Technical Memorandum

TO: Joseph Flaherty, The Boeing Company

FROM: Colette Gaona

DATE: March 1, 2022

RE: **3-322 Building Flooding Trench Drain Repair Work Plan**
North Boeing Field
Seattle, Washington
Project No. 025082.222.005

Introduction

This technical memorandum, prepared by Landau Associates, Inc. (Landau), presents a work plan for soil characterization sampling in excavation areas associated with Building 3-322 at North Boeing Field (NBF) in Seattle, Washington. Boeing plans to excavate soils and perform asphalt and storm drain repairs near areas where soils containing polychlorinated biphenyls (PCBs) had formerly been removed (Figure 1). The objective of this investigation is to characterize soils that will be excavated during storm drain repairs and asphalt replacement to determine appropriate handling and disposal requirements.

The field activities, laboratory analysis, and reporting that will be conducted as part of the investigation are described herein. This work plan includes information for the following topics: field quality control sample collection; field documentation; sample designation; chemical analysis; sample labeling, shipping, and chain-of-custody (COC); equipment decontamination; and waste disposal.

Background

Surface and subsurface soil cleanup activities were performed in the vicinity of Building 3-322 in 2010 to remove and dispose of accessible material with PCB concentrations greater than 0.5 milligrams per kilogram (mg/kg; Landau 2010). Boeing plans to excavate additional soils near the areas where these PCB-impacted soils were removed (Figure 1) to complete storm drain repairs and asphalt replacement. This investigation will evaluate soil conditions prior to the Boeing repair work and the results will be used to advise excavation worker health and safety protocols as well as appropriate soil handling, including storage and disposal if necessary. Based on previous sampling and soil removal in this area, it is not anticipated that concentrations of PCBs will exceed risk-based cleanup levels under the Toxic Substances Control Act (TSCA; 50 mg/kg).

Proposed Soil Sampling Locations

Proposed soil sampling locations were selected to provide sufficient data to evaluate whether PCB-impacted soils are present in the areas to be excavated. A total of 15 soil sampling locations are proposed on Figure 1. Prior to drilling, the locations of each proposed boring will be cleared in the

field and both public and private utility locates will be performed. A ground-penetrating radar (GPR) survey will also be conducted to mark non-conductible utilities in the field prior to sampling activities. Due to the density of underground utilities in the targeted sampling area, each sampling location will be hand-cleared during sampling activities via the use of a hand auger and/or vacuum truck air-knife to avoid damaging any subsurface utilities or other structures. Sample locations may be adjusted based on the final utility locates, the presence of underground utilities, and/or the pre-field site walk with Boeing and the drilling contractor. The final coordinates for each sample location will be documented using a hand-held Global Positioning System (GPS). Landau will coordinate with Boeing to facilitate access and traffic control in the investigation area prior to field work.

Soil Sampling

Soil borings in the areas of the storm drain replacement will be completed to the depth of groundwater, expected to be approximately 3 to 4 feet (ft). Borings in the areas where only asphalt will be replaced will be completed to a depth of approximately 1 to 2 ft. One soil sample will be collected from each of the shallow borings. Up to two soil samples will be collected from the deeper borings with the bottom sample interval to be immediately above the encountered depth of the water table. Sample intervals may be adjusted in the field based on observed or suspected contamination. In addition to soil samples, one composite asphalt sample will also be collected.[1]

Borings will be completed using hand auger and/or vacuum truck air-knife techniques for sample collection. Because the anticipated maximum depth of the borings (4 ft) is less than the depth typically used to hand-clear each location, it is expected that borings will be completed without the need for direct-push drilling equipment. A Landau field representative will log each boring and collect soil samples at the appropriate depth intervals.

Soil collected from the proposed sampling intervals will be homogenized in a clean stainless-steel bowl using a clean stainless-steel spoon, placed into an 8-ounce glass sample jar, labeled, and stored on ice. Each soil sample will be assigned a unique alphanumeric identifier according to the order it was collected in relation to other samples, the depth interval that it represents, and the date. For example, the first subsurface soil sample, if collected on March 15, 2022 between 0 and 2 ft deep, will be identified as “3-322-SB01(0-2)031522”. Field duplicate samples for quality assurance/quality control (QA/QC) are planned to be collected at a rate of one per every 20 samples.

A complete record of all field activities will be maintained. Documentation will include the following:

- Field logbooks
- Field sampling forms
- Photographs of sample locations, including sample number

[1] Composite asphalt sample will include asphalt from five randomly selected sample locations in the field.

- GPS coordinates of sample locations, where possible
- Sample labels
- COC forms
- Custody seals (only if not directly delivered to the laboratory)
- Project and data management file copies.

Sample container labels will be completed immediately before or immediately following sample collection. Container labels and COC forms will include the following information:

- Project name (Boeing NBF 3-322 Repairs)
- Boeing project manager's name (Joe Flaherty)
- Landau project number (0025082.222.005)
- Sample identification (ID)
- Initials of the person collecting the sample
- Date and time of collection
- Analysis requested.

Sample Analysis

Samples will be transported under standard COC procedures to Boeing's contracted analytical laboratory, Analytical Resources, Inc., (ARI) of Tukwila, Washington, within 36 hours of sample collection. All soil samples will be analyzed for PCB Aroclors by US Environmental Protection Agency (EPA) Method 8082.

Decontamination and Waste Disposal

The equipment decontamination procedures described below are to be used by field personnel to clean drilling, sampling, and related field equipment. Deviation from these procedures must be documented in field records. All sampling equipment used (e.g., stainless-steel bowls, stainless-steel spoons, etc.) will be cleaned using a three-step process, as follows:

1) Scrub surfaces of equipment that would be in contact with the sample with brushes using an Alconox soap and potable water solution.
2) Rinse and scrub equipment with clean tap water.
3) Rinse equipment a final time with de-ionized water to remove tap water impurities.

Decontamination of reusable sampling devices will occur between collection of each sample.

Heavy equipment (e.g., equipment that is used downhole, or that contacts material and equipment going downhole) will be cleaned by a hot-water, high-pressure wash before each use and at the completion of the project.

Soil cuttings generated during boring advancement will be temporarily stored onsite in 55-gallon drums. Disposal methods for soil stored in 55-gallon drums will be determined by Boeing based on the analytical results for the soil sampling. Landau may collect additional waste characterization samples to determine disposal requirements as requested by Boeing.

Schedule and Reporting

Soil sampling activities are scheduled for March 9, 10, and 11, 2022. It is anticipated that laboratory analysis results will be available about 2 weeks after sample collection. Landau will prepare a report documenting the implementation of this work plan. The report will include a description of field activities, laboratory analytical results, and summary tables of validated data.

LANDAU ASSOCIATES, INC.

Colette Gaona
Senior Associate

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Attachment

Figure 1. Building 3-322 Area

References

Landau. 2010. Report: Storm Drain Structure and Surface Cleanup, North Boeing Field, Seattle, Washington. Landau Associates, Inc. June 18.

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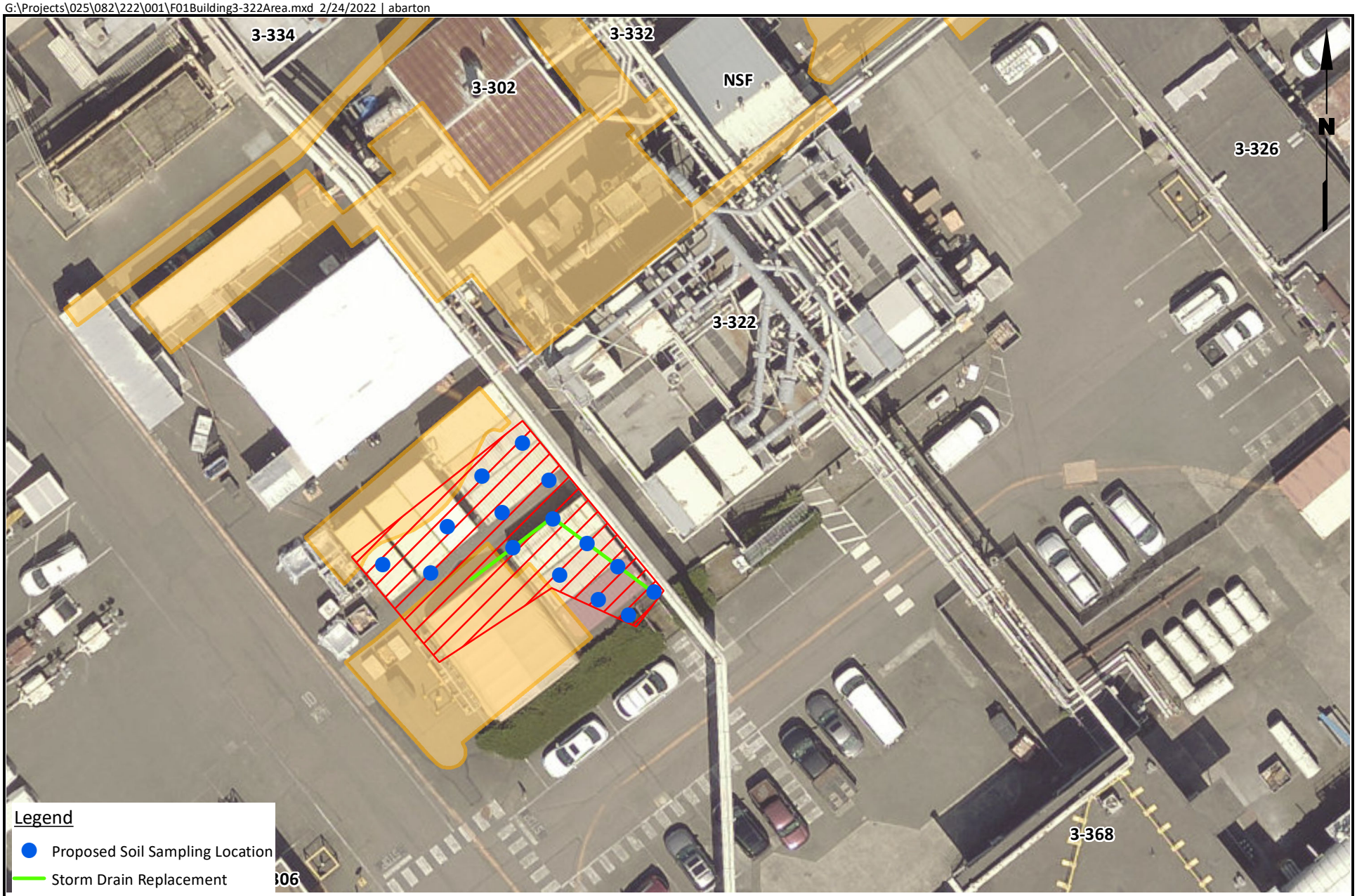

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North Boeing Field
Seattle, Washington

Building 3-322 Area

Figure
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