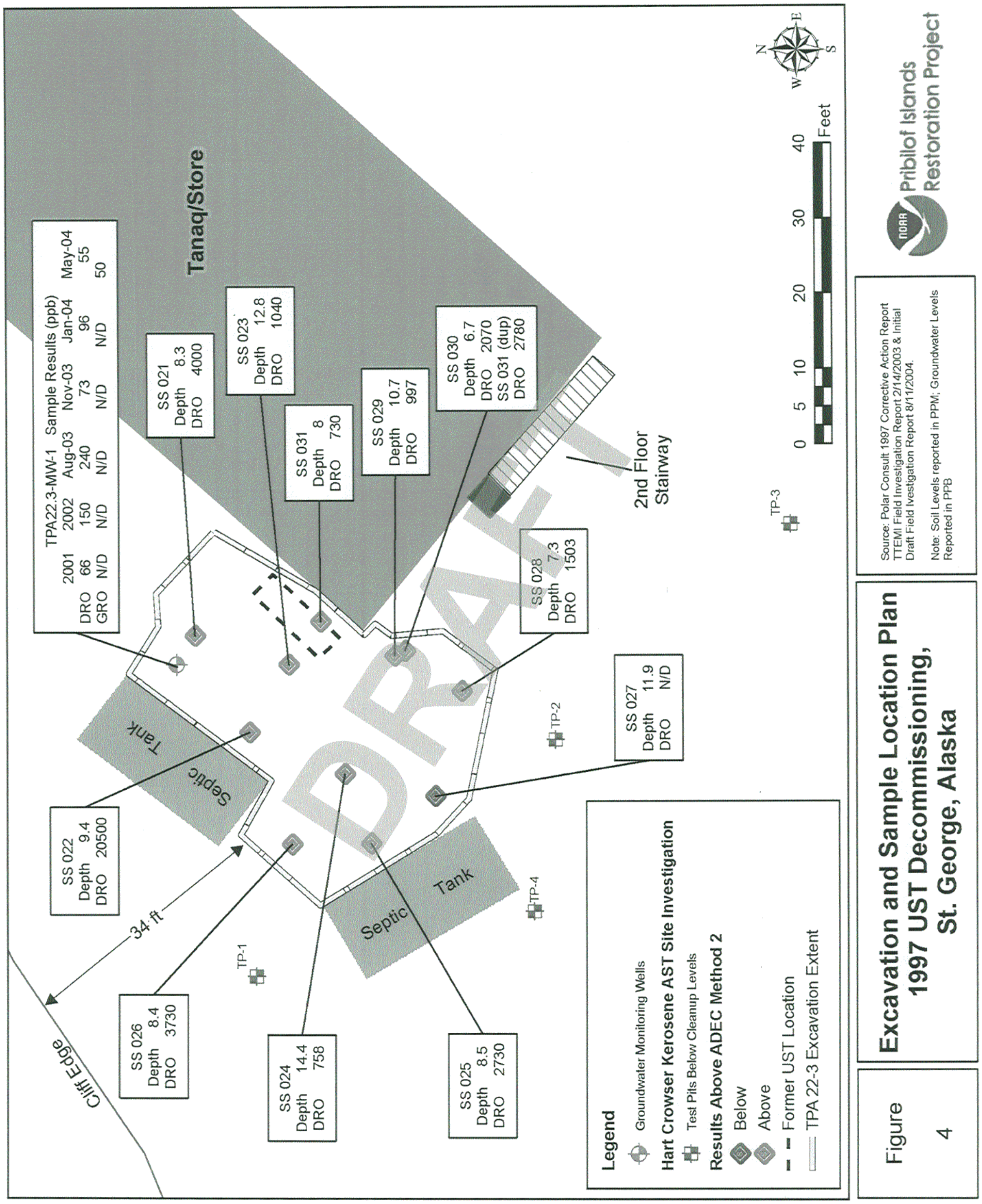

Figure 2

City Area Vicinity Map

Source: Aero Map U.S. 9/28/96
Aerial Photograph

NOAA Pribilof Islands Restoration Project


Tanaq Office/Store
DRAFT
33 ft
60 ft
Cliff Edge Surveyed July 2003
Area Lost During Winter 2003
0 20 40 80 120 160
Feet
N
E
S
W
Figure
3
Cliff Erosion Winter 2003
Tanaq Office/Store Building
St. George Island, Alaska
Source: Ikonos 2001 Orthorectified
Satellite Image; Survey Data
Collected by Pribilof Project
Contractor July 2003
NOAA
Pribilof Islands
Restoration Project



Tanaq/Store
TPA22.3-MW-1 Sample Results (ppb)
2001 2002 Aug-03 Nov-03 Jan-04 May-04
DRO 66 150 240 73 96 55
GRO N/D N/D N/D N/D N/D 50
SS 021 Depth 8.3 DRO 4000
SS 023 Depth 12.8 DRO 1040
SS 031 Depth 8 DRO 730
SS 029 Depth 10.7 DRO 997
SS 030 Depth 6.7 DRO 2070 SS 031 (dup) DRO 2780
SS 028 Depth 7.3 DRO 1503
SS 027 Depth 11.9 DRO N/D
SS 022 Depth 9.4 DRO 20500
SS 026 Depth 8.4 DRO 3730
SS 024 Depth 14.4 DRO 758
SS 025 Depth 8.5 DRO 2730
2nd Floor Stairway
Septic Tank
Septic Tank
34 ft
Cliff Edge
TP-1
TP-2
TP-3
TP-4
DRAFT
0 5 10 20 30 40 Feet
N E S W
Legend
Groundwater Monitoring Wells
Hart Crowser Kerosene AST Site Investigation
Test Pits Below Cleanup Levels
Results Above ADEC Method 2
Below
Above
Former UST Location
TPA 22-3 Excavation Extent
Figure 4
Excavation and Sample Location Plan 1997 UST Decommissioning, St. George, Alaska
Source: Polar Consult 1997 Corrective Action Report TTEMI Field Investigation Report 2/14/2003 & Initial Draft Field Ivestigation Report 8/11/2004.
Note: Soil Levels reported in PPM; Groundwater Levels Reported in PPB
NOAA Pribilof Islands Restoration Project

cc

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S
K
A

2008-000322-0
Recording Dist: 305 - Aleutian Islands
7/15/2008 10:23 AM Pages: 1 of 6

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 22-3
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation and The Aleut Corporation as the owners, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property on the west end of the Tanaq Building in the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Lot 1, Tract 43**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 6.16" North Latitude, 169° 33' 1.24" West Longitude**

This property, hereafter referred to as Site 22-3 (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time.

This site was identified as *Site 22-3 Shop/Store UST* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 22-3 and NOAA Site 24. Following corrective action, NOAA submitted a request for No Further Remedial Action Planned for Site 22-3 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2004). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 22-3 cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2004, ADEC 2004). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (ADEC 2004).

| | |
|---|---|
| Grantor: | U.S. Bureau of Land Management |
| Grantee (subsurface estate): | The Aleut Corporation<br>4000 Old Seward Highway, Suite 300<br>Anchorage, AK 99503 |
| Grantee (surface estate): | St. George Tanaq Corporation<br>4141 B Street, Suite 301<br>Anchorage, AK 99503 |

**<u>Recording District:</u>** Aleutian Islands

6

## Remedial Actions and Residual Contamination

An underground storage tank (UST) was installed on the west end of the Tanaq Building (Site 22-3) in the 1960s to store diesel fuel for the building's furnace; the UST was taken out of service in the late 1970s (Polarconsult 1997). In 1997, the UST and approximately 402 cubic yards of diesel range organics (DRO) contaminated soil was removed from the site (Polarconsult 1997). The contaminated soil removal started at the UST location and expanded horizontally until further excavation was not practicable due to the risk of undermining the building foundation, interference by nearby septic tanks, and concerns about excavating adjacent to the nearby cliff (Polarconsult 1997). The excavation expanded vertically until equipment refusal was reached due to an underlying basalt layer. Attached is a diagram (Figure 3) drawn to scale that shows the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2001, NOAA installed a groundwater monitoring well at Site 22-3. Groundwater samples collected from this well from 2001 through 2004 had analytical results indicating all contaminants either non-detect or detected at concentrations well below ADEC cleanup standards (Tetra Tech 2005). Based on a determination that groundwater in the vicinity of Site 22-3 had not been adversely impacted, this monitoring well was decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005).

### Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

Alaska Department of Environmental Conservation (ADEC). 2004. Letter addressed to Mr. John Lindsay; *RE: Request for No Further Remedial Action Planned Tanaq Shop Store Tank TPA Site 22-3/Site 24, St. George Island Dated October 5, 2004.* File No: 2643.38.031.03. Dated October 8, 2004.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2004. *Request for No Further Remedial Action Planned, Tanaq Shop Store Tank, TPA Site 22-3/Site 24, St. George Island, Alaska.* Signed by John Lindsay (NOAA) and submitted with cover letter October 6, 2004. Signed by Louis Howard of ADEC Contaminated Sites Program, October 8, 2004.

NOAA. 2005. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volumes 1 through 3. November 2.

Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

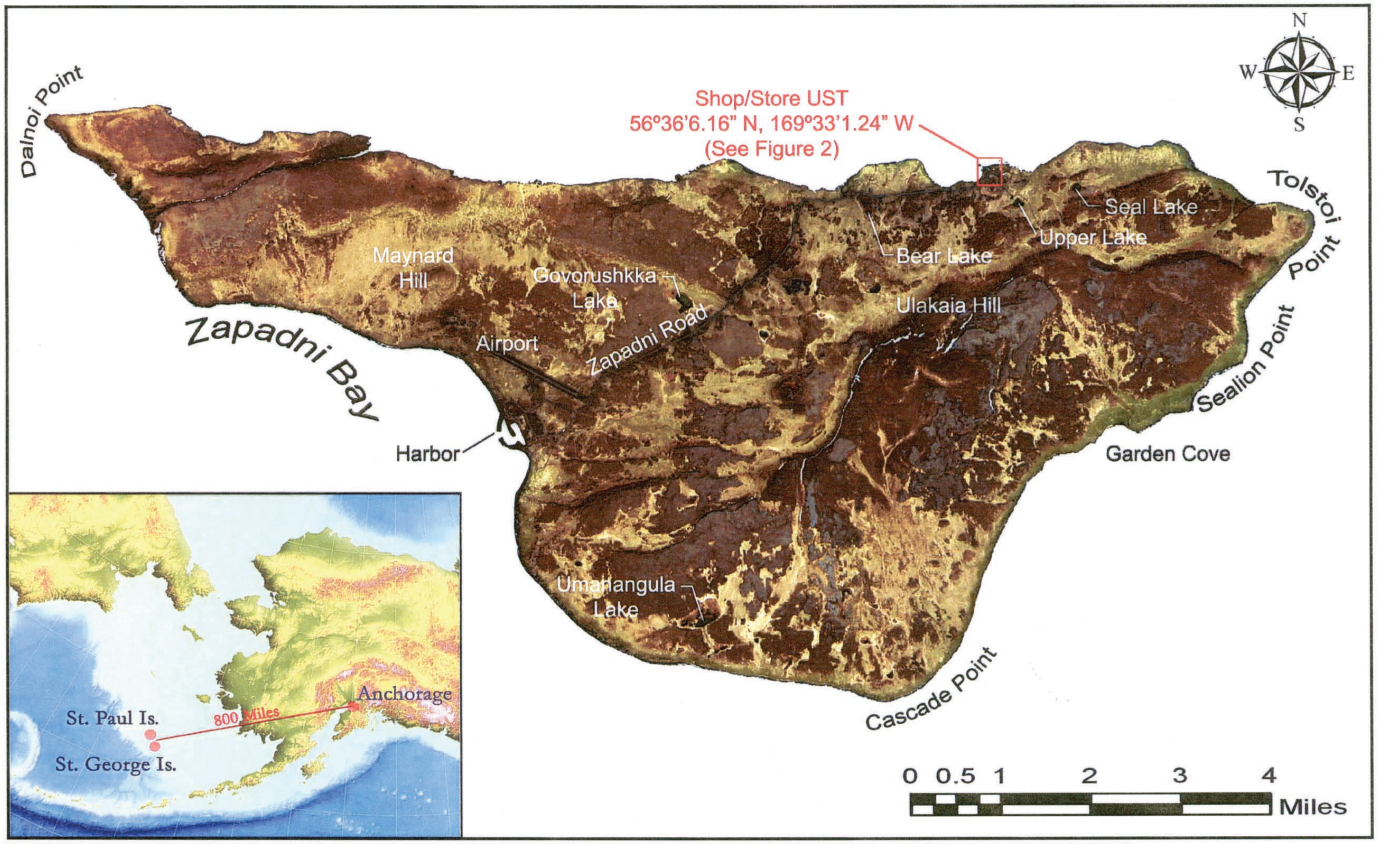
Signature: ______________________________

Printed Name: ____________John A. Lindsay____________

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 6
2008-000322-0




| Figure<br>1 | St. George Island Vicinity Map<br>Shop/Store UST<br>NOAA Site 24/TPA Site 22-3<br>St. George Island, Alaska | **Source:** Ikonos Satellite Imagery (Space Imaging 2001)<br>**Path:** C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Shop_Store UST\Fig 1 STG Standard - TPA 22-3.psd<br>**Date:** 06/26/2008 |
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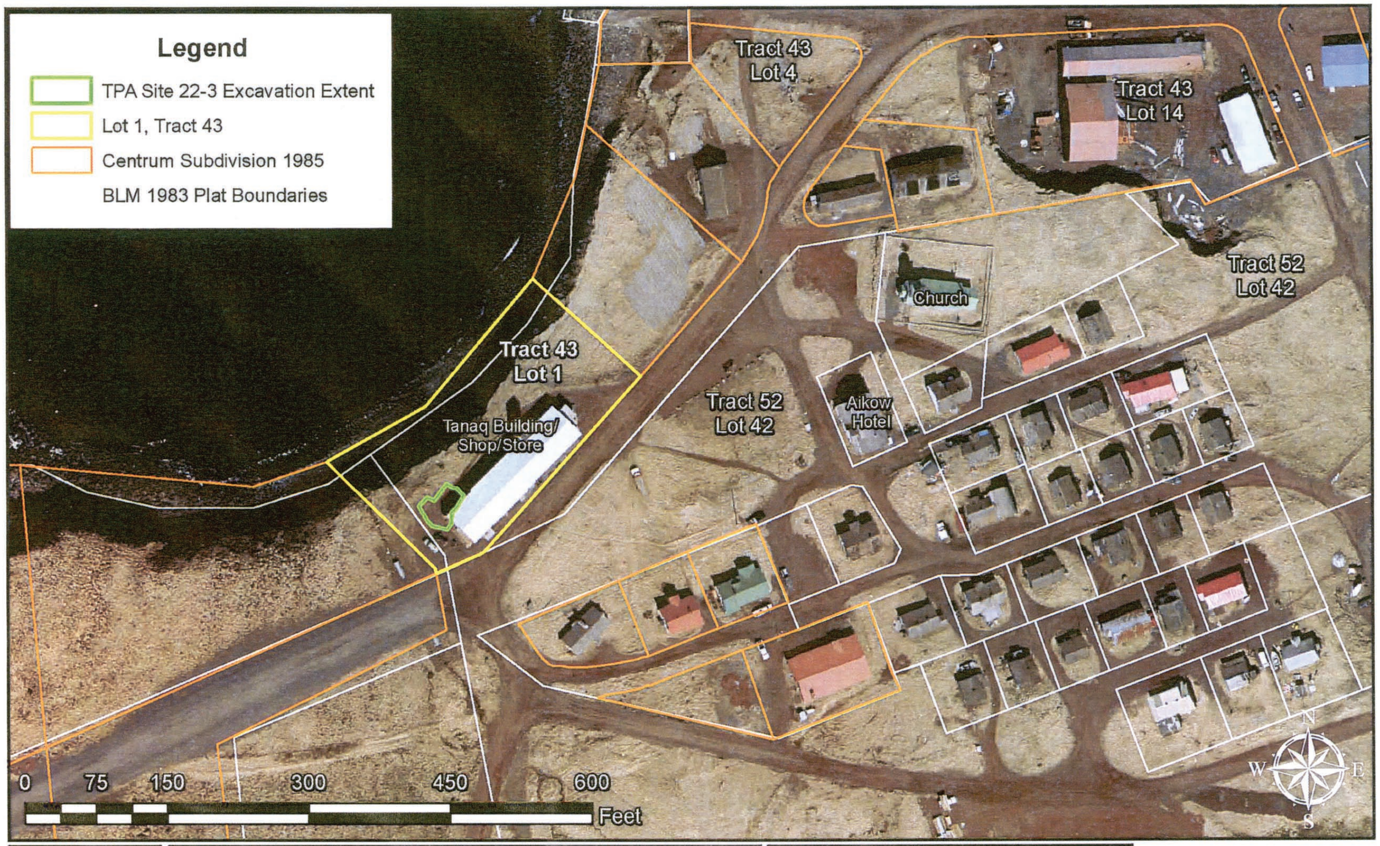
Pribilof Islands Restoration Project

4 of 6
2008-000322-0




| Figure 2 | Legal Property Description Map<br>Lot 1, Tract 43 of T41S, R129W, S29<br>Shop/Store UST<br>NOAA Site 24/TPA Site 22-3<br>St. George Island, Alaska | Sources: Excavation Extent (NOAA PPO GIS 2003), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrum Subdivision 10/31/85.<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Shop_Store UST\Fig2_TPA22-3_PropDescription.mxd<br>Date: 7/8/2008 @ 3:08:53 PM |
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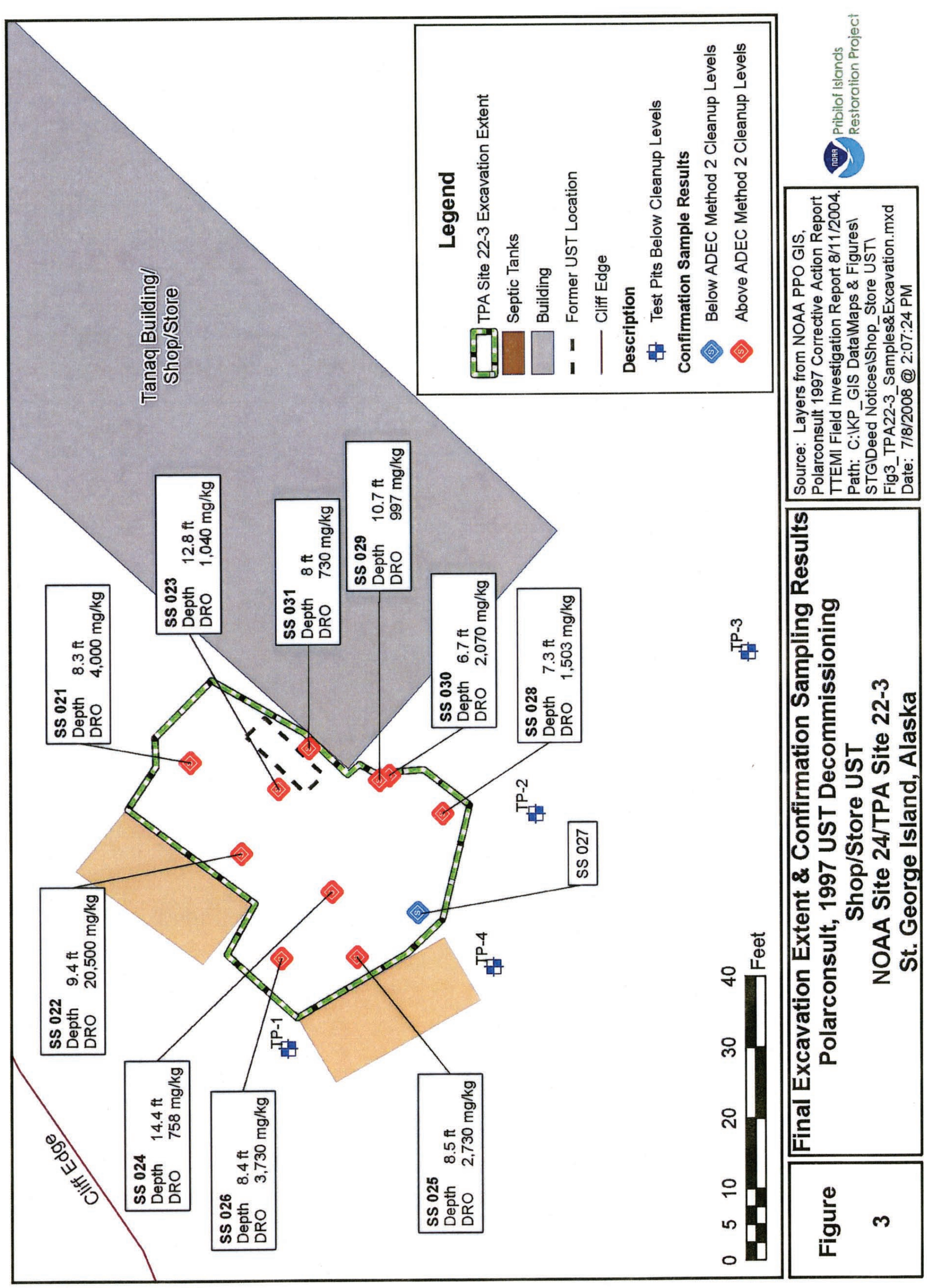
Pribilof Islands Restoration Project

5 of 6
2008-000322-0




6 of 6
2008-000322-0

# NOAA Site 25
# TPA Site 22-4: Old Airport Hangar UST

St. George Island, Alaska, Request for No Further Action, Old Airport Hangar UST, TPA Site No. 22-4 ....575

Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Old Airport Hangar UST TPA Site No. 22-4, dated February 19, 2003. Dated March 11, 2003....585

## St. George Island, Alaska
## Request for No Further Action
## Old Airport Hangar UST
## TPA Site No. 22-4

**Site:** Old Airport Hangar UST, Two-Party Agreement (TPA) Site Number 22-4

Location: St. George Island, Alaska, approximately 800 miles southwest of Anchorage in the Bering Sea. . TPA Site 22-4 is located at Tract II, Airport Subdivision, Seward Meridian, Alaska. (Figures 1 and 2)The site is approximately 1 mile west of the City of St. George and is immediately to the north of Zapadni Bay Road.

**Type of Release:** aviation gasoline

History: The St. George airport operated at this location from approximately 1970 to 1984. One 4,000-gallon underground storage tank (UST) was used at the site for aircraft refueling. The UST was reportedly installed in the 1960s (Polarconsult 1997a) and taken out of service in the early 1990s. The Alaska Department of Environmental Conservation facility ID for this tank is 3047.

**Summary of Site Investigations:**

Metallic debris, including two decommissioned fuel storage tanks, was observed on the ground surface near the site during a 1993 environmental assessment (Woodward-Clyde 1994). The two fuel storage tanks were previously decommissioned from a different site and were left as debris at this site. The two fuel storage tanks and debris were removed by Woodward-Clyde in 1993.

The UST in service at this site was observed "essentially resting on the surface of the ground" at the site in 1996 (Polarconsult 1997a). (Figure 3) The UST had previously been below ground surface. The scoria rock above and around the UST was mined as borrow material in the early and mid-1990s, causing the UST to appear exposed and at the ground surface (Kashevarof 2003). The UST was removed from the site in 1996 and relocated by the City of St. George to the city storage yard.

A site assessment was performed in accordance with a May 1997 work plan (Polarconsult 1997b). Nine shallow test pits were excavated at the presumed former locations of the UST, distribution piping, and fuel dispenser. (Figure 4) Due to the past scoria mining, the test pits were excavated to depths below the previous locations of the UST and appurtenances. As a result, sample depths of only a few feet below the 1997 ground surface level represented the soil below and near the previous locations of the UST and appurtenances. No soil stains, odor, or other indications of a release were observed in the test pits or on the ground surface at the site. Nine soil samples were collected at a maximum depth of 2.9 feet and were analyzed for gasoline-range organics (GRO). One sample, located beneath the former UST location, had GRO at 13 mg/kg; the other samples did not have GRO at detectable levels (Polarconsult 1997a). (Figure 5) A summary of the analytical results is shown in Table 1.

**Summary of Clean up Actions:**

The tank was reportedly unearthed during scoria mining activities in the early 1990s. The UST was observed on the ground surface in 1996, and was relocated to the city storage yard in 1996. The UST, fuel transfer piping, and dispenser were removed from the ground prior to 1997. No records were located that document the official closure of the UST. The fuel transfer piping was found resting on a scoria pad at the site during site assessment activities in 1997 (Polarconsult 1997a). (Figure 6) The exhumed tank was found at the city storage yard in 1997. The tank was inspected and found to have light surface rust but was otherwise in sound condition (Polarconsult 1997a). The dispenser unit for this UST was not located after its removal prior to 1997. Metallic debris was shipped during June 1997 from St. George Island to Alaska Metal Recycling in Seward, Alaska as scrap for disposal (Polarconsult 1997a). Documentation confirming the disposal of the site's UST and appurtenances as part of the June 1997 metallic debris shipment was not located. No soil was removed from the site since no GRO contamination was encountered above the regulatory cleanup level (100 mg/kg).

**Recommended Action:**
In accordance with paragraph 59 of the Two-Party Agreement (NOAA 1996), NOAA submits written confirmation that all corrective action has been completed and that no further action is required at TPA Site Number 22-4.

**References:**
Kashevarof, Andronik Jr., Site Foreman, St. George Tanaq Corporation. Telephone interview regarding the history of the UST at TPA Site 22-4. January 8, 2003.

NOAA. 1996. Pribilof Islands Environmental Restoration Two Party Agreement, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26, 1996.

Polarconsult. 1997a. Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project. Polarconsult Alaska, Inc. December 31, 1997.

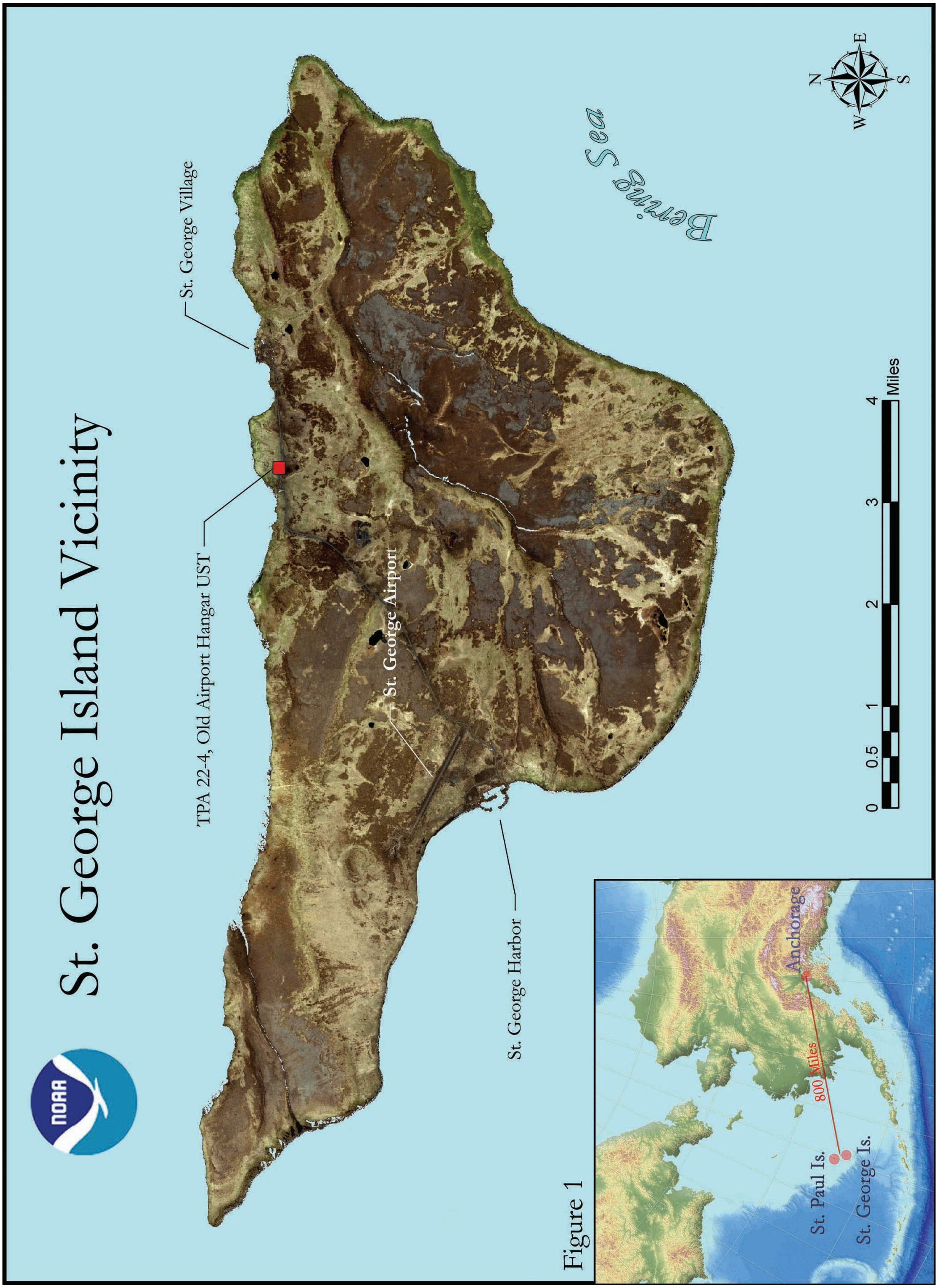
Polarconsult. 1997b. Work Plan for Site Assessment and Contaminated Soil Removal. Polarconsult Alaska, Inc. May 1, 1997.

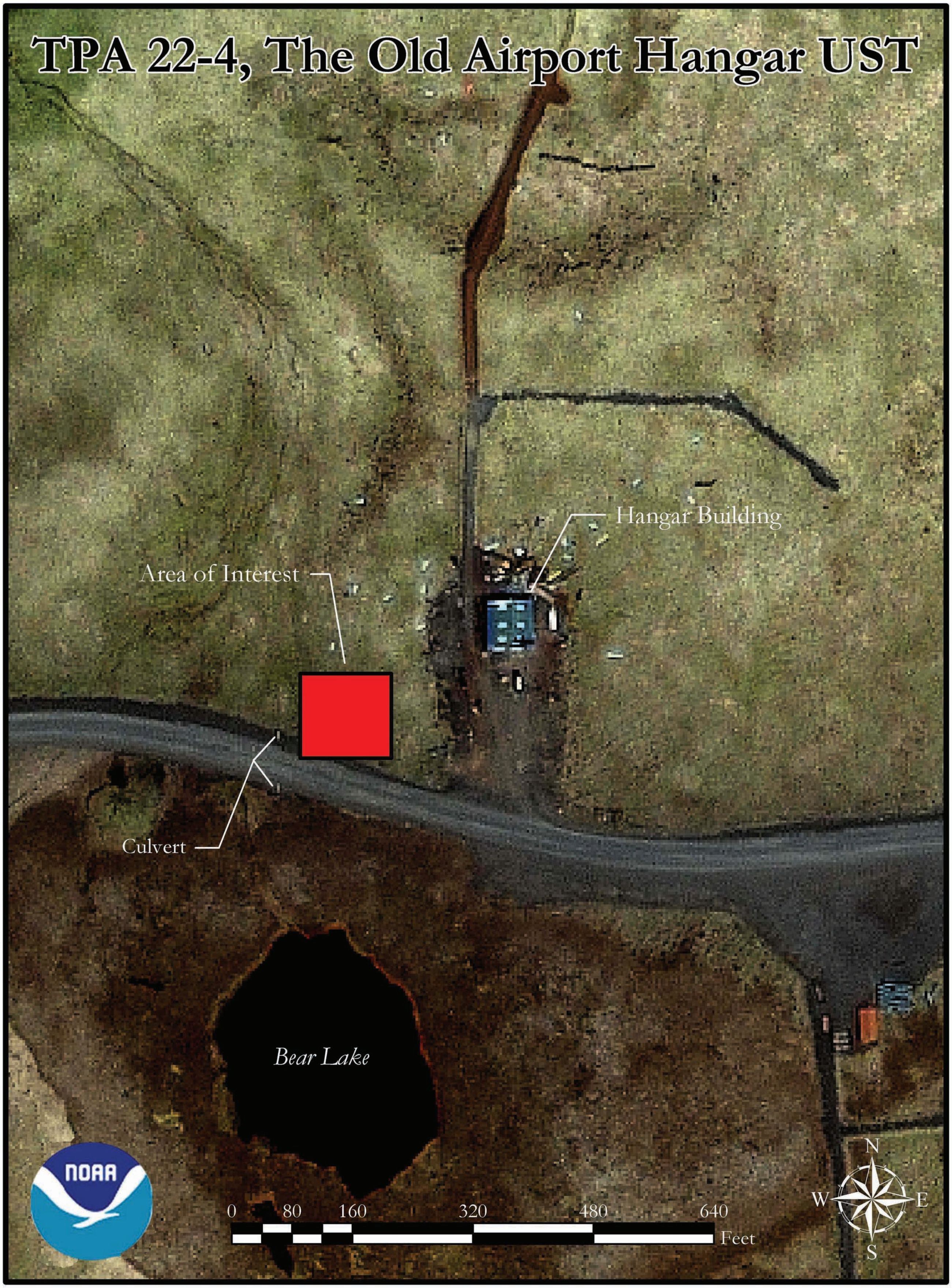
Woodward-Clyde. 1994. Phase 1B Environmental Assessment, St. George Island, Alaska. Woodward-Clyde Consultants, Inc. March 1994.

Table 1: Summary of Analytical Data for Old Airport Hangar UST Site

| *Sample ID* | *Sample Depth BGS (ft)* | *OVM Analysis Result (ppm)* | *GRO by AK-101 Result (mg/kg)* |
|---|---|---|---|
| SS 111 | 2.0 | 0 | ND |
| SS 112 | 1.9 | 0 | ND |
| SS 113 | 2.7 | 0 | ND |
| SS 114 | 0.6 | 0 | 13 |
| SS 115 | 1.7 | 0 | ND |
| SS 116 | 2.4 | 0 | ND |
| SS 117 | 2.9 | 0 | ND |
| SS 118 | 2.8 | 0 | ND |
| SS 119 | 2.4 | 0 | ND |
| ***Regulatory Cleanup Level (mg/kg)*** | -- | -- | ***100*** |

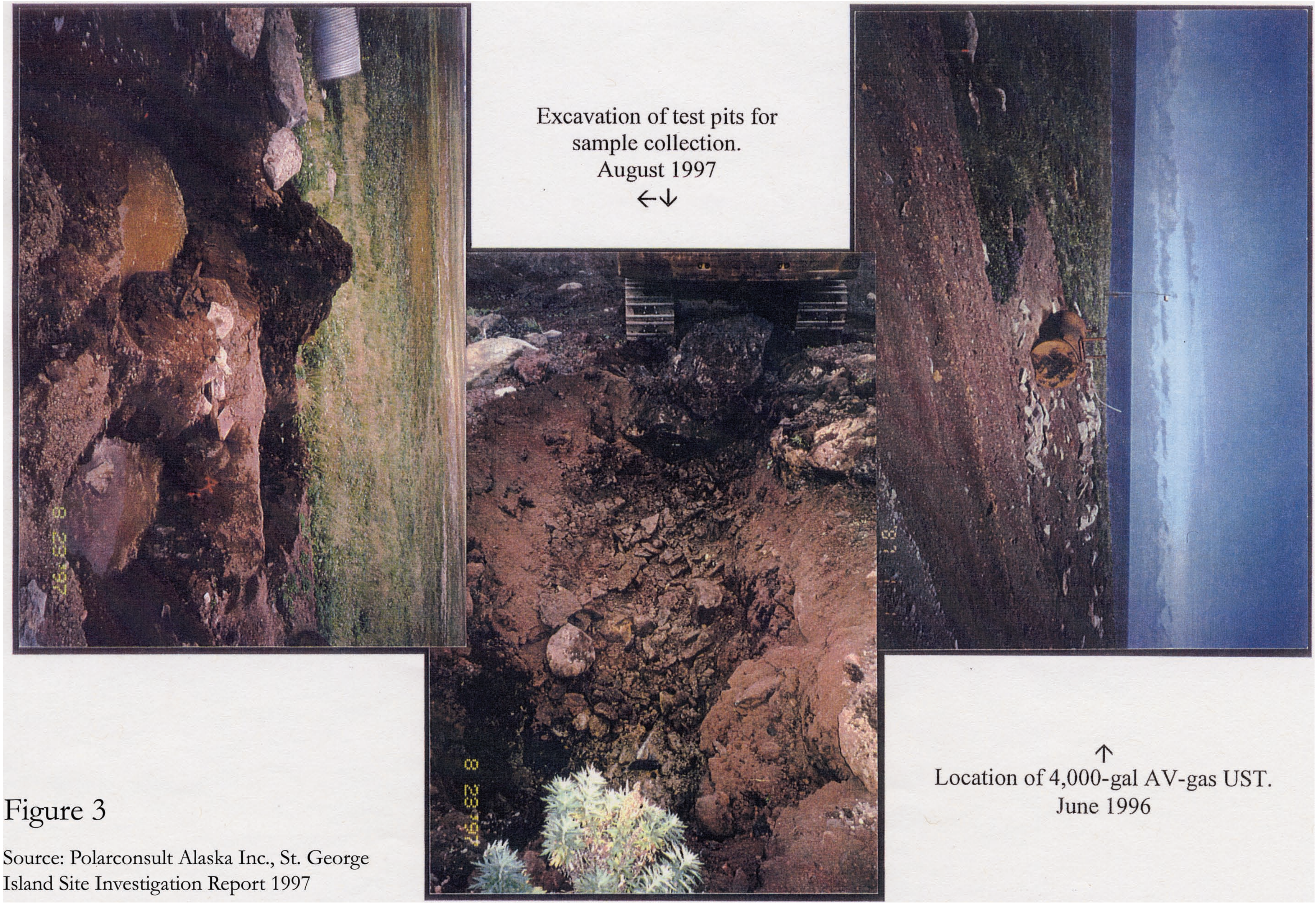
Notes:
ND = Soil not detected above the Practical Quantitation Limit, which was <10 mg/kg for GRO in these analyses.
Source of Analytical Data: Polarconsult 1997a.


St. George Island Vicinity
St. George Village
TPA 22-4, Old Airport Hangar UST
St. George Airport
St. George Harbor
Bering Sea
N
E
S
W
0
0.5
1
2
3
4
Miles
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Figure 1



TPA 22-4, The Old Airport Hangar UST
Hangar Building
Area of Interest
Culvert
Bear Lake
NOAA
0
80
160
320
480
640
Feet
N
W
E
S


Figure 2




Excavation of test pits for
sample collection.
August 1997
←↓

↑
Location of 4,000-gal AV-gas UST.
June 1996

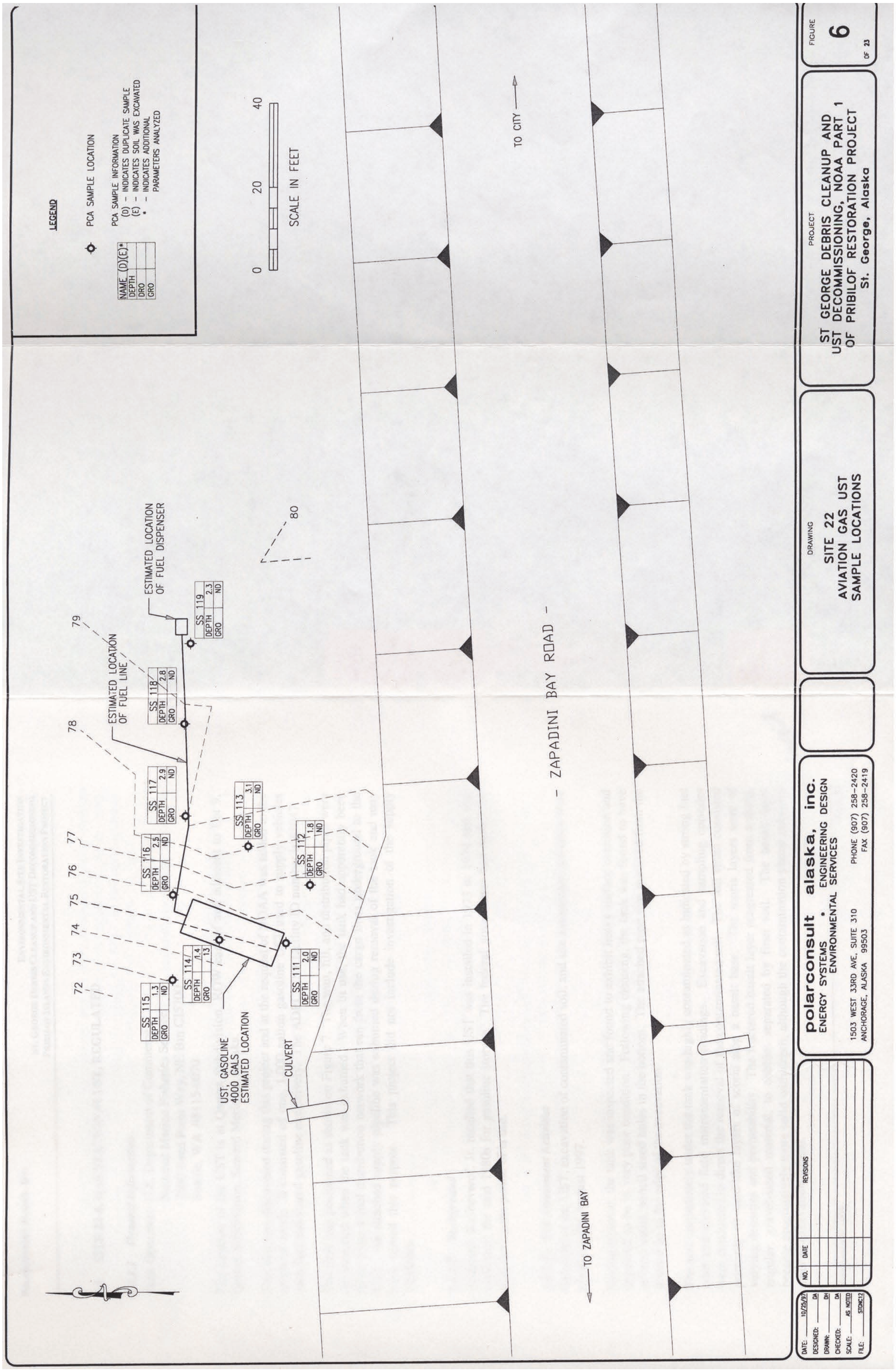
Figure 3

Source: Polarconsult Alaska Inc., St. George Island Site Investigation Report 1997

Figure 4

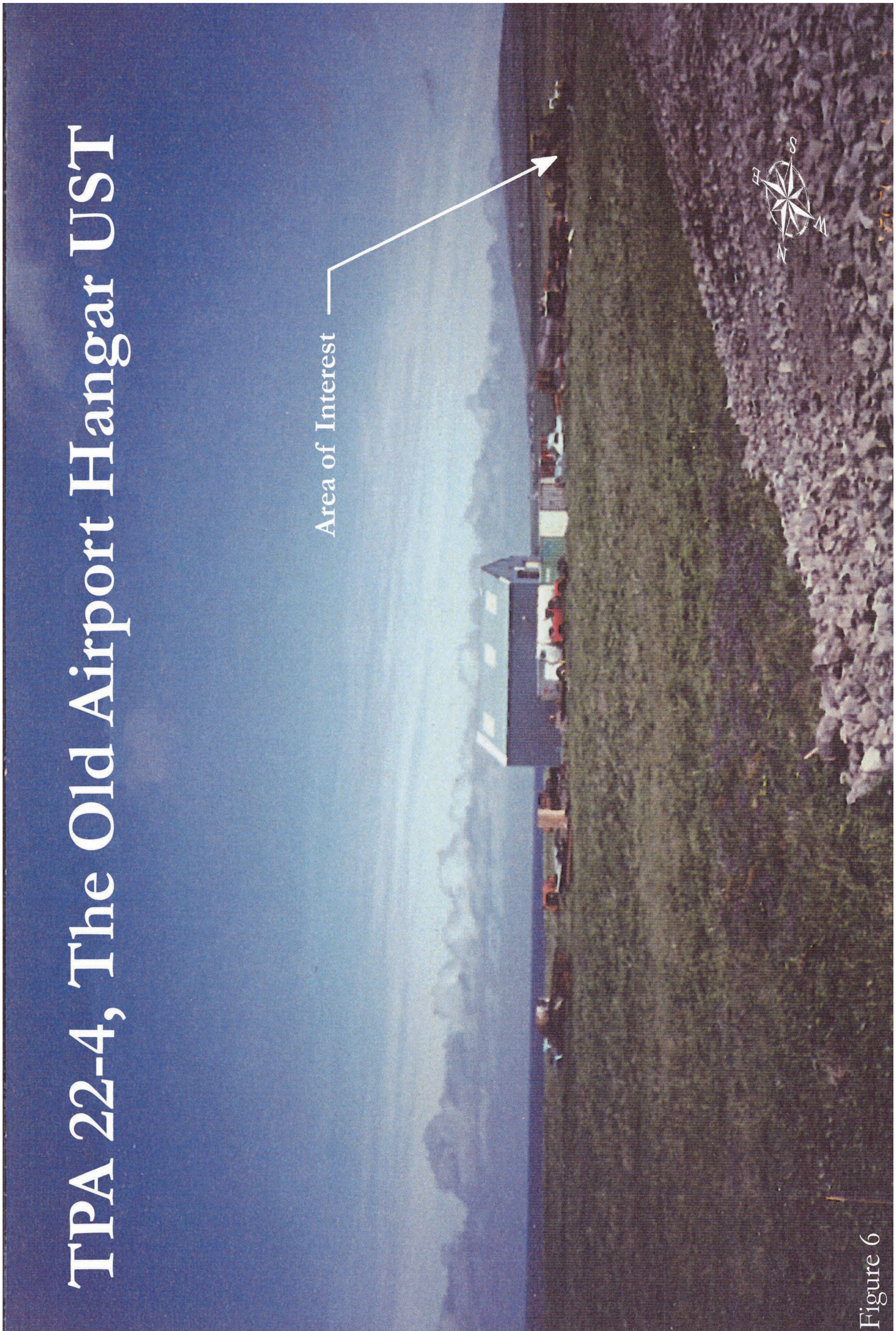

Test Pit Excavation

Source: Polarconsult Alaska Inc., St. George Island Site Investigation Report 1997



LEGEND
PCA SAMPLE LOCATION
NAME (D)(E)*
DEPTH
DRO
GRO
PCA SAMPLE INFORMATION
(D) - INDICATES DUPLICATE SAMPLE
(E) - INDICATES SOIL WAS EXCAVATED
* - INDICATES ADDITIONAL PARAMETERS ANALYZED
0 20 40
SCALE IN FEET
72 73 74 75 76 77 78 79 80
SS 115 DEPTH 1.3 GRO ND
SS 114 DEPTH 1.4 GRO 13
SS 116 DEPTH 2.5 GRO ND
SS 117 DEPTH 2.9 GRO ND
SS 118 DEPTH 2.8 GRO ND
SS 119 DEPTH 2.3 GRO ND
SS 113 DEPTH 3.1 GRO ND
SS 112 DEPTH 1.8 GRO ND
SS 111 DEPTH 2.0 GRO ND
ESTIMATED LOCATION OF FUEL LINE
ESTIMATED LOCATION OF FUEL DISPENSER
UST, GASOLINE 4000 GALS ESTIMATED LOCATION
CULVERT
TO ZAPADINI BAY
- ZAPADINI BAY ROAD -
TO CITY
DATE: 10/29/97
DESIGNED: DA
DRAWN: DH
CHECKED: DA
SCALE: AS NOTED
FILE: STGMC13
NO. DATE REVISIONS
polarconsult alaska, inc.
ENERGY SYSTEMS • ENGINEERING DESIGN
ENVIRONMENTAL SERVICES
1503 WEST 33RD AVE, SUITE 310
ANCHORAGE, ALASKA 99503
PHONE (907) 258-2420
FAX (907) 258-2419
DRAWING
SITE 22
AVIATION GAS UST
SAMPLE LOCATIONS
PROJECT
ST GEORGE DEBRIS CLEANUP AND
UST DECOMMISSIONING, NOAA PART 1
OF PRIBILOF RESTORATION PROJECT
St. George, Alaska
FIGURE
6
OF 23


Figure 5


TPA 22-4, The Old Airport Hangar UST
Area of Interest
Figure 6

**For the National Oceanic and Atmospheric Administration**

for

John Lindsay
NOAA, Pribilof Project Office

2/24/03
Date

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at TPA Site Number 22-4, the Old Airport Hangar UST, in accordance with the Agreement and that no further action is required.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager
* with conditions, see attached letter

3/10/03
Date

# STATE OF ALASKA

**DEPT. OF ENVIRONMENTAL CONSERVATION**
**DIVISION OF SPILL PREVENTION AND RESPONSE**
**CONTAMINATED SITES PROGRAM**

***FRANK H. MURKOWSKI, GOVERNOR***
555 Cordova Street
Anchorage, AK 99501
PHONE: (907) 269-7503
FAX: (907) 269-7649
http://www.state.ak.us/dec/home.htm

March 11, 2003

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE BIN C15700
Seattle, WA 98115-6349

RE: St. George Island Request for No Further Action Old Airport Hangar UST TPA Site No. 22-4, dated February 19, 2003

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on February 26, 2003. Based on our review of the information provided, the Department finds the Old Airport Hangar UST listed in the Two Party Agreement (TPA) as Site No. 22-4, does not pose a significant threat to human health or safety, or the environment. For your information, Department regulations concerning sampling at suspected releases from aviation fuel USTs typically requires additional sampling for diesel range organics (DRO), benzene, toluene, ethylbenzene, and xylenes (BTEX). There are no provisions in regulation to eliminate this sampling requirement based solely on analytical results obtained for gasoline range organics (GRO).

However, since confirmation soil samples did not detect any GRO above 13 mg/kg, it is highly unlikely that BTEX would be present above levels requiring further action. This fact combined with the past scoria mining activities at the site to depths below the previous locations of the UST and appurtenances, the Department has determined that no further investigation or sampling is required.

> **NOTE: Unless analytical data indicates otherwise, all future investigative/assessment/confirmation sampling activities for Method One cleanups on the Pribilof Islands involving aviation fuel sources shall include: DRO, BTEX and GRO analyses.**

The Department is basing its decision on the most current and complete information provided by NOAA. The Department reserves its rights, under 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations, 18 AAC 78 Underground Storage Tank regulations, and AS 46.03 to require the National Oceanic and Atmospheric Administration to perform additional investigation, cleanup, or containment if subsequent information indicates that

(1) the cleanup is not protective of human health, safety, or welfare, or of the environment; or

(2) the information the Department relied upon for its decision was invalid, incomplete, or fraudulent.

The Department requests that NOAA attach a copy of this letter with the document. Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard

Louis Howard
Project Manager

G:\SPAR\EQ-CLER\Howard_Louis\ 2003 TPA 22 4 Old Airport Hangar UST.doc

# NOAA Site 26
# TPA Site 22-5: Gas Station #1 UST

St. George Island, Alaska, Request for No Further Action, Gas Station #1 UST Site, TPA Site No. 22-5 ........................................................................................589

Letter from Louis Howard to John Lindsay RE: St. George Island Request for No Further Action Gas Station #1 UST TPA Site No. 22-5. Dated February 24, 2003.........................................................................................597

**St. George Island, Alaska**
**Request for No Further Action**
**Gas Station #1 UST Site**
**TPA Site No. 22-5**

**Site:** Gas Station #1 UST, Two-Party Agreement (TPA) Site Number 22-5

**Location:** St. George Island, Alaska, approximately 800 miles southwest of Anchorage in the Bering Sea. The site is a former underground storage tank (UST) for a gasoline distribution station located east of the current St. George Tanaq Corporation Carpenter Shop (TPA Site 22-2) in the City of St. George. (Figures 1 and 2)

**Type of Release:** Petroleum fuel hydrocarbons from a UST and its appurtenances.

**History:** A gas station operated at this site from 1973 to the mid-1980s. The UST was installed in 1973 or 1974 and was used until the mid-1980s for gasoline storage (Polarconsult 1997a). The Alaska Department of Environmental Conservation facility ID for this tank is 3047.

**Summary of Site Investigations:**
No site investigations were performed for the site. The UST was discovered in 1997 during activities supporting clean up actions on nearby sites. Once NOAA discovered the UST, NOAA's contractor was tasked to close the UST and remediate associated petroleum contaminated soil.

**Summary of Clean up Actions:**
A UST closure was performed in accordance with a May 1997 work plan (Polarconsult 1997b). Clean overburden soil was excavated from above the UST and placed temporarily in two on-site stockpiles. During the closure, the soil immediately below the tank appeared highly contaminated with fuel based on field instrument readings, as well as visual and olfactory observations. Several small, pencil-sized holes were observed in the tank bottom during tank cleaning (Polarconsult 1997a). The tank was removed from the site, cleaned, and cut into pieces. The tank was transported to Alaska Metal Recycling in Seward, Alaska in June 1997 for disposal as metallic scrap (Polarconsult 1997a). A total of 756 cubic yards of petroleum contaminated soil (PCS) was removed from beneath and near the tank. (Figure 3) The excavated PCS was hauled to NOAA's PCS stockpile, approximately one mile west of the City of St. George. The PCS stockpile was treated using NOAA's enhanced thermal conduction system in 2000 and 2001 (Polarconsult 2001). Confirmation samples were collected from the excavation. Stockpile characterization samples were collected from the two clean overburden stockpiles on-site. The samples were analyzed for gasoline-range organics (GRO) and were found to be at non-detectable levels and below the GRO cleanup level of 100 mg/kg (Polarconsult 1997a). (Figure 4) The samples were not analyzed for benzene, toluene, ethylbenzene, xylenes or lead due to non-detectable levels of GRO. A summary of analytical data is shown in Table 1. The site was backfilled with clean soil, compacted and graded.

**Recommended Action:**
In accordance with paragraph 59 of the Two-Party Agreement (NOAA 1996), NOAA submits written confirmation that all corrective action has been completed and that no further action is required at TPA Site Number 22-5.

**References:**
NOAA. 1996. Pribilof Islands Environmental Restoration Two Party Agreement, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26, 1996.

Polarconsult. 1997a. Environmental Site Investigation, St. George Debris Removal Report, Pribilof Islands Environmental Restoration Project. Polarconsult Alaska, Inc. December 31, 1997.

Polarconsult. 1997b. Work Plan for Site Assessment and Contaminated Soil Removal. Polarconsult Alaska, Inc. May 1, 1997.

Polarconsult. 2001. Draft Report Revision 1, Remediation of Petroleum Contaminated Soil, NOAA Part II Pribilof Islands Environmental Cleanup Project, St. George Island, Alaska. Polarconsult Alaska, Inc. December 27, 2001.

Table 1: Summary of Analytical Data for Gas Station #1 UST Site

| **Sample ID** | **Sample Type** | **Sample Depth BGS (ft)** | **OVM Analysis Result (ppm)** | **GRO by AK-101 Result (mg/kg)** |
|---|---|---|---|---|
| SS 094 | E | 14.9 | 0 | ND |
| SS 095 | E | 16.9 | 0 | ND |
| SS 096 | E | 19.0 | 1 | ND |
| SS 097 | E | 19.5 | 0 | ND |
| SS 098 | E | 17.3 | 5 | ND |
| SS 099 | E | 19.1 | 0 | ND |
| SS 100 | E | 13.0 | 0 | ND |
| SS 101 | E | 11.3 | 0 | ND |
| SS 224 | E | 21.2 | 0 | ND |
| SS 225 | E | 17.6 | 0 | ND |
| SS 226 | E | 17.6 | 0 | ND |
| SS 227 | E | 16.4 | 0 | ND |
| SS 228 | E | 18.7 | 0 | ND |
| SS 102 | C | n/a | 0 | ND |
| SS 103 | C | n/a | 0 | ND |
| SS 104 | C | n/a | 0 | ND |
| ***Cleanup Level (mg/kg)*** | **--** | **--** | **--** | ***100*** |

Notes:
ND = Soil not detected above the Practical Quantitation Limit, which was < 10 mg/kg for GRO in these analyses.
Sample Types: E = excavation confirmation sample; C = stockpile characterization sample
Source of Analytical Data: Polarconsult 1997a.

For the National Oceanic and Atmospheric Administration

_______________________________ 2/24/03

John Lindsay                                                        Date
NOAA, Pribilof Project Office

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at TPA Site Number 22-5, the Gas Station #1 UST Site, in accordance with the Agreement and that no further action is required.

For the Alaska Department of Environmental Conservation

_______________________________ 3/10/03

Louis Howard                                                        Date
Alaska Department of Environmental Conservation
Remedial Project Manager
* with conditions, see attached letter

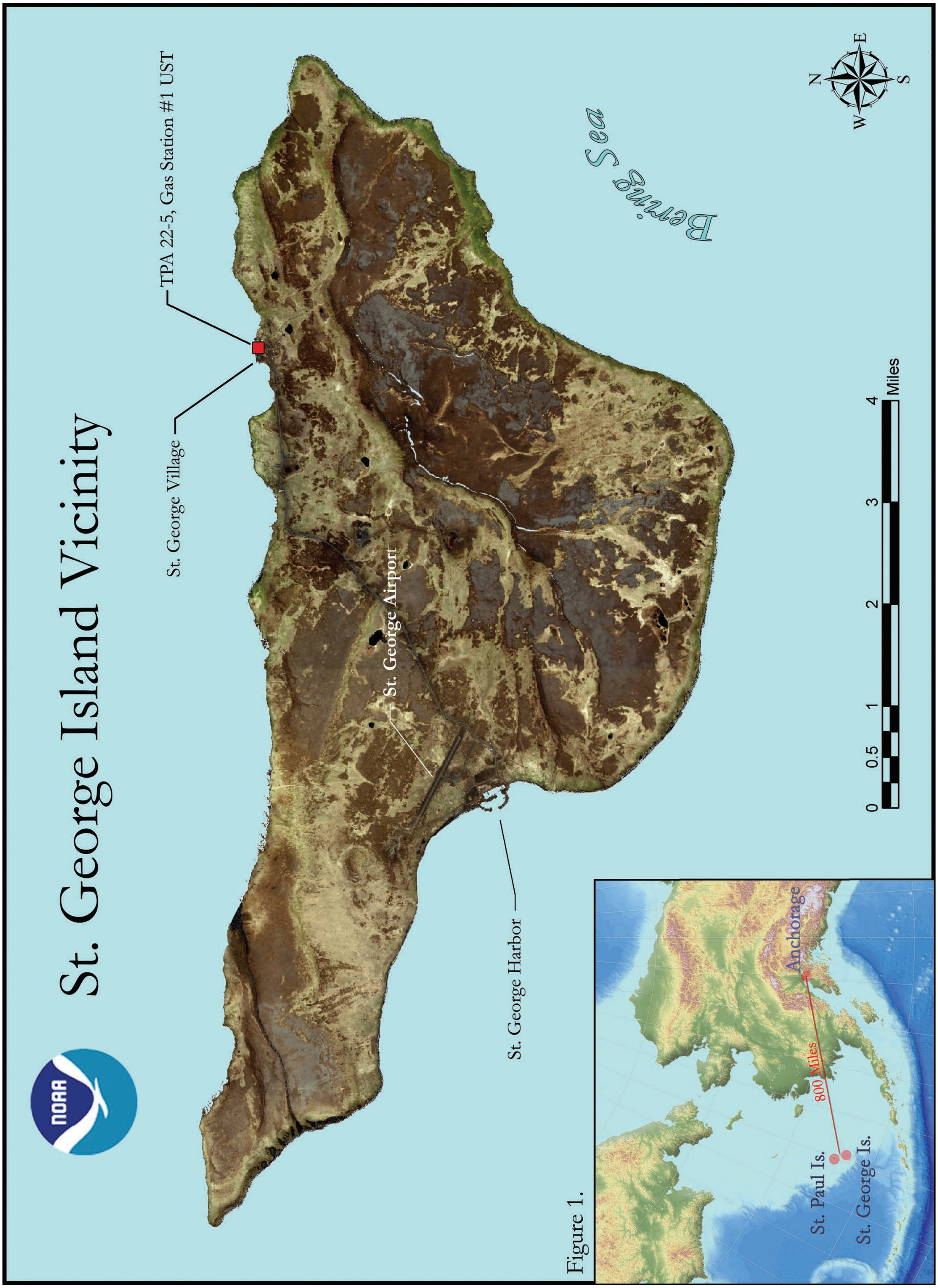

St. George Island Vicinity
TPA 22-5, Gas Station #1 UST
St. George Village
St. George Airport
St. George Harbor
Bering Sea
N
E
S
W
0
0.5
1
2
3
4
Miles
NOAA
Anchorage
800 Miles
St. Paul Is.
St. George Is.

Figure 1.

# TPA 22-5, The Gas Station #1 UST

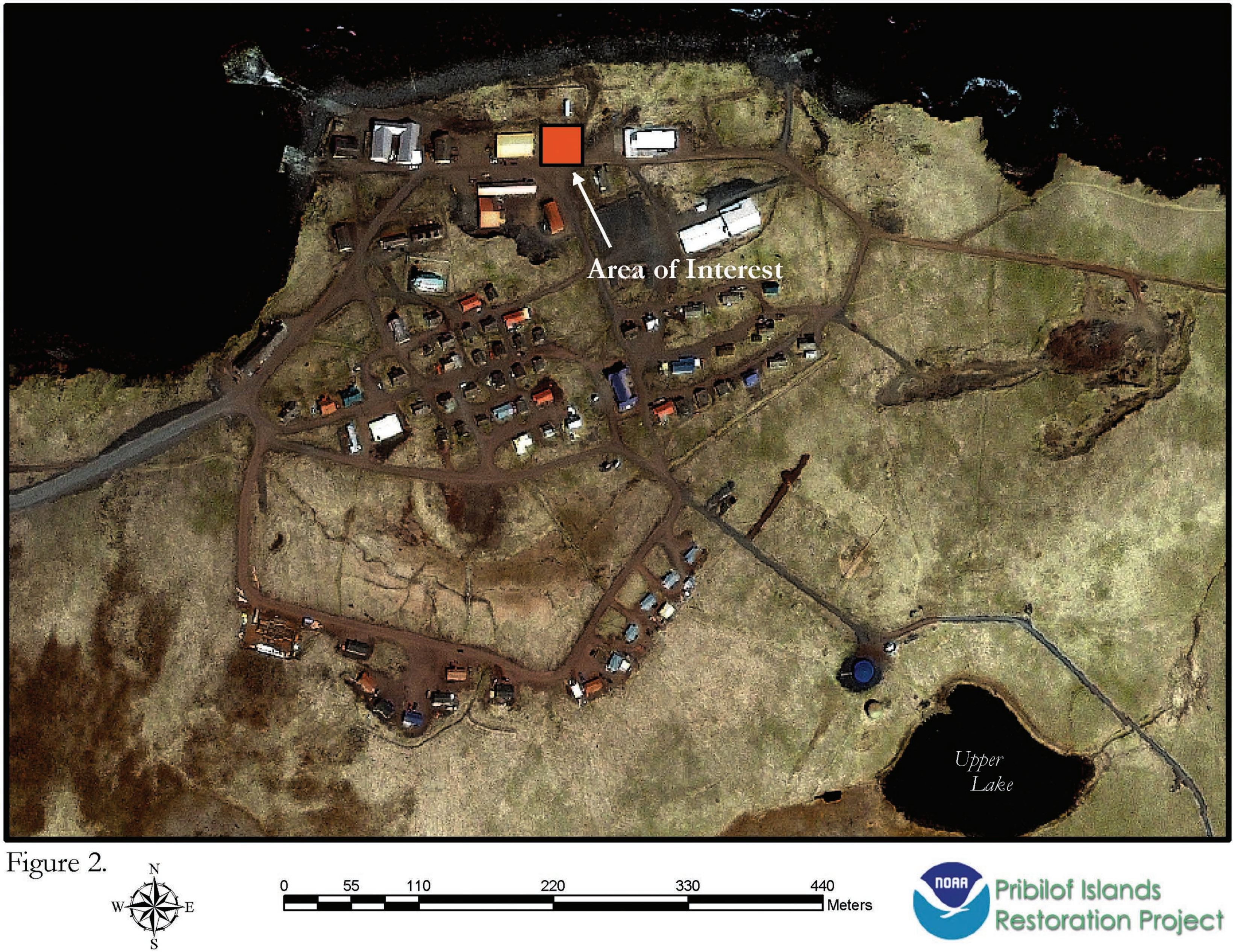



Figure 2.


Figure 3. TPA 22-5, The Gas Station #1 UST, Excavating Contaminated Soil.

Source: Environmental Site Investigation Report, Polarconsult Alaska Inc.

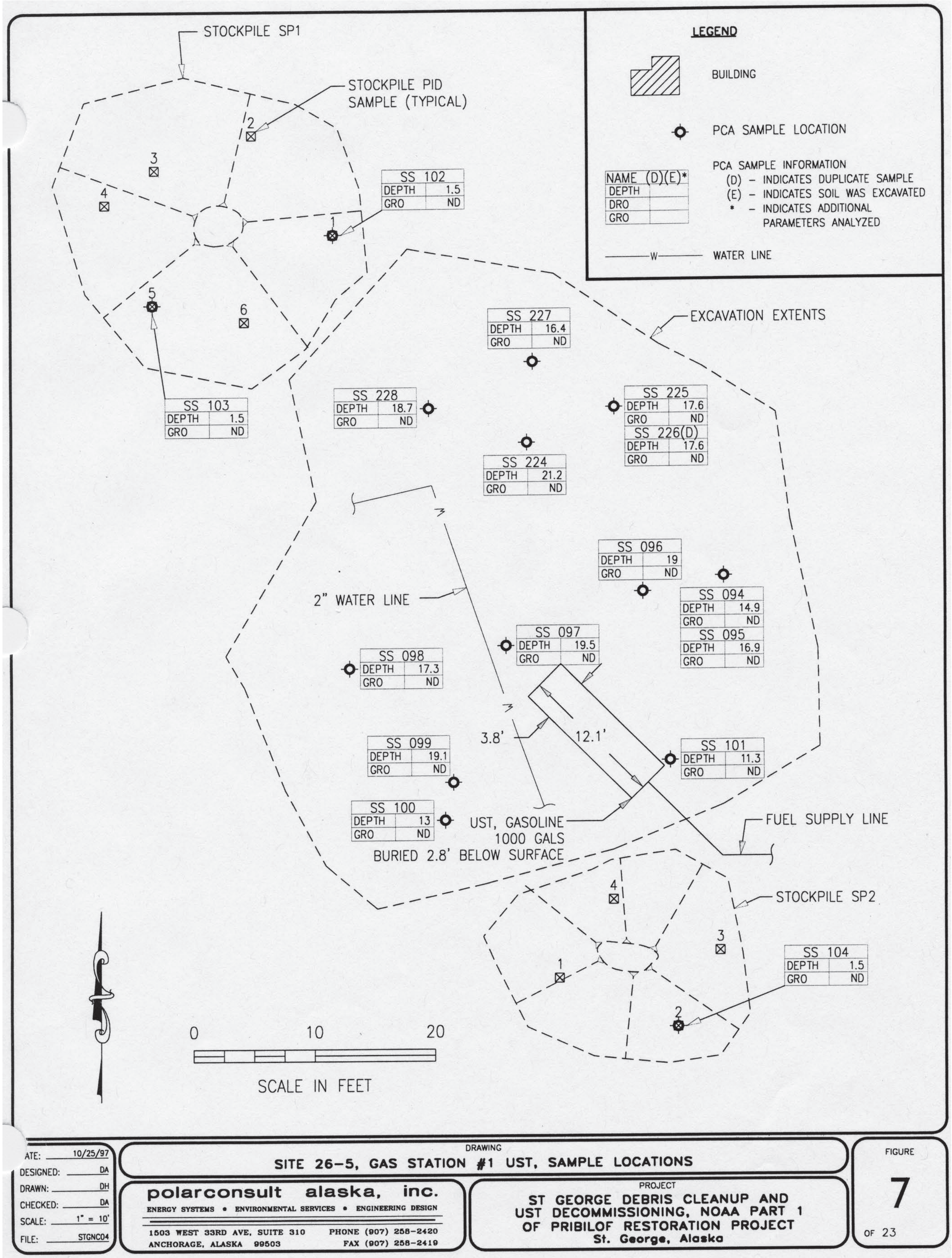

STOCKPILE SP1
STOCKPILE PID
SAMPLE (TYPICAL)
LEGEND
BUILDING
PCA SAMPLE LOCATION
PCA SAMPLE INFORMATION
NAME (D)(E)*
DEPTH
DRO
GRO
(D) - INDICATES DUPLICATE SAMPLE
(E) - INDICATES SOIL WAS EXCAVATED
* - INDICATES ADDITIONAL
PARAMETERS ANALYZED
W
WATER LINE
1
2
3
4
5
6
SS 102
DEPTH 1.5
GRO ND
SS 103
DEPTH 1.5
GRO ND
EXCAVATION EXTENTS
SS 227
DEPTH 16.4
GRO ND
SS 228
DEPTH 18.7
GRO ND
SS 225
DEPTH 17.6
GRO ND
SS 226(D)
DEPTH 17.6
GRO ND
SS 224
DEPTH 21.2
GRO ND
SS 096
DEPTH 19
GRO ND
SS 094
DEPTH 14.9
GRO ND
SS 095
DEPTH 16.9
GRO ND
2" WATER LINE
SS 097
DEPTH 19.5
GRO ND
SS 098
DEPTH 17.3
GRO ND
3.8'
12.1'
SS 099
DEPTH 19.1
GRO ND
SS 101
DEPTH 11.3
GRO ND
SS 100
DEPTH 13
GRO ND
UST, GASOLINE
1000 GALS
BURIED 2.8' BELOW SURFACE
FUEL SUPPLY LINE
STOCKPILE SP2
1
2
3
4
SS 104
DEPTH 1.5
GRO ND
0
10
20
SCALE IN FEET
ATE: 10/25/97
DESIGNED: DA
DRAWN: DH
CHECKED: DA
SCALE: 1" = 10'
FILE: STGNC04
DRAWING
SITE 26-5, GAS STATION #1 UST, SAMPLE LOCATIONS
polarconsult alaska, inc.
ENERGY SYSTEMS • ENVIRONMENTAL SERVICES • ENGINEERING DESIGN
1503 WEST 33RD AVE, SUITE 310
ANCHORAGE, ALASKA 99503
PHONE (907) 258-2420
FAX (907) 258-2419
PROJECT
ST GEORGE DEBRIS CLEANUP AND
UST DECOMMISSIONING, NOAA PART 1
OF PRIBILOF RESTORATION PROJECT
St. George, Alaska
FIGURE
7
OF 23

Figure 4.

FRANK H. MURKOWSKI, GOVERNOR

555 Cordova Street
Anchorage, AK 99501
PHONE: (907) 269-7503
FAX: (907) 269-7649
http://www.state.ak.us/dec/home.htm

**DEPT. OF ENVIRONMENTAL CONSERVATION**
**DIVISION OF SPILL PREVENTION AND RESPONSE**
**CONTAMINATED SITES PROGRAM**

March 11, 2003

Mr. John Lindsay
Pribilof Project Manager
U.S. Department of Commerce, NOAA
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE BIN C15700
Seattle, WA 98115-6349

RE: St. George Island Request for No Further Action Gas Station #1 UST TPA Site No. 22-5, Dated February 19, 2003

Dear Mr. Lindsay:

The Alaska Department of Environmental Conservation (the Department) received the above document on February 26, 2003. Based on our review of the information provided, the Department finds the Gas Station #1 underground storage tank (UST) Site listed in the Two Party Agreement (TPA) as Site No. 22-5, does not pose a significant threat to human health or safety, or the environment. For your information, Department regulations concerning sampling at suspected releases from gasoline USTs typically requires additional sampling for benzene, toluene, ethylbenzene, xylenes (BTEX) and lead. There are no provisions in regulation to eliminate this sampling requirement based solely on analytical results obtained for gasoline range organics (GRO).

However, since confirmation soil samples did not detect any GRO in any of the samples, it is highly unlikely that BTEX would be present above levels requiring further action. This fact combined with the excavation and treatment of 756 cubic yards of contaminated soils, the Department has determined that no further investigation or sampling is required.

> **NOTE: Unless analytical data indicates otherwise, all future investigative/assessment/confirmation sampling activities for Method One cleanups on the Pribilof Islands involving gasoline sources shall include: GRO, BTEX and lead analyses.**

The Department is basing its decision on the most current and complete information provided by NOAA. The Department reserves its rights, under 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations, 18 AAC 78 Underground Storage Tank regulations, and AS 46.03 to require the National Oceanic and Atmospheric Administration to perform additional investigation, cleanup, or containment if subsequent information indicates that

1200-01-G0026-I.016-0002

(1) the cleanup is not protective of human health, safety, or welfare, or of the environment; or

(2) the information the Department relied upon for its decision was invalid, incomplete, or fraudulent.

The Department requests NOAA attach a copy of this letter with the document. Please contact me with any questions or concerns at (907) 269-7552.

Sincerely,

Louis Howard

Louis Howard
Project Manager

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# NOAA Site 27
# TPA Site 23: Abandoned Diesel Tank Farm

Request for Conditional Closure, Abandoned Diesel Tank Farm, TPA Site 23/ NOAA Site 27, St. George Island, Alaska ....................................................601

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 23 and 25-2, St. George Island, Alaska (Tract 49)..............................................................................................617

**Request for Conditional Closure**
**Abandoned Diesel Tank Farm, TPA Site 23/NOAA Site 27**
**St. George Island, Alaska**

**Site:** Abandoned Diesel Tank Farm, also known as Two Party Agreement (TPA) Site 23, National Oceanic and Atmospheric Administration (NOAA) Site 27, Inactive Diesel Tank Farm, and the Diesel Tank Farm. The site will be referred to as the "site" herein.

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, the site is situated east of St. George Village (Figures 1 and 2), south of the Inactive Gasoline Tank Farm (TPA Site 24) and the Bering Sea (56°36'5.22" North Latitude, 169°32'27.08" West Longitude).

**Legal Property Description:** The area of excavation is located at Tract 49 in Section 29, Township 41 South, Range 129 West of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Black-Smith & Richards 1985; Figure 2). The City of St. George owns the property within the area of excavation. [Note: TPA site boundaries are not defined in the TPA. At its discretion, NOAA established a boundary for this TPA site based on site characterization data and historic information.]

**Type of Release:** Potential release mechanisms include: 1) leaks associated with the storage and dispensation of diesel fuel in fourteen aboveground fuel storage tanks (ASTs) and their appurtenances; and 2) leaks associated with diesel fuel transfers utilizing the pipeline that enters the site from the north.

**History and Background:**

Reportedly, the use of the site use began in the 1970s when the Former Diesel Tank Farm (TPA Site 1) was decommissioned (WCFS 1995). TPA Site 1 is located along the St. George Village waterfront, approximately 1,500 feet (ft) northwest of the site (Figure 2). The diesel tank farm at the site was originally designed to fuel the Active Power Plant (TPA Site 8) underground storage tanks (USTs) via the Port Fuel Supply Line. Twelve of the tanks were 20,000-gallon capacity, adjacent to each other in an east-west oriented row, supported by individual concrete saddles, and situated within an earthen berm. Another 20,000-gallon capacity tank was situated north of the twelve tanks, and was reportedly used from the late-1980s to 1992. A 2,500-gallon tank was located south of the twelve tanks (Figures 2, 3, and 4).

The City of St. George took over responsibility for the fuel storage and power generation needs of the community in 1983, and subsequently ceased use of the Port Fuel Supply Line due to suspicions of leakage based on AST fuel volume discrepancies (Hart Crowser 1997). The City used tanker trucks to transport fuel from the ASTs to the power plant USTs until 1993, when the City abandoned the site after the Delta Western fuel depot at St. George Harbor became operational (Hart Crowser 1995).

The site is currently unused, and the nearest residence is approximately 200 ft northwest of the site (Figure 2).

**Summary of Site Investigations:**

During a 1992 site visit, Ecology & Environment, Inc. (E&E) observed stained soil beneath the tank valve for the 20,000-gallon tank located north of the twelve tanks (E&E 1993), though they did not collect samples of the stained soil. Hart Crowser, Inc. (Hart Crowser) observed soil stains and sheens on standing water inside the berm during a 1995 Expanded Site Investigation (ESI). Hart Crowser also observed some stained soil outside the berm along the access road bordering the north and west sides of the site. An estimated 3,000 gallons of water and fuel remained within the tanks in 1996 (Hart Crowser 1997).

Hart Crowser advanced one hand auger boring and excavated twelve test pits during the ESI (Figure 3). The near-surface soil consisted of sandy gravel over basalt rock. Based on backhoe refusal met at various test pits, overburden soil thickness varied across the site with depths of 4 to 7 ft within and immediately south of the bermed area, 2.5 to 4 ft immediately north and adjacent to the berm, and 7.5 to 10 ft further north of the berm.

Hart Crowser set up a field laboratory capable of quantifying gasoline-range organics (GRO), diesel-range organics (DRO), and residual-range organics (RRO) using the U.S. Environmental Protection Agency (EPA) Method

8015 Modified (EPA 1996). The field laboratory also quantified benzene, toluene, ethylbenzene, and total xylenes (BTEX) using a Photovac 10S50 equipped with a photoionization detector (PID). Hart Crowser collected a total of 35 soil samples from the boring and the test pits, and analyzed the samples by the field laboratory for GRO, DRO, and RRO. Hart Crowser also analyzed five of the soil samples in the field laboratory for BTEX. Hart Crowser sent two of the BTEX samples, five of the GRO samples, and thirteen of the DRO samples off island to a fixed laboratory for analysis as part of the ESI's data quality control (QC) program.

The ESI field laboratory sample analysis results indicated that site soil contained DRO from the ground surface to the backhoe's refusal at up to 7 ft below ground surface (bgs). The maximum DRO concentration was 11,000 milligrams per kilogram (mg/kg), found at test pit TP-6 from 0 to 0.5 ft bgs. The Alaska Department of Environmental Conservation (ADEC) Method Two soil cleanup level for DRO at the site is 250 mg/kg. Hart Crowser did not detect GRO, RRO, or BTEX above their ADEC Method Two cleanup levels. The fixed laboratory QC samples were consistent with the field laboratory results. The ESI (Hart Crowser 1997) concluded that an estimated 1,580 cubic yards of petroleum-contaminated soil (PCS) were above site cleanup levels, requiring removal and disposal (Figure 3).

In 2001, Tetra Tech EM Inc. (TTEMI) performed a site characterization to identify potential contaminant sources and to characterize existing contamination in soil and groundwater at the site. TTEMI performed this characterization because confirmation samples collected during a 1997 PCS removal action indicated contamination remained above site cleanup levels (Polarconsult 1997). The *Summary of Cleanup Actions* section of this conditional closure request discusses the 1997 PCS removal.

TTEMI advanced six manual direct-push borings at locations adjacent to the 1997 confirmation sample locations where elevated levels of DRO were encountered. The maximum boring depth was 5.9 ft bgs due to refusal (that is, competent pyroclastic material). TTEMI collected eleven samples from the six borings, with all the samples field screened using a Petroflag colorimetric test kit. Based on the Petroflag results, seven of the eleven samples were sent for off-island fixed laboratory analyses for GRO, DRO, RRO, volatile organic compounds (VOCs) including BTEX, semivolatile organic compounds (SVOCs), and heavy metals (TTEMI 2002).

GRO, DRO, RRO, VOCs (including BTEX), SVOCs, and heavy metals, excepting arsenic and chromium, were not detected above their ADEC Method Two cleanup levels. TTEMI found arsenic and chromium above their cleanup levels; however, the levels detected are within the range measured in background soil samples on St. George Island (TTEMI 2002). The 2001 characterization samples were shallower than some of the PCS quantified in the adjacent 1997 confirmation samples. However, the 2001 characterization samples indicated that surface and near-surface soil about the 1997 excavation is not contaminated above ADEC Method Two, and that refusal reduces the future likelihood that clean overburden soil would be removed, creating potential contaminated soil ingestion and inhalation pathways.

TTEMI recommended fate and transport modeling of DRO in soil to predict the migration of residual contamination from the soil to the groundwater (TTEMI 2002). Upon review of the TTEMI site investigation work and recommendations, ADEC indicated that groundwater monitoring may be more appropriate than modeling. ADEC requested that NOAA conduct four groundwater monitoring events to establish trends and determine whether groundwater concentrations are increasing, stable, or decreasing (ADEC 2002).

In 2001, TTEMI also installed three groundwater monitoring wells at the site to address potential impacts to groundwater caused by PCS (Figure 4). Monitoring well TPA23-MW-3 is upgradient of the site while monitoring wells TPA23-MW-1 and TPA23-MW-2 are downgradient of the site. Groundwater in the vicinity of the site is interpreted to flow northerly to northeasterly away from the site, toward the Bering Sea (Figure 5). Groundwater at the site begins approximately 90 ft bgs (TTEMI 2002).

TTEMI conducted groundwater monitoring in October 2001, October 2002, August 2003, November 2003, January 2004, and April 2004. During the sampling events, none of the wells at the site had contamination above ADEC Table C levels of concern (Figure 5), indicating PCS at the site has not impacted groundwater.

Summary of Applied Cleanup Levels:

NOAA employed ADEC Method Two cleanup criteria, discussed at 18 AAC 75.341(c) (ADEC 2003), when evaluating site conditions relative to the need for further remedial action. Under the TPA (NOAA 1996), NOAA had the option to cleanup to the less stringent State of Alaska benzene cleanup level in effect in 1991 (ADEC 1991). Thus, the alternative cleanup level (0.5 mg/kg) was applied for benzene. ADEC uses 15 ft bgs to define subsurface soil to which residents will have a reasonable potential to be exposed through the inhalation or ingestion pathways (ADEC 2000; 18 AAC 75.340 (j)(2)). Therefore, NOAA is not obligated to excavate contaminated soil occurring at depths deeper than 15 ft to address the inhalation and ingestion pathways. Cleanup criteria were applied to the maximum extent practicable (18 AAC 75.325 (f), 18 AAC 75.990).

**Summary of Cleanup Actions:**

St. George Tanaq Corporation (Tanaq), under a grant to NOAA, removed the fourteen ASTs and their appurtenances, and disposed of them off island as scrap metal, in 1997 (Polarconsult 1997). Tanaq also performed a major PCS removal in 1997. Tanaq's objectives were the removal of PCS identified by Hart Crowser (1997) and removal of additional PCS identified by fixed laboratory analyses, field screening with a PID, visual observations, and olfactory observations. Tanaq transported removed PCS to NOAA's permitted short-term PCS stockpile. In most instances, Tanaq pursued these objectives until all petroleum contamination at or above the cleanup levels was removed or refusal was experienced. Refusal was encountered throughout much of the excavation. There were, however, several locations along the sidewall of the excavation's eastern half that exceeded the Method Two cleanup level for DRO; Tanaq did not conduct further excavation of this area (Figure 6). Tanaq observed that diesel fuel contamination at refusal extended into the fractured basalt beyond the practicable limits of removal (Figure 6; Polarconsult 1997).

Tanaq removed and transported an estimated 4,150 cubic yards of contaminated soil to the PCS stockpile in 1997 (Figure 6). The maximum depth of excavation at the site was approximately 15 ft bgs. The minimum vertical distance from contaminated soil at the bottom of the excavation to the regional aquifer below was estimated as 70 ft. NOAA directed Tanaq to leave the excavation open due to budgetary constraints.

During the first phase of excavation Tanaq collected 14 samples from the excavation sidewalls and bottom from locations believed to be below the cleanup levels, as documented in Tanaq's monthly status updates, sample collection dates, and data summary maps (Polarconsult 1997). Eight of these samples contained contamination above the cleanup levels, and Tanaq later excavated soil from the locations of six of the contaminated samples and two of the uncontaminated samples. NOAA considers the results of the other six samples to be final confirmation samples since the soil they represent was not later removed (Table 1; Figure 6).

Tanaq collected 40 final confirmation samples in 1997 from the final extent of the excavation, including the six referenced in the previous paragraph. A total of five field QC duplicate samples were collected and analyzed. Tanaq did not collect any *ex situ* characterization samples from the PCS removed and stockpiled in 1997. Tanaq surveyed the confirmation sample locations and the excavation topography using a total station referenced to a temporary survey control point. [Note: NOAA also surveyed the excavation topography in 2002 using its survey-grade global positioning system referenced to a permanent survey control point installed by the NOAA National Geodetic Survey.]

The soil samples were analyzed for DRO by method AK-102. Tanaq did not analyze samples for BTEX because Tanaq considered DRO the cleanup driver given BTEX was not found at other diesel fuel storage locations on St. George Island (Polarconsult 1997). Tanaq's laboratory detected DRO above the ADEC Method Two cleanup level at 22 of the 40 confirmation sampling locations (Table 1; Figure 6), with a maximum concentration of 7,240 mg/kg (SS 191).

St. George Chadux Corporation (Chadux), a Tanaq subsidiary, remediated PCS hauled to NOAA's stockpile in 1997 using NOAA's enhanced thermal conduction (ETC) thermal desorption system in 2001 and 2002. NOAA directed Chadux to backfill the open excavation in 2002 using remediated soil from the ETC system operation.

During a 2003 remedial action for the adjacent North-South Cargo Fuel Pipeline (TPA 25-2) Site, Chadux performed an additional remedial action at the western portion of the 1997 excavation footprint (Polarconsult 2004). Chadux removed an estimated 900 cubic yards of clean 1997 backfill, then removed an estimated 1,450 cubic yards of PCS associated with 1997 confirmation samples SS186, SS204, SS207, SS210, SS211, SS213, SS214, and SS215 (Figure 7). Chadux removed the PCS at NOAA's direction since it was contiguous with PCS from TPA 25-2. The PCS was added to NOAA's PCS stockpile and currently awaits beneficial reuse as soil berm construction material for the City of St. George's new landfill. Chadux collected 19 confirmation samples from the 2003 excavation as well as characterization samples from the PCS removed in 2003. Samples were analyzed for GRO, DRO and BTEX. Seven of the 19 confirmation samples were found above Method Two for DRO but were at refusal (Table 2; Figure 7). None of the confirmation samples exceeded the Method Two cleanup levels for GRO or BTEX (Polarconsult 2004).

Laboratory reporting limits were below ADEC Method Two cleanup levels for all contaminants. Figure 8 summarizes the 1997 and 2003 confirmation sample results for the soil remaining in the excavation area; confirmation sample results from 1997 for soil subsequently removed in 2003 were omitted from this figure.

**Conclusions and Recommended Action:**

NOAA removed an estimated 5,600 cubic yards of PCS from the site, backfilling the site with clean soil. NOAA permanently remediated an estimated 4,150 cubic yards of this PCS with its ETC system. An estimated 1,450 cubic yards of this PCS is stockpiled at NOAA's short-term PCS stockpile and awaits final disposal. Soil DRO contamination remains in some locations along the eastern portions of the 1997 excavation sidewall above the ADEC Method Two cleanup level for protection of groundwater (250 mg/kg), including above the refusal depth along the eastern part of the 1997 excavation (Figure 8). However, no soil contamination remains at the site above the ADEC Method Two cleanup levels for the ingestion and inhalation exposure pathways (10,250 mg/kg and 12,500 mg/kg, respectively). Groundwater monitoring results from six monitoring events over a 30-month period indicate that soil DRO contamination at the site has not impacted groundwater. Additionally, site groundwater flows toward the Bering Sea and away from the municipal drinking water supply.

In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action, to the maximum extent practicable, at the Abandoned Diesel Tank Farm, TPA Site 23/Site 27 in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

**References:**

Alaska Department of Environmental Conservation (ADEC). 1991. *Interim Guidance for Non-UST Contaminated Soil Cleanup Levels, Contaminated Sites Program*. State of Alaska. July 17.

ADEC. 2002. Correspondence from Louis Howard, ADEC Contaminated Sites Program Manager to John Lindsay, NOAA Pribilof Project Manager regarding TPA Site 23, St. George Island. March 6.

ADEC. 2003. *Title 18 of the Alaska Administrative Code 75, Articles 3 and 9. Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. January 30.

Black-Smith & Richards. 1985. *Appraisal Report, Parcels on St. George and St. Paul Islands, Pribilof Islands, Alaska*. File No. 11-85-0650. Appraisal dates: September 9, 10, and 11, 1985, and October 1 and 2, 1985. Prepared for NOAA, WASC Procurement Division, Seattle, Washington. November.

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Polarconsult. 2004. *Corrective Action Report, North-South Cargo Fuel Line, TPA Site 25-2, Remedial Corrective Action Project, St. George Island, Alaska*. Final. August 12.

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Woodward-Clyde Federal Services (WCFS). 1995. *Expanded Site Inspection, St. George Island, Alaska*. March.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

2/22/05
Date

**Approvals:**

In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Abandoned Diesel Tank Farm, TPA Site 23/NOAA Site 27 in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

2/28/05
Date

**Tables**

Table 1 – 1997 Corrective Action Confirmation Sample Results

| Sample Number | Sample Depth (feet bgs) | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Total Xylenes (mg/kg) | GRO (mg/kg) | DRO (mg/kg) |
|---|---|---|---|---|---|---|---|
| **NOAA Site 27/TPA Site 23 1997 Confirmation Samples** | | | | | | | |
| SS 006 | 2.5 | -- | -- | -- | -- | -- | **320** |
| SS 007 | 5 | -- | -- | -- | -- | -- | **266** |
| SS 008 | 7 | -- | -- | -- | -- | -- | 5 |
| SS 010 | 2 | -- | -- | -- | -- | -- | 5 |
| SS 011 | 4 | -- | -- | -- | -- | -- | 36 |
| SS 012 | 6 | -- | -- | -- | -- | -- | 5 U |
| SS 020 (dup. of SS 007) | 5 | -- | -- | -- | -- | -- | **298** |
| SS 182 | 9.3 | -- | -- | -- | -- | -- | **3,520** |
| SS 183 | 8.9 | -- | -- | -- | -- | -- | **1,730** |
| SS 184 | 11 | -- | -- | -- | -- | -- | 85 |
| SS 185 | 8.4 | -- | -- | -- | -- | -- | 125 |
| SS 186 | 14.1 | -- | -- | -- | -- | -- | **344** |
| SS 187 | 13.7 | -- | -- | -- | -- | -- | **800** |
| SS 188 | 4.2 | -- | -- | -- | -- | -- | 5 U |
| SS 189 | 9.1 | -- | -- | -- | -- | -- | **525** |
| SS 190 | 4.5 | -- | -- | -- | -- | -- | **2,030** |
| SS 191 | 5.5 | -- | -- | -- | -- | -- | **7,240** |
| SS 192 | 3.7 | -- | -- | -- | -- | -- | **1,000** |
| SS 193 | 4.3 | -- | -- | -- | -- | -- | 7 |
| SS 194 | 6.1 | -- | -- | -- | -- | -- | **521** |
| SS 195 | 5.8 | -- | -- | -- | -- | -- | 5 U |
| SS 196 | 4.4 | -- | -- | -- | -- | -- | **1,130** |
| SS 197 | 3.6 | -- | -- | -- | -- | -- | **4,030** |
| SS 198 | 4.5 | -- | -- | -- | -- | -- | **1,480** |
| SS 199 | 2.8 | -- | -- | -- | -- | -- | 10 |
| SS 200 | 1.5 | -- | -- | -- | -- | -- | **1,690** |
| SS 201 | 2.3 | -- | -- | -- | -- | -- | 6 |
| SS 202 | 5.8 | -- | -- | -- | -- | -- | 20 |
| SS 203 | 5.5 | -- | -- | -- | -- | -- | 5 U |
| SS 204 | 6.1 | -- | -- | -- | -- | -- | **573** |
| SS 205 | 4.5 | -- | -- | -- | -- | -- | 17 |
| SS 206 | 11.3 | -- | -- | -- | -- | -- | 5 U |
| SS 207 | 8 | -- | -- | -- | -- | -- | **462** |
| SS 208 | 3.7 | -- | -- | -- | -- | -- | 5 U |
| SS 209 | 4.6 | -- | -- | -- | -- | -- | 5 U |
| SS 210 | 6.1 | -- | -- | -- | -- | -- | **1,200** |
| SS 211 | 5.8 | -- | -- | -- | -- | -- | **1,120** |
| SS 212 | 4.7 | -- | -- | -- | -- | -- | 5 U |

| Sample Number | Sample Depth (feet bgs) | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Total Xylenes (mg/kg) | GRO (mg/kg) | DRO (mg/kg) |
|---|---|---|---|---|---|---|---|
| SS 213 | 12.8 | -- | -- | -- | -- | -- | **591** |
| SS 214 | 3.4 | -- | -- | -- | -- | -- | **854** |
| SS 215 | 8.7 | -- | -- | -- | -- | -- | **1,070** |
| SS 216 (dup. of SS 194) | 6.1 | -- | -- | -- | -- | -- | 169 |
| SS 217 (dup. of SS 201) | 2.3 | -- | -- | -- | -- | -- | 5 U |
| SS 218 (dup. of SS 211) | 5.8 | -- | -- | -- | -- | -- | **764** |
| SS 219 (dup. of SS 215) | 8.7 | -- | -- | -- | -- | -- | **1,400** |
| *ADEC Method Two Cleanup Level*[a] | | *0.02* | *5.4* | *5.5* | *78* | *300* | *250* |
| *Alternative Cleanup Level*[b] | | *0.5*[c] | *NA* | *NA* | *NA* | *NA* | *NA* |

Table 2 – 2003 Corrective Action Confirmation Sample Results

| Sample Number | Sample Depth (feet bgs) | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Total Xylenes (mg/kg) | GRO (mg/kg) | DRO (mg/kg) |
|---|---|---|---|---|---|---|---|
| **NOAA Site 27/TPA Site 23 2003 Confirmation Samples** | | | | | | | |
| SG25.2-CS-013-045 | 4.5 | 0.01 U | 0.07 | 0.04 U | 0.07 U | 2 U | 5 J |
| SG25.2-CS-069-160 | 16 | 0.01 U | 0.03 | 0.03 U | 0.04J | 1J | **724** |
| SG25.2-CS-070-120 | 12 | 0.02 J | 0.03 J | 0.02 J | 0.06 | 2 U | 70 |
| SG25.2-CS-071-100 | 10 | 0.01 U | 0.04 | 0.03 U | 0.12 | 3 | **1,020** |
| SG25.2-CS-072-120 | 12 | 0.01 U | 0.03 J | 0.02 J | 0.13 | 5 | **284** |
| SG25.2-CS-073-110 | 11 | 0.01 U | 0.03 J | 0.03 J | 0.11 | 3 | **3,850** |
| SG25.2-CS-074-090 | 9 | 0.01 U | 0.02 J | 0.03 U | 0.03 J | 2 U | 8 J |
| SG25.2-CS-075-120 | 12 | 0.01 U | 0.04 | 0.03 U | 0.03 J | 1 U | 9 J |
| SG25.2-CS-076-110 | 11 | 0.03 U | 0.04 | 0.03 U | 0.04 J | 2 U | 8 J |
| SG25.2-CS-077-060 | 6 | 0.01 U | 0.04 J | 0.04 U | 0.09 U | 1 J | **4,840** |
| SG25.2-CS-078-150 | 15 | 0.01 U | 0.04 U | 0.04 U | 0.07 U | 2 U | 82 |
| SG25.2-CS-079-130 | 13 | 0.01 U | 0.02 J | 0.05 U | 0.10 U | 3 U | 4 J |
| SG25.2-CS-080-150 | 15 | 0.01 U | 0.01 J | 0.02 J | 0.09 | 5 J | **1,620** |
| SG25.2-CS-081-150 | 15 | 0.01 U | 0.05 U | 0.05 U | 0.10 U | 2 J | 3 J |
| SG25.2-CS-082-140 | 14 | 0.08 U | 0.08 U | 0.08 U | 0.16 U | 1 J | 3 J |
| SG25.2-CS-083-100 | 10 | 0.01 U | 0.02 J | 0.05 U | 0.09 U | 1 J | 22 J |
| SG25.2-CS-084-140 | 14 | 0.02 U | 0.07 U | 0.07 U | 0.13 U | 3 J | 3 J |
| SG25.2-CS-085-130 | 13 | 0.01 U | 0.04 U | 0.04 U | 0.08 U | 2 | **387** |
| SG25.2-CS-086-130 | 13 | 0.01 U | 0.03 U | 0.03 U | 0.05 U | 1 | 4 J |
| *ADEC Method Two Cleanup Level*[a] | | *0.02* | *5.4* | *5.5* | *78* | *300* | *250* |
| *Alternative Cleanup Level*[b] | | *0.5*[c] | *NA* | *NA* | *NA* | *NA* | *NA* |

Notes for Tables 1 and 2

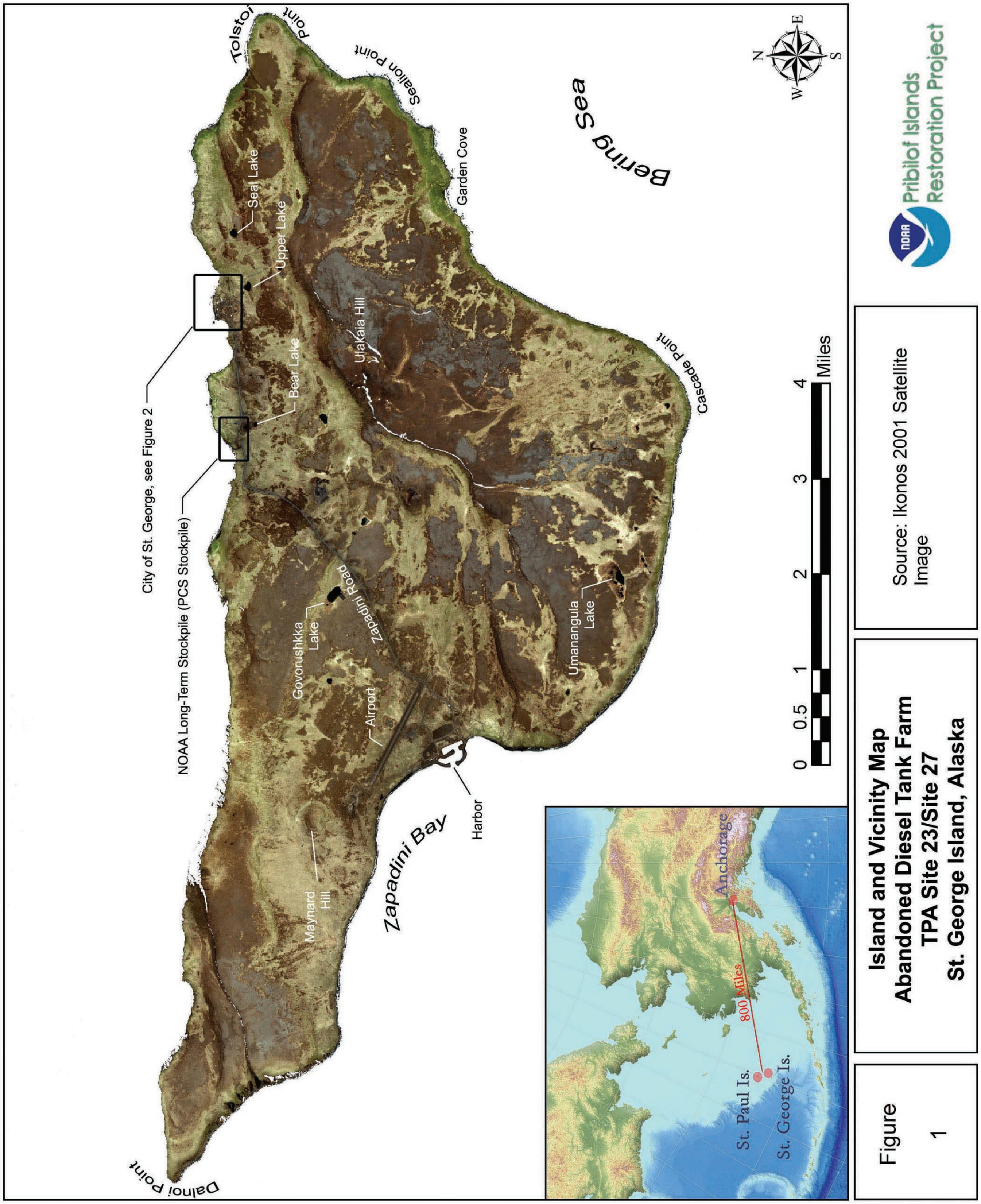
**bold** Indicates concentration above cleanup levels. Although reporting limits for benzene sometimes exceeded the current ADEC Method Two cleanup level of 0.02 mg/kg, reporting limits did not exceed the alternative cleanup level of 0.5 mg/kg.

ADEC Alaska Department of Environmental Conservation

bgs Below ground surface

| | |
|---|---|
| BTEX | Benzene, toluene, ethylbenzene, and total xylenes |
| DRO | Diesel-range organic compounds |
| GRO | Gasoline-range organic compounds |
| J | Analyte was positively identified, but concentration is estimated; result is considered qualitatively acceptable, but quantitatively unreliable. |
| mg/kg | Milligram per kilogram |
| -- | Not analyzed |
| NA | Not applicable |
| TPA | Two-Party Agreement |
| U | The analyte was analyzed for, but was not detected above the sample reporting limit. |
| a | Cleanup level is from Title 18 of the *Alaska Administrative Code 75* "Oil and Hazardous Substances Pollution Control Regulations," published by the State of Alaska and amended through October 28, 2000. Contaminants of concern for this site are limited to |
| b | Cleanup level obtained from ADEC Method Two based on the 1991 cleanup level. |
| c | Under the TPA, NOAA may utilize the 1991 ADEC cleanup level for benzene (0.5 mg/kg). |

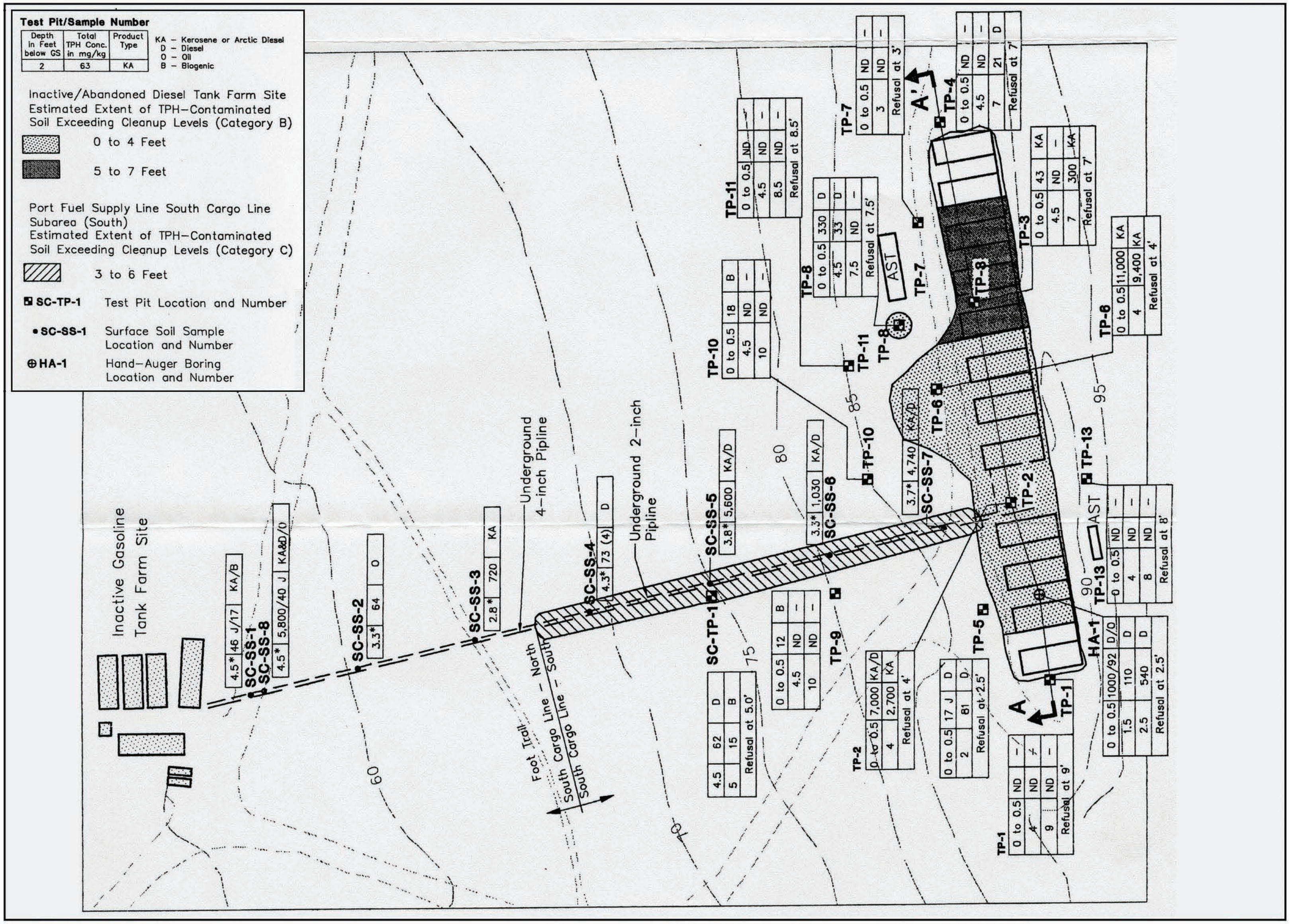
## Figures



Tolstoi Point
Sealion Point
Garden Cove
Bering Sea
Seal Lake
Upper Lake
City of St. George, see Figure 2
Bear Lake
Ulakaia Hill
Cascade Point
NOAA Long-Term Stockpile (PCS Stockpile)
Govorushkka Lake
Zapadini Road
Umanangula Lake
Airport
Harbor
Zapadini Bay
Maynard Hill
Dalnoi Point
N
E
S
W
0 0.5 1 2 3 4 Miles
Source: Ikonos 2001 Satellite Image
Pribilof Islands Restoration Project
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Figure 1
Island and Vicinity Map
Abandoned Diesel Tank Farm
TPA Site 23/Site 27
St. George Island, Alaska

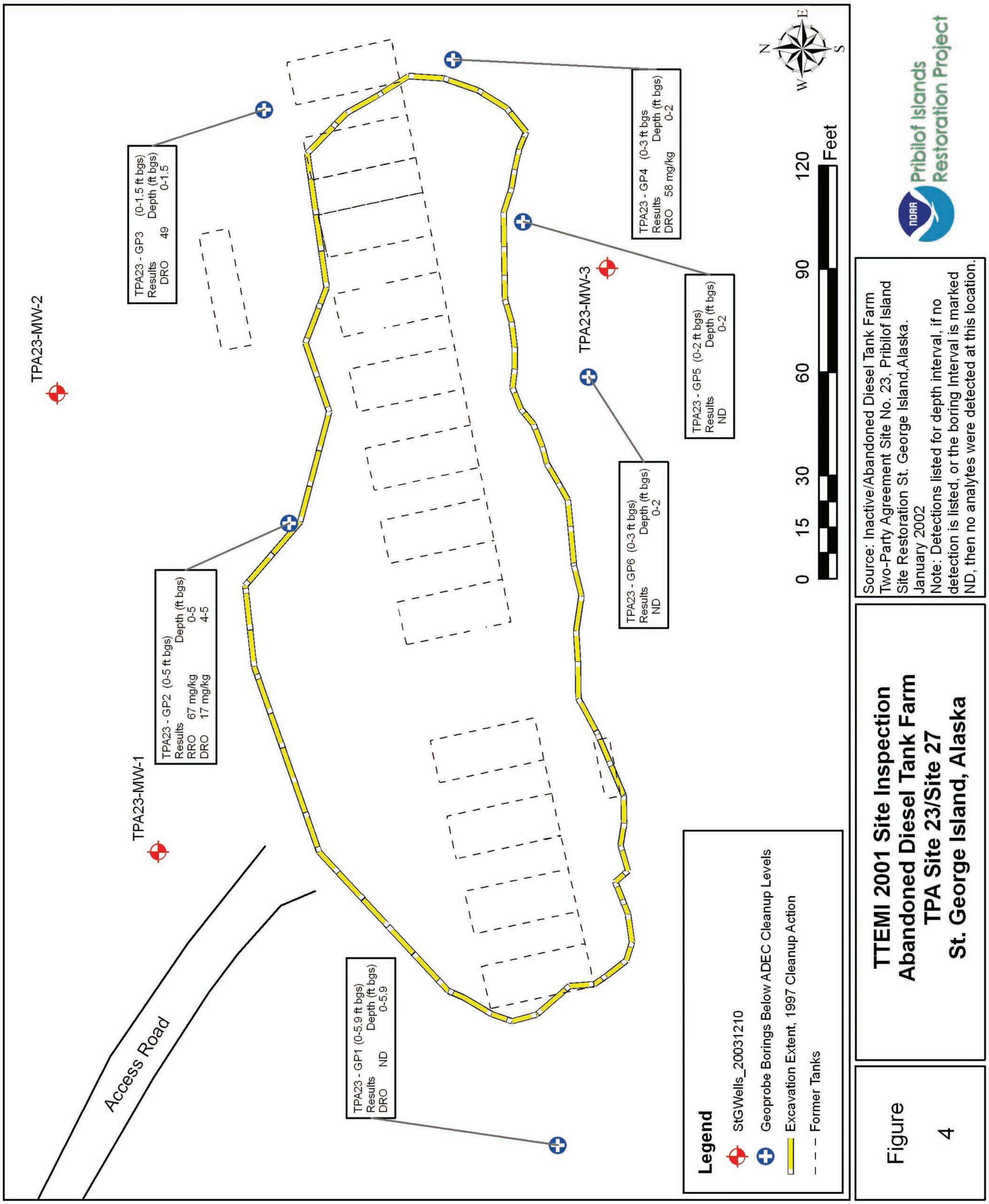

| Figure 2 | City of St. George Map<br>Abandoned Diesel Tank Farm<br>TPA Site 23/Site 27<br>St. George Island, Alaska | Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985 |
|---|---|---|

Pribilof Islands Restoration Project




| Figure 3 | Hart Crowser 1996 Site Investigation<br>Abandoned Diesel Tank Farm<br>TPA Site 23/Site 27<br>St. George Island, Alaska | Source: Expanded Site Inspection St. George Island Pribilof Islands, Alaska. Volume 1 January 1997 |
|---|---|---|

Pribilof Islands Restoration Project


TTEMI 2001 Site Inspection
Abandoned Diesel Tank Farm
TPA Site 23/Site 27
St. George Island, Alaska
Figure
4
Source: Inactive/Abandoned Diesel Tank Farm
Two-Party Agreement Site No. 23, Pribilof Island
Site Restoration St. George Island,Alaska.
January 2002
Note: Detections listed for depth interval, if no
detection is listed, or the boring Interval is marked
ND, then no analytes were detected at this location.
Pribilof Islands Restoration Project
NOAA
Legend
StGWells_20031210
Geoprobe Borings Below ADEC Cleanup Levels
Excavation Extent, 1997 Cleanup Action
Former Tanks
0 15 30 60 90 120
Feet
N
E
S
W
Access Road
TPA23-MW-1
TPA23-MW-2
TPA23-MW-3
TPA23 - GP1 (0-5.9 ft bgs)
Results Depth (ft bgs)
DRO ND 0-5.9
TPA23 - GP2 (0-5 ft bgs)
Results Depth (ft bgs)
RRO 67 mg/kg 0-5
DRO 17 mg/kg 4-5
TPA23 - GP3 (0-1.5 ft bgs)
Results Depth (ft bgs)
DRO 49 0-1.5
TPA23 - GP4 (0-3 ft bgs
Results Depth (ft bgs)
DRO 58 mg/kg 0-2
TPA23 - GP5 (0-2 ft bgs)
Results Depth (ft bgs)
ND 0-2
TPA23 - GP6 (0-3 ft bgs)
Results Depth (ft bgs)
ND 0-2

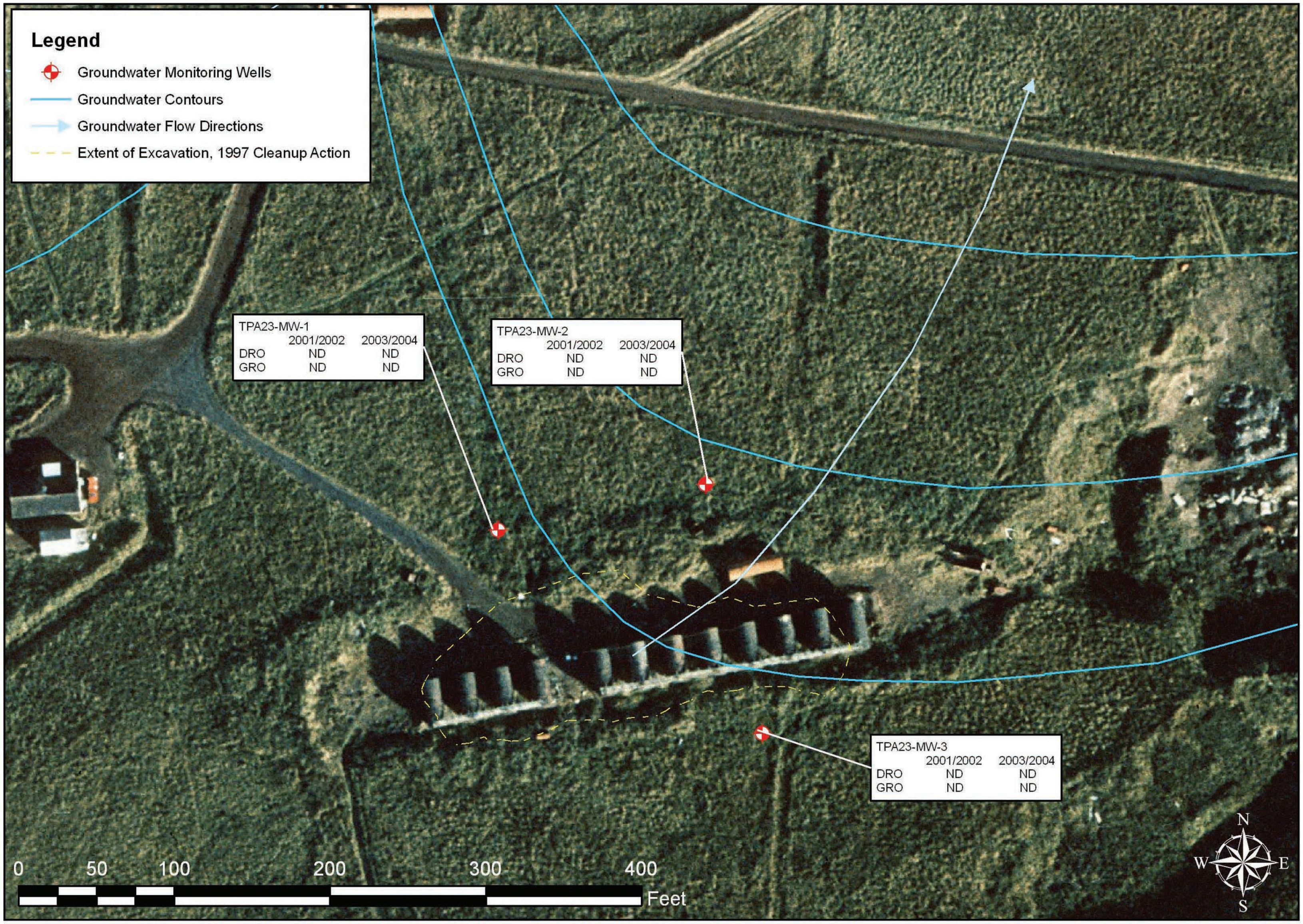



Figure 5

**Groundwater Sampling Results**
**Abandoned Diesel Tank Farm**
**TPA Site 23/Site 27**
**St. George Island, Alaska**

Source: AeroMap U.S. 9/28/96 Aerial Photograph; Pribilof Project Database; TTEMI Field Investigation Report February 14, 2003
Note: Results in µg/L (Micrograms per Liter; Parts per Billion); ND (analyte was analyzedfor but not detected); Results reflect the highest detection for the round of sampling. Additonal analytes were analyzed for but not detected

Pribilof Islands Restoration Project

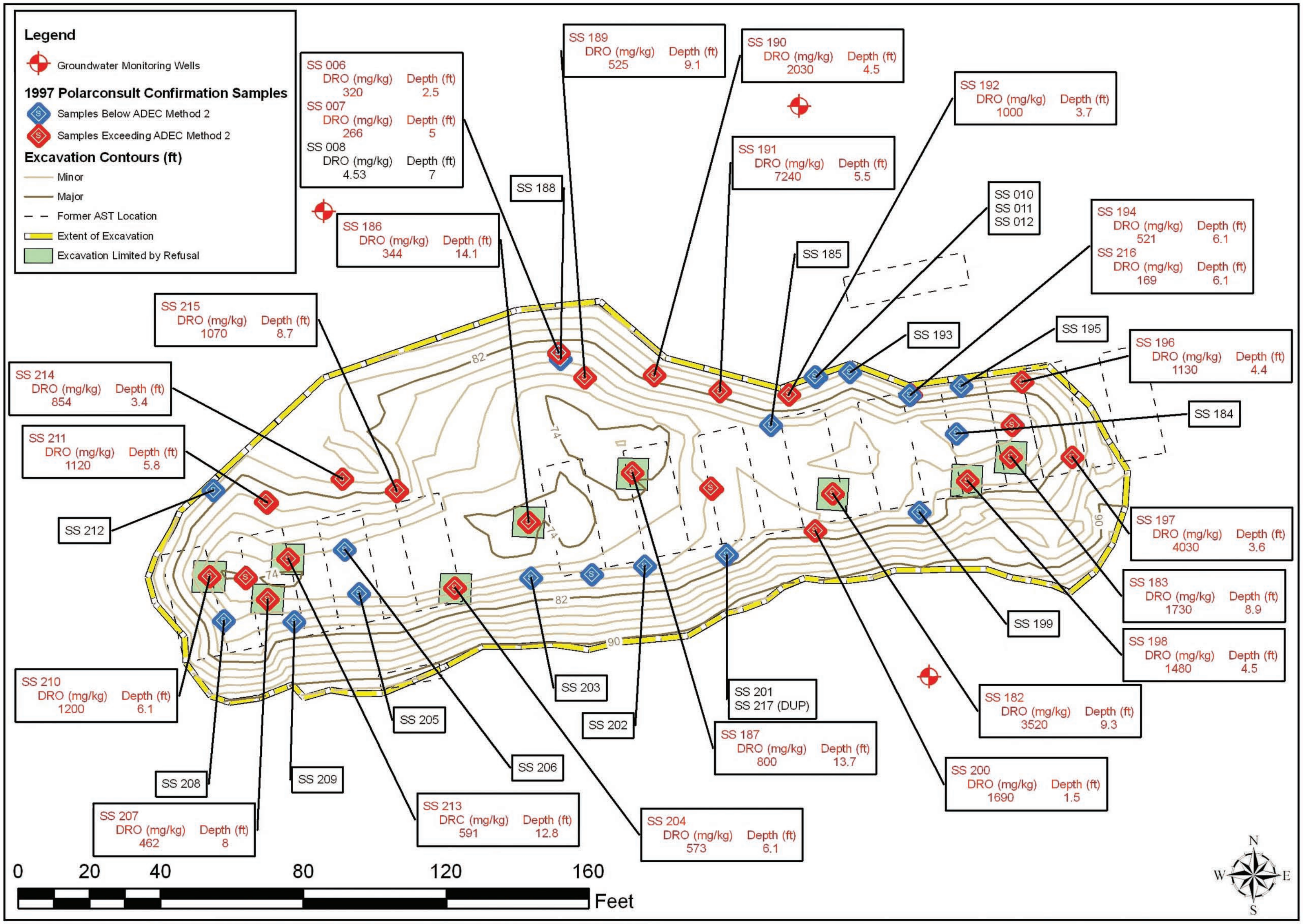
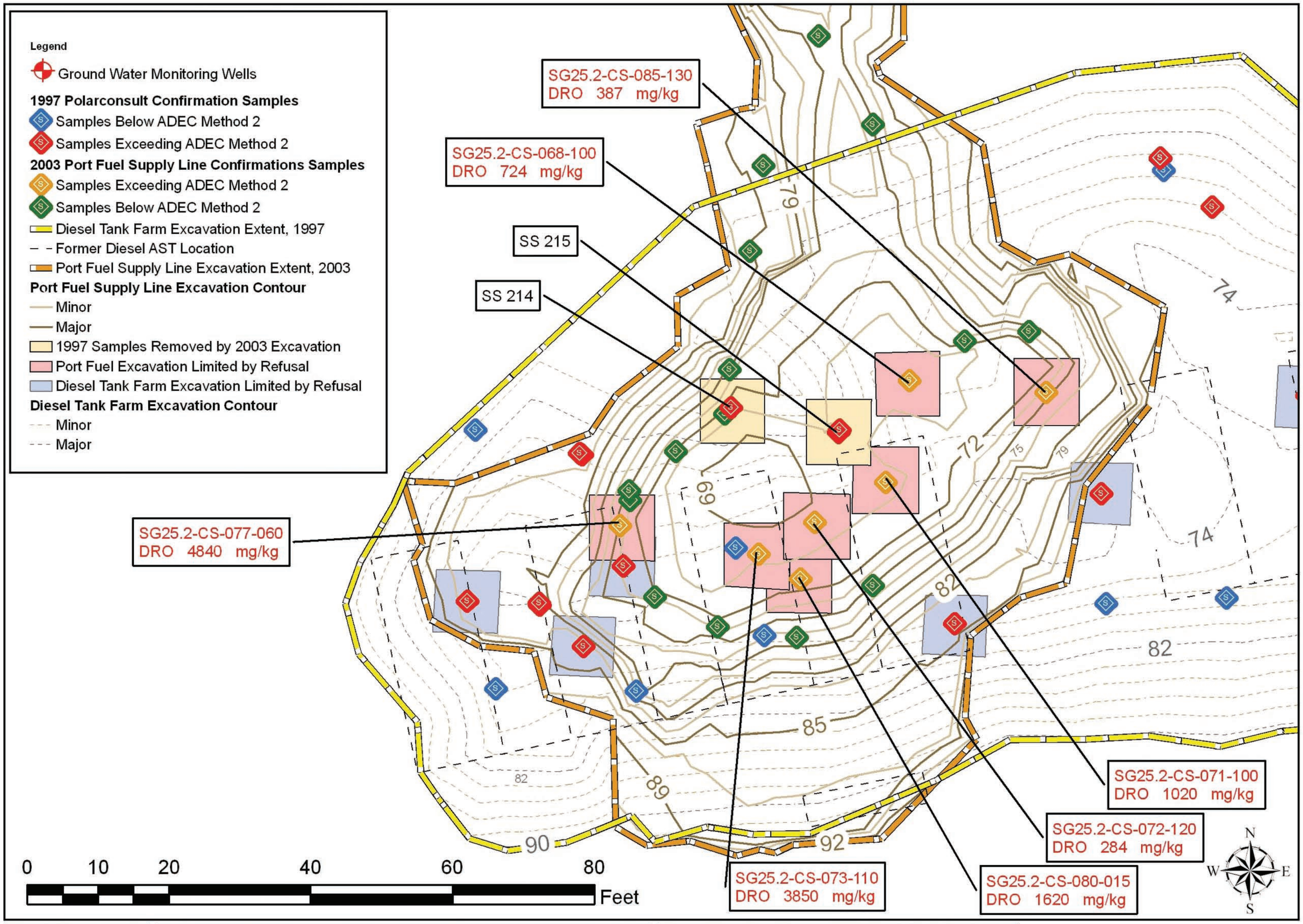



Figure 6

**St. George Tanaq Corporation**
**1997 Cleanup Action**
**Abandoned Diesel Tank Farm**
**TPA Site 23/Site 27**
**St. George Island, Alaska**

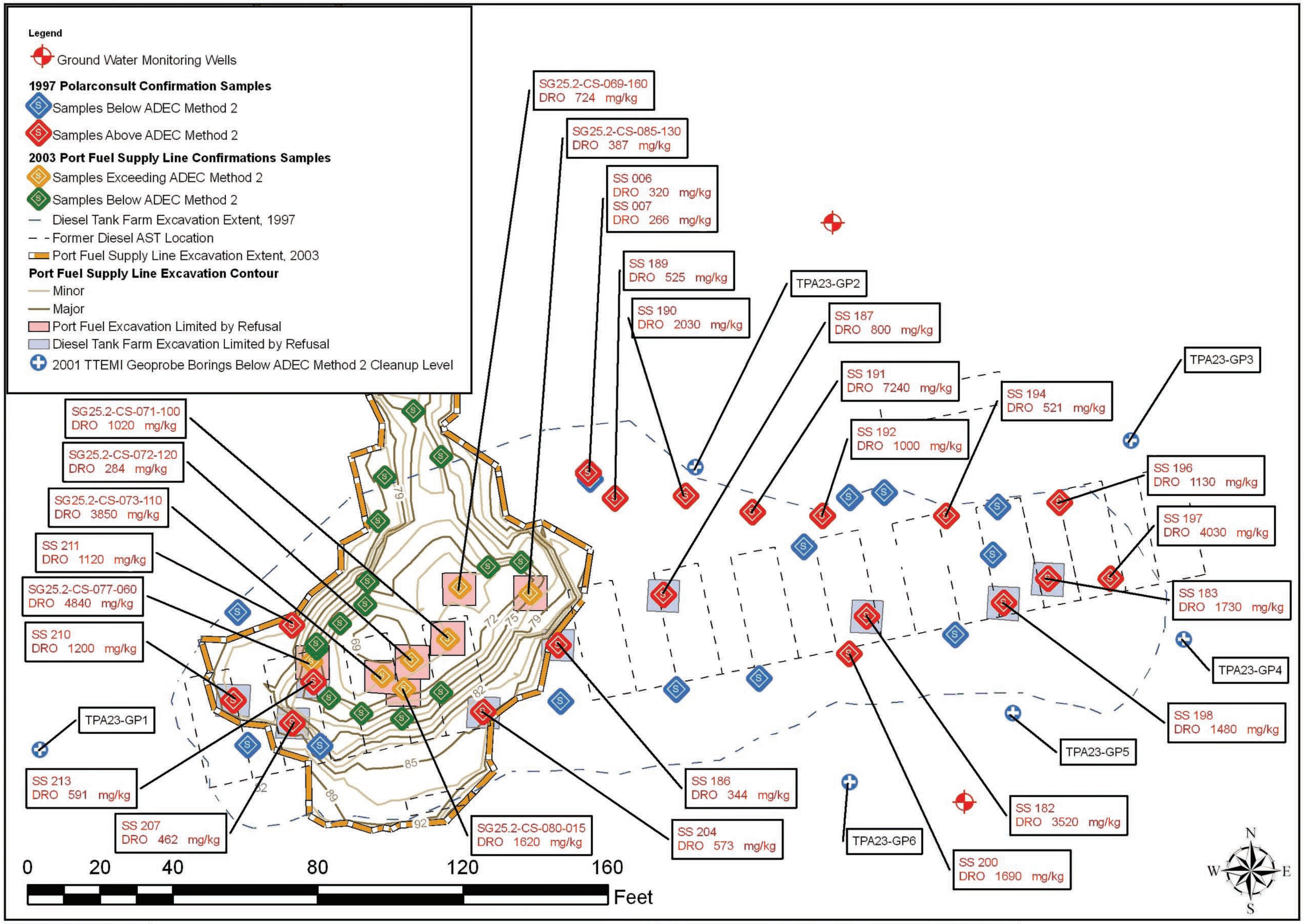
Source: Expanded Site Inspection St. George Island Pribilof Islands, Alaska. Volume 1
January 1997

Pribilof Islands Restoration Project




| Figure 7 | Abandoned Diesel Tank Farm & Port Fuel Supply Line N-S (TPA 25-2) Excavation Interface & Confirmation Sampling TPA Site 23/Site 27 St. Geroge Island, Alaska | Source: Pribilof Project Database; Environmental Site Investigation St. George Debris Cleanup and UST Decommissioning Report, Polarconsult Alaska, Inc. |
|---|---|---|

Pribilof Islands Restoration Project




Figure

8

**Residual Contamination Within Excavation Limits Post 2003 Cleanup Action**
**TPA Site 23/Site 27**
**St. Geroge Island, Alaska**

Source: Pribilof Project Database; Environmental Site Investigation St. George Debris Cleanup and UST Decommissioning Report, Polarconsult Alaska, Inc.; Inactive/Abandoned Diesel Tank Farm Two-Party Agreement Site No. 23, Pribilof Island Site Restoration St. George Island, Alaska. January 2002.

Pribilof Islands Restoration Project

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2008-000323-0
Recording Dist: 305 - Aleutian Islands
7/15/2008 10:23 AM Pages: 1 of 7

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITES 23 and 25-2
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation and The Aleut Corporation as the owners, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that property on the southeast edge of the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Tract 49**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 11.48" North Latitude, 169° 32' 27.10" West Longitude**

This property, hereafter referred to as the "Site" (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135435; File ID 2643.38.028 and Reckey #1994250135457; File ID 2643.38.034.

The Site was identified as *Site 23 Abandoned Diesel Tank Farm* and *Site 25-2 Port Fuel Supply Line North-South* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 23/NOAA Site 27 and TPA Site 25-2/NOAA Site 30. Following corrective actions, NOAA submitted requests for conditional closures for these sites to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2005a, NOAA 2005b). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that the Site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2005a, NOAA 2005b). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the Site unless new information becomes available that indicates to ADEC that the Site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2005a, NOAA 2005b).

| | |
|---|---|
| Grantor: | U.S. Bureau of Land Management |
| Grantee (subsurface estate): | The Aleut Corporation<br>4000 Old Seward Highway, Suite 300<br>Anchorage, AK 99503 |
| Grantee (surface estate): | St. George Tanaq Corporation<br>4141 B Street, Suite 301<br>Anchorage, AK 99503 |

7

**Recording District:** Aleutian Islands

**Remedial Actions and Residual Contamination**

Diesel fuel was stored at TPA Site 23 (Abandoned Diesel Tank Farm) in aboveground storage tanks (ASTs) from the 1970s until 1993. The diesel fuel was transferred to other island power generation and heating storage tanks via TPA Site 25-2 Port Fuel Supply Line North-South and tanker trucks (Hart Crowser 1997). Environmental investigations performed in 1992 (E&E 1993) and 1996 (Hart Crowser 1997) found diesel range organics (DRO) contaminated soil at the Site, likely resulting from fuel spills and leakage during transfer operations. In 1997, the ASTs and approximately 4,150 cubic yards of DRO contaminated soil were removed from the Site (Polarconsult 1997). In 2003, an additional 2,945 cubic yards of contaminated soil was removed from the Site (Polarconsult 2004a, Polarconsult 2004b); see Figure 2. The excavations were backfilled with clean material. DRO contaminated soil was removed to the extent practicable; however, areas of contamination remain at equipment refusal depth of 15 feet below the ground surface (bgs) and in some locations shallower than refusal, but at least 4 feet bgs. Remaining DRO concentrations in the soil exceed the ADEC Method 2 criterion for protection of groundwater, but meet ADEC criteria for inhalation and ingestion. Attached are diagrams (Figures 3 and 4) drawn to scale that show the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2001, NOAA installed three groundwater monitoring wells at the Site. Groundwater samples collected from these wells from 2001 through 2004 had analytical results indicating all contaminants either non-detect or detected at concentrations well below ADEC cleanup standards (Tetra Tech 2005). Based on a determination that groundwater in the vicinity of the Site had not been adversely impacted by DRO contamination, these monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005c).

Site Use

In the event that information becomes available which indicates that the Site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the Site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the Site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**


Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska.* Contract No. DACA85-91-D-0003, Delivery Order No. 0027. Prepared for Alaska District, U.S. Army Corps of Engineers. February.

Hart Crowser. 1997. *Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska.* January.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2005a. *Request for Conditional Closure, Abandoned Diesel Tank Farm, TPA Site 23/NOAA Site 27, St. George Island, Alaska.* Signed by John Lindsay (NOAA) and submitted with cover letter February 22, 2005. Signed by Louis Howard of ADEC Contaminated Sites Program, February 28, 2005.

NOAA. 2005b. *Request for Conditional Closure, North-South Cargo Fuel Line, TPA Site 25-2/NOAA Site 30, St. George Island, Alaska.* Signed by John Lindsay (NOAA) on May 2, 2005 and submitted with cover letter May 3, 2005. Signed by Louis Howard of ADEC Contaminated Sites Program, May 5, 2005.

NOAA. 2005c. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Polarconsult Alaska, Inc. (Polarconsult). 1997. *Environmental Site Investigation, St. George Debris Cleanup & UST Decommissioning, Pribilof Islands Environmental Restoration Project.* Volumes 1 through 3. November 2.

Polarconsult. 2004a. *Corrective Action Report, Inactive/Abandoned Diesel Tank Farm, Two-Party Agreement Site No. 23.* Pribilof Islands Site Restoration. St. George Island, Alaska. Final. August 12.

Polarconsult. 2004b. *Corrective Action Report, North-South Cargo Fuel Line, TPA Site 25-2, Remedial Corrective Action Project, St. George Island, Alaska.* Final. August 12.

Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

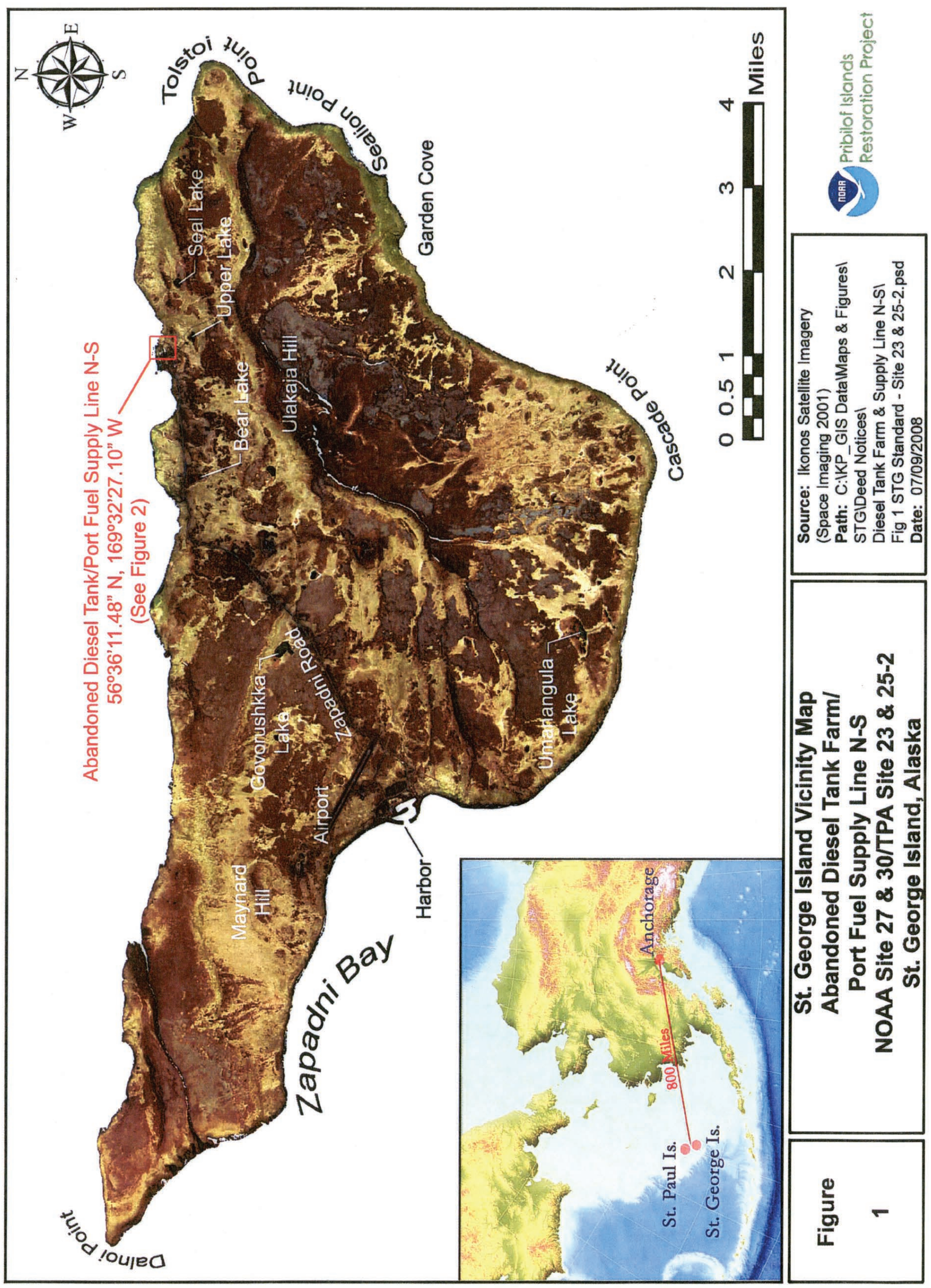
Signature: ______________________

Printed Name: John A. Lindsay

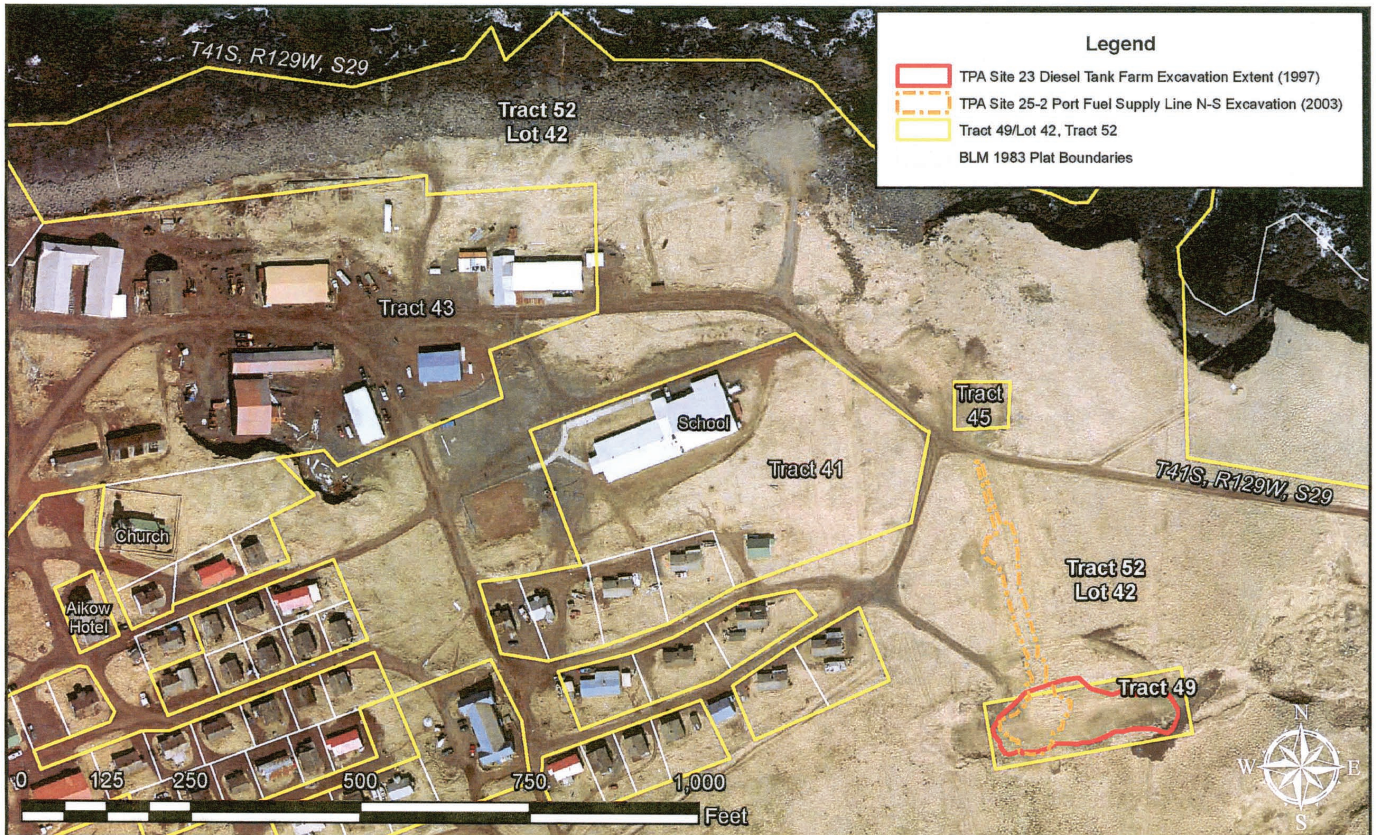
Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 7
2008-000323-0




4 of 7
2008-000323-0




| Figure 2 | Legal Property Description Map<br>Tract 49/Lot 42, Tract 52 of T41S, R129W, S29<br>Abandoned Diesel Tank Farm/Port Fuel Supply Line N-S<br>NOAA Site 27 & 30/TPA Site 23 & 25-2<br>St. George Island, Alaska | Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985.<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Diesel Tank Farm & Supply Line N-S\Fig2_TPA23&25-2_PropDescription.mxd<br>Date: 7/9/2008 @ 9:39:38 AM |
|---|---|---|

NOAA Pribilof Islands Restoration Project

5 of 7
2008-000323-0

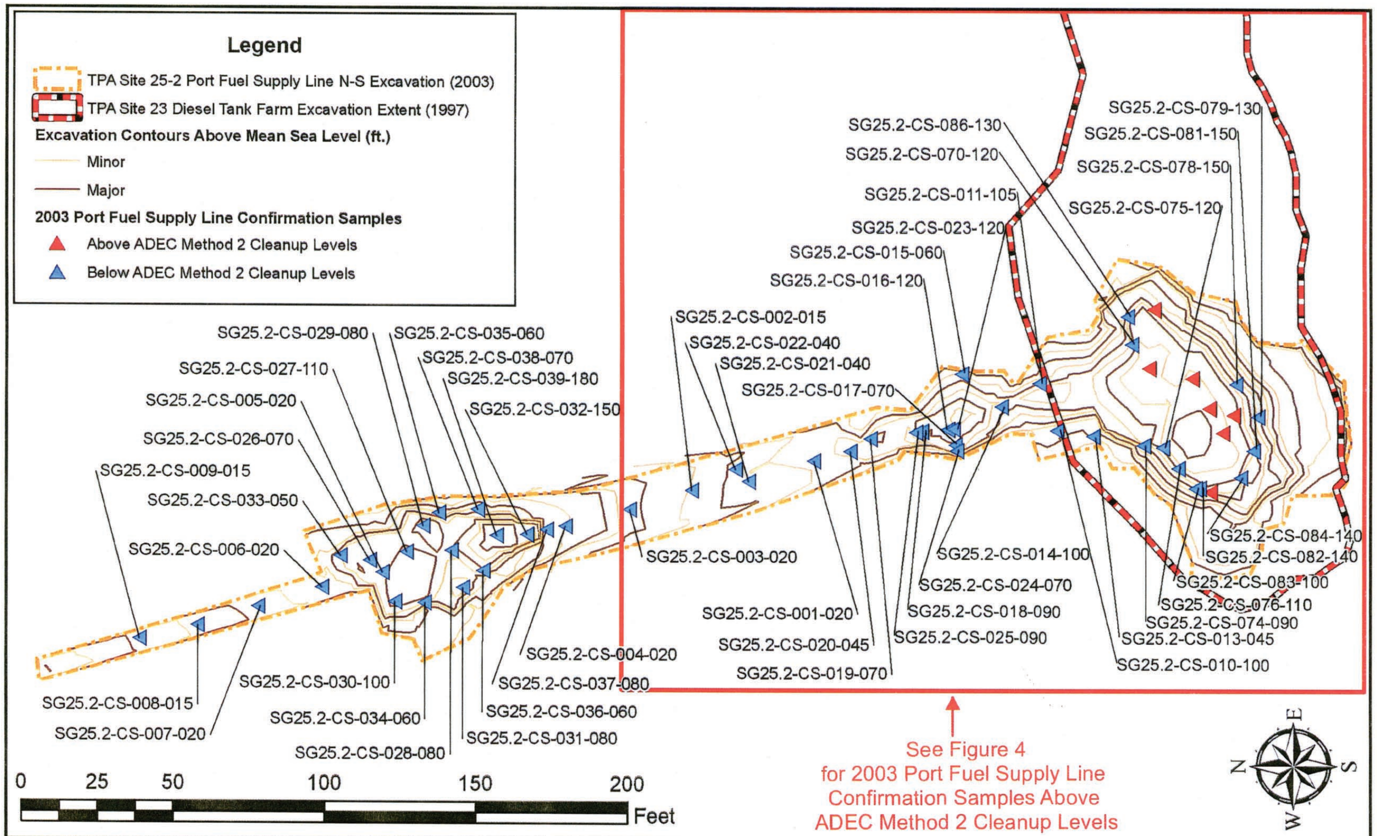



**Figure 3**

**Final Excavation Extent & Confirmation Sampling Results**
**Abandoned Diesel Tank Farm/Port Fuel Supply Line N-S**
**NOAA Site 27 & 30/TPA Site 23 & 25-2**
**St. George Island, Alaska**

Sources: Layers & Samples (NOAA PPO GIS & Chemical Database), Polarconsult, Final Corrective Action Report, North - South Cargo Fuel Line, TPA 25-2, St. George Island, Alaska 8/12/04.
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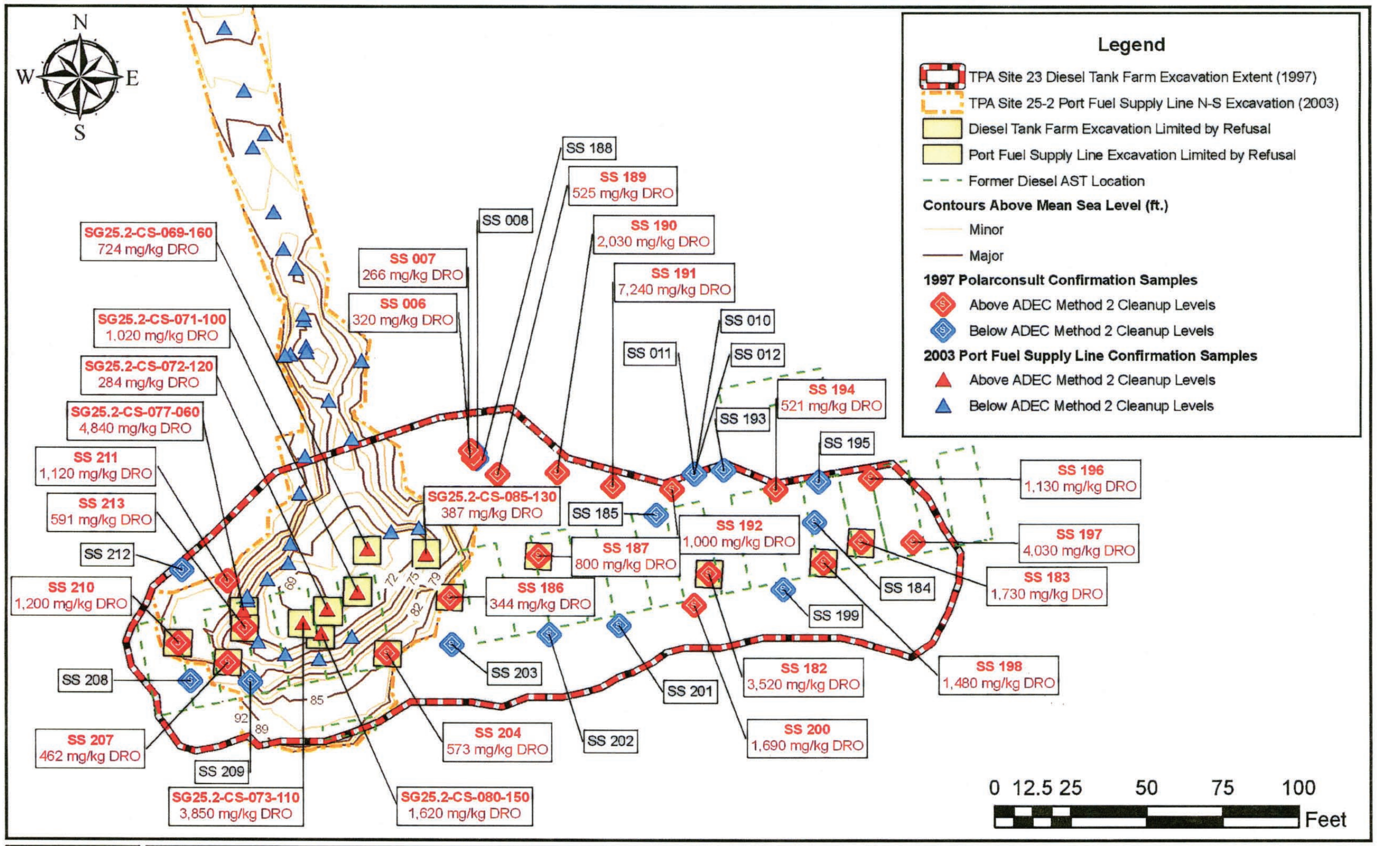
Pribilof Islands Restoration Project




| Figure 4 | Final Excavation Extent & Confirmation Sampling Results<br>Abandoned Diesel Tank Farm/Port Fuel Supply Line N-S<br>NOAA Site 27 & 30/TPA Site 23 & 25-2<br>St. George Island, Alaska | Sources: Layers (NOAA PPO GIS & Chemical Database), Environmental Site Investigation St. George Debris Cleanup and UST Decommissioning Report, Polarconsult Alaska, Inc.; Inactive/Pribilof Island Site Restoration, St. George Island, Alaska. January 2002.<br>Path: C:\KP_GIS Data\Maps & Figures\STG\ Deed Notices\Diesel Tank Farm & Supply Line N-S\ Fig4_TPA23&25-2_Samples&Excavation.mxd<br>Date: 7/9/2008 @ 10:02:15 AM |
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Pribilof Islands Restoration Project

7 of 7
2008-000323-0

# NOAA Site 28
# TPA Site 24: Inactive Gasoline Tank Farm


Request for Conditional Closure, Inactive Gasoline Tank Farm,
TPA Site 24/NOAA Site 28, St. George Island, Alaska ....................................627

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska
(Lot 5 of the East Landing Subdivision) ....................................639

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska
(Lot 42, Tract 52) ....................................647

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 24 and 25-2, St. George Island, Alaska
(Tract 45) ....................................655

**Request for Conditional Closure**
**Inactive Gasoline Tank Farm, TPA Site 24/NOAA Site 28**
**St. George Island, Alaska**

**Site:** Inactive Gasoline Tank Farm, also known as Two Party Agreement (TPA) Site 24, National Oceanic and Atmospheric Administration (NOAA) Site 28, Inactive Gas Tank Farm, and the Gas Tank Farm. The site will be referred to as the "site" herein.

**Location:** St. George Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. On the island, the site is situated east of St. George Village, (Figures 1 and 2), north of the Abandoned Diesel Tank Farm (TPA Site 23) and immediately south of the Bering Sea (56°36'9.85" North Latitude, 169°32'30.15" West Longitude).

**Legal Property Description:** The area of excavation is Tract 45 in Section 29, Township 41 South, Range 129 West of the Seward Meridian, Alaska, as shown on the plat of rectangular net survey, officially filed February 15, 1985 (Figure 2). The City of St. George owns the property within the area of excavation. [Note: TPA site boundaries are not defined in the TPA. At its discretion, NOAA established a boundary for this TPA site based on site characterization data and historic information.]

**Type of Release:** Potential release mechanisms include: 1) leaks associated with the storage of gasoline fuel in seven aboveground fuel storage tanks (ASTs) and their appurtenances; and 2) leaks associated with gasoline and diesel fuel transfers within the pipeline that crossed the site.

**History and Background:**
The U.S. Fish and Wildlife Service (USFWS) constructed and placed into operation the gasoline fuel storage facility in the late 1960s. It consisted of three 8,000-gallon ASTs on concrete saddle foundations, a pump house, and a pipeline that ran from East Landing, through the site, to a diesel fuel storage facility, now called TPA Site 23. The pipeline constitutes the North-South Cargo Fuel Pipeline (TPA Site 25-2). In 1971, the NOAA National Marine Fisheries Service (NMFS) replaced the USFWS in the administration and management of the island. In October 1983, the City of St. George operated the facility after NOAA relinquished administration and management of the island. NOAA transferred the facility and underlying real estate to the City of St. George by Quit Claim Deed in May 1986 (NOAA 1986). Between October 1983 and 1993, four additional ASTs were added to the site. Two 15,000-gallon ASTs on steel support cradles were added first, then two 1,100-gallon ASTs were added later and were placed directly on the ground surface. In 1992, the facility was still in use and the City replaced the aboveground portion of the pipeline from East Landing to the site. In 1993, the City abandoned the site after the Delta Western fuel depot and gasoline station at St. George Harbor became operational (BLM 1967; Black-Smith & Richards 1985; NOAA 1986; E & E 1993; USACE 1994; Hart Crowser 1995).

The site is currently unused, and the nearest residence and the St. George School are approximately 350 feet (ft) southwest of the site (Figure 2).

**Summary of Site Investigations:**
In 1992, a Preliminary Assessment identified stained soils at the site (E&E 1993). During the Expanded Site Inspection (ESI) in 1995, Hart Crowser detected petroleum odors in the vicinity of the 1,100-gallon ASTs (Hart Crowser 1997). Hart Crowser identified seven tanks at the site during the ESI; four of the tanks were within a divided earthen berm measuring 32 feet (ft) by 82 ft, and the other three tanks were outside of the berm. (Hart Crowser 1997).

Hart Crowser advanced four hand auger borings and excavated four test pits during the ESI (Figure 3). The near-surface soil consisted of sandy gravel and gravelly sand. Excavation refusal was encountered between 5 and 9 feet below ground surface (bgs). The ESI field laboratory analyzed nineteen soil samples for total petroleum hydrocarbons (TPH) using Method 8015 (modified) and benzene, toluene, ethylbenzene and total xylenes (BTEX) using a Photovac portable analytical instrument. The TPH method quantified specific ranges of hydrocarbons, similar to current Alaska Department of Environmental Conservation (ADEC) analytical methods AK-101, AK-

102, and AK-103. An off-island project laboratory analyzed one sample from each test pit and boring (eight total samples) for gasoline-range organics (GRO), BTEX, and total lead analysis.

ESI sample analysis results indicated that site soil was contaminated with GRO and diesel-range organics (DRO) from the ground surface to refusal at up to 9 ft bgs. GRO was found at up to 1,800 milligrams per kilogram (mg/kg) and DRO was found at up to 3,300 mg/kg. The ADEC Method Two soil cleanup levels for GRO and DRO at the site are 300 mg/kg and 250 mg/kg, respectively. Total lead was found at concentrations ranging from 2.2 to 15 mg/kg, which are less than the ADEC Method Two residential soil cleanup level of 400 mg/kg. The ESI concluded that approximately 80 cubic yards of petroleum contaminated soil (PCS) were above site cleanup levels and would require removal and disposal (Hart Crowser 1997). (Figure 3) Hart Crowser recommended excavation and removal of 80 cubic yards of PCS from the site.

In 2001, Tetra Tech EM Inc. (TTEMI) installed one monitoring well at the site while evaluating groundwater at and near St. George Village. TTEMI installed two additional groundwater monitoring wells in 2002 to address potential impacts to groundwater caused by PCS at the site (Figure 4). Monitoring well TPA24-MW-1 is at the upgradient portion of the site while monitoring wells TPA24-MW-2 and TPA24-MW-3 are at the downgradient portion of the site. Nearby well MW22.1-MW-1, located at the St. George School, is approximately 500 feet up-gradient of the site (Figure 4). Groundwater in the vicinity of the site is thought to flow northerly to northeasterly away from the site, toward the Bering Sea (Figure 4).

NOAA contractors conducted groundwater monitoring in October 2001, October 2002, August 2003, November 2003, January 2004, and April 2004. During the sampling events, none of the wells at the site had contamination above ADEC Table C levels of concern (Figure 4). Groundwater at the site is found approximately 45 ft bgs. Groundwater at MW22.1-MW-1 had DRO contamination as high as 860 micrograms per liter (µg/L), which is less than the ADEC Table C cleanup level of 1,500 µg/L.

**Summary of Applied Cleanup Levels:**
NOAA employed ADEC Method Two cleanup criteria, discussed at 18 AAC 75.341(c) (ADEC 2000). An alternative cleanup level (0.5 mg/kg) was applied for benzene. Under the TPA, NOAA had the option to cleanup to the less stringent State of Alaska cleanup level in effect in 1991 (ADEC 1991). ADEC uses 15 feet below ground surface (bgs) to define subsurface soil to which residents will have a reasonable potential to be exposed through the inhalation or ingestion pathways (ADEC 2000; 18 AAC 75.340 (j)(2)). Therefore NOAA is not obligated to excavate contaminated soil occurring at depths deeper than 15 feet to address the inhalation and ingestion pathways. Cleanup criteria were applied to the maximum extent practicable (18 AAC 75.325 (f), 18 AAC 75.990).

**Summary of Cleanup Actions:**
The ASTs and their appurtenances were removed in 1997 (Polarconsult 1997), and subsequently disposed off-island as scrap metal. No soil removal was performed in 1997.

Corrective actions related to PCS removal were performed in 2002 and 2003. The corrective action objectives called for removing and transporting contaminated soil to the NOAA long-term PCS stockpile and confirming the removal of all soil exceeding the ADEC Method Two cleanup levels (ADEC 2000), consistent with an ADEC-approved corrective action plan (Polarconsult 2002). NOAA pursued these objectives until all petroleum contamination at or above the cleanup levels was removed, the excavation encroached into another TPA site (i.e. TPA Site 25-2), refusal (*i.e.* more competent pyroclastic material) was experienced, the excavation reached depths greater than 15 ft bgs, or continued excavation threatened to destabilize the adjacent road to TPA Site 6 (Open Pits Site) and the East Rookery.

Corrective action activities involved the removal and transport of 1,731 cubic yards of contaminated soil to the PCS Stockpile for remediation (Figure 5). Recovery of contaminated scoria and welded tuff was discontinued in some areas due to refusal. The maximum depth of excavation at the site was approximately 16 ft bgs. The minimum vertical distance from contaminated soil at the bottom of the excavation to the regional aquifer below was estimated as 30 ft (Polarconsult 2003).

Following the removal of contaminated soil, confirmation samples were collected from the final extents of the excavation and from soil stockpiles generated during the project. The soil samples were analyzed for GRO, DRO, residual-range organics (RRO), BTEX, and lead. GRO, DRO, toluene, ethylbenzene, and total xylenes were detected in the excavation confirmation soil samples above the site cleanup levels at six of the 76 sampling locations (Figures 6 and 7). The site cleanup levels for toluene, ethylbenzene, and total xylenes are 5.4 mg/kg, 5.5 mg/kg, and 78 mg/kg, respectively (Polarconsult 2002). The maximum concentrations of these contaminants at the site after the 2002 corrective action were GRO at 2,050 mg/kg, DRO at 2,870 mg/kg, toluene at 147 mg/kg, ethylbenzene at 84.6 mg/kg, and total xylenes at 389 mg/kg. Benzene, RRO and lead were not detected above cleanup levels at the site (Polarconsult 2002). Benzene was detected at an estimated 0.0837 mg/kg, above its ADEC Method Two cleanup level of 0.02 mg/kg but below its site cleanup level (i.e. 1991 cleanup level) of 0.5 mg/kg.

Stockpile samples collected from PCS transported to NOAA's stockpile indicated DRO and benzene at maximum concentrations of 3,020 mg/kg and 0.343, respectively. All other contaminants were below ADEC Method Two cleanup levels (Polarconsult 2003). A total of six stockpiles were temporarily staged on site to determine whether the soil in the stockpiles was contaminated above site cleanup levels or satisfactory for use as clean backfill. Three of the stockpiles were found to contain DRO above the site cleanup level of 250 mg/kg, with a maximum of 2,540 mg/kg. These three stockpiles were hauled to NOAA's off-site PCS stockpile. The other three on-site stockpiles were below site cleanup levels for all contaminants and were used as clean backfill. The PCS hauled to NOAA's stockpile in 2002 was remediated with NOAA's enhanced thermal conduction (ETC) system by thermal desorption.

Additional PCS was removed from the northwest portion of the site in 2003 during the corrective action for the adjacent TPA Site 25-2. The soil found contaminated in 2002 samples SG-24-015D and SG-24-065 was removed (Figures 7 and 8). This PCS was added to NOAA's PCS stockpile and currently awaits beneficial industrial use as soil berm construction material for the City of St. George's new landfill.

Laboratory reporting limits were below ADEC Method Two cleanup levels for all contaminants except benzene. For benzene, reporting limits of 0.0884 mg/kg or lower were achieved, which is above the ADEC Method Two cleanup level of 0.02 mg/kg, but below the alternative cleanup level of 0.5 mg/kg. Concentrations of all other contaminants in confirmation samples collected were below the ADEC Method Two cleanup levels.

**Recommended Action:**

In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate and practicable corrective and closure actions at the Inactive Gasoline Tank Farm, TPA Site 24/NOAA Site 28 in accordance with the Agreement and that ADEC grant a conditional closure that will not require further remedial action from NOAA.

**References:**

Alaska Department of Environmental Conservation (ADEC). 1991. *Interim Guidance for Non-UST Contaminated Soil Cleanup Levels, Contaminated Sites Program*. July 17.

ADEC. 2000. *Title 18 of the Alaska Administrative Code 75, Articles 3 and 9. Oil and Hazardous Substances Pollution Control Regulations*. State of Alaska. Amended through October 28.

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Hart Crowser. 1995. F*inal Management Plan, Expanded Site Investigations, St. George Island, Alaska. J-3933-39A*. Prepared for the Seattle District, U.S. Army Corps of Engineers, on behalf of the National Oceanic and Atmospheric Administration. Contract No. DACA67-93-D-1004, Delivery Order No. 39. August 31.

Hart Crowser, Inc. 1997. *Expanded Site Inspection of St. Paul Island, Pribilof Islands, Alaska*. January.

National Oceanic and Atmospheric Administration (NOAA). 1986. *Quit Claim Deed (QCD)*. Book 25 of 443, Aleutian Recording District, No. 86-263, recorded May 15, 1986. Transfer of Tract 45, Gasoline Tank Farm, from the National Oceanic and Atmospheric Administration to the City of St. George, Alaska. April 25.

NOAA. 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*. Attorney General's Office File No. 66 1-95-0126, National Oceanic and Atmospheric Administration. January 26.

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Polarconsult. 2002. *Corrective Action Plan, Remedial Corrective Action Project, Inactive Gas Tank Farm, TPA Site 24, St. George Island, Alaska*. Prepared for St. George Chadux Corporation, Anchorage, Alaska, on behalf of the National Oceanic and Atmospheric Administration, Seattle, Wash. Contract No. 50ABNC200016. May 20.

Polarconsult. 2003. *Corrective Action Report, Inactive Gas Tank Farm, TPA Site 24, Remedial Corrective Action Project, St. George Island, Alaska*. Final. June.

U.S. Army Corps of Engineers (USACE). 1994. *Scope of Work, Environmental Assessment, St. George Island, Alaska*. Seattle, Washington.

U.S. Environmental Protection Agency (EPA). 1996. *Test Methods for Evaluating Solid Waste. EPA/SW-846. Third Edition and Updates*. December.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

11-24-04
Date

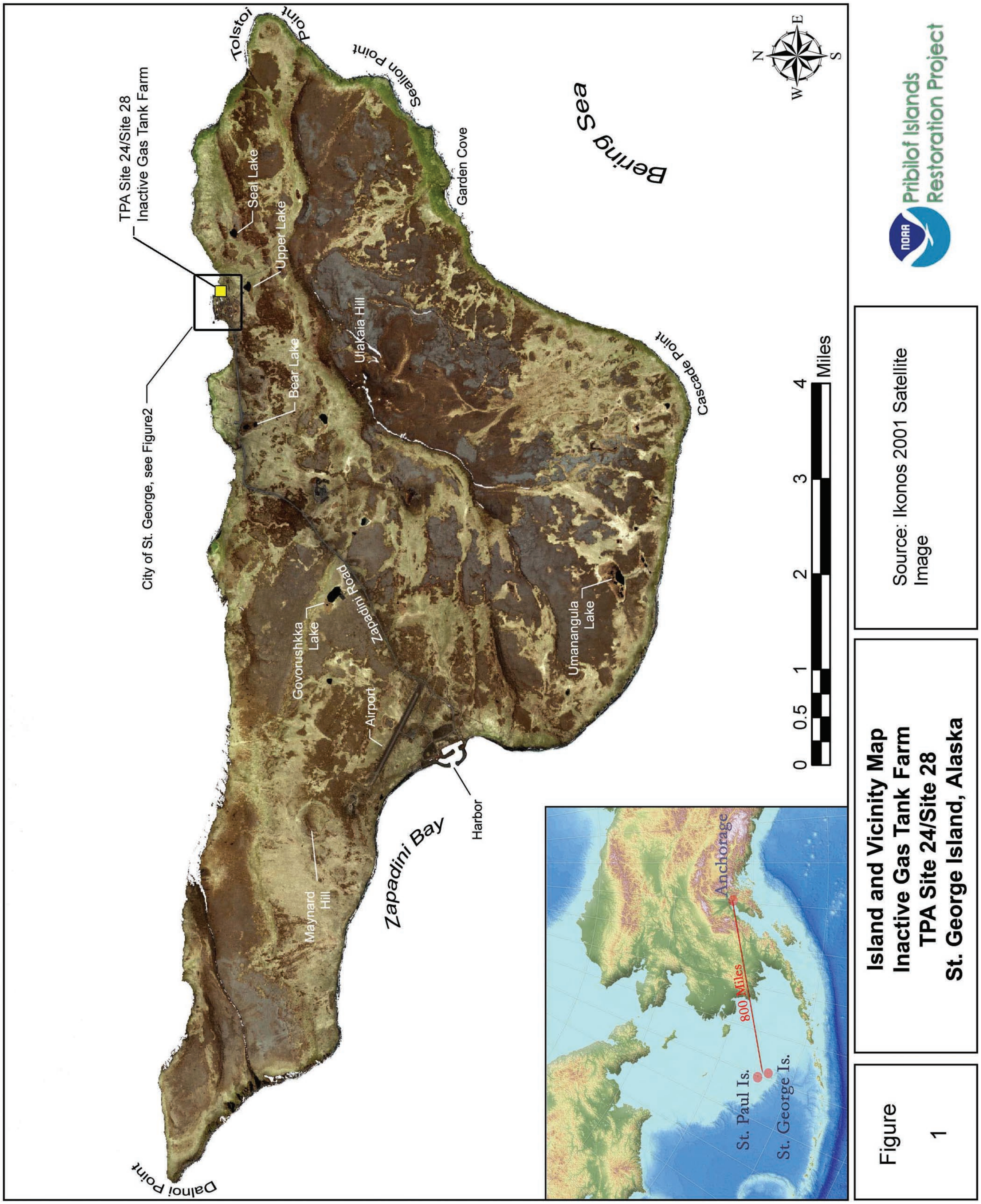
**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed at the Inactive Gasoline Tank Farm, TPA Site 24/NOAA Site 28, in accordance with the Agreement and that no plan for further remedial action is required.

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

Dec 14, 2004
Date

## Figures



TPA Site 24/Site 28
Inactive Gas Tank Farm
City of St. George, see Figure2
Tolstoi Point
Sealion Point
Garden Cove
Bering Sea
Seal Lake
Upper Lake
Bear Lake
Ulakaia Hill
Cascade Point
Govorushkka Lake
Zapadini Road
Airport
Umanangula Lake
Maynard Hill
Zapadini Bay
Harbor
Dalnoi Point
N
E
S
W
0 0.5 1 2 3 4 Miles
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Source: Ikonos 2001 Satellite Image
NOAA
Pribilof Islands Restoration Project
Island and Vicinity Map
Inactive Gas Tank Farm
TPA Site 24/Site 28
St. George Island, Alaska
Figure
1


| Figure 2 | Legal Property Description Map<br>Inactive Gasoline Tank Farm<br>TPA Site 24/Site 28<br>St. George Island, Alaska | Source: AeroMap U.S. 9/28/96 Aerial Photograph;Bureau of Land Management Land Survey Filed Febuary 15, 1985 |
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Pribilof Islands Restoration Project

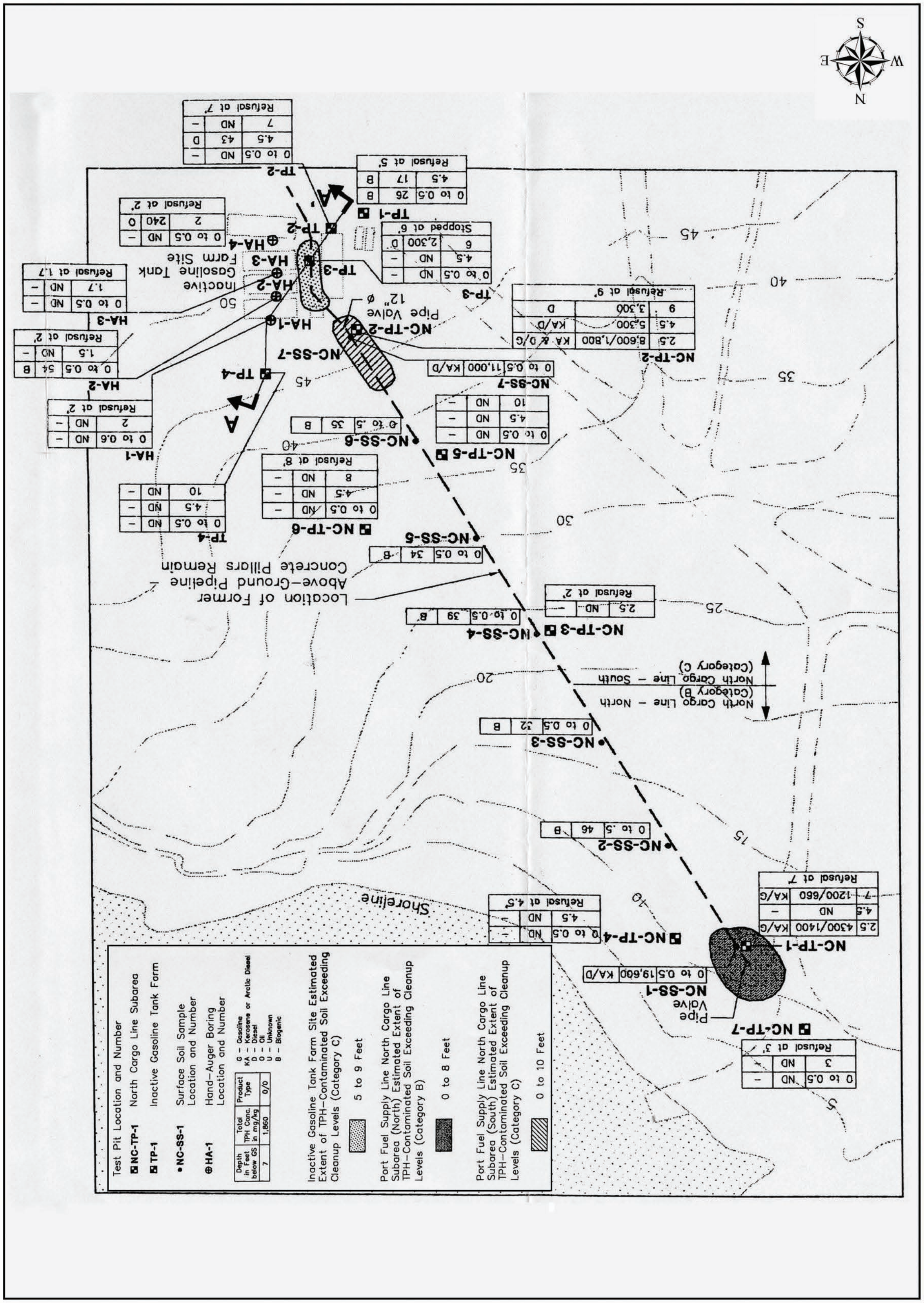


Figure 3

Hart Crowser 1996 Site Investigation
Inactive Gas Tank Farm
TPA Site 24.Site 28
St. George Island, Alaska

Source: Expanded Site Inspection St. George Island Pribilof Islands, Alaska. Volume 1 January 1997

Pribilof Islands Restoration Project

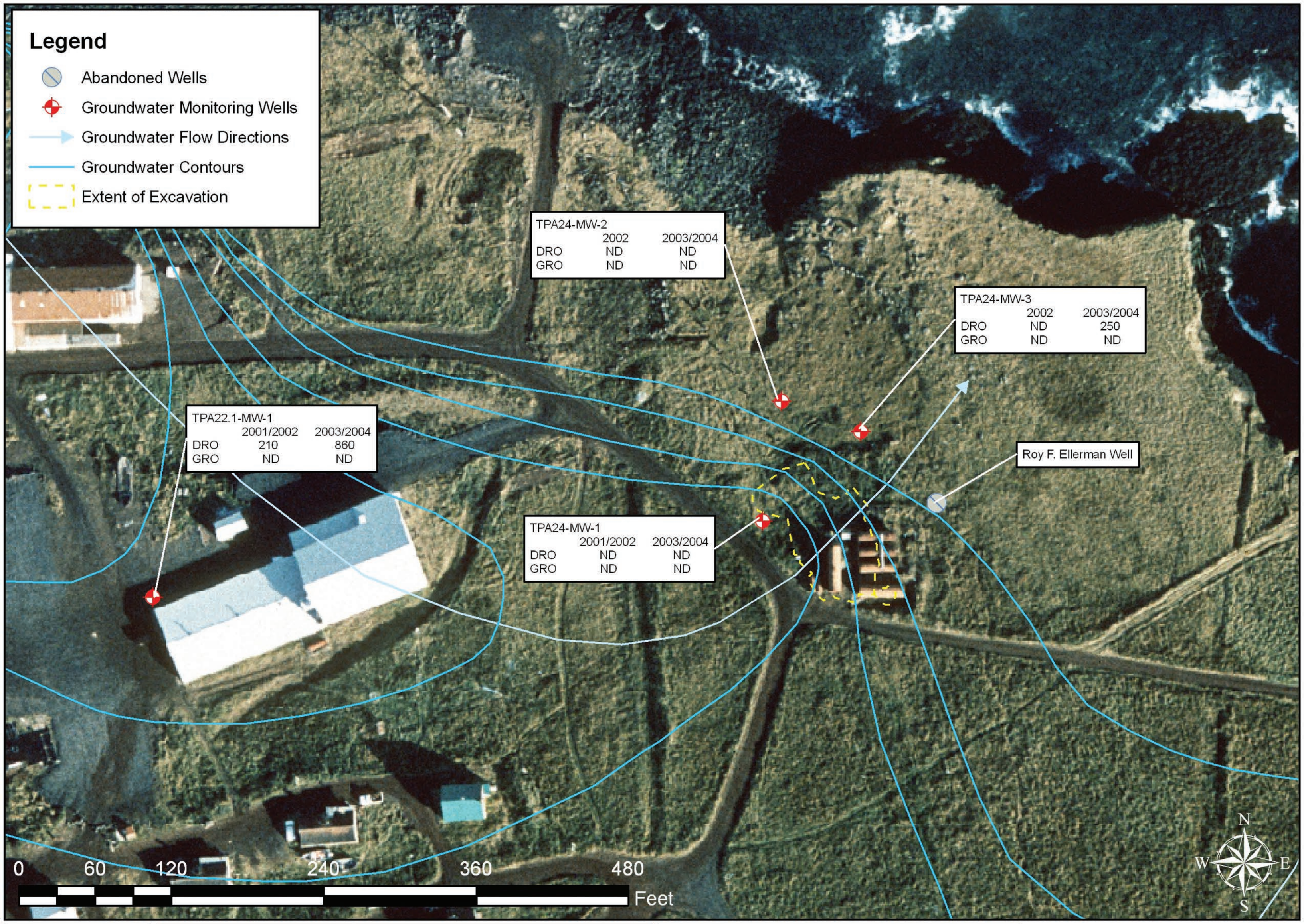


Figure 4

**Groundwater Sampling Results**
**Inactive Gas Tank Farm**
**TPA Site 24/Site 28**
**St. George Island, Alaska**

Source: AeroMap U.S. 9/28/96 Aerial Photograph; Pribilof Project Database; TTEMI Field Investigation Report February 14, 2003
Note: Results in µg/L (Micrograms per Liter; Parts per Billion); ND (analyte was analyzedfor but not detected); Results reflect the highest detection for the round of sampling. Additonal analytes were analyzed for but not detected

Pribilof Islands Restoration Project


Photo #1: View Northwest, Early stages of TPA 24 Inactive Gas Tank Farm Excavation.


Photo # 2: View Northwest, Finishing of TPA 24 Inactive Gas Tank Farm Excavation.


Photo # 3: View South, Sampling of TPA 24 Inactive Gas Tank Farm Excavation.


Photo # 4: Exposing the liner placed along contaminated wall of TPA 24 Inactive Gas Tank Farm Excavation, during the 2003 excavation of the Port Fuel Supply Line N-S (TPA 25-2).

| | | |
|---|---|---|
| **Figure**<br><br>**5** | **Excavation Photo's**<br>**Inactive Gas Tank Farm**<br>**TPA Site 24/Site 28**<br>**St. George Island, Alaska** | Source: Pribilof Project Photo Archive |

Pribilof Islands Restoration Project

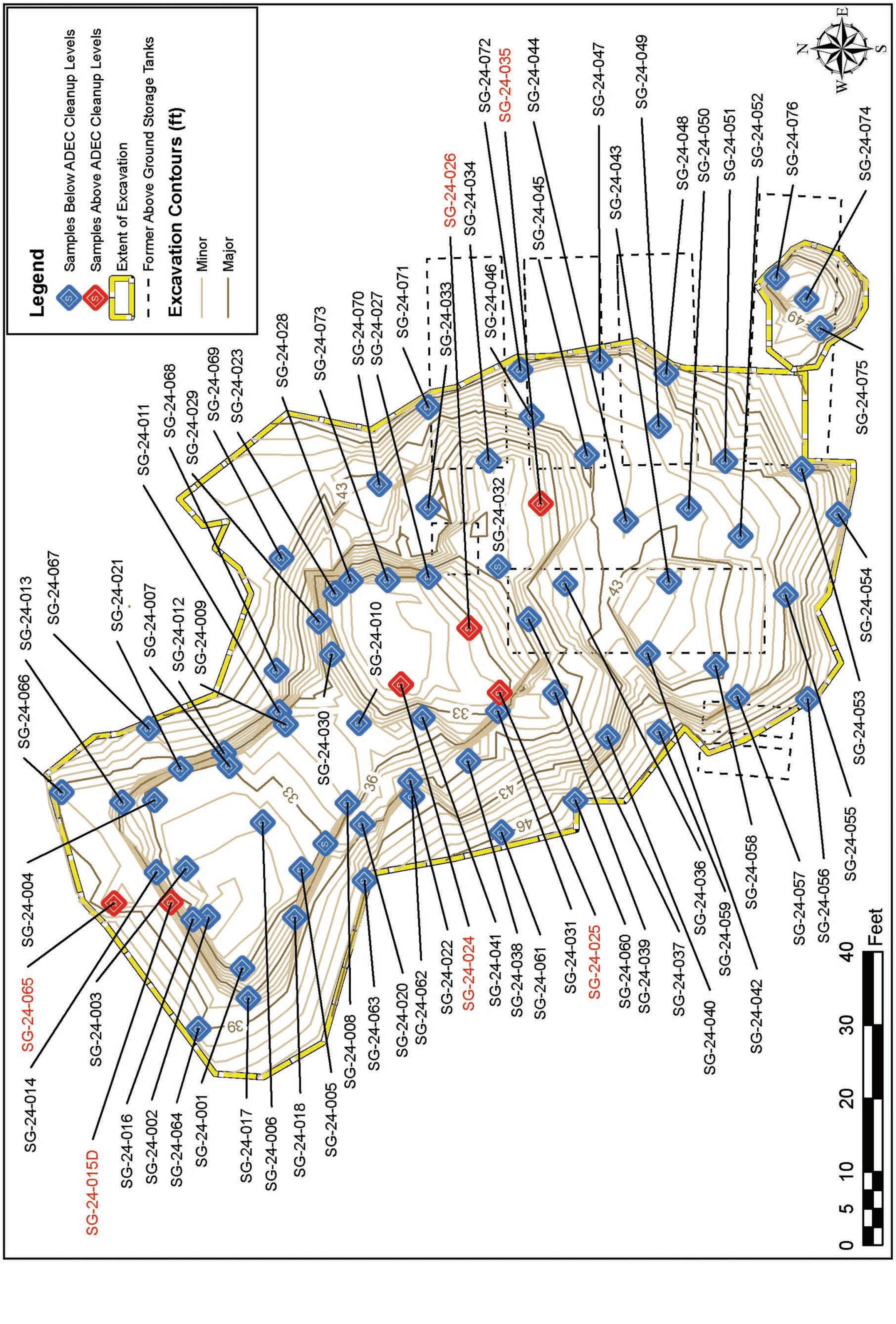


Figure
6

**Excavation and Sample Location Plan**
**Inactive Gas Tank Farm**
**TPA Site 24/Site 28**
**St. George Island, Alaska**

Source: Hart Crowser 1997 Expanded Site Inspection Volume 1; Polarconsult 2003 Final Corrective Action Report Inactive Gas Tank Farm, TPA Site 24 Remedial Corrective Action Project St. George Island, Alaska Volume 1

NOAA
Pribilof Islands Restoration Project

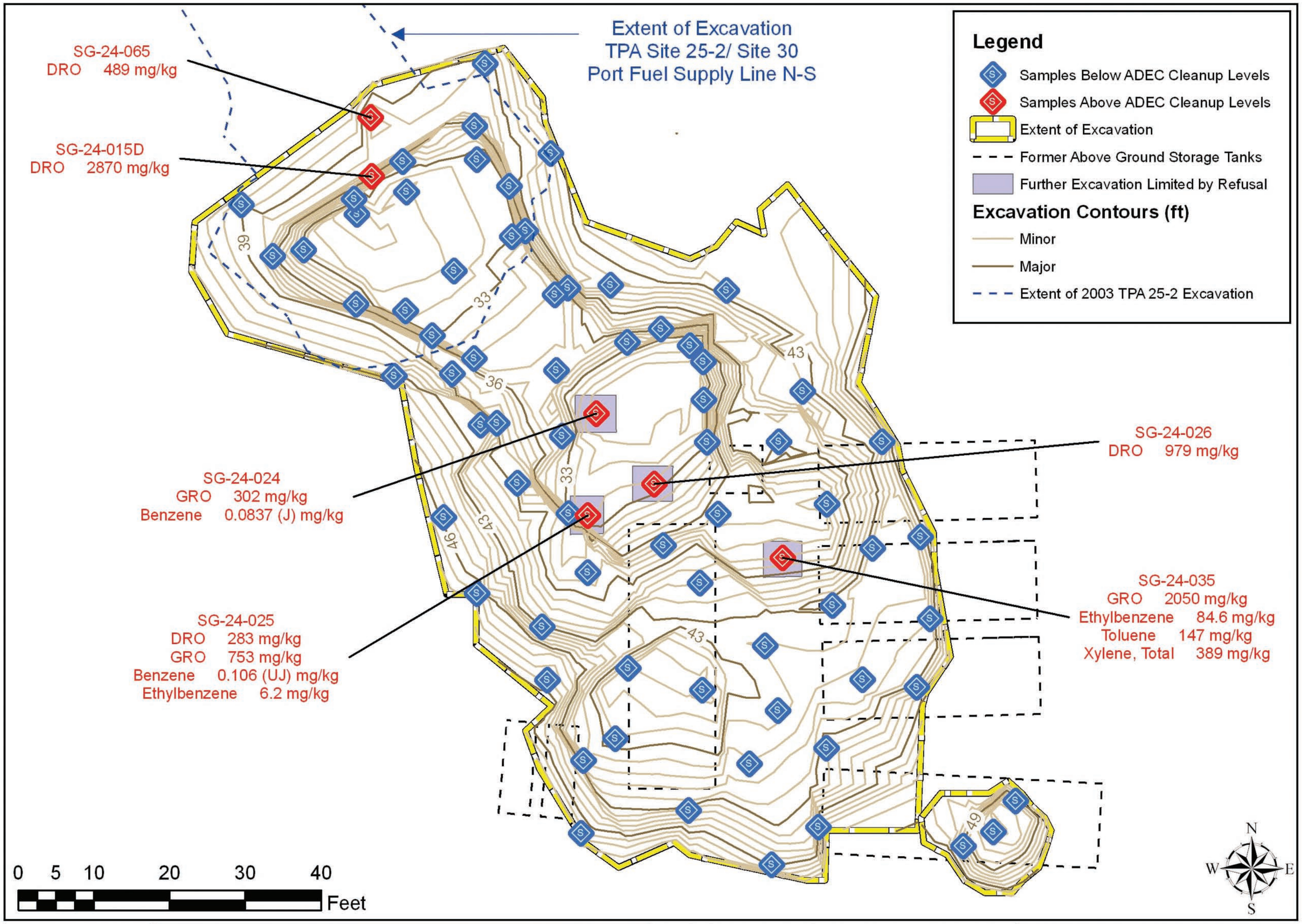


Figure 7

**Sample Exceedances and Excavation Plan**
**Inactive Gas Tank Farm**
**TPA Site 24/Site 28**
**St. George Island, Alaska**

Source: Hart Crowser 1997 Expanded Site Inspection Volume 1; Polarconsult 2003 Final Corrective Action Report Inactive Gas Tank Farm, TPA Site 24 Remedial Corrective Action Project St. George Island, Alaska Volume 1

Note: Lab Detection Flag "UJ" means the analytenot detected at the estimated reporting limit, and "J" means the result is an estimated concentration

NOAA Pribilof Islands Restoration Project

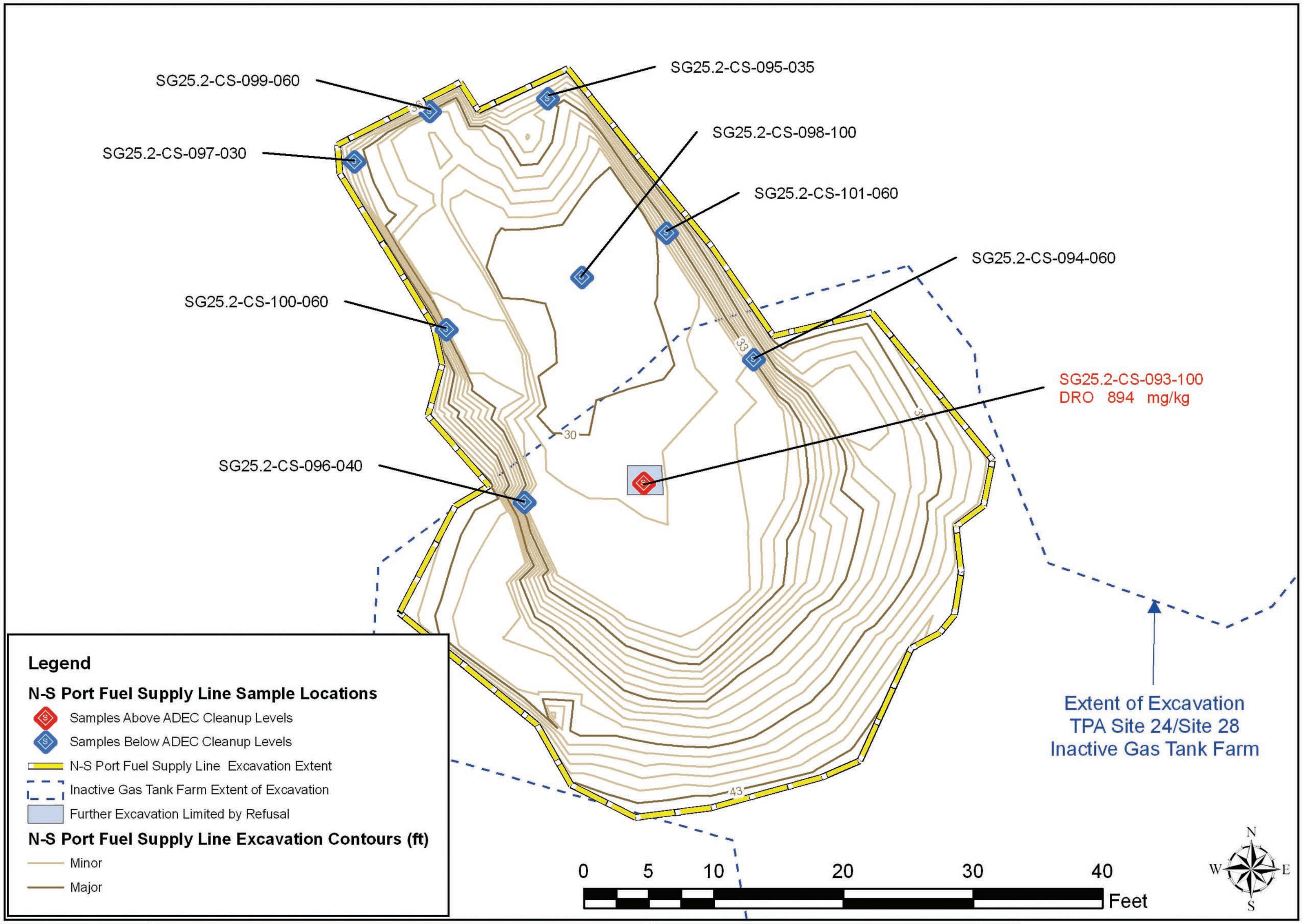


Figure 8

**Port Fuel Supply Line N-S Excavation Adjacent to Inactive Gas Tank Farm TPA Site 24/Site 28 St. George Island, Alaska**

Source: Final Corrective Action Report North-South Cargo Fuel Line, TPA Site 25-2 Remedial Corrective Action Project St. George Island, Alaska Volume 1 August 12, 2004

Note: Contours in Feet Above Mean Sea Level

NOAA Pribilof Islands Restoration Project

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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITES 24 and 25-2
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that property on the northeast edge of the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Lot 5 of the East Landing Subdivision**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 9.87" North Latitude, 169° 32' 30.21" West Longitude**

This property, hereafter referred to as the "Site" (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135436; File ID 2643.38.033 and Reckey #1994250135457; File ID 2643.38.034.

The Site was identified as *Site 24 Inactive Gas Tank Farm* and *Site 25-2 Port Fuel Supply Line North-South* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 24/NOAA Site 28 and TPA Site 25-2/NOAA Site 30. Following corrective action, NOAA submitted a request for conditional closure for these sites to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2004, NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that the Site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2004, NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2004, NOAA 2005a).

Grantor: U.S. Bureau of Land Management

Grantee: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

**Recording District:** Aleutian Islands

7

**Remedial Actions and Residual Contamination**

Gasoline was stored at TPA Site 24 in aboveground storage tanks (ASTs) from the late 1960s until 1993 (Hart Crowser 1995). Gasoline was transferred from Site 24 to island dispensing stations via the Port Fuel Supply Line North-South (TPA Site 25-2) which ran through the Site. The Port Fuel Supply Line North-South was also used for transferring diesel fuel from TPA Site 23 (Abandoned Diesel Tank Farm), which was located south and up-gradient of TPA Site 24. Environmental investigations performed in 1992 (E&E 1993) and 1996 (Hart Crowser 1997) found petroleum hydrocarbon contaminated soil at the Site. The contamination likely resulted from gasoline spills associated with operation of the ASTs, and supply pipeline leakage of both gasoline and diesel fuel. In 1997, the ASTs were removed from the Site (Polarconsult 1997). In 2002 and 2003, approximately 2,000 cubic yards of contaminated soil was removed from the Site (Polarconsult 2003, Polarconsult 2004). The excavations were backfilled with clean material. Contaminated soil was removed to the extent practicable; however, areas contaminated with diesel range organics (DRO), gasoline range organics (GRO), toluene, ethylbenzene and total xylenes remain at equipment refusal depths of between 9.5 and 16.2 feet below the ground surface (bgs). Attached are diagrams (Figures 3 and 4) drawn to scale that show the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2001, NOAA installed three groundwater monitoring wells at the Site. Groundwater samples collected from these wells from 2001 through 2004 had analytical results indicating all contaminants either non-detect or detected at concentrations below ADEC cleanup standards (Tetra Tech 2005). Based on a determination that groundwater in the vicinity of the Site had not been adversely impacted by petroleum hydrocarbon contamination, these monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b).

Site Use

In the event that information becomes available which indicates that the Site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the Site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the Site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska.* Contract No. DACA85-91-D-0003, Delivery Order No. 0027. Prepared for Alaska District, U.S. Army Corps of Engineers. February.

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Hart Crowser. 1997. *Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska.* January.

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NOAA. 2004. *Request for Conditional Closure, Inactive Gasoline Tank Farm, TPA Site 24/NOAA Site 28, St. George Island, Alaska*. Signed by John Lindsay (NOAA) and submitted with cover letter November 29, 2004. Signed by Louis Howard of ADEC Contaminated Sites Program, December 14, 2004.

NOAA. 2005a. *Request for Conditional Closure, North-South Cargo Fuel Line, TPA Site 25-2/NOAA Site 30, St. George Island, Alaska*. Signed by John Lindsay (NOAA) on May 2, 2005 and submitted with cover letter May 3, 2005. Signed by Louis Howard of ADEC Contaminated Sites Program, May 5, 2005.

NOAA. 2005b. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

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Polarconsult. 2004. *Corrective Action Report, North-South Cargo Fuel Line, TPA Site 25-2, Remedial Corrective Action Project, St. George Island, Alaska*. Final. August 12.

Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

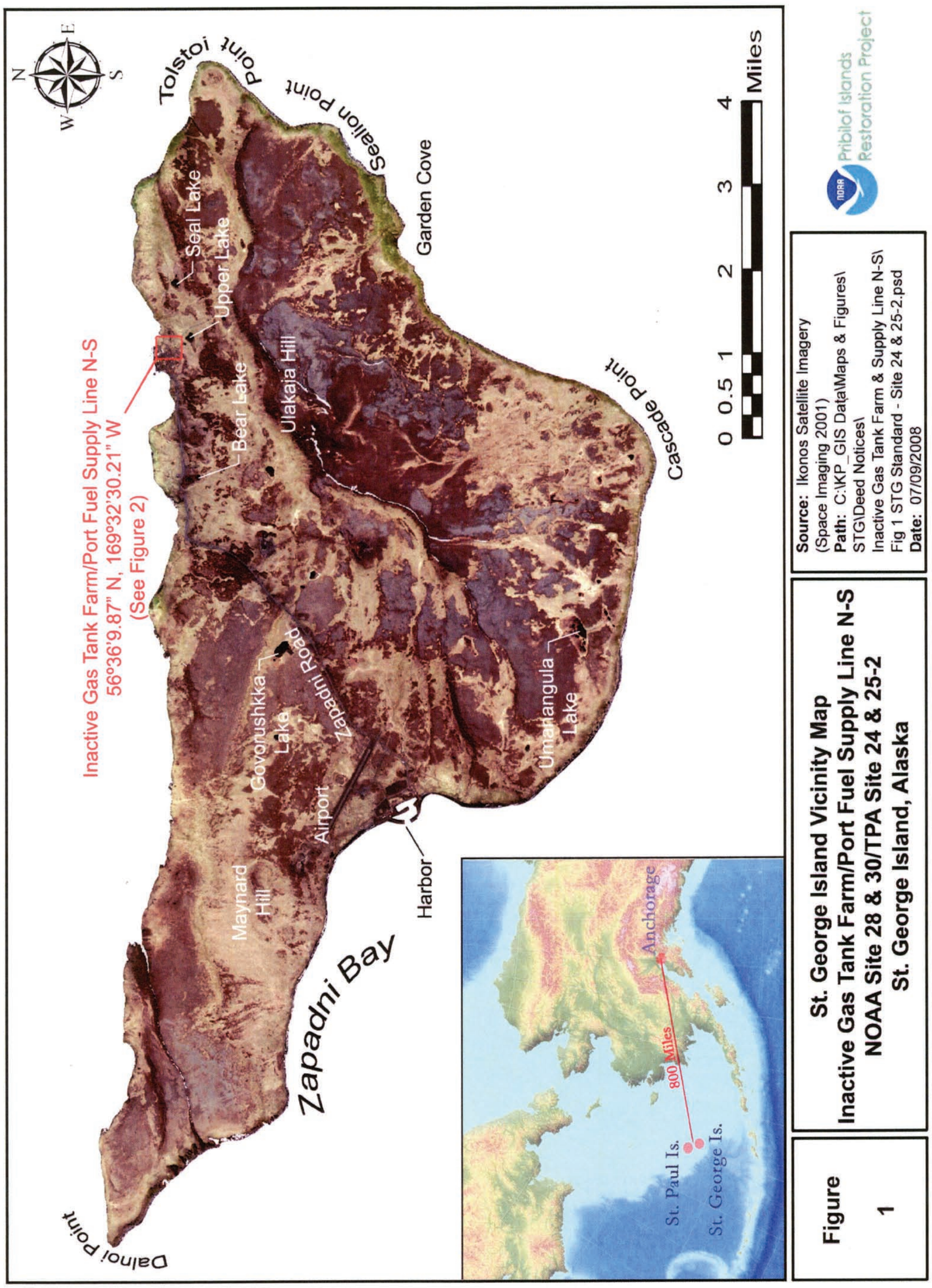
Signature: John A. Lindsay

Printed Name: John A. Lindsay

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 7
2008-000400-0

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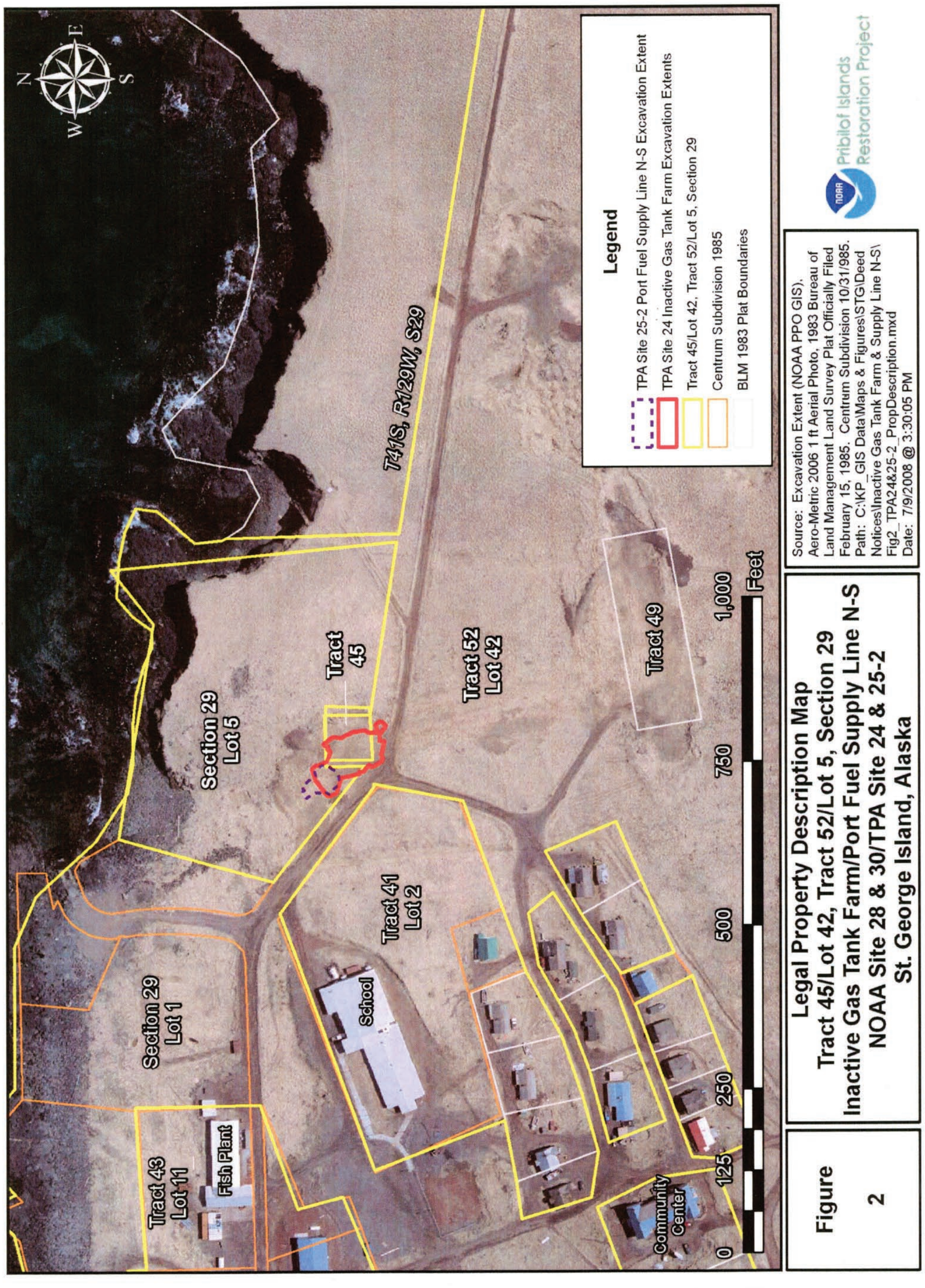


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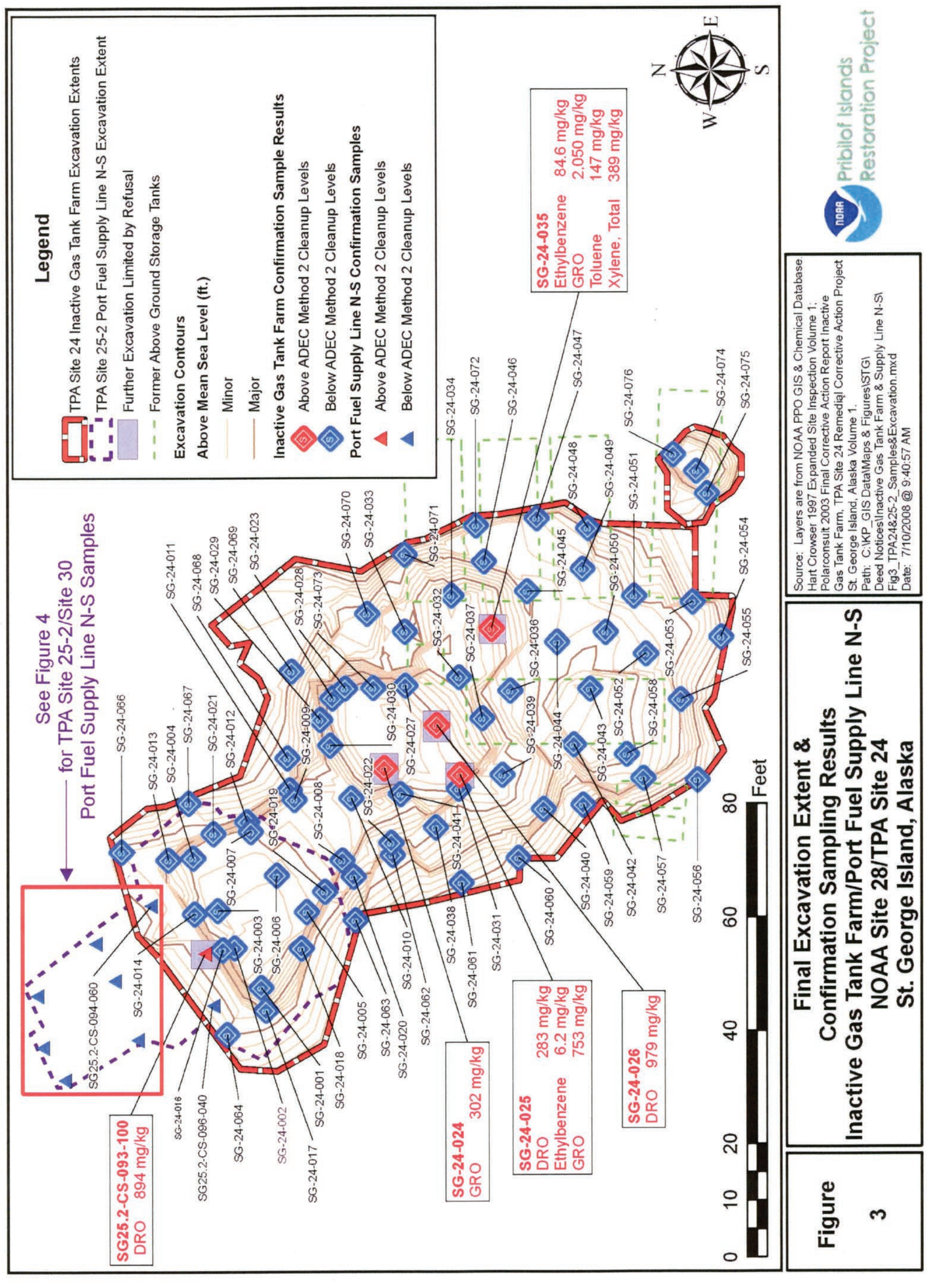


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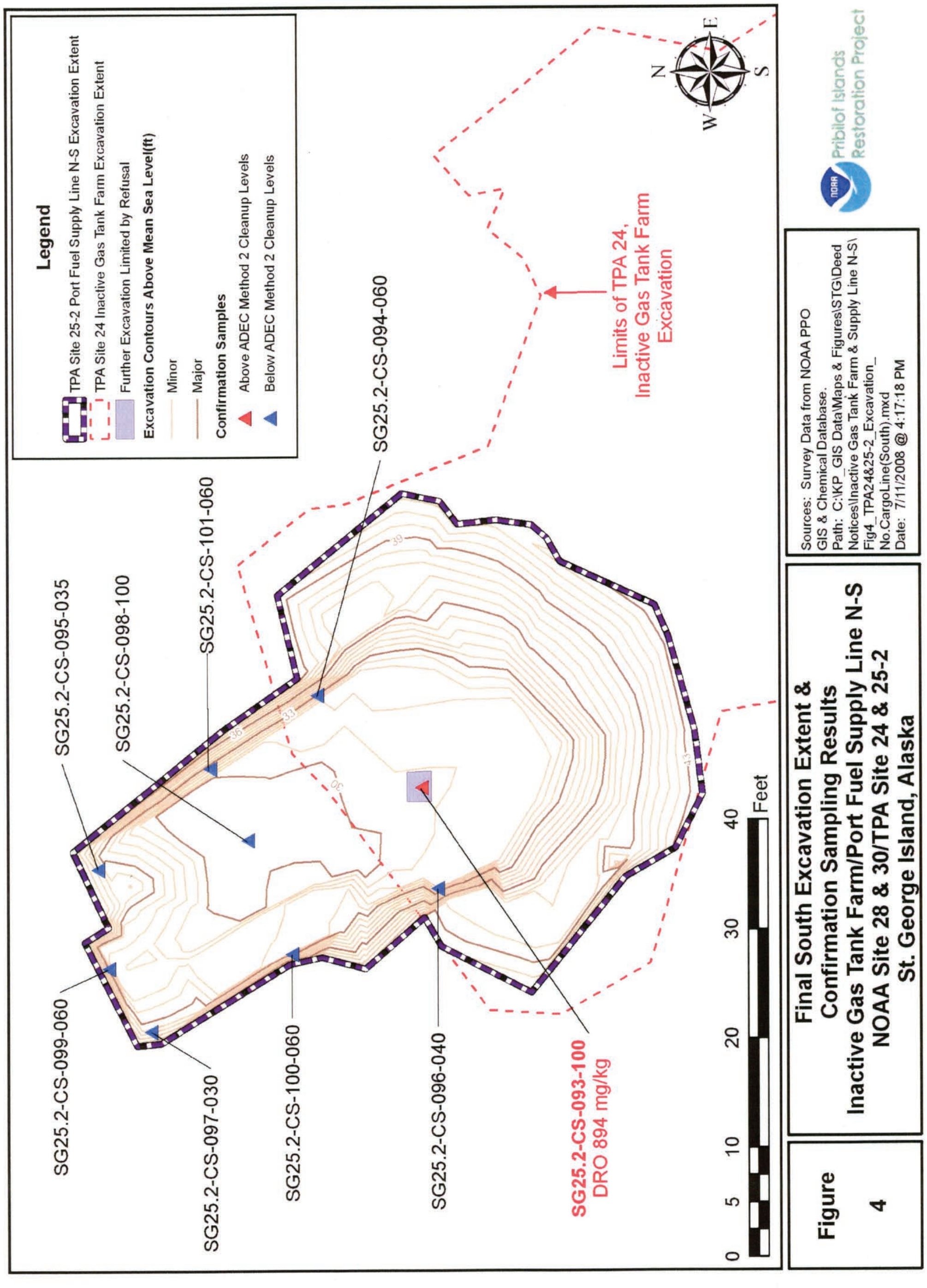


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A L A S K A

**2008-000398-0**

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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITES 24 and 25-2
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that property on the northeast edge of the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

> **Lot 42, Tract 52**
> **Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
> **56° 36' 9.87" North Latitude, 169° 32' 30.21" West Longitude**

This property, hereafter referred to as the "Site" (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135436; File ID 2643.38.033 and Reckey #1994250135457; File ID 2643.38.034.

The Site was identified as *Site 24 Inactive Gas Tank Farm* and *Site 25-2 Port Fuel Supply Line North-South* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 24/NOAA Site 28 and TPA Site 25-2/NOAA Site 30. Following corrective action, NOAA submitted a request for conditional closure for these sites to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2004, NOAA 2005a). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that the Site cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2004, NOAA 2005a). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2004, NOAA 2005a).

Grantor: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

Grantee: City of St. George
PO Box 929
St. George, AK 99591

**Recording District:** Aleutian Islands

7

## Remedial Actions and Residual Contamination

Gasoline was stored at TPA Site 24 in aboveground storage tanks (ASTs) from the late 1960s until 1993 (Hart Crowser 1995). Gasoline was transferred from Site 24 to island dispensing stations via the Port Fuel Supply Line North-South (TPA Site 25-2) which ran through the Site. The Port Fuel Supply Line North-South was also used for transferring diesel fuel from TPA Site 23 (Abandoned Diesel Tank Farm), which was located south and up-gradient of TPA Site 24. Environmental investigations performed in 1992 (E&E 1993) and 1996 (Hart Crowser 1997) found petroleum hydrocarbon contaminated soil at the Site. The contamination likely resulted from gasoline spills associated with operation of the ASTs, and supply pipeline leakage of both gasoline and diesel fuel. In 1997, the ASTs were removed from the Site (Polarconsult 1997). In 2002 and 2003, approximately 2,000 cubic yards of contaminated soil was removed from the Site (Polarconsult 2003, Polarconsult 2004). The excavations were backfilled with clean material. Contaminated soil was removed to the extent practicable; however, areas contaminated with diesel range organics (DRO), gasoline range organics (GRO), toluene, ethylbenzene and total xylenes remain at equipment refusal depths of between 9.5 and 16.2 feet below the ground surface (bgs). Attached are diagrams (Figures 3 and 4) drawn to scale that show the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

In 2001, NOAA installed three groundwater monitoring wells at the Site. Groundwater samples collected from these wells from 2001 through 2004 had analytical results indicating all contaminants either non-detect or detected at concentrations below ADEC cleanup standards (Tetra Tech 2005). Based on a determination that groundwater in the vicinity of the Site had not been adversely impacted by petroleum hydrocarbon contamination, these monitoring wells were decommissioned in 2005 and removed in 2006 in accordance with an ADEC approved long-term groundwater monitoring plan (NOAA 2005b).

### Site Use

In the event that information becomes available which indicates that the Site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil from the Site requires notification to and approval from the Department in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the Site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska.* Contract No. DACA85-91-D-0003, Delivery Order No. 0027. Prepared for Alaska District, U.S. Army Corps of Engineers. February.

Hart Crowser. 1995. *Final Management Plan, Expanded Site Investigations, St. George Island, Pribilof Islands, Alaska.* J-3933-39A. Prepared for the Seattle District, U.S. Army Corps of Engineers, on behalf of the National Oceanic and Atmospheric Administration. Contract No. DACA67-93-D-1004, Delivery Order No. 39. August 31.

Hart Crowser. 1997. *Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska.* January.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2004. *Request for Conditional Closure, Inactive Gasoline Tank Farm, TPA Site 24/NOAA Site 28, St. George Island, Alaska*. Signed by John Lindsay (NOAA) and submitted with cover letter November 29, 2004. Signed by Louis Howard of ADEC Contaminated Sites Program, December 14, 2004.

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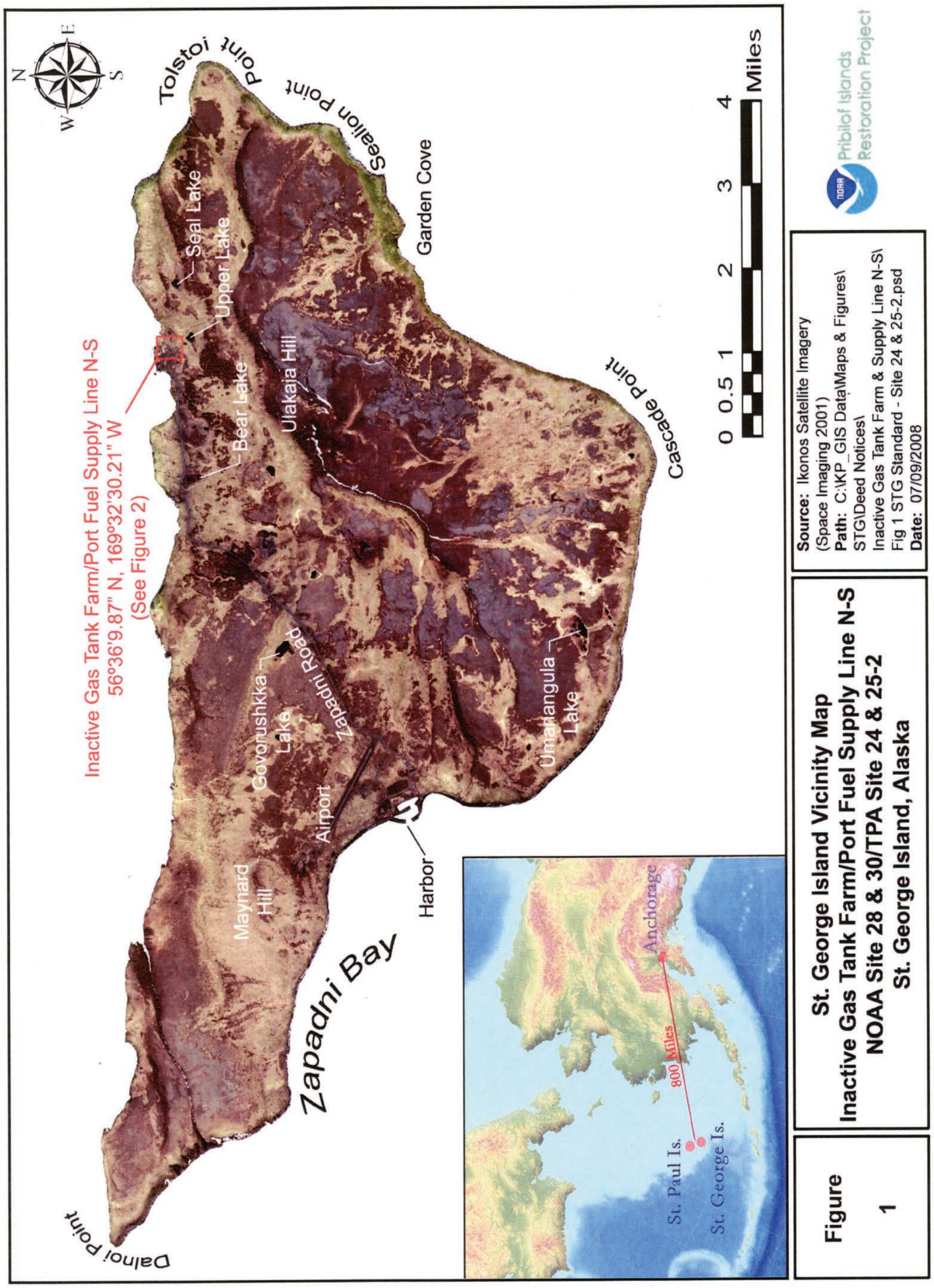
Please return original copy of this notice to the (operator) address below:

Signature: ______________________

Printed Name: John A. Lindsay

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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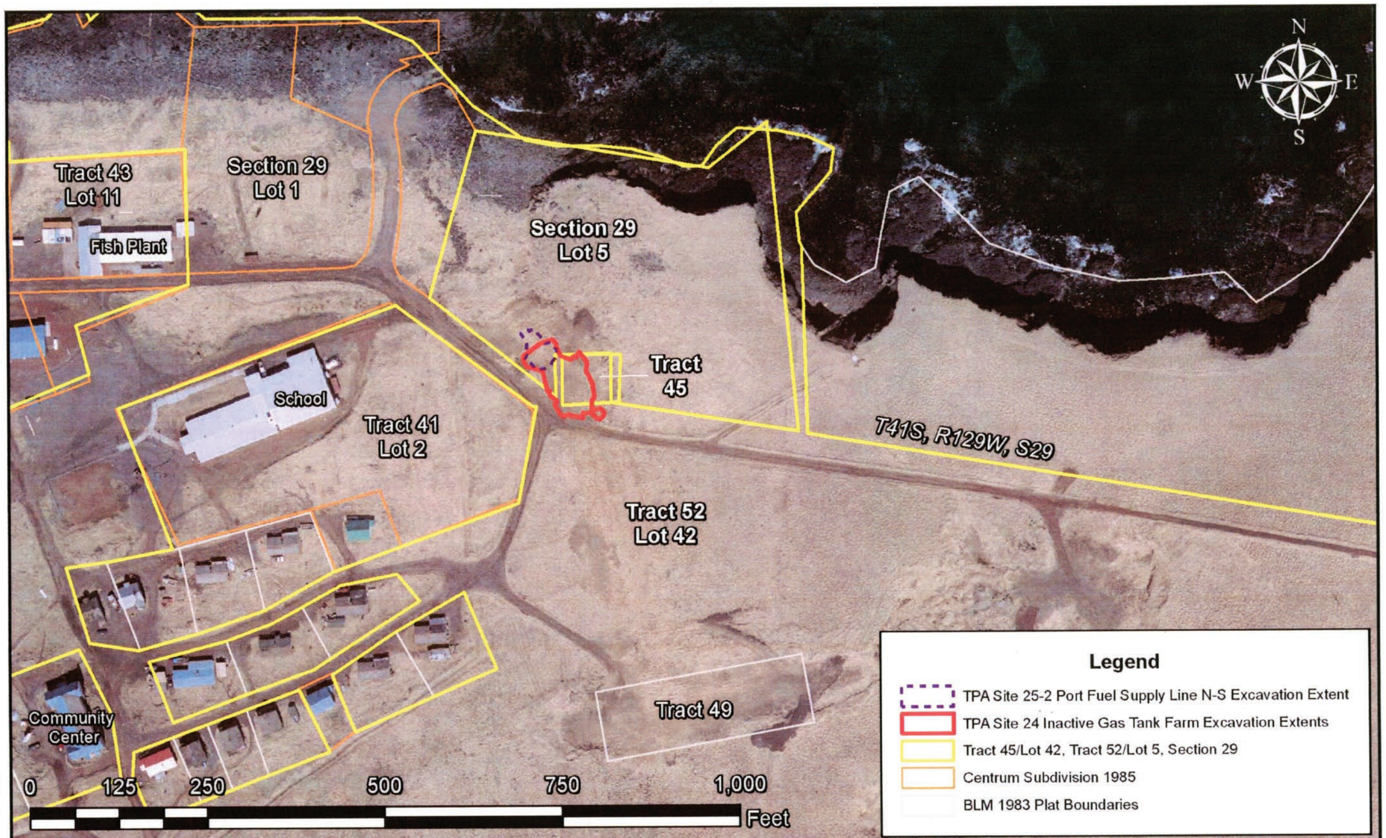


| Figure 2 | Legal Property Description Map<br>Tract 45/Lot 42, Tract 52/Lot 5, Section 29<br>Inactive Gas Tank Farm/Port Fuel Supply Line N-S<br>NOAA Site 28 & 30/TPA Site 24 & 25-2<br>St. George Island, Alaska | Source: Excavation Extent (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrem Subdivision 10/31/985.<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Inactive Gas Tank Farm & Supply Line N-S\Fig2_TPA24&25-2_PropDescription.mxd<br>Date: 7/9/2008 @ 3:30:05 PM |
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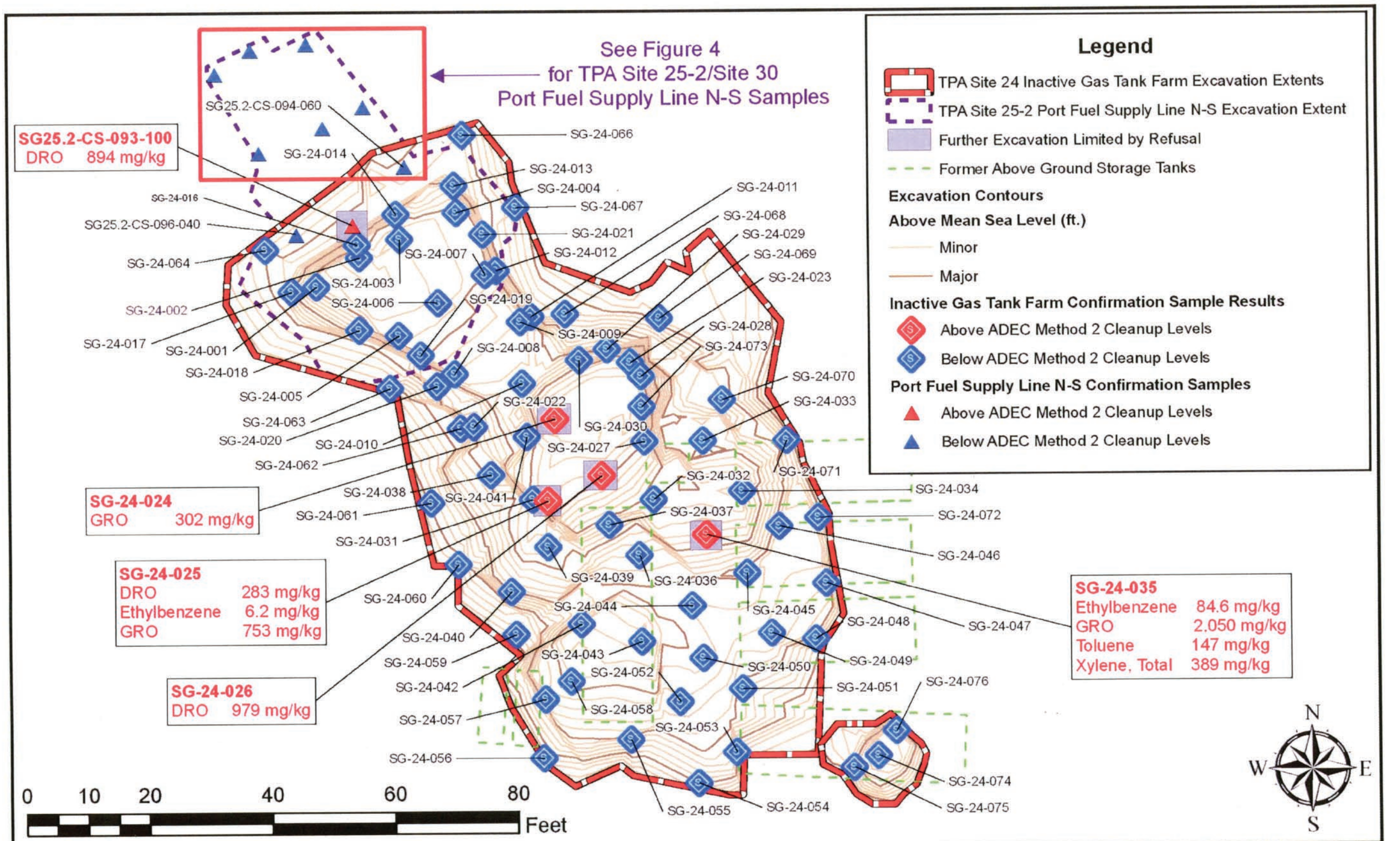


| Figure 3 | Final Excavation Extent & Confirmation Sampling Results Inactive Gas Tank Farm/Port Fuel Supply Line N-S NOAA Site 28/TPA Site 24 St. George Island, Alaska | Source: Layers are from NOAA PPO GIS & Chemical Database Hart Crowser 1997 Expanded Site Inspection Volume 1; Polarconsult 2003 Final Corrective Action Report Inactive Gas Tank Farm, TPA Site 24 Remedial Corrective Action Project St. George Island, Alaska Volume 1. Path: C:\KP_GIS Data\Maps & Figures\STG\ Deed Notices\Inactive Gas Tank Farm & Supply Line N-S\ Fig3_TPA24&25-2_Samples&Excavation.mxd Date: 7/10/2008 @ 9:40:57 AM |
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Pribilof Islands Restoration Project

6 of 7
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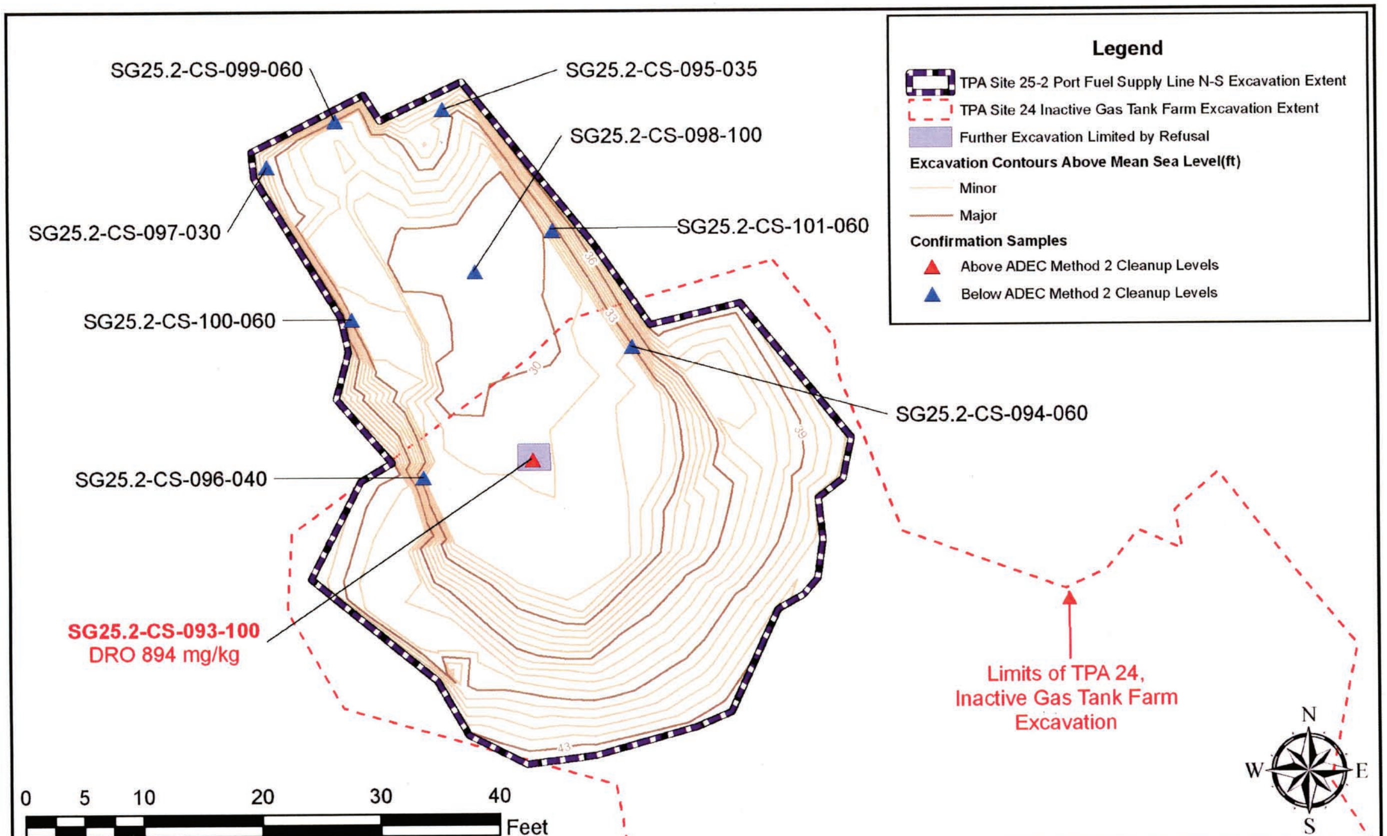


| Figure 4 | Final South Excavation Extent & Confirmation Sampling Results Inactive Gas Tank Farm/Port Fuel Supply Line N-S NOAA Site 28 & 30/TPA Site 24 & 25-2 St. George Island, Alaska | Sources: Survey Data from NOAA PPO GIS & Chemical Database. Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Inactive Gas Tank Farm & Supply Line N-S\ Fig4_TPA24&25-2_Excavation_ No.CargoLine(South).mxd Date: 7/11/2008 @ 4:17:18 PM |
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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITES 24 and 25-2
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the City of St. George as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that property on the northeast edge of the City of St. George, St George Island, Alaska 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Tract 45**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 9.87" North Latitude, 169° 32' 30.21" West Longitude**

This property, hereafter referred to as the "Site" (Figures 1 and 2), has been subject to petroleum contaminated soil from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135436; File ID 2643.38.033 and Reckey #1994250135457; File ID 2643.38.034.

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| | |
|---|---|
| Grantor: | St. George Tanaq Corporation<br>4141 B Street, Suite 301<br>Anchorage, AK 99503 |
| Grantee: | City of St. George<br>PO Box 929<br>St. George, AK 99591 |

**<u>Recording District:</u>** Aleutian Islands

7

**Remedial Actions and Residual Contamination**

Gasoline was stored at TPA Site 24 in aboveground storage tanks (ASTs) from the late 1960s until 1993 (Hart Crowser 1995). Gasoline was transferred from Site 24 to island dispensing stations via the Port Fuel Supply Line North-South (TPA Site 25-2) which ran through the Site. The Port Fuel Supply Line North-South was also used for transferring diesel fuel from TPA Site 23 (Abandoned Diesel Tank Farm), which was located south and up-gradient of TPA Site 24. Environmental investigations performed in 1992 (E&E 1993) and 1996 (Hart Crowser 1997) found petroleum hydrocarbon contaminated soil at the Site. The contamination likely resulted from gasoline spills associated with operation of the ASTs, and supply pipeline leakage of both gasoline and diesel fuel. In 1997, the ASTs were removed from the Site (Polarconsult 1997). In 2002 and 2003, approximately 2,000 cubic yards of contaminated soil was removed from the Site (Polarconsult 2003, Polarconsult 2004). The excavations were backfilled with clean material. Contaminated soil was removed to the extent practicable; however, areas contaminated with diesel range organics (DRO), gasoline range organics (GRO), toluene, ethylbenzene and total xylenes remain at equipment refusal depths of between 9.5 and 16.2 feet below the ground surface (bgs). Attached are diagrams (Figures 3 and 4) drawn to scale that show the area that was cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

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Site Use

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Hart Crowser. 1995. *Final Management Plan, Expanded Site Investigations, St. George Island, Pribilof Islands, Alaska.* J-3933-39A. Prepared for the Seattle District, U.S. Army Corps of Engineers, on behalf of the National Oceanic and Atmospheric Administration. Contract No. DACA67-93-D-1004, Delivery Order No. 39. August 31.

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Please return original copy of this notice to the (operator) address below:

Signature: [signature]

Printed Name: John A. Lindsay

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

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2008-000399-0

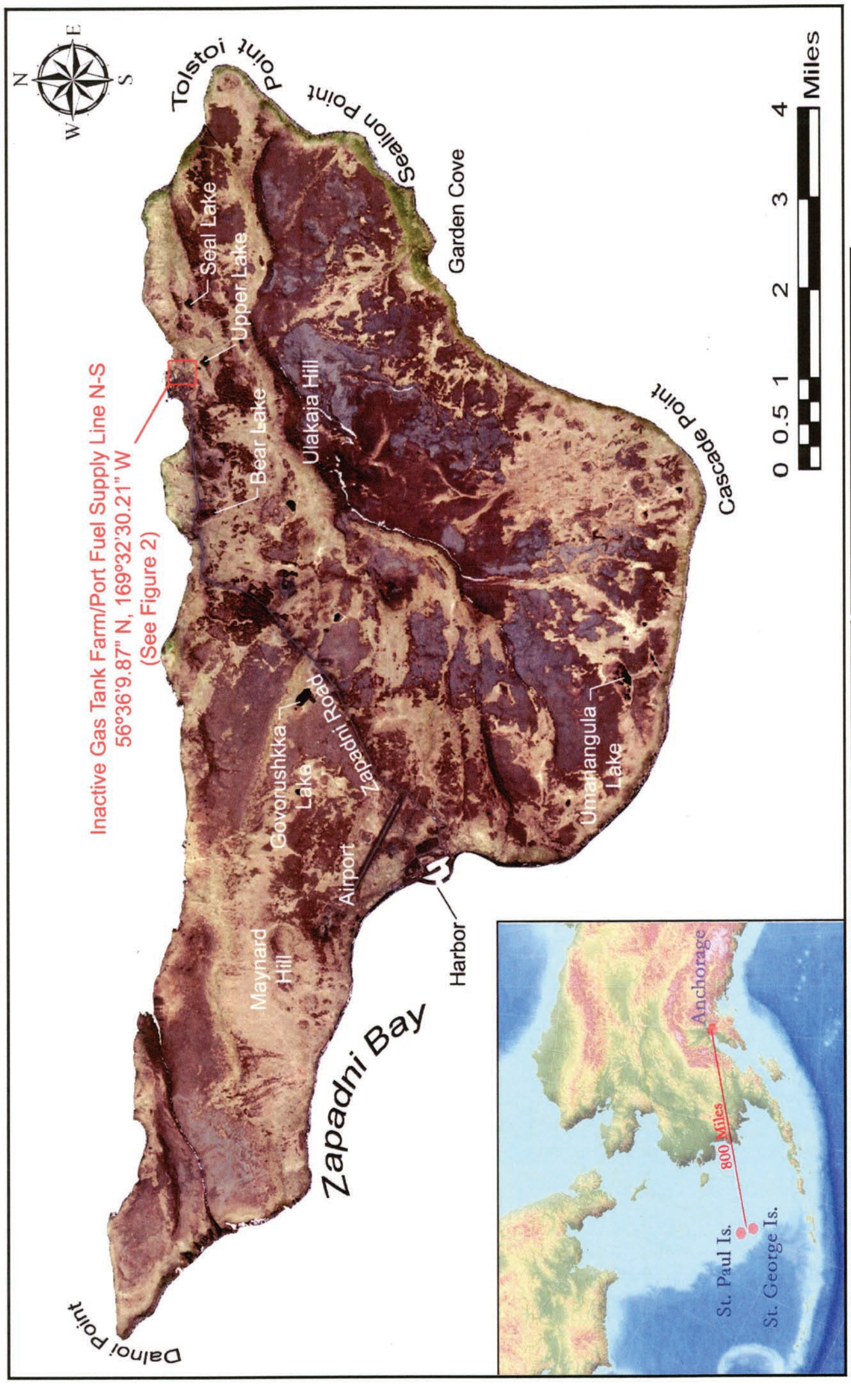


**Figure 1**

**St. George Island Vicinity Map**
**Inactive Gas Tank Farm/Port Fuel Supply Line N-S**
**NOAA Site 28 & 30/TPA Site 24 & 25-2**
**St. George Island, Alaska**

**Source:** Ikonos Satellite Imagery (Space Imaging 2001)
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Pribilof Islands Restoration Project

4 of 7
2008-000399-0

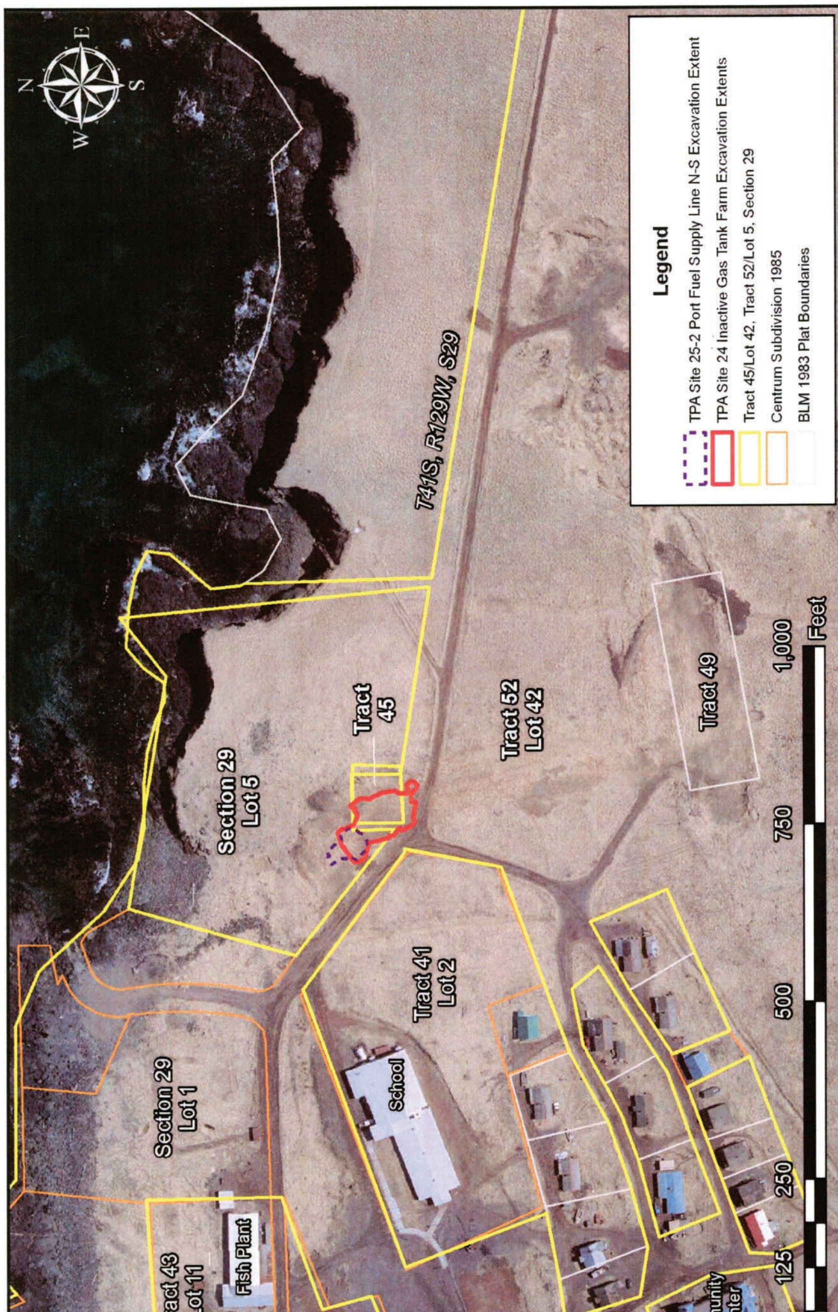


Figure 2

Legal Property Description Map
Tract 45/Lot 42, Tract 52/Lot 5, Section 29
Inactive Gas Tank Farm/Port Fuel Supply Line N-S
NOAA Site 28 & 30/TPA Site 24 & 25-2
St. George Island, Alaska

Source: Excavation Extent (NOAA PPO GIS).
Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrum Subdivision 10/31/1985.
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NOAA Pribilof Islands Restoration Project

5 of 7
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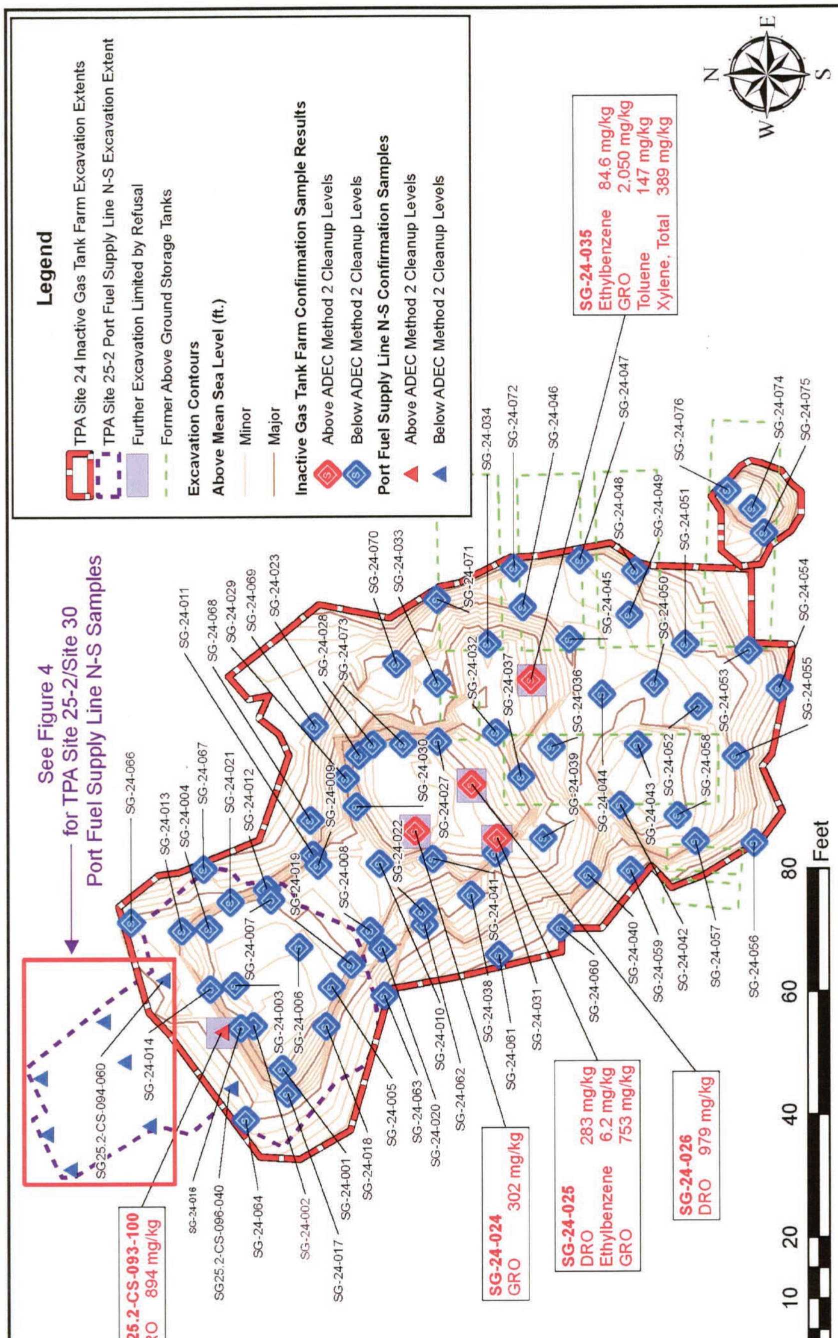


| Figure 3 | Final Excavation Extent & Confirmation Sampling Results<br>Inactive Gas Tank Farm/Port Fuel Supply Line N-S<br>NOAA Site 28/TPA Site 24<br>St. George Island, Alaska | Source: Layers are from NOAA PPO GIS & Chemical Database. Hart Crowser 1997 Expanded Site Inspection Volume 1; Polarconsult 2003 Final Corrective Action Report Inactive Gas Tank Farm, TPA Site 24 Remedial Corrective Action Project St. George Island, Alaska Volume 1.<br>Path: C:\KP_GIS Data\Maps & Figures\STG\ Deed Notices\Inactive Gas Tank Farm & Supply Line N-S\ Fig3_TPA24&25-2_Samples&Excavation.mxd<br>Date: 7/10/2008 @ 9:40:57 AM |
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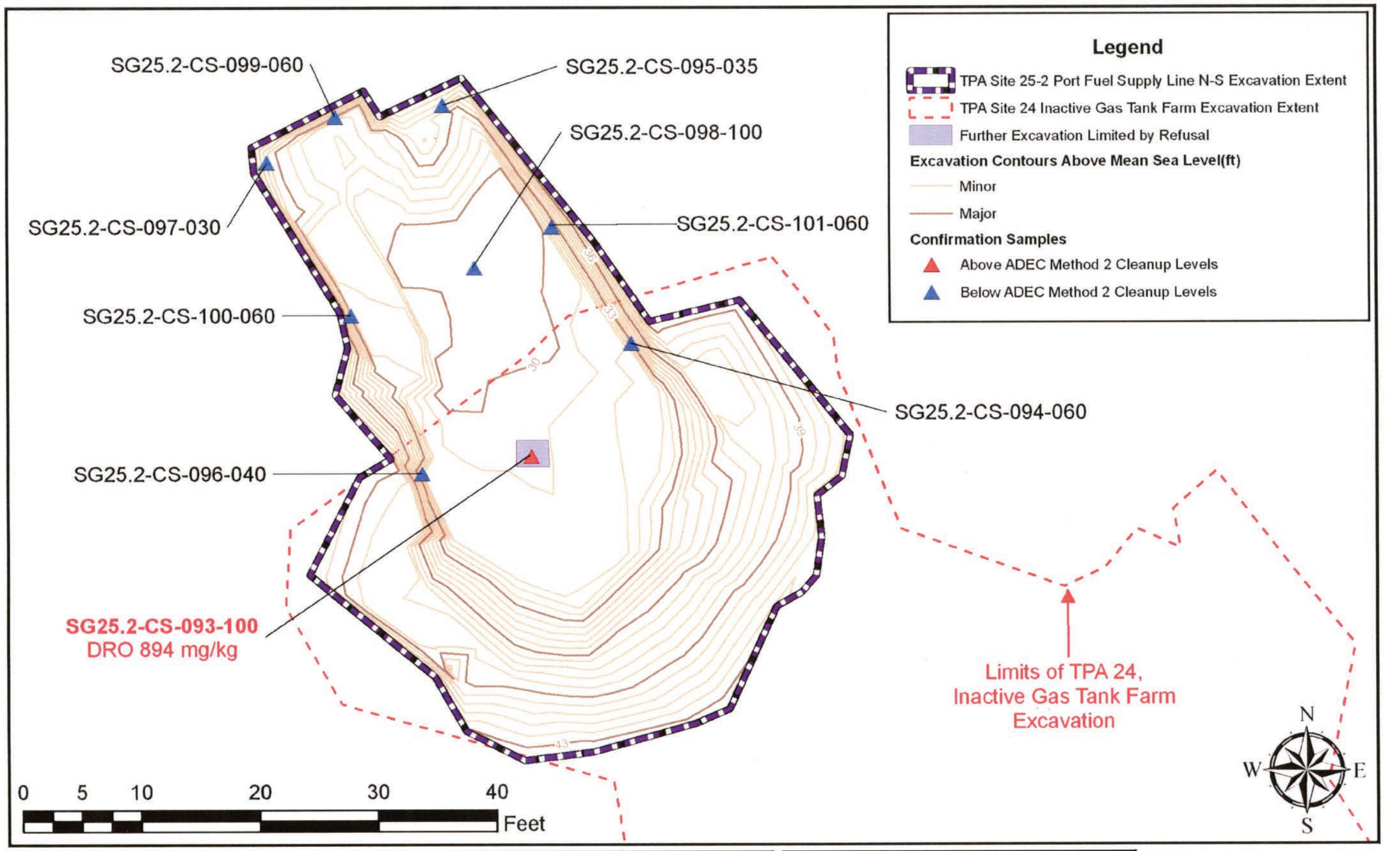
Pribilof Islands Restoration Project

6 of 7
2008-000399-0




| Figure 4 | Final South Excavation Extent & Confirmation Sampling Results<br>Inactive Gas Tank Farm/Port Fuel Supply Line N-S<br>NOAA Site 28 & 30/TPA Site 24 & 25-2<br>St. George Island, Alaska | Sources: Survey Data from NOAA PPO GIS & Chemical Database.<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Inactive Gas Tank Farm & Supply Line N-S\Fig4_TPA24&25-2_Excavation_No.CargoLine(South).mxd<br>Date: 7/11/2008 @ 4:17:18 PM |
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Pribilof Islands Restoration Project

7 of 7
2008-000399-0

# NOAA Site 29
# TPA Site 25-1: Port Fuel Supply Line East-West

Corrective Action Report/Conditional Closure Request, NOAA Site 29/ Two Party Agreement Site 25-1, Port Fuel Supply Line East-West, St. George Island, Alaska ........ 665

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 25-1, St. George Island, Alaska (Lot 1 of the East Landing Subdivision) ........ 723

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 25-1, St. George Island, Alaska (Lot 2 of the East Landing Subdivision) ........ 731

Notice of Environmental Cleanup and Residual Soil Contamination at Two Party Agreement Sites 25-1, St. George Island, Alaska (Lot 11, Tract 43) ........ 739

# Corrective Action Report/Conditional Closure Request
# NOAA Site 29/Two Party Agreement Site 25-1
# Port Fuel Supply Line East-West
# St. George Island, Alaska

November 20, 2007

Prepared By:

National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
7600 Sand Point Way NE
Seattle, Washington 98115

## CONTENTS

ACRONYMS AND ABBREVIATIONS ....669
EXECUTIVE SUMMARY ....670
1.0 INTRODUCTION ....670
2.0 SITE BACKGROUND ....671
2.1 OWNERSHIP ....671
2.2 PROPERTY DESCRIPTION ....671
2.3 HISTORY ....671
Site 29 East ....671
Site 29 West ....672
2.4 GEOLOGY ....672
2.5 HYDROGEOLOGY ....672
2.6 ENVIRONMENTAL HISTORY ....673
Petroleum-Contaminated Soil Investigations and Actions ....673
Groundwater Investigations ....675
3.0 REMOVAL METHODOLOGY ....678
3.1 SITE 29 WEST ....678
3.2 SITE 29 EAST ....678
4.0 FIELD ACTIVITIES ....680
4.1 CONTRACTORS AND EQUIPMENT ....680
4.2 PCS EXCAVATION ....680
4.3 INVESTIGATION-DERIVED WASTE MANAGEMENT ....682
4.4 SITE SURVEYING ....682
5.0 SAMPLING METHODS ....682
5.1 PID HEAD-SPACE ANALYIS ....682
5.2 CONFIRMATION SAMPLES ....683
5.3 PCS CHARACTERIZATION ....683
5.4 BACKFILL CHARACTERIZATION ....683
6.0 ANALYTICAL RESULTS ....684
6.1 EXCAVATION CONFIRMATION SAMPLES ....684
6.2 EXCAVATED PCS CHARACTERIZATION SAMPLES ....685
6.3 BACKFILL CHARACTERIZATION SAMPLES ....686
7.0 QUALITY ASSURANCE AND QUALITY CONTROL ....686
7.1 FIELD PROCEDURES ....686
Qualified Samplers ....686
Sample Control Procedures ....686
Documentation ....686
7.2 ANALYTICAL PROCEDURES ....687
Trip Blanks ....687
Equipment Rinsate Blanks ....687

Field Duplicate Samples ....................................................................................................687
Matrix Spike and Matrix Spike Duplicates ..........................................................................687
Laboratory Quality Assurance and Quality Control ..............................................................688
7.3 DATA QUALITY OBJECTIVES AND RESULTS ................................................................688
Data Precision ....................................................................................................688
Data Accuracy ....................................................................................................689
Data Representativeness ....................................................................................................690
Data Completeness ....................................................................................................690
Comparability ....................................................................................................690
8.0 CONCEPTUAL SITE MODEL ....................................................................................................690
8.1 SOURCES OF CONTAMINATION AND RELEASE MECHANISMS ....................................690
8.2 IMPACTED MEDIA ....................................................................................................690
8.3 MIGRATION PATHWAYS ....................................................................................................690
8.4 EXPOSURE ROUTES ....................................................................................................691
8.5 POTENTIAL RECEPTORS ....................................................................................................691
8.6 CUMULATIVE RISK ASSESSMENT ....................................................................................................691
9.0 CONCLUSIONS AND RECOMMENDATIONS ....................................................................................................692
9.1 CONCLUSIONS ....................................................................................................692
9.2 RECOMMENDATION ....................................................................................................693
10.0 REFERENCES ....................................................................................................694

## TABLES

Table
2-1 Contaminant Fate and Transport Model Parameters
2-2 Plume Monitoring Well Results
3-1 ADEC Method Two Cleanup Levels for Soil at Site 29
6-1 Analytical Results for Confirmation Samples
6-2 Analytical Results for PCS Characterization Samples
6-3 Analytical Results for Backfill Characterization Samples
7-1 Sample ID Correlation to Work Order Numbers
7-2 Field Sample Precision Results
8-1 Cumulative Risk Determination

## FIGURES

Figure
1 St. George Island and Vicinity Map
2 Legal Property Description Map
3 Oceanfront Sites Historical Overview
4 City of St. George Groundwater Contours and Flow Direction
5 Investigation Sample Locations, NOAA Site 29 West
6 Investigation Sample Locations, NOAA Site 29 East
7 Corrective Action Plan (CAP) Estimated Excavation Extents
8 Transportation Route for Petroleum-Contaminated Soil Removal
9 Archaeological Investigation Trenches
10 Monitoring Wells
11 2006 and 2007 Excavation Extents, NOAA Site 29 East
12 2006 and 2007 Confirmation Sample Locations, NOAA Site 29 East

## APPENDICES

A Photographic Documentation
B Contractor's Quality Control Reports
C Contractor's Field Logs
D Analytical Data

## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AAC | Alaska Administrative Code |
| ADEC | Alaska Department of Environmental Conservation |
| AST | Aboveground storage tank |
| ATV | All-terrain vehicle |
| bgs | Below ground surface |
| BTEX | Benzene, toluene, ethylbenzene, and total xylene |
| City | City of St. George Island |
| cm | Centimeter |
| CQC | Contractor quality control |
| CSM | Conceptual site model |
| DGPS | Digital global positioning system |
| DQO | Data quality objective |
| DRO | Diesel range organics |
| EA | Environmental assessment |
| EPA | US Environmental Protection Agency |
| ft | Feet |
| $ft^2$ | Square feet |
| GIS | Geographic information system |
| GPS | Global positioning system |
| GRO | Gasoline range organics |
| HASP | Master Health and Safety Plan |
| HAZWOPER | Hazardous waster operations and emergency response |
| HI | Health index |
| HVO | Halogenated volatile organics |
| Lbs | Pounds |
| LCS | Laboratory control sample |
| LCSD | Laboratory control sample duplicate |
| LEL | Lower explosive limit |
| mg/kg | Milligrams per kilogram |
| mg/L | Milligrams per liter |
| MSL | Mean sea level |
| MS | Matrix spike |
| MSD | Matrix spike duplicate |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| OSHA | Occupational Safety and Health Administration |
| PAH | Polynuclear aromatic hydrocarbon |
| PCB | Polychlorinated biphenyls |
| PCE | Perchloroethylene |
| PCS | Petroleum-contaminated soil |
| PEL | Permissible exposure limit |
| PID | Photoionization detector |
| PQL | Practical quantitation limit |
| QA/QC | Quality assurance and quality control |
| QAP | Master Quality Assurance Plan |
| RPD | Relative percent difference |
| RRO | Residual range organics |
| Tanaq | St. George Tanaq Corporation |
| TDS | Total dissolved solids |
| TLC | Thin-layer chromatography |
| TPA | Two-Party Agreement |
| TPH | Total petroleum hydrocarbons |
| TSP | Trisodium phosphate |
| TWA | Time-weighted average |
| UST | Underground storage tank |
| VOC | Volatile organic compounds |
| $yd^3$ | Cubic yards |

## EXECUTIVE SUMMARY

This report describes the cleanup of the St. George Island Port Fuel Supply Line East-West, designated National Oceanic and Atmospheric (NOAA) Site 29/Two Party Agreement Site 25-1. NOAA Site 29 encompasses areas traversed by pipelines that were used to transfer gasoline and diesel fuel between barges, tank and drum depots, and a fuel dispensing station. Site 29 is divided into two areas, Site 29 East and Site 29 West. Two 2-inch diameter lines and one 4-inch diameter line were located aboveground in Site 29 East. One 4-inch diameter line was installed underground in Site 29 West. The 4-inch diameter lines were operated from the 1950s to the 1970s; the 2-inch diameter lines were operated from the 1970s to the early 1990s.

Environmental investigations found two areas within Site 29 East where soil was contaminated by diesel fuel in concentrations above the applicable cleanup standard. NOAA excavated a total of 2,260 cubic yards of petroleum-contaminated soil from the two locations during the fall of 2006 and spring of 2007. Soil with contaminant concentrations above applicable cleanup standards was removed to the extent practicable; however, excavation efforts were constrained to the north by the Bering Sea and excavation depth was limited by bed rock encountered at approximately eleven feet below the ground surface. The excavated soil was stockpiled at the City of St. George's new landfill for use as municipal waste day-cover and also was landspread as cover material at the City's closed landfill. The excavations were backfilled with clean material after collection of cleanup confirmation samples.

Environmental investigations found no soil contamination associated with the buried pipeline in Site 29 West; however, two sample locations in the vicinity of the site returned analytical results indicating diesel fuel contamination. These particular sample locations were chosen during a 1994 investigation based on observed spills that likely occurred/were occurring after the 1984 transfer of property from the federal government to the City of St. George. The contaminated "hot spots' are located in or adjacent to an access road, in an area known to be traversed by underground power and sewer lines. The City of St. George is not able to verify the locations of these lines. Any excavation attempt would require leaving soil in place to prevent undermining or damaging the utilities, if located. The potential benefit to be derived from removing these hot spots is limited, and when compared to the risk of damaging the utilities, it is evident that it is not practicable to excavate these areas. No action was taken for Site 29 West.

This report proposes that NOAA has completed all appropriate actions related to the cleanup of NOAA Site 29, and includes a request for a conditional closure determination.

## 1.0 INTRODUCTION

The U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) is responsible for characterization and restoration of specific sites on St. George Island, Alaska under Public Law 104-91 of 1996 and Public Law 106-562 of 2000. A Two-Party Agreement (TPA), signed in 1996 by NOAA and the State of Alaska, provides the framework for corrective action on St. George Island (NOAA 1996). The State of Alaska provides TPA oversight through the Alaska Department of Environmental Conservation (ADEC).

Under the TPA, NOAA is required to comply with State of Alaska regulations that were in effect in 1991:

1) The interim soil guidance for non-underground storage tank (UST) soil cleanup levels, dated July 17, 1991 (ADEC 1991);

2) The guidance for storage, remediation and disposal of non-UST petroleum-contaminated soils (PCS), dated July 29, 1991;

3) For water, the applicable water standards set out in 18 Alaska Administrative Code (AAC) 70; the applicable state and federal regulatory requirements for maximum contaminant levels for drinking water; and the interim guidance for surface and groundwater cleanups, dated September 26, 1990; and

4) For releases from regulated underground storage tank systems, 18 AAC 78.

With ADEC agreement, however, NOAA has chosen to follow more current regulations whenever practicable.

The Port Fuel Supply Line East-West (NOAA Site 29/TPA Site 25-1) encompasses areas that were traversed by fuel pipelines and is divided into two sites, Site 29 East and Site 29 West (Figure 3). Environmental investigations found two areas within Site 29 East where the soil was contaminated with diesel fuel due to leakage from pipe connections. No contamination due to pipeline leakage was found in Site 29 West; however, two "hot spots" in the vicinity of Site 29 West were found to have been contaminated by diesel fuel from surface spills.

Groundwater is known to be contaminated in the vicinity of Sites 29 East and 29 West due to significant fuel spills associated with historical operations at NOAA Site 1 – Former Diesel Tank Farm, NOAA Site 2 – Former Drum Storage Area, and NOAA Site 3 – Inactive Gas Station (Figure 3). NOAA Sites 1, 2 and 3 are adjacent to and were served by the Site 29 East and West pipelines. Corrective actions for NOAA Sites 1, 2, and 3 are addressed in separate reports (NOAA 2005a, NOAA 2007a). This report addresses corrective actions taken at Site 29.

# 2.0 SITE BACKGROUND

## 2.1 OWNERSHIP

The City of St. George (the City) is the current owner of NOAA Site 29, having received the property from the federal government under a transfer of property agreement (NOAA 1984).

## 2.2 PROPERTY DESCRIPTION

NOAA Site 29 is located within Tracts 43 and 52, Section 29, Township 41 south, Range 129 west of the Seward Meridian, Alaska, as shown on the Bureau of Land Management, File/Record No. ak2804100s12900w001, February 15, 1985, sheet 1 of 4 (Figures 1 and 2). Site 29 East is centered on coordinates latitude 56º 36’ 13.25” north and longitude 169º 32’ 40.02” west; Site 29 West is centered on coordinates latitude 56º 36’ 12.76” north and longitude 169º 32’ 50.93” west.

## 2.3 HISTORY

Site 29 encompasses areas traversed by pipelines that were used to transfer gasoline and diesel fuel between fuel barges, tank and drum depots, and a fuel dispensing station. Site 29 is divided into two areas, Site 29 East and Site 29 West (Figure 3). Documentation of the construction and operation of the Site 29 pipelines has not been found; however, the following information about the pipelines can be deduced from environmental investigation reports (E & E 1993; Hart Crowser 1997; Polarconsult 1997a; Polarconsult 1997b; Woodward-Clyde 1995).

**Site 29 East**

Three steel pipelines were located within Site 29 East; two 2-inch diameter lines raised above the ground on concrete pillars for most of their length, and one 4-inch diameter line that ran on the ground parallel to and approximately 15 feet south of the raised piping. All three lines were constructed from 21-foot pipe sections with threaded couplings, and were approximately 450 feet long when inspected in 1996 by Hart Crowser, an environmental consultant working under NOAA contract (Hart Crowser 1997). All three lines were removed in 1996 (Polarconsult 1997a).

The 4-inch diameter line was installed in the 1950s to transfer diesel fuel from the east boat launch area to the Former Diesel Tank Farm - NOAA Site 1 which was put into operation during that time period (E & E 1993). Hart Crowser noted that this line went underground at the east side of the Former Drum Storage Area - NOAA Site 2 retaining wall, presumably to traverse this area to reach the tank farm which was located west of the drum storage area (Figure 3). The diesel tank farm was taken out of service in the 1970s (E & E 1993), which is likely when use of this pipe ceased.

The two raised 2-inch diameter lines were installed in the 1970s after the Former Diesel Tank Farm - NOAA Site 1 was taken out of service (E & E 1993). These lines were part of a fuel distribution system that originated at NOAA Site 27 - Abandoned Diesel Tank Farm and NOAA Site 28 – Inactive Gas Tank Farm. Fuel was transferred from the tank farms to pipelines running north-south (NOAA Site 30 - Port Fuel Supply Line North-South) which in turn were connected to the Site 29 East 2-inch diameter pipelines via flexible hoses. The Site 29 East pipelines then carried the gasoline and diesel fuel to USTs located at NOAA Site 3 – Inactive Gas Station and NOAA Site 8 – Active Power Plant. The City of St. George, which took over pipeline operations in 1983, stopped all diesel fuel transfers via the distribution pipelines by 1984 (E & E 1993). The gasoline UST utilized at the gas station was taken out of service in 1993 (Woodward Clyde 1995), which is likely when gasoline ceased being transferred via the Site 29 East pipelines. Documentation has not been found regarding the routes that the 2-inch diameter fuel lines took once leaving Site 29 East to ultimately reach the Site 3 and Site 8 USTs. Photos taken by Hart Crowser in 1996 show both lines on the ground at the western end of Site 29 East; however, the report does not mention that these lines went underground within the site.

The 1996 Hart Crowser environmental investigation found two areas within Site 29 East where soil was contaminated with diesel-range organics (DRO) in concentrations above the applicable ADEC cleanup criterion. In their report, Hart Crowser deduced that the contamination likely originated from pipe connection leakage (Hart Crowser 1997).

**Site 29 West**

One buried 4-inch diameter steel pipeline was located in Site 29 West. The pipeline ran from the west landing area to a valve pit within the Former Diesel Tank Farm - NOAA Site 1 and was used to transfer diesel fuel from barges docked at the landing (Figure 3). This fuel line was probably installed in the 1950's to function as an alternate to the transfer line running from the east boat launch (Site 29 East), and was likely taken out of service in the 1970's. Hart Crowser reported finding about 120 feet of buried pipe between the valve pit and a point where it surfaced from an eroded bank to the west (Hart Crowser 1997). Hart Crowser uncovered two pipe joints along the run, at depths of 2 to 3 feet below ground surface (bgs), and collected soil samples from the base of the pipe. No odors or other signs of leakage were observed in the excavations, and petroleum contamination was not detected in the samples in concentrations above applicable cleanup standards.

## 2.4 GEOLOGY

The geology of the Pribilof Islands consists of lava flows and sills, with lesser amounts of pyroclastic (explosive volcanic ejecta) and tuffaceous material (fine-grained volcanic fragments, particularly ash), as well as glacial deposits (Barth 1956). Bedrock on St. George Island consists of block-faulted, layered basaltic lava flows and minor amounts of pyroclastic material overlying peridotite basement rocks.

## 2.5 HYDROGEOLOGY

In general, oceanic islands consisting of uniform geology develop a groundwater lens formed by the radial movement of infiltrating freshwater toward the shore. The rate of freshwater recharge, the size of the island, and the permeability of the subsurface dictate the profile and the thickness of the lens. The occurrence of potable groundwater on St. George Island is inferred from known geologic and hydrologic conditions and by analogy to other oceanic volcanic islands. Because the island is relatively narrow, the rate of recharge is low, and the subsurface fairly permeable, the freshwater lens is most likely thin (Anderson 1976).

The City of St. George currently obtains drinking water from four municipal wells located about 1/2 mile southeast of the city, near Upper Lake (Figure 1). Two of these wells were completed in 1987, and two were completed in 1988. The wells are located at elevations between 222 and 227 ft above mean sea level (MSL), with intake screens installed between 228 and 244 ft below ground surface (bgs) (TTEMI 2005a). Water is piped from the wells via an insulated aboveground line to a pump house and water tank located adjacent to Upper Lake. The water is normally not treated before being distributed to the community.

The water table in the vicinity of Sites 29 East and West is encountered at approximately 15 feet bgs. Hydrogeological testing found that groundwater flow in the vicinity of Site 29 East is toward the north and east; at Site 29 West, the flow is toward the north and west (Figure 4). Hydrogeological modeling shows that, even under maximum pumping conditions, groundwater in the vicinity of these sites will not be drawn into the City's drinking water supply (TTEMI 2005a).

## 2.6 ENVIRONMENTAL HISTORY

This section provides a chronological summary of environmental investigations and other actions that formed the basis for the corrective action taken at Site 29. A more detailed summary of environmental investigation analytical results and findings can be found in NOAA's corrective action plan (CAP) for Sites 1, 2, 3, and 29 (NOAA 2004a).

**Petroleum-Contaminated Soil Investigations and Actions**

**1993** Ecology & Environment, Inc. (E & E) conducted a preliminary assessment of St. George Island and found that there were two abandoned pipelines that supplied NOAA Site 1; one from the east boat launch (Site 29 East) and one from the west landing (Site 29 West). The report does not note indications of fuel leakage around these pipelines, nor does it discuss the 2-inch diameter lines traversing Site 29 East (E & E 1993).

E &E Assessment Recommendation: Perform surface and subsurface soil sampling to determine the level and extent of contamination.

**1994** Woodward-Clyde performed an environmental investigation on St. George that included excavating four test pits to the west and south of Site 29 West (Figure 5; TP-1, TP-2, TP-3, and TP-15). According to the report (Woodward-Clyde 1995), the location for TP-1 was chosen to determine the western extent of contaminated soil along the oceanfront area which included NOAA Sites 1, 2, and 3 (Figure 3). The report indicates that a sewer line was encountered during TP-1 excavation, so a surface soil sample was taken and the excavation moved to the location of TP-2, where a surface sample and a subsurface sample at seven feet bgs were collected. The site for TP-3 was chosen based on observation of surface water runoff from Site 3 collecting at that location and exhibiting sheen. A surface soil sample and a subsurface sample from 6.5 feet bgs were collected from TP-3. The location for TP-15 was chosen based on surface soil staining near abandoned equipment. A surface soil sample and a subsurface sample from 6 feet bgs were collected.

Soil samples were analyzed on-site in a field laboratory, and off-site at a fixed laboratory. At the field laboratory, soil samples were analyzed for DRO, gasoline-range organics (GRO), toluene, ethylbenzene, total xylenes, volatile chlorinated solvents, polychlorinated biphenyls (PCB), and total petroleum hydrocarbons (TPH). At the fixed laboratory, soil samples were analyzed for DRO, GRO, TPH, volatile organic compounds (VOC), halogenated volatile organics (HVO), PCBs, and metals (arsenic, cadmium, chromium and lead).

Analytical results indicate that soil at TP-1 and TP-2 was not contaminated (Figure 5). Soil at TP-3 was found to be contaminated at the ground surface with DRO at a concentration of 1500 milligrams per kilogram (mg/kg), which is above the ADEC Method Two criterion of 250 mg/kg; the DRO concentration then dropped off to below the criterion at 6.5 feet bgs. Soil at TP-15 was also contaminated with DRO above the ADEC criterion, with the highest concentration, 1500 mg/kg, at the ground surface, decreasing to 400 mg/kg at six feet bgs. No other organic compounds or metal concentrations were found above ADEC Method Two cleanup levels for soil in the vicinity of Site 29 West.

Woodward-Clyde Site Inspection Recommendation: Removal and/or in-situ treatment of an estimated 5,500 cubic yards ($yd^3$) of petroleum contaminated soil at Sites 1 and 2, within which the report included the areas around TP-3 and TP-15.

**1996** Hart Crowser conducted an environmental investigation that included Site 29 East and Site 29 West (Hart Crowser 1997).

Site 29 East

Fourteen surface samples were taken around the east pipe lines (Figure 6). Surface samples EO-SS-1 through EO-SS-7 were collected from areas along the raised 2-inch-diameter gas and diesel fuel lines, with field and fixed lab analyses performed for DRO, GRO, residual range organics (RRO), benzene, toluene, ethylbenzene and total xylenes (BTEX). Additionally, EO-SS-1 and EO-SS-5 were analyzed at the fixed lab for lead, a potential constituent of gasoline. Surface samples EO-SS-8 through EO-SS-14 were collected from areas along the 4-inch-diameter line, with field and fixed lab analyses for DRO, GRO and RRO. Analyses for BTEX and lead were not performed on these samples because the 4-inch diameter line reportedly carried only diesel fuel.

Analytical results from the 14 surface samples indicated all contaminant concentrations met ADEC Method Two cleanup criteria with the exception of 450 mg/kg DRO at EO-SS-3, and 930 mg/kg DRO at EO-SS-12 (Figure 6). GRO and BTEX were not detected in any samples; therefore Hart Crowser considered DRO the only contaminant of concern at TPA Site 25-1 East.

Hart Crowser deduced that DRO contamination at sample point EO-SS-3 was likely localized due to the fairly low concentration and the assumption that, because the source was a surface leak, the highest contamination levels would be found at the surface. To investigate the lateral and vertical extent of soil contamination in the area of EO-SS-12, two test pits were excavated to refusal, and six additional samples were collected and analyzed for DRO, GRO, and RRO. At Test Pit One (EO-TP-1), DRO was found above the cleanup level; at EO-TP-2, just north of EO-TP-1, DRO was found at a very low level at the surface and not detected at deeper depths (Figure 6). Hart Crowser concluded that DRO contamination at TPA Site 25-1 East was not wide spread, and posed a low, but not zero, potential risk to the environment.

<u>Site 29 West</u>

Hart Crowser noted that portions of the four-inch diameter pipe were no longer present due to wave induced sloughing of the bank it was buried in. Hart Crowser also noted that the vicinity of Site 29 West showed signs of filling activity and was cluttered by debris including vehicle chassis, wood, concrete, pneumatic hoses, and various machine parts. A utility locating device was used to trace the remaining buried pipe, about 120 feet in length, which ran between a valve pit located in Site 1 and the gravel beach (Figure 5). Two couplings were uncovered at depths of 2 and three feet bgs. Soil samples were taken 0 to 0.5 feet beneath the exposed couplings and designated WO-SS-1 and WO-SS-2 (Figure 5). The samples were analyzed for DRO, GRO and RRO. DRO and GRO were not detected by the analyses; RRO was detected, but well below the cleanup requirement.

<u>Hart Crowser Recommendations:</u> Site 29 East - remove the pipelines, excavate an estimated 255 $yd^3$ of DRO contaminated soil to 3 feet bgs in the area around EO-TP-1 and EO-SS-12. Site 29 West – no remedial action recommended.

**<u>2001</u>** Tetra Tech Environmental Management Inc. (TTEMI) advanced six soil borings in or near Site 29 East (Figure 6) and four soil borings in or near Site 29 West (Figure 5). Samples collected from the borings were analyzed for DRO, GRO, RRO, VOC, semivolatile organic compounds (SVOC) and metals (TTEMI 2003).

TTEMI's analytical results for Site 29 East and Site 29 West found no contaminant concentrations above applicable ADEC Method 2 cleanup criteria.

**<u>2004</u>** NOAA prepared a Corrective Action Plan (CAP) that included Site 29 (NOAA 2004a); the CAP was subsequently approved by ADEC. The CAP estimate for PCS at Site 29 East was 920 $yd^3$, based on excavating the contaminated areas found by Hart Crowser to 8 feet bgs. NOAA estimated 10 $yd^3$ of PCS would be excavated during hot spot cleanup at Site 29 West (Figure 7).

Pursuant to PCS disposal discussions with NOAA, ADEC conducted a risk evaluation of the potential effects to human health from land farming PCS on St. George Island, and determined that all associated risks were well below all risk management standards (ADEC 2004a). NOAA developed a contaminant fate and transport model for PCS placed at the City's new landfill site using Site 1 and Site 2 investigation analytical results and landfill specific data as model parameters (NOAA 2004b). The model indicated that PCS could be landspread at the new landfill site (Figure 8) with minimal impact to the environment as long as the following model parameters of average contaminant concentrations and PCS stockpile depth were met:

Table 2-1. Contaminant Fate and Transport Model Parameters

| Contaminant | Maximum Average Concentration | Maximum Height of PCS Stockpile Over Native Surface |
|---|---|---|
| DRO | 3,478 mg/kg | 5.26 feet |
| GRO | 193 mg/kg | 5.26 feet |
| Benzene | 0.05 mg/kg | 5.26 feet |
| Toluene | 1.53 mg/kg | 5.26 feet |
| Ethylbenzene | 0.48 mg/kg | 5.26 feet |
| Xylenes | 1.06 mg/kg | 5.26 feet |

NOAA proposed that the PCS be used beneficially as landfill berm construction material and municipal waste daily cover material; ADEC approved the proposal (NOAA 2004b; ADEC 2004b).

**2005** NOAA prepared an Environmental Assessment (EA) to disclose potentially significant impacts to the human environment associated with the treatment and/or disposal of PCS on St. George Island (NOAA 2005b). The EA concluded that the preferred disposal alternative for PCS was to reuse it beneficially in the construction and operations of the City's landfill and on-island bioremediation by landspreading. NOAA and the City came to an agreement regarding use of the City's new landfill for landspreading and other beneficial uses of 20,000 $yd^3$ of NOAA's PCS (NOAA 2005c).

**2006** NOAA and ADEC held a public meeting on St. George in April that was attended by concerned island residents and representatives from the City Council and St. George Tribal Office. The purpose of the public meeting was to explain the modeling and associated parameters that led to the EA conclusion that landspreading at the City landfill sites was the preferable alternative for PCS disposal. NOAA and ADEC presented the data, and answered all questions to the satisfaction of those present.

In June 2006, Charles M. Mobley & Associates (Mobley) excavated three trenches within Site 29 East (Figure 9) to investigate whether significant archaeological deposits might be disturbed during PCS excavation. Archaeological trenches were not excavated within Site 29 West as planned due to reported buried power and sewer utilities that the City could not locate (Mobley 2006). Trench locations in Site 29 East were chosen based on proximity to planned excavations in that area. No archaeologically significant artifacts were found within the Site 29 East trenches. Mobley judged that NOAA's intent on excavating contaminated soil from Site 29 East would have no effect on the National Landmark or cultural resources on St. George (Mobley 2006). Contaminated soil was encountered in Trench 6 (Figure 9) from 40 inches bgs to the bottom of the excavation at 7.5 feet bgs.

**2007** NOAA and the City came to an agreement regarding landspreading of 11,500 $yd^3$ of NOAA PCS, in addition to the 20,000 $yd^3$ of PCS covered by the 2005 agreement (NOAA 2005c), as old landfill cover material and new landfill municipal day-cover (NOAA 2007b).

### Groundwater Investigations

NOAA Sites 1, 2, 3, and 29 (Figure 3) are collectively known as the Oceanfront Sites. Groundwater beneath the Oceanfront Sites is contaminated with DRO, GRO and benzene. However, the groundwater contamination attributable to the Site 29 fuel pipelines is likely minimal due to the relatively low levels of DRO contamination found at Site 29. Sites 1, 2 and 3, which were significantly contaminated with high concentrations of DRO and GRO, are considered the source sites for the area's groundwater contamination. Separate reports discuss the corrective actions taken at Sites 1 and 2 (NOAA 2007a) and Site 3 (NOAA 2005a). This section describes groundwater investigations specific to Sites 1 and 2, but applicable to Site 29.

**2001-2003** TTEMI conducted a hydrogeological investigation of groundwater flow in the vicinity of the City (TTEMI 2005a). The investigation included definition of hydrostratigraphic units, determination of aquifer hydraulic parameters, and tidal influence studies. Data collected from the investigation, plus information about the City's municipal well field's installation and operations, were used as inputs for modeling the expected static groundwater flow directions, and dynamic flow direction under differing municipal well pump rate scenarios. The investigation found that static groundwater flow in the vicinity of the Oceanfront Sites is primarily from south to north toward the Bering Sea. However, a dense basalt layer in the northeastern portion of the area is thought to cause water table mounding with resulting local radial groundwater flow to the east, west and south (Figure 4). Based on hydrogeological modeling, the investigation also concluded that, even under maximum pump rates for the City's municipal well system, contaminants in the Oceanfront Site's groundwater would never be drawn south into the municipal well capture zones.

**<u>2001-2004</u>** TTEMI conducted groundwater contaminant characterization investigations at several St. George Island TPA Sites including Site 1 and Site 2. In 2001, monitoring wells TPA1-MW-1 and TPA2-MW-1 were installed at Sites 1 and 2 (Figure 10). In 2003, monitoring wells TPA1-MW-2, TPA1-MW-3, TPA1-MW-4, TPA1-PER-1, TPA1-PER-2, TPA1-PER-3, and TPA2-MW-2 were installed. Groundwater sampling was conducted in 2001, 2002, August 2003, November 2003, January 2004 and May 2004; samples were analyzed for DRO, GRO, VOC, SVOC, Total Dissolved Solids (TDS) and metals with the following results (TTEMI 2005b):

- Free product was observed in wells TPA1-MW-1 and TPA1-MW-4;
- Dissolved-phase DRO and GRO above ADEC Table C criteria (ADEC 2006a) were found in wells TPA1-MW-2, TPA1-MW-3, and TPA2-MW-1;
- Benzene above the Table C criterion was found in wells TPA1-MW-1 and TPA1-MW-3 for all sample events when benzene was an analyte;
- All analytes were below ADEC criteria in well TPA2-MW-2, with one exception being a benzene result slightly above the ADEC criterion in November 2003;
- Samples were not drawn from wells TPA1-PER-1, TPA1-PER-2, and TPA1-PER-3 because they were inadvertently installed in perched water tables not representative of the area's main groundwater aquifer.
- SVOC and metal concentrations were either non-detectable or at levels well below ADEC criteria with the exception of naphthalene which was detected in 2001 in monitoring well TPA1-MW-1. In their 2005 report, TTEMI did not include 2001 dissolved contaminant data from TPA1-MW-1 due to the presence of free product in this well.
- TDS concentrations in Site 1 and Site 2 were found above the ADEC water quality criterion. The likely cause of elevated TDS concentrations is the intrusion of Bering Sea salt water into the fresh water aquifer along the waterfront.

**<u>2003</u>** TTEMI conducted an investigation of free product in the vicinity of Site 1. TTEMI attempted to use hydrocarbon bail-down testing coupled with empirical methods to calculate "actual" product thickness on the water table; however, tidal influences prevented this approach (TTEMI 2004). Therefore, the "apparent" (observed in-well) product thickness and assumed aquifer hydraulic parameters of porosity and hydrocarbon saturation were used to estimate free product volume. Studies have shown that observed product thickness in wells can be greater than the actual product thickness in the surrounding aquifer due to capillary action (Testa and Paczkowski 1989). TTEMI estimated the <u>maximum</u> volume of free product in the vicinity of Site 1 to be from 5,842 gallons to 16,754 gallons (TTEMI 2004); however, this is likely an overestimate due to the use of observed product thickness rather than empirically derived "actual" product thickness in the volume calculations.

**<u>2004</u>** SLR Alaska (SLR) investigated free product in the vicinity of Site 1. SLR employed a different methodology than TTEMI for calculating actual product thickness, i.e. removing free product and measuring product recovery in test wells over a period of several hours (SLR 2005). SLR also employed well inflow testing to determine aquifer hydraulic parameters. SLR estimated that, based on calculated "actual" product thickness and measured hydraulic parameters, the volume of free product in the vicinity of Site 1 to be 814 gallons.

**<u>2005</u>** NOAA produced a long-term groundwater monitoring plan, concurred in by ADEC, that designated four wells in the vicinity of Site 1 and Site 2 that would be monitored semi-annually for contaminant concentration trends and the presence of free product (NOAA 2005d). Monitoring wells TPA1-MW-2, TPA1-MW-3, TPA2-MW-1 and TPA2-MW-2, labeled "plume monitoring wells" in Figure 10, were chosen because previous groundwater investigations had not found free product in these wells. Also, their locations are down-gradient from the estimated location of the potential free product plume (TTEMI 2004), and presumably would be in the path of any plume movement should it occur. Per the plan, groundwater monitoring will continue for five years after commencement. At the end of the five year period, NOAA and ADEC will evaluate whether continued monitoring is warranted.

**2006** In May, NOAA with SLR consulting, excavated two trenches in the northwest area of Site 1 to measure depth to the water table bgs; measure the thickness of free product floating on the water table; measure and sample the "smear zone" at the soil interface between the free product and water table; and determine if any safety and/or health related problems, related to free product, would be encountered during contaminated soil removal throughout the site. SLR planned on using direct observation of the free product for refining product extraction system designs (SLR 2007).

In both trenches, the water table was encountered approximately 15 feet bgs; this depth to water table matched the water table depth indicated on logs from past well installations in this area (TTEMI 2005b). However, a discernable free product layer and corresponding smear zone were not observed in either trench. A dark layer of odorous contaminated soil was observed in both trenches starting at about 1 foot bgs and continuing to the bottom of the trenches. Petroleum sheen was observed on the groundwater; however, the sheen may have been attributable to surface water from melting snow running over the contaminated sidewalls of the trenches. Photoionization detector (PID) readings at the top of the excavation indicated very low VOC levels; lower explosive limit (LEL) readings indicated explosive gas and vapor concentrations of 0 percent.

In June 2006, NOAA decommissioned monitoring wells TPA1-PER-1, TPA1-PER-2, TPA1-PER-3, and TPA1-MW-1 in preparation for PCS excavation later in the year. These wells were not being used for long-term groundwater monitoring (NOAA 2005d), and were located in the path of PCS removal.

In October and December 2006, Tanaq Services, Inc. (TSI) sampled the four plume monitoring wells in the vicinity of Sites 1 and 2 (Figure 10) per the requirements of NOAA's long-term groundwater monitoring plan (NOAA 2005d). Samples from wells TPA1-MW-2, TPA1-MW-3, TPA2-MW-1 and TPA2-MW-2 were analyzed for GRO, DRO, and benzene, which are the contaminants found in concentrations above ADEC cleanup criteria in previous Sites 1 and 2 groundwater investigations. PCE was also an analyte because it had been found in previous investigations in groundwater in the vicinity of NOAA Site 8 – Active Power Plant. NOAA Site 8 is located south of Sites 1 and 2. Unfortunately, due to sample container freezing and breakage during transport, DRO analytical results from this sampling round were rejected for these wells (TSI 2007a). GRO, benzene and PCE concentration trends did not appear to change significantly (see Table 2-2 below). Free product was not observed in any of the wells.

In September and October 2006, NOAA excavated approximately 14,300 yd$^3$ of DRO, GRO and BTEX contaminated soil from NOAA Sites 1 and 2. The excavation bottom was maintained approximately one foot above the area water table to avoid water saturated soil and potentially highly contaminated "smear zone" PCS. Depth to groundwater was checked periodically during excavation by digging test pits into the water table. Direct observation of soil and groundwater conditions in these test pits matched those seen during exploratory trenching in May 2006. The observations support the absence of a discernable "smear zone" and petroleum on the groundwater as a sheen with no free-phase product layer amendable to extraction.

**2007** In May, TSI again sampled the four plume monitoring wells in the vicinity of Sites 1 and 2. As in 2006, wells TPA1-MW-2, TPA1-MW-3, TPA2-MW-1 and TPA2-MW-2 were analyzed for GRO, DRO, benzene, and PCE. Analytical results indicate relatively no concentration trend changes for benzene and PCE (TSI 2007b). GRO concentration trends did not change for wells TPA1-MW-2, TPA2-MW-1, and TPA2-MW-2, but indicate an upswing for well TPA1-MW-3. DRO concentrations indicate an upswing for all four wells. Extensive PCS excavations in Sites 1, 2, and 29 East, conducted in fall 2006, likely influenced groundwater contaminant concentrations in the plume monitoring wells. Groundwater monitoring will continue through spring 2011, at a minimum, with contaminant concentration trends monitored and evaluated throughout this time period. Table 2-2 provides a summary of analytical results for Oceanfront Sites plume monitoring wells from August 2003 through May 2007.

Table 2-2 Plume Monitoring Well Results

| Analyte | ADEC Cleanup Level[a,b] | Sample Identification and Sample Date | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TPA1-MW-2 | | | | | | TPA1-MW-3 | | | | | |
| | | Aug-03 | Nov-03 | Jan-04 | May-04 | Oct-06 | May-07 | Aug-03 | Nov-03 | Jan-04 | May-04 | Oct-06 | May-07 |
| GRO | 1,300 | 100 | 250U | 230 | 200 | 510 | 290 | 1,200 | 710 | 2,300 | 2,100 | 3,100 | 4,800 |
| DRO | 1,500 | 2,100 | 1,900 | 2,400 | 2,700 | R | 5,400 | 3,700 | 4,200 | 6,800 | 5,700 | R | 7,400 |
| Benzene | 5 | 1U | 1U | 1U | 1U | 1U | 1U | 50 | 220 | 260 | 220 | 94 | 59 |
| PCE | 5 | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U |
| **Analyte** | **ADEC Cleanup Level[a,b]** | **Sample Identification and Sample Date** | | | | | | | | | | | |
| | | **TPA2-MW-1** | | | | | | **TPA2-MW-2** | | | | | |
| | | Aug-03 | Nov-03 | Jan-04 | May-04 | Oct-06 | May-07 | Aug-03 | Nov-03 | Jan-04 | May-04 | Oct-06 | May-07 |
| GRO | 1,300 | 50U | 50 U | 160 | 50 U | 100U | 51 | 110 | 110 | 79 | 92 | 120 | 180 |
| DRO | 1,500 | 360J | 5,600 | 1,800 | 200 | R | 990 | 800 | 640 | 630 | 670 | R | 1,600 |
| Benzene | 5 | 1U | 8 | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U |
| PCE | 5 | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U |

**Notes:**

a Cleanup levels shown are from Title 18 of the Alaska Administrative Code, Section 75.345, Table C (Table C).
b Cleanup levels and analytical results expressed as micrograms/liter.
Shaded Indicates a result that exceeds the Table C cleanup level.
ADEC State of Alaska Department of Environmental Conservation
GRO Gasoline Range Organics
DRO Diesel Range Organics
PCE Perchloroethylene
J The quantitation is an estimate.
R Analytical result rejected due to sample container freezing and breaking during transport.
U The analyte was analyzed for but was not detected; the associated number is the reporting limit.

# 3.0 REMOVAL METHODOLOGY

This section provides the criteria used as the basis for the decisions made in the field during cleanup activities.

## 3.1 SITE 29 WEST

NOAA did not perform corrective actions at the two DRO contaminated “hot spots” identified during the 1994 Woodward-Clyde investigation (Figure 5, Woodward-Clyde 1995). The following factors contributed to this decision:

- The hot spots resulted from surface spills from abandoned equipment and runoff unrelated to the Site 29 West pipeline. These particular sample locations were chosen during the 1994 investigation based on observed spills that likely occurred/were occurring after the 1984 transfer of property from the federal government to the City of St. George.
- The hot spots are located in an area reported by City employees to have subsurface power and sewer lines. However, the City does not possess drawings or other means of determining where the utilities are located and declined to visit the site to identify approximate utility locations.
- TP-3 is located in a roadway, the surface of which has changed over the years following the 1994 Woodward-Clyde investigation due to erosion and the resulting corrective road grading. Therefore, it is likely that the original contaminated surface area has been removed.

- Analytical results from three investigations (Woodward-Clyde 1995; Hart Crowser 1997; TTEMI 2003) indicate these hot spots are localized (Figure 5) and have moderate surface DRO concentrations (1,500 mg/kg) that decrease with depth.
- The maximum DRO concentration found at both sites, 1,500 mg/kg, is well below the ADEC Method Two, Under 40-inch Zone cleanup criteria for ingestion (10,250 mg/kg) and inhalation (12,500 mg/kg).
- Site 29 West is in an area where groundwater is already contaminated by DRO, GRO and benzene as a result of fuel spills during storage and transfer operations conducted in nearby Sites 1, 2, and 3 (Figure 3; TTEMI 2004; TTEMI 2005b). Therefore, excavation of these hot spots will do little to address the local groundwater contamination.
- PCS removal would have to observe setbacks and excavation sloping to protect the utilities if they were located. These measures would likely significantly reduce the amount of PCS that could safely be removed from the hot spots.

The potential benefit to be derived from removing these hot spots is limited, and when compared to the risk of damaging the utilities, it is evident that it is not practicable to excavate these areas. Therefore, no action was taken for Site 29 West.

## 3.2 SITE 29 EAST

The cleanup objective for Site 29 East is the removal of all PCS, to the extent practicable. The CAP (NOAA 2004a) specifies that ADEC Method Two (ADEC 2006a) will be used to establish the cleanup criteria for contaminants of concern at the site. Use of ADEC Method Two requires sampling to ensure that select polynuclear aromatic hydrocarbon (PAH) concentrations also meet cleanup criteria. Table 3-1 presents the most stringent cleanup levels for potential Site 29 East contaminants based on Method Two tables B1 and B2 “Under 40 Inch Zone” criteria.

Table 3-1 ADEC Method Two Cleanup Levels for Soil at Site 29 East

| Analysis Type | Laboratory Method | Cleanup Level, mg/kg |
|---|---|---|
| GRO[a] | AK-101 | 300 |
| DRO[a] | AK-102 | 250 |
| RRO[a] | AK-103 | 10,000 |
| Acenaphthene[a] | EPA 8270C | 210 |
| Anthracene[a] | EPA 8270C | 4,300 |
| Benzo(a)anthracene[a] | EPA 8270C | 6 |
| Benzo(b)fluoranthene[b] | EPA 8270C | 11 |
| Benzo(k)fluoranthene[b] | EPA 8270C | 110 |
| Benzo(a)pyrene[b] | EPA 8270C | 1 |
| Chrysene[a] | EPA 8270C | 620 |
| Dibenzo(a,h)anthracene[b] | EPA 8270C | 1 |
| Fluorene[a] | EPA 8270C | 270 |
| Indeno(1,2,3-c,d)pyrene[b] | EPA 8270C | 11 |
| Naphthalene[a] | EPA 8270C | 43 |
| Pyrene[a] | EPA 8270C | 1,500 |
| Benzene[a] | AK-101 | 0.5c |
| Toluene[a] | AK-101 | 5.4 |
| Ethylbenzene[a] | AK-101 | 5.5 |
| Total Xylenes[a] | AK-101 | 78 |

a Cleanup level based on Under 40 Inch Zone, Migration to Groundwater Maximum Allowable Concentration.

b Cleanup level based on Under 40 Inch Zone, Ingestion Maximum Allowable Concentration.
c 1991 cleanup level for benzene which NOAA is allowed to use per Two Party Agreement requirements (see Section 1.0).

Prior to PCS removal at Site 29 East, the following limits to excavation were established: (1) a buffer would be maintained between the Bering Sea and excavations to address the danger of storm surge causing site flooding and subsequent release of contaminants, (2) PCS removal would not continue deeper than 15 ft bgs, the maximum depth addressed under hazardous substance ingestion and inhalation protection criteria, (3) excavation work would be stopped approximately one foot above the water table if encountered, and (4) excavation work would be stopped if equipment refusal was encountered. Equipment refusal is defined as the presence of consolidated soil and rock which causes the excavator bucket to release water vapor or smoke due to friction.

In October 2006, approximately 1,200 $yd^3$ of PCS were removed from the area around Hart Crowser sample location EO-SS-3 in Site 29 East; see Figures 6, 7, and 11. Due to increasingly severe winter weather conditions, excavation of Site 29 East was halted in late October, and then resumed in May 2007 in the area around Hart Crowser sample locations EO-SS-12 and EO-TP-1 (Figures 6, 7 and 11). Approximately 1,060 $yd^3$ of PCS were removed from the second location. Contaminated soil within both locations was discernable visually and by odor (Appendix A, Photographs 4 and 21). Site excavation was guided by visual and olfactory indications, and by field screening using PID head-space analysis.

## 4.0 FIELD ACTIVITIES

In August 2006 NOAA awarded contract AB133C-06-NC-1723 to ChemTrack LLC (ChemTrack) for the excavation of PCS from NOAA Site 1 - Former Diesel Tank Farm, NOAA Site 2 – Former Drum Storage Area, and NOAA Site 29 – Port Fuel Supply Line East-West. On September 5, 2006 ChemTrack and NOAA mobilized to St. George Island to start the project. Excavation and backfill of Site 1, Site 2 and the area around Hart Crowser sample location EO-SS-3 in Site 29 East (Figures 6, 7, and 11) was completed in November 2006. Excavation and backfill of the area around Hart Crowser sample locations EO-SS-12 and EO-TP-1 (Figures 6, 7 and 11) was completed in May and June 2007. The following sections discuss project field activities. Appendix B contains copies of the contractor's daily quality control reports which provide details on the daily progress, problems encountered and decisions made during the course of the project when working in Site 29 East. Appendix C contains copies of the contractor's field logs which document day to day field conditions and sample collection information.

### 4.1 CONTRACTORS AND EQUIPMENT

NOAA provided, as government-furnished equipment, three Kenworth 14-cubic yard dump trucks, a Caterpillar D5 bulldozer, a John Deere 624J loader, and a Caterpillar 320B excavator. NOAA also provided survey support using real-time kinematic global positioning system (GPS) instruments. ChemTrack, the prime contractor, provided the project manager, crew superintendent, heavy equipment operator/mechanic, and an environmental technician. ChemTrack also hired island residents as equipment operators, truck drivers, and flaggers. Subcontractors to ChemTrack included (1) St. George Tanaq Corporation, which supplied a field office, a Caterpillar 325 excavator, a crew pickup truck and the source for excavation backfill; (2) the City, which supplied a crew break area within the Public Safety Building, road grading/maintenance services for the PCS haul route, and two dump trucks with drivers; and (3) the island's Traditional Council, which provided a second pickup. Laboratory analytical services were subcontracted to Test America - Analytical Testing Corporation (Anchorage, Alaska) for all confirmation and characterization samples.

### 4.2 PCS EXCAVATION

**September 5 through September 12, 2006.** Preparations were made for the excavation of PCS and moving it to the City's new landfill for use as municipal waste day-cover. ChemTrack's project manager, a certified trainer, provided 8-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher training to island residents who had already completed the 40-hour HAZWOPER course and were interested in working on the project. Ten island residents attended the training; eight were subsequently hired by ChemTrack. Two access ramps were constructed with 660 $yd^3$ of clean material for dump truck access into the new City landfill's interior for building PCS day-cover stockpiles per the agreement between NOAA and the City (NOAA 2005c). The access ramps (Appendix A, Photograph 13) were left in place for use by the City when moving day-cover over municipal waste. Fencing was installed around the excavation sites. Equipment maintenance and repair were performed during the preparation period, and continued throughout the project.

**September 12 through October 18, 2006.** Approximately 14,280 $yd^3$ of PCS and 720 $yd^3$ of temporary access road material were excavated from Sites 1 and 2. A separate Corrective Action Report/Conditional Closure Request was submitted to and approved by ADEC for Sites 1 and 2 (NOAA 2007a).

**October 18 through October 23, 2006.** Approximately 1,200 $yd^3$ of PCS were removed from the area around Hart Crowser sample location EO-SS-3 in Site 29 East (Figures 6, 7, and 11). The DRO contaminated soil was grey in color and discernable visually (Appendix A, Photographs 4, 5 and 6). At about 3 feet bgs, an 8-inch diameter asbestos-cement pipe was uncovered. The buried pipe, likely an abandoned sewer line, ran from the southwest to the northeast ending at a concrete vault, perhaps the start of an old outfall, on the bank of the Bering Sea (Figure 11; Appendix A, Photographs 4, 5 and 6). PCS was found mainly along and beneath the abandoned asbestos-cement pipe. It is apparent that fuel leaking from an aboveground fuel supply pipeline, which ran east-west, seeped through the ground until it reached the buried asbestos-cement pipe; the fuel then followed the least restrictive flow path which was along the length of the pipe, contaminating the soil in the pipe's path. PID and olfactory readings also indicated that some of the grey soil located along the pipeline was not contaminated with DRO, but likely resulted from sewage leaking from the pipeline when it was active. Contaminated soil and asbestos-cement pipe were removed until the excavation approached within 10 feet of the Bering Sea beach line; PCS removal was then stopped in order to maintain a buffer between the Bering Sea and the excavation. A blue plastic 6-inch diameter discharge line, running south from the defunct fish plant was encountered on the ground surface beneath the vegetation sod layer (Appendix A, Photograph 7). The blue pipeline was removed as necessary to continue the excavation. PCS was removed vertically until either equipment refusal was met at about 11 feet bgs, or field screening indicated that the contaminated soil was removed. Excavated soil was transported to the City's new landfill (Figure 8) where it was stockpiled for use as municipal waste day-cover. A total of approximately 100 feet of asbestos-cement pipe sections were removed during PCS excavation. The pipe, which was in good condition, non-friable and wet from being buried and then exposed to rainfall, was staged for burial in a cell at the City's new landfill.

ChemTrack used PID head-space analysis, olfactory and visual indications to direct excavation activity and determine confirmation sampling locations. The PID proved useful for qualitative assessment of soil contaminant levels with readings varying between 2 parts per million (ppm) and off-scale (999 ppm). Soil samples were collected for fixed laboratory confirmation analysis based on highest PID readings. PCS characterization samples were collected daily, and day-cover stockpile heights were kept at 5 feet or less to ensure adherence to contaminant fate and transport model parameters (NOAA 2004b). Characterization samples were also collected from NOAA's clean backfill stockpile which was mined in 2005 from the island's red scoria borrow pit (Figure 1). Deteriorating weather conditions raised project concerns about the ability to backfill excavations prior to haul routes becoming unusable due to snow and freezing conditions. Consequently, PCS removal was suspended at Site 29 East, and then resumed in May 2007.

**October 24 through November 11, 2006.** Sites 1, 2, and 29 were backfilled with clean scoria. Approximately 974 $yd^3$ of clean backfill was placed into Site 29 East. Scrap metal, plastic pipe and debris collected during excavation were either disposed of at the new City landfill, or placed at the City scrap metal collection area near the old City landfill. After consultation with ADEC and the City, the asbestos-cement pipe excavated from Site 29 East was buried in a cell within the southeast corner of the new landfill (NOAA 2006a, Appendix A. Photograph 15).

**May 8 through May 17, 2007.** ChemTrack and NOAA remobilized to St. George Island to complete PCS excavation at Site 29 East. Approximately 1,060 $yd^3$ of PCS were removed from the area around Hart Crowser sample locations EO-SS-12 and EO-TP-1 (Figures 6, 7, and 11). In this area, PCS was found intermittently in layers.

ChemTrack used PID head-space analysis, olfactory and visual indications to direct excavation activity and determine confirmation sampling locations. Soil samples were collected for fixed laboratory confirmation analysis based on highest PID readings. PCS characterization samples were collected daily. The excavated PSC was landspread as cover material over the City's old landfill site per a request by the City (Appendix A, Photograph 24). Sub-freezing temperatures, frozen ground and snow drifts in the borrow pit area (Appendix A, Photograph 16) prevented mining backfill for the PCS excavation; therefore, safety fencing was erected around the excavation and the project crew demobilized until warmer temperatures prevailed.

**June 16 through June 26, 2007.** The project mined and hauled 1,400 $yd^3$ of clean scoria from the borrow pit to Site 29 East and backfilled the excavation in the area around Hart Crowser sample locations EO-SS-12 and EO-TP-1 (Figures 6, 7, and 11). More backfill was placed at the site than PCS was excavated due to leveling out and contouring the area surrounding the excavation. Characterization samples were collected from the backfill material. Final contouring and debris removal from around Sites 1, 2 and 29 were completed. Approximately 500 pounds (lbs) of fertilizer and 60 lbs of native grass seed mix were applied to the Sites 1, 2, and 29; fertilizer and seed were then tilled into the soil using a fence section towed behind an ATV (Appendix A, Photographs 26, 28, 29 and 30). 1,450 lbs of fertilizer and 125 lbs of native grass seed mix were applied to and tilled into the City's old landfill cover.

## 4.3 INVESTIGATION-DERIVED WASTE MANAGEMENT

IDW generated during this corrective action included:

- Used nitrile sampling gloves, disposable sampling tools and plastic bags; disposed of at the local municipal landfill.

## 4.4 SITE SURVEYING

Sample point locations, excavation extents and other site features were surveyed by NOAA using a survey-grade Trimble Total Station 5700® differential GPS. The Trimble Total Station 5700® is a GPS and GIS data collection and mapping system that combines a high performance, dual-channel GPS receiver and antenna with a local base station and real-time differential correction system to provide survey-grade accuracy in real time. Horizontal positions of surveyed locations were determined to within plus or minus 1 centimeter (cm), and elevations were measured within plus or minus 2 cm. GPS data were collected in latitude and longitude referenced to the World Geodetic System (WGS) 84 Datum, Universal Transverse Mercator Zone 2 coordinate system in meters.

# 5.0 SAMPLING METHODS

PID head-space analysis and sample collection for fixed laboratory analysis were conducted consistent with NOAA's Master Quality Assurance Plan (QAP; NOAA 2006b). PID head-space analysis, performed by ChemTrack, was the primary field screening method used during excavation of Site 29 East. Confirmation samples were collected from locations with the highest PID readings and submitted for fixed laboratory analyses. Characterization samples of the excavated PCS and backfill materials were also collected and submitted for fixed laboratory analysis.

The following subsections provide an overview of sampling methods.

## 5.1 PID HEAD-SPACE ANALYIS

Photoionizing detectors respond to organic vapors in air and provide a measurement of vapor concentration relative to a calibration standard. The following PID procedure, combined with visual, olfactory, and knowledge of the site's contamination history, were used for excavation decisions and determination of confirmation sample locations:

- Collect a soil sample from a freshly uncovered location.

- Fill a clean sealable plastic bag 1/3 full with the sample to be analyzed, quickly seal the bag.
- Allow headspace vapors to develop for about 10 minutes, agitate bag contents.
- Take a PID reading by opening the bag minimally and inserting the instrument probe midway into the bag headspace while avoiding uptake of soil particles and moisture. Record the PID reading in the field notebook.
- If the PID reading is 100 ppm or greater and olfactory/visual clues indicate PCS, then the sample location is considered contaminated for decision making purposes. Contamination is likely gasoline or other volatile substance as this reading was taken with a "cold" sample.
- If the PID reading is under 100 ppm, warm the bag up by taking indoors or placing in a vehicle with defrost on; repeat taking and recording the PID reading. If the PID reading increased for the warmed sample, the sample location is considered potentially contaminated with DRO. If the PID reading remains low, then the sample location is considered likely uncontaminated.
- The locations with the highest PID readings were selected for confirmation sample collection within an excavated area.

## 5.2 CONFIRMATION SAMPLES

ChemTrack collected confirmation samples for off-site laboratory analysis to document the DRO, GRO, RRO, BTEX and PAH concentrations remaining in the site's soil after completion of remedial activities. Per the CAP, the number of PAH sample analyses was 10% that of DRO/GRO. Confirmation samples were collected according to the following procedure. First, a minimum of six inches of soil was removed from the sampling location just prior to sample collection. Soil was placed directly from the sampling location into 4-ounce glass jars. For BTEX and GRO analyses, the samples were field preserved with methanol. For DRO, RRO, and PAH analyses, samples were homogenized prior to being place in the jars. Soil samples were then placed in coolers with gel ice packs. Confirmation samples were packaged and shipped to the off-site laboratory for the following analyses:

- GRO/BTEX by ADEC Method AK101/EPA Method 8021B
- DRO by ADEC Method AK102
- RRO by ADEC Method AK103
- PAHs by EPA SW-846 Method 8270C Selected Ion Monitoring

Twenty-nine confirmation samples plus field duplicates were submitted for fixed laboratory analyses from the Site 29 East excavations (Figure 12). Analytical results are summarized in Section 6.0; quality assurance results are discussed in Section 7.0.

## 5.3 PCS CHARACTERIZATION

A grab sample was taken daily, at random, from a PCS load being hauled to the City landfill sites. These samples were analyzed for DRO, GRO, RRO, BTEX and PAH (at rate of 10% DRO/GRO analyses) at a fixed laboratory to characterize the PCS placed at the landfills, and to document that contaminant concentrations did not exceed fate and transport model parameters for the use of PCS as day-cover (see Section 2.6, Table 2-1).

Six characterization samples were submitted for analyses. Analytical results, summarized in Section 6.0, indicate that model parameters were met. Quality assurance results are discussed in Section 7.0.

## 5.4 BACKFILL CHARACTERIZATION

In 2005, NOAA mined and stockpiled approximately 15,500 $yd^3$ of scoria at the island borrow pit (Figure 1); a portion of this stockpile was used to backfill Site 29 East in 2006. To confirm the stockpile was uncontaminated, in 2006 Chemtrack gathered three samples from random locations, 18 inch below the stockpile surface. Chemtrack also gathered three samples from the area where backfill was mined in June 2007. Both sets of samples were sent to a fixed laboratory and analyzed for DRO, GRO, RRO, BTEX and total lead. Analytical results, summarized in Section 6.0, indicate analyte concentrations were either non-detect or well below ADEC cleanup standards.

## 6.0 ANALYTICAL RESULTS

The following subsections summarize the fixed-laboratory analytical results for samples collected to document contaminant levels remaining at the excavation sites, contaminant levels in excavation backfill material and contaminant levels in PCS stockpiled for day-cover at the City's new landfill and landspread as cap cover material at the old landfill. Appendix D provides the analytical data packages for the fixed-laboratory analyses.

### 6.1 EXCAVATION CONFIRMATION SAMPLES

Figure 12 provides the final excavation extents, confirmation sample locations, and color coding indicating whether analytical results for each sample location were above or below ADEC cleanup criteria. Table 6-1 provides analytical results for DRO, GRO, RRO, BTEX, and the PID reading for each sample location. Per the CAP, samples were analyzed for PAH at 10% of the number of DRO/GRO analyses; analytical results for PAH can be found in Appendix D.

Confirmation sample analytical results for the westernmost excavation within Site 29 East (Figure 12) indicate that soil with DRO concentrations above the ADEC cleanup criterion of 250 mg/kg remains in two areas: (1) 1,660 mg/kg DRO at sample location SG29-CS-004-110, located in the excavation bottom where equipment refusal was reached at 11 feet bgs, and (2) 3,880 mg/kg DRO at sample location SG29-CS-005-060, located at the northeastern end of the excavation which was left in place as a buffer to the Bearing Sea. These areas are precluded from further excavation. Analytical results for GRO, RRO, BTEX and PAH were either non-detect or well below the ADEC cleanup criteria specified in Section 3.1, Table 3-1.

Confirmation sample analytical results for the easternmost excavation within Site 29 East (Figure 12) indicate that concentration levels for all analytes were either non-detect or well below the ADEC cleanup criteria specified in Section 3.1, Table 3-1.

Table 6-1 Analytical Results for Confirmation Samples

| Sample ID | Depth ft bgs | DRO mg/kg | GRO mg/kg | PID ppm | Benzene mg/kg | Toluene mg/kg | Ethylbenzene mg/kg | Xylenes mg/kg | RRO mg/kg |
|---|---|---|---|---|---|---|---|---|---|
| **Cleanup Level** | **-** | **250** | **300** | **-** | **0.5** | **5.4** | **5.5** | **78** | **10,000** |
| **NOAA Site 29 East – Westernmost Excavation** | | | | | | | | | |
| SG29-CS-001-070 | 7.0 | ND<15.0 | ND<2.13 | 3 | ND<0.0133 | ND<0.0267 | ND<0.0267 | ND<0.0534 | ND<30.0 |
| SG29-CS-002-080 | 8.0 | ND<15.1 | ND<1.96 | 5 | ND<0.0123 | ND<0.0245 | ND<0.0245 | ND<0.0490 | ND<30.2 |
| SG29-CS-003-060 | 6.0 | ND<14.8 | ND<2.78 | 4 | ND<0.0174 | ND<0.0347 | ND<0.0347 | ND<0.0695 | ND<29.5 |
| SG29-CS-004-110 | 11.0 | 1660 | 49.5 | 138 | ND<0.0116 | 0.0298 | 0.770 | 1.39 | ND<29.1 |
| SG29-CS-005-060 | 6.0 | 3880 | 72.9 | 999 | 0.0178 | 0.709 | 2.06 | 3.05 | ND<31.9 |
| SG29-CS-006-040 | 4.0 | ND<14.3 | ND<1.78 | 5 | ND<0.0111 | ND<0.0223 | ND<0.0223 | ND<0.0445 | ND<28.7 |
| SG29-CS-007-050 | 5.0 | ND<16.4 | ND<2.62 | 3 | ND<0.0164 | ND<0.0328 | ND<0.0328 | ND<0.0656 | ND<32.7 |
| SG29-CS-008-060 | 6.0 | ND<15.3 | ND<2.27 | 2 | ND<0.0142 | ND<0.0284 | ND<0.0284 | ND<0.0568 | ND<30.5 |
| CS-008-Field Dup | 6.0 | ND<15.3 | ND<2.55 | 2 | ND<0.0159 | ND<0.0318 | ND<0.0318 | ND<0.0636 | ND<30.5 |
| SG29-CS-009-055 | 5.5 | ND<15.0 | ND<2.25 | 3 | ND<0.0141 | ND<0.0281 | ND<0.0281 | ND<0.0562 | ND<30.0 |
| SG29-CS-010-050 | 5.0 | ND<15.8 | ND<2.90 | 4 | ND<0.0181 | ND<0.0363 | ND<0.0363 | ND<0.0725 | ND<31.6 |
| SG29-CS-011-070 | 7.0 | ND<15.9 | ND<2.30 | 5 | ND<0.0144 | ND<0.0287 | ND<0.0287 | ND<0.0574 | ND<31.7 |
| SG29-CS-012-110 | 11.0 | 103 | 12.0 | 15 | ND<0.0144 | ND<0.0289 | 0.115 | 0.173 | ND<31.1 |

| Sample ID | Depth ft bgs | DRO mg/kg | GRO mg/kg | PID ppm | Benzene mg/kg | Toluene mg/kg | Ethylbenzene mg/kg | Xylenes mg/kg | RRO mg/kg |
|---|---|---|---|---|---|---|---|---|---|
| **Cleanup Level** | **-** | **250** | **300** | **-** | **0.5** | **5.4** | **5.5** | **78** | **10,000** |
| **NOAA Site 29 East – Easternmost Excavation** | | | | | | | | | |
| SG29-CS-013-025 | 2.5 | ND<15.2 | ND<2.89 | 0 | ND<0.0362 | ND<0.0723 | ND<0.0723 | ND<0.15 | ND<30.3 |
| SG29-CS-014-030 | 3.0 | ND<15.4 | ND<2.47 | 0 | ND<0.0309 | ND<0.0618 | ND<0.0618 | ND<0.12 | ND<30.9 |
| CS-014-Field Dup | 3.0 | ND<14.9 | ND<2.25 | 0 | ND<0.0282 | ND<0.0564 | ND<0.0564 | ND<0.11 | ND<29.8 |
| SG29-CS-015-030 | 3.0 | ND<15.3 | ND<3.01 | 1 | ND<0.0376 | ND<0.0752 | ND<0.0752 | ND<0.1554 | ND<30.6 |
| SG29-CS-016-035 | 3.5 | ND<14.9 | ND<3.34 | 0 | ND<0.0418 | ND<0.0835 | ND<0.0835 | ND<0.17 | ND<29.9 |
| SG29-CS-017-030 | 3.0 | ND<15.4 | ND<2.16 | 0 | ND<0.0270 | ND<0.0539 | ND<0.0539 | ND<0.1164 | ND<30,7 |
| SG29-CS-018-020 | 2.0 | ND<15.8 | ND<2.49 | 0 | ND<0.0311 | ND<0.0621 | ND<0.0621 | ND<0.12 | ND<31.6 |
| SG29-CS-019-015 | 1.5 | ND<16.0 | ND<3.37 | 1 | ND<0.0421 | ND<0.0841 | ND<0.0841 | ND<0.17 | ND<32.0 |
| SG29-CS-020-035 | 3.5 | ND<15.1 | ND<2.19 | 0 | ND<0.0272 | ND<0.0547 | ND<0.0547 | ND<0.11 | ND<30.2 |
| SG29-CS-021-030 | 3.0 | ND<16.3 | ND<2.52 | 0 | ND<0.0315 | ND<0.0629 | ND<0.0629 | ND<0.13 | ND<32.5 |
| SG29-CS-022-025 | 2.5 | ND<14.5 | ND<2.41 | 0 | ND<0.0301 | ND<0.0602 | ND<0.0602 | ND<0.1276 | ND<29.0 |
| SG29-CS-023-020 | 2.0 | ND<14.9 | ND<2.26 | ? | ND<0.0282 | ND<0.0564 | ND<0.0564 | ND<0.1139 | ND<29.8 |
| SG29-CS-024-055 | 5.5 | ND<15.0 | ND<2.60 | 0 | ND<0.0324 | ND<0.0649 | ND<0.0649 | ND<0.1355 | ND<30.0 |
| SG29-CS-025-030 | 3.0 | 19.1 | ND<2.12 | 1 | ND<0.0264 | ND<0.0529 | ND<0.0529 | ND<0.11 | ND<30.4 |
| SG29-CS-026-070 | 7.0 | ND<15.3 | ND<3.21 | 0 | ND<0.0401 | ND<0.0803 | ND<0.0803 | ND<0.1650 | ND<30.5 |
| CS-026-Field Dup | 7.0 | ND<15.3 | ND<3.58 | 0 | ND<0.0448 | ND<0.0895 | ND<0.0895 | ND<0.1803 | ND<28.6 |
| SG29-CS-027-080 | 8.0 | ND<15.6 | ND<4.94 | 0 | ND<0.0617 | ND<0.123 | ND<0.123 | ND<0.2560 | ND<31.3 |
| SG29-CS-028-055 | 5.5 | ND<15.0 | ND<3.06 | 0 | ND<0.0383 | ND<0.0766 | ND<0.0766 | ND<0.15 | ND<30.1 |
| SG29-CS-029-050 | 5.0 | ND<15.3 | ND<2.47 | 1 | ND<0.0308 | ND<0.0617 | ND<0.0617 | ND<0.12 | ND<30.7 |

PID – Photoionization detector; GRO – gasoline-range organics; DRO - diesel range organics; RRO – residual-range organics
mg/kg – milligrams/kilogram; ppm – parts per million; ft bgs – feet below ground surface
ND – Non-detect
Highlighted analytical results indicate contaminant concentrations above cleanup criteria shown in Table 3-1.

## 6.2 EXCAVATED PCS CHARACTERIZATION SAMPLES

Table 6-2 presents the analytical results for the daily characterization samples that were taken to determine the average contaminant concentrations of the PCS stockpiled at the City's new landfill for use as municipal waste day-cover and landspread as cover material at the City's old landfill. Comparisons of Table 6-2 concentration averages with Table 2-1, Contaminant Fate and Transport Parameters, shows the model parameters were not exceeded. For non-detect analytical results, one-half of the detection level was used for averaging. All PAH analytical results were non-detect (see Appendix D).

Table 6-2 Analytical Results for PCS Characterization Samples

| Sample ID | DRO mg/kg | GRO mg/kg | PID ppm | Benzene mg/kg | Toluene mg/kg | Ethylbenzene mg/kg | Xylenes mg/kg | RRO mg/kg |
|---|---|---|---|---|---|---|---|---|
| Cleanup Level | **250** | **300** | **-** | **0.5** | **5.4** | **5.5** | **78** | **10,000** |
| SG29-DC-001-080 | 1880 | 68.8 | 205 | .033 | 0.060 | 1.62 | 1.86 | ND <37 |
| SG29-DC-002-110 | 188 | 17.2 | 38 | ND<0.013 | ND<0.0262 | 0.238 | 0.478 | ND <31 |
| SG29-DC-003-070 | ND<15 | ND <2.6 | 12 | ND<0.016 | ND<0.033 | 0.0543 | 0.0985 | ND <30 |
| SG29-DC-004-030 | 2550 | 16.1 | 33 | ND<0.027 | ND<0.053 | ND<0.053 | 0.690 | 36.9 |
| SG29-DC-005-040 | 2470 | 39.8 | 71 | ND<0.027 | ND<0.054 | 0.152 | 0.431 | 33.4 |
| SG29-DC-006-040 | 123 | ND<2.6 | 22 | ND<0.033 | ND<0.066 | ND<0.066 | ND<.13 | ND <30 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Average | 1,203 | 24.1 | NA | .015 | .029 | .35 | .60 | 22 |
| Model Limit | 3,478 | 193 | NA | .05 | 1.53 | .48 | 1.06 | NA |

PID – Photoionization detector; GRO – gasoline-range organics; DRO - diesel range organics; RRO – residual-range organics
mg/kg – milligrams/kilogram; ppm – parts per million
NA – Not applicable; ND- Non-detect
Highlighted analytical results indicate contaminant concentrations above cleanup criteria shown in Table 3-1.

## 6.3 BACKFILL CHARACTERIZATION SAMPLES

Backfill for Site 29 was obtained from the St. George Island scoria borrow pit area. Three characterization samples were collected in 2006 for backfill of Sites 1, 2, and 29 East. Three samples and one duplicate were collected in 2007 for Site 29 East. Sample analytical results indicate that concentrations of all contaminants were either non-detect or well below ADEC Method Two cleanup levels.

Table 6-3 Analytical Results for Backfill Characterization Samples

| Sample ID | DRO mg/kg | GRO mg/kg | PID ppm | Benzene mg/kg | Toluene mg/kg | Ethylbenzene mg/kg | Xylenes mg/kg | Total Lead mg/kg | RRO mg/kg |
|---|---|---|---|---|---|---|---|---|---|
| Cleanup Level | **250** | **300** | **-** | **0.5** | **5.4** | **5.5** | **78** | **400** | **10,000** |
| SG01-BF-001-350 | 2.74 | ND<2.86 | 0 | 0.00573 | 0.0112 | 0.00739 | 0.0283 | ND<2.38 | 31.5 |
| SG01-BF-002-350 | 5.5 | ND<3.92 | 0 | ND<0.0118 | 0.00620 | ND<0.0392 | ND<0.0785 | ND<2.55 | 57.4 |
| SG01-BF-003-450 | 3.69 | ND<2.63 | 1 | ND<0.00790 | 0.00403 | 0.00187 | ND<0.0527 | ND<2.17 | 37.3 |
| SG29-BF-001-050 | ND<10 | ND<3.0 | 0 | ND<0.03 | ND<0.03 | ND<0.03 | ND<0.09 | 2.34 | ND<50 |
| SG29-BF-002-040 | ND<10 | ND<3.0 | 1 | ND<0.03 | ND<0.03 | ND<0.03 | ND<0.09 | 1.59 | ND<50 |
| SG29-BF-003-070 | ND<10 | ND<3.0 | 0 | ND<0.03 | ND<0.03 | ND<0.03 | ND<0.09 | 1.35 | ND<50 |
| BF-003-Field Dup | ND<10 | ND<3.0 | 0 | ND<0.03 | ND<0.03 | ND<0.03 | ND<0.09 | 1.58 | ND<50 |

PID – Photoionization detector; GRO – gasoline-range organics; DRO - diesel range organics; RRO – residual-range organics
mg/kg – milligrams/kilogram; ppm – parts per million
ND- Non-detect

# 7.0 QUALITY ASSURANCE AND QUALITY CONTROL

To ensure that analytical results accurately represent site conditions, quality assurance and quality control (QA/QC) procedures were followed for soil sampling and laboratory analysis. The QAP (NOAA 2006b) establishes the QA/QC requirements; this section provides an overview.

## 7.1 FIELD PROCEDURES

Several field QA/QC procedures were implemented to ensure sample integrity and the accurate representation of site conditions.

**Qualified Samplers**

Samples were collected, controlled and shipped by ChemTrack personnel who were qualified in accordance with 18 AAC 75 (ADEC 2006a) and the ADEC UST Procedures Manual (ADEC 2002). Appendix D provides sampler qualification documentation.

**Sample Control Procedures**

Sample collection protocols, described in Section 5.0, ensured that samples were collected in the same representative manner from one sample to the next. After each sample was collected, the sample container was labeled with a unique identification number that was also recorded on a chain-of-custody (COC) form and in the field logbook.

Fixed laboratory confirmation and characterization samples were kept cool and in ChemTrack's custody until they were shipped directly to the laboratory. The appropriate COC forms accompanied each sample shipment to the laboratory.

**Documentation**
Field activities were documented by ChemTrack in bound field logbooks. Field procedures, sample collection information, and sample identification information were recorded to ensure that samples were properly acquired, preserved, and identified in the field. Appendix C provides copies of the field logbooks generated during the corrective action.

## 7.2 ANALYTICAL PROCEDURES

Several QA/QC procedures were followed during this corrective action, both in the field and in the laboratory, to ensure accurate analytical representation of site conditions. Section 7.3 provides a review of the QA/QC results. Test America Analytical Testing Corporation (Anchorage, AK) provided laboratory analyses for DRO, GRO, RRO, BTEX, and select PAHs; the laboratory is ADEC approved in accordance with 18 AAC 78 *Underground Storage Tanks* (ADEC 2006b).

**Trip Blanks**
Trip blanks are used to verify that contamination is not originating from sample containers or other external factors during sample transport. A trip blank originates at the laboratory as a container with clean sand (for soil samples) that is transported to the site with the empty containers to be used for field sample collection. The trip blanks are stored at the site until the field samples have been collected. Each trip blank is extracted with methanol in the same manner as field samples, and is then analyzed for BTEX and GRO. Four trip blanks associated with Site 29 East excavations were submitted for analyses. Appendix D contains trip blank analytical results; GRO and BTEX were not detected in any trip blank samples. Sample contamination during transport is not considered an issue.

**Equipment Rinsate Blanks**
Sampling equipment was disposable, one time use; rinsate blanks were not collected.

**Field Duplicate Samples**
Field duplicate samples are collected and analyzed to evaluate the precision of the project's soil testing process, which includes sample collection, shipment and analysis. Field duplicate samples are collected at the same time and from the same location as regular samples, assigned a unique ID number, and submitted to the laboratory for analysis. Evaluated together for trends, the relative percent differences (RPD) between the duplicates and their corresponding regular sample analytical results are used to assess the reproducibility of the soil testing program. An individual RPD outside an acceptable range may only be an indication of heterogeneous soil contaminant conditions; however, trends of RPD's outside acceptable ranges may indicate problems in the soil testing program such as improper sample collection or poor laboratory procedures.

The QAP (NOAA 2006b) requires duplicate samples be collected at a minimum rate of 10 percent of the number of regular samples collected. For Site 29 East, 3 duplicate samples were collected to evaluate 29 excavation confirmation samples and 1 duplicate was collected to evaluate 3 backfill samples. Duplicate samples were analyzed for DRO, GRO, RRO, and BTEX. Appendix D contains the laboratory analytical results for duplicate samples; field duplicate samples are designated by "9" in the first digit of the last three digits of the sample ID; e.g., SG29-CS-014-930. Section 7.3 provides an assessment of the soil testing precision.

**Matrix Spike and Matrix Spike Duplicates**
Field sample aliquots are spiked by the laboratory with known concentrations of the target analytes to measure the accuracy of applicable analytical methods for a sample matrix, e.g., site soil. These laboratory-prepared samples are referred to as matrix spike (MS) samples. Percent recovery is determined for each sample spike analyte.

Acceptable percent recoveries differ, depending on the matrix and analytical method used. The laboratory also prepares a duplicate of the spiked sample (MSD). MS/MSD samples are prepared at a rate of 1 for every 20 field samples analyzed. The RPD between the MS and MSD analysis can be calculated to evaluate analytical precision. In the event that a sample displays a percent recovery or RPD outside the allowable range, sample data in that particular analytical batch are flagged by the laboratory with a qualifier indicating the discrepancy. Flags are typically posted adjacent to the laboratory's reported value (see Appendix D). Section 7.3 provides an assessment of the analytical accuracy.

**Laboratory Quality Assurance and Quality Control**

Additional laboratory QA/QC procedures include: duplicate analysis of field samples; laboratory control samples (LCS), LCS duplicates (LCSD), method blanks, and surrogate spiking. These QA/QC procedures are established by the laboratory in accordance with its standard operating procedures and certification requirements. The results of the laboratory QA/QC are generally discussed in the laboratory's data package narrative and indicated, when appropriate, as flagged qualifiers. Section 7.3 provides an assessment of the laboratory QA/QC results.

## 7.3 DATA QUALITY OBJECTIVES AND RESULTS

The following subsections provide a summary of the objectives and results for precision, accuracy, representativeness, completeness, and comparability associated with analytical data resulting from the Site 29 East sampling. More details on data quality results can be found in Appendix D, which contains data validation checklists, laboratory data quality narratives and analytical results. Appendix D data validation is arranged by work order number; for reference, Table 7-1 below correlates work order numbers with the sample identification numbers found in Figure 12 and Tables 6-1, 6-2, 6-3 and 7-2.

Table 7-1 Sample ID Correlation To Work Order Number

| Sample ID | Work Order | Sample ID | Work Order | Sample ID | Work Order | Sample ID | Work Order |
|---|---|---|---|---|---|---|---|
| SG29-CS-001-070 | PPJ1108 | SG29-CS-012-110 | PPK0211 | SG29-CS-023-020 | PQE0857 | SG29-DC-005-040 | PQE0857 |
| SG29-CS-002-080 | PPJ1108 | SG29-CS-013-025 | PQE0857 | SG29-CS-024-055 | PQE0857 | SG29-DC-006-040 | PQE0857 |
| SG29-CS-003-060 | PPJ1108 | SG29-CS-014-030 | PQE0857 | SG29-CS-025-030 | PQE0857 | SG01-BF-001-350 | BP10628 |
| SG29-CS-004-110 | PPJ1114 | CS-014-Field Dup | PQE0857 | SG29-CS-026-070 | PQE0857 | SG01-BF-002-350 | BP10628 |
| SG29-CS-005-060 | PPJ1114 | SG29-CS-015-030 | PQE0857 | CS-026-Field Dup | PQE0857 | SG01-BF-003-450 | BP10628 |
| SG29-CS-006-040 | PPJ1108 | SG29-CS-016-035 | PQE0857 | SG29-CS-027-080 | PQE0857 | SG29-BF-001-050 | 706246 |
| SG29-CS-007-050 | PPJ1108 | SG29-CS-017-030 | PQE0857 | SG29-CS-028-055 | PQE0857 | SG29-BF-002-040 | 706246 |
| SG29-CS-008-060 | PPJ1108 | SG29-CS-018-020 | PQE0857 | SG29-CS-029-050 | PQE0857 | SG29-BF-003-070 | 706246 |
| CS-008-Field Dup | PPJ1108 | SG29-CS-019-015 | PQE0857 | SG29-DC-001-008 | PPJ1114 | BF-003-Field Dup | 706246 |
| SG29-CS-009-055 | PPJ1108 | SG29-CS-020-035 | PQE0857 | SG29-DC-002-110 | PPJ1114 | | |
| SG29-CS-010-050 | PPJ1108 | SG29-CS-021-030 | PQE0857 | SG29-DC-003-070 | PPJ1114 | | |
| SG29-CS-011-070 | PPJ1108 | SG29-CS-022-025 | PQE0857 | SG29-DC-004-030 | PQE0857 | | |

**Data Precision**

The degree of soil testing variation introduced during sample collection, shipping and analysis is assessed by determining the analytical RPDs between field samples and field duplicate samples; field samples and laboratory duplicates; LCS/LCSD pairs and MS/MSD pairs. For a sample set, the smaller the RPDs, the greater the inferred precision or reproducibility, and the higher the confidence that the analytical results represent actual site conditions. The RPD between field samples and field sample duplicates can be heavily influenced by heterogeneous soil conditions. Variation in a contaminant concentration at a soil sample location, particularly if the concentration is near the analytical detection limit, can produce high a RPD value regardless of the precision of the sampling process. RPD values for MS/MSD pairs, LC/LCD pairs, and laboratory duplicates are measures of the laboratory's analysis precision because they are derived from a single sample, not two samples from one sample location.

Table 7-2 (below) provides the DRO, GRO, and BTEX RPD between field samples and field duplicates. Field duplicate analytical results for RRO were all non-detect (see Appendix D).

Table 7-2 RPDs are calculated using the following equation:

RPD = 100 x 2(D1 – D2)/(D1+D2)
D1= Concentration of analyte in normal field sample
D2= Concentration of analyte in duplicate sample

The QAP (NOAA 2006b) establishes data quality objectives (DQO) for precision RPD values as follows: DRO and RRO ± 30 %; GRO, benzene, toluene, ethylbenzene and xylenes ± 35 %.

Analytical results for the four field sample/duplicate pairs indicate that DRO, GRO and BTEX concentrations are all below method detection levels; therefore, RPDs can be considered zero or at least not indicative of poor precision.

Review of RPD values for laboratory duplicates, MS/MSD pairs and LC/LCD pairs (see Appendix D) indicates that laboratory precision for work orders BP10628, PPK0211, PPJ1108, PPJ1114, PQE0857 and 706246 are all satisfactory.

In summary, the precision of the soil testing program for NOAA Site 29 East is satisfactory; no systemic sample processing issues were identified.

Table 7-2 Field Sample Precision Results

| Sample ID[1] | DRO (mg/kg) | RPD (%) | GRO (mg/kg) | RPD (%) | Benzene (mg/kg) | RPD (%) | Toluene (mg/kg) | RPD (%) | Ethylbenzene (mg/kg) | RPD (%) | Xylenes (mg/kg) | RPD (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SG29-CS-008-060 | ND< 15.3 | 0 | ND< 2.27 | 0 | ND<0.014 | 0 | ND<0.028 | 0 | ND<0.028 | 0 | ND<0.05 | 0 |
| SG29-CS-008-960 | ND< 15.3 | | ND< 2.55 | | ND<0.016 | | ND<0.032 | | ND<0.032 | | ND<0.06 | |
| SG29-CS-014-030 | ND< 15.4 | 0 | ND< 2.47 | 0 | ND<0.031 | 0 | ND<0.062 | 0 | ND<0.062 | 0 | ND<0.12 | 0 |
| SG29-CS-014-930 | ND< 14.9 | | ND< 2.25 | | ND<0.028 | | ND<0.056 | | ND<0.056 | | ND<0.11 | |
| SG29-CS-026-070 | ND< 15.3 | 0 | ND< 3.21 | 0 | ND<0.040 | 0 | ND<0.080 | 0 | ND<0.080 | 0 | ND<0.16 | 0 |
| SG29-CS-026-970 | ND< 15.3 | | ND< 3.58 | | ND<0.045 | | ND<0.086 | | ND<0.090 | | ND<0.18 | |
| SG29-BF-003-070 | ND< 12 | 0 | ND<3 | 0 | ND<0.03 | 0 | ND<0.03 | 0 | ND<0.03 | 0 | ND<0.09 | 0 |
| SG29-BF-003-970 | ND< 13 | | ND<3 | | ND<0.03 | | ND<0.03 | | ND<0.03 | | ND<0.09 | |

Note 1. Field duplicates indicated with "9" in first digit of last three digits; "CS" in sample ID indicates excavation confirmation sample; "BF" indicates day-cover characterization sample.
RPD = relative percent difference; DRO = diesel range organics; GRO = gasoline range organics

**Data Accuracy**

Accuracy refers to the degree to which a measurement agrees with its true value. Laboratories spike samples with known concentrations of target analytes to assess analytical accuracy by determining the percent recovery of the spike. MS, MSD, LCS, LCSD and blank samples are used for accuracy determination. Surrogate standards are also added to samples analyzed for organic constituents.

Surrogate recoveries for some analyses in Work Orders #'s PPJ1114 and PPK0211 fell outside laboratory control limits due to sample matrix interference (see Appendix D). The laboratory determined that data quality was not affected.

All sample data from the work order sample groups were found to be representative and valid. Data accuracy is considered acceptable for the Site 29 East analytical results.

**Data Representativeness**
Representativeness expresses the degree to which sample data accurately and precisely represent the true site characteristics being measured. This project ensured representative data by adhering to QA/QC procedures during sample collection, storage, shipping and analysis. Soil samples were analyzed for contaminants that were previously identified through several site investigations. Samplers and laboratories met applicable ADEC qualification criteria.

The sample results provided by this report are judged to be representative of true site conditions based on observation of ChemTrack's sampling techniques, and review of analytical precision and accuracy data.

**Data Completeness**
Completeness is a measure of the percentage of project-specific data that are valid. When all data validation is completed, the percent completeness value is calculated by dividing the number of useable sample results by the total number of sample results obtained.

The QAP DQO for completeness is 85 percent or greater; 100 percent data completeness was achieved for this project.

**Comparability**
Comparability expresses the confidence with which one data set can be compared with another. Comparability of data is achieved by consistently following standard field and laboratory procedures and by using standard measurement units in reporting analytical data.

This project used standard procedures for both field and laboratory processes, and the units used to express sample results are reasonable for concentrations encountered. Data sets for this project are, therefore, deemed comparable.

# 8.0 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is used to evaluate exposure pathways for human health and ecological receptors. The following subsections provide an evaluation for each of the elements of the CSM for NOAA Site 29 including: contamination sources, release mechanisms, impacted media, migration pathways, exposure routes, potential receptors, and a cumulative risk assessment.

## 8.1 SOURCES OF CONTAMINATION AND RELEASE MECHANISMS
The sources of contamination at NOAA Site 29 East were leaking fuel pipeline connections. Contaminant sources at NOAA Site 29 West were rainwater runoff carrying DRO from NOAA Site 3 and leakage from derelict equipment.

## 8.2 IMPACTED MEDIA
NOAA Site 29 East and West have soil contaminated with DRO above the ADEC Method Two cleanup criterion. Groundwater underlying NOAA Site 29 is contaminated with DRO, GRO and benzene above ADEC groundwater cleanup criteria as a result of historical operations at NOAA Sites 1, 2, and 3 (see Figure 3).

## 8.3 MIGRATION PATHWAYS
Operations at NOAA Sites 1, 2 and 29 West ceased in the 1970s; operations at NOAA Sites 3 and 29 East ceased in the 1990's. Storage tanks, fuel drums and above ground pipelines were removed from these sites between the 1970s and the 1990s. Contaminated surface soil was removed from NOAA Site 3 in 1997 and from NOAA Sites 1, 2, and 29 East in the fall of 2006/spring of 2007. All derelict equipment was removed from NOAA Site 29 West in 2007 (Appendix A, Photograph 27). These corrective actions have eliminated the sources of Site 29 pe-

troleum contaminants. Surface transport pathways no longer exist at NOAA Site 29 East and are unlikely at Site 29 West's small areas of DRO contaminated soil.

Subsurface transport pathways include vertical migration through the vadose zone and lateral migration in groundwater.

## 8.4 EXPOSURE ROUTES

Direct exposure pathways involve direct contact (human or ecological) with contaminated media. Indirect exposure pathways involve contamination traveling through the environment to a location at which the receptors (human or ecological) are exposed.

Potential direct exposure pathways include dermal contact with or ingestion of petroleum contaminated soil. Corrective actions at NOAA Site 29 have resulted in either the complete removal of PCS, or leaving PCS with contaminant concentrations below ADEC Method Two ingestion criteria (see Table 8-1 below). Dermal contact with DRO contaminated soil remains a possibility at Site 29 West at the two locations found to be contaminated in 1994, and at Site 29 East if soil excavation were to expose areas left contaminated at 11 feet bgs and 6 feet bgs (see Figure 12).

Potential indirect exposure pathways include inhalation of contaminated soil particles transported off site by the wind, and ingestion of surface water or groundwater containing dissolved contaminant phases. DRO contaminated soil remaining at NOAA Site 29 is found in concentrations below the ADEC Method Two inhalation criterion (see Table 8-1 below). Hydrogeological studies (TTEMI 2005a) have determined that contaminated groundwater in the vicinity NOAA Site 29 does not pose a threat to the island's drinking water supply. Modeling indicates that, even under maximum pumping conditions, the groundwater underlying NOAA Site 29 will not fall within the municipal water well area of influence due to distance and geological features, such as faults, between the wells and this site. Investigations (TTEMI 2005b) have found that the total dissolved solids (TDS) concentration in the groundwater in the vicinity of Site 29 exceeds the ADEC drinking water quality standard of 500 milligrams per liter (mg/L). The elevated TDS concentration is indicative of saltwater intrusion from the nearby Bering Sea into the island water table, and means that groundwater in the vicinity of Site 29 will likely never be used as a drinking water source. Sheen attributable to petroleum contaminated groundwater has not been observed on the Bering Sea. There are no indirect exposure pathways for ingestion of surface or groundwater.

## 8.5 POTENTIAL RECEPTORS

NOAA Site 29 East is undeveloped and primarily used by island residents for access to the Bering Sea. There is a potential for dermal contact with DRO contaminated soil by future workers who excavate in areas where PCS has been left in place below the ground surface (see Figure 12). The two hot spots in NOAA Site 29 West are located in or alongside a roadway used for access along the City waterfront. There is a potential for dermal contact with DRO contaminated soil in these locations. There is no discernable indirect exposure pathway for human or ecological receptors within Site 29.

## 8.6 CUMULATIVE RISK ASSESSMENT

Cumulative risk is defined as the sum of risks resulting from multiple sources and pathways to which humans are exposed. When more than one hazardous substance is present at a site or multiple exposure pathways exist, the cleanup levels in Table B1 of 18 AAC 75.341 and Table C of 18 AAC 75.345 may need to be adjusted downward. In accordance with the requirements outlined in 18 AAC 78.600, NOAA must ensure that the cumulative cancer risk remaining after the completion of the corrective action does not exceed 1 in 100,000 ($1 \times 10^{-5}$) and that the cumulative non-carcinogenic hazard index (HI) does not exceed 1.0. Each contaminant detected above one-tenth of the Table B1 inhalation or ingestion or Table C cleanup levels must be included in cumulative risk calculations for exposure pathways that are shown to be complete based on the site-specific CSM. For NOAA Site 29, the only known complete exposure pathway is potential dermal contact.

Site 29 contaminants requiring cumulative risk evaluation are benzene, toluene, ethylbenzene and xylenes (BTEX). ADEC does not include DRO, GRO and RRO in cumulative risk analysis. As shown in Table 8-1 below, the remaining BTEX concentrations do not exceed one-tenth of their corresponding Table B1 cleanup levels; therefore, the cumulative cancer risk for contaminants remaining at Site 29 does not exceed 1 x $10^{-5}$, and the cumulative non-carcinogenic hazard index is below ADEC's criterion of 1.0.

Table 8-1 Cumulative Risk Determination

| Chemical of Concern | DRO | GRO | Benzene | Toluene | Ethylbenzene | Xylenes |
|---|---|---|---|---|---|---|
| Table B.1 Soil Cleanup Level (mg/kg)[1] | | | | | | |
| Ingestion | 10,250 | 1,400 | 290 | 20,300 | 10,000 | 203,000 |
| Inhalation | 12,500 | 1,400 | 9 | 180 | 89 | 81 |
| One-Tenth Table B.1 Cleanup Level (mg/kg) | | | | | | |
| Ingestion | NA | NA | 29 | 2,030 | 1,000 | 20,300 |
| Inhalation | NA | NA | 0.9 | 18 | 8.9 | 8.1 |
| Highest Site Concentration (mg/kg)[2] | 3,880 | 72.9 | 0.0178 | 0.709 | 2.06 | 3.05 |
| Site Concentration > 1/10 Table Criteria? | NA | NA | No | No | No | No |

Note 1 – Table B.1 Cleanup Level based on "Under 40-Inch Zone".
Note 2 – Highest Site Concentration obtained from confirmation sample analytical results listed in Table 6-1.
NA – ADEC does not include DRO, GRO and RRO in cumulative risk calculations.

# 9.0 CONCLUSIONS AND RECOMMENDATIONS

The following subsections present conclusions and recommendations for NOAA Site 29 based on corrective actions performed in 2006 and 2007.

## 9.1 CONCLUSIONS

Petroleum-contaminated soil has been removed from NOAA Site 29 to the extent practicable. Soil contaminated with DRO in concentrations above the ADEC cleanup criterion remains at Site 29 East in one area where equipment refusal was reached at 11 feet bgs, and in another area, starting at 6 feet bgs, that was left in place as a buffer to the Bering Sea (Figure 12). The buffer between the Bering Sea and the site excavation reduces the potential for storm seas breaching the excavation and carrying away fill material and contaminants, a scenario of concern to the community.

Environmental investigations found no soil contamination associated with the buried pipeline in Site 29 West; however, two sample locations in the vicinity of the site returned analytical results with DRO concentrations above the ADEC cleanup criterion. The sample locations were chosen during a 1994 investigation based on observed spills that likely occurred/were occurring after the 1984 transfer of property from the federal government to the City of St. George. The contaminated "hot spots' are located in or adjacent to an access road, in an area known to be traversed by underground power and sewer lines. The City of St. George is not able to verify the locations of these lines. Any excavation attempt would require leaving soil in place to prevent undermining or damaging the utilities, if located. The potential benefit to be derived from removing these hot spots is limited, and when compared to the risk of damaging the utilities, it is evident that it is not practicable to excavate these areas.

DRO concentrations remaining in the soil at Site 29 East and West are well below the ADEC cleanup criteria for inhalation and ingestion. The cumulative cancer risk for remaining contaminants does not exceed 1 x $10^{-5}$, and the cumulative non-carcinogenic hazard index is below ADEC's criterion of 1.0.

The depth to the water table in the vicinity of Site 29 is approximately 15 feet bgs and contaminated with DRO, GRO and benzene. Due to its shallow depth and the history of operations at the adjacent NOAA Site 1- Former Diesel Tank Farm, Site 2 – Former Drum Storage Area, and Site 3 – Inactive Gas Station, it is likely that the groundwater became contaminated with petroleum products soon after fuel storage operations began in the 1950's. The removal of 1,624 $yd^3$ of PCS from Site 3 in 1997, and 16,540 $yd^3$ of PCS from Sites 1, 2, and 29 in 2006/2007 should largely mitigate further introduction of contaminants to the groundwater. Environmental investigations have shown that the groundwater in vicinity of Site 29 is not potable due to elevated TDS concentrations resulting from sea water intrusion. Hydrogeological investigations have determined that contaminated groundwater in this area will not be drawn into the community's drinking water wells, even under maximum pumping conditions. Direct groundwater cleanup action, such as extraction wells, is not warranted and not practicable. NOAA has committed to long-term groundwater monitoring to determine the effectiveness of the cleanup actions undertaken at Sites 1, 2, 3 and 29.

## 9.2 RECOMMENDATION

NOAA requests written confirmation from ADEC that all appropriate corrective actions have been completed for mitigating petroleum contamination at NOAA Site 29 on St. George Island, Alaska, and that ADEC grants a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

**Approvals:** In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at NOAA Site 29/Two Party Agreement Site 25-1 on St. George Island in accordance with the Agreement.

**For the National Oceanic and Atmospheric Administration**

John Lindsay
NOAA, Pribilof Project Office

Dec. 3, 2007
Date

**For the Alaska Department of Environmental Conservation**

Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

Dec. 18, 2007
Date

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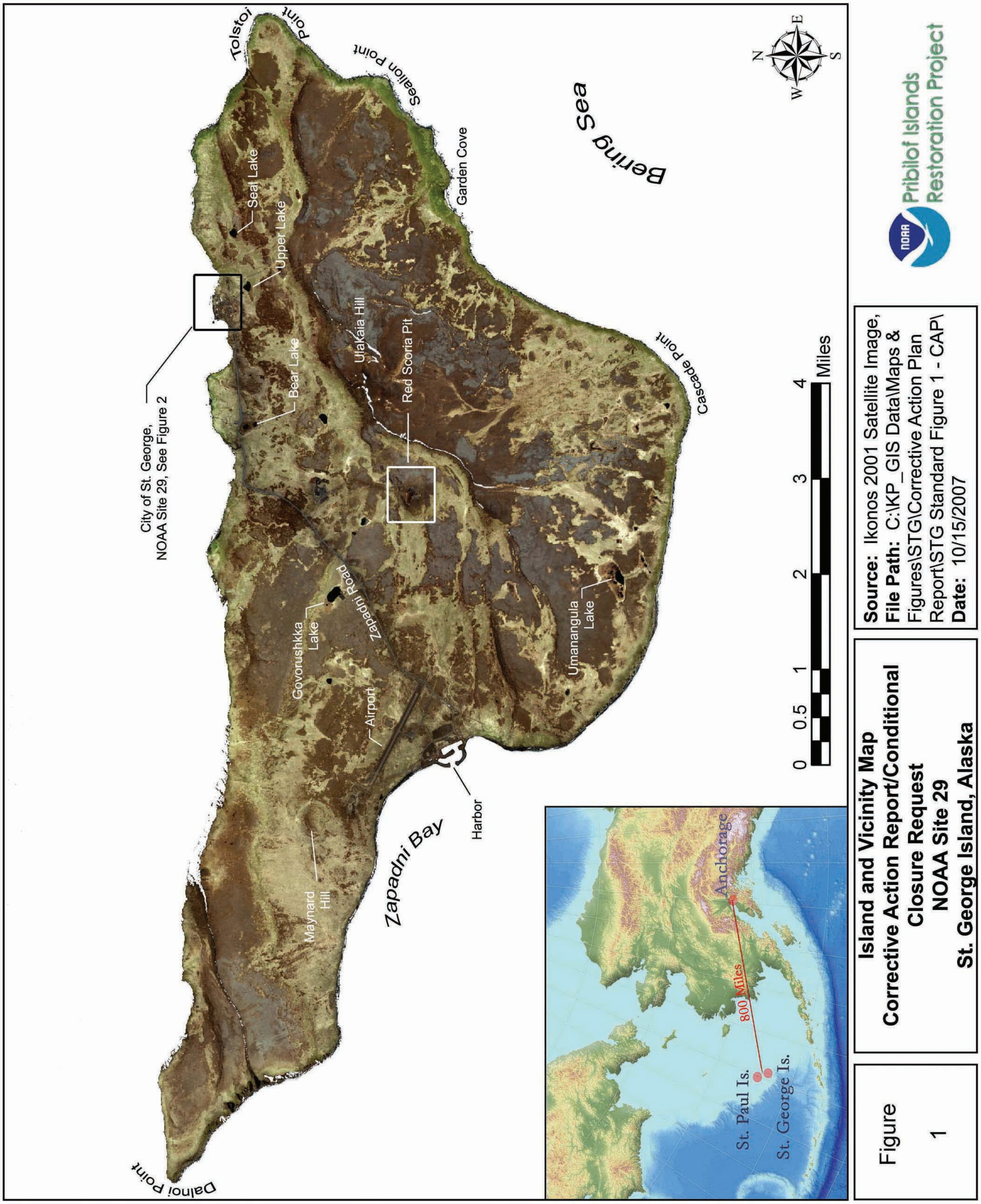
## FIGURES


Tolstoi Point
Sealion Point
Bering Sea
Garden Cove
Seal Lake
Upper Lake
City of St. George, NOAA Site 29, See Figure 2
Bear Lake
Ulakaia Hill
Red Scoria Pit
Cascade Point
Govorushkka Lake
Zapadni Road
Airport
Umanangula Lake
Maynard Hill
Zapadni Bay
Harbor
Dalnoi Point
0 0.5 1 2 3 4 Miles
N E S W
Anchorage
800 Miles
St. Paul Is.
St. George Is.
Pribilof Islands Restoration Project
NOAA
Source: Ikonos 2001 Satellite Image,
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Island and Vicinity Map
Corrective Action Report/Conditional Closure Request
NOAA Site 29
St. George Island, Alaska
Figure
1


| Figure 2 | Legal Property Description Map<br>NOAA Site 29<br>St. George Island, Alaska | Source: Aero-Metric 2006 2 ft Aerial Photo, GIS Layers (NOAA Pribilof Project Database), 1983 Bureau of Land Management Land Survey Plat Officially filed February 15, 1985<br>File Path: C:\KP_GIS Data\Maps & Figures\STG\Corrective Action Plan Report\Prop_Description_Fig2.mxd<br>Date: 11/29/2007 @ 10:57:15 AM | Pribilof Islands Restoration Project |
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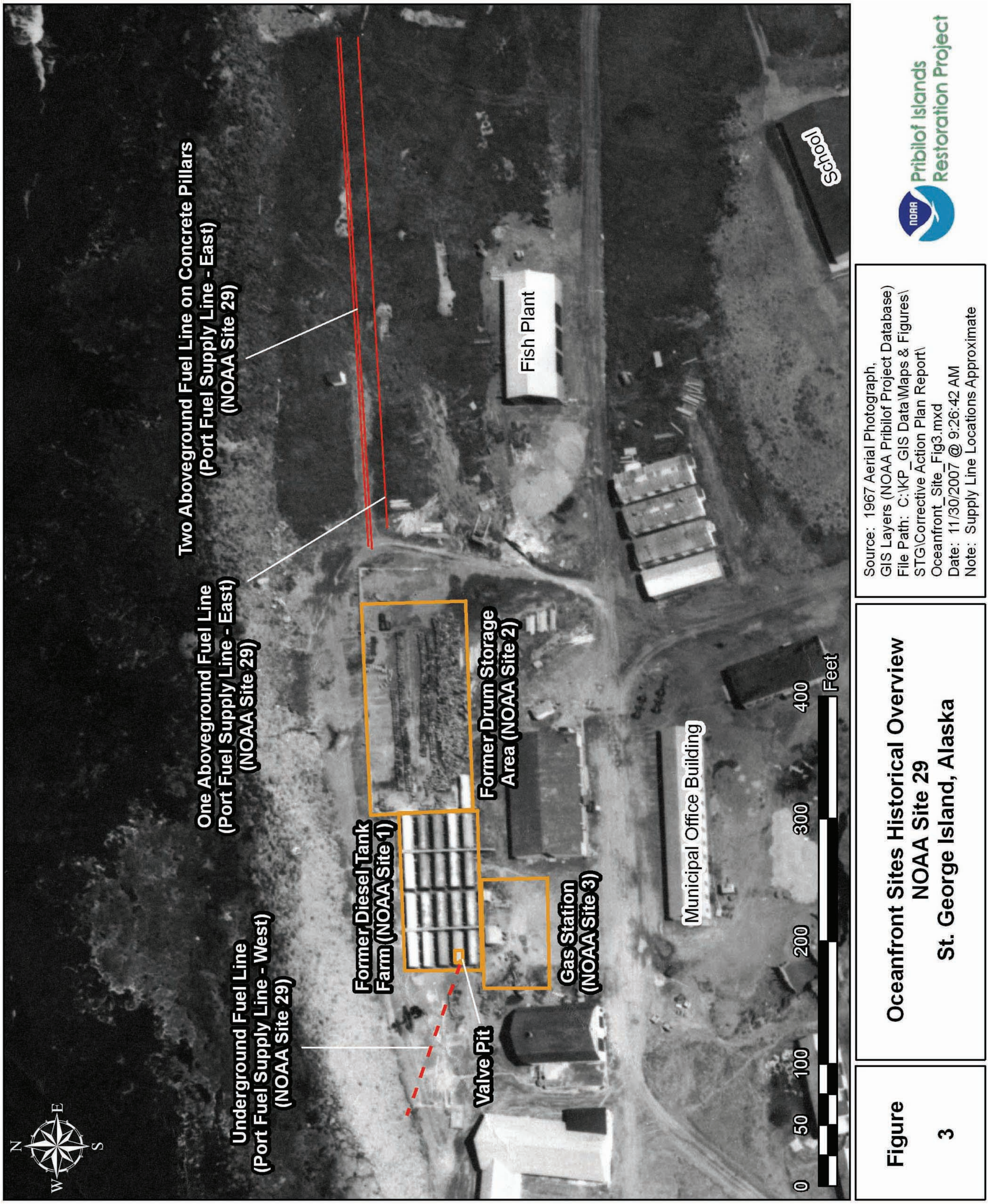
Two Aboveground Fuel Line on Concrete Pillars
(Port Fuel Supply Line - East)
(NOAA Site 29)
One Aboveground Fuel Line
(Port Fuel Supply Line - East)
(NOAA Site 29)
Underground Fuel Line
(Port Fuel Supply Line - West)
(NOAA Site 29)
Former Diesel Tank Farm (NOAA Site 1)
Former Drum Storage Area (NOAA Site 2)
Gas Station (NOAA Site 3)
Valve Pit
Fish Plant
School
Municipal Office Building
0 50 100 200 300 400 Feet
N E S W
Figure 3
Oceanfront Sites Historical Overview
NOAA Site 29
St. George Island, Alaska
Source: 1967 Aerial Photograph.
GIS Layers (NOAA Pribilof Project Database)
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Note: Supply Line Locations Approximate
NOAA
Pribilof Islands
Restoration Project


Figure 4

City of St. George Groundwater Contours and Flow Direction
NOAA Site 29
St. George Island, Alaska

Source: Aero-Metric 2006 2ft Aerial Map;
GIS Layers (NOAA Pribilof Project);
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Figure 5

**Investigation Sample Locations**
**NOAA Site 29 West**
**St. George Island, Alaska**

Source: Aero-Metric 2006 1ft Aerial Photo,
GIS Layers (NOAA Pribilof Project Database)
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Pribilof Islands Restoration Project

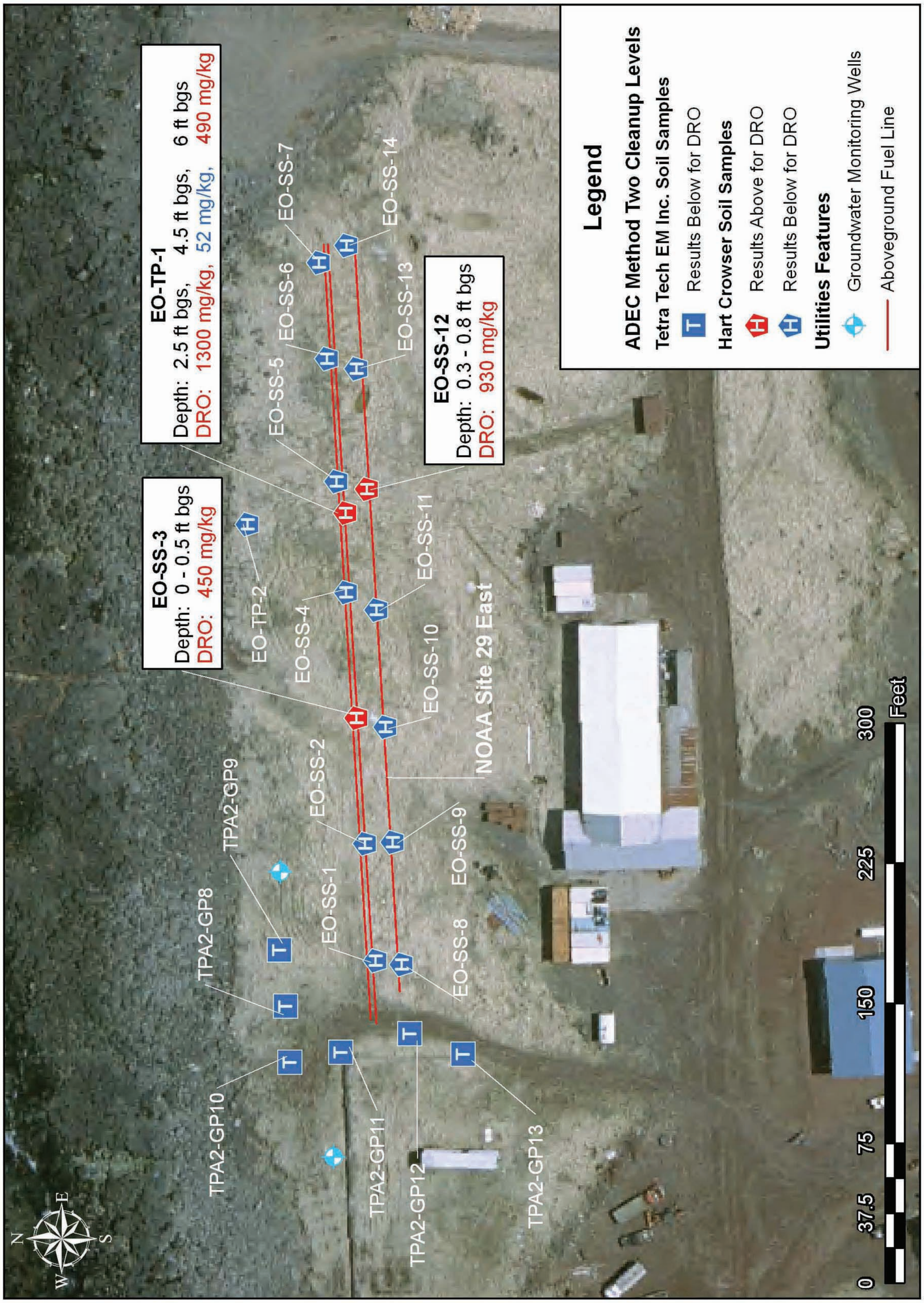


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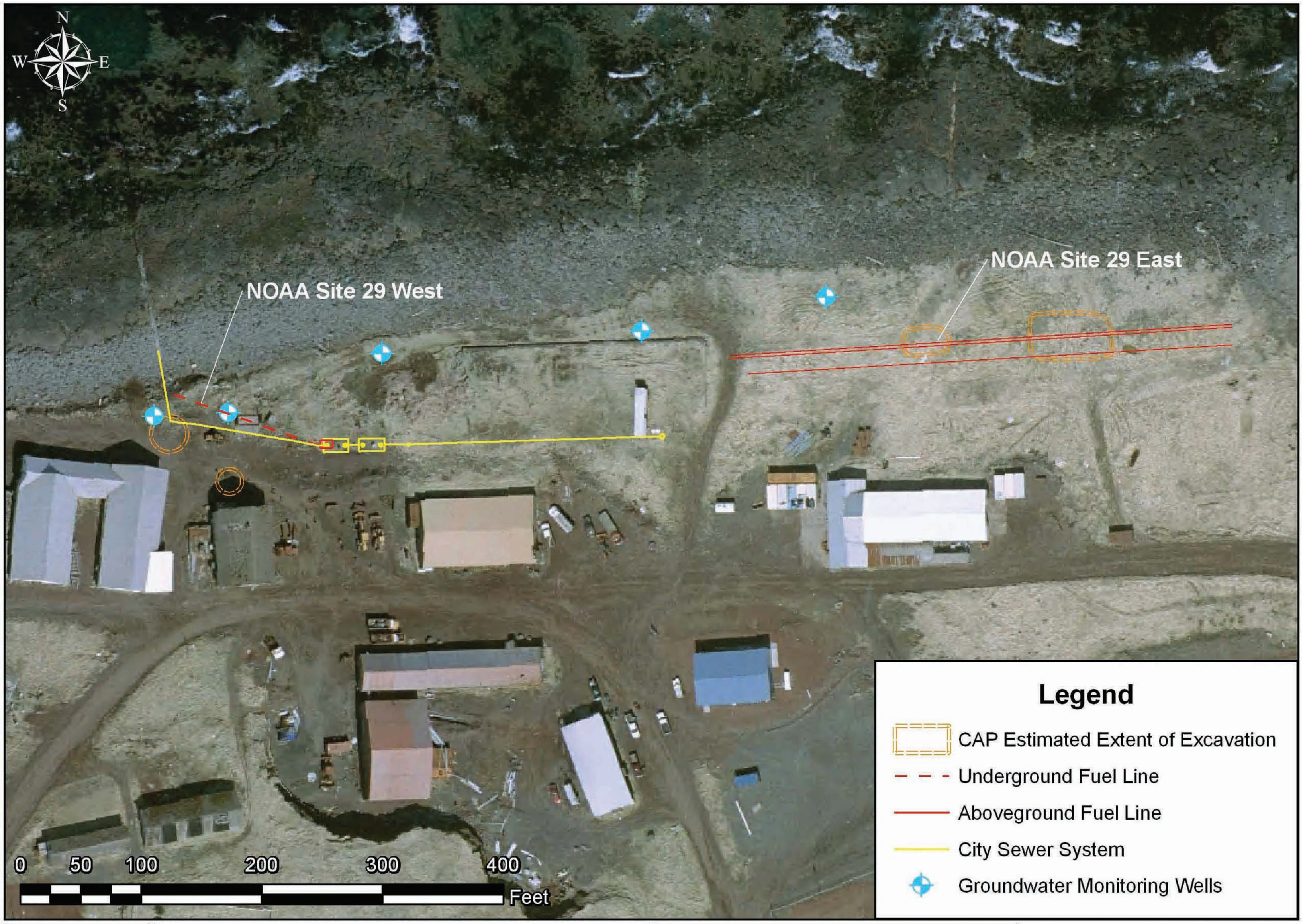
**Figure 6**

**Investigation Sample Locations**
**NOAA Site 29 East**
**St. George Island, Alaska**




| Figure 7 | Corrective Action Plan (CAP) Estimated Excavation Extents<br>NOAA Site 29<br>St. George Island, Alaska | Source: Aero-Metric 2006 1ft Aerial Photo, GIS Layers (NOAA Pribilof Project Database)<br>Path Name: C:\KP_GIS Data\Maps & Figures\STG\Corrective Action Plan Report\CAP_Estimated_Excavation_Fig7.mxd<br>Date: 11/29/2007 @ 11:30:22 AM | NOAA Pribilof Islands Restoration Project |
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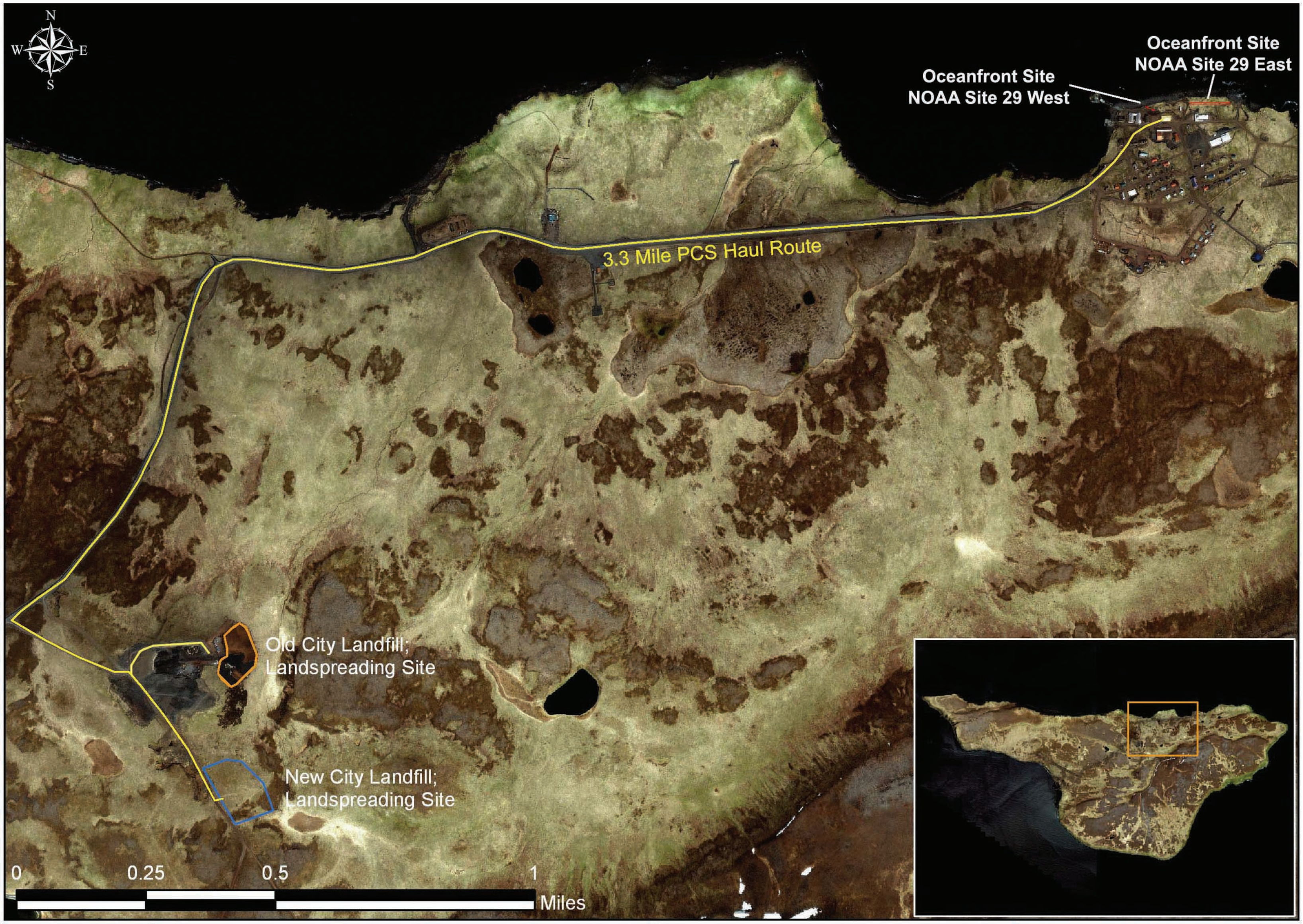


**Figure 8**

**Transportation Route for Petroleum Contaminated Soil Removal NOAA Site 29 St. George Island, Alaska**

**Source:** Ikonos 2001 Satellite Image (Space Imaging), GIS Layers (NOAA Pribilof Project Database)
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NOAA Pribilof Islands Restoration Project


| | | |
|---|---|---|
| **Figure**<br>**9** | **Archaeological Investigation Trenches**<br>**NOAA Site 29 East**<br>**St. George Island, Alaska** | Source: Aero-Metric 2006 2ft Aerial Photo,<br>GIS Layers (NOAA Pribilof Project Database)<br>File Path: C:\KP_GIS Data\Maps & Figures\<br>STG\Corrective Action Plan Report\<br>Investigative_Trench_Fig9.mxd<br>Date: 11/29/2007 @ 11:56:28 AM |

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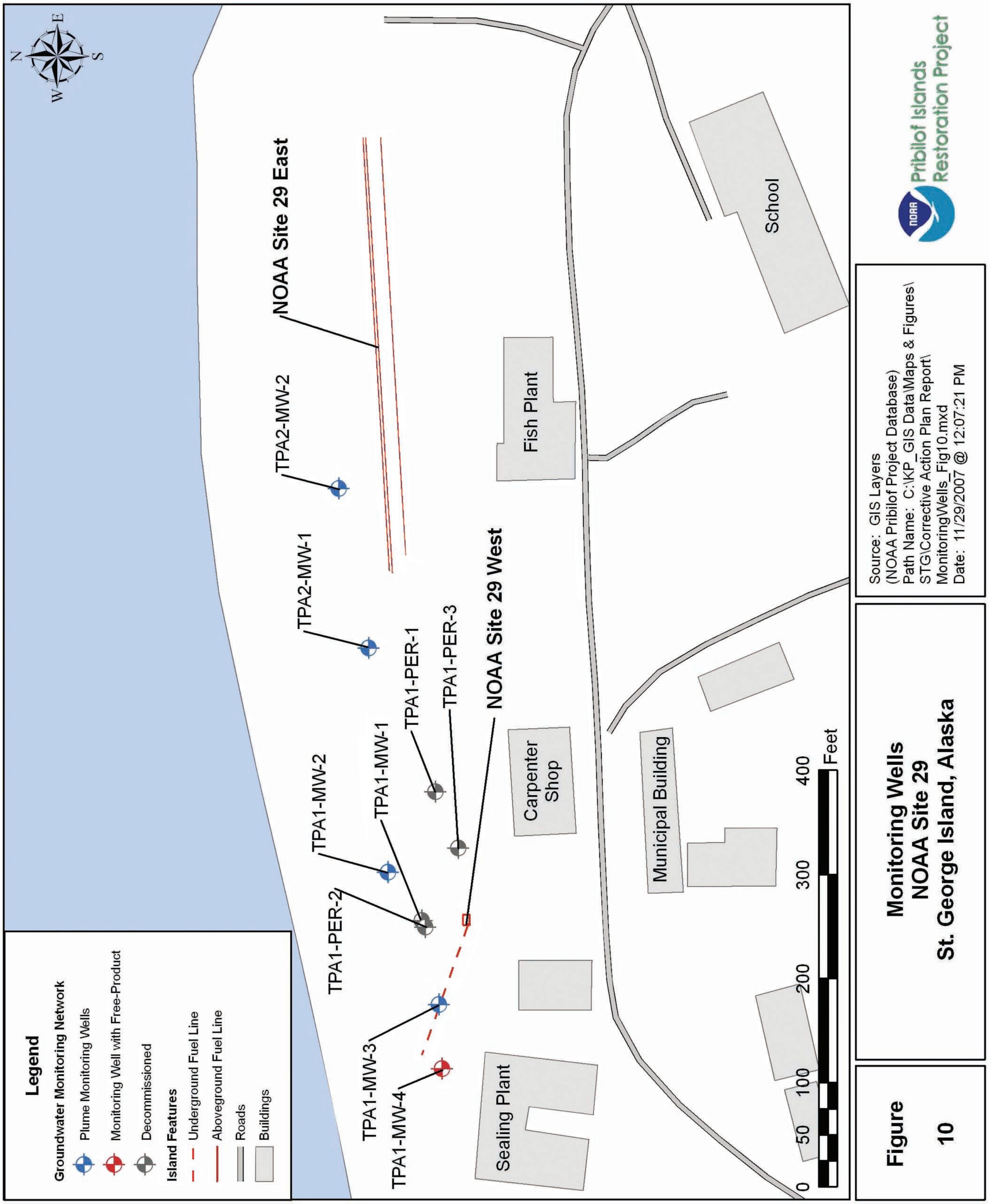
Legend
Groundwater Monitoring Network
Plume Monitoring Wells
Monitoring Well with Free-Product
Decommissioned
Island Features
Underground Fuel Line
Aboveground Fuel Line
Roads
Buildings
N
E
S
W
NOAA Site 29 East
NOAA Site 29 West
TPA2-MW-2
TPA2-MW-1
TPA1-PER-1
TPA1-PER-3
TPA1-MW-1
TPA1-MW-2
TPA1-PER-2
TPA1-MW-3
TPA1-MW-4
Sealing Plant
Carpenter Shop
Municipal Building
Fish Plant
School
0 50 100 200 300 400 Feet
Figure 10
Monitoring Wells
NOAA Site 29
St. George Island, Alaska
Source: GIS Layers
(NOAA Pribilof Project Database)
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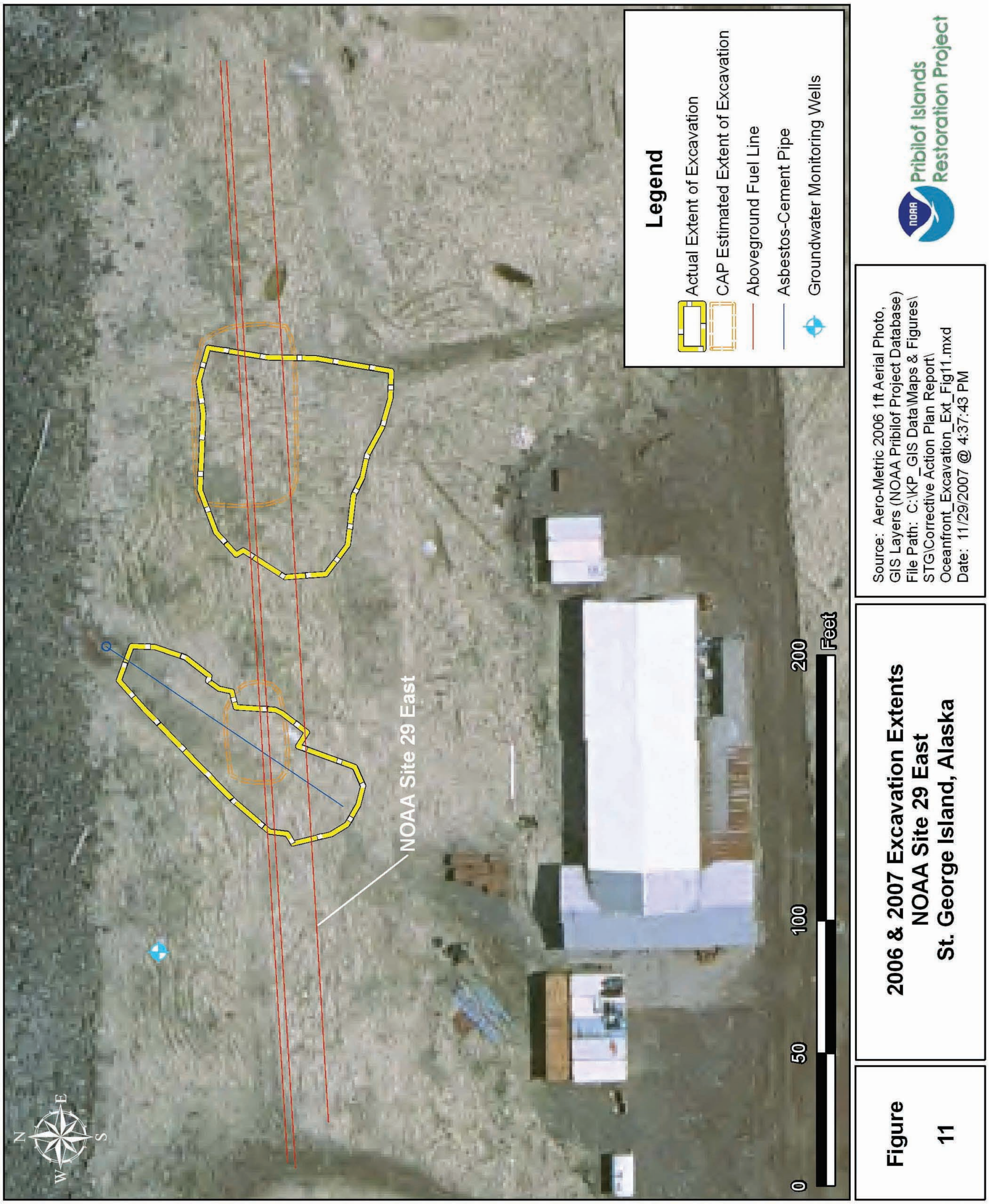


Figure 11

2006 & 2007 Excavation Extents
NOAA Site 29 East
St. George Island, Alaska

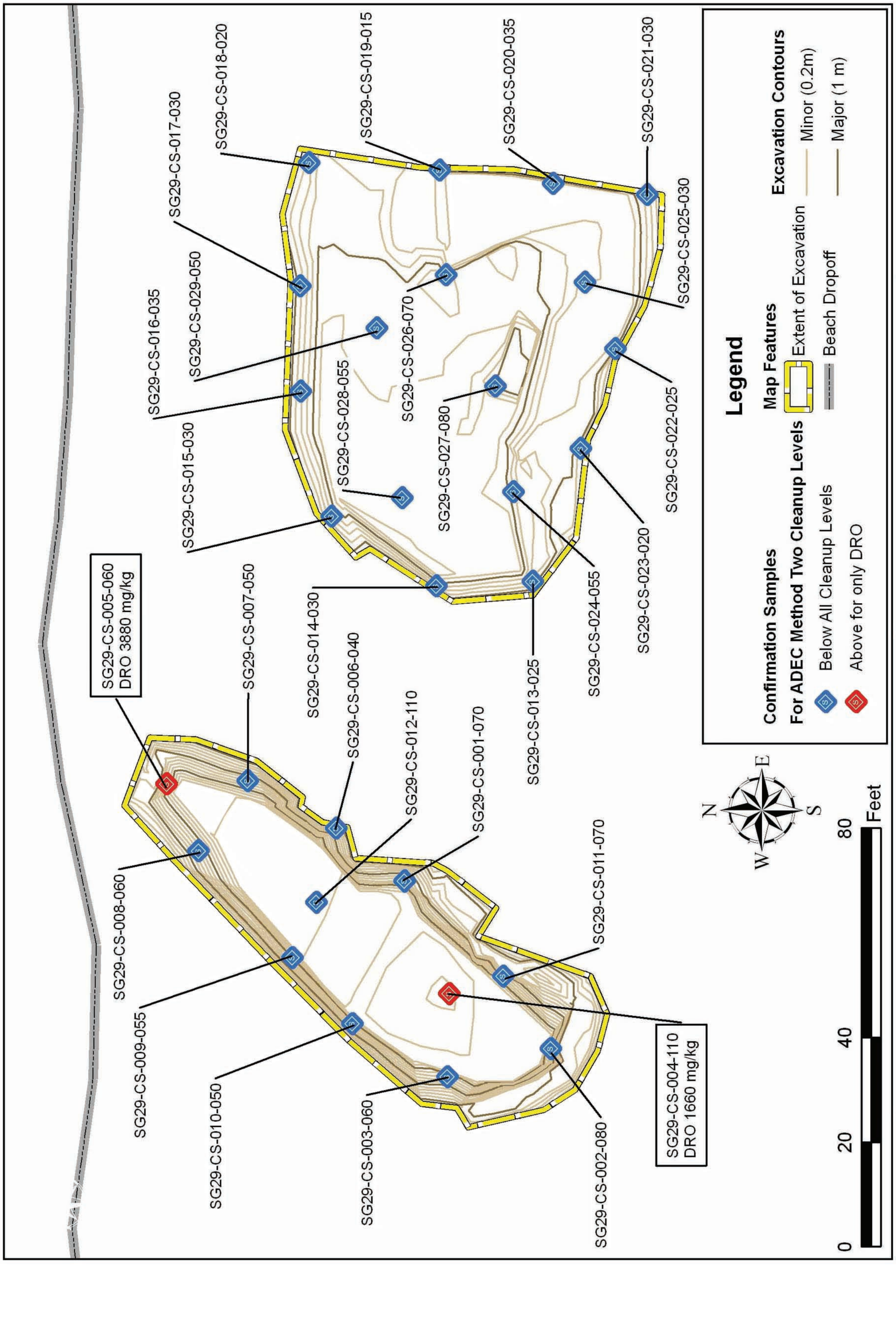


Figure 12

2006 and 2007
Confirmation Sample Locations
NOAA Site 29 East
St. George Island, Alaska

Source: GIS Layers
(NOAA Pribilof Project Database)
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Pribilof Islands Restoration Project

## APPENDIX A:  PHOTOGRAPHIC DOCUMENTATION

Photograph 1.    NOAA Site 29 East Excavation  18 October 2006
View of Site 29 East prior to start of petroleum-contaminated soil excavation.  Looking northeast.


Photograph 2.    NOAA Site 29 East Excavation  18 October 2006
View of NOAA's Caterpillar 320B excavator moving onto the site.  An old road bed was found beneath the tundra grass, allowing access without the need for building a temporary road. Looking northeast.


Photograph 3. NOAA Site 29 East Excavation 18 October 2006
Start of excavation around Hart Crowser sample location EO-SS-3; see Figure 6 of the report. Looking west.

Photograph 4. NOAA Site 29 East Excavation 18 October 2006
View of grey petroleum-contaminated soil layer and an abandoned 8-inch diameter asbestos-cement pipe encountered at about three feet below the ground surface. Facing southwest.

Photograph 5. NOAA Site 29 East Excavation 18 October 2006
Grey contaminated soil layer and asbestos-cement pipe exposed during the excavation. Looking southwest.

Photograph 6. NOAA Site 29 East Excavation 18 October 2006
View of grey soil that was contaminated by both sewage leakage from the asbestos-cement pipe and fuel from leaking aboveground pipelines that traveled sub-surface along the asbestos-cement pipe. Steven McCain, ChemTrack Project Manager, in photo. Looking north-northeast.

Photograph 7. NOAA Site 29 East Excavation 20 October 2006
View of abandoned blue plastic discharge line from the inactive fish processing plant which crossed over the abandoned asbestos-cement sewer line (in photo center left). Looking northeast.

Photograph 8. NOAA Site 29 East Excavation 20 October 2006
View of contaminated soil excavation that followed an abandoned asbestos-cement pipeline. Looking northeast.

Photograph 9.    NOAA Site 29 East Excavation  21 October 2006
Steven McCain, ChemTrack, collecting soil samples from excavator bucket.  Looking southwest.

Photograph 10.  NOAA Site 29 East Excavation  23 October 2006
View of asbestos-cement pipe left behind in Bering Sea buffer set-back.  Note beach in upper right.  Looking northwest.

Photograph 11.  NOAA Site 29 East Excavation  3 November 2006
Backfilling excavation around Hart Crowser sample location EO-SS-3; see Figure 6 of the report.   Looking southwest.

Photograph 12.  NOAA Site 29 East Excavation  6 November 2006
Backfilled excavation.  Looking north.

Photograph 13.  New City Landfill          9 September 2006
View of ramp built into interior of the City of St. George's new landfill site to allow access for stockpiling petroleum-contaminated soil for use as municipal waste day cover.   Looking east.


Photograph 14.  New City Landfill          7 October 2006
Pushing soil into five foot high municipal waste day cover stockpiles at the new landfill.  Looking northeast.


Photograph 15.  New City Landfill          11 November 2006
Asbestos-cement pipe, covered with liner and asbestos caution tape, prior to burial at the City's new landfill.

Photograph 16.  Scoria Borrow Pit          9 May 2007
Clearing snow at scoria backfill borrow area to enhance melt and ground thaw.


Photograph 17. NOAA Site 29 East Excavation 11 May 2007
Start of excavation around Hart Crowser sample location EO-SS-12 and EO-TP-1; see Figure 6 of the report. Looking east.

Photograph 18. NOAA Site 29 East Excavation 11 May 2007
Excavating around Hart Crowser sample location EO-SS-12 and EO-TP-1. Looking east.

Photograph 19. NOAA Site 29 East Excavation 11 May 2007
Access road into the site. Looking southeast.

Photograph 20. NOAA Site 29 East Excavation 11 May 2007
Shallow excavation of contaminated soil. Looking north.

Photograph 21. NOAA Site 29 East Excavation 11 May 2007
Grey diesel-range organics (DRO) contaminated soil.

Photograph 22. NOAA Site 29 East Excavation 12 May 2007
Continued excavation around Hart Crowser sample location EO-SS-12 and EO-TP-1. Note pickup truck in background is parked on filled excavation of Hart Crowser sample location EO-SS-3, excavated in October 2006. Looking west.

Photograph 23.  NOAA Site 29 East Excavation  13 May 2007
Final excavation extents around Hart Crowser sample location EO-SS-12 and EO-TP-1.  Looking west.

Photograph 24.  Old City Landfill 13 May 2007
View of the City of St. George old landfill site where DRO contaminated soil was landspread over the cap.  Looking northeast.

Photograph 25. NOAA Site 29 East Excavation 21 June 2007
View of backfilled excavation around Hart Crowser sample locations EO-SS-12 and EO-TP-1. Looking east.

Photograph 26. Old City Landfill 21 June 2007
View of a fence section dragged behind an ATV to till in seed and fertilizer spread over old landfill site after petroleum-contaminated soil landspreading. Looking northeast.


Photograph 27.  NOAA Site 29 West Derelict Equipment Removal          2 July 2007
Removing abandoned equipment from Site 29 West.   James Merculief, local citizen employed by ChemTrack, in photograph foreground.  Looking south.

Photograph 28.  NOAA Site 29 East Excavation  14 August 2007
View of backfilled, seeded and fertilized excavation area around Hart Crowser sample location EO-SS-3. Looking north.

Photograph 29. NOAA Site 29 East Excavation 14 August 2007
View of backfilled, seeded and fertilized excavation area around Hart Crowser sample locations EO-SS-12 and EO-TP-1. Looking northwest.

Photograph 30. Old City Landfill 14 August 2007
View of seeded and fertilized old landfill cap. Looking northeast.

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NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT
TWO PARTY AGREEMENT SITE 25-1
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property northeast of the City of St. George along the Bering Sea coastline, St George Island, Alaska, 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Lot 1 of the East Landing Subdivision**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 13.14" North Latitude, 169° 32' 38.94" West Longitude**

This property, hereafter referred to as Site 25-1 (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135457; File ID 2643.38.034.

This site was identified as *Site 25-1 Port Fuel Supply Line East-West* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 25-1 and NOAA Site 29. Following corrective action, NOAA submitted a conditional closure request for Site 25-1 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2007). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 25-1 cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2007). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2007).

Grantor: U.S. Bureau of Land Management

Grantee: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

**Recording District:** Aleutian Islands

**Remedial Actions and Residual Contamination**

Site 25-1 encompasses areas traversed by pipelines that were used to transfer gasoline and diesel fuel

1

between fuel barges, tank and drum depots, and fuel dispensing stations. The property addressed by this deed notice contained the eastern portion of the pipeline system which consisted of two 2-inch diameter lines raised above the ground on concrete pillars for most of their length, and one 4-inch diameter line that ran on the ground parallel to and approximately 15 feet south of the raised piping. The 4-inch diameter line was installed in the 1950s and taken out of service in the 1970s; the 2-inch diameter lines were installed in the 1970s and taken out of service in the 1980s (E&E 1993).

An environmental investigation performed in 1996 found that the site's soil was contaminated with diesel range organics (DRO) in two areas (Hart Crowser 1997). In 2006 and 2007, approximately 2,260 cubic yards of contaminated soil was removed from these locations (NOAA 2007). Contaminated soil removal was constrained vertically by the underlying bedrock encountered at about eleven feet below the ground surface. Soil removal was further constrained to the north by a Bering Sea buffer zone that was established to prevent storm surge flooding of the excavation. The excavations were backfilled with clean material. Attached is a diagram (Figure 3) drawn to scale that shows the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater in the general vicinity of Site 25-1 is known to be contaminated with petroleum products due to fuel storage and transfer operations at multiple TPA sites in the area (Tetra Tech 2005). Groundwater in this area is monitored for contaminant concentration trends in accordance an ADEC approved long-term groundwater monitoring plan (NOAA 2005). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions.

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil or water from the site or use of the groundwater at or near the contaminated area requires notification to and approval from ADEC in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska.* Contract No. DACA85-91-D-0003, Delivery Order No. 0027. Prepared for Alaska District, U.S. Army Corps of Engineers. February.

Hart Crowser. 1997. *Expanded Site Inspection, St. George Island, Pribilof Islands, Alaska.* January.

National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2007. *Corrective Action Report/Conditional Closure Request, NOAA Site 29/Two Party Agreement Site 25-1, Port Fuel Supply Line East-West, St. George Island, Alaska.* Document date November 20, 2007; signed by John Lindsay, Pribilof Project Manager, U.S. Department of Commerce, National Oceanic and Atmospheric Administration December 3, 2007; signed by Louis Howard, Project Manager, Alaska Department of Environmental Conservation, Division of Spill Prevention and Response December 18, 2007.

NOAA. 2005. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

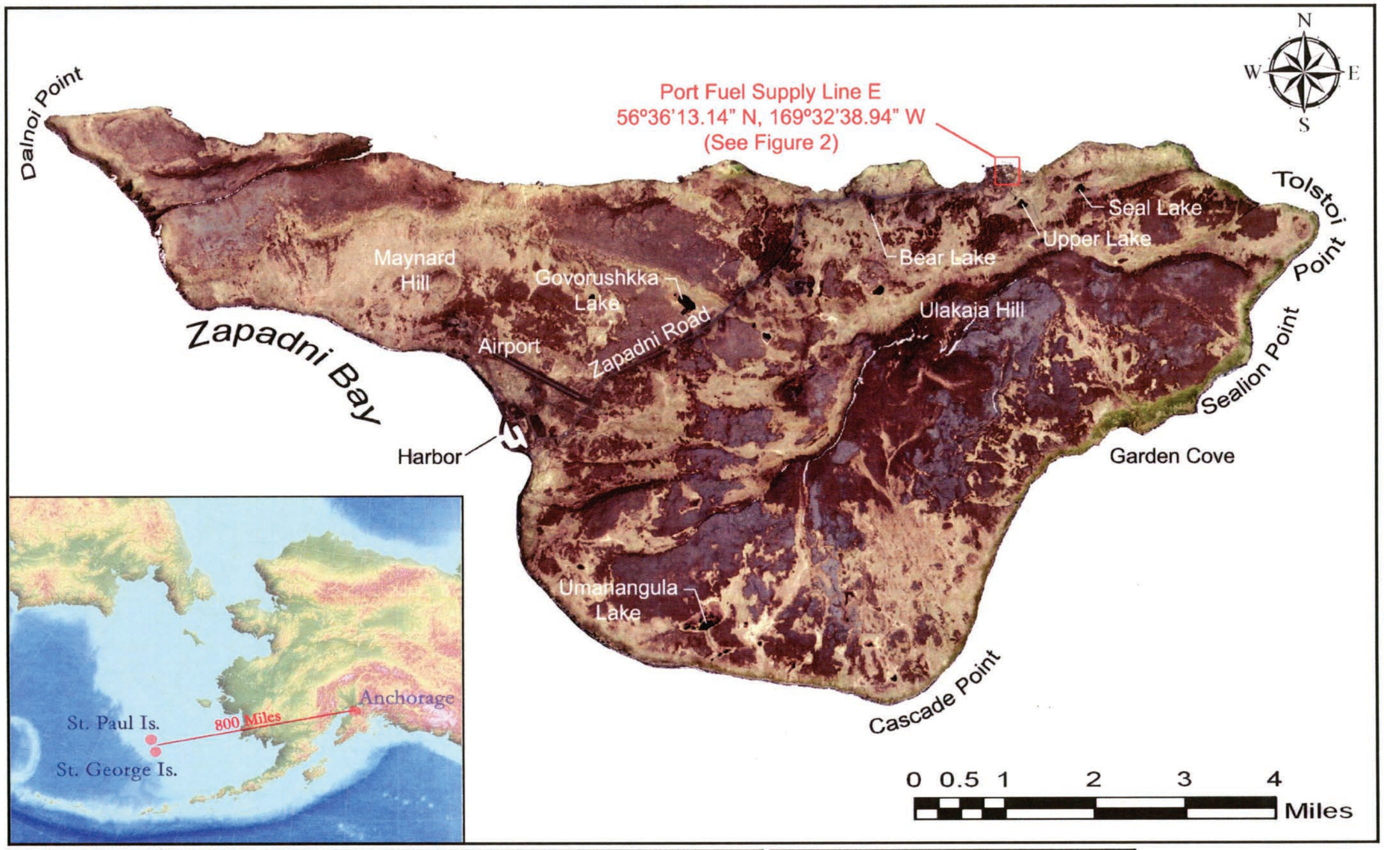
Signature: ______________________________

Printed Name: ____________John A. Lindsay____________

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 7
2008-000395-0




| Figure | St. George Island Vicinity Map | Source: Ikonos Satellite Imagery |
|---|---|---|
| 1 | Port Fuel Supply Line East<br>NOAA Site 29/TPA Site 25-1<br>St. George Island, Alaska | (Space Imaging 2001)<br>**Path:** C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Port Fuel Supply Line E\Fig 1 STG Standard - TPA 25-1E.psd<br>**Date:** 07/11/2008 |

Pribilof Islands Restoration Project

4 of 7
2008-000395-0

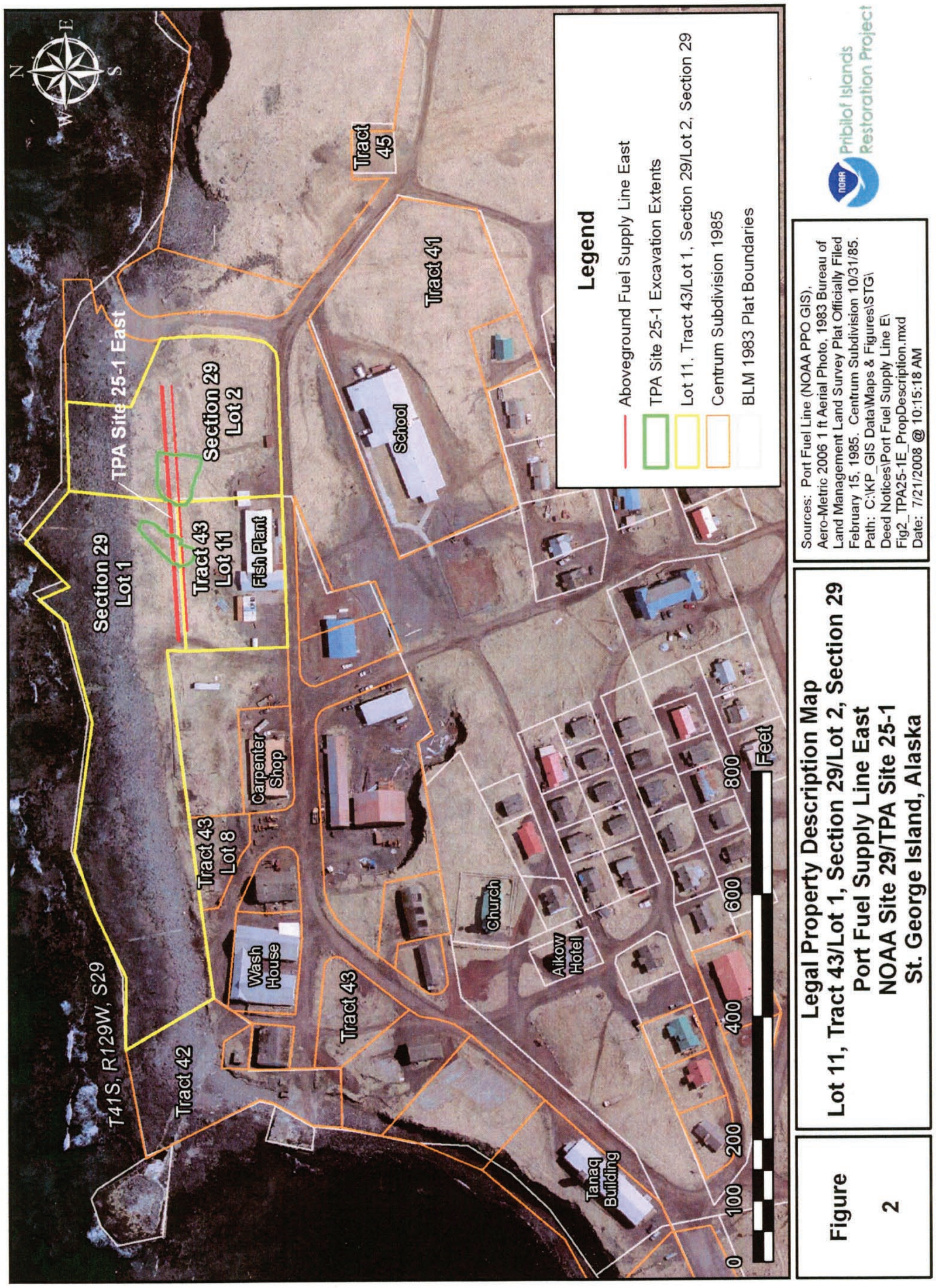
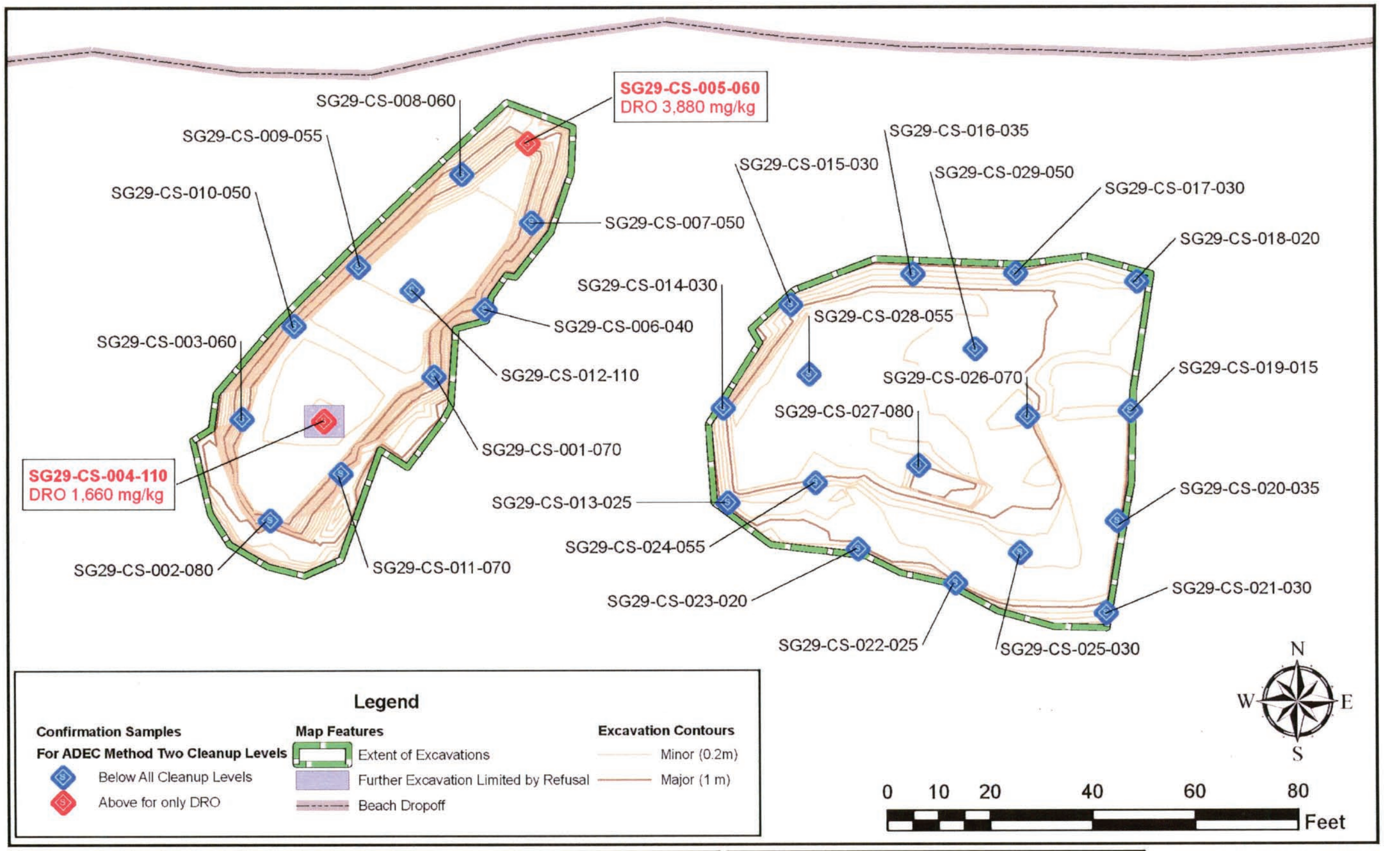



Figure 2

Legal Property Description Map
Lot 11, Tract 43/Lot 1, Section 29/Lot 2, Section 29
Port Fuel Supply Line East
NOAA Site 29/TPA Site 25-1
St. George Island, Alaska

5 of 7

2008-000395-0




| Figure 3 | Final Excavation Extent & Confirmation Sampling Results Port Fuel Supply Line East NOAA Site 29/TPA Site 25-1 St. George Island, Alaska | Sources: Aero-Metric 2006 1 ft Aerial Photo, GIS Layers (NOAA GIS & PPO Chemical Database) Path: C:\KP_GIS Data\Maps & Figures\STG\ Deed Notices\Port Fuel Supply Line E\ Fig3_TPA25-1E_Samples&Excavation.mxd Date: 7/21/2008 @ 9:38:49 AM |
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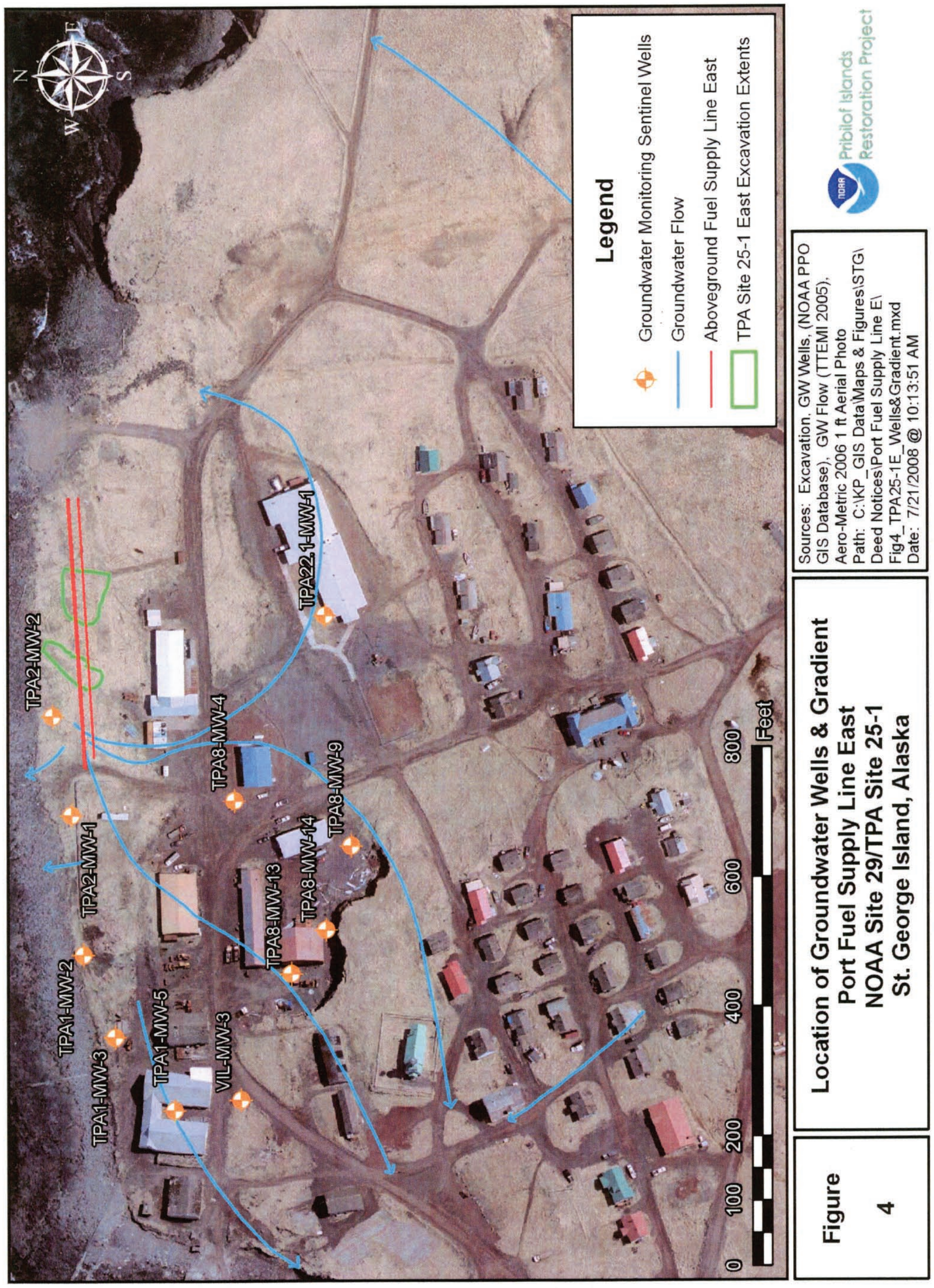
Pribilof Islands Restoration Project

6 of 7
2008-000395-0




7 of 7
2008-000395-0

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A L A S K A

2008-000396-0
Recording Dist: 305 - Aleutian Islands
8/11/2008 2:43 PM Pages: 1 of 7

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITE 25-1
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property northeast of the City of St. George along the Bering Sea coastline, St George Island, Alaska, 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Lot 2 of the East Landing Subdivision**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 13.14" North Latitude, 169° 32' 38.94" West Longitude**

This property, hereafter referred to as Site 25-1 (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135457; File ID 2643.38.034.

This site was identified as *Site 25-1 Port Fuel Supply Line East-West* pursuant to the *Pribilof Islands Environmental Restoration Two Party Agreement* (TPA) between the State of Alaska and NOAA (NOAA 1996). NOAA addressed the property as TPA Site 25-1 and NOAA Site 29. Following corrective action, NOAA submitted a conditional closure request for Site 25-1 to the ADEC Division of Spill Prevention and Response, Contaminated Sites Program (NOAA 2007). ADEC determined, in accordance with 18 AAC 75.325(f)(1), that Site 25-1 cleanup has been performed to the maximum extent practicable even though residual petroleum contaminated soil remained on the property (NOAA 2007). ADEC granted a conditional closure, in part subject to this institutional control (deed notice), and confirmed that no further remedial action was required at the site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare or the environment (NOAA 2007).

Grantor: U.S. Bureau of Land Management

Grantee: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

**Recording District:** Aleutian Islands

**Remedial Actions and Residual Contamination**

Site 25-1 encompasses areas traversed by pipelines that were used to transfer gasoline and diesel fuel

1

between fuel barges, tank and drum depots, and fuel dispensing stations. The property addressed by this deed notice contained the eastern portion of the pipeline system which consisted of two 2-inch diameter lines raised above the ground on concrete pillars for most of their length, and one 4-inch diameter line that ran on the ground parallel to and approximately 15 feet south of the raised piping. The 4-inch diameter line was installed in the 1950s and taken out of service in the 1970s; the 2-inch diameter lines were installed in the 1970s and taken out of service in the 1980s (E&E 1993).

An environmental investigation performed in 1996 found that the site's soil was contaminated with diesel range organics (DRO) in two areas (Hart Crowser 1997). In 2006 and 2007, approximately 2,260 cubic yards of contaminated soil was removed from these locations (NOAA 2007). Contaminated soil removal was constrained vertically by the underlying bedrock encountered at about eleven feet below the ground surface. Soil removal was further constrained to the north by a Bering Sea buffer zone that was established to prevent storm surge flooding of the excavation. The excavations were backfilled with clean material. Attached is a diagram (Figure 3) drawn to scale that shows the areas that were cleaned up, the locations where confirmation soil samples were collected, and the approximate locations of remaining soil contamination based on confirmation sample results.

Groundwater in the general vicinity of Site 25-1 is known to be contaminated with petroleum products due to fuel storage and transfer operations at multiple TPA sites in the area (Tetra Tech 2005). Groundwater in this area is monitored for contaminant concentration trends in accordance an ADEC approved long-term groundwater monitoring plan (NOAA 2005). Figure 4 depicts area groundwater monitoring well locations and estimated groundwater flow directions.

Site Use

In the event that information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations. Further site characterization and cleanup may be necessary under 18 AAC 75.325-.390 and 18 AAC 78.600. Also, any transport, treatment, or disposal of any potentially contaminated soil or water from the site or use of the groundwater at or near the contaminated area requires notification to and approval from ADEC in accordance with AAC 75.370(b) and 18 AAC 78.600(h).

This notice remains in effect until a written determination from ADEC is recorded that states that soil at the site has been shown to meet the most stringent soil cleanup levels in Method Two of 18 AAC 75.341 (c) and that off-site transportation of soil is not a concern.

**References:**

Ecology and Environment, Inc. (E&E). 1993. *Preliminary Assessment of National Oceanic and Atmospheric Administration Sites, Pribilof Islands, Alaska.* Contract No. DACA85-91-D-0003, Delivery Order No. 0027. Prepared for Alaska District, U.S. Army Corps of Engineers. February.

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National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

NOAA. 2007. *Corrective Action Report/Conditional Closure Request, NOAA Site 29/Two Party Agreement Site 25-1, Port Fuel Supply Line East-West, St. George Island, Alaska.* Document date November 20, 2007; signed by John Lindsay, Pribilof Project Manager, U.S. Department of Commerce, National Oceanic and Atmospheric Administration December 3, 2007; signed by Louis Howard, Project Manager, Alaska Department of Environmental Conservation, Division of Spill Prevention and Response December 18, 2007.

NOAA. 2005. *Final Long-Term Groundwater Monitoring Plan, St. George Island, Alaska, Pribilof Islands Environmental Restoration Project*. August 29.

Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

Please return original copy of this notice to the (operator) address below:

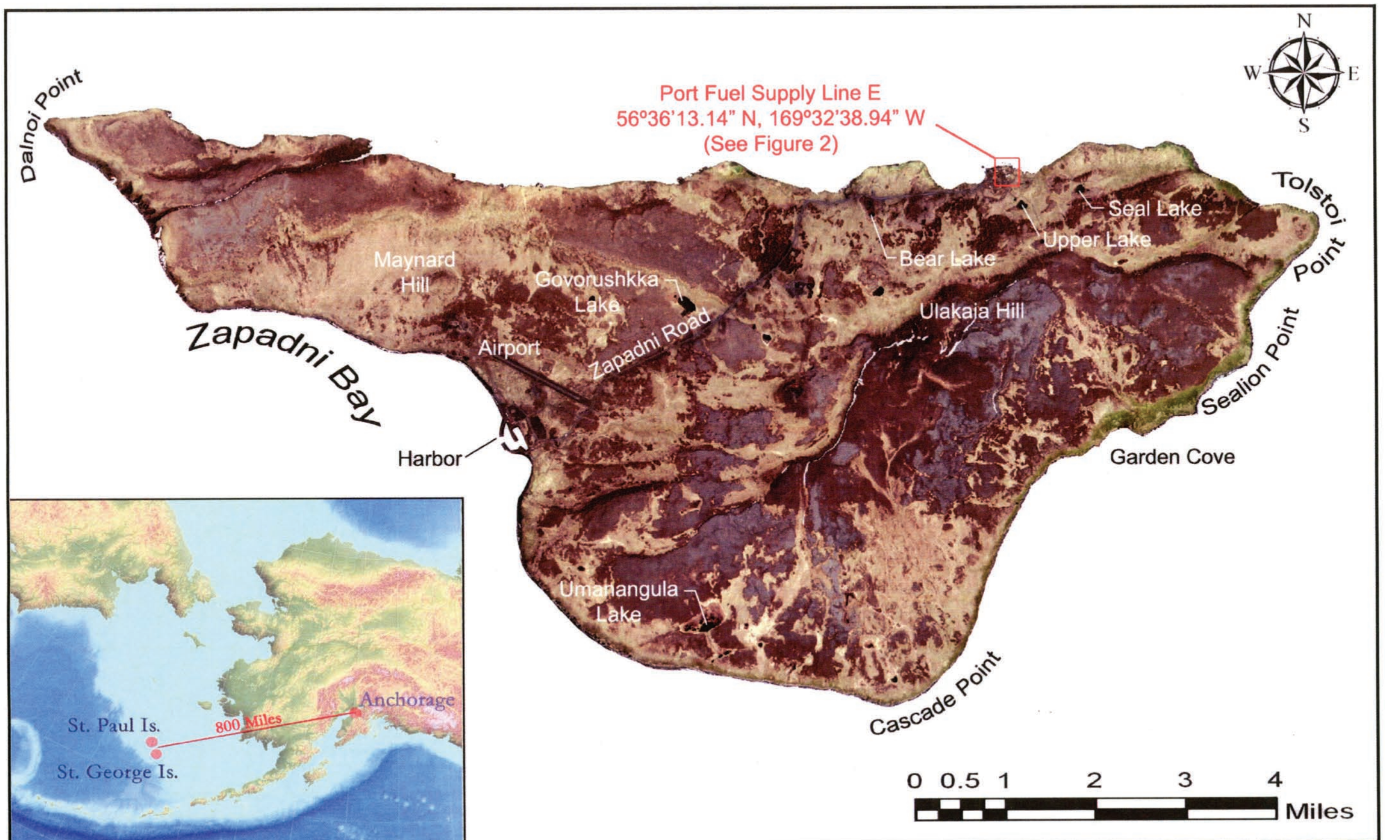
Signature: ______________________

Printed Name: ____________John A. Lindsay____________

Mailing Address:

Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 7
2008-000396-0




| Figure 1 | St. George Island Vicinity Map<br>Port Fuel Supply Line East<br>NOAA Site 29/TPA Site 25-1<br>St. George Island, Alaska | **Source:** Ikonos Satellite Imagery (Space Imaging 2001)<br>**Path:** C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Port Fuel Supply Line E\Fig 1 STG Standard - TPA 25-1E.psd<br>**Date:** 07/11/2008 |
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Pribilof Islands Restoration Project

4 of 7
2008-000396-0

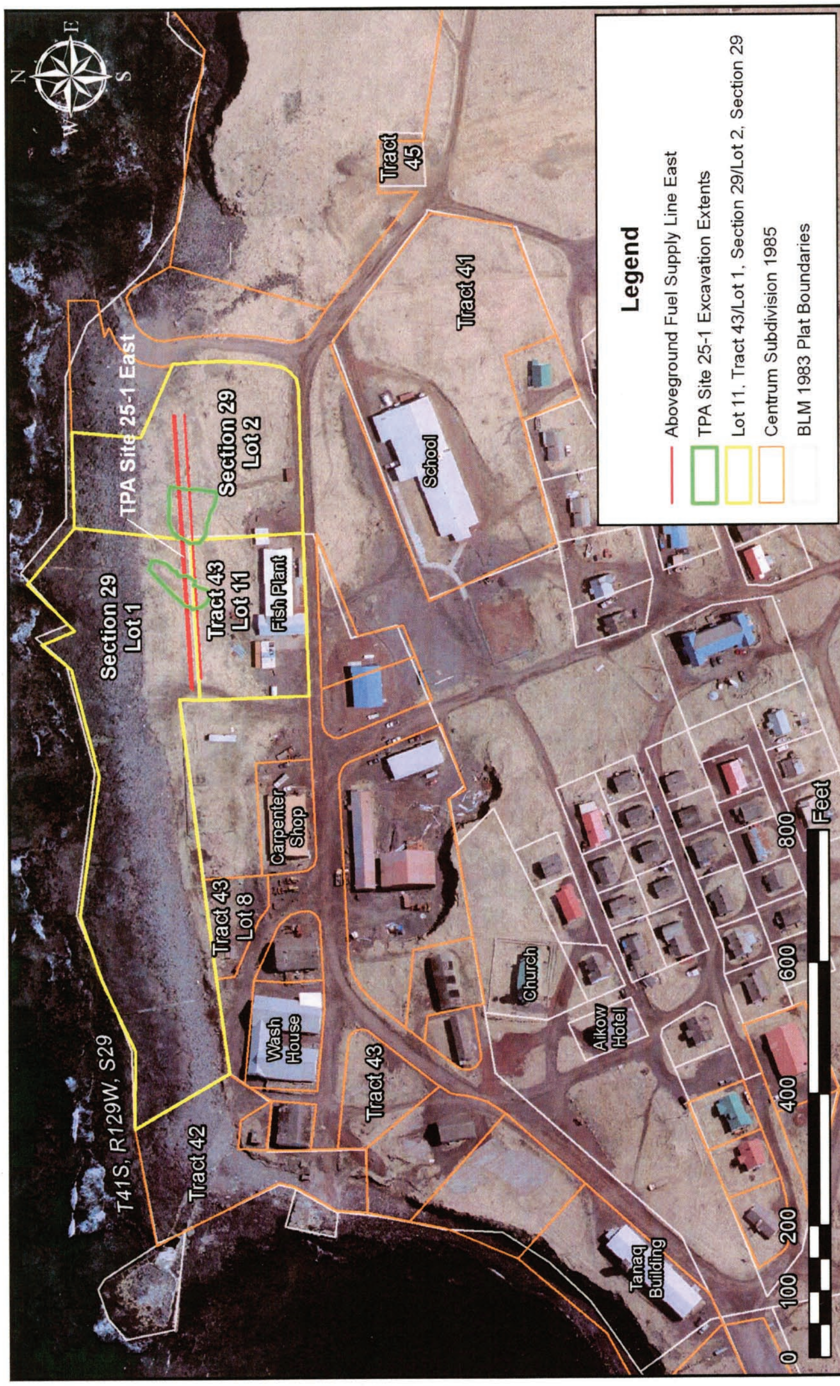


Figure 2

Legal Property Description Map
Lot 11, Tract 43/Lot 1, Section 29/Lot 2, Section 29
Port Fuel Supply Line East
NOAA Site 29/TPA Site 25-1
St. George Island, Alaska

Sources: Port Fuel Line (NOAA PPO GIS), Aero-Metric 2006 1 ft Aerial Photo, 1983 Bureau of Land Management Land Survey Plat Officially Filed February 15, 1985. Centrum Subdivision 10/31/85.
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Pribilof Islands Restoration Project

5 of 7
2008-000396-0

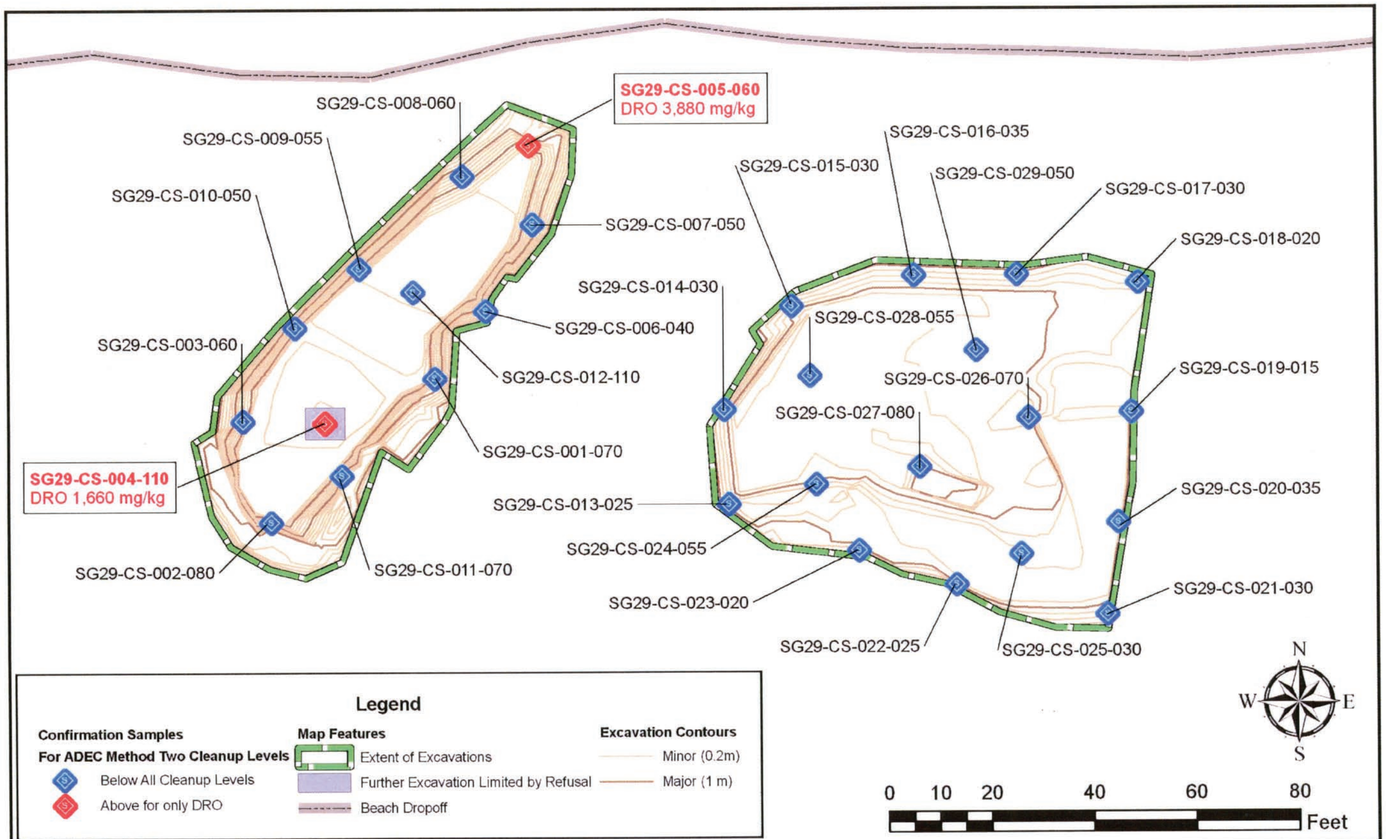


**Figure 3**

**Final Excavation Extent & Confirmation Sampling Results**
**Port Fuel Supply Line East**
**NOAA Site 29/TPA Site 25-1**
**St. George Island, Alaska**

Sources: Aero-Metric 2006 1 ft Aerial Photo,
GIS Layers (NOAA GIS & PPO Chemical Database)
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Deed Notices\Port Fuel Supply Line E\
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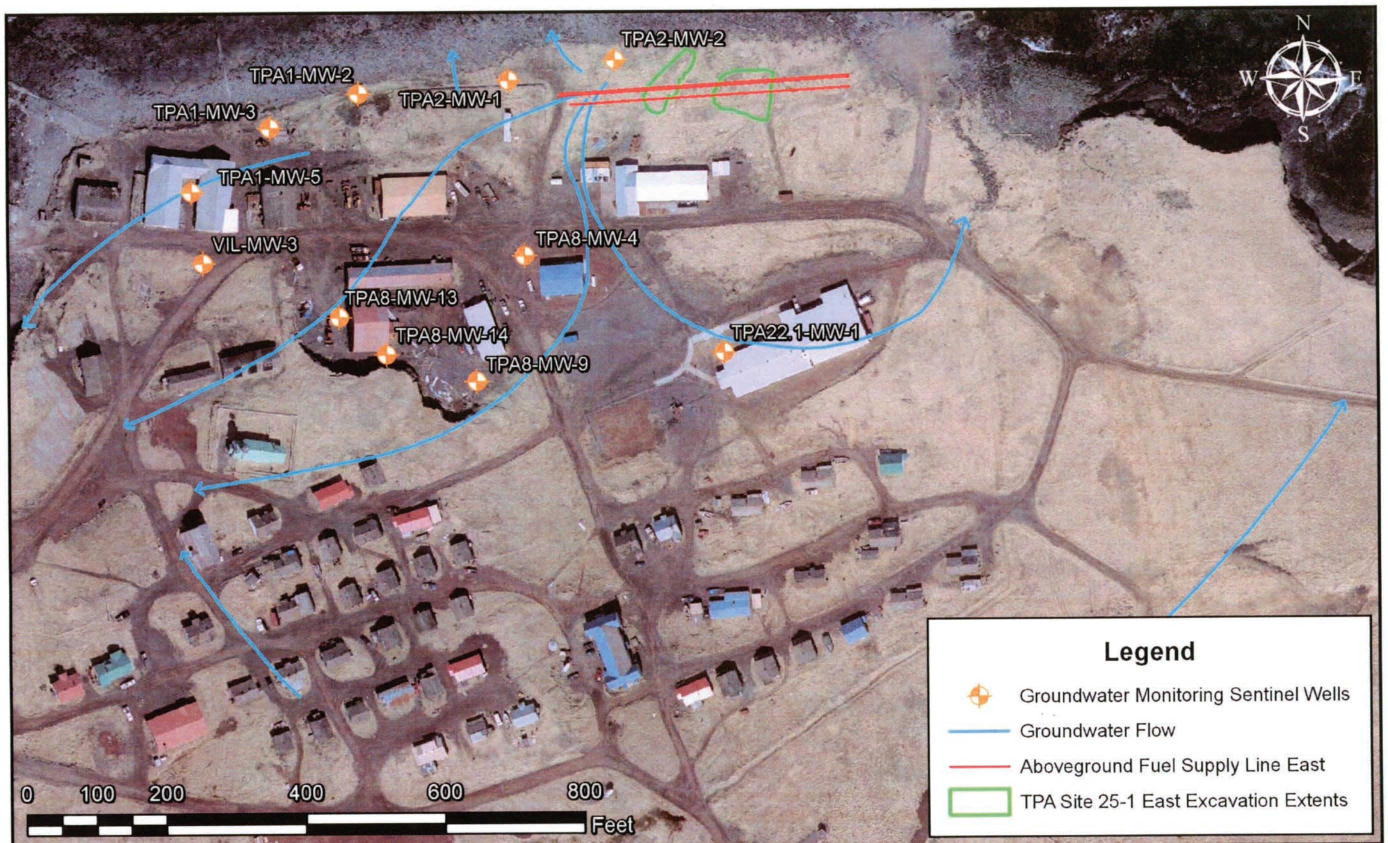
Pribilof Islands Restoration Project

6 of 7
2008-000396-0




| Figure 4 | Location of Groundwater Wells & Gradient<br>Port Fuel Supply Line East<br>NOAA Site 29/TPA Site 25-1<br>St. George Island, Alaska | Sources: Excavation, GW Wells, (NOAA PPO GIS Database), GW Flow (TTEMI 2005), Aero-Metric 2006 1 ft Aerial Photo<br>Path: C:\KP_GIS Data\Maps & Figures\STG\ Deed Notices\Port Fuel Supply Line E\ Fig4_TPA25-1E_Wells&Gradient.mxd<br>Date: 7/21/2008 @ 10:13:51 AM |
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Pribilof Islands Restoration Project

7 of 7
2008-000396-0

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A L A S K A

2008-000397-0

Recording Dist: 305 - Aleutian Islands
8/11/2008 2:44 PM Pages: 1 of 7

NOTICE OF ENVIRONMENTAL CLEANUP AND RESIDUAL SOIL CONTAMINATION AT TWO PARTY AGREEMENT SITE 25-1
ST. GEORGE ISLAND, ALASKA

Pursuant to 18 AAC 75.375, the St. George Tanaq Corporation as the owner, and the U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA), as the operator of the subject property hereby provide public notice that the property northeast of the City of St. George along the Bering Sea coastline, St George Island, Alaska, 99591 is contaminated with petroleum products. More specifically, the property is described as follows:

**Lot 11, Tract 43**
**Section 29, Township 41 South, Range 129 West, of the Seward Meridian, Alaska.**
**56° 36' 13.14" North Latitude, 169° 32' 38.94" West Longitude**

This property, hereafter referred to as Site 25-1 (Figures 1 and 2), has been subject to petroleum contaminated soil and groundwater from a discharge or release and subsequent cleanup regulated under 18 AAC 75, Article 3 as amended December 2006. Adequate soil cover needs to be maintained over the residual petroleum contaminated soil. If contaminated soil is exposed in the future, it must be managed in accordance with laws applicable at that time. These releases and cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Reckey #1994250135457; File ID 2643.38.034.

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Grantor: U.S. Bureau of Land Management

Grantee: St. George Tanaq Corporation
4141 B Street, Suite 301
Anchorage, AK 99503

**<u>Recording District:</u>** Aleutian Islands

**<u>Remedial Actions and Residual Contamination</u>**

Site 25-1 encompasses areas traversed by pipelines that were used to transfer gasoline and diesel fuel

7

between fuel barges, tank and drum depots, and fuel dispensing stations. The property addressed by this deed notice contained the eastern portion of the pipeline system which consisted of two 2-inch diameter lines raised above the ground on concrete pillars for most of their length, and one 4-inch diameter line that ran on the ground parallel to and approximately 15 feet south of the raised piping. The 4-inch diameter line was installed in the 1950s and taken out of service in the 1970s; the 2-inch diameter lines were installed in the 1970s and taken out of service in the 1980s (E&E 1993).

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National Oceanic and Atmospheric Administration (NOAA). 1996. *Pribilof Islands Environmental Restoration Two Party Agreement*, Attorney General's Office File No. 66 1-95-0126. National Oceanic and Atmospheric Administration. January 26.

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Tetra Tech. 2005. *Final Field Investigation Report, St. George Island, Alaska, Pribilof Environmental Restoration Project.* June 23.

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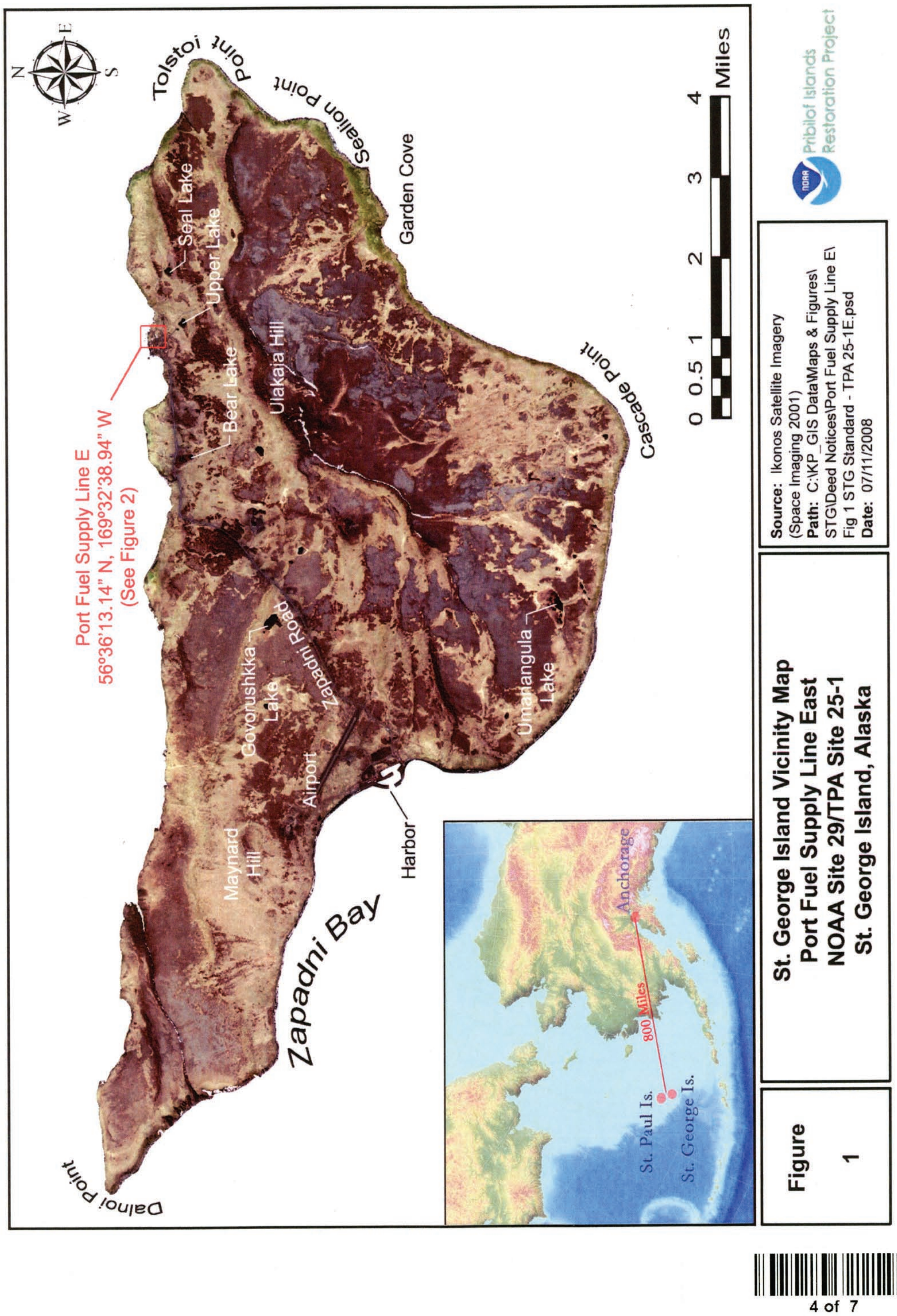
Attn: John Lindsay
US DOC, NOAA, NOS, OR&R, PPO
7600 Sand Point Way NE
Bldg 3, RM 1301
Seattle, WA 98115

3 of 7
2008-000397-0

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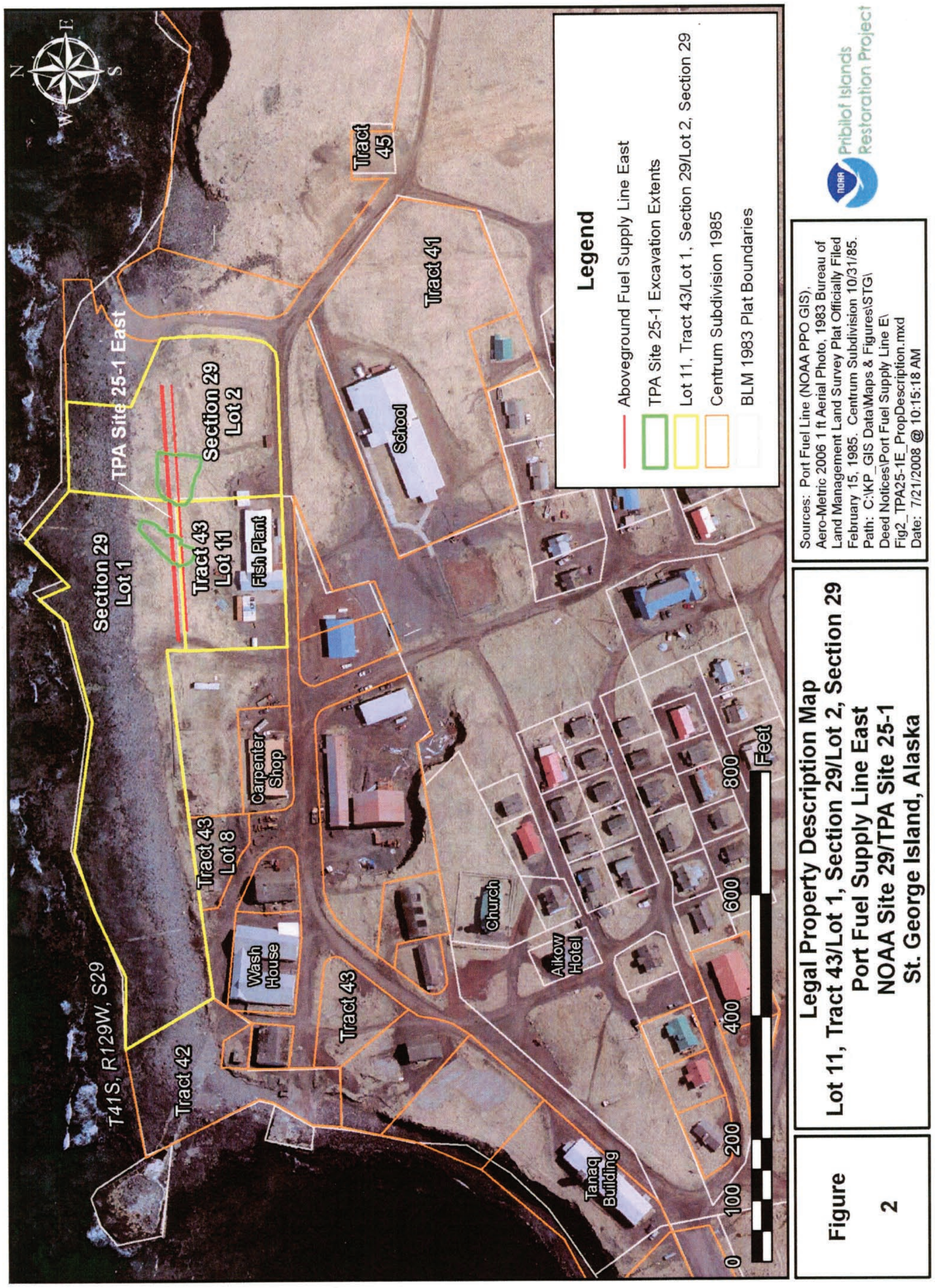


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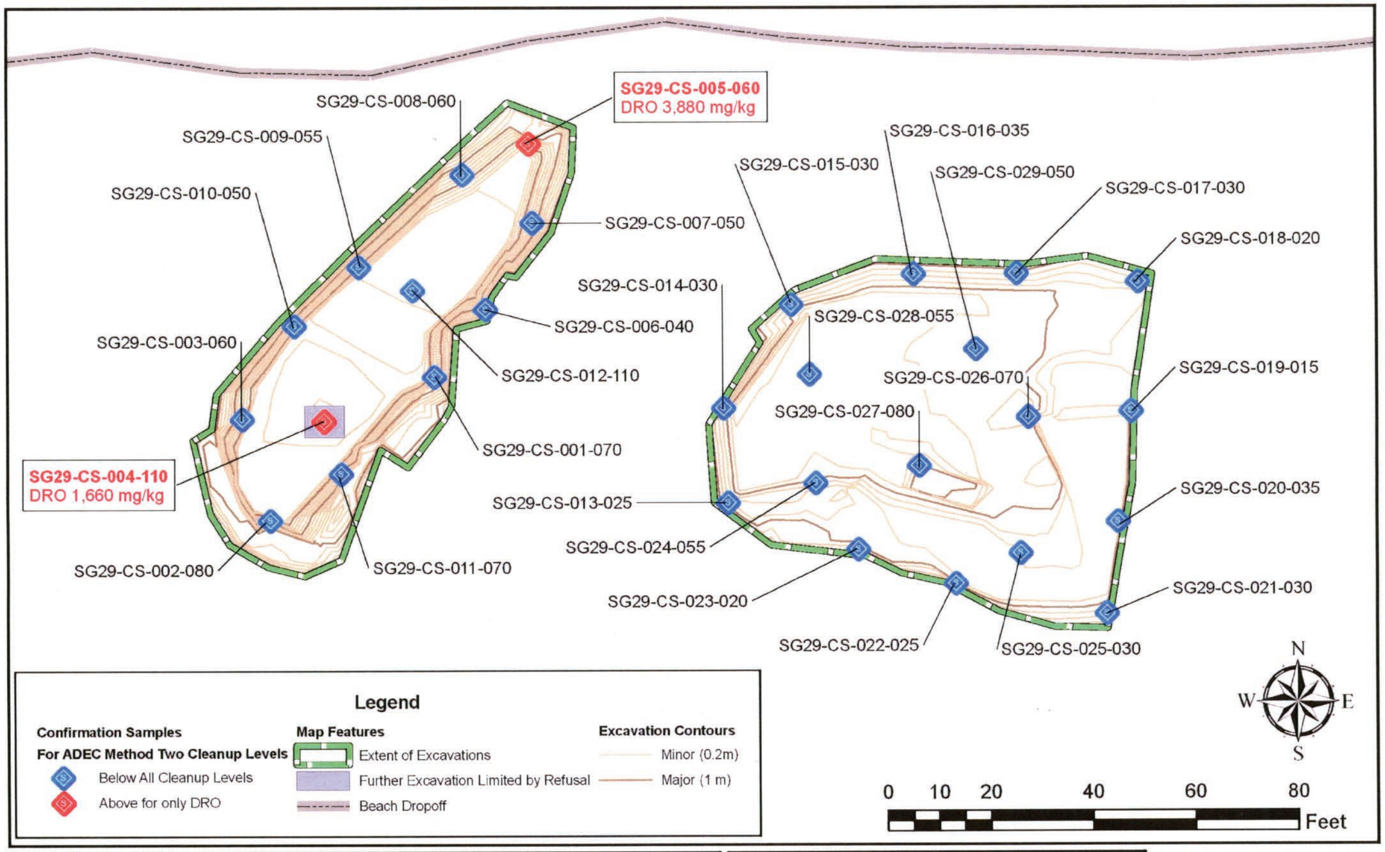


| Figure 3 | Final Excavation Extent & Confirmation Sampling Results Port Fuel Supply Line East NOAA Site 29/TPA Site 25-1 St. George Island, Alaska | Sources: Aero-Metric 2006 1 ft Aerial Photo, GIS Layers (NOAA GIS & PPO Chemical Database) Path: C:\KP_GIS Data\Maps & Figures\STG\ Deed Notices\Port Fuel Supply Line E\ Fig3_TPA25-1E_Samples&Excavation.mxd Date: 7/21/2008 @ 9:38:49 AM |
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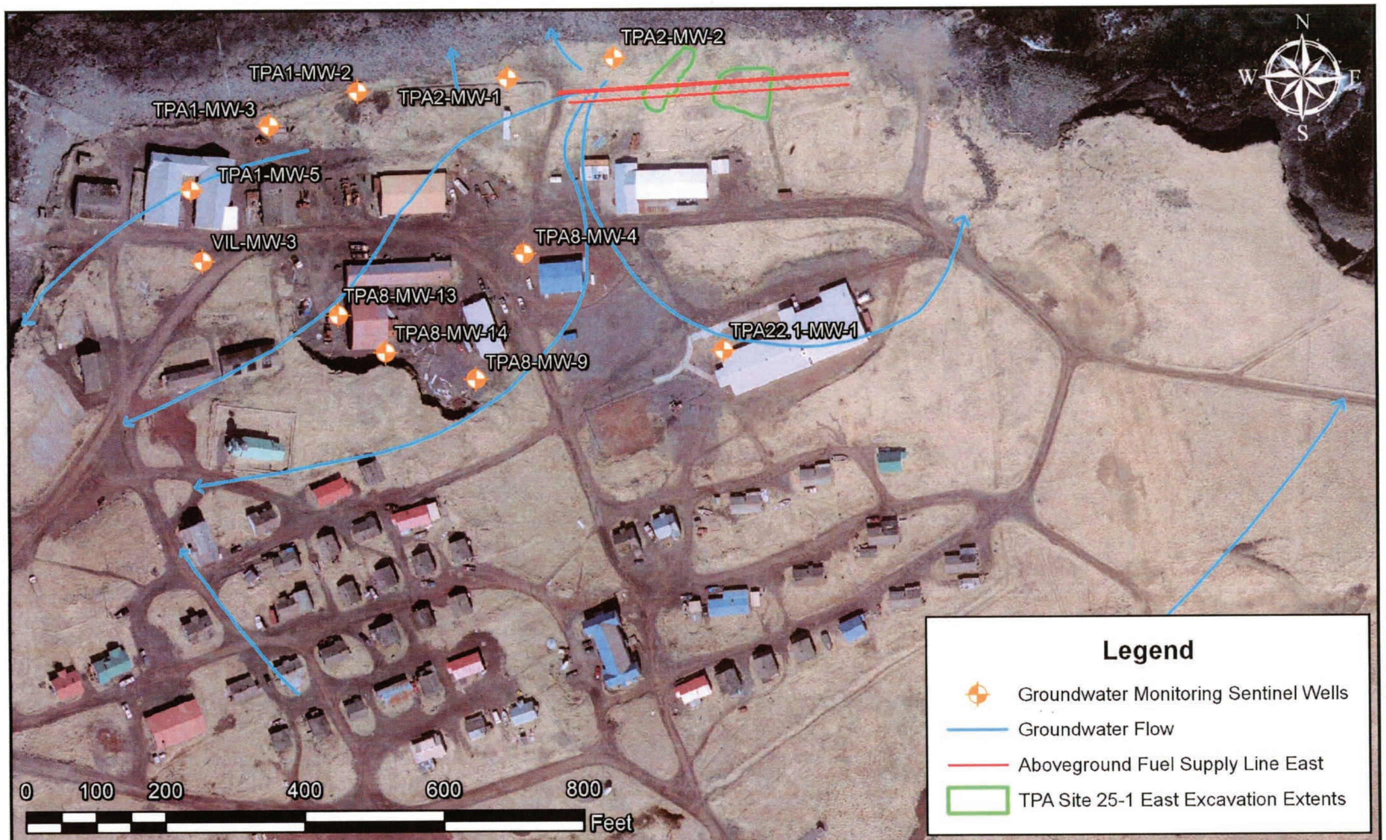
Pribilof Islands Restoration Project

6 of 7
2008-000397-0




| Figure 4 | Location of Groundwater Wells & Gradient<br>Port Fuel Supply Line East<br>NOAA Site 29/TPA Site 25-1<br>St. George Island, Alaska | Sources: Excavation, GW Wells, (NOAA PPO GIS Database), GW Flow (TTEMI 2005), Aero-Metric 2006 1 ft Aerial Photo<br>Path: C:\KP_GIS Data\Maps & Figures\STG\Deed Notices\Port Fuel Supply Line E\Fig4_TPA25-1E_Wells&Gradient.mxd<br>Date: 7/21/2008 @ 10:13:51 AM |
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Pribilof Islands Restoration Project

7 of 7
2008-000397-0