THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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File: 2444.38.002

December 13, 2017

Sent via electronic mail only
Heidi Long
Alaska Army National Guard
Construction Facilities Management Office
PO Box 5800
JBER, AK 99505-0800

Re: Decision Document: AKARNG Saint Mary's FSA
Cleanup Complete Determination

Dear Ms. Long:

The Alaska Department of Environmental Conservation, Contaminated Sites Program (ADEC) has completed a review of the environmental records associated with the Alaska Army National Guard (AKARNG) Saint Mary's Federal Scout Armory (FSA) located on Kussug Road in Saint Mary's. The site does not have a formal address; however, the legal description is Lot 1, Block 9, of the City of Saint Mary's Subdivision Addition No. 1 of U.S. Survey 2984, Alaska. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment and no further remedial action will be required unless new information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the AKARNG Saint Mary's FSA, which is located in the ADEC office in Juneau, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

Site Name and Location:
AKARNG Saint Mary's FSA
Lot 1, Block 9 Saint Mary's Subdivision
Addition No. 1 of U.S. Survey 2984
Saint Mary's, Alaska 99658

Name and Mailing Address of Contact Party:
Heidi Long
Alaska Army National Guard
Construction Facilities Management Office
PO Box 5800
JBER, AK 99505-0800

DEC Site Identifiers:
File No.: 2444.38.002
Hazard ID.: 3200

Regulatory Authority for Determination:
18 AAC 75

Site Description and Background

Saint Mary's is located on the north bank of the Andreafsky River near the confluence of the Yukon River. The climate is continental but has maritime influence. Saint Mary's is characterized by discontinuous permafrost, but permafrost has not been located at the Federal Scout Armory (FSA) at depths up to 9 ft. below ground surface (bgs). The vegetation consists of wet tundra having a cover of grasses and sedges rooted in moss and lichens. The community obtains its' drinking water from the Alstrom Creek reservoir approximately 0.5 mile west of the FSA. The site topography suggests that runoff from the community does not reach the reservoir. Groundwater is present in Saint Mary's at approximately 23 feet (ft.) bgs, however, groundwater is not used as a drinking water source due to low groundwater recharge rates and high mineral content. There are no known drinking water wells in the vicinity of the FSA.

The Saint Mary's FSA was installed in 1981 and consists of a prefabricated Butler building on wooden spread-footings foundation. There is a 3,000-gallon heating oil aboveground storage tank (AST) and an indoor day tank which provide fuel to the building, and a conex storage van which was formerly on site and has been removed. The FSA was deactivated in 1994 but the building is currently in use as a court house.

According to the FSA record, there had been minor fuel releases in addition to 1 documented release at the secondary containment release valve below the AST. According to a 1995 inspection, fuel reportedly permeated the surface soil and flowed downhill. Other potential sources of petroleum contamination include the snow machine and drum storage areas. The site was added to the ADEC Contaminated Sites Database in July 1998 following receipt of the *Preliminary Assessment Records Review* report and *Draft Site Sampling Plan*, both prepared by Hart Crowser Inc. and ERM-West Inc. These reports documented petroleum contamination associated with the AST.

Contaminants of Concern

During the site investigation and cleanup activities at this site, samples were collected from soil and analyzed for diesel range organics (DRO) gasoline range organics (GRO), residual range organics (RRO), polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, and xylenes (BTEX), extractable aliphatic and aromatic petroleum hydrocarbon (EPH), and volatile aliphatic and aromatic petroleum hydrocarbon (VPH). Based on these analyses, the following contaminant was detected in soil above the applicable cleanup level and is considered a contaminant of concern at this site:

- Diesel Range Organics (DRO)

Cleanup Levels

The approved site-specific cleanup level for soil at the site is 10,250 milligrams per kilogram (mg/kg) DRO, which corresponds to the soil ingestion/direct contact pathway for the under-40 inch precipitation zone as outlined in 18 AAC 75.340 Table B2. Groundwater was not encountered during site investigations and is not believed to have been affected by historic fuel spills.

Table 1 – Approved Cleanup Level

Contaminant	Soil (mg/kg)
DRO	10,250

mg/kg = milligrams per kilogram

Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the Contaminated Sites Program began in 1998 following an environmental investigation conducted the same year by Hart Crowser Inc. and ERM-West Inc. on behalf of the Alaska Army National Guard (AKARNG) and is documented in the report *Final Site Investigation Army National Guard Scout Armory St Mary's Alaska* dated August 1999. During the investigation, 29 surface and subsurface soil samples (including a background and a duplicate) were collected from the following areas: day tank piping, the AST, storage van, drum storage area, and all sides of the FSA. All of the soil samples were analyzed for DRO and select samples were also analyzed for GRO, RRO, PAHs, and BTEX. Other analyses performed on selected samples to aid in developing remedial options were nutrient analyses and grain size. The results of the investigation found that the primary contaminant of concern is DRO and concentrations up to 41,000 mg/kg were found beneath the AST. GRO results ranged from 1.3-54 mg/kg. Benzene results were all below the laboratory detection limits (0.26 mg/kg). Total BTEX results ranged from 0.022-4.3 mg/kg. The drum storage areas also had DRO contamination in addition to the snow machine storage area. The day tank area was free of contamination above ADEC cleanup levels found in 18 AAC 75.340 Table B2. At the time of sampling no surface or subsurface water was present or available for sampling. No other contaminants of concern were found.

In May 2002, an interim removal action (IRA) was performed by Clearwater Environmental Inc. on behalf of the AKARNG and is documented in the report *Final Interim Removal Action Report Federal Scout Armory Saint Mary's Alaska*, dated April 2005. The objective of the IRA was to excavate and remove 20 tons of DRO contaminated soil identified in the report *Final Site Investigation Army National Guard Scout Armory St Mary's Alaska*. The excavation occurred near the AST and drum storage area east of the FSA. DRO contaminated soil was removed from up to 5.5 ft. bgs despite the presence of frozen soil. The excavation was guided by field screening with a photoionization detector (PID). All of the petroleum stained surface soil was removed and in total, 22.3 tons of DRO contaminated soil was transported in 20 1-cubic yard Supersacks to TPS Technologies in Lakewood, Washington for thermal remediation. Five confirmation soil samples (collected post-excavation) and a duplicate were collected from the base and sidewalls. These samples were analyzed for GRO, DRO, BTEX, and total organic carbon (TOC). The GRO and BTEX data was rejected due to quality concerns. The DRO results ranged from 100-20,000 mg/kg. The south sidewall had the greatest concentration of remaining DRO. The soil sample collected from the base of the excavation had a DRO value of 100 mg/kg which is below ADEC cleanup levels. After excavation activities were completed, the site was backfilled with clean material and seeded with grass seeds.

In August 2008, the AKARNG tasked North Wind Inc. to conduct field screening and sampling at the FSA. Site investigation activities are documented in the report *Final Secondary Site Characterization Federal Scout Armory St. Mary's Alaska*, dated December 2008. The goal was to fully delineate the amount of DRO contaminated soil and to estimate the volume of soil that would need to be excavated in order to meet the ADEC's default unrestricted use cleanup level for DRO of 250 mg/kg. Sixty soil borings at depths up to 4 ft. bgs or to the permafrost layer were driven into soils in 3 grids: east of the FSA near the AST and within the 2002 excavation area, southeast of the FSA building at the conex storage shed, and east of the conex. One hundred and forty-four samples from the borings were field screened using a PID. Laboratory samples were chosen based on PID results: the majority that were submitted had low PID results to identify areas without contamination and others were collected from areas with high PID results to provide a comparison between PID results and laboratory analyses. Some analytical samples were also collected to delineate the vertical extent of contamination. The soil samples (22 primary and 3 duplicates) were submitted to an ADEC-approved laboratory and analyzed for DRO. The results of the investigation indicated that there was approximately 26 cubic yards (yd^3) requiring excavation for a cleanup level of 250 mg/kg DRO, located

along the east side of the FSA and extending 25 ft. from the building. In general, the contamination zone ran northeast to southwest and corresponded to the former drum storage area and south of the storage area.

A data gap investigation was conducted by CH2MHill on behalf of the AKARNG in July of 2011 and is documented in the report *Saint Mary's Federal Scout Readiness Center Data Gap Investigation Report* dated February 2013. The goal of the investigation was to address data gaps in the delineation of the lateral and vertical extents of contamination and to collect data such as PAH, BTEX, EPH, and VPH to support the determination of site-specific cleanup levels. Eleven soil borings were completed on site at various locations over the entire property at depths up to 5.3 ft. bgs. Twenty-five primary and 4 duplicate soil samples were collected and field screened using a PID. All of the samples were sent to an ADEC-approved laboratory and analyzed for DRO. A subset of samples was also analyzed for EPH, VPH, BTEX, and PAHs. The results of the investigation were presented in a figure depicting the lateral extent of DRO contamination exceeding 250 mg/kg DRO cleanup level. There were 5 discrete areas of contamination: on either side of the AST, the former drum storage area, both sides of the former storage van, and east of the drum storage area. The DRO contamination appeared to have originated near the southeastern end of the AST and then expanded and joined with contamination in the former drum storage area. However, a large amount of contamination had been previously excavated from the drum storage area in 2002 during the interim removal action. The investigation suggested that the majority of contamination was limited to the top 1-2 ft. bgs but extended to depths of 5 ft. bgs in some places. The highest DRO result found on site during the investigation was 16,000 mg/kg at 4-4.5 ft. bgs. Although there were PAH and BTEX detections in the samples collected, none of the concentrations were greater than ADEC cleanup levels. The report noted that groundwater is significantly deeper than the vertical extent of contamination and found at approximately 23 ft. bgs.

A Record of Decision was signed by the AKARNG and the ADEC for the Saint Mary's FSA in August 2013 and documented a site-specific cleanup level and remedy for the site that is based on human health (ingestion) criteria. The Method 2 alternative cleanup level (ACL) presented in the 2013 CH2M Hill *Saint Mary's Federal Scout Readiness Center Data Gap Investigation Report* was confirmed to meet migration to groundwater criteria using an approved fate and transport model, although groundwater has never been encountered on site. Groundwater is believed to be at least 23 ft. bgs and is not expected to have been affected by historic fuel spills. Additionally, groundwater is not used as a drinking water source in Saint Mary's due to low recharge and high mineral content. The community uses surface water for drinking water. As a result, the site-specific cleanup level for the site was determined to be 10,250 mg/kg DRO for soil. The selected remedy for the site was source removal.

A remedial action was completed in June 2016 and is documented in the report *Final Remedial Action Report for the St. Mary's Federal Scout Readiness Center* prepared by Eagle Eye Electric LLC and dated October 17, 2016. According to the *Final Remedial Action Plan*, using the higher site-specific cleanup levels rather than the ADEC Method 2 for the migration to groundwater which are lower values, an additional excavation was required in 2 discrete locations near the drum storage area for a total of 9 yd^3. Both excavations were guided using a PID and field screened soils that had the highest PID readings were selected for laboratory analysis of DRO. Excavation 1 centered at historical sample 11STMSB003 (see Figure 1). Ten yd^3 was excavated from the area, but confirmation samples (8) collected from the base and sidewalls indicated that there was contaminated soil left above the cleanup level on the south, east, and west sidewalls. Additional soil was excavated (38 yd^3) and those confirmation samples (7 samples and 2 duplicates) showed DRO results below the cleanup level ranging from 3,100-10,100 mg/kg. Excavation 2 targeted historical sample STM003 (see Figure 2) and 2 yd^3 of contaminated soil was removed from this area. Five confirmation samples and a duplicate were collected and analyzed for DRO. The analytical results were below the cleanup level with a maximum DRO concentration of 160 mg/kg. The clean overburden (75 yd^3) was also field screened and 5

samples and a duplicate were analyzed for DRO prior to use as backfill. The DRO results ranged from 150-2,600 mg/kg. Fifty yd^3 of petroleum contaminated soil was removed from the site and disposed of at a permitted landfill in Arlington, Oregon.

Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways. Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations meet the human health cumulative risk criteria for residential land use.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using ADEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

Table 2 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Contamination in surface soil is at concentrations less than the most stringent of ADEC Method 2 cleanup levels. Confirmation soil samples from the surface soil were less than 160 mg/kg DRO.
Sub-Surface Soil Contact	De-Minimis Exposure	Contamination remains in the sub-surface at 5-6 ft. below ground surface at concentrations up to 10,100 mg/kg DRO which is below the ADEC cleanup level for ingestion.
Inhalation – Outdoor Air	De-Minimis Exposure	Contamination remains in the sub-surface, but is below the ADEC inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	De-Minimis Exposure	Remaining DRO contamination is not expected to affect indoor air.
Groundwater Ingestion	Pathway Incomplete	Groundwater was not encountered during site investigations but is located 23 ft. bgs – far below the extent of remaining contamination. Additionally, groundwater is not used for drinking water in the community.
Surface Water Ingestion	Pathway Incomplete	Although surface water is used as a drinking water source in the vicinity of the site, surface water runoff from the community is not expected to reach the drinking water reservoir due to surface topography.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contaminants of concern do not have the potential to bioaccumulate in plants or animals.
Exposure to Ecological Receptors	Pathway Incomplete	Remaining contamination is not expected to affect the ecology of the area.

Notes to Table 2: "De-Minimis Exposure" means that in ADEC's judgment receptors are unlikely to be adversely affected by the minimal volume or concentration of remaining contamination. "Pathway Incomplete" means that in ADEC's judgment contamination has no potential to contact receptors. "Exposure Controlled" means there is an institutional control in place limiting land or groundwater use and there may be a physical barrier in place that prevents contact with residual contamination.

ADEC Decision

Soil contamination at the site has been cleaned up to concentrations below the approved cleanup levels suitable for residential land use. This site will receive a "Cleanup Complete" designation on the Contaminated Sites Database, subject to the following standard conditions.

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325(i). A "site" as defined by 18 AAC 75.990 (115) means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. (See site figures following this letter.)

2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

3. Groundwater throughout Alaska is protected for use as a water supply for drinking, culinary and food processing, agriculture including irrigation and stock watering, aquaculture, and industrial use. Contaminated site cleanup complete determinations are based on groundwater being considered a potential drinking water source. In the event that groundwater from this site is to be used for other purposes in the future, such as aquaculture, additional testing and treatment may be required to ensure the water is suitable for its intended use.

This determination is in accordance with 18 AAC 75.380 and does not preclude ADEC from requiring additional assessment and/or cleanup action if future information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to the environment.

Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 555 Cordova Street, Anchorage, Alaska 99501-2617, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, P.O. Box 111800, Juneau, Alaska 99811-1800, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions about this closure decision, please feel free to contact me at (907) 465-7576, or email at danielle.duncan@alaska.gov.

Sincerely,

Danielle Duncan
Project Manager

cc: Spill Prevention and Response, Cost Recovery Unit, via electronic mail

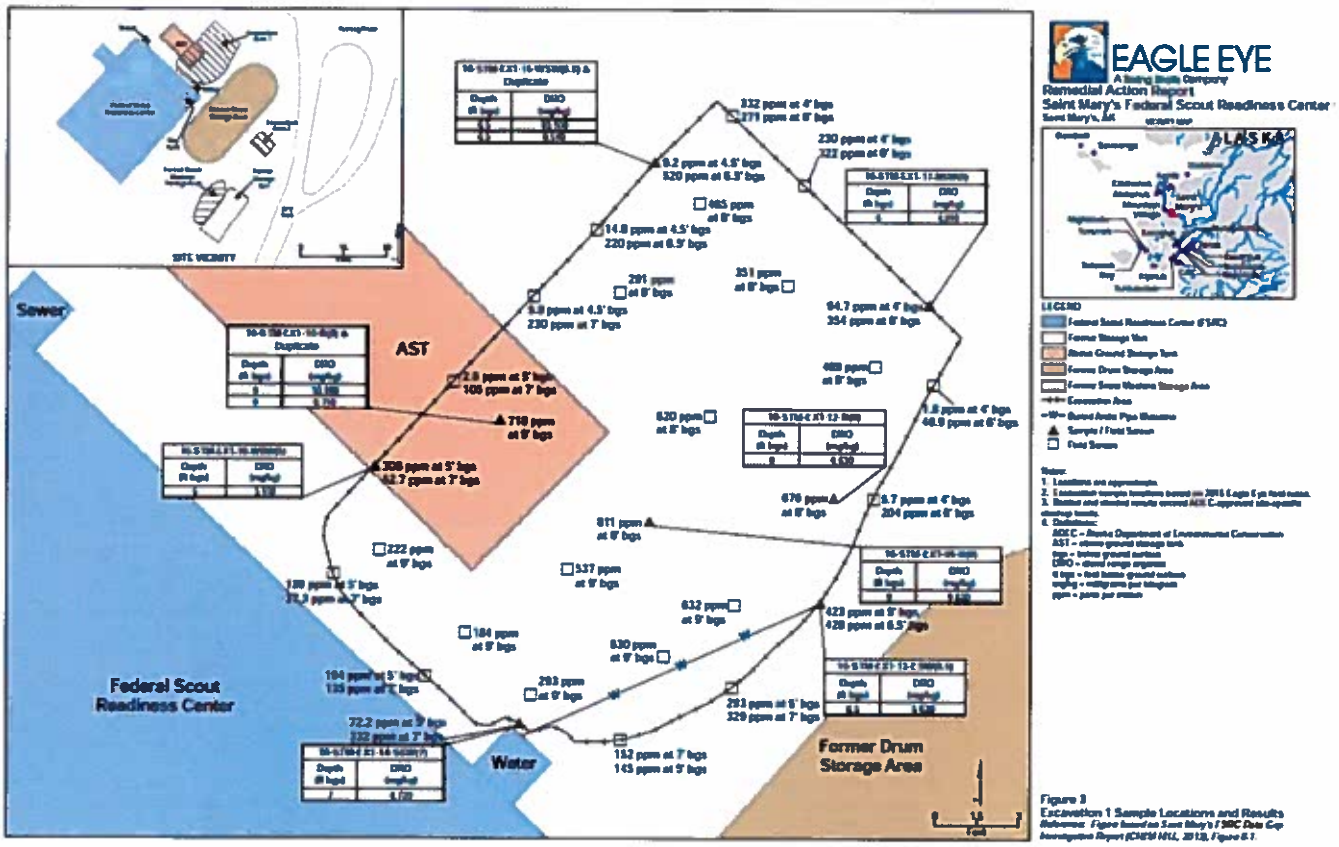

Figure 1: Excavation 1 sample locations and results. Figure copied from *Final Remedial Action Report for the St. Mary's Federal Scout Readiness Center* prepared by Eagle Eye Electric LLC.

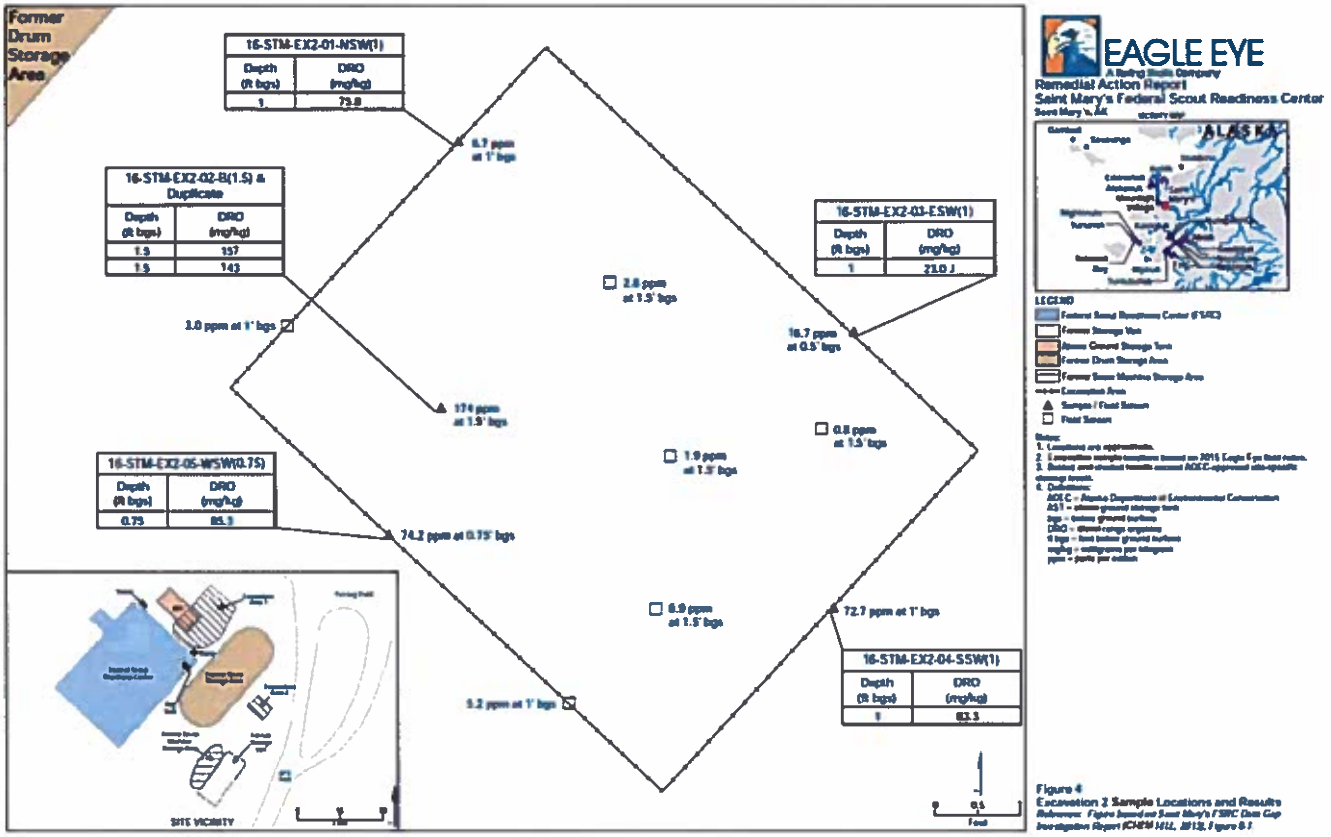

Figure 2: Excavation 2 sample locations and results. Figure copied from *Final Remedial Action Report for the St. Mary's Federal Scout Readiness Center* prepared by Eagle Eye Electric LLC.