

# BGES, INC.

ENVIRONMENTAL CONSULTANTS

**BAXTER MULTI-FAMILY DEVELOPMENT  
4220 BAXTER ROAD  
ANCHORAGE, ALASKA  
ADEC SPILL NUMBER 25239915702**

**SOIL MANAGEMENT  
AND CHARACTERIZATION WORK PLAN**

**JULY 2025**

**Submitted to:** Cook Inlet Housing Authority  
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Figure 2	Proposed Soil Boring and Monitoring Well Locations Map

## **1.0 INTRODUCTION**

BGES, Inc. (BGES) is pleased to present this Soil Management and Characterization Work Plan to Cook Inlet Housing Authority (CIHA) for managing potentially contaminated soil that may be encountered during construction of the Baxter Multi-Family Development project. The project consists of constructing one, 6-plex building and two, 9-plex buildings for multi-family housing at 4220 Baxter Road in Anchorage, Alaska; hereafter referred to as the subject property (Figure 1). BGES, on behalf of CIHA, will provide a Qualified Environmental Professional (QEP) as defined by the Alaska Department of Environmental Conservation (ADEC) to manage potentially contaminated soil, to observe the advancement of soil borings to characterize the extent of soil contamination, and the installation of a monitoring well to evaluate groundwater conditions at the subject property.

The purpose of this Soil Management and Characterization Work Plan is to present the procedures that will be completed to properly characterize and dispose of any contaminated soils that are encountered in the vicinity of previously identified contamination and to define the extent of soil and groundwater contamination at the subject property.

## **2.0 BACKGROUND**

The subject property is comprised of an irregularly shaped parcel; located along the west side of Baxter Road, between Eastwood Court and East Tudor Road; in the eastern portion of Anchorage, Alaska. Currently, the subject property is in the process of being developed by CIHA for multi-family housing.

BGES was contacted by CIHA on June 2, 2025, during installation of a water line across the development because the general contractor encountered potentially contaminated soil and a perched interval of water located at approximately 10 feet below grade (bg). BGES collected soil samples and a water sample from an approximate depth of 10 feet bg. These samples were submitted to Eurofins Spokane in Spokane Washington for laboratory analyses. Eurofins Spokane is an ADEC-approved laboratory for analyses of gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), volatile organic compounds (VOC), and polynuclear aromatic hydrocarbons (PAHs). Soil Sample NS1-060225 exhibited concentrations of DRO and naphthalene that exceeded ADEC's cleanup criteria for migration to groundwater. Soil Sample SS1-060225 exhibited non-detectable concentrations of all analytes. Water Sample BS1-060225 exhibited concentrations of DRO, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene that exceeded ADEC's cleanup criteria. It is important to note the water sample

was collected from a pocket of water that appeared to be perched within the soils. In other words, groundwater was not encountered during these sampling activities. Based on these results, BGES submitted a spill notification to ADEC on behalf of CIHA. The ADEC spill number for this project is 25239915702.

After obtaining approval from Jade Gamble, ADEC Prevention Preparedness and Response Program, the contaminated soil was returned to its approximate location of origin and a minimum of 18 inches of clean material was placed around the water pipe. In addition, Anchorage Water and Wastewater Utility requested that special piping be used in the waterline utility trench where the soil contamination was encountered.

Additional soil sampling included collection of soil samples from test pits that were excavated north and south of the initial discovery of contamination. It is important to note that these test pits were excavated to approximately 10 feet bg and no water was encountered. The Test Pit samples advanced north and south of the water line exhibited analyte concentrations below ADEC cleanup criteria.

On June 13, 2025, the general contractor discovered additional contamination at approximately 10 feet bg during installation of the sewer line. Soil samples collected from the approximate center of the open trench from an approximate depth of 10 feet bg exhibited concentrations of naphthalene that exceeded the ADEC cleanup criterion. Soil samples were also collected from the eastern and western ends of the open trench on June 19, 2025. The soil sample collected from the western end of the sewer line trench exhibited a naphthalene concentration that exceeded the cleanup criterion. The soil sample collected from the eastern end of the sewer line trench exhibited analyte concentrations that were below ADEC's cleanup criteria. Based on these results, Bill O'Connell at the ADEC requested a work plan to discuss how to handle any contaminated soils that may be encountered on the subject property during property development and he requested that the work plan also include advancement of soil borings to define the extent of soil contamination and installation of one monitoring well to determine if groundwater was impacted by the contamination present on the subject property. With this in mind, the following scope of work was developed to present the procedures that will be completed to properly characterize and dispose of any contaminated soils that are encountered in the vicinity of previously identified contamination and to define the extent of soil and groundwater contamination at the subject property.

### **3.0 SCOPE OF WORK**

BGES will provide a QEP for field supervision when the contractor suspects contamination along trench excavations for all utilities, during the advancement of soil borings for the collection of soil samples, and during the installation of a monitoring well and collection of a groundwater sample.

As mentioned above, we have developed this Soil Management and Characterization Work Plan for managing potentially contaminated soil in an environmentally appropriate manner and to define the extent of soil and groundwater contamination.

#### **3.1 Management of Soils During Excavation Activities**

As discussed above, contaminated soil has been identified in separate areas on the subject property at an approximate depth of 10 feet bg. According to CIHA, the general contractor will excavate soil to approximately 10 feet below grade in order to install municipal water and wastewater utilities and to approximately 5 feet bg in the locations of the planned buildings for installation of building footers and foundations. The specific location(s) of contaminated soil that will be encountered on the subject property is not known. The approximate locations where contamination has been encountered to date during these development activities are presented on Figure 2.

Because of the scattered locations of contamination encountered to date, BGES will not be onsite during excavation during the development activities. During excavation of soil across the subject property, the contractor will be vigilant and notify CIHA if any evidence of contamination is identified; including unidentified or petroleum odors, stained soils, stressed vegetation, pits, ponds, lagoons, septic systems, buried items, etc. CIHA will notify BGES of the potential contamination encountered and BGES will mobilize to the project site.

Any soils that are excavated from areas not suspected to be contaminated and that do not exhibit evidence of contamination, and that the contractor intends to reuse onsite, will not be sampled for laboratory analyses.

In the event that any evidence of contamination is encountered during excavation activities, a QEP from BGES will mobilize to the site (if not already present) to oversee management of the contaminated soils. Potentially contaminated soils will be screened using a photoionization detector (PID), in order to segregate the soils by apparent degree of contamination. The PID will be calibrated prior to use with 100 parts per million (ppm) isobutylene calibration gas. Excavated soils will be segregated based on visual

and olfactory observations, as well as PID readings taken directly from soils within the excavator bucket. Soil samples will also be periodically collected for heated headspace readings with the PID by placing the soils in sealed plastic bags; labeling the bags with appropriate identification information; agitating the bags for approximately 15 seconds and allowing the bags to warm to at least 40 degrees Fahrenheit. Within no less than 10 minutes and no greater than one hour of collection, the bags will again be agitated, the probe of the PID will be inserted into the bags, and the greatest reading associated with each field screening sample will be recorded in the field log book.

Any soil from the utility trenches that are suitable for reuse may be used as backfill in the approximate location of origin, at least 2 feet below grade, in accordance with the ADEC technical memorandum *Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects*, dated September 2018. The suitable soil will be temporarily stockpiled adjacent to the utility trench. Upon installation of the new utilities, the excavated soils that are deemed acceptable for reuse will be backfilled into the trench (depths below 2 feet), and if necessary, imported clean material (or excess clean material from other portions of the project site) will then be used to backfill the trench to grade. Soils that are deemed unsuitable for reuse will be stockpiled onsite and sampled to determine the appropriate disposal option.

Obviously contaminated soils that are excavated from the building footprints will be stockpiled onsite in accordance with applicable regulations and ADEC guidelines, to await further characterization aimed at determining the material's acceptability for disposal at an appropriate facility.

Any excavated soil that is expected to be potentially contaminated and stockpiled onsite will be placed on top of, and covered with a liner (when left overnight), in accordance with ADEC regulations for short-term storage of contaminated soils as specified in 18 Alaska Administrative Code 75.370.

The excavation of any contaminated soils (if encountered) will be limited to only that which must be removed to facilitate the construction of the buildings. Prior to disposal of any contaminated soils at an appropriate disposal facility, BGES will obtain approval of the disposal facility in addition to ADEC's approval for transport and disposal.

### **3.2 Management of Groundwater During Excavation Activities**

It is anticipated that groundwater will not be encountered during any excavation activities on the subject property because the estimated depth to groundwater is approximately 18 to 20 feet bg.

### **3.3 Stockpile Field Screening and Sampling**

If soil stockpiles are created, samples for field screening will be collected from at least 18 inches below the exposed surface of the stockpiles, and some field screening samples will be collected near the base of the stockpile as stipulated in the ADEC Field Sampling Guidance. Five field screening samples will be collected from the stockpiled material, or one sample per 10 cubic yards; whichever number is greater.

The soil samples will be screened using the heated headspace procedure described above in Section 3.1. Samples for laboratory analyses will be collected from the screening locations with the greatest PID readings to characterize the stockpiles for proper disposal. In accordance with ADEC Field Sampling Guidance, one sample will be collected for laboratory analysis for up to 10 cubic yards of stockpiled soil; two samples will be collected if the stockpile contains 11 to 50 cubic yards of soil; and three samples will be collected for 51 to 100 cubic yards of soil. If more than 100 cubic yards of potentially contaminated soil are stockpiled, then three samples will be collected for laboratory analysis, plus one sample per additional 200 cubic yards. If a very large volume of soil is stockpiled for assessment, then BGES may discuss an alternative sampling strategy with the ADEC.

Samples will be collected using clean, stainless-steel spoons. The samples will be placed directly into laboratory-supplied jars, and the portions of the samples scheduled for volatile analyses will be collected first. These sample portions will be preserved with laboratory-supplied methanol immediately after collection.

### **3.4 Laboratory Analysis**

Because the nature of the contamination formerly identified on the subject property is likely related to heating fuel, soil samples collected for laboratory analyses will be analyzed for GRO by Alaska Method (AK) 101; DRO by AK 102; RRO by AK 103; VOCs by EPA Method 8260D and Method 8260D SIM; and PAHs by EPA Method 8270E SIM. Trip blanks will accompany all samples scheduled for volatile analyses at all times from sample collection until submission to the laboratory and will be analyzed for GRO and VOCs by the same methods described above. The soil samples will be placed in a chilled cooler and delivered for analysis under chain of custody protocol to an ADEC-approved laboratory.

### **3.5 Advancement of Soil Borings**

**Utility Locates.** BGES will contact the Alaska One-Call Center to request that any public underground utility lines on the subject property be located and marked. For scheduling purposes, advance notice of 2 to 3 days is required to mark public utility lines for the subject property. BGES will also request assistance from the general contractor or CIHA so they can locate the newly-installed utilities for the subject property development.

**Drilling and Collection of Soil Samples.** BGES and a qualified drilling company will mobilize to the subject property for the advancement of five soil borings to an approximate depth of 12 feet bg. The soil boring advanced adjacent to the waterline excavation will be managed as described below in Section 3.6. The soil borings will be positioned in locations surrounding the previously identified areas of subsurface contamination. The approximate locations of the proposed soil borings and monitoring well are depicted on Figure 2.

The drilling company will advance the soil borings using a Geoprobe drilling rig and soil samples will be collected using Macro-Core sampling methods. Soil samples will be collected continuously from ground surface to the estimated completion depth of each soil boring. Upon retrieval, the 5-foot Macro-Core samplers will be opened and the field screening samples and confirmation samples will be collected from every 2.5-foot interval, assuming good sample recovery. Soil samples will be collected with clean, stainless-steel spoons from each sampling interval. Immediately upon retrieval, sample portions scheduled to be analyzed for volatile compounds will be collected and preserved in laboratory-supplied containers. A second portion of each sample will be placed in a laboratory-supplied container without preservative, for analysis of non-volatile compounds. The samples will be labeled and placed in a cooler to maintain a temperature of 0 to 6 degrees Celsius.

A final portion of each sample will be placed in a sealable plastic bag that will be labeled with a unique sample number and the time of collection. These samples will be field-screened as described above in Section 3.1. The soil cuttings will be stored onsite in 55-gallon drums that will be clearly labeled as containing potentially contaminated soil, and the borings will be backfilled with hydrated bentonite. The soil boring completed as a monitoring well will be constructed as described below in Section 3.6.

A total of seven soil samples (including a duplicate sample) will be submitted for laboratory analyses to determine if the extent of soil contamination has been defined. As a quality control measure, a trip blank

sample will accompany the soil samples scheduled for volatile analyses during the entire sampling and handling process. As an additional quality control procedure, one duplicate soil sample will be collected per 10 project soil samples being collected and submitted “blindly” to the laboratory to evaluate field sampling precision. The sample coolers will be transported by BGES personnel to Alaska Air Cargo (Gold Streak) in Anchorage, Alaska. The coolers will be shipped to Eurofins Spokane in Spokane, Washington; an ADEC-approved laboratory, under standard chain of custody protocol. The soil samples will be analyzed for GRO, DRO, RRO, VOCs, and PAHs by the methods listed above.

### **3.6 Monitoring Well Installation and Collection of a Groundwater Sample**

The soil boring located adjacent to the water line excavation (Figure 2) will be sampled as described above to an approximate depth of 15 feet bg. If obvious signs of petroleum contamination such as elevated PID readings and/or visual/olfactory indications are present, then the soil boring will be advanced and completed as a monitoring well as described below. If no signs of petroleum contamination are present at 15 feet bg, then a soil sample will be collected from the bottom of the soil boring to evaluate for the presence of soil contamination. If the analytical results for the soil sample from the base of the soil boring indicate that contamination is present, then a drilling rig will be remobilized to install a monitoring well to evaluate groundwater conditions. It is noted that groundwater was observed during geotechnical drilling between 13 and 25 feet bg across the project site.

One soil boring will be completed as a monitoring well for collection of a groundwater sample to evaluate baseline conditions. The monitoring well will be constructed with 2-inch diameter polyvinyl chloride (PVC) casing from the ground surface to approximately 15 feet bg, and 10 feet of 2-inch diameter 10-slot PVC well screen from approximately 15 to 25 feet bg. The exact depth of the well screen will be determined in the field such that the screen approximately bisects the groundwater table. A bottom cap will be placed on the bottom of the well screen and the top of the well casing will be capped with an expandable plug to prevent introduction of surface water. The annular space around the well screen will be backfilled with an appropriate filter sand from the base of the boring to a minimum of 2 to 3 feet above the screened interval, followed by hydrated bentonite chips to approximately 1-foot bg. A protective steel cover will be installed around the top of the well, flush with grade, and secured with a cement seal at the surface. The well completion details will be recorded on a well completion log.

BGES will develop the monitoring well with a disposable polyethylene bailer at least 24 hours after the well is installed. The bailer will be surged in the well to dislodge silt and sediment, which will then be

removed along with stagnant water in the bailers. This process will continue until approximately 5 gallons of water have been removed from the well or until the water is relatively sediment-free. The well development water will be stored onsite in a 55-gallon drum that will be clearly labeled as containing potentially contaminated water.

A minimum of 24 hours after development of the well, the depth to water will be measured again utilizing a decontaminated electronic water level indicator. The well will then be purged of approximately three well volumes, or until water quality parameters (such as temperature, pH, conductivity, and oxidation reduction potential) indicate stabilization of the aquifer in accordance with ADEC's Field Sampling Guidance (current version). Low-flow sampling methodology [pumping rate of 50 to 500 milliliters per minute (ml/min)] will be utilized during purging and sampling using a positive displacement bladder pump, with poly tubing and bladders. The intake of the bladder pump will be set within the top 12 inches of the water table, and the depth of drawdown in each well will be minimized during purging and sampling, with a goal of less than 0.3 foot. The depth to water, depth to the bottom of the well, calculated well volume, depth of the pump intake, the purge rate, and the sampling rate will all be documented on the water sampling log.

The groundwater sample will be collected directly into laboratory-supplied containers. The containers for volatile analyses will be filled first and care will be exercised to ensure that no headspace is created within the laboratory vials. Care will also be exercised to ensure that none of the preservative is spilled during sample collection. As a quality control measure, a trip blank sample will accompany the water samples scheduled for volatile analyses during the entire sampling and handling process. One duplicate groundwater sample will be collected and submitted "blindly" to evaluate field sampling precision. The groundwater samples will be labeled, placed in a chilled cooler and shipped to Eurofins Spokane in Spokane, Washington under standard chain of custody protocol. The groundwater samples will be analyzed for GRO, DRO, RRO, VOCs, and PAHs by the methods listed above.

The purge water will also be temporarily stored onsite in a 55-gallon drum that will be clearly labeled as containing potentially contaminated water pending analytical results of the groundwater samples.

Investigation-derived waste (IDW) generated during advancement of the soil borings will include soil cuttings, field-screening samples, decontamination water, empty methanol vials, and miscellaneous personal protective equipment and trash. The empty methanol vials, personal protective equipment, and trash will be transported to the Anchorage Regional Landfill for disposal. The well development and

purge water will also be temporarily stored onsite as described above.

### 3.7 Reporting

BGES will develop a comprehensive report detailing the results of the characterization activities, in accordance with ADEC requirements. The report will include a narrative description of the field activities, a discussion of laboratory analyses and field-screening results, tabulated analytical data, laboratory data quality checklists, a conceptual site model, and field notes. In addition, figures showing the approximate locations of the excavations, soil stockpiles, soil borings, test pits with samples, and monitoring well(s) will be included in the report. Final disposition of all IDW will be documented and presented in the report. Photographs taken before, during, and after the field activities will also be included in the report.

## 4.0 PROJECT SCHEDULE

We have developed the preliminary schedule shown below to assist you with planning for project completion. This schedule is an estimate and is highly dependent upon the review and approval of our work plan by the ADEC, the availability of the drilling subcontractor, and the availability of field personnel.

Submit Work Plan to client for review	July 9, 2025
Receive Comments from client	July 10, 2025
Submit Work Plan to ADEC	July 11, 2025
Obtain ADEC Approval of Work Plan	July 25, 2025
Task 1 – Conduct Utility Locates	July 28 – 30, 2025
Task 2 – Advance Soil Borings & Install Monitoring Well	July 30 – 31, 2025
Task 3 – Develop & Sample Monitoring Well	August 4 - 5, 2025
Task 4 – Laboratory Analyses	August 4 – 20, 2025
Task 5 – Submit Draft Report to client	September 30, 2025
Receive Comments from client	October 10, 2025
Submit Final Report to ADEC	October 14, 2025

We look forward to working with you towards the successful completion of this project. If you have any questions concerning our work plan, please do not hesitate to contact us.

### BGES, INC.

Prepared by:

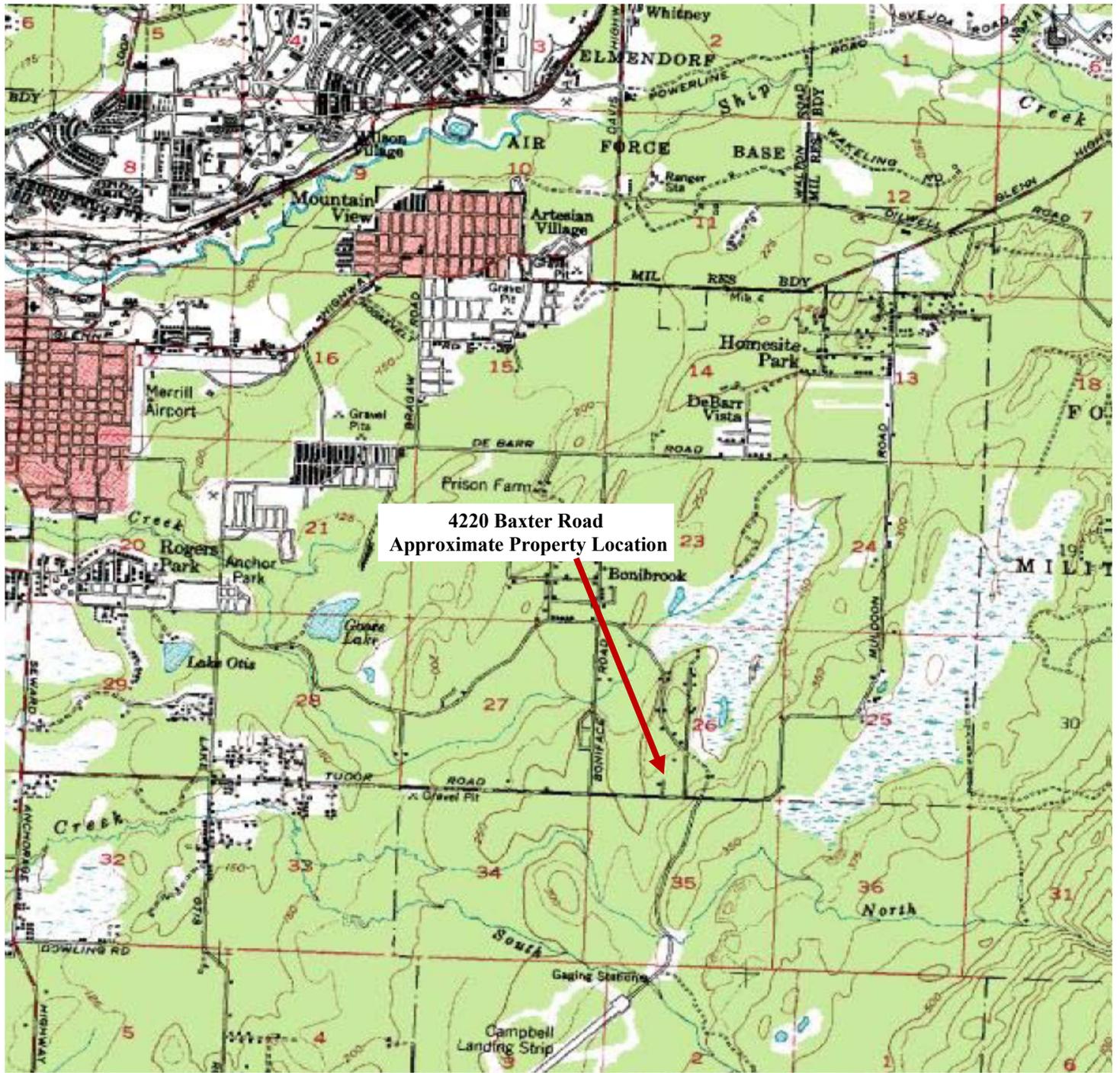


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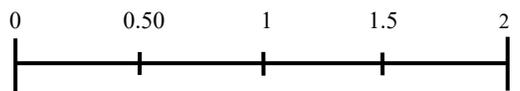
Reviewed and Approved By:



Robert N. Braunstein, C.P.G., P.G.  
Principal Geologist



Source: USGS Map, Anchorage, Alaska 1963



Approximate Scale in Miles

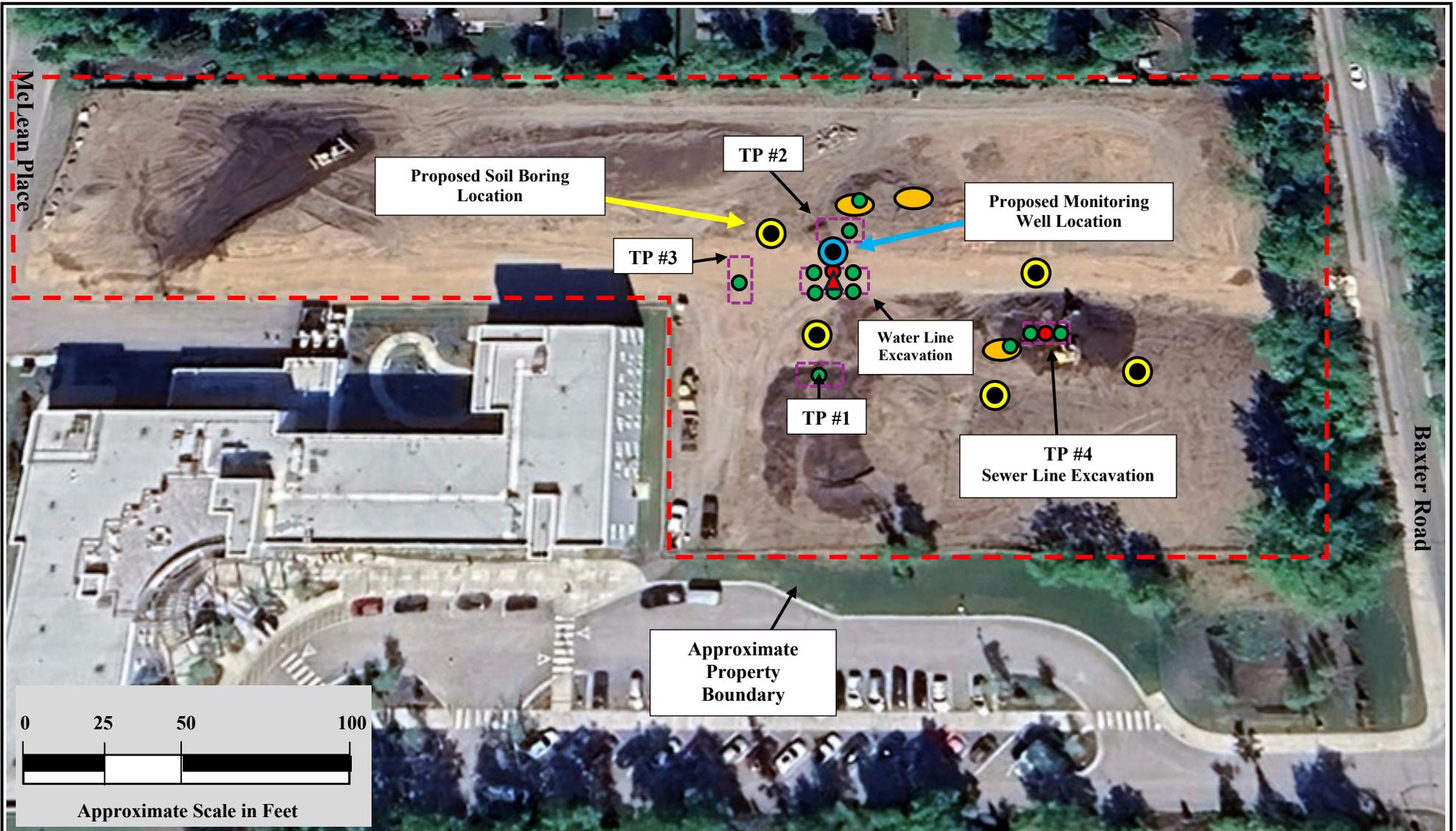


4220 Baxter Road  
Anchorage, Alaska  
**Property Vicinity Map**



**July 2025**

**Figure 1**



Source: Google Earth Pro ©

**LEGEND**

- = Approximate Location of Original Excavation/Test Pits
- = Approximate Location of Former Stockpiles
- = Approximate Location of Soil Sample (Concentrations are below ADEC Cleanup Criteria)
- = Approximate Location of Soil Sample (Concentrations exceed ADEC Cleanup Criteria)
- = Approximate Location of Water Sample (Concentrations exceed ADEC Cleanup Criteria)

Notes: TP = Test Pit



4220 Baxter Road  
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**Proposed Soil Boring and  
Monitoring Well Locations Map**



July 2025

Figure 2