

BGES, INC.

ENVIRONMENTAL CONSULTANTS

BGES, INC.
Providing Environmental and Geological Consulting Services

1042 East 6th Avenue
Anchorage, Alaska 99501
Phone: (907) 644-2900
Fax: (907) 644-2901
www.BGESINC.com

January 28, 2019

Chelsy Passmore
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, Alaska 99501

RE: WORK PLAN FOR ADVANCEMENT OF SOIL BORINGS; 20943 BILL STEPHENS DRIVE, CHUGIAK, ALASKA

Dear Ms. Passmore:

BGES, Inc. (BGES) is pleased to present our work plan for the advancement of soil borings at the above-referenced location (Figure 1); hereafter referred to as the subject property. Shannon & Wilson advanced four soil borings on the subject property in 1991. Benzene and ethylbenzene were identified at a depth of 12.5 to 14 feet below grade (bg) in one soil boring, and benzene was identified at a depth of 25 to 26.5 feet bg in another soil boring on the western portion of the property at concentrations exceeding the current Alaska Department of Environmental Conservation (ADEC) cleanup criteria (October 27, 2018). Total petroleum hydrocarbons (TPH) was also detected in a sample from the on-site drinking water well at a concentration exceeding the current ADEC cleanup criterion. This assessment was conducted prior to the requirement of preserving soil samples with methanol; indicating that the soil sample analytical results may be biased low.

Soil contamination was also identified by Terrasat, Inc. during the removal of four underground storage tanks (USTs) on the subject property in October of 1998. Terrasat excavated approximately 123 cubic yards of contaminated soil and noted that additional contaminated soil remained along the northern side of the excavation and underneath the building. Gasoline range organics (GRO), benzene, toluene, and ethylbenzene were identified in confirmation soil samples at concentrations exceeding the current ADEC cleanup criteria (October 27, 2018). Terrasat excavated the piping associated with the USTs and additional contaminated soils in November of 1998. Confirmation samples exhibited GRO, benzene, toluene, ethylbenzene, and total xylenes at concentrations exceeding the current ADEC cleanup criteria.

According to the Alaska Department of Natural Resources (AKDNR) Well Log Tracking System (WELTS), the on-site drinking water well on the subject property was installed on October 17, 1974 by

Sullivan Water Wells to a total depth of approximately 500 feet bg.

With this in mind, we have developed the following scope of work to evaluate the extent of contamination remaining on the subject property.

SCOPE OF WORK

The following activities will be conducted in general accordance with the ADEC guidance and regulations. All field work will be performed by, or under the direct supervision of, a Qualified Environmental Professional (QEP) as defined by the ADEC.

Task 1 – Coordinate Utility Locates

Prior to advancing soil borings, BGES personnel will coordinate the marking of utility locates on the subject property with the Alaska One-Call Utility Locate service. We have assumed that the current property owner will be able to provide information concerning local utilities on the subject property and that the services of an independent utility locator will not be required.

Task 2 – Advance Soil Borings

BGES personnel will mobilize to the site to observe the drilling of an estimated nine soil borings on the subject property in the approximate locations shown on Figure 2. The soil borings will be advanced to depths of approximately 15 to 40 feet bg. Based on information provided in reports associated with previous assessments on the subject property, groundwater is not anticipated to be present at these depths.

BGES will subcontract GeoTek Alaska (GeoTek) to drill the soil borings. The borings will be advanced using direct-push drilling technology. Soil samples will be obtained using 5-foot macro-core samplers. If geologic conditions preclude the use of direct-push technology, GeoTek will be prepared to continue drilling with hollow-stem augers. Based on a previous site assessment, it appears that this drilling technology will work; however, if advancement of the borings is still impeded by large cobbles or boulders, it may be necessary to switch to air-rotary drilling. Soil samples for field screening and possible laboratory analyses will be collected from 2.5-foot intervals (two intervals per macro-core sampler), continuously from grade to 20 feet bg, and then on 5-foot centers to the total depth of the boreholes.

Portions of each sample will be collected in laboratory-supplied containers using clean, stainless-steel spoons. The first sample portion will be preserved with laboratory-supplied methanol immediately upon collection for analysis of volatile compounds. The methanol will be added to the samples in a manner that completely covers the samples. The sample containers will be labeled, placed in a chilled cooler, and delivered under chain of custody protocol to TestAmerica Laboratories (TestAmerica) in Spokane; an

ADEC-approved laboratory. As a quality control measure, a trip blank will accompany the soil samples during the entire sampling and handling process, and will be analyzed for the same volatile constituents as the project samples.

A portion of each sample will then be placed into a sealable plastic bag using the same stainless-steel spoon. The bags will be labeled with unique sample numbers and the times of collection. Soils in the plastic bags will be screened with a photoionization detector (PID) that will be calibrated prior to use with 100 parts per million (ppm) isobutylene calibration gas. The samples will be allowed to warm for at least 10 minutes and to a temperature of at least 40 degrees Fahrenheit. Then, within 1 hour of collection, the plastic bags will be agitated for approximately 15 seconds, and the probe of the PID will be inserted into the bags and the maximum reading associated with each sample will be recorded.

If no contamination is identified based on field observations, the drill cuttings and unused sample portions (except for the methanol-preserved portions) will be replaced in the boreholes upon completion of sampling activities. If evidence of contamination is observed, the drill cuttings and unused sample portions will be placed in 55-gallon drums that will be stored onsite pending laboratory results to determine the appropriate disposal method. The drums will be labeled as containing potentially-contaminated soil with the client's contact information. Prior to the ultimate disposal of the soils, BGES will obtain permission from the receiving entity and from the ADEC.

Task 3 – Laboratory Analyses

Approximately 20 soil samples (two from each soil boring and two duplicate samples) will be submitted to TestAmerica in Spokane for analysis of GRO by Alaska Method (AK) 101; diesel range organics (DRO) by AK 102; residual range organics (RRO) by AK 103; volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260C and 8260C SIM; ethylene dibromide and 1,2,3-trichloropropane by EPA Method 8011; and lead by SW Method 6010C. Approximately 2 samples, or 10 percent of the project samples, plus two duplicate samples, will be analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D SIM. The samples analyzed for PAHs will be obtained from soils exhibiting the apparent greatest degree of contamination based on field observations. For quality-control purposes, a trip blank sample will accompany the project samples during collection and delivery to the laboratory, and will be analyzed for GRO and VOCs by the same methods listed above. All samples will be submitted to the laboratory on a standard 10 business-day turnaround time.

Task 4 – Preparation of Report

Upon receipt of the laboratory analyses, we will prepare a summary report of our findings. The report

will include a discussion of the field activity procedures, laboratory results, and data quality; a conceptual site model; and figures showing the locations of the soil borings. Photographs of project activities, a data quality checklist, and the complete laboratory report will be provided in appendices to our report.

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 availability of the drilling subcontractor; and review and approval of our work plan by the ADEC.

Submit Work Plan to ADEC for Review	February 1, 2019
Obtain ADEC Approval of Work Plan	February 15, 2019
Task 1 – Coordinate Utility Locates	Days 1 and 2
Task 2 – Advance Soil Borings	Days 3 and 4
Task 3 – Laboratory Analyses	Days 5 – 18
Task 4 – Submit Report	Day 30

For the convenience of the ADEC, we have included an approval block below. 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.

Sincerely,

BGES, INC.

Prepared by:



Rose Pollock
Environmental Scientist II

Reviewed by:



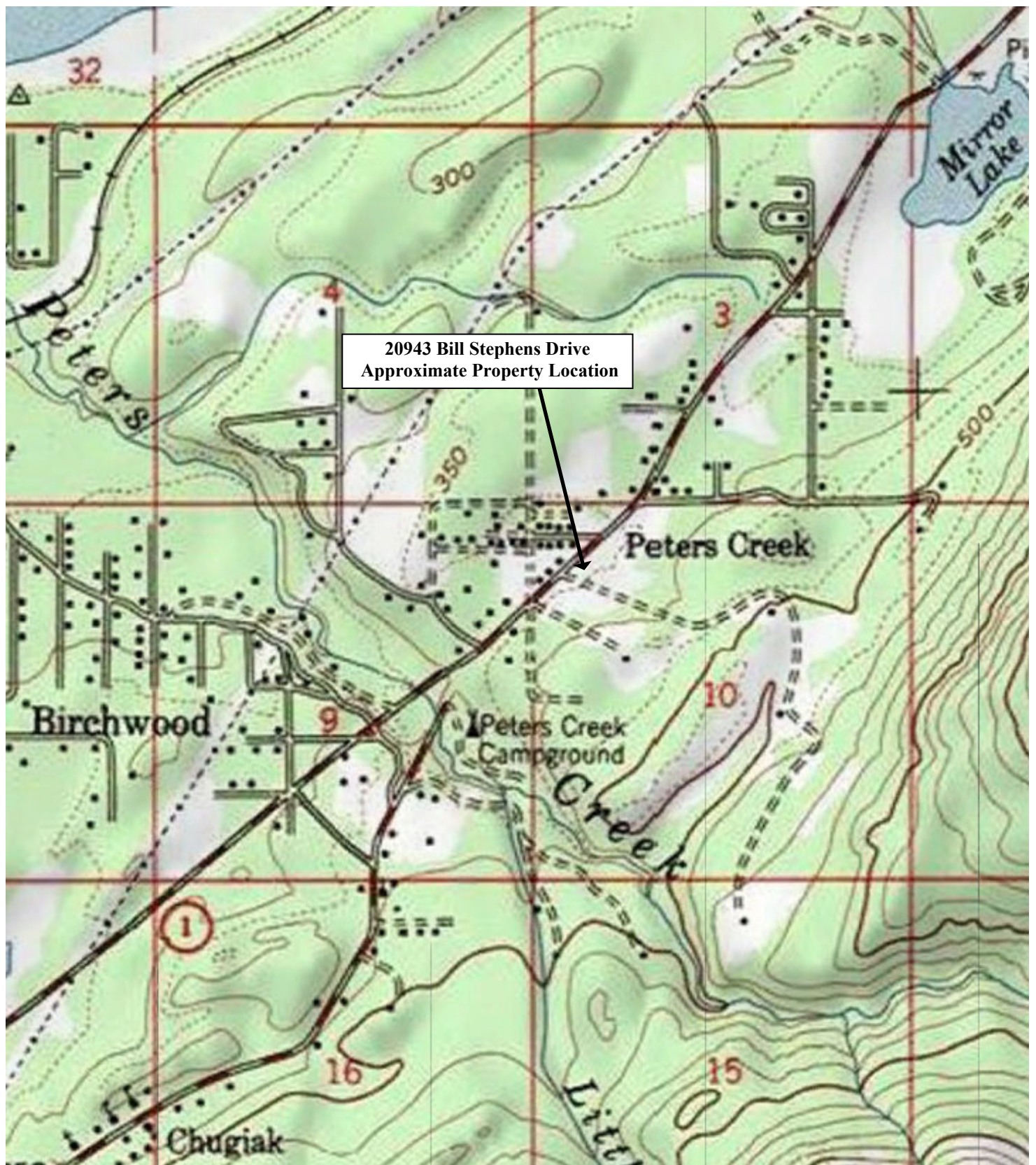
Robert N. Braunstein, C.P.G.
Principal

WORK PLAN AUTHORIZATION:

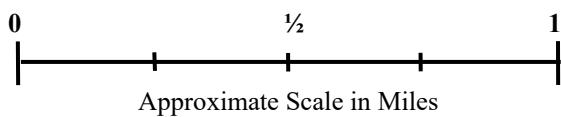
I have reviewed this work plan for the advancement of soil borings at the property located at 20943 Bill Stephens Drive, in Chugiak, Alaska. I approve of the planned activities presented in the work plan with the following modifications/additional comments, if applicable:

Signature, ADEC Project Manager

Date



Source: Provided by Google Earth Pro ©

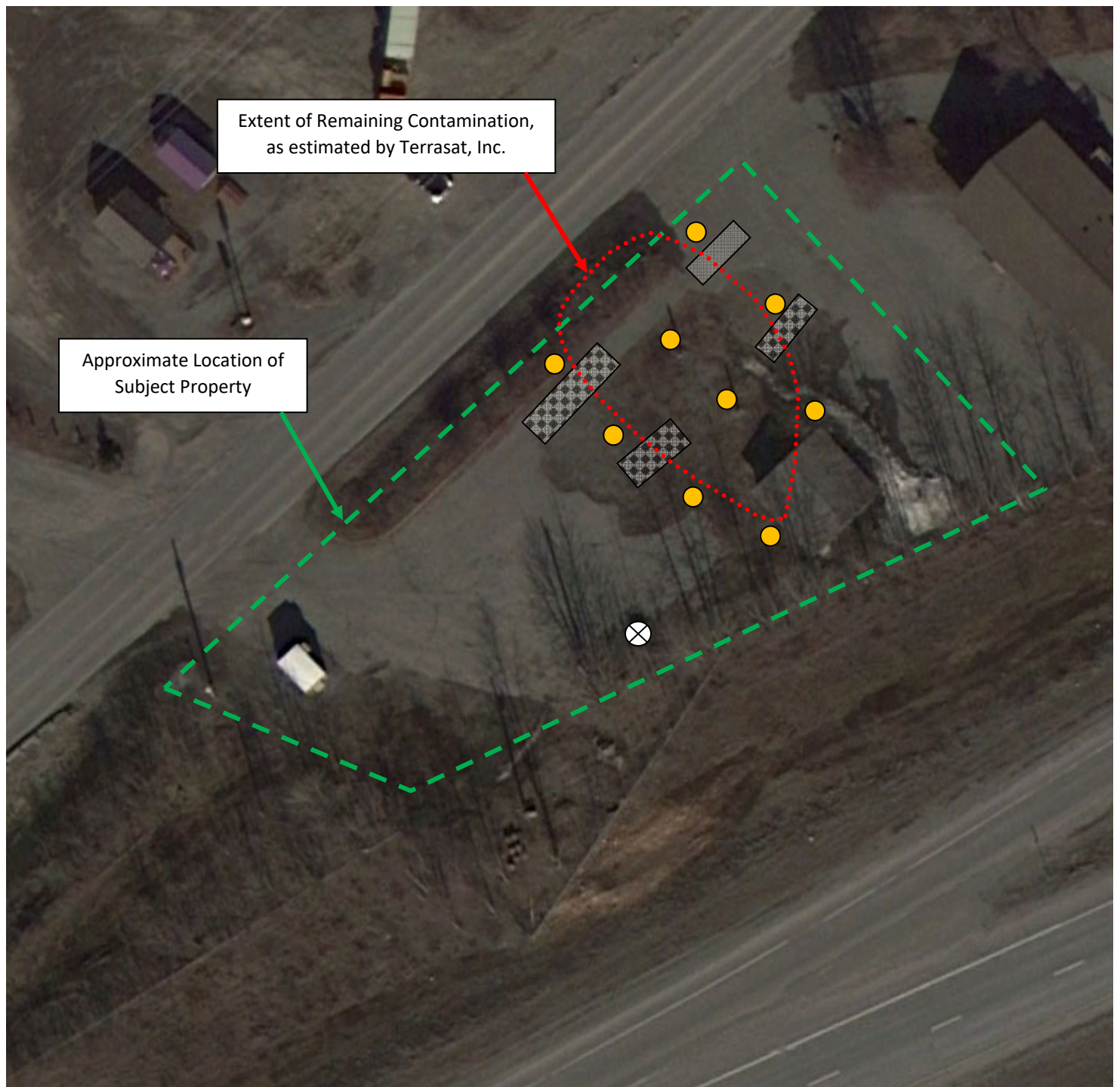


20943 Bill Stephens Drive
Chugiak, Alaska
Property Vicinity Map

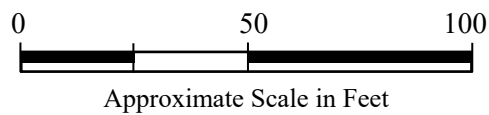
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Figure 1



Source: Provided by Google Earth Pro ©



KEY

-  Former gasoline underground storage tank (UST)
-  Former diesel UST
-  Proposed Soil Boring Location
-  Drinking Water Well

20943 Bill Stephens Drive
Chugiak, Alaska
Proposed Soil Boring Locations


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Figure 2