ENVIRONMENTAL CHECKLIST

Anderson Hall Renovation

UNIVERSITY of WASHINGTON

January 2024

Purpose

The State Environmental Policy Act (SEPA), Chapter 43.21 RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. The purpose of this checklist is to provide information to help identify impacts from the proposal (and to reduce or avoid impacts, if possible) and to help the University of Washington to make a SEPA threshold determination.

A.Background

1. **Name of proposed project, if applicable:**

   Anderson Hall Renovation

2. **Name of applicant:**

   University of Washington

3. **Address and phone number of applicant and contact person:**

   Applicant & Contact
   Julie Blakeslee
   Environmental and Land Use Planner
   University of Washington
   Facilities, Asset Management
   Box 359571
   Seattle, WA 98195-9571
   jblakesl@uw.edu

4. **Date checklist prepared:**

   The Checklist was prepared on January 18, 2024 by the University of Washington as the lead agency under the authority of WAC 478-324

5. **Agency requesting checklist:**

   University of Washington
   Facilities, Asset Management
   Box 359571
   Seattle, WA 98195-9571

6. **Proposed timing of schedule (including phasing, if applicable):**

   Project construction is anticipated to begin in summer 2024 and have a duration of approximately 18 months.

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

   No future plans for further development of the project site are proposed.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

   The following environmental review documents were prepared for the University of Washington 2018 Seattle Campus Master Plan:

   - University of Washington 2018 Seattle Campus Master Plan Draft EIS (2016)
   - University of Washington 2018 Seattle Campus Master Plan Final EIS (2017)

   The following environmental review information was prepared in support of the proposed project and can be found in the appendix of this document:

   - *Anderson Hall Renovation, Geotechnical Engineering Report* (Haley & Aldrich, Inc., 2024) – Appendix A
   - *Avian Survey Memo, Anderson Hall (Shannon & Wilson, 2024)* – Appendix B
   - *Hazardous Materials Survey Report, UW Anderson Hall (PBS, 2023)* – Appendix C

9. **Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

   There are no known other applications that are pending approval for this site.

10. **List any government approvals or permits that will be needed for your proposal, if known.**

    University of Washington
    - Project approval, design approval, and authorization to prepare contract documents.

    City of Seattle Department of Construction and Inspections

    Permits/approvals associated with the proposed project, including:
    - Building Permit
    - Electrical Permit
    - Comprehensive Drainage Control Plan and Construction Stormwater Control Plan Approval
    - Environmental Critical Areas Exemption

11. **Give brief, complete description of your proposal, including the proposed uses and the size of the project and site.**

    Anderson Hall is an existing 33,500 SF University of Washington academic building in the southern part of Central Campus. Anderson is proposed to be renovated to: modernize the interior for classroom, office and student gathering spaces; improve building systems (mechanical, electrical, plumbing, heating, ventilation); improve accessibility with new

elevator, ramps, and pathways; seismic upgrade; new lighting and finishes; tree removal and replacement to improve the integrity of the building envelope and foundation; clean, repair, and/or restore exterior façade such as bricks, roof gutter, cast stone, and steel sash windows.

12. **Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s).**

    The project site is generally bounded by West Stevens Way NE to the north, Rainier Vista to the east, Bloedel Hall and NE Pacific Street to the south, and Garfield Place NE and Life Sciences Building to the west. (see **Figures 1-3**).

B.Environmental Elements

1. Earth

a. General description of the site:

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

The lot is generally flat, with a gentle sloping to the south.

b. What is the steepest slope on the site (approximate percent slope)?

The City of Seattle's Environmental Critical Areas (ECA) Maps indicate there are no steep slopes on the site.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Soils mapped in the immediate vicinity of Anderson Hall are mapped as Glacial Till (very dense silt sand and silt). A layer of fill is on top of the till from construction and landscape around the building.

Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No indications are present (see Appendix A).

d. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

It is anticipated that construction of the proposed project would require approximately 208 cubic yards of material to be removed from the C10 parking lot onsite for the stormwater system and around Anderson Hall for site accessibility improvements.

Approximately 175 cubic yards of fill would be required in this area. Approximately 420 cubic yards of material is expected to be removed under the building for the new shear wall foundations to meet structural code. Soil removed would be tested for contamination and would be transported to an approved location. The source of fill is unknown at this time but extracted soil would be used if clean or from an approved source. Fine grading and new top soil would be provided at all new planting areas (new top soil depth to range from 6-18").

e. Could erosion occur because of clearing, construction, or use? If so, generally describe.

Temporary erosion is possible in conjunction with any construction activity. Site work would expose soils on the site, but the implementation of a Temporary Erosion Sedimentation Control (TESC) plan that is consistent with City of Seattle standards and the implementation of best management practices (BMPs) during construction would mitigate any potential impacts.

Once the project is operational, no erosion is anticipated.

f. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The site is currently covered with existing impervious surfaces, including the existing building, parking lot and other impervious surfaces (walkways, sidewalks, etc.). With the proposed project, the building footprint would not change. Additional sidewalks and ramps will be added to improve accessibility to/from the building.

Campus wide this results in a negligible change.

g. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

The site is identified on the City of Seattle ECA maps as within a peat-settlement prone area. However, geotechnical investigations encountered no peat on site (see Appendix A).

Pursuant to the Overview Policy at SMC 25.05.665, no further mitigation is warranted.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

During construction, the project could result in temporary increases in localized air emissions associated with particulates and construction-related vehicles. It is anticipated that the primary source of temporary, localized increases in air quality emissions would result from particulates associated with demolition of a paved surface, on-site excavation, and site preparation. While the potential for increased, air quality emissions could occur throughout the construction process, the timeframe of greatest potential impact would be at the outset of the project in conjunction with the site preparation and minor excavation/grading activities. However, as described above under the Earth

discussion, minimal amounts of excavation would be required for the project and air quality emission impacts are not anticipated to be significant.

Temporary, localized emissions associated with carbon monoxide and hydrocarbons would result from diesel and gasoline-powered construction equipment operating on-site, construction traffic accessing the project site, and construction worker traffic. However, emissions from these vehicles and equipment would be small and temporary and are not anticipated to result in a significant impact.

Upon completion of the project, operation of the site would be similar to today but over time with more electric vehicles on campus resulting in lower emissions. As a result, significant adverse air quality impacts would not be anticipated.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

The primary off-site source of emissions in the site vicinity is vehicle traffic on surrounding roadways, including West Stevens Way NE and NE Pacific Street. There are no known offsite sources of air emissions or odors that would affect the proposed project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Short term impacts to air quality arising from construction, (fugitive dust and airborne particulates) are mitigated by adherence to Puget Sound Clean Air Agency regulations PSCAA - Reg 1 - Section 9.15 (1-9 Emission Standards), PSCAA – Reg 3 – Article 4 (Asbestos Control Standards), the Seattle Stormwater Drainage Code 22.800, and Grading Code 22.170 and the best management practices for controlling erosion described above from the Seattle Municipal Code.

Pursuant to the Overview Policy at SMC 25.05.665, no further mitigation is warranted.

3. Water

a. Surface:

1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There is no surface water body on or in the immediate vicinity of the project site.

2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No.

3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None.

4. **Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.**

   No.

5. **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

   No.

6. **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

   No.

b. Ground:

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.**

   No.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (domestic sewage; industrial, containing the following chemicals…; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

   No.

c. Water Runoff (including stormwater):

1. **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

   With the proposed project, stormwater from the site would be designed in accordance with the City of Seattle Stormwater and Drainage Code, SMC Title 22 and similar to the rest of south campus, stormwater would ultimately discharge to the University of Washington storm drainage system which drains to the Portage Bay area.

2. **Could waste materials enter ground or surface waters? If so, generally describe.**

   The existing and proposed stormwater management system for the site would continue to ensure that waste materials would not enter ground or surface waters as a result of the proposed project.

3. **Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

   No.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Stormwater for the proposed project site would discharge to the University of Washington's storm drainage system which ultimately drains to the Portage Bay area. The proposed on-site system at UW is estimated to have adequate capacity for the proposed project.

Additionally, all existing local regulations under the Stormwater and Drainage Code, SMC Title 22, apply.

4. Plants

Find help answering plants questions

a. Check the types of vegetation found on the site:

☒ **deciduous tree: alder, maple, aspen, other**

☒ **evergreen tree: fir, cedar, pine, other**

☒ **shrubs**

☒ **grass**

☐ **pasture**

☐ **crop or grain**

☐ **orchards, vineyards, or other permanent crops.**

☐ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**

☐ **water plants: water lily, eelgrass, milfoil, other**

☐ **other types of vegetation**

b. What kind and amount of vegetation will be removed or altered?

Vegetation adjacent to the building will be removed when needed to repair, restore and/or clean the façade building materials. Approximately 46 trees and large shrubs are likely to be removed as a result. Minor areas of grass or shrubs may be removed or pruned for purposes of construction/installation.

c. List threatened and endangered species known to be on or near the site.

None.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

Restoration of the site would occur. Replacement trees will be planted on site or in-lieu fees provided for planting offsite but within the UW campus.

e. List all noxious weeds and invasive species known to be on or near the site.

None known.

5. Animals

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- **Birds:** hawk, heron, eagle**, songbirds, other:**
- **Mammals:** deer, bear, elk, beaver, **other: squirrels, raccoons, rats, mice**
- **Fish:** bass, salmon, trout, herring, shellfish, **other: None**

b. List any threatened and endangered species known to be on or near the site.

In the past, a blue heron nest has been observed across West Stevens Way NE just west of Rainier Vista. A nest survey was conducted in and documents in Appendix B. No activity has been reported in this area for multiple years. Another site walk will be conducted in the spring during nesting season prior to construction.

c. Is the site part of a migration route? If so, explain.

The entire Puget Sound area is within the Pacific Flyway, which is a major north-south flyway for migratory birds in America—extending from Alaska to Patagonia. Every year, migratory birds travel some or all of this distance both in spring and in fall, following food sources, heading to breeding grounds, or travelling to overwintering sites.

d. Proposed measures to preserve or enhance wildlife, if any.

None.

e. List any invasive animal species known to be on or near the site.

Invasive species known to be located in King County include European starling, house sparrow and eastern gray squirrel.

6. Energy and natural resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity and natural gas are the primary sources of energy that would continue to serve the building. Per SDCI project records, energy standards will be met where able

and some cannot due to the historic nature of the building (see Section 13). The University is working towards conversion of its power plant to more efficiency.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The proposed project would not affect the use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

The proposed development would conform to the applicable provisions of the State of Washington Energy Code and the City of the Seattle Energy Code with exemptions for being a Seattle Historic Landmark.

7. Environmental health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.

As with any construction project, accidental spills of hazardous materials from equipment or vehicles could occur during the construction of the project; however, a spill prevention plan would minimize the potential of an accidental release of hazardous materials into the environment.

1. Describe any known or possible contamination at the site from present or past uses.

No known soil contamination is known for this site. The building was studied for lead, asbestos, RCRA metals, PCB-containing components, and silica-containing materials. Minor amounts of these materials were found in building materials such as caulking, pipe wrapping, sealants, and paint (see Appendix C).

2. Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None identified. Hazardous materials will be removed, hauled and disposed of properly and at approved sites.

3. Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

During construction, gasoline and other petroleum-based products would be used for the operation of construction vehicles and equipment.

During the operation, no toxic or hazardous materials are anticipated to be stored or used.

4. **Describe special emergency services that might be required.**

   No special emergency services are anticipated to be required as a result of the project. As is typical of urban development, it is possible that normal fire, medical, and other emergency services may, on occasion, be needed from the City of Seattle.

5. **Proposed measures to reduce or control environmental health hazards, if any.**

   Washington State occupational health and safety standards and local fire code requirements ensuring the use of toxic or flammable materials is adequately addressed in the campus setting.

b. Noise

1. **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

   Traffic noise from adjacent streets (West Stevens Way NE and NE Pacific Street) are the primary source of noise in the vicinity. Existing noise in the vicinity is not anticipated to affect the proposed project.

2. **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?**

   Short-Term Noise

   Temporary construction-related noise would occur as a result of on-site construction activities associated with the project. The proposed project would comply with provisions of Seattle's Noise Code (SMC, Chapter 25.08) as it relates to construction-related noise to reduce noise impacts during construction.

   Long-Term Noise

   The proposed project would likely result in no increase in noise as the use would continue to be academic. No significant noise impacts would be anticipated.

3. **Proposed measures to reduce or control noise impacts, if any:**

   No.

8. Land and shoreline use

a. **What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

   The current and proposed use is academic and surrounded by the University of Washington. No effect to land use or adjacent properties are anticipated.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or non-forest use?

No.

1. **Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

   No.

c. Describe any structures on the site.

Anderson Hall.

d. Will any structures be demolished? If so, what?

No structures would be demolished.

e. What is the current zoning classification of the site?

The site is currently zoned as Major Institution Overlay with a 65-foot height limit (MIO-65) established pursuant to the 2019 Seattle Campus Master Plan.

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation for the site is Major Institution. (City of Seattle, 2022).

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Wildlife (for the blue heron as described in Section 5) and peat-settlement (which is incorrect and described in Section 1).

i. Approximately how many people would reside or work in the completed project?

A similar number of students, faculty and staff would work in Anderson Hall as today.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any.

None necessary.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

None necessary.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The project site is not located near agricultural or forest lands and no mitigation measures are necessary.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

None necessary.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The existing building height would remain (approx. 61') which is under the 65' height limit. The building exterior is primarily brick with cast stone elements, steel sash windows, and slate roof.

b. What views in the immediate vicinity would be altered or obstructed?

None.

c. Proposed measures to reduce or control aesthetic impacts, if any:

None necessary.

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Short-Term/Construction Light and Glare

At times during the construction process, area lighting of the project site (to meet safety requirements) may be necessary, which would be noticeable proximate to the project site. In general, however, light and glare from construction of the proposed project are not anticipated to adversely affect adjacent land uses.

Long-term/Operational Light and Glare

Existing lighting would remain with new, supplemental fixtures added that would provide downward directed illumination of the front and back of the building entrances and exterior pathways.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Light and glare associated with the proposed project would not be expected to cause a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

None necessary.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

No recreational opportunities are in the immediate vicinity. The closest opportunities are all of the UW Recreation and Intercollegiate Athletic facilities across Montlake Blvd NE and approximately 1/2 mile or more to the southeast including intramural playfields.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None necessary.

13. Historic and cultural preservation

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

Anderson Hall is a designated Seattle Landmark and may be eligible for state listing. The two closest buildings to Anderson, Winkenwerder and Bloedel Halls are more than 45 years and are not listed buildings.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

Anderson Hall is a designated Seattle Landmark and project permitting will include review by the Seattle Landmarks Board and WA DAHP. All proposed work is towards the intent of preserving and restoring the historic building and making it useable for the next 50+ years.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and

the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

The DAHP website, WISAARD, and the City of Seattle Department of Neighborhoods Landmarks Map and List were consulted to identify any potential historic or cultural sites in the surrounding area, as well as the potential for encountering archaeological resources in the area.

Additionally, the cultural resources sensitivity analysis in the 2019 Seattle Campus Master Plan EIS indicates that the site has a low potential for sensitive cultural resource conditions.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Minimal ground disturbance is anticipated and only to depths that would have already been disturbed with construction of the building. All building renovation practices are geared to minimize impact. Project plans will be reviewed by SDON Landmarks staff and Seattle Landmarks Board.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Anderson Hall is accessed by UW streets and will continue to do so with the proposed project.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Transit with numerous routes operate along West Stevens Way NE and NE Pacific Street.

c. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Renovation of a small UW parking area and pedestrian paths and ramps will occur. These changes will improve access to nearby bus stops and pedestrian and bicycle routes nearby.

d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No. The University of Washington LINK station is approximately ¼ mile to the southeast.

e. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?

Construction of the proposed project would temporarily generate some additional vehicle trips associated with construction workers and equipment/vehicles travelling to and from the site during the construction process. Construction activities would be in compliance with applicable University of Washington and City of Seattle regulations, which would include preparation of a Construction Management Plan to minimize potential construction-related transportation issues.

The proposed project is not anticipated to generate increased demand vehicle trips to the site or the overall University campus due to the fact that the project would be utilized by employees that are already traveling to campus currently.

f. Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No.

g. Proposed measures to reduce or control transportation impacts, if any:

Construction activities would occur in compliance with applicable University of Washington and City of Seattle regulations, and would include the preparation of a Construction Management Plan to control and minimize potential construction-related transportation issues.

15. Public services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The project is not anticipated to generate an increase in the need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

None.

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:

All utilities are currently available on site, including electricity, natural gas, water, sanitary sewer, telephone, and cable/internet services.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

All existing utility service will continue for this site.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Type name of signee: Julie Blakeslee

Position and agency/organization: University Environmental & Land Use Planner, SEPA Responsible Official, University of Washington Facilities

Date prepared: 1/26/24

Figure 1 – Site Vicinity

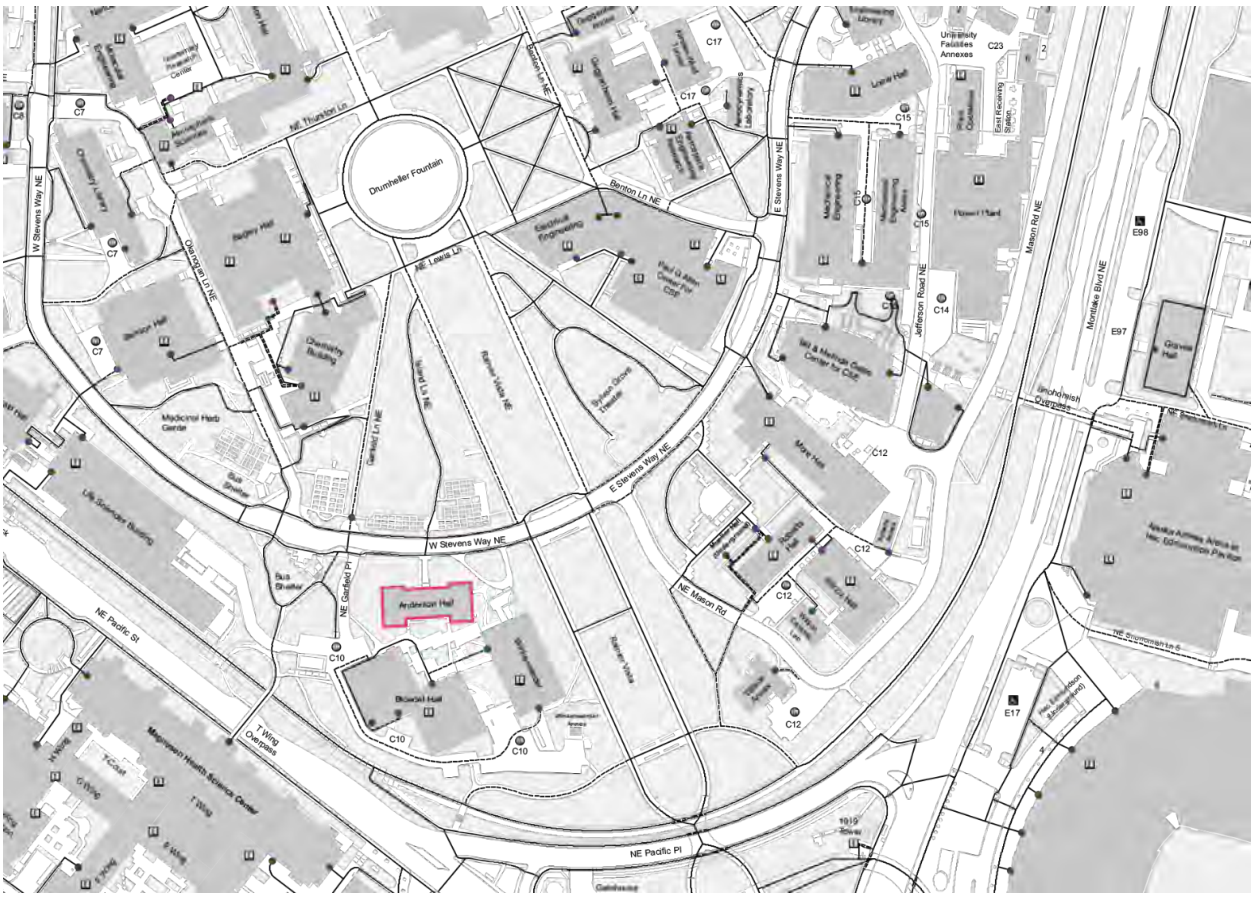


Figure 2 – Existing Site Plan

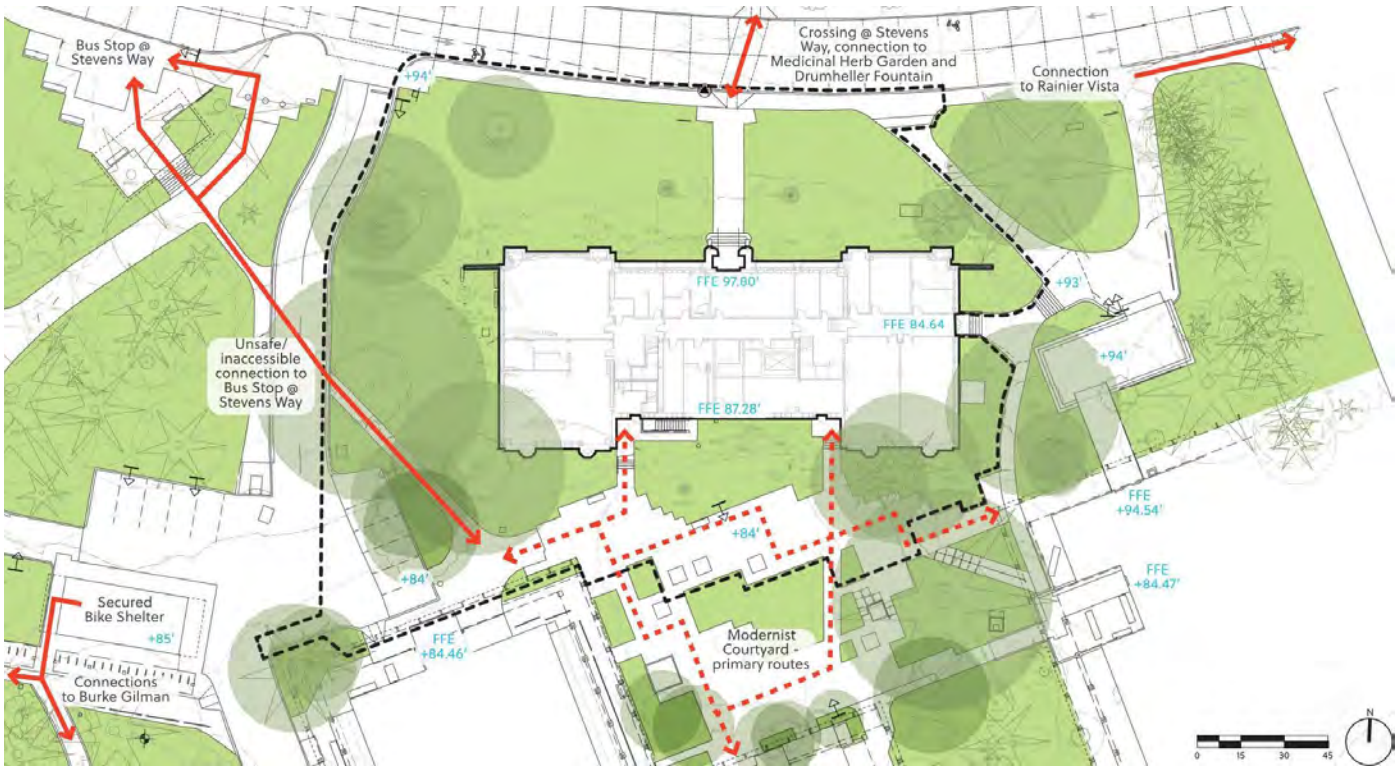


Figure 3 – Proposed Site Plan

Appendix A

Geotechnical Report

HALEY ALDRICH

www.haleyaldrich.com

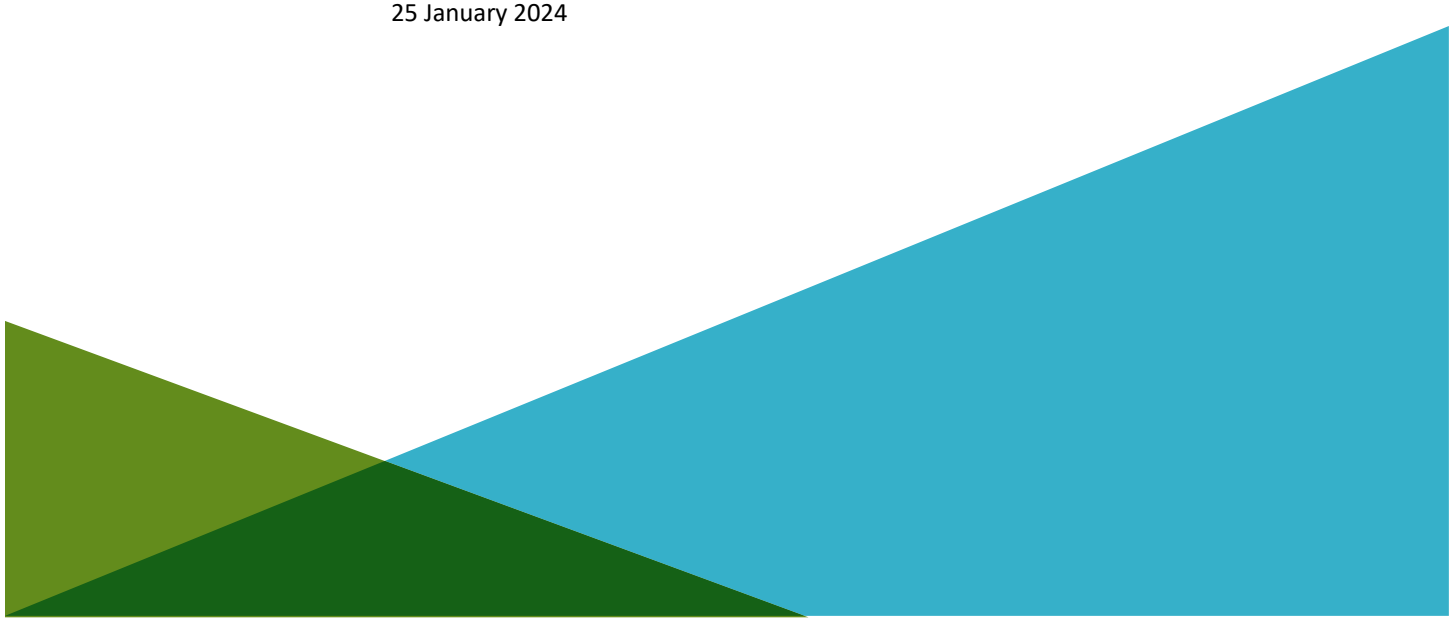
GEOTECHNICAL REPORT ON

ANDERSON HALL RENOVATION
SEATTLE, WASHINGTON

by
Haley & Aldrich, Inc.
Seattle, Washington

for
University of Washington
Seattle, Washington

File No. 0208784-000
25 January 2024



HALEY & ALDRICH, INC.
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SIGNATURE PAGE FOR

GEOTECHNICAL REPORT ON
ANDERSON HALL RENOVATION
SEATTLE, WASHINGTON

PREPARED FOR
UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON

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Geotechnical Engineer
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Principal Geotechnical Engineer
Haley & Aldrich, Inc.

25 January 2025

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1. Introduction

This report summarizes Haley & Aldrich, Inc.'s (Haley& Aldrich) geotechnical engineering services for the Anderson Hall renovation project located at the University of Washington campus in Seattle, Washington. Our services were completed in general accordance with our contract dated 26 October 2023. In performing our services, we collaborated with Coughlin Porter Lundeen (CPL), Mayfly, Hennebery Eddy Architects, and Lease Crutcher Lewis.

The project is located southeast of the intersection of West Stevens Way NE and Garfield Place NE. It is bounded by the Rainier Vista pedestrian pathway on the east, West Stevens Way NE on the north, Garfield Place NE on the west, and Bloedel Hall and Winkenwerder Forest Laboratory to the south. The surrounding area contains many academic buildings. The site grade slopes north to south from approximately an elevation of 94 feet to 83 feet (North American Vertical Datum of 1988 [NAVD 88]). The NAVD 88 datum is used throughout this report unless noted otherwise. According to as-built plans the existing building has an approximate basement finished floor elevation of 77.6 feet. The elevation of new footings is still unknown as the foundation system is still being designed.

[Source: University of Washington, 2023; https://sefs.uw.edu/about/reimagining-anderson-hall/]

Exhibit 1. Aerial view of Anderson Hall. The north side of Bloedel Hall is visible in the background.

We understand the project consists of accessibility improvements to Anderson Hall, including the construction of a new elevator, and a seismic building evaluation per the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) 41-17 – Seismic Evaluation and Retrofit of Existing Buildings (ASCE/SEI, 2017). Following the evaluation, Anderson Hall will be retrofitted with a new shear wall to improve its seismic performance.

This report is organized into several sections. The first section provides an overview of the project information discussed in the text and the main body of the report presents our geotechnical engineering findings and recommendations in detail. The report is organized as follows:

1. Introduction
2. Purpose, Scope, and Use of This Report
3. Subsurface Conditions
4. Seismic Considerations
5. Geotechnical Engineering Design Recommendations
6. Recommendations for Continuing Geotechnical Services
7. References

Tables are included within the text. Figures follow the text. Figure 1 shows the general location of the site on a vicinity map. Figure 2 shows the project site location, the location of our subsurface explorations, and the location of relevant historical explorations. Figure 3 shows the characteristic tectonics of the Pacific Northwest.

Supporting information is provided in the appendices. Appendix A includes Haley & Aldrich's boring logs, Appendix B presents the associated laboratory test results, Appendix C presents the results of infiltration testing, and Appendix D includes relevant historical borings.

2. Purpose, Scope, and Use of this Report

2.1 PURPOSE

The purpose of our services was to evaluate subsurface conditions at the site and to provide geotechnical engineering guidance and recommendations that conform to the geotechnical requirements of ASCE/SEI 41-17. This report will be used by the project team for design of the accessibility and seismic improvements as part of the Anderson Hall renovation project.

2.2 SCOPE OF SERVICES

Our services included conducting geologic research, subsurface explorations, laboratory testing, seismic evaluation, engineering analyses, and preparation of this report. We completed the following tasks:

- Reviewed readily available geologic information, seismic hazard, groundwater, and other nearby geotechnical reports for general information regarding subsurface soil and groundwater conditions and geologic hazards in the project vicinity.
- Conducted a geotechnical site reconnaissance, noted relevant features, notified the "One-Call" service for public utility locates, and coordinated a utility locating subcontractor to locate known private utilities.
- Advanced four borings to depths of approximately 12 to 35 feet below ground surface (bgs) to characterize subsurface conditions.
- Observed the explorations, logged the subsurface conditions, collected representative soil samples, and transported the samples to our laboratory for further visual review and testing.
- Drummed and hauled the borehole spoils and disposed of them at an off-site location. Backfilled the explorations in accordance with Washington State Department of Ecology regulations.
- Completed laboratory tests on select soil samples to evaluate soil engineering properties. Our specific tests included moisture content and grain size distribution determinations in accordance with current American Society for Testing and Materials (ASTM) or other applicable standards.
- Excavated a test pit and completed a Pilot Infiltration Test (PIT) to obtain a site-specific infiltration information.
- Characterized soils at the site based on the findings of our research, explorations, laboratory testing, and historical explorations. We used these characterizations to perform geotechnical engineering analyses including evaluations of:
  - liquefaction potential and settlement;
  - lateral spreading hazard;
  - foundation bearing capacity and settlement;
  - retaining walls;
  - stormwater infiltration; and
  - earthwork.
- Provided code-based seismic design values in conformance with ASCE 41 Section 2.4 and ASCE 7-22 Section 11.4.

- Prepared this geotechnical report that documents and summarizes our findings and recommendations. The geotechnical report includes discussion of the following:
  - Subsurface soil and groundwater conditions
  - Seismic and ground settlement hazards
  - Seismic design criteria
  - Shallow foundation recommendations
  - Deep foundation recommendations
  - Earthwork recommendations
  - Foundation retrofit design parameters
  - Construction considerations
- Provided project management and support services, including coordinating staff, email communications, and meetings with you and the design team.

2.3 USE OF THIS REPORT

We have prepared this report for the exclusive use of University of Washington and their design and construction teams for the proposed seismic retrofit of Anderson Hall in Seattle, Washington, in general accordance with our contract dated 26 October 2023. Our report is intended to provide our opinion of preliminary geotechnical parameters for design and construction of the proposed project based on exploration locations that are believed to be representative of site conditions. However, conditions can vary significantly between exploration locations and our conclusions should not be construed as a warranty or guarantee of subsurface conditions or future site performance.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty, express or implied, should be understood.

Any electronic form, facsimile, or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by Haley & Aldrich and will serve as the official document of record.

3. Subsurface Conditions

Our interpretation of the site subsurface conditions is based on conditions encountered in our borings and test pit, review of historical geotechnical data near the site, laboratory tests, our previous experience in the area, and published regional geologic maps. Haley & Aldrich completed four borings (HA-1-23 through HA-4-23) drilled to depths ranging from approximately 12.5 to 35 feet bgs on 21 and 22 December 2023. One test pit was performed on 20 and 21 December 2023. We reviewed historical borings completed to the northwest for the Life Sciences Building (GeoEngineers, 2014) and to the southwest for the University of Washington Utility Tunnels (Shannon & Wilson, 1963). Locations of our borings for this project and nearby historical borings are shown on Figure 2.

Soil and groundwater conditions are summarized in the following sections. The conditions encountered in our explorations are presented in boring logs in Appendix A. The results of laboratory tests on selected samples are presented in Appendix B. The results of infiltration testing south of Anderson Hall is presented in Appendix C. Historical boring logs in the nearby areas considered relevant for the project are included in Appendix D.

The subsurface information used for this study represents conditions at discrete locations. Actual conditions in other areas will vary. The nature and extent of any variations in subsurface conditions may not become evident until construction begins. If significant variations are observed at that time, we may need to modify our conclusions and recommendations to reflect actual site conditions.

3.1 SOIL CONDITIONS

The site soil conditions consists of a thin layer of fill over very dense glacially overridden soils. These glacial soils are suitable for shallow and deep foundation support. In general, the soils observed in the explorations consisted of the following soil units, described in the order they were encountered from the ground surface down.

- **Fill – Loose to Medium Dense Silty Sand and Poorly Graded Sand**. Borings indicated between 5 and 7.5 feet of fill consisting of loose to medium dense, moist, silty sand or poorly graded sand with variable amounts of gravel. Fill was identified in all borings and was generally encountered at more shallow depths in borings south of Anderson Hall. To the north of Anderson Hall, fill was encountered down to an elevation of approximately 87 feet (7.5 feet below ground surface). South of Anderson Hall, in borings HA-3-23 and HA-4-23, fill was encountered to an approximate depth of 5 and 7.5 feet below ground surface, and corresponding to elevations of 79.5 and 74 feet, respectively. Fill may be encountered at variable and deeper depths due to historical development activity across the site.
- **Glacial Till – Very Dense Silty Sand with Gravel and Hard Silt with Gravel**. Below the fill, the borings indicated very dense, dry to moist, silty sand with varying amounts of gravel. This unit is composed of glacially overridden Glacial Till material and appears to extend down to at least an elevation of 59 feet, based on our borings. All of our explorations terminated in this unit. Glacial Till is a suitable bearing unit for shallow and deep foundations.

Boring HA-1-23 was unable to be advanced past 30.5 feet bgs because the drill encountered a large rock. This indicates the presence of oversized materials such as cobbles and boulders. Such large materials could make drilling and excavation difficult. Therefore, the contractor should be prepared to deal with

hard drilling or large obstructions. In addition, the native soils may contain relatively clean sand and/or gravel zones, where groundwater may accumulate and be more prone to caving when exposed in a vertical face or encountered in a drilled hole or excavation. Provisions should be made in contract documents to account for the possibility of these conditions.

3.2 GROUNDWATER CONDITIONS

Our understanding of groundwater conditions at the site is based on observations during our explorations, PIT, and conditions described in existing historical borings around the site (Figure 2; Appendix A and Appendix C).

The regional groundwater table was not encountered in our explorations and most of the historical explorations. One historical boring south of the project site encountered groundwater at an approximate elevation of 54 feet (approximately 35 feet below the ground surface in the project area). Based on our understanding of the project, we anticipate the regional groundwater level is well below the planned footing elevations. However, isolated perched water-bearing zones may exist in the upper soils and should be anticipated during construction. In particular, perched groundwater may be encountered above the Glacial Till unit and/or within sandy or gravelly zones of the Glacial Till unit. Historical borings document the presence of perched groundwater with in the Glacial Till unit. These groundwater estimates are based on the water level readings collected at the time of drilling. The actual groundwater levels will fluctuate because of variations in rainfall, temperature, season, and other factors.

4. Seismic Considerations

4.1 SEISMIC SETTING

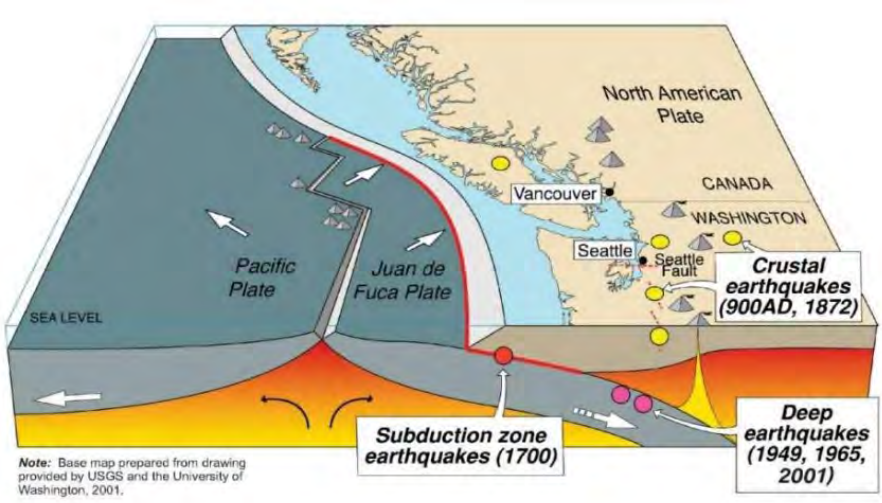
The site is in a seismically active area. In this section, we describe the seismic setting at the project site, identify the seismic basis of design, provide recommendations for design response spectra, and discuss the seismic hazards at the site.

4.1.1 Regional Seismic Hazard

The seismicity of Western Washington is dominated by the Cascadia Subduction Zone, in which the offshore Juan de Fuca Plate is subducting beneath the continental North American Plate. Three types of earthquakes are typically associated with subduction zones: crustal, interface subduction, and intraslab subduction earthquakes (Figure 3).

Crustal Sources. Recent fault trenching and seismic records in the Puget Sound area clearly indicate a distinct shallow zone of crustal seismicity, the Seattle Fault, which may have surficial expressions and can extend 25 to 30 kilometers deep.

Subduction Zone Sources. The offshore Juan de Fuca Plate is subducting below the North American Plate. This causes two distinct types of events. Large-magnitude interface earthquakes occur at shallow depths near the Washington coast (e.g., the 1700 earthquake with a magnitude of 8 to 9) at the interface between the two plates. A deeper zone of seismicity is associated with bending the Juan de Fuca Plate below the Puget Sound region that produces intraslab earthquakes at depths of 40 to 70 kilometers (e.g., the 1949, 1965, and 2001 earthquakes).



Source	Maximum Magnitude
Cascadia Subduction Zone - Interface	9.0
Cascadia Subduction Zone - Intraslab	7.5
Crustal Faults	7.5

Figure 3. Characteristic Tectonics of the Pacific Northwest

4.2 CODE-BASED SEISMIC PARAMETERS FOR EXISTING BUILDINGS

We understand this is a voluntary seismic upgrade and that the building will not be required to be brought up to the current building code standard. Based on our discussions with CPL, we provided code-based seismic design parameters following guidelines in ASCE/SEI 41-17 and ASCE 7-16.

The mapped response spectra are based on Site Class B (rock) conditions. Seismic parameters are adjusted according to the actual site conditions. The site class for this project location is Site Class C (very dense soil). ASCE/SEI 41-17 defines the design spectral acceleration parameters at short periods (S_{xS}) and at the one-second period (S_{x1}) as the corresponding site-class-adjusted maximum considered earthquake (MCE_R) parameters (S_s and S_1). The collapse prevention performance criterion in ASCE 41 is known as BSE-2N and its seismic hazard level defers to Section 11.4 of ASCE 7-16. The resulting seismic design parameters are shown below in Table 1.

Table 1. General Procedure Spectral Design Parameters

Design Parameters	Hazard Level			
	BSE-2N	BSE-1N	BSE-2E	BSE-1E
Site Class	C			
S_s	1.31	-	1.01	0.49
F_a	1.2	-	1.2	1.3
S_{xs}	1.58	1.05	1.21	0.64
S_1	0.46	-	0.34	0.15
F_v	1.5	-	1.5	1.5
S_{x1}	0.68	0.46	0.51	0.23
T_L	6 s	6 s	6 s	6 s
PGA [c]	0.558	0.286	0.392	0.196

Notes:

1) *Site coordinates are Latitude/Longitude 47.65175055°N / 122.30753925°W*
2) *Values obtained from https://www.seismicmaps.org/*
3) *Value obtained from https://earthquake.usgs.gov/hazards/interactive/*
4) *- = no information available*

4.3 SEISMICALLY INDUCTED GEOTECHNICAL HAZARDS

Our assessment of seismically induced geotechnical hazards at the project site is based on the existing soil explorations presented in this report, regional experience, and our knowledge of local seismicity. The potential hazards include surface rupture, liquefaction and subsidence, and lateral spreading.

4.3.1 Surface Rupture

The Seattle Fault zone consists of multiple east-trending, north-verging reverse thrust faults located in the Puget Lowlands of Western Washington. The northernmost splay of the Seattle Fault is estimated to be approximately 5 miles south of the site. Because there are not any known faults underlying the site, the hazard associated with surface rupture at the site during the life of the structure is considered very low.

4.3.2 Landslides

The ground surface is relatively flat, near-surface soils are dense, and the regional groundwater level is relatively deep. Therefore, the hazard associated with landslides is very low.

4.3.3 Liquefaction and Subsidence

When cyclic loading occurs during a seismic event, the shaking can increase the pore pressure in loose to medium dense saturated sands and cause liquefaction, resulting in temporary loss of soil strength that can lead to surface settlement. Recent and historical borings did not encounter saturated soil in a loose to medium dense condition near the site. The soils below the groundwater table at this site are generally very dense silty sand or hard sandy silt. The risk of liquefaction or significant ground deformation as a result of liquefaction from the design earthquake is very low.

4.3.4 Lateral Spreading

Lateral spreading is typically associated with lateral movement on sloping ground caused by liquefaction or a reduction of shear strength of soil within or under the slope. Because the liquefaction hazard is very low, the lateral spreading hazard is also very low.

5. Geotechnical Engineering Design Recommendations

This section of the report presents our conclusions and recommendations for the geotechnical aspects of design and construction of the Anderson Hall renovations. We developed our recommendations based on our current understanding of the project and the subsurface conditions encountered in our soil explorations and the surrounding historical explorations. If the nature or location of the project is different than we have assumed, we should be notified so we can change or confirm our recommendations.

5.1 SITE PREPARATION

Site preparation may involve removing the asphalt and concrete pavements, demolishing existing structural and architectural elements, removing existing foundation and floor elements, and abandoning in place or removing underground utilities within the project area. Site preparation will include preparing a firm and relatively unyielding subgrade beneath footings, slabs-on-grade, new structural fill, and pavement sections. We recommend not reusing any removed asphalt, brick, concrete, or topsoil as structural fill. Suitability of reusing existing fill and native soils as structural fill will depend on gradation and moisture content as determined at the time of construction.

It may be necessary to relocate or abandon some utilities. Excavation of these utility lines will occur through fill materials. Abandoned underground utilities should be removed or completely grouted to keep soil or water from entering the line. Soft or loose backfill materials should be removed, and excavations should be backfilled with structural fill.

5.2 SHALLOW FOUNDATIONS

New elevator and shear wall foundations may bear on shallow spread and/or continuous footings at foundation elevations similar to the existing building foundations levels. The soil encountered below an elevation of about 87 feet to the north of Anderson Hall and 79.5 feet to the south consists of Glacial Till composed of very dense silty sand with varying amounts of gravel.

We understand the new elevator and shear wall will be moderately loaded structures supported on shallow footing foundations. Table 2 presents geotechnical design recommendations for moderately loaded shallow footings bearing on Glacial Till or up to 5 feet of densely compacted (i.e., minimum 95 percent density based on the modified Proctor dry density test, ASTM D1557-12) structural fill overlying Glacial Till. As the footing design is not yet complete, we have also provided a bearing pressure for footings bearing on densely compacted in-situ granular fill. These allowable bearing pressure recommendations are for new footings. Existing footings have not been evaluated.

Table 2. Shallow Foundation Design Parameters			
Design Parameter (Unit)	**Spread Footing on Glacial Till[a]**	**Spread Footing on Compacted Structural Fill[a]**	**Spread Footing on Compacted In-situ Granular Fill[a]**
Maximum Allowable Bearing Pressure (psf)[b]	8,000	4,000	2,000

Notes:

a. Use a minimum spread footing width of 2 feet.

b. Allowable bearing pressures include a safety factor of at least 3 and consideration of a tolerable settlement of about 1 inch or less. Differential settlement between pile caps spaced approximately 20 feet apart is estimated to be about 0.5 inches. An increase in allowable bearing pressure by 1/3 is recommended for short duration loading, such as wind or seismic forces.

In addition, we recommend the following for design of shallow foundations:

- Locate the base of all footings at least 18 inches below the lowest adjacent grade to protect against frost effects for exterior footings.
- Footings should be founded outside of an imaginary 1H:1V plane projected upward from the bottom edge of adjacent footings and utility trenches. If new footings are located within this plane, additional protective measures may be required. We should be consulted for such instances to evaluate specific cases.
- Verify that subgrade soil is in a very dense, non-yielding condition before placing concrete for footings. Remove loosened soil and standing water.
- Have a Haley & Aldrich representative observe exposed subgrades before footing construction to verify design assumptions about subsurface conditions and subgrade preparation.

We estimate approximately 1 inch or less of total settlement for footings bearing on well compacted structural fill over Glacial Till or on Glacial Till. Estimated settlement could be higher for footings bearing on the existing fill. Settlement is expected to occur elastically (i.e., essentially as the loads are applied). Differential settlement is expected to be approximately half the total settlement. These values assume proper subgrade preparation. Any loosening of the subgrade materials during construction could result in more settlement.

Once the foundations are designed and the design loads are known, we recommend that we be allowed to analyze and estimate post-construction settlement.

5.2.1 Lateral Load Resistance

Shallow foundation resistance to lateral loads is from passive soil resistance against the side(s) of the footing and/or frictional resistance along the base of the footing.

- Use an equivalent fluid density to represent the passive resistance of the soil. For footings poured against neat-cut glacial soil or densely compacted structural fill, use an allowable passive equivalent fluid density of 350 pounds per cubic foot (pcf) in a triangular pressure distribution. For footings poured against neat cut compacted structural fill or in-situ fill, use an equivalent fluid density of 300 pcf and 250 pcf, respectively. A factor of safety of 1.5 has been applied to these values. Ignore the passive resistance within 18 inches of the adjacent ground surface.
- Model passive pressure mobilization using Figure 4 below.
- Use an allowable coefficient of friction of 0.3 to resist sliding for new footings poured neat on glacial soil or compacted structural fill. A factor of safety of 1.5 has been applied to this value.

- Do not use sliding resistance for pile supported foundations.

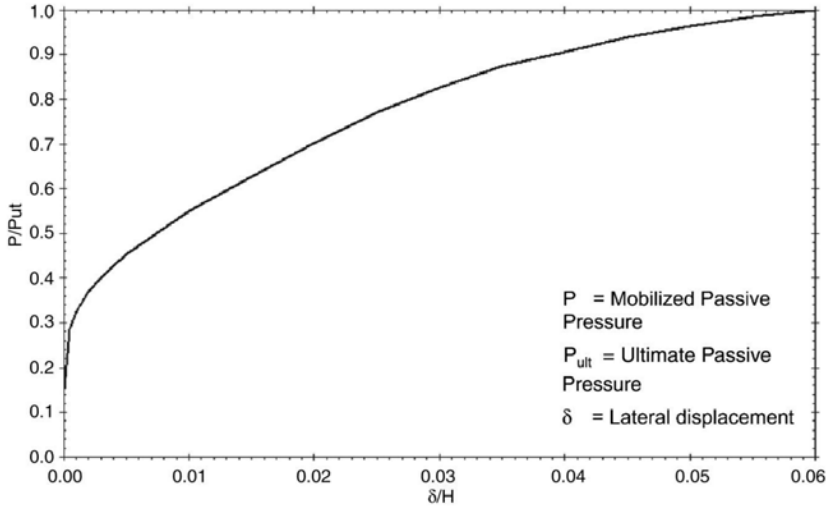


Figure 4. Passive Pressure Mobilization Curve (reproduced from Figure 8-6 of ASCE 41-17)

5.2.2 Spring Constants for Foundation Design

Modeling foundation behavior under loading conditions will require a modulus of subgrade reaction (vertical spring constant) applicable to the soils on which the foundations bear. Depending on the elevation of the foundation elements, the underlying soil may vary in its density and consistency. Determining the subgrade modulus value to be used depends on:

- the structural and geotechnical engineer's experience designing similar foundations in similar soil conditions;
- the quantity, magnitude, and area of the foundation under various loads; and
- back-checking settlement and pressures predicted from structural modeling with geotechnical settlement estimates for given foundation geometries.

Footings. For rectangular and strip footings under static loading conditions and bearing on Glacial Till, we recommend using a unit modulus of vertical subgrade reaction (K_{V1}) of 300 pounds per cubic inch. K_{v1} is based on a 1- by 1-foot vertically loaded plate, and obtained from standard charts. Subgrade moduli tend to decrease with an increasing area of a foundation element. For this reason, the unit modulus will need to be reduced based on the actual dimensions of the foundation modeled.

For a square footing of size B (in feet), supported on the sandy soils identified at the site, the modulus of subgrade reaction (K_V) should be calculated using the following equation (NAVFAC, 1986):

$$K_v = K_{V1} (B+1)^2/(4B^2)$$

Where: B = foundation width in feet. Interpolate for intermediate values of B.

K_{v1} = vertical subgrade reaction modulus for a 1-foot square plate

For a rectangular footing of dimension B x mB, where m is ≥ 1, K_V may be modified to obtain the modulus of subgrade reaction (K_{VR}) as:

$$K_{VR} = K_V[(m+0.5)/(1.5m)]$$

Haley & Aldrich should review the structural load and displacement results to compare to our own settlement estimates of the foundations and modify these initial modulus of subgrade reaction recommendations until the structural and geotechnical settlement results are similar. This is an iterative approach that typically takes one to three iterations.

5.3 MICROPILES

We understand the project involves the construction of a new elevator and shear wall. Both structures will likely be supported by isolated and/or continuous spread footings at or below the grade of existing footings. Micropiles are also an option for these foundations or for underpinning existing footings that may need to be undermined by adjacent excavation. Vertical and/or slightly battered micropiles may be used for foundation support.

Micropiles consist of small-diameter (usually 6 to 12 inches) drilled and grouted replacement (non-displacement) piles and are typically reinforced. A micropile is installed by drilling a borehole, placing reinforcement, and grouting from the bottom up. Often the micropiles are partially cased during construction, with casing left in place for some portion of the micropile length to increase the micropile strength. A drilling method suited to local conditions should be selected. For example, rotary percussive or rotary duplex techniques may be used to penetrate obstructions.

Micropiles can withstand relatively significant axial loads and relatively small lateral loads. An advantage of micropiles is that they can be installed where access is restricted and in most soil types and ground conditions.

Because of micropiles' small diameter, the end-bearing resistance of micropiles is small compared with the grout-to-ground bond resistance along its shaft and is typically neglected. The soil conditions and installation procedure strongly influence the grout-to-ground bond strength. In general, micropiles are classified into four types (A to D) depending on the construction details (Federal Highway Administration [FHWA], 2005). For this analysis, we assumed the micropiles will be constructed using pressure grouting through the casing as the casing is withdrawn slowly and incrementally, which corresponds to the Type B classification (FHWA, 2005).

5.3.1 Micropile Vertical Capacity

Dense Glacial Till starts just below the surficial fill at approximately elevations of 87 feet and 79.5 feet to the north and south of Anderson Hall, respectively. Therefore, we expect that micropiles will achieve capacity primarily in the glacially overridden native soil.

We recommend an allowable grout-to-ground bond adhesion of about 2.5 to 2.8 kilopounds per square foot for micropiles installed into the bearing layer. This corresponds to approximately 4.0 to 4.5 kips per foot for a 6-inch-diameter micropile. This allowable value includes a factor of safety of 2.0 and assumes Type B pressure-grouted micropile (FHWA, 2005). Micropile capacity is largely a function of the means and methods of installation selected by the contractor. The contractor must choose appropriate means

and methods to achieve the design bond adhesion based on experience on similar sites. Longer or shorter micropiles may be allowed based on verification of the bond adhesion.

We anticipate that total post-construction settlement of micropile-supported structural elements be on the order of 0.5 inches for design loads. Differential settlement between adjacent micropiles could approach one-half of the actual total settlement.

We make the following additional recommendations:

- Assume fill soils exist down to an approximate elevation of 79.5 feet. Neglect any micropile capacity in fill.
- Embed all micropiles a minimum of 10 feet into the dense glacial soil.
- Contract the micropiles as design-build to allow the contractor to optimize the installation method. Prospective contractors may be required to provide information about proposed methods of drilling and grouting to evaluate their applicability and suitability to site conditions.
- Require a verification test (to 200 percent of the allowable design load) on a non-production "sacrificial" micropile following standard procedures and criteria (FHWA, 2005) before construction of the production piles. This test is intended to ensure that the design capacities can be achieved with the soil and construction equipment used by the contractor at the site. The verification test may be in tension or compression. The verification test may be performed in tension or compression. With approval from Haley & Aldrich this test may be performed on a production pile.
- Require proof tests (to 160 percent of the allowable design load) on 5 percent of the production piles, proof-testing a minimum of two piles. The proof tests may be performed in tension or compression.
- Allow Haley & Aldrich to review the final foundation plan.
- If compression or tension of the foundation layout requires micropile center-to-center spacing closer than 3D or 8D, respectively (where D is the diameter of the installed pile), contact Haley & Aldrich and plan to adjust pile capacity for group effects.
- For evaluating the stiffness of these micropiles, consider use of the structural stiffness of the pile itself as an upper bound stiffness and with an effective length 'L' of about one quarter the bond length of the pile with the full micropile load. For a lower bound stiffness, use the structural stiffness of the pile considering the full length of the pile plus an expected displacement of about 0.25 inches due to shearing of the soil around the pile with the full micropile load.

5.3.2 Micropile Installation

It is important to select an experienced micropile contractor. Proper installation of piles requires appropriate care and experience on the part of the contractor. We recommend that all foundation contractors bidding on the project demonstrate proficiency and experience.

The completed pile is below the ground surface and cannot be observed during construction, so judgment and experience must be used to determine its acceptability. We recommend close monitoring of installation procedures such as installation sequence, casing withdrawal rate, grouting pressure, and quantity of grout used per pile. Variations from the established pattern, such as low grout pressure or excessive settlement of grout in a completed pile would make the pile susceptible to rejection.

We recommend the following for micropile installation:

- Haley & Aldrich should observe micropile installation to evaluate the contractor's operation and to collect and interpret the installation data.
- Disposal of excess soil that will be generated during micropile installation must be considered, especially if environmental issues exist at the site.
- Encountering cobbles and large boulders should be anticipated during drilling, and appropriate drilling methods should be chosen accordingly. Cobbles, boulders, and other obstructions should be anticipated in the fill, as well as in native soil.
- To prevent interconnection of grout between piles, no two micropiles should be installed within 5 pile diameters of each other (center-to-center) in a single 12-hour period.
- Micropiles in soft silt or any loose sand materials should be cased to avoid excessive grout take.
- The casing should be withdrawn from the hole slowly to maintain pressure on the grout column. Permanent casing may be required based on the structural design.

5.3.3 Micropile Testing

The contractor should perform verification and proof testing of micropiles as described herein. Testing recommendations are generally based on FHWA NHI-05-039 *Micropile Design and Construction Reference Manual* (FHWA, 2005) and are applicable for both vertical and battered micropiles. All test data shall be recorded by Haley & Aldrich. Pullout testing of micropiles shall not be performed until the pile grout has attained at least 50 percent of its specified 28-day compressive strength. Micropile testing on vertical piles is acceptable to use to verify battered pile axial capacity provided the tests meet the criteria outlined herein.

5.3.3.1 Verification Tests

A minimum of one verification test per soil type should be completed before installation of production micropiles. Each verification test should be conducted according to the following procedure:

- Sacrificial and production micropile verification tests shall be performed at locations proposed by the Contractor and approved by Haley & Aldrich.
- The Contractor shall provide Haley & Aldrich a calibration log for the testing ram. The calibration shall be valid for six months from the start of micropile testing.
- The Contractor shall provide two dial gages for use during micropile testing to measure pile head movement.
- The maximum stress in the micropile reinforcement should not exceed 80 percent of the ultimate tensile strength for grade 150 ksi (kips per square inch) steel, or 90 percent of the yield strength for grade 60 and 75 ksi steel during verification testing. These conditions may require larger diameter reinforcing bars than those used for production micropiles to successfully permit stressing to 200 percent of design load (DL) as required for the verification tests.
- The verification test will measure micropile stress and displacement incrementally to values of unit skin friction equal to 200 percent of the DL. The alignment load (AL) is the minimum load required to align the testing apparatus and should not exceed 0.10 DL. For verification tests, the

test micropiles should be incrementally loaded and unloaded, and deflections measured, in accordance with the schedule presented in Table 3.

Table 3. Recommended Micropile Verification Test Schedule

Load Level	Hold Time (minutes)
AL	2.5
0.25 DL	2.5
0.50 DL	2.5
AL	Until Stable
0.50 DL	2.5
0.75 DL	2.5
1.00 DL	2.5
AL	Until Stable
0.50 DL	2.5
1.00 DL	2.5
1.25 DL	2.5
1.50 DL	10 or 60
AL	Until Stable
0.50 DL	2.5
1.00 DL	2.5
1.50 DL	2.5
1.75 DL	2.5
2.00 DL	10
1.50 DL	2.5
1.00 DL	2.5
0.50 DL	2.5
AL	Until Stable

- For 2.5-minute hold times, obtain and record deflection measurements during loading at intervals of 1 minute, 2 minutes, and 2.5 minutes. Measurements shall be made to an accuracy of 0.01 inch.
- Perform a creep test at the 150 percent of design load, holding the load constant to within 50 pounds per square inch, and recording readings at 1, 2, 3, 4, 5, 6, and 10 minutes. The time at which the 1.50 DL is applied represents the start time for the creep test. The movement from 1 to 10 minutes after the starting time should be compared to the creep criterion. If the creep criterion is not satisfied, the load test shall be held on the micropile for an additional 50 minutes. The total amount of movement between 6 and 60 minutes should then be compared to the specified criterion. Criteria for creep tests are provided below.
  - A successful test is one that does not experience pullout failure, holds the maximum test unit stress without considerable creep movement, and satisfies creep rate criteria.
  - Pullout failure occurs when test measurements no longer exhibit a linear or near-linear relationship between unit stress and movement over the entire 200-percent stress range.
  - Noticeable creep is defined as a movement of not more than 0.04 inch between the 1-and 10-minute readings, or not more than 0.08 inch between the 6- and 60-minute readings. If the reading does not stabilize to 0.08 inch or less per log cycle, the test shall be considered to fail the creep movement criteria.

- Creep rate criteria is satisfied if the creep rate is linear or decreasing in time logarithmic scale from the 6- to the 60-minute reading.

5.3.3.2 Proof Tests

Proof testing shall be performed on at least 5 percent (minimum of two) of the production micropiles as determined by the Owner's Representative. For each production micropile to be proof tested, follow the procedures outlined below:

- Load the test micropile incrementally to 160 percent of the DL in increments of approximately 25 percent of the DL (i.e., 0.25 DL, 0.50 DL, 0.75 DL, 1.00 DL, 1.25 DL, 1.60 DL, and AL). The maximum stress in the micropile rod should not exceed 80 percent of the ultimate tensile strength during proof testing.
- Hold each incremental load for a period long enough to obtain a stable deflection measurement while recording deflections at each load increment. All load increments should be maintained to within 5 percent of the intended load. Hold the 160 percent load for a minimum of 10 minutes, recording the movement at times of 30 seconds, 1 minute, 2 minutes, 5 minutes, 7 minutes, and 10 minutes.
- A successful test is one that meets the same acceptance criteria as verification test micropiles, except that the creep portion of the test need not exceed 10 minutes if a creep rate less than 0.04 inches per log cycle of time is observed between 1- and 10-minute readings.

5.4 LATERAL EARTH PRESSURES FOR SITE RETAINING WALLS

Lateral earth pressures depend on the ability of a retaining wall to deform. If the top of the wall is allowed to yield on the order of 0.001 to 0.002 times the height, and if no settlement-sensitive structures or utilities are in the zone of deformation, the wall may be designed using active earth pressures. If settlement-sensitive structures or utilities exist within the potential zone of deformation, or where the wall system is too stiff to allow sufficient lateral movement to develop an active condition, at-rest earth pressures should be used to design the wall. Theoretically, little movement should occur behind walls properly designed and installed for at-rest conditions.

The following recommendations apply to backfilled retaining walls where drainage is provided behind the wall such that there will be no hydrostatic pressure buildup behind the wall. To estimate lateral pressure on the wall, we recommend the following:

- For yielding backfilled walls where the ground is level with the top of the wall, use an equivalent active fluid density of 38 pcf for fill soils and 30 pcf for Glacial Till for level ground backfill conditions. For sloped areas above the wall, use equivalent active fluid density of 35(H+h/2) pcf, where H is the height of the wall and h represents the height of the slope above the wall and h is no more than 6 feet. The sloping conditions are valid for slopes no steeper than 2H:1V.
- For braced walls, non-yielding backfilled walls, and the permanent building wall (i.e., walls for which allowable deflection is less than 0.001 times the height of the wall), use an equivalent fluid density of 60 pcf for fill soils and 50 pcf for Glacial Till to compute at-rest earth pressures.
- For seismic loading conditions use the surcharge values provided in Table 4. These surcharges are based on the seismic hazard levels described in Section 4 (Seismic Considerations) of this report. The horizontal acceleration coefficient was calculated as one half the site-specific peak ground acceleration (PGA_m) as defined in ASCE 7-16.

Table 4. Lateral Seismic Surcharge Loads				
Design Parameter	**Hazard Level**			
	BSE-2N	**BSE-1N**	**BSE-2E**	**BSE-1E**
PGA_m	0.670	0.446	0.470	0.235
Dynamic Uniform Lateral Surcharge [a]	17H	10H	10.5H	5H
Notes:				
a. H represents the total wall height and the surcharge is a uniform/rectangular distribution over the wall height in psf.				

- For resistance to lateral loads, use an equivalent fluid unit weight to represent the passive resistance of the soil. For a cast-in-place, backfilled wall poured against native Glacial Till above the groundwater table, we recommend an allowable passive equivalent fluid density of 350 pcf in triangular pressure distribution. This includes a factor of safety of 1.5.
- For footings backfilled against fill, we recommend an allowable passive equivalent fluid density of 250 pcf in triangular pressure distribution. This includes a factor of safety of 1.5.
- Equivalent fluid pressures should be applied using triangular pressure distribution, ignoring the passive resistance within 2 feet of the adjacent ground surface.
- Use an allowable coefficient of friction of 0.3 for retaining wall foundations poured neat on the Glacial Till or structural fill for resistance on the base of foundations. This includes a factor of safety of 1.5.
- The active or at-rest pressures should extend to the base of the wall system.
- If construction or vehicular traffic is present above the wall, 70 pounds per square foot uniform lateral surcharge should be included in the design.

5.5 STRUCTURAL FILL

Backfill placed within the building area, or below paved areas, should be considered structural fill. The following sections discuss whether site soil can be used as structural fill and provide our recommendations for selecting imported structural fill. Placement and compaction are also discussed.

5.5.1 Use of Site Soil as Structural Fill

The suitability of excavated site soils for use as compacted structural fill depends on the gradation and moisture content of the soil when it is placed. As the amount of fines (that portion passing the U.S. No. 200 mesh sieve expressed as a percentage of the fraction passing the 3/4-inch sieve size) increases, the soil's sensitivity to small changes in moisture content increases, and adequate compaction becomes more difficult to achieve. Soil containing more than about 5 percent fines cannot be consistently compacted to a dense non-yielding condition when the water content is greater than about 2 percent above or below optimum, where optimum is defined by a method of test such as ASTM D1557. Reused soil must also be free of organic or other unsuitable material.

In general, some, perhaps all, of the site soils that will be excavated (fill and Glacial Till) will contain a significant amount of fines and be extremely moisture-sensitive. Therefore, it may be very difficult to reuse site soil as structural fill during the winter or during periods of wet weather. However, some could be used as structural fill during the summer, when the moisture content of the material can be maintained near its optimum level.

We recommend stockpiling the excavated fill or native soil intended for reuse as structural fill separately and having the on-site geotechnical engineer or geologist review it for suitability. Such stockpiles should be protected with plastic sheeting so they do not get wet during rainy weather.

5.5.2 Selection of Imported Fill

We recommend the following for imported structural fill:

- Before fill control can begin, the compaction characteristics of proposed fill material must be determined from representative samples of the structural fill. Samples should be obtained as soon as possible, but allow at least 10 days for laboratory tests, before use on site. Optimum and natural moisture content of the soil at the time of placement should be determined. Additionally, the grain-size distribution of the fill should be determined, as well as its maximum dry density.
- Structural fill can consist of either imported soil or re-compacted on-site soil if its moisture content is suitable and weather conditions allow.
- Structural fill should be compacted to a minimum of 95 percent of the maximum dry density as determined by the modified Proctor (ASTM D1557) test method.
- Moisture content should be maintained within 2 percent of the optimum (ASTM D1557).
- Structural fill should be placed only on dense, non-yielding subgrade soils.
- All structural fill should be placed and compacted in even lifts with a loose thickness no greater than 10 inches. If small, hand-operated compaction equipment is used to compact structural fill, fill lifts should not exceed 6 to 8 inches in loose thickness.
- In wet subgrade areas, clean material with a gravel content (material coarser than a U.S. No. 4 sieve) of at least 30 to 35 percent may be necessary.
- The compacted densities of all lifts should be verified by testing. Any material to be used as structural fill should be sampled and tested prior to use on site to determine its maximum dry density and gradation.

5.6 TEMPORARY OPEN CUTS

The stability and safety of cut slopes depend on a number of factors, including:

- the type and density of the soil;
- the presence and amount of any seepage;
- the depth of the cut;
- the proximity of the cut to any surcharge loads near the top of the cut, such as stockpiled material, traffic, or structures, and the magnitude of these surcharges;
- the duration of the open excavation; and
- the care and methods used by the contractor.

Temporary soil cuts for site excavations that are more than 4 feet deep should be adequately sloped back to prevent sloughing, and collapsed in accordance with Washington Department of Occupational Safety and Health guidelines (Washington Administrative Code Chapter 296-155 Part N). Using these

guidelines, the fill at the site is classified as Type C and the Glacial Till soils are classified as Type B. We recommend the following for open cuts:

- Use a maximum allowable slope for excavation less than 20 feet deep of 1.5H:1V for cuts in Soil Type C.
- Use a maximum allowable slope of 1.5H:1V or less steep if groundwater seepage is encountered within the excavation slopes.
- Do not excavate below the bearing elevation of the existing footings or structural elements. Consult with the geotechnical engineer during construction to limit the size of these excavations and the amount of time they remain open.
- Protect the slope from erosion by using plastic sheeting, especially during wet weather excavation.
- Limit the maximum duration of the open excavation to the shortest time possible.
- Place no surcharge loads (equipment, materials) within 10 feet of the top of the slope, in general. However, more or less stringent requirements may apply depending on field conditions and actual surcharge loads.

Because of the variables involved, before construction, actual slope angles required for stability in temporary cut areas can be only estimated. We recommend that stability of the temporary slopes used for construction be the sole responsibility of the contractor, since the contractor is in control of the construction operation and is continuously at the site to observe the nature and condition of the subsurface. All excavations should be made in accordance with all local, state, and federal safety requirements.

5.7 PERMANENT DRAINAGE

As noted above, the groundwater table is well below the lowest proposed footing elevation; however, limited amounts of perched groundwater may be encountered and should be considered in the permanent drainage design. Rainfall, surface water, and groundwater from adjacent utility trenches can also increase short-term water discharge rates; therefore, we recommend installing footing and wall drains to accommodate a seasonally high flow of approximately 5 gallons per minute.

5.8 BACKFILL AND DRAINAGE FOR RETAINING WALLS

Walls with soil backfilled on only one side will require drainage. We recommend the following:

- Backfill immediately behind the wall with a minimum thickness of 18 inches of well graded, free-draining sand or sand and gravel.
- Install drains behind any backfilled subgrade walls. Drains, with cleanouts, should consist of a minimum 4-inch-diameter perforated pipe placed on a bed of, and surrounded by, 6 inches of free-draining (less than 3 percent passing the U.S. No. 200 mesh sieve based on minus 3/4-inch fraction), well-graded sand or sand and gravel. The drains should be sloped to carry the water to a sump or other suitable discharge.
- Wall drainage can also consist of Miradrain-type composite panels laid flush on the outside of the permanent wall and connected to a collector pipe that runs along the footing, at an

elevation lower than the bottom of the floor slab. This will allow water collected outside the wall to be tight-lined beneath the slab and into the central drainage sump.

- The drainage backfill should be continuous and envelop the drainage pipe behind the wall.

5.9 SITE DRAINAGE

Final grades should be sloped to carry surface water runoff away from structures to prevent water from infiltrating near foundation walls. Roof drainage and new pavement drainage should be tied into the storm drainage system and should not be tied into the subdrain system or discharge onto the site slopes.

5.10 STORMWATER INFILTRATION

On-site soils generally have a high fines content and are unlikely to allow water to infiltrate quickly. We do not recommend using a stormwater infiltration system for the proposed development, since this could cause a buildup of water above the fine-grained glacial soils and potentially decrease the stability of the slope in the project area or downslope of the project area. Additionally, the area south of Anderson Hall contains a dense network of utilities that could channel infiltrating water down utility trenches. As discussed in the Infiltration Testing Results memorandum in Appendix C, infiltration south of the site near the Burke Gilman Trail is not recommended.

5.11 TOWER CRANES AND OTHER TEMPORARY STRUCTURES

Design recommendations in this report should not be used for the design of foundations for tower cranes, mobile cranes, or any other temporary structure to be used during construction. Cranes and temporary structures should be the responsibility of the contractor and their designer(s).

6. Recommendations for Continuing Geotechnical Services

6.1 DESIGN AND CONSULTING SERVICES

Throughout this report, we recommend that we provide additional geotechnical input during design and construction of any geotechnical improvements to Anderson Hall. Geotechnical recommendations summarized below should be coordinated with Haley & Aldrich as they pertain to geotechnical performance issues.

Before construction begins, we should:

- continue to meet with the design team periodically as design concepts and design documents progress;
- update this report as needed for the final design process; and
- review the final design plans to verify that the geotechnical engineering recommendations have been properly interpreted and implemented into the design.

6.2 CONSTRUCTION SERVICES

During the construction phase of the project, we recommend retaining us to review contractor submittals and observe the following activities:

- Excavation and preparation of subgrades for footings and fill placement
- Installation and testing of micropile foundations
- Placement and density testing of structural fill at the site (if any)
- Installation of foundation and wall drainage
- Backfilling of utility trenches

We should also attend meetings as needed and assist with other geotechnical engineering considerations that may arise during construction. The purpose of our observations will be to note compliance with design concepts, specifications, and recommendations, and to allow design changes or evaluation of appropriate construction methods if subsurface conditions differ from those anticipated before construction begins.

7. References

1. ASCE/SEI 2016. Minimum Design Loads for Buildings and Other Structures, ASCE 7-16, American Society of Civil Engineers (ASCE) - Structural Engineering Institute (SEI), 2016.
2. ASCE/SEI 2017. Seismic Evaluation and Retrofit of Existing Buildings, ASCE 41-17, American Society of Civil Engineers (ASCE) - Structural Engineering Institute (SEI), 2017.
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4. FHWA, 2005, Micropile Design and Construction, FHWA-NHI-132078, Federal Highway Administration, Washington, DC.
5. NAVFAC, 1986. DM-7.01 Soil Mechanics. Naval Facilities Engineering Command, Alexandria, Virigina.
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7. Shannon & Wilson Inc., Soil Mechanics & Foundation Engineers, 1963. Foundation Investigation for Proposed Utility Tunnels University of Washington. July.

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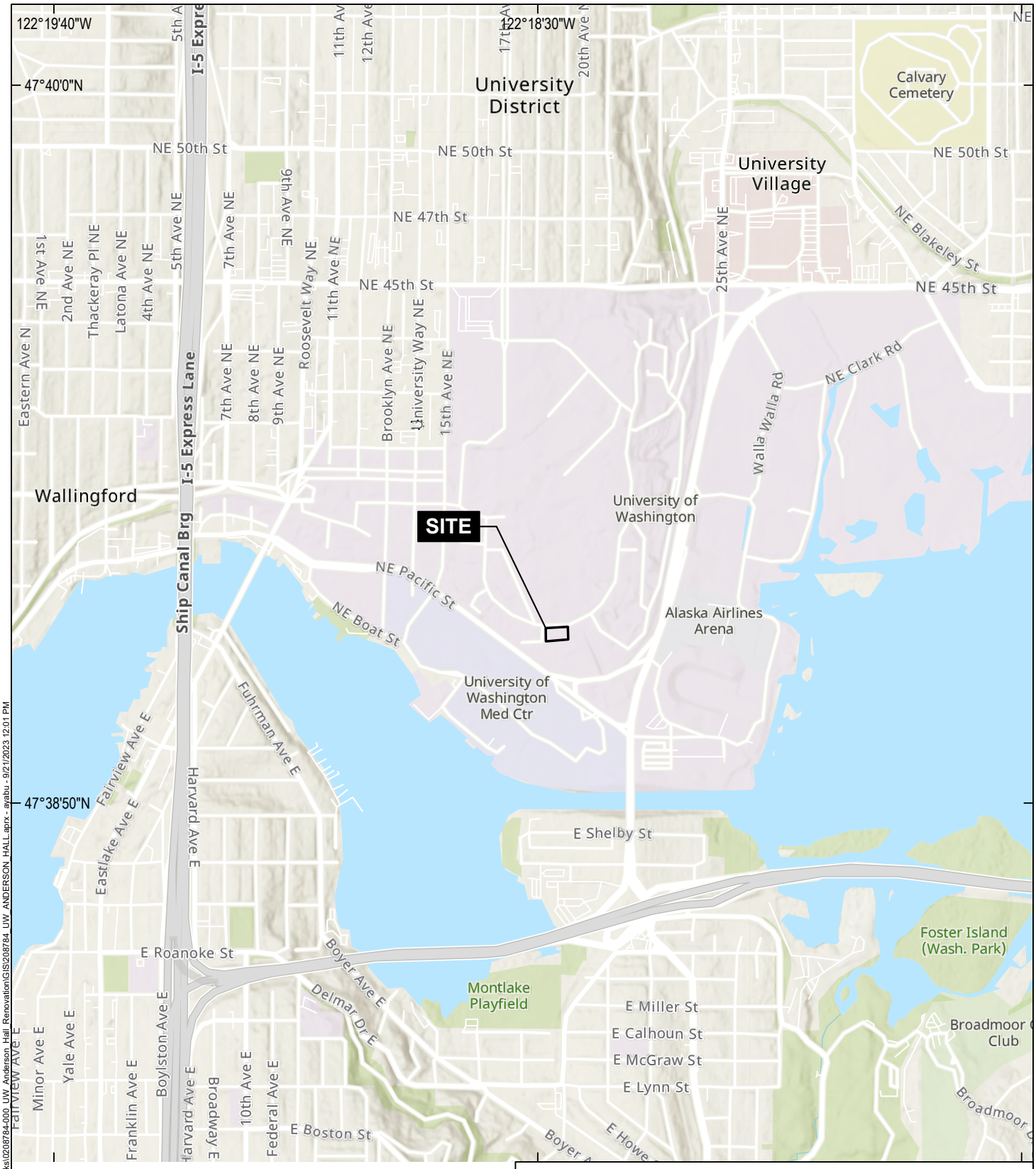
FIGURES



HALEY ALDRICH

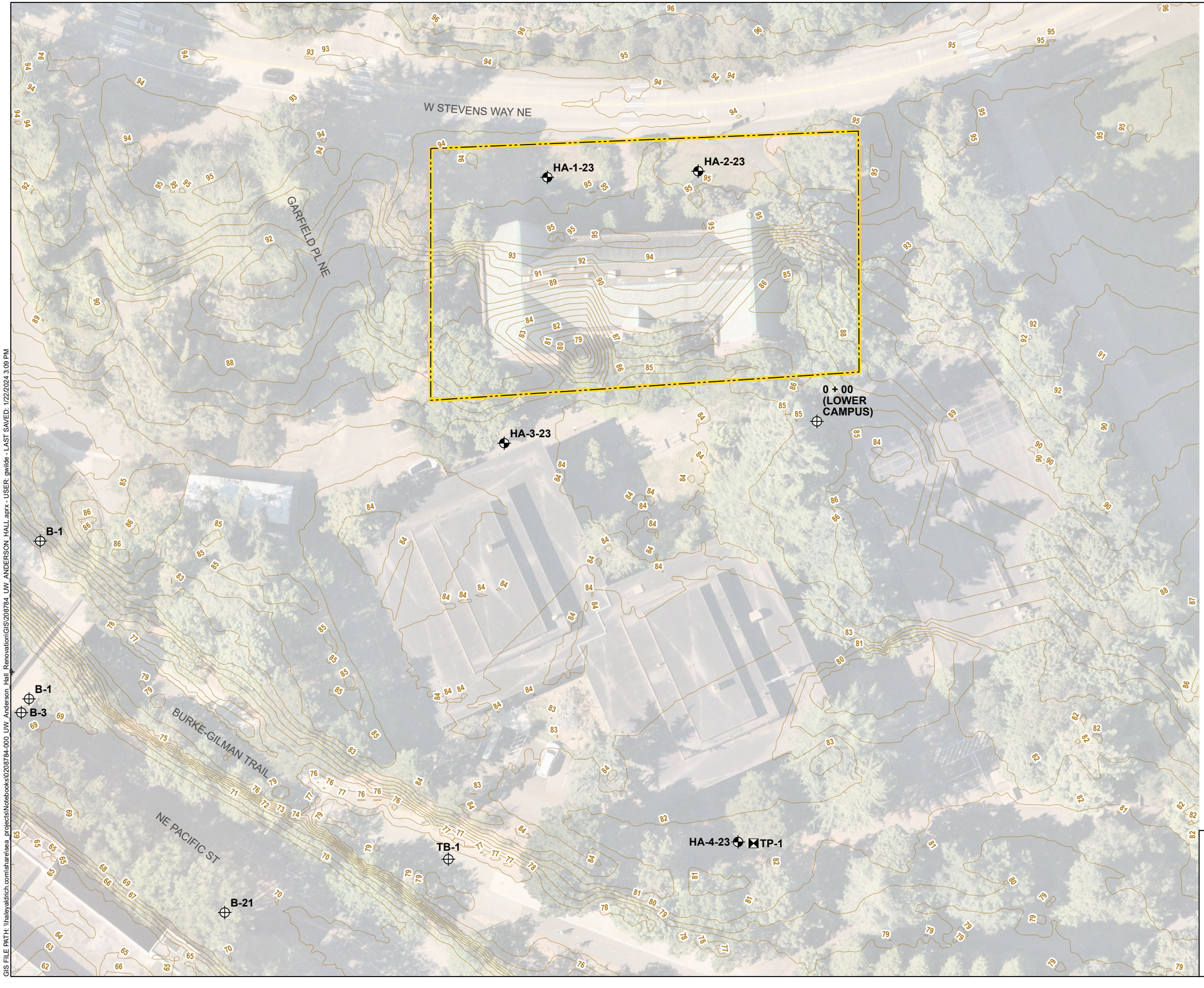
UNIVERSITY OF WASHINGTON
ANDERSON HALL RENOVATION
SEATTLE, WASHINGTON

VICINITY MAP

MAP SOURCE: ESRI
SITE COORDINATES: 47°39'06"N, 122°18'27"W

APPROXIMATE SCALE: 1 IN = 2000 FT
SEPTEMBER 2023

FIGURE 1



LEGEND

- SOIL BORING
- TEST PIT
- HISTORICAL BORING
- ELEVATION CONTOUR, 1-FT INTERVAL (NAVD88)
- SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. HISTORICAL BORING DATA SOURCE: WASHINGTON DEPARTMENT OF NATURAL RESOURCES (DNR)
3. NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988
4. AERIAL IMAGERY SOURCE: NEARMAP, 12 AUGUST 2023

N

0 50 100
SCALE IN FEET

HALEY ALDRICH

UNIVERSITY OF WASHINGTON
ANDERSON HALL RENOVATION
SEATTLE, WASHINGTON

SITE AND EXPLORATION PLAN

JANUARY2024

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\sea_projects\Notebooks\0208784-000_UW_Anderson_Hall_Renovation\GIS\208784_UW_ANDERSON_HALL.aprx - USER: gwilde - LAST SAVED: 1/22/2024 3:09 PM

APPENDIX A
Exploration Logs

APPENDIX A

Field Explorations

This appendix documents the processes Haley & Aldrich, Inc. (Haley & Aldrich) used to determine the nature of the soils at the project site, and contains the following sections:

- Explorations and Their Locations
- Borings
- Test Pits
- Standard Penetration Test Procedures

EXPLORATIONS AND THEIR LOCATIONS

The exploration logs in this appendix show our interpretation of the drilling, sampling, and testing data. These logs indicate the approximate depth where the soils change. The soil changes may be gradual and may vary in depth across the site.

In the field, we classified the soil samples according to the methods shown on Figure A-1, Key to Exploration Logs. The figure's legend explains the symbols and abbreviations used on the logs.

Figure 2 in the main text shows the exploration location based on measuring from existing features. Elevations are referenced to the North American Vertical Datum of 1988.

BORINGS

Borings HA-1-23, HA-2-23, HA-3-23, and HA-4-23 were drilled with a 2.25-inch-inside-diameter hollow-stem auger using a track-mounted drill rig used by our subcontractor Holocene Drilling. A Haley & Aldrich engineer or geologist continuously observed the drilling. Detailed field logs were prepared for the borings. Using the standard penetration test (SPT), samples were obtained at intervals of 2.5 to 5 feet. The logs of these borings are presented at the end of this appendix. To reduce the potential for hitting a utility, the top approximately 5 feet of the borings was excavated using a vacuum air knife.

TEST PITS

One test pit, designated TP-1, was excavated from 20 December 2023 to 22 December 2023, with a backhoe operated by our subcontractor Rivers Edge Environmental Services. The sides of these excavated pits offer direct observation of the subgrade soils. The test pits were located by and excavated under the direction of a geologist from Haley & Aldrich. The geologist observed the soil exposed in the test pit and reported the findings on a field log. Our geologist took representative samples of soil types for testing at Haley & Aldrich's laboratory. Groundwater levels or seepage were noted during excavation and a Pilot Infiltration Test was performed. The density/consistency of the soils (as presented parenthetically on the test pit logs to indicate their having been estimated) is based on visual observation only as disturbed soils cannot be measured for in-place density in the laboratory.

The test pit logs are presented on Figure A-6.

STANDARD PENETRATION TEST PROCEDURES

The SPT is an approximate measure of soil density and consistency. To be useful, the results must be interpreted in conjunction with those from other tests. The SPT (as described in the American Society for Testing and Materials [ASTM] D1586) was used to obtain disturbed soil samples.

This test employs a standard 2-inch-outside-diameter and 1.38-inch-inside-diameter split-spoon sampler. Using a 140-pound autohammer, free-falling 30 inches, the sampler is driven into the soil for 18 inches. The number of blows required to drive the sampler the last 12 inches is the standard penetration resistance. This resistance, or blow count, measures the relative density of granular soils and the consistency of cohesive soils. The blow counts are plotted on the boring logs at their respective sample depths.

Soil samples were recovered from the split-spoon sampler, field classified, and placed into watertight jars. The samples were taken to Haley & Aldrich's laboratory for further testing.

In Case of Hard Driving

Occasionally, very dense materials preclude driving a total 18-inch sample. When this happens, the penetration resistance is entered on logs as follows:

Penetration less than 6 inches. The log indicates the total number of blows over the number of inches of penetration.

Penetration greater than 6 inches. The blow count noted on the log is the sum of the total number of blows completed after the first 6 inches of penetration. This sum is expressed over the number of inches driven that exceed the first 6 inches. The number of blows needed to drive the first 6 inches are not reported. For example, a blow count series of 12 blows for 6 inches, 30 blows for 6 inches, and 50 blows (the maximum number of blows counted within a 6-inch increment for SPT) for 3 inches would be recorded as 80/9.

Sample Description

Identification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. ASTM D 2488 visual-manual identification methods were used as a guide. Where laboratory testing confirmed visual-manual identifications, then ASTM D 2487 was used to classify the soils.

Relative Density/Consistency

Soil density/consistency in borings is related primarily to the standard penetration resistance (N). Soil density/consistency in test pits and probes is estimated based on visual observation and is presented parenthetically on the logs.

SAND or GRAVEL Relative Density	N (Blows/Foot)	SILT or CLAY Consistency	N (Blows/Foot)
Very loose	0 to 4	Very soft	0 to 1
Loose	5 to 10	Soft	2 to 4
Medium dense	11 to 30	Medium stiff	5 to 8
Dense	31 to 50	Stiff	9 to 15
Very dense	>50	Very stiff	16 to 30
		Hard	>30

Moisture

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

USCS Soil Classification Chart (ASTM D 2487)

Major Divisions			Symbols: Graph	Symbols: USCS	Typical Descriptions
Coarse Grained Soils — More than 50% of Material Retained on No. 200 Sieve	Gravel and Gravelly Soils — More than 50% of Coarse Fraction Retained on No. 4 Sieve	Clean Gravels (<5% fines)		GW	Well-Graded Gravel; Well-Graded Gravel with Sand
				GP	Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Gravels (5-12% fines)		GW-GM	Well-Graded Gravel with Silt; Well-Graded Gravel with Silt and Sand
				GW-GC	Well-Graded Gravel with Clay; Well-Graded Gravel with Clay and Sand
				GP-GM	Poorly Graded Gravel with Silt; Poorly Graded Gravel with Silt and Sand
				GP-GC	Poorly Graded Gravel with Clay; Poorly Graded Gravel with Clay and Sand
		Gravels with Fines (>12% fines)		GM	Silty Gravel; Silty Gravel with Sand
				GC	Clayey Gravel; Clayey Gravel with Sand
	Sand and Sandy Soils — More than 50% of Coarse Fraction Passing No. 4 Sieve	Sands with few Fines (<5% fines)		SW	Well-Graded Sand; Well-Graded Sand with Gravel
				SP	Poorly Graded Sand; Poorly Graded Sand with Gravel
		Sands (5-12% fines)		SW-SM	Well-Graded Sand with Silt Well-Graded Sand with Silt and Gravel
				SW-SC	Well-Graded Sand with Clay; Well-Graded Sand with Clay and Gravel
				SP-SM	Poorly Graded Sand with Silt; Poorly Graded Sand with Silt and Gravel
				SP-SC	Poorly Graded Sand with Clay; Poorly Graded Sand with Clay and Gravel
		Sands with Fines (>12% fines)		SM	Silty Sand; Silty Sand with Gravel
				SC	Clayey Sand; Clayey Sand with Gravel
Fine Grained Soils — More than 50% of Material Passing No. 200 Sieve	Silts			ML	Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
				MH	Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
	Silty Clay (based on Atterberg Limits)			CL-ML	Silty Clay; Silty Clay with Sand or Gravel; Gravelly or Sandy Silty Clay
	Clays			CL	Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
				CH	Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
	Organics			OL/OH	Organic Soil; Organic Soil with Sand or Gravel; Sandy or Gravelly Organic Soil
Highly Organic (>50% organic material)				PT	Peat - Decomposing Vegetation - Fibrous to Amorphous Texture

Minor Constituents

	Estimated Percentage
Sand, Gravel	
Trace	<5
Few	5 - 15
Cobbles, Boulders	
Trace	<5
Few	5 - 10
Little	15 - 25
Some	30 - 45

Soil Test Symbols

%F	Percent Passing No. 200 Sieve
AL	Atterberg Limits (%)
	Liquid Limit (LL)
	Water Content (WC)
	Plastic Limit (PL)
CA	Chemical Analysis
CAUC	Consolidated Anisotropic Undrained Compression
CAUE	Consolidated Anisotropic Undrained Extension
CBR	California Bearing Ratio
CIDC	Consolidated Drained Isotropic Triaxial Compression
CIUC	Consolidated Isotropic Undrained Compression
CK0DC	Consolidated Drained k0 Triaxial Compression
CK0DSS	Consolidated k0 Undrained Direct Simple Shear
CK0UC	Consolidated k0 Undrained Compression
CK0UE	Consolidated k0 Undrained Extension
CRSCN	Constant Rate of Strain Consolidation
DS	Direct Shear
DSS	Direct Simple Shear
DT	In Situ Density
GS	Grain Size Classification
HYD	Hydrometer
ILCN	Incremental Load Consolidation
K0CN	k0 Consolidation
kc	Constant Head Permeability
kf	Falling Head Permeability
MD	Moisture Density Relationship
OC	Organic Content
OT	Tests by Others
P	Pressuremeter
PID	Photoionization Detector Reading
PP	Pocket Penetrometer
SG	Specific Gravity
TRS	Torsional Ring Shear
TV	Torvane
UC	Unconfined Compression
UUC	Unconsolidated Undrained Triaxial Compression
VS	Vane Shear
WC	Water Content (%)

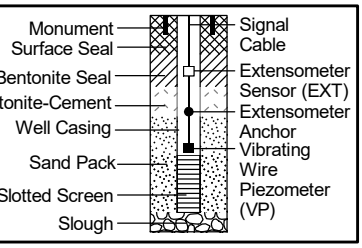
Groundwater Indicators

- Groundwater Level on Date or At Time of Drilling (ATD)
- Groundwater Level on Date Measured in Piezometer
- Groundwater Seepage (Test Pits)

Sample Symbols

- 1.5" I.D. Split Spoon
- 3.0" I.D. Split Spoon
- Modified California Sampler
- Rock Core Run
- Sonic Core
- Thin-walled Sampler
- Grab
- Cuttings
- Push Probe

Well Symbols



HALEY ALDRICH	Project: Anderson Hall Renovation Location: Seattle, Washington Project No.: 0208784-000	**Key to Exploration Logs**	Figure **A-1** Sheet **1 of 1**

Date Started: 12/21/2023	Date Completed: 12/21/2023	Drilling Contractor/Crew: Holocene Drilling, Inc. / Ian	
Logged by: S. Sirmans	Checked by: M. Ferencz	Drilling Method: Hollow Stem Auger	
Location: Lat: 47.651923 Long: -122.307769 (WGS 84)		Rig Model/Type: Track-mounted drill rig	
Ground Surface Elevation: 94.40 feet (NAVD 88)		Hammer Type: Auto-hammer	
Comments:		Hammer Weight (pounds): 140	Hammer Drop Height (inches): 30
		Measured Hammer Efficiency (%): Not Available	
		Hole Diameter:	Well Casing Diameter: NA
		Total Depth: 30.5 feet	Depth to Groundwater: Not Identified

Elevation (feet)	Depth (feet)	Sample Data: Blow Count	Type	Recovery	Length (inches)	Number / Tests	Graphic Log	Material Description
94	0							Vacuum excavated to 5 ft bgs. Cuttings indicate grass and top soil with scattered organics from 0 to 1 ft. Cuttings indicate moist fine sand with few cobbles, trace gravel and fractured concrete chunks from 1 to 5 ft.
90	5	7 20 2		5in.	18	S-1		SILTY SAND WITH GRAVEL (SM), medium dense, dry to moist, brown, occasional brick lens, brick may have inflated blow count. [FILL] chattery drilling from 6 to 7 ft
85	10	6 34 43		18in.	18	S-2		POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, very dense, moist, gray-brown, pocket of iron oxide staining.
		7 35 50		14in.	16	S-3		SILTY SAND (SM), trace subangular gravel, very dense, dry to moist, gray to brown, occasional pockets of light brown medium sand. [TILL]
80	15	50		6in.	6	S-4		grades to trace subrounded to rounded gravel, moist, gray, occasional pockets of brown medium sand
75	20	50		4in.	4	S-5 GS, WC		grades to trace subrounded gravel, dry to moist, gray-brown, no sand pockets
70	25	17 50		12in.	12	S-6		
65	30	50		1in.	2	S-7		Refusal at 30.5 feet.
60	35							
55								

WC (%) ●
Fines Content (%) ✖
SPT N Value ▲
10 20 30 40

22
77
85/10"
50/6"
32
50/4"
50/6"
50/2"

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: Anderson Hall Renovation
Location: Seattle, Washington
Project No.: 0208784-000

Boring Log
HA-1-23

Figure **A-2**
Sheet **1 of 1**

Date Started: 12/21/2023	Date Completed: 12/21/2023	Drilling Contractor/Crew: Holocene Drilling, Inc. / Ian	
Logged by: S. Sirmans	Checked by: M. Ferencz	Drilling Method: Hollow Stem Auger	
Location: Lat: 47.651936 Long: -122.307455 (WGS 84)		Rig Model/Type: Track-mounted drill rig	
Ground Surface Elevation: 94.70 feet (NAVD 88)		Hammer Type: Auto-hammer	
Comments:		Hammer Weight (pounds): 140	Hammer Drop Height (inches): 30
		Measured Hammer Efficiency (%): Not Available	
		Hole Diameter:	Well Casing Diameter: NA
		Total Depth: 35.5 feet	Depth to Groundwater: Not Identified

Elevation (feet)	Depth (feet)	Sample Data: Blow Count	Type	Recovery	Length (inches)	Number / Tests	Graphic Log	Material Description
94.7	0							Vacuum excavated to 5 ft bgs. Cuttings indicate grass and topsoil with scattered organics from 0 to 1 ft. Cuttings indicate moist fine sand with few cobbles and trace gravel from 1 to 5 ft.
90	5	3 3 2		18in.	18	S-1		SILTY SAND (SM), loose, moist, red-brown, occasional pockets of iron oxide staining, trace organics (roots). [FILL]
		11 21 25		18in.	18	S-2 GS, WC		SILTY SAND WITH GRAVEL (SM), dense, moist, gray-brown, fine to coarse gravel.
85	10	12 37 50		11in.	17	S-3		SILTY SAND (SM), very dense, dry to moist, gray, blocky, trace organics (roots). [TILL]
80	15	28 50		8in.	8	S-4		grades to few gravel, moist
75	20	30 50		9in.	9	S-5 GS, WC		
70	25	50		6in.	6	S-6		occasional pockets of dark brown silt chattery drilling from 28 to 29 ft
65	30	50		5in.	5	S-7		grades to dry to moist
60	35	50		6in.	6	S-8		Bottom of Borehole at 35.5 feet.
55								

WC (%) ● Fines Content (%) ✖ SPT N Value ▲

Depth (feet)	SPT N Value
5	5
10	20
10	46
10	87/11"
15	50/2"
20	43
20	50/3"
25	50/6"
30	50/5"
35	50/6"

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: Anderson Hall Renovation
Location: Seattle, Washington
Project No.: 0208784-000

Boring Log
HA-2-23

Figure **A-3**
Sheet **1 of 1**

Date Started: 12/22/2023
Date Completed: 12/22/2023
Logged by: S. Sirmans
Checked by: M. Ferencz
Location: Lat: 47.651548 Long: -122.307848 (WGS 84)
Ground Surface Elevation: 84.40 feet (NAVD 88)
Comments:

Drilling Contractor/Crew: Holocene Drilling, Inc. / Ian
Drilling Method: Hollow Stem Auger
Rig Model/Type: Track-mounted drill rig
Hammer Type: Auto-hammer
Hammer Weight (pounds): 140
Hammer Drop Height (inches): 30
Measured Hammer Efficiency (%): Not Available
Hole Diameter:
Well Casing Diameter: NA
Total Depth: 25.5 feet
Depth to Groundwater: Not Identified

Elevation (feet)	Depth (feet)	Blow Count	Type	Recovery	Length (inches)	Number / Tests	Material Description	WC (%) / Fines Content (%) / SPT N Value
84.4	0						Vacuum excavated to 5 ft bgs. Cuttings indicate asphalt from 0 to 0.167 ft. Cuttings indicate WELL-GRADED GRAVEL WITH SAND (GW), few cobbles from 0.167 to 5 ft.	
	5	22 50		11in.	11	S-1	SILTY SAND (SM), trace gravel, very dense, moist, gray, fine sand. [TILL]	50/5"
		17 50		7.5in.	7	S-2	grades to dry to moist, gray to brown	50/1"
	10	50		5.5in.	6	S-3	grades to few gravel	50/6"
	15	50		4in.	4	S-4	grades to gray	50/4"
							chattery drilling from 19 to 20 ft	
	20	41 50		9in.	9	S-5	grades to fine to coarse sand, trace subrounded gravel	50/3"
	25	50		5in.	5	S-6 / GS, WC	SILTY SAND WITH GRAVEL (SM), very dense, dry to moist, gray, subangular gravel. [TILL]	Fines 33; 50/5"

Bottom of Borehole at 25.5 feet.

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

Date Started: 12/22/2023	Date Completed: 12/22/2023	Drilling Contractor/Crew: Holocene Drilling, Inc. / Ian	
Logged by: S. Sirmans	Checked by: M. Ferencz	Drilling Method: Hollow Stem Auger	
Location: Lat: 47.650993 Long: -122.307345 (WGS 84)		Rig Model/Type: Track-mounted drill rig	
Ground Surface Elevation: 81.40 feet (NAVD 88)		Hammer Type: Auto-hammer	
Comments:		Hammer Weight (pounds): 140	Hammer Drop Height (inches): 30
		Measured Hammer Efficiency (%): Not Available	
		Hole Diameter:	Well Casing Diameter: NA
		Total Depth: 13 feet	Depth to Groundwater: Not Identified

Elevation (feet)	Depth (feet)	Sample Data: Blow Count	Type	Recovery	Length (inches)	Number / Tests	Graphic Log	Material Description
80	0							Vacuum excavated to 5 ft bgs. Cuttings indicate ASPHALT from 0 to 0.333 ft. Cuttings indicate POORLY GRADED SAND WITH GRAVEL (SP), occasional organics (roots) from 0.333 to 5 ft.
75	5	4 6 32		18in.	18	S-1		SILTY SAND (SM), dense, moist, red-brown, 2-inch lens of fine sand with scattered organics, iron oxide staining. [FILL]
		20 50		12in.	12	S-2		POORLY GRADED SAND WITH SILT (SP-SM), trace gravel, very dense, dry to moist, gray-brown. [TILL]
		23 23 50		16in.	18	S-3		SILTY SAND (SM), few gravel, very dense, dry to moist, gray-brown. [TILL]
70	10	25 50		12in.	12	S-4 GS, WC		grades to gray, occasional pockets of brown fine sand
		25 50		11in.	11	S-5 GS, WC		SILTY SAND WITH GRAVEL (SM), very dense, dry to moist, gray-brown. [TILL]
65	15	50		6in.	6	S-6		Bottom of Borehole at 13.0 feet.
60	20							
55	25							
50	30							
45	35							

WC (%) ●
✖ Fines Content (%)
▲ SPT N Value
10 20 30 40

Depth (feet): 0, 5, 10, 15, 20, 25, 30, 35

SPT N Value: 38; 50/6"; 26; 73; 50/6"; 23; 50/5"; 50/6"

General Notes:
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: Anderson Hall Renovation
Location: Seattle, Washington
Project No.: 0208784-000

Boring Log
HA-4-23

Figure **A-5**
Sheet **1 of 1**

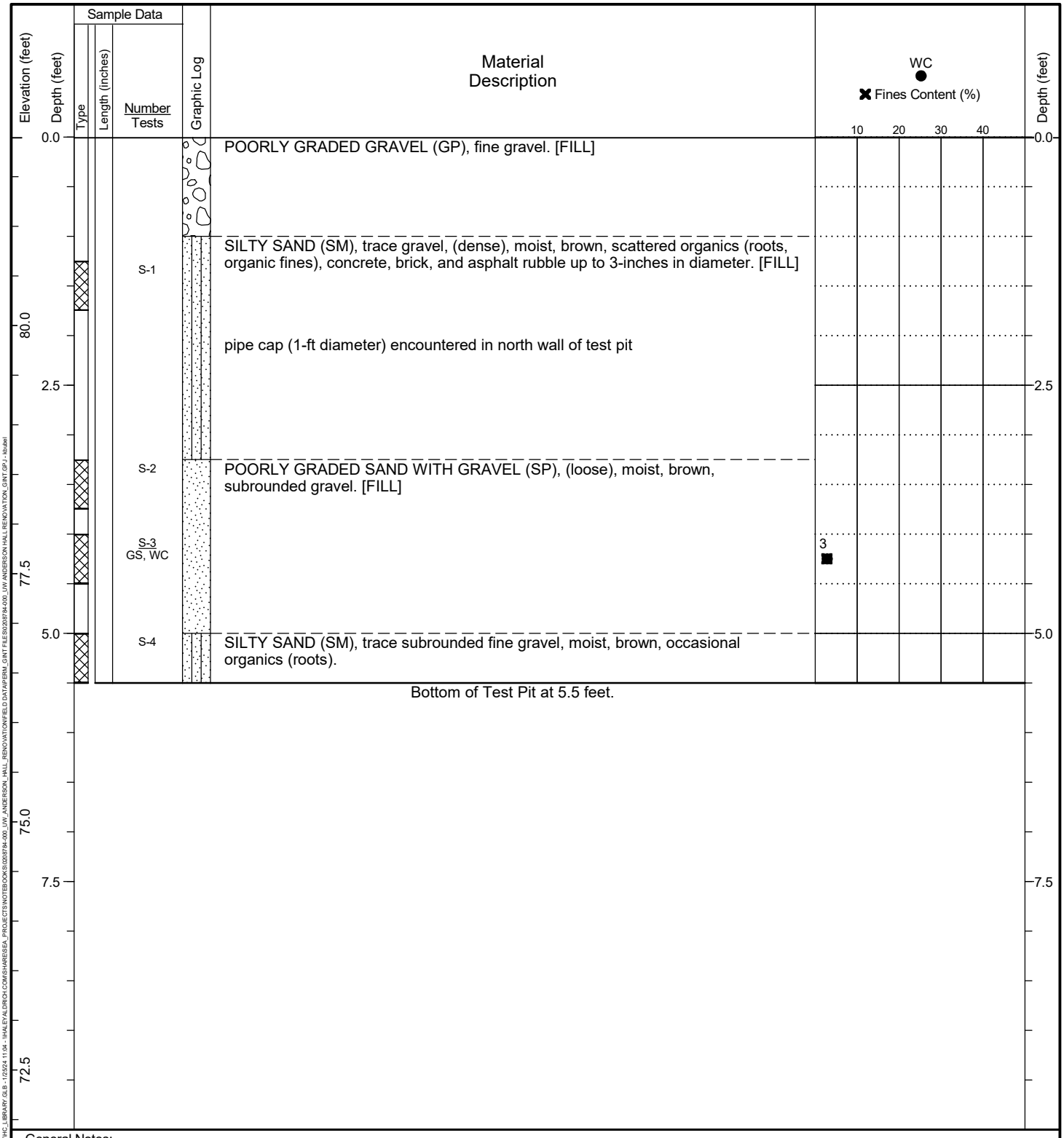
Date Started: 12/20/2023 Date Completed: 12/21/2023 Contractor/Crew: Rivers Edge Environmental Services

Logged by: BG/AG Checked by: M. Ferencz Rig Model/Type: Takeuchi TB235 / Excavator

Location: Lat: 47.650991 Long: -122.307313 (WGS 84) Total Depth: 5.5 feet Depth to Seepage: Not Encountered

Ground Surface Elevation: 81.90 feet (NAVD 88)

Comments: 4 ft by 4 ft test pit



General Notes:

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Material stratum lines are interpretive and actual changes may be gradual. Solid lines indicate distinct contacts and dashed lines indicate gradual or approximate contacts.
3. USCS designations are based on visual-manual identification (ASTM D 2488), unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling/excavation (ATD) or for date specified. Level may vary with time.
5. Location and ground surface elevations are approximate.

HALEY ALDRICH

Project: Anderson Hall Renovation
Location: Seattle, Washington
Project No.: 0208784-000

Test Pit Log
TP-1

Figure **A-6**
Sheet **1 of 1**

APPENDIX B
Laboratory Test Results

APPENDIX B

Laboratory Testing Program

Laboratory tests were performed for this study to evaluate the basic index and geotechnical engineering properties of the site soils. Standard penetration tests samples and a test pit grab sample were tested. The tests performed and the procedures followed are outlined below.

SOIL CLASSIFICATION

Soil samples from the explorations were visually classified in the field and then taken to our laboratory, where the classifications were reviewed in a relatively controlled laboratory environment. Field and laboratory observations include density/consistency, moisture condition, and grain size and plasticity estimates.

The classifications of selected samples were checked by laboratory tests such as Atterberg limits determinations and grain size analyses. Classifications were made in general accordance with the Unified Soil Classification System, American Society for Testing and Materials (ASTM) D2487, except for the relative density for cohesionless materials. For cohesionless soils, the relatively density was determined in accordance with WSDOT GDM 4.2.5 Table 4-11.

WATER CONTENT DETERMINATION

Water content was determined for several samples in general accordance with ASTM D2216 following the samples' arrival in our laboratory. Water content was not determined for very small samples or for samples whose large gravel content would result in unrepresentative values. The results of the water content tests are plotted at the respective sample depths on the boring logs.

GRAIN SIZE ANALYSIS

Grain size distribution was analyzed on representative samples in general accordance with ASTM D422. Wet sieve analysis was used to determine the size distribution greater than the U.S. No. 200 mesh sieve. The size distribution for particles smaller than the U.S. No. 200 mesh sieve was determined by the hydrometer method for a selected number of samples. The results of the tests are presented as curves plotting percent finer by weight versus grain size on Figure B-2.

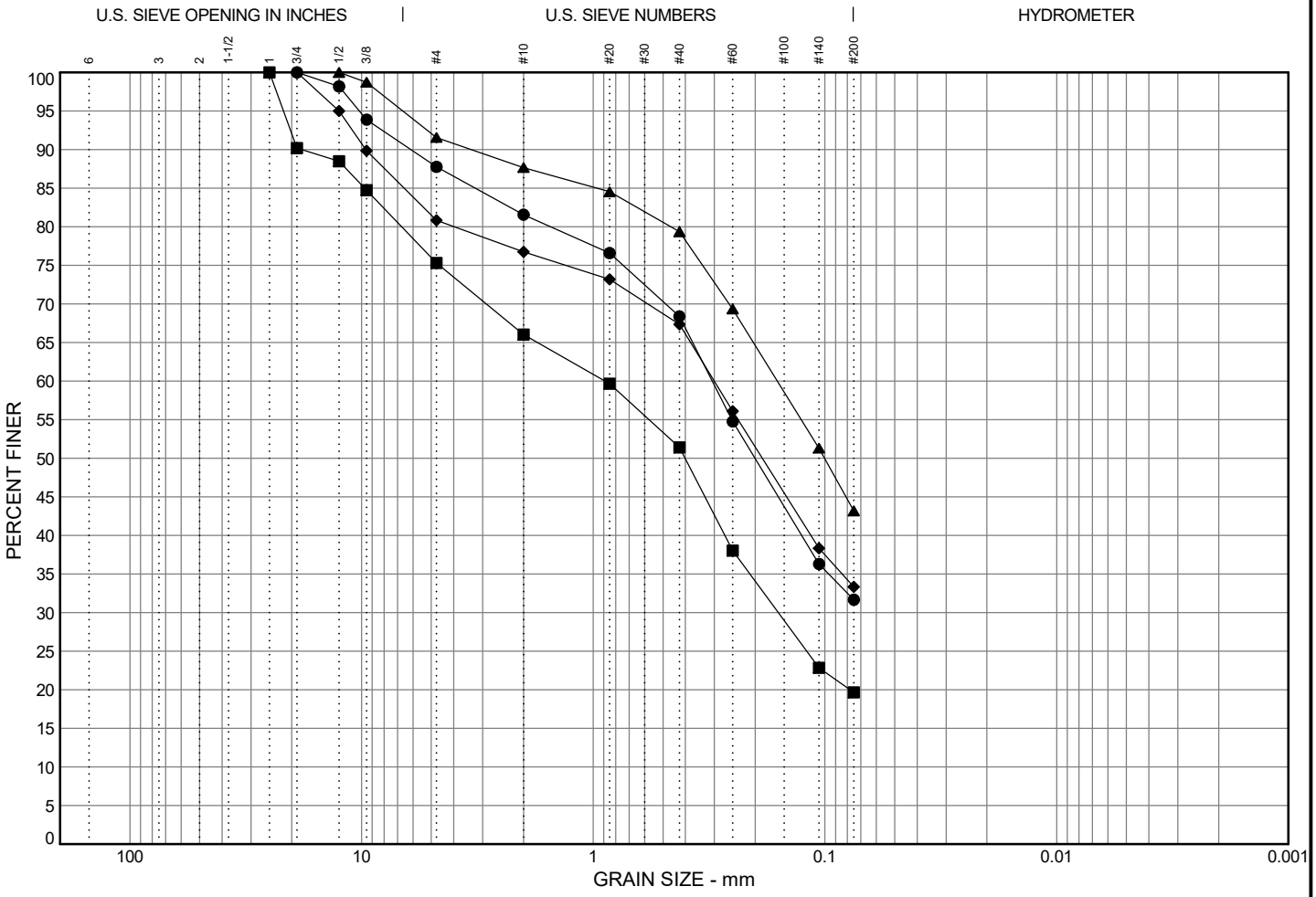
Exploration	Sample ID	Depth	Gravel (%)	Sand (%)	Fines (%)	Liquid Limit	Plastic Limit	Water Content (%)	USCS Group Symbol	Soil Description
HA-1-23	S-1	5.0								
HA-1-23	S-2	7.5								
HA-1-23	S-3	10.0								
HA-1-23	S-4	15.0								
HA-1-23	S-5	20.0	12.2	56.1	31.7			6.1	SM	SILTY SAND
HA-1-23	S-6	25.0								
HA-1-23	S-7	30.0								
HA-2-23	S-1	5.0								
HA-2-23	S-2	7.5	24.7	55.7	19.7			8.3	SM	SILTY SAND WITH GRAVEL
HA-2-23	S-3	10.0								
HA-2-23	S-4	15.0								
HA-2-23	S-5	20.0	8.4	48.4	43.2			10.9	SM	SILTY SAND
HA-2-23	S-6	25.0								
HA-2-23	S-7	30.0								
HA-2-23	S-8	35.0								
HA-3-23	S-1	5.0								
HA-3-23	S-2	7.5								
HA-3-23	S-3	10.0								
HA-3-23	S-4	15.0								
HA-3-23	S-5	20.0								
HA-3-23	S-6	25.0	19.2	47.5	33.4			6.0	SM	SILTY SAND WITH GRAVEL
HA-4-23	S-1	5.0								
HA-4-23	S-2	6.5								
HA-4-23	S-3	8.0								
HA-4-23	S-4	9.5	7.3	66.8	25.9			4.2	SM	SILTY SAND
HA-4-23	S-5	11.0	23.3	53.4	23.3			3.7	SM	SILTY SAND WITH GRAVEL
HA-4-23	S-6	12.5								
TP-1	S-1	1.3								
TP-1	S-2	3.3								
TP-1	S-3	4.0	35.5	61.7	2.8			2.8	SP	POORLY GRADED SAND WITH GRAVEL
TP-1	S-4	5.0								

HALEY ALDRICH

Project: Anderson Hall Renovation
Location:
Project No.: 0208784-000

Summary of Laboratory Results

Figure **B-1**
Sheet **1 of 1**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Location and Description	% Cobbles	% Gravel	% Sand	% Silt	% Clay	MC%	USCS
● **Source:** HA-1-23 **Sample No.:** S-5 **Depth:** 20.0 to 20.3 SILTY SAND	0.0	12.2	56.1	31.7		6	SM
■ **Source:** HA-2-23 **Sample No.:** S-2 **Depth:** 7.5 to 9.0 SILTY SAND WITH GRAVEL	0.0	24.7	55.7	19.7		8	SM
▲ **Source:** HA-2-23 **Sample No.:** S-5 **Depth:** 20.0 to 20.8 SILTY SAND	0.0	8.4	48.4	43.2		11	SM
◆ **Source:** HA-3-23 **Sample No.:** S-6 **Depth:** 25.0 to 25.4 SILTY SAND WITH GRAVEL	0.0	19.2	47.5	33.4		6	SM

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			3.231	0.307	0.200					
■			9.694	0.891	0.402	0.159				
▲			0.965	0.160	0.100					
◆			6.543	0.300	0.186					

Remarks:

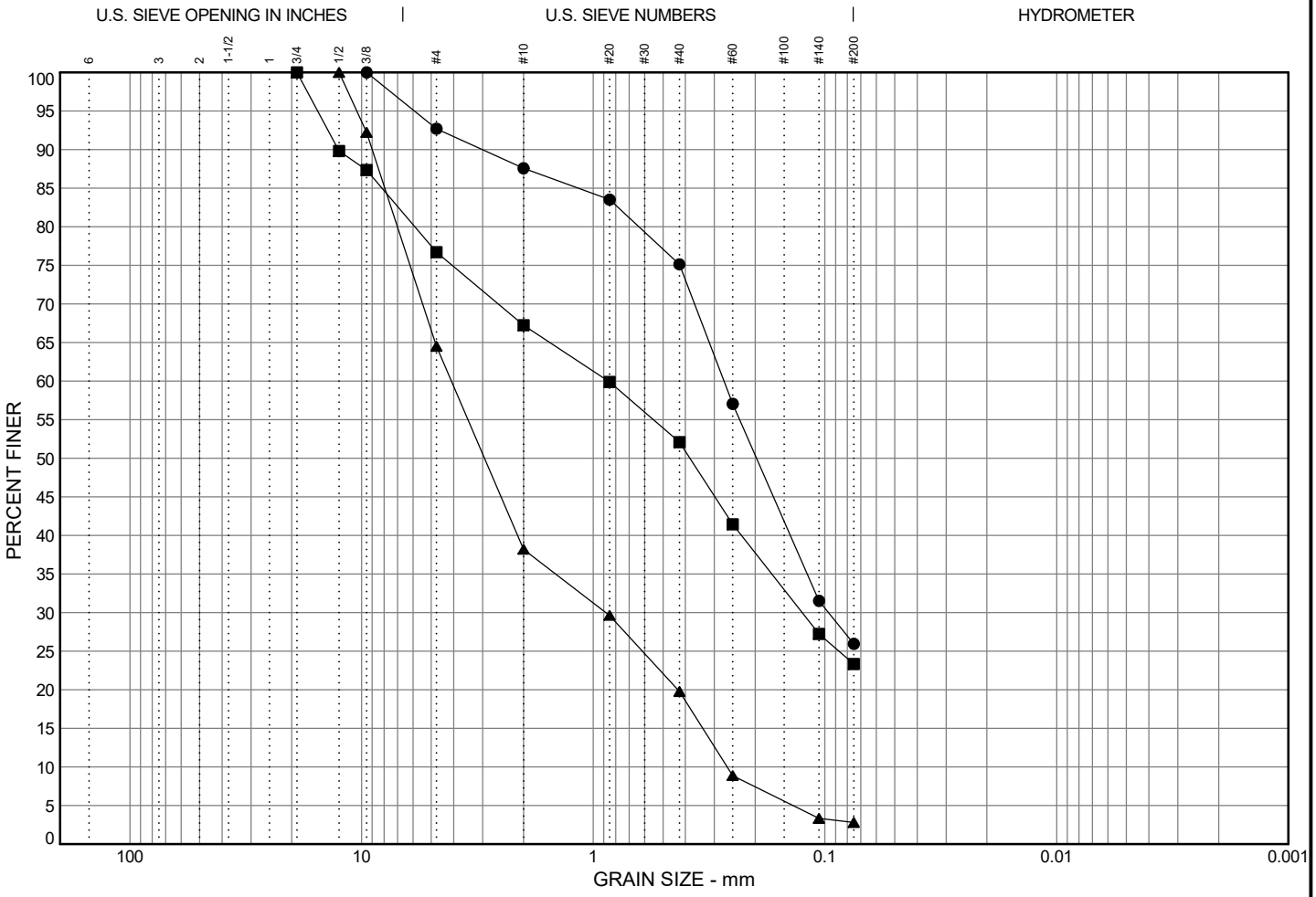
● ■ ▲ ◆

HALEY ALDRICH

Project: Anderson Hall Renovation
Location: Seattle, Washington
Project No.: 0208784-000

Particle-Size Analysis

Figure **B-2**
Sheet **1 of 2**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Location and Description	% Cobbles	% Gravel	% Sand	% Silt	% Clay	MC%	USCS
● **Source:** HA-4-23 **Sample No.:** S-4 **Depth:** 9.5 to 10.5 SILTY SAND	0.0	7.3	66.8	25.9		4	SM
■ **Source:** HA-4-23 **Sample No.:** S-5 **Depth:** 11.0 to 11.9 SILTY SAND WITH GRAVEL	0.0	23.3	53.4	23.3		4	SM
▲ **Source:** TP-1 **Sample No.:** S-3 **Depth:** 4.0 to 4.5 POORLY GRADED SAND WITH GRAVEL	0.0	35.5	61.7	2.8		3	SP

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.163	0.273	0.197	0.096				
■			8.159	0.862	0.383	0.125				
▲			7.928	4.096	2.948	0.882	0.337	0.264	0.72	15.51

Remarks:

● ■ ▲

HALEY ALDRICH

Project: Anderson Hall Renovation
Location: Seattle, Washington
Project No.: 0208784-000

Particle-Size Analysis

Figure **B-2**
Sheet **2 of 2**

APPENDIX C
Infiltration Memo

HALEY & ALDRICH, INC.
3131 Elliott Avenue
Suite 600
Seattle, WA 98121
206.324.9530

MEMORANDUM

25 January 2024
File No. 0208784-000

TO: Phil Iverson, Regional Project Manager
University of Washington

FROM: Haley & Aldrich, Inc.
Blake Lytle-Goldstein, L.G.
Roy E. Jensen, L.H.G.

SUBJECT: Infiltration Testing Results
Anderson Hall Renovation
3715 West Stevens Way NE
Seattle, Washington

This memorandum provides results of infiltration testing performed by Haley & Aldrich, Inc. (Haley & Aldrich) in the parking lot south of Bloedel Hall (the "Site") as part of the University of Washington Anderson Hall Renovation project located in Seattle, Washington. It is our understanding that renovations to Anderson Hall and surroundings may result in additional stormwater which will need to be managed. Our infiltration testing and analysis services are based on guidance provided in the Washington State Department of Ecology Stormwater Management Manual for Western Washington (Washington State Department of Ecology ,2019), the City of Seattle Stormwater Manual (2021), and our experience with similar projects.

A description of the Site, proposed structures, and regional geology is included in the Geotechnical Report on Anderson Hall Renovation (Geotechnical Report) to be dated 25 January 2024 (Haley & Aldrich, 2024). Relevant exploration logs, laboratory data, and groundwater observations are also included in the Geotechnical Report. Details of the infiltration testing are contained in the following sections.

Purpose and Scope of Services

The purpose of the infiltration testing program is to assess general subsurface soil and groundwater conditions and determine the infiltration rates in the vicinity of the proposed stormwater infiltration facility. Results of the infiltration tests are used to develop recommendations for the feasibility and design of stormwater infiltration facilities.

Haley & Aldrich's scope of services included the following:

- Completing one test pit in an area for the proposed infiltration facility to a depth of 4 feet.

- Recording the type and texture of soil in the test pit and collecting one or more representative soil sample(s) for grain size analysis from the soil units encountered in the test pit.
- Performing a small pilot infiltration test (PIT) in the test hole with a duration of six hours. A PIT consists of measuring the infiltration (i.e., percolation) rate in the test hole.
- Over excavating the test hole to a depth of 5.5 feet to determine if the test water was observed on restrictive layers or if it continued to flow into the subsurface.
- Determining the field infiltration rate and providing a recommended design infiltration rate.

Soil and Groundwater Conditions

Test pit TP-1-23 and boring HA-4-23 were completed in the vicinity of the proposed infiltration facility. Exploration logs, laboratory data, and a complete description of subsurface soil and groundwater conditions can be found in the Geotechnical Report. Test pit TP-1-23 was completed to a depth of about 5.5 feet, and boring HA-4-23 was completed to a depth of 13 feet. Soils encountered in test explorations consisted of fill composed of gravelly and sandy soils to a depth of about 6 feet, and Glacial Till composed of silty sand with variable amounts of gravel. A poorly-graded sand with gravel with about 3 percent fines by weight was encountered at a depth of about 3 feet in test pit TP-1-23. The PIT was performed in this soil unit. Groundwater and groundwater seepage were not observed in either exploration.

GRAIN SIZE ANALYSIS

Two soil samples from boring HA-4-23 and one soil sample from test pit TP-1-23 were analyzed for grain size distribution in general accordance with American Society for Testing and Materials D422. Soil samples range in depth from 4 to 11 feet. A summary of grain size results is presented in Table 1. For samples with greater than 15 percent fines content and where a D_{10} was not calculated as part of the grain size analysis, a tangent line was extended from the grain size curve to estimate the D_{10}.

Estimates of the saturated hydraulic conductivity K_{sat} were calculated from the grain size distribution using the Hazen method (Hazen, 1892) and the Massmann method (Washington State Department of Ecology, 2019). The resulting estimates of K_{sat} are provided in Table 2. These values range from 0.6 inches per hour in the Glacial Till soil (HA-4-23) to 99 inches per hour in the fill (TP-1-23). We acknowledge that the quality of K_{sat} estimates calculated from grain size relationships are degraded by the presence of significant fine-grained fractions as well as by soil compaction by anthropogenic and glacial sources. Consequently, the estimates here are likely to overestimate the true hydraulic conductivity of the soil.

Infiltration rates are a function of both K_{sat} and the hydraulic gradient. The hydraulic gradient is the change in piezometric head between the infiltration surface and the destination of infiltrating water divided by the distance between these points along the direction of flow. It is generally assumed that flow is occurring in the vertical direction under fully saturated conditions. In this analysis, we have assumed that the hydraulic gradient is equal to 1.

Infiltration Test Procedure

The procedure for the infiltration test is based on the small-scale pilot infiltration method specified in the Washington State Department of Ecology Stormwater Management Manual for Western Washington (SWMMWW, 2019). The purpose of the PIT is to determine the infiltration rate of the soils in the unsaturated zone. We completed a PIT in TP-1-23 on 21 December 2023. Our infiltration testing procedure generally followed the methodology in the Stormwater Management Manual for Western Washington and City of Seattle Stormwater Manual, which consisted of the following:

- Measured the infiltration in a test cell approximately 4 feet deep and with an area of about 20 square feet.
- Installed a stadia rod marked in 0.25-inch increments to the pit bottom to record water levels.
- Performed a pre-soak period where water was added to the pit so that there was at least 12 inches of standing water for 5 hours. Water was conveyed into the test cell in a manner to reduce erosion or excessive disturbance of the test cell bottom.
- The PIT consisted of two phases following the pre-soak. The first phase was the constant head test and the second phase was the falling head test.
- Performed the constant head test consisting of adding water to the test cell at a rate that maintained water at a depth of 12.5 inches. The instantaneous flow rate was periodically measured and recorded every 15 minutes using an in-line flowmeter. The constant head test duration was 1 hour.
- Performed a falling head test phase where the flow of water into the test cell was terminated and the water drop rate was recorded.
- Over excavated the test hole the following day to a depth of about 5.5 feet. Soils encountered were moist to the depth of 5.5 feet. Glacial Till was encountered at a depth of about 5 feet, and the silty sand was moist but not saturated, suggesting water had flowed laterally through the fill sand and had not infiltrated downward into the Glacial Till.

Infiltration Test Results

The results of PIT constant head test are provided in Table 3. A field infiltration rate of 26 inches per hour was calculated for the fill encountered at a depth of 4 feet. The City of Seattle Stormwater Manual requires use of a correction factor multiplied by the field-measured infiltration rate to determine the design infiltration rate. For small scale PITs, a correction factor of 0.5 is required unless a lower value is warranted by site conditions. In determining the appropriate correction factor, we considered the following criteria:

- site variability and number of locations tested;
- uncertainty of test method; and
- degree of influent control to prevent siltation and bio-buildup.

Based on the subsurface variability, the number of locations tested, and uncertainty in the test method and planned degree of influent control, we recommend applying a correction factor of 0.3 to obtain the design infiltration rate. Applying a correction factor of 0.3 to the field infiltration rate of 26 inches per hour results in a design infiltration rate of 7.7 inches per hour.

Table 3. Summary of Constant Head Infiltration Test Results

Infiltration Test	Test Depth (Feet)	Length (Feet)	Width (Feet)	Area (Square Feet)	Steady-State Head (Feet)	Steady-State Flow (GPM)	Infiltration Rate (GPM/Feet^2)	Infiltration Rate (inch per hour)	Correction Factor	Recommended Design Infiltration Rate (inch per hour)
TP-1-23	4	4	5	20	1.04	5.3	0.3	26	0.3	7.7

Notes:
GPM = gallons per minute

Conclusions and Recommendations

- Two explorations consisting of a test pit and boring were completed in the planned location of an infiltration facility to depths of 5.5 and 13 feet (TP-1-23 and HA-4-23, respectively). The soils encountered included fill soils consisting of gravels, sands, and silty sands to a depth of about 6 feet and below the fill was Glacial Till consisting of silty sands.
- The water table was not encountered in either exploration.
- A small-scale PIT test was conducted at a depth of about 4 feet in the sand fill. The observed field infiltration rate was 26 inches per hour.
- Infiltration testing was not conducted in the Glacial Till soil present at the site. Estimates of the Glacial Till hydraulic conductivity K_{sat} from grain size data range from 0.6 to 12 inches per hour; however, these estimates are of low quality when significant fines content is present and when soils have been compacted.
- In our experience, soils with greater than 15 percent fines by weight are typically not suitable for infiltration. Soil samples from the Glacial Till unit contained about 23 to 26 percent fines.
- Fill soils are not preferred for infiltration. Numerous utilities are present in the area and could act as preferential conduits for water flow rather than infiltrating into the underlying soils.
- There is high risk of stormwater to mound on the Glacial Till and travel laterally along the soil contact between fill and Glacial Till and seep from the nearby slope onto the Burke-Gilman Trail.
- We do not recommend stormwater infiltration in this location as part of the Anderson Hall Renovation due to the presence of low-permeability Glacial Till and risk of seepage onto the public trail.

Attachments:

Table 1 – Summary of Grain Size Analysis
Table 2 – Summary of Hydraulic Conductivity Estimates from Grain Size Data
Attachment 1 – Falling Head Test Calculations

References

1. City of Seattle, 2021. Stormwater Manual. Volumes 1 to 5, Appendices A to I.
2. Devlin, J.F., 2015. HydrogeoSieveXL: an Excel-based tool to estimate hydraulic conductivity from grain-size analysis. Hydrogeology Journal.
3. Haley & Aldrich, 2024. Geotechnical Report on Anderson Hall Renovation, 25 January.
4. Hazen, 1892. Experiments upon the purification of sewage and water at the Lawrence Experiment Station, Massachusetts State Board of Health 23rd Annual Report.
5. Washington State Department of Ecology ,2019. Stormwater Management Manual for Western Washington. Water Quality Program. Publication 19-10-021.

TABLES

TABLE 1

SUMMARY OF GRAIN SIZE ANALYSIS

ANDERSON HALL RENOVATION

SEATTLE, WASHINGTON

Exploration	Depth	Gravel (%)	Sand (%)	Fines (%)	USCS Group Symbol	Soil Description	D_{85} (mm)	D_{60} (mm)	D_{50} (mm)	D_{30} (mm)	D_{15} (mm)	D_{10} (mm)	C_c	C_u
HA-4-23	9.5	7.3	66.8	25.9	SM	SILTY SAND	1.163	0.273	0.197	0.096	0.04 [2]	0.03 [2]	1.13 [3]	9.1 [3]
HA-4-23	11.0	23.3	53.4	23.3	SM	SILTY SAND WITH GRAVEL	8.159	0.862	0.383	0.125	0.033 [2]	0.02 [2]	0.91 [3]	43.1 [3]
TP-1-23	4.0	35.5	61.7	2.8	SP	POORLY GRADED SAND WITH GRAVEL	7.928	4.096	2.948	0.882	0.337	0.264	0.72	15.5

Notes

1. % gravel, %sand, %fines, D_{85}, D_{60}, D_{30}, D_{15},D_{10}, C_c, and C_u from the results of sieve analysis

2. Parameter not reported in grain size analysis, was extrapolated using a tangent line from end of the grain size curve

3. Calculated using estimated parameter from (2)

TABLE 2

SUMMARY OF HYDRAULIC CONDUCTIVITY ESTIMATES FROM GRAIN SIZE DATA

ANDERSON HALL RENOVATION

SEATTLE, WASHINGTON

Exploration	Sample	Depth	USCS Group Symbol	Soil Description	Hazen K_{sat} (cm/sec)	Hazen K_{sat} (inches/hour)	Massmann K_{sat} (cm/sec)	Massmann K_{sat} (inches/hour)
HA-4-23	S-4	9.5	SM	SILTY SAND	9.0E-04	1.3	8.7E-03	12
HA-4-23	S-5	11.0	SM	SILTY SAND WITH GRAVEL	4.0E-04	0.6	7.8E-03	11
TP-1-23	S-3	4.0	SP	POORLY GRADED SAND WITH GRAVEL	7.0E-02	99	6.8E-02	96

Notes:

1. Hazen method = $(D10mm)^2$ = Hydraulic conductivity (K) in centimeters per second

2. Massman method = $\log10(K_{sat}) = -1.57 + 1.90D_{10} + 0.015D_{60} - 0.013D_{90} - 2.08f_{fines} = K_{sat}$ in cm/sec.

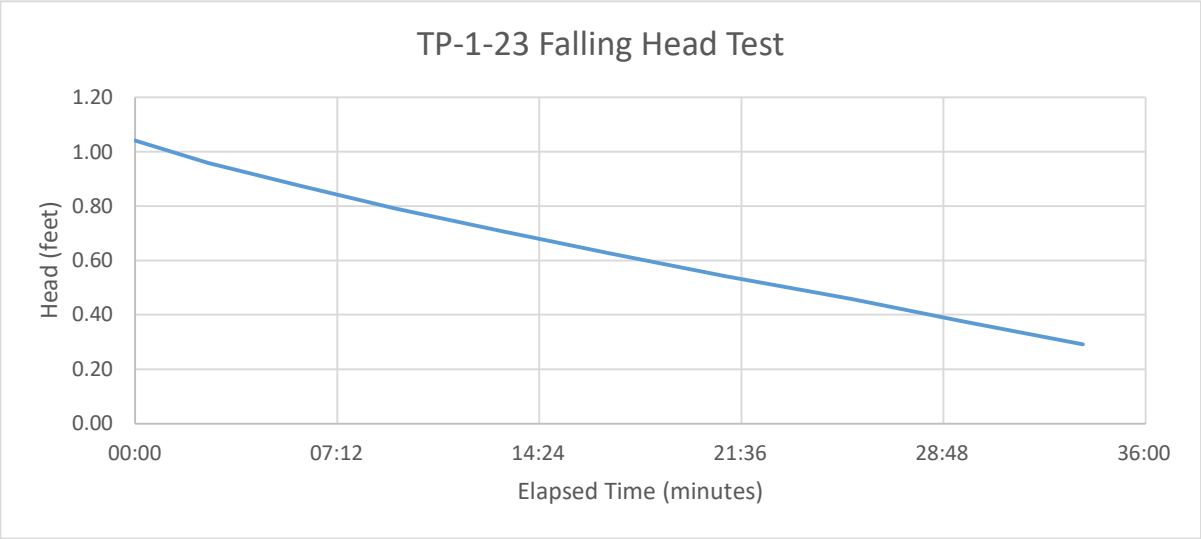
where, D_{10}, D_{60} and D_{90} are the grain sizes in mm for which 10 percent, 60 percent and 90 percent of the is more fine and f_{fines} is the fraction of the soil (by weight) that passes the number-200 sieve (K_{sat} in cm/ec). (1 cm/sec = 1417 in/hr)

ATTACHMENT 1
Falling Head Test Calculations

ATTACHMENT 1
FALLING HEAD TEST CALCULATIONS
UW ANDERSON HALL RENOVATION PROJECT
SEATTLE, WASHINGTON

Falling Head TP-1-23 PIT Area (sq ft) 20

Elapsed Time	Elapsed Time (hours)	Total Head (Feet)	Head Diff (feet)	Rate of Change (feet/min)	Drop rate (in/hr)	Volume Water (gpm/ft2)	Field Infiltration Rate (in/hr)
0:00:00	0.000	1.04	0	0	0	0	0
0:02:36	0.043	0.96	0.083	0.032	23.08	0.30	28.85
0:05:51	0.098	0.88	0.083	0.026	18.46	0.24	23.08
0:09:15	0.154	0.79	0.083	0.025	17.65	0.23	22.06
0:13:03	0.218	0.71	0.083	0.022	15.79	0.21	19.74
0:16:56	0.282	0.63	0.083	0.021	15.45	0.20	19.31
0:21:02	0.351	0.54	0.083	0.020	14.63	0.19	18.29
0:25:31	0.425	0.46	0.083	0.019	13.38	0.17	16.73
0:29:32	0.492	0.38	0.083	0.021	14.94	0.19	18.67
0:33:46	0.563	0.29	0.083	0.020	14.17	0.18	17.72
				Average	16.39		



APPENDIX D
Historical Borings

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Material Description Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
PPM	Parts per million
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

GeoEngineers

FIGURE A-1

Drilled	Start 7/31/2014	End 7/31/2014	Total Depth (ft) 25	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger
Surface Elevation (ft) 82 Vertical Datum NAVD88			Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment MT-52	
Easting (X) Northing (Y)			System Datum		Groundwater Date Measured	Depth to Water (ft) Elevation (ft)
Notes:						

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						GP-GM	Pea gravel with silt and sand (approximately 2 inches)			Woven geotextile fabric below pea gravel
							SM	Brown silty fine to medium sand with occasional gravel, trace organic matter (loose, moist) (fill)			
80		12	3	1							
	5	18	29	2			SM	Light brown silty fine to medium sand with occasional gravel, laminated, oxidation staining (medium dense, moist) (glacially consolidated soils)			
75											Rough drilling starting at 7 feet
		6	75/6"	3				Becomes very dense, till-like			
	10	6	65/6"	4							
70							ML	Light brownish-gray silt, laminated (hard, moist)			
			50/6"	5 %F					18	93	
							SM	Gray silty fine sand (very dense, wet)			
	15	12	50/6"	6 %F					13	27	
65											
							SM	Gray silty fine to medium sand with occasional gravel, till-like (very dense, moist)			Gravelly drilling at 19 feet
	20										

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-1

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-2
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	FIELD DATA: Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
60	20	4	100/4"	7							Rough drilling from 20 to 25 feet. Driller added water to reduce friction.
	25							Boring terminated at approximately 25 feet due to refusal			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-1 (continued)

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-2
Sheet 2 of 2

Drilled Start 7/31/2014 End 7/31/2014	Total Depth (ft) 16.16	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger
Surface Elevation (ft) 82 Vertical Datum NAVD88		Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment MT-52
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)
Notes:				

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						AC	Asphalt concrete (approximately 1½ inches)			No sub base
80				1			SM	Brown silty fine to medium sand with occasional gravel, trace brick debris (loose, moist) (fill)			
		10	5	2			SM	Brown silty fine to medium sand with gravel (very loose to loose, moist)			
								Becomes moist to wet			
	5	18	4	3							
75								Becomes moist and very loose			
		18	3	4 %F					12	24	
	10	7	6	5							
70											
		3	5	6							
								Becomes dark brownish gray and moist to wet			
	15	10	50/2"	7							Asphalt or charcoal debris in sampler
								Boring terminated at approximately 16 feet due to refusal on concrete or asphalt			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-1A

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-3
Sheet 1 of 1

Drilled Start 7/29/2014	End 7/29/2014	Total Depth (ft) 40.5	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger
Hammer Data: Rope and cathead 140 (lbs) / 30 (in) Drop			Drilling Equipment: D-50		
Surface Elevation (ft) 82 Vertical Datum NAVD88			Top of Casing Elevation (ft)		
Easting (X) Northing (Y)			Horizontal Datum		

DOE Well I.D.: BIJ 475
A 2 (in) well was installed on 7/29/2014 to a depth of 40 (ft).

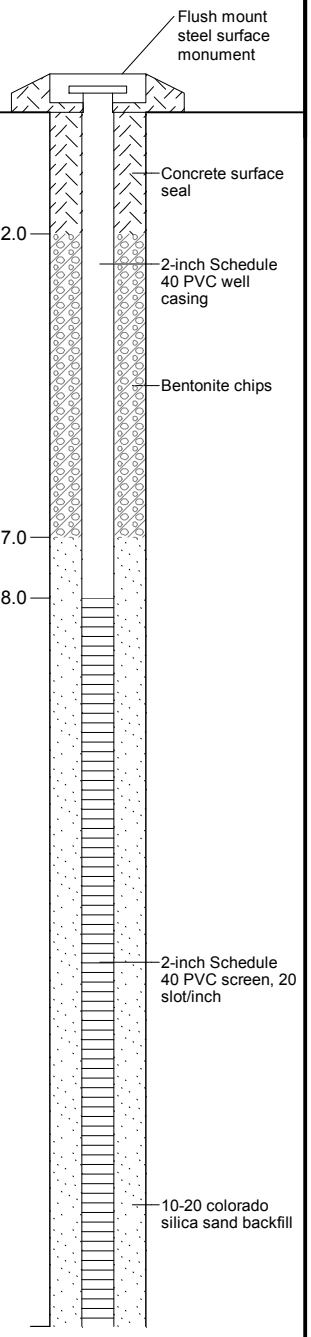
Groundwater

Date Measured	Depth to Water (ft)	Elevation (ft)

Notes:

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)
	0						CR	Crushed rock (approximately 3 inches)		
				1			TS	Dark brown silty fine to medium sand with occasional gravel, organic matter (loose, moist) (topsoil)		
80		4	4	2			SM	Brown silty fine to medium sand with occasional gravel (loose, moist) (fill)		
	5	18	3	3			SM	Dark brown silty fine to medium sand with occasional gravel, trace organic matter (roots) (loose, moist)		
75		18	34	4 %F			GM	Brown silty fine to coarse gravel with sand (dense, moist)		
	10	18	30	5 SA			SM	Grayish brown silty fine to medium sand with gravel, oxidation staining, till-like (medium dense to dense, moist) (glacially consolidated soils)	8	24
70		18	90	6				Becomes very dense and moist to wet		
	15	18	40	7			ML/SM	Gray silt with sand, fine to medium sand lenses (hard, moist to wet)		
65								(Driller noted cobbles)		
	20									

WELL LOG



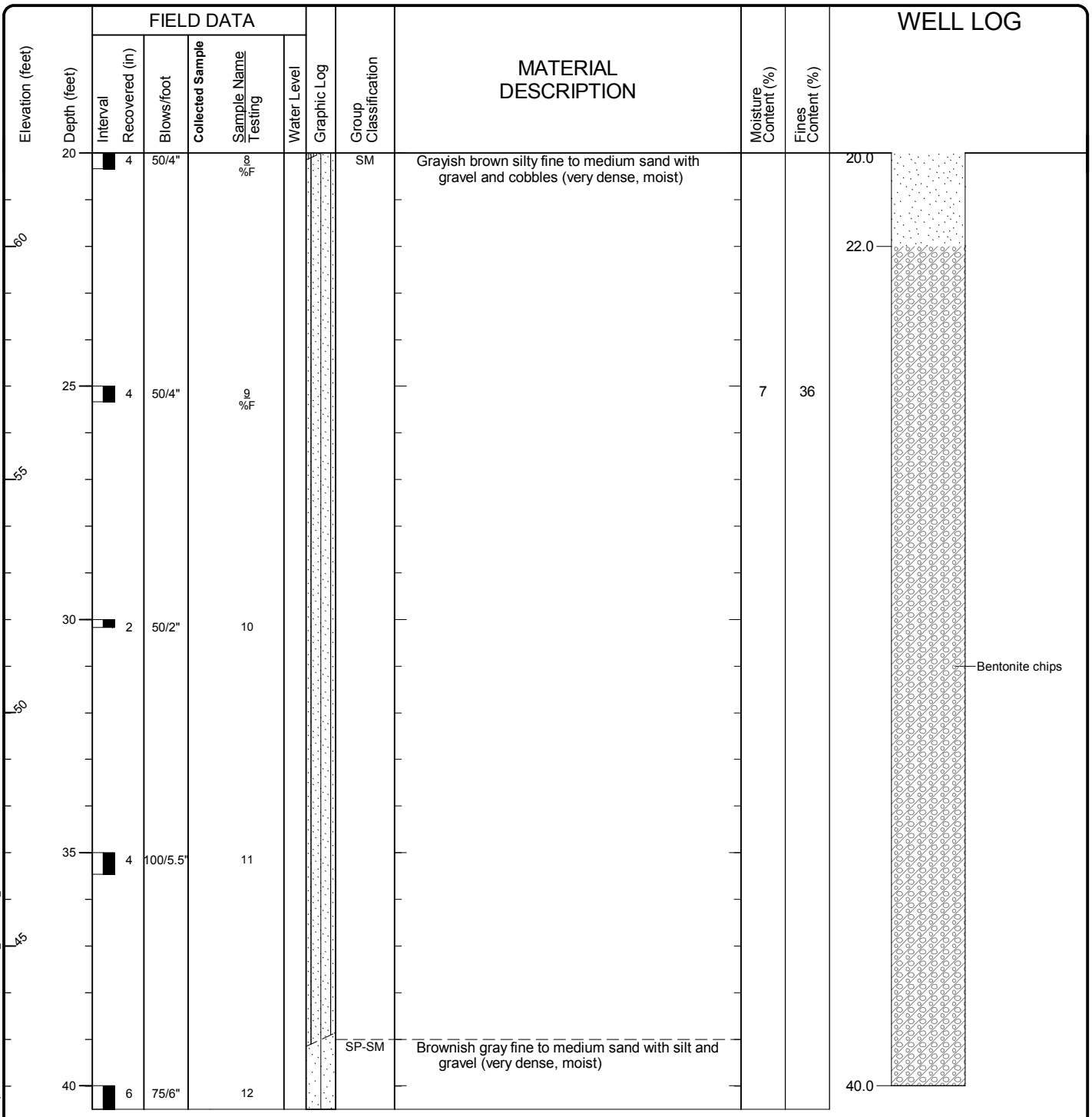
Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well GEI-2

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-4
Sheet 1 of 2



Note: See Figure A-1 for explanation of symbols.

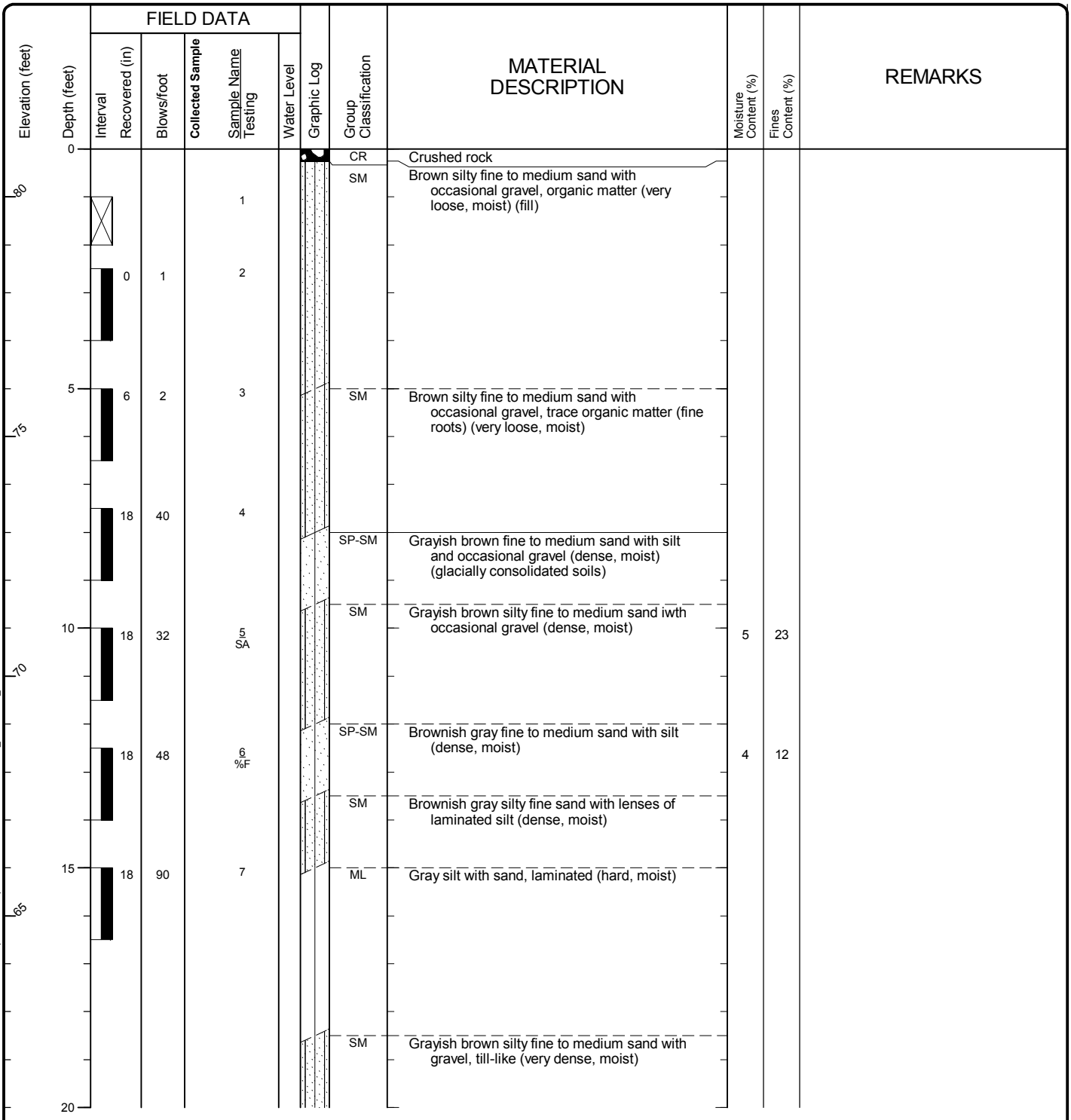
Log of Monitoring Well GEI-2 (continued)

GeoEngineers

Project:	University of Washington Life Sciences Building
Project Location:	Seattle, Washington
Project Number:	0183-096-00

Figure A-4
Sheet 2 of 2

Drilled	Start 7/30/2014	End 7/30/2014	Total Depth (ft) 40.9	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger
Surface Elevation (ft) 81 Vertical Datum NAVD88			Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment D-50	
Easting (X) Northing (Y)			System Datum		Groundwater Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:						



Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-3

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-5
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	FIELD DATA: Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
60	20	5	50/5"	8							
	25	0	50/3"	9			SM	Grayish brown silty fine to medium sand with gravel and cobbles (very dense, moist)			Rougher drilling at 25 feet
55											
	30	<1	50/2"	10							Sampler bounced on rock; poor recovery
50							SM	Grayish brown silty fine to medium sand with gravel and cobbles, silt lenses (very dense, moist)			
	35	11	50/5"	11							
45							SP-SM	Grayish brown fine sand with silt (very dense, moist)			Driller reports smoother drilling at 39 feet
	40	11	50/5"	12							

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-3 (continued)

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-5
Sheet 2 of 2

Drilled Start 7/30/2014	End 7/30/2014	Total Depth (ft) 32	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger
Hammer Data: Rope and cathead 140 (lbs) / 30 (in) Drop			Drilling Equipment: D-50		
Surface Elevation (ft): 88 Vertical Datum: NAVD88			Top of Casing Elevation (ft)		
Easting (X) Northing (Y)			Horizontal Datum		

DOE Well I.D.: BIJ 476
A 2 (in) well was installed on 7/30/2014 to a depth of 40 (ft).

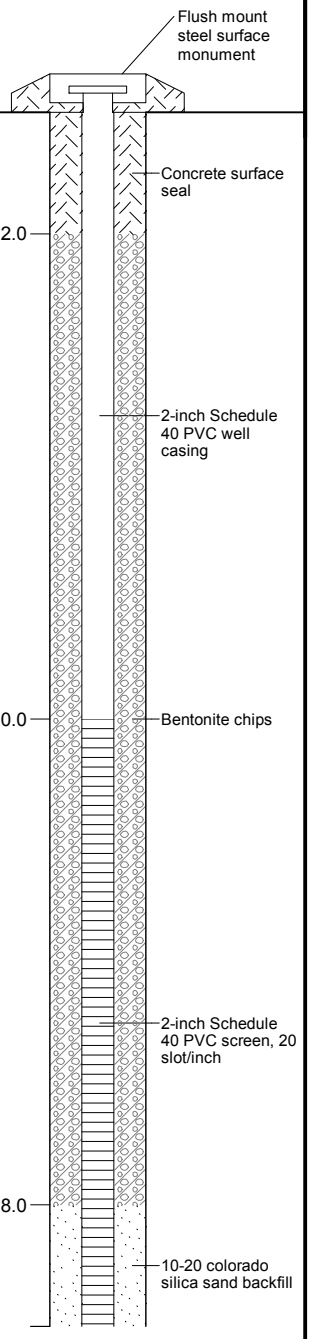
Groundwater

Date Measured	Depth to Water (ft)	Elevation (ft)

Notes:

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample: Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)
	0						TS	Brown silty fine to medium sand with occasional gravel, organic matter (roots, bark) (loose, moist) (topsoil)		
				1						
85		10	50/4"*	2			SM	Grayish brown silty fine to medium sand with occasional gravel (loose, moist) (fill) *Blow count not representative Encountered concrete and moved hole 5 feet south		
	5	15	5	3 SA			SM	Light yellowish brown silty fine to medium sand with occasional gravel, weathered (loose, moist) (glacially consolidated soils)	11	27
80		18	17	4			SM	Becomes medium dense, oxidation staining Brownish gray silty fine sand with occasional gravel (medium dense, moist)		
	10	18	39	5 SA					7	25
75							SM	Brown fine to medium sand with gravel, cobbles inferred due to poor recovery, till-like (very dense, moist)		
	15	10	50/4"	6				Driller noted water in cuttings		
70										
	20									

WELL LOG



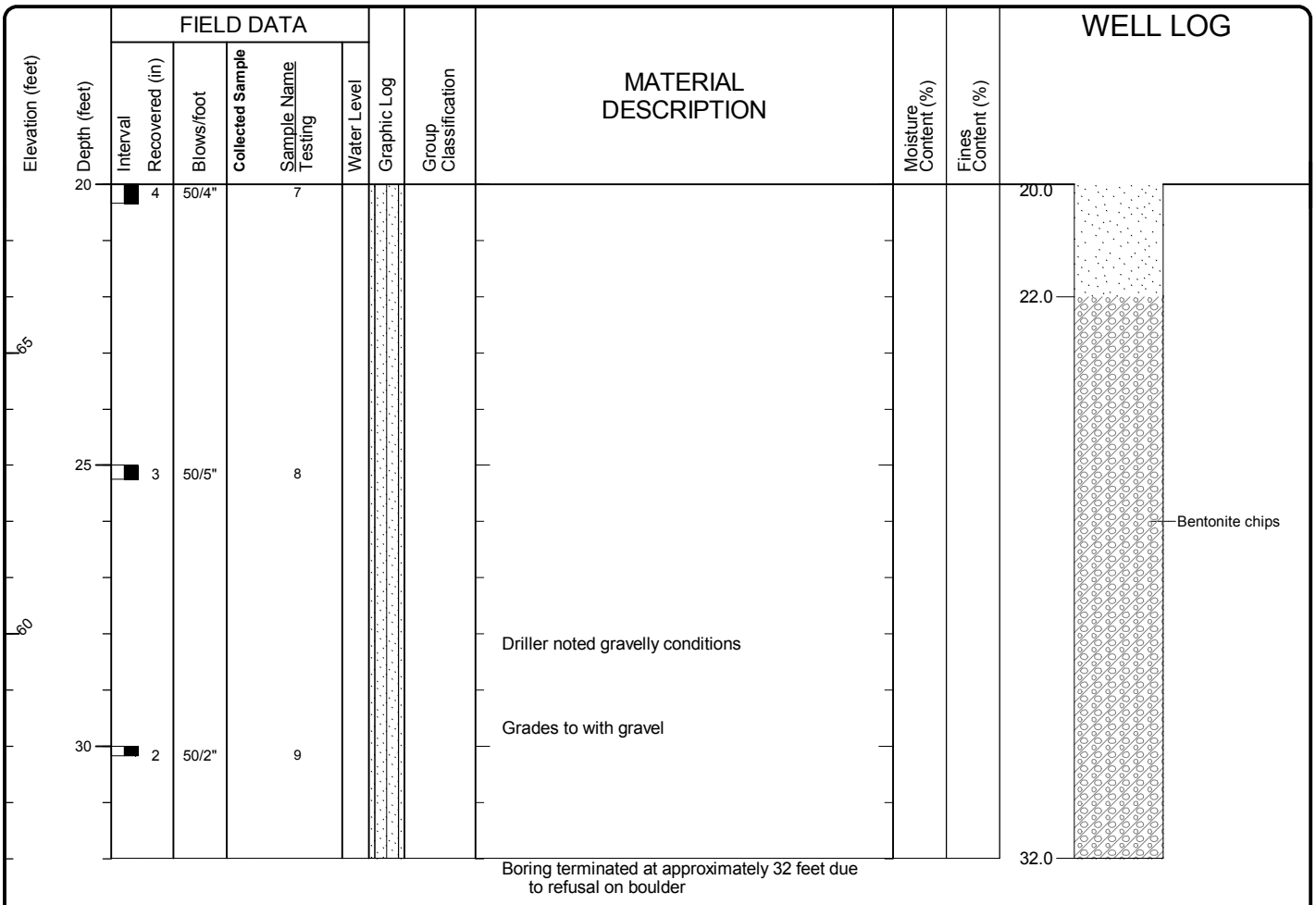
Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well GEI-4

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-6
Sheet 1 of 2



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well GEI-4 (continued)

GeoEngineers

Project:	University of Washington Life Sciences Building
Project Location:	Seattle, Washington
Project Number:	0183-096-00

Figure A-6
Sheet 2 of 2

Drilled Start 7/29/2014 End 7/29/2014	Total Depth (ft) 40.7	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger
Surface Elevation (ft) 82 Vertical Datum NAVD88		Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment D-50
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)
Notes:				

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						SM	Dark brown silty fine to medium sand, organic matter (loose, moist) (topsoil)			
80				1							
		18	25	2			SM	Light brown silty fine to medium sand with occasional gravel, trace organic matter (fine roots), oxidation staining, interbeds of silty fine sand (medium dense, moist) (glacially consolidated soils)			
	5	18	71	3 SA			SM	Brownish gray silty fine to medium sand with occasional gravel (very dense, moist)	9	20	
75		18	38	4			SM	Brownish gray silty fine to medium sand with occasional gravel, interbeds of fine sand, oxidation staining (dense, moist)			
	10	17	31	5 %F			SP-SM	Grayish brown fine to coarse sand with silt, occasional gravel, interbeds of fine sand (dense, moist)	8	10	
70							SP-SM	Grayish brown fine to medium sand with silt (medium dense, moist)			
	15	18	29	6 %F					3	11	
65											
	20										

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-5

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-7
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	FIELD DATA: Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	20	1	50/2"	7							Sampler bouncing on rock
60							SM	Gray silty fine to medium sand with gravel, silt interbeds (very dense, moist)			
	25	12	50/6"	8 %F					5	22	
55							SM	Brownish gray silty fine to medium sand with occasional gravel, silt interbeds (very dense, moist)			
	30	18	50	9							
50							SM	Brownish-gray silty fine to coarse sand with gravel (very dense, moist)			
	35		95/9"	10							
45							SM	Brownish-gray silty fine to medium sand with gravel, oxidation staining, till-like matrix (very dense, moist)			
	40	8	50/2"	11							

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-5 (continued)

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-7
Sheet 2 of 2

Drilled	Start 7/31/2014	End 7/31/2014	Total Depth (ft) 12.5	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger
Surface Elevation (ft) 86 Vertical Datum NAVD88			Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment MT-52	
Easting (X) Northing (Y)			System Datum		Groundwater Date Measured	Depth to Water (ft) Elevation (ft)
Notes:						

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
86	0			1			MULCH	Mulch (approximately 1-inch)			
							TS	Brown silty fine to medium sand with occasional gravel, organic matter (loose, moist) (topsoil)			
		10	6	2			SM	Brown silty fine to medium sand with occasional gravel, brick fragments, trace organic matter (roots) (loose, moist) (fill)			
80	5	18	14	3			SM	Orangish brown silty fine to medium sand, occasional silt lenses, oxidation staining (medium dense, moist) (glacially consolidated soils)			
		16	28	4 %F			SM	Grayish brown silty fine to medium sand (medium dense, moist)	7	15	
75	10	18	85/11"	5			SM	Grayish brown silty fine to medium sand, homogeneous (very dense, moist)			
				6			SP-SM	Grayish brown fine to medium sand with silt (moist)			
								Boring terminated at approximately 12½ feet due to refusal			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-6

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-8
Sheet 1 of 1

Drilled Start 7/30/2014 End 7/30/2014	Total Depth (ft) 40.25	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger	
Surface Elevation (ft) 85 Vertical Datum NAVD88		Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment D-50	
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						AC	Asphalt concrete (approximately 3 inches)			
				1			BC	"Ore slag" base course (approximately 8 inches)			
				2			SM	Light brown silty fine to medium sand with occasional gravel, trace organic matter (medium dense, moist) (fill)			
		18	16	3							
80	5	18	53	4 SA			SM	Grayish brown silty fine to medium sand with occasional gravel, till-like (very dense, moist) (glacially consolidated soils)	7	37	
		10	50/4"	5			SM	Grayish brown silty fine to coarse sand with gravel (very dense, moist)			
75	10	18	50/6"	6 %F					5	12	
							SM	Grayish brown silty fine to medium sand with occasional gravel (very dense, moist)			
							ML	Grayish brown silt with interbeds of fine to medium sand (hard, moist to wet)			Driller reports smoother drilling at 13 feet
70	15	18	71	7	▽						Perched water observed at 16 feet
65	20						SM	Grayish brown silty fine to medium sand with occasional gravel, till-like (very dense, moist)			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-7

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-9
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample: Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	20	4	50/4"	8							
60	25	3	50/5"	9							
55	30	0	50/6"	10				No recovery			
50	35	6	50/6"	11 %F					6	21	
45	40	3	100/3"	12				Becomes siltier			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-7 (continued)

GeoEngineers

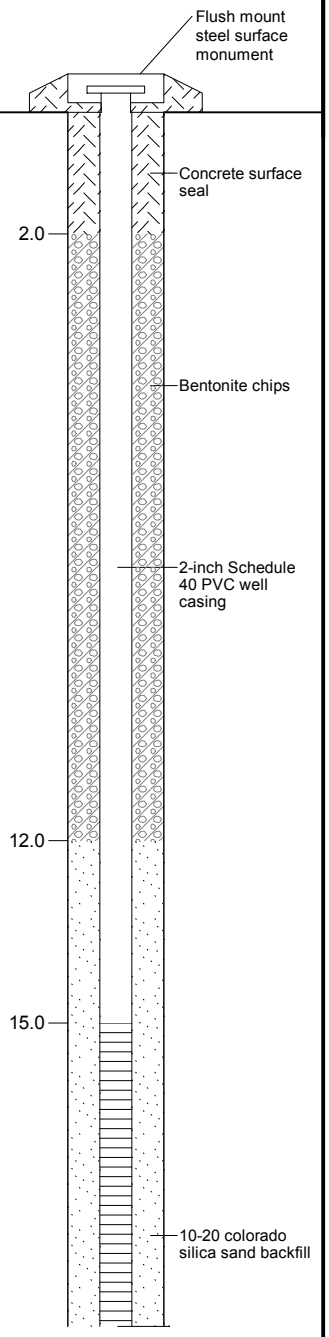
Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-9
Sheet 2 of 2

Drilled Start 7/31/2014 End 7/31/2014	Total Depth (ft) 25.5	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger	
Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment MT-52	DOE Well I.D.: BIJ 477 A 2 (in) well was installed on 7/31/2014 to a depth of 25 (ft).		
Surface Elevation (ft) 84 Vertical Datum NAVD88		Top of Casing Elevation (ft)	Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)		
Easting (X) Northing (Y)		Horizontal Datum			

Notes:

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)
	0							AC	Asphalt concrete (approximately 3 inches)		
					1			SM	Brown silty fine to medium sand with occasional gravel (dense, moist) (fill)		
		18	76		2 SA			SM	Grayish brown silty fine to coarse sand with occasional gravel, till-like (very dense, moist) (glacially consolidated soils)	7	50
80	5	4	50/4"		3				Driller added water to reduce friction and drill through cobbles		
		8	50/2"		4						
75								SM	Grayish brown silty fine to medium sand with occasional gravel (very dense, moist)		
	10	11	90/11.5"		5			ML	Grayish brown silt with interbeds of silty fine to medium sand and occasional gravel (hard, moist)		
70								SM	Brownish gray silty fine to medium sand with gravel and cobbles, till-like (very dense, moist)		
	15	4	50/4		6				Driller reports water between 11.5 and 15 feet		
									Added water		
65	20										



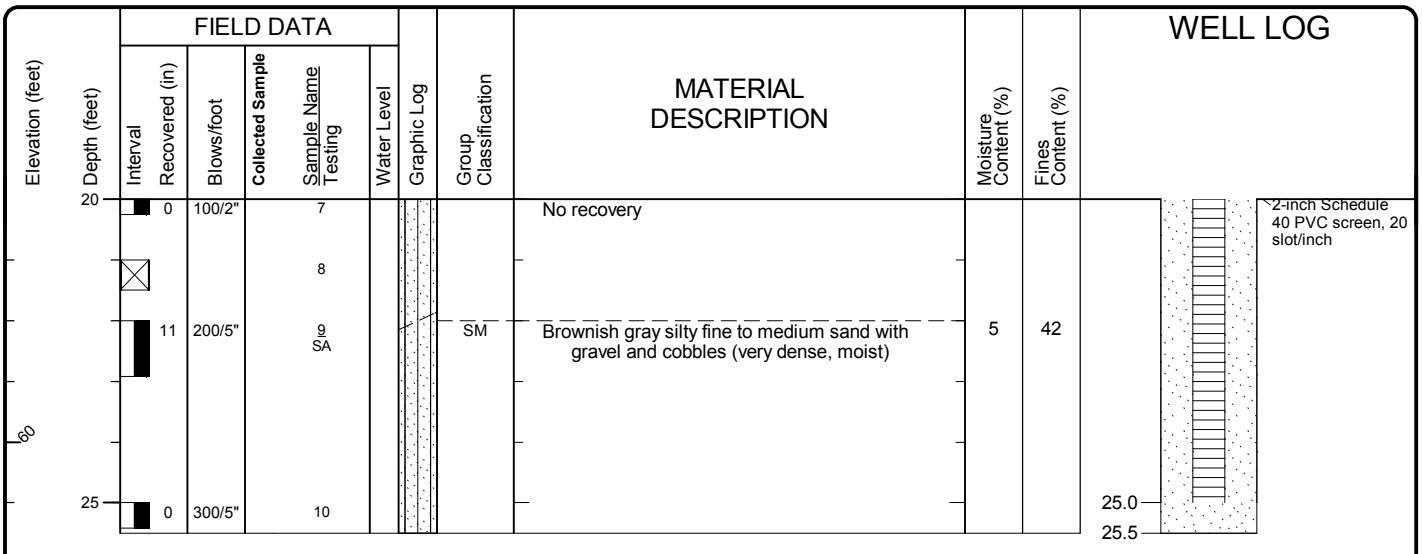
Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well GEI-8

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-10
Sheet 1 of 2



Note: See Figure A-1 for explanation of symbols.

Log of Monitoring Well GEI-8 (continued)

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-10
Sheet 2 of 2

Drilled Start 7/29/2014 End 7/29/2014	Total Depth (ft) 32	Logged By DTM/CM Checked By LCF	Driller Geologic Drill	Drilling Method Hollow-Stem Auger	
Surface Elevation (ft) 84 Vertical Datum NAVD88		Hammer Data Rope and cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment D-50	
Easting (X) Northing (Y)		System Datum		Groundwater Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						AC	Approximately 2¼ inches asphalt concrete pavement			
							CR	Approximately 4 inches subbase			
				1			SM	Brown silty fine to medium sand with gravel (loose, moist) (fill)			
		18	3	2			SM	Light brown silty fine to medium sand (loose, moist)			
80	5	18	73	3			SM	Light brown silty fine to medium sand with occasional gravel, oxidation staining (very dense, moist) (glacially consolidated soils)			
		12	50/6"	4 SA					4	24	
75	10	12	50/6"	5				Grades to brownish gray			
70	15	4	50/4"	6 %F			SM	Brownish gray silty fine to coarse sand with occasional gravel (very dense, moist)	6	33	Hard drilling starting at 15 feet
65	20										

Note: See Figure A-1 for explanation of symbols.

Redmond: Date:9/19/14 Path:C:\USERS\KJANC\DESKTOP\0183096O0.GPJ DBTemplate\LibTemplate\GEOENGINEERS8.GDT/GEI8_GEOTECH_STANDARD

Log of Boring GEI-9A

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-11
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	FIELD DATA: Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	20	0	50/0.5"	7				No recovery			Poor recovery; till-like?
60											
	25	2	50/2"	8							
55											
	30	2	100/2"	9							Hard drilling
								Boring terminated at approximately 32 feet due to refusal on boulder			

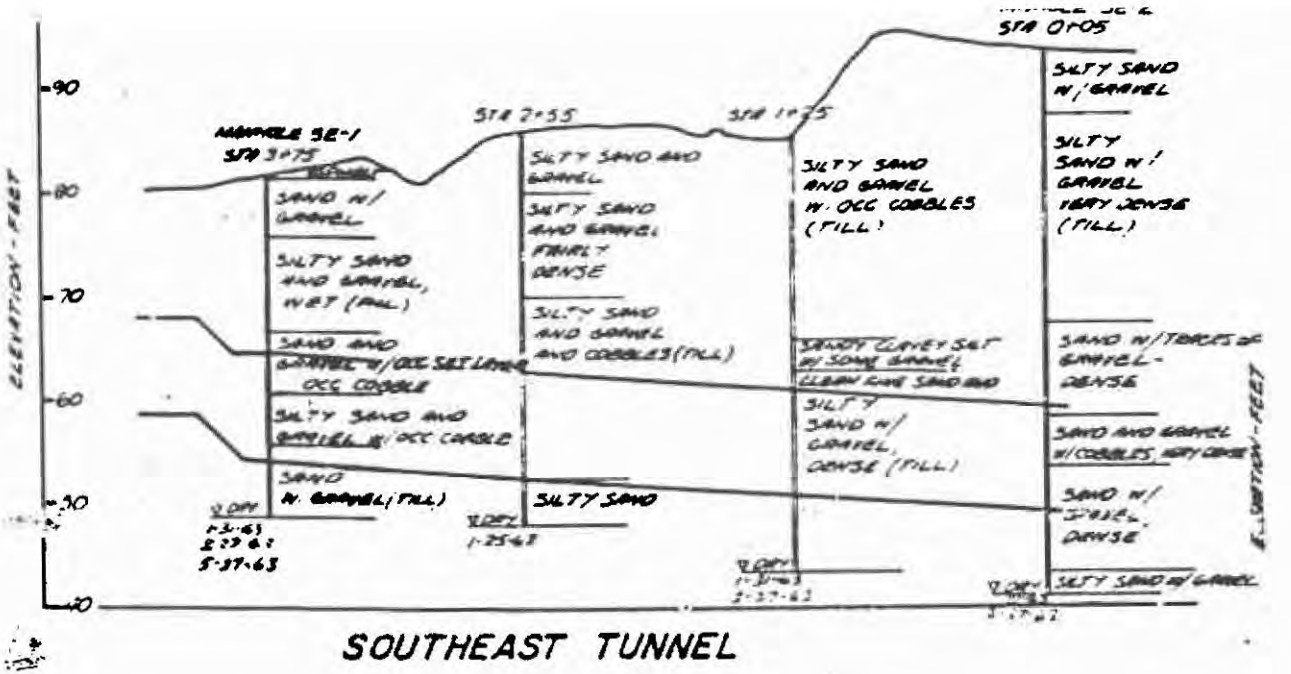
Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-9A (continued)

GeoEngineers

Project: University of Washington Life Sciences Building
Project Location: Seattle, Washington
Project Number: 0183-096-00

Figure A-11
Sheet 2 of 2



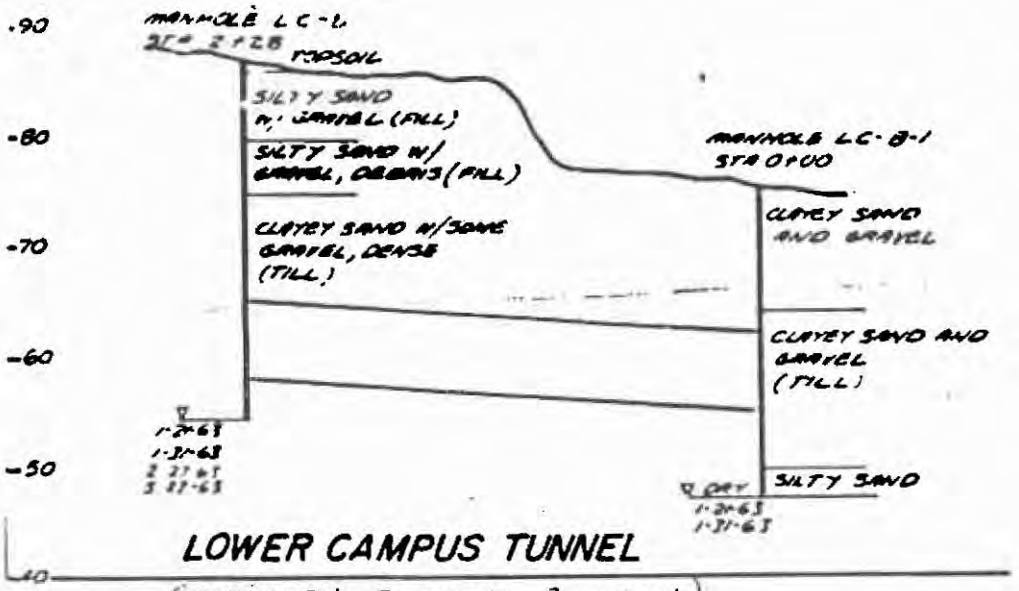
SOUTHEAST TUNNEL

LEGEND

▽ 1-31-63 — WATER LEVEL AS MEASURED AT PIEZOMETER LOCATION ON DATE INDICATED.

HORIZONTAL SCALE

0 50 100 200 300



LOWER CAMPUS TUNNEL

(FORESTRY SCIENCE BUILDING)

TABLE I SUMMARY OF TEST DATA

W-62-197
March 1963

02200 A

Boring No	Sample No.	Depth, feet	Standard Penetration Resistance, blows/ft.	Natural Water Content, percent	Atterberg Limits LL	PL	PI	Sample Classification
STA 2+55 Southeast Tunnel	S-1	22.0-22.9	>75					Gray slightly silty to silty very dense medium SAND and GRAVEL, trace of clay
	S-2	37.0-38.0	>75					Gray-brown silty very fine SAND
STA 1+25 Southeast Tunnel	S-1	17.0-17.5	>75					Gray slightly silty dense medium SAND and GRAVEL with some cobbles
	S-2	22.0-22.4	>75					Gray sandy clayey SILT with some gravel
	S-3	27.0-28.0	>75					Gray clean fine layers of silty very fine SAND
	S-4	32.0-32.6	>75					Gray clean medium SAND with layers of very fine sandy silt
	S-5	37.0-38.0	>75					Gray clean medium SAND with layers of very fine sandy silt
	S-6	42.0-42.5	>75					Gray slightly silty SAND with some gravel
STA 0+05 Southeast Tunnel	S-1	32.0-32.5	>75					Gray clean dense fine to medium SAND with some gravel
	S-2	42.0-42.5	>75					Same
	S-3	47.0-48.0	>75					Gray fairly clean dense medium SAND with occasional thin layer of silty fine sand
	S-4	52.0-52.3	>75					Gray slightly clayey silty SAND with some gravel

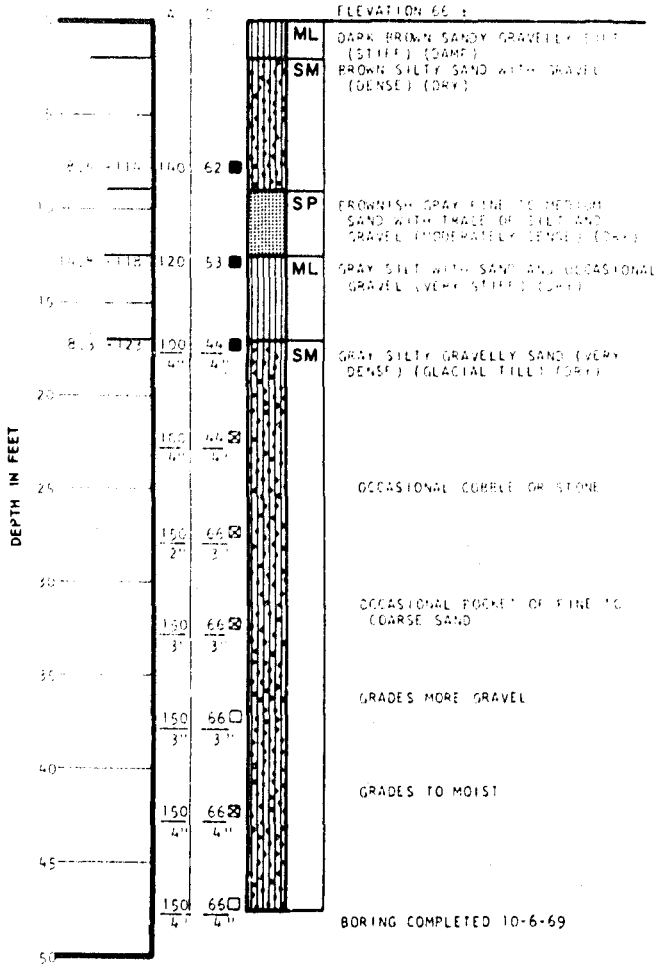
TABLE I SUMMARY OF TEST DATA

March 1963
Sheet 3 of 5

02200 B

Boring No	Sample No.	Depth, feet	Standard Penetration Resistance, blows/ft.	Natural Water Content, percent	Atterberg Limits LL	PL	PI	Sample Classification
ta 2+28 ower Campus unnel	S-1	2.0- 3.5	22					Brown silty medium SAND with some gravel (fill).
	S-2	7.0- 7.2	>75					Gray silty medium SAND with some gravel and considerable organic debris (fill)
	S-3	12.0-12.8	>75					Gray slightly clayey very dense fine to medium SAND and GRAVEL with occasional cobble
	S-4	17.0-17.5	>75					Same
	S-5	22.0-22.5	>75					Same
	S-6	32.0-32.5	>75					Same
a 0+00 ower ampus unnel	S-1	7.0- 7.8	>75					Gray clayey fine to medium SAND and GRAVEL with some cobbles
	S-2	12.0-13.0	>75					Gray slightly clayey silty medium SAND and GRAVEL with occasional cobbles (till)
a 3+75 outheast unnel	S-1	2.0- 3.5	7					Gray fairly clean silty medium SAND with some gravel
	S-2	7.0- 8.5	6					Same
	S-3	12.0-13.5	7					Gray-brown silty SAND with some gravel (fill)
	S-4	17.0-18.5	>75					Gray fairly clean dense medium SAND and GRAVEL with occasional thin clayey silt layers
	S-5	22.0-22.5	>75					Gray silty fine SAND with trace of gravel
	S-6	27.0-27.5	>75					Gray slightly silty medium SAND with some gravel
	S-7	32.0-33.0	>75					Gray clean SAND with trace of gravel

BORING 1



KEY:

COLUMN A. FIELD OBSERVED BLOW COUNTS WITH DAMES & MOORE SAMPLER USING WEIGHT = 140 LBS., STROKE = 30 INCHES.

COLUMN B. EQUIVALENT NUMBER OF BLOWS WITH STANDARD SPLIT SPOON SAMPLER PENETRATION TEST (WEIGHT = 140 LBS., STROKE = 30 INCHES.)

MOISTURE CONTENT, PCF, DRY DENSITY

■ INDICATES DEPTH AT WHICH UNDISTURBED SAMPLE WAS EXTRACTED.

⊠ INDICATES DEPTH AT WHICH DISTURBED SAMPLE WAS EXTRACTED.

□ INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY.

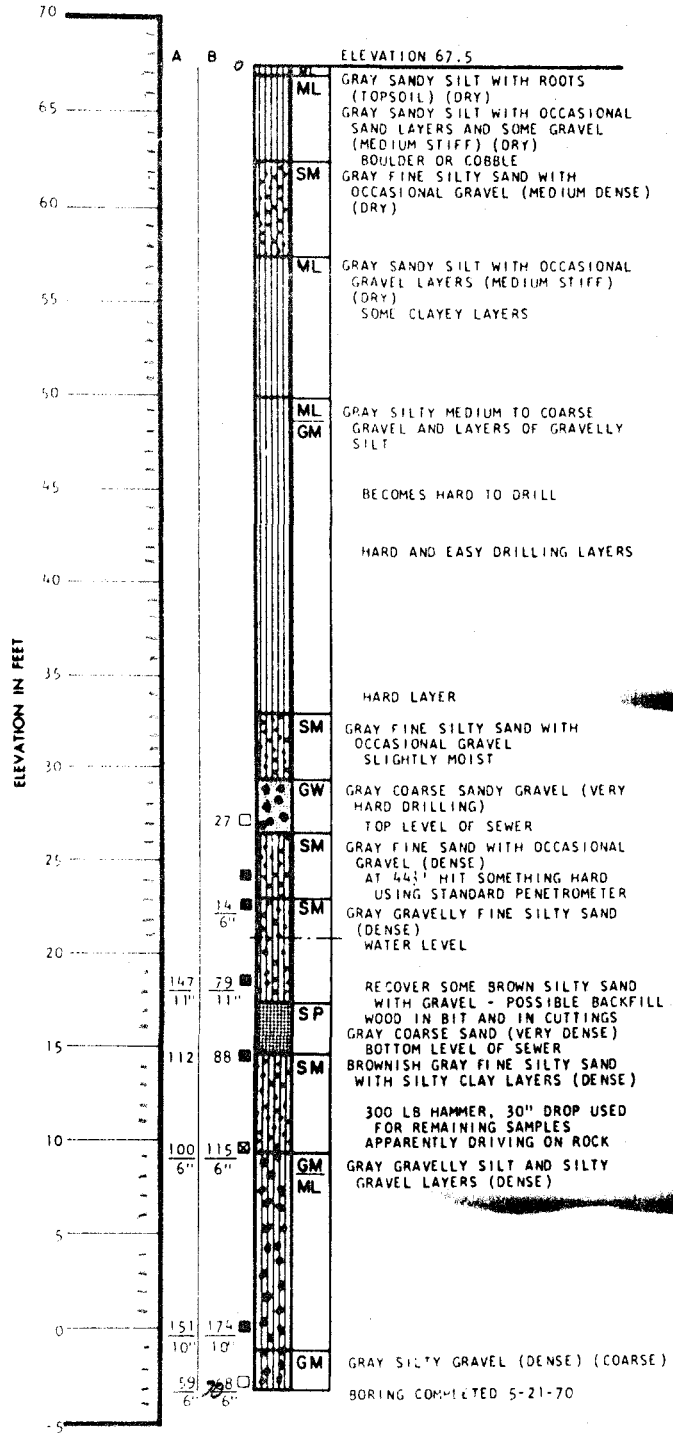
THE DISCUSSION IN THE TEXT OF THIS REPORT IS NECESSARY TO A PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.

LOG OF BORINGS

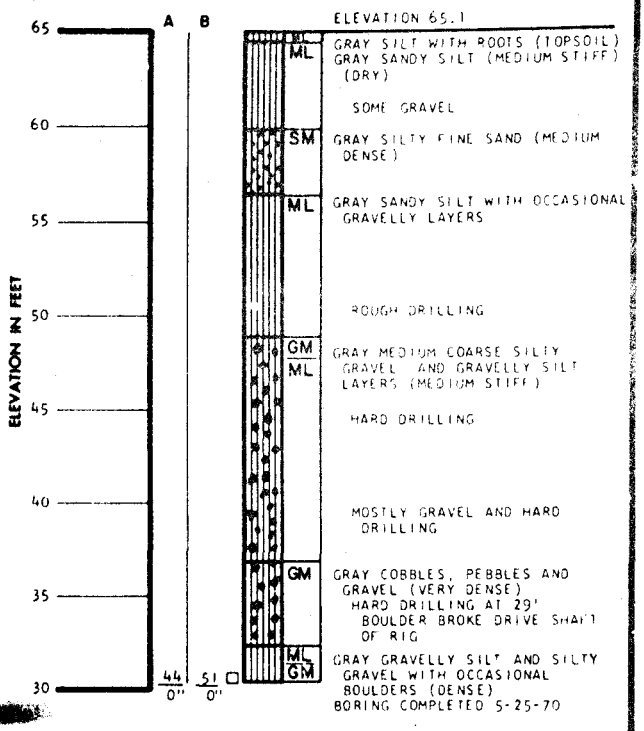
DAMES & MOORE

PLATE 2

BORING 1



BORING 2A



KEY:

COLUMN A: FIELD OBSERVED BLOW COUNT WITH DAMES & MOORE SAMPLER USING WEIGHT = 140 LBS. STROKE = 30 INCHES.

COLUMN B: EQUIVALENT NUMBER OF BLOWS WITH STANDARD SPLIT SPOON SAMPLER PENETRATION TEST (WEIGHT = 140 LBS., STROKE = 30 INCHES.

MOISTURE CONTENT →
DRY DENSITY IN PCF →

■ INDICATES DEPTH AT WHICH UNDISTURBED SAMPLE WAS EXTRACTED.

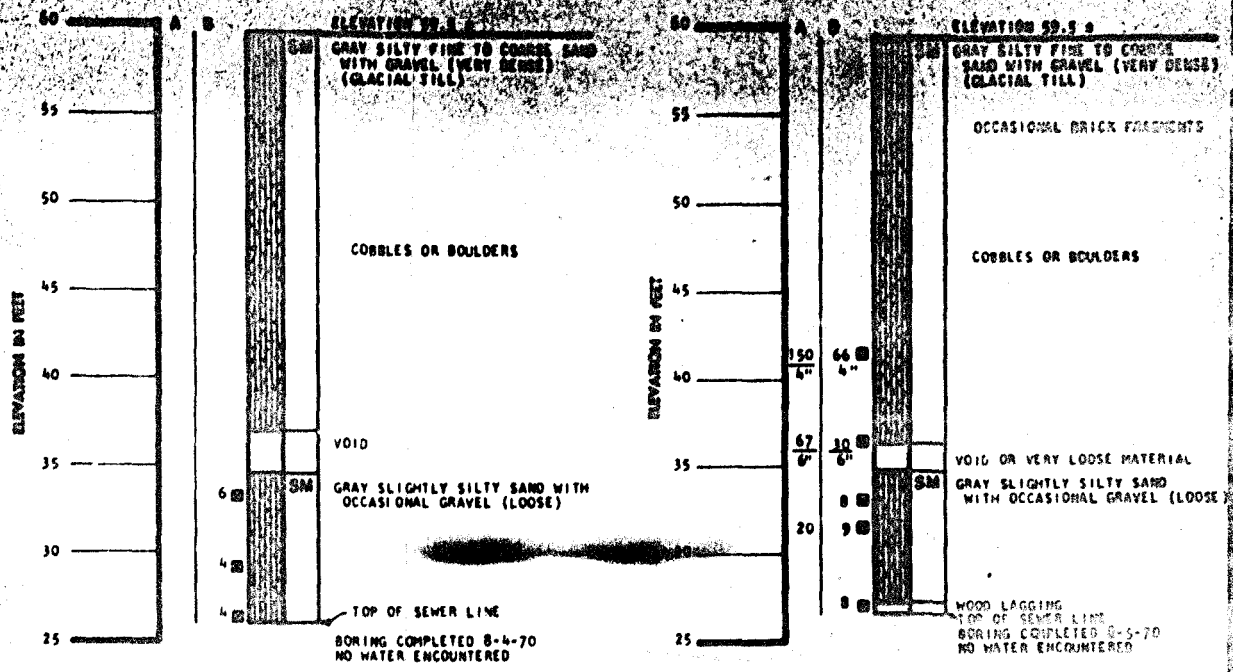
⊠ INDICATES DEPTH AT WHICH DISTURBED SAMPLE WAS EXTRACTED.

□ INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY.

THE DISCUSSION IN THE TEXT OF THIS REPORT IS NECESSARY TO A PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.

LOG OF BORINGS

DAMES & MOORE



KEY:

COLUMN A: FIELD OBSERVED BLOW COUNT WITH DAMES & MOORE SAMPLER USING WEIGHT = 140 LBS. STROKE = 30 INCHES.

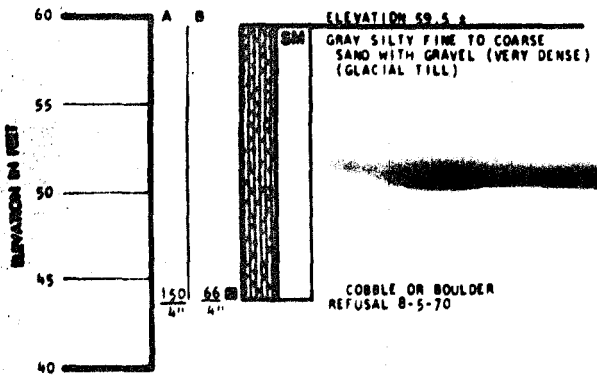
COLUMN B: EQUIVALENT NUMBER OF BLOWS WITH STANDARD SPLIT SPOON SAMPLER PENETRATION TEXT (WEIGHT = 140 LBS., STROKE = 30 INCHES.

■ INDICATES DEPTH AT WHICH UNDISTURBED SAMPLE WAS EXTRACTED.

■ INDICATES DEPTH AT WHICH DISTURBED SAMPLE WAS EXTRACTED.

THE DISCUSSION IN THE TEXT OF THIS REPORT IS NECESSARY TO A PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.

BORING 4A



LOG OF BORINGS

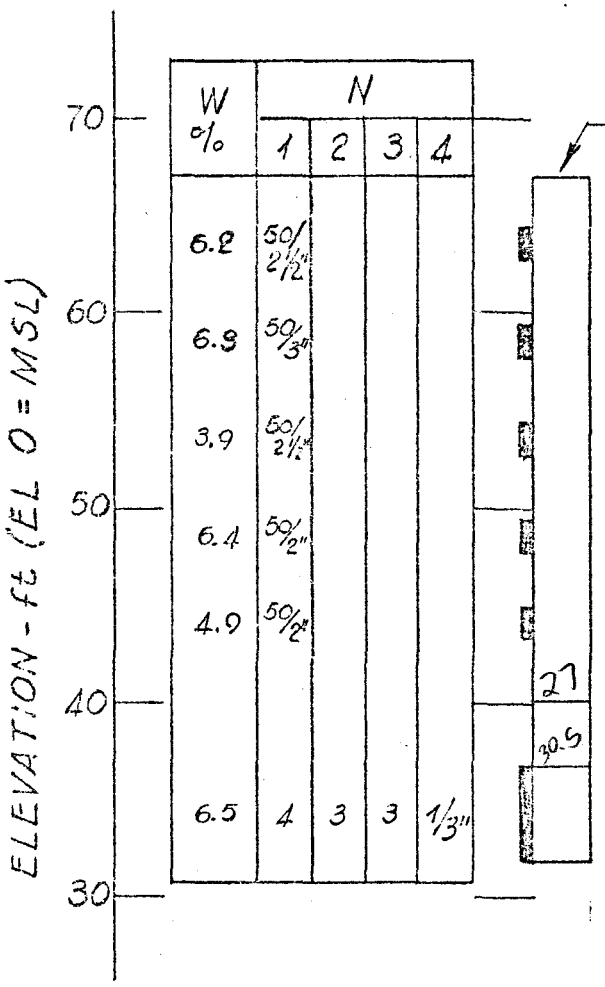
PLATE 2

CALCULATION SHEET

METROPOLITAN ENGINEERS
SEATTLE, WASHINGTON

BORING 27

ELEVATION 67.4
LOCATION STA 345+76
DATE DRILLED 6.17.74



3" ASPHALT WALKWAY

GRAY FINE-VERY FINE SAND WITH SILT AND SOME PEBBLES-(TILL ?)-VERY COMPACT.

VOID

GRAY FINE - VERY FINE SAND WITH SILTY VERY FINE SAND LAYERS, SOME PEBBLES - LOOSE

DECAYED WOOD AND SILT ABOVE SEWER

NOTE:
UPON COMPLETION BORING BACKFILLED WITH NATIVE SAND AND PEA GRAVEL. SURFACE SEALED AND PATCHED WITH READY-MIX CONCRETE AND COLD PATCH ASPHALT.

DATE	BY	JOB NO.	TITLE	PLATE
		M250D	LOG OF BORING	23

Appendix B

Bird Survey Memorandum

SHANNON & WILSON

January 17, 2024

Ms. Lara Sirois
University of Washington
University Facilities Building
Box 352205
Seattle, WA 98105

RE: AVIAN SURVEY LETTER, UNIVERSITY OF WASHINGTON ANDERSON HALL RENOVATION AND ADA PARKING LOT IMPROVEMENTS PROJECT

Dear Ms. Sirois:

This letter addresses potential impacts to avian species on the University of Washington (UW) campus, as it pertains to work being proposed on two projects. The Anderson Hall Renovation Project is located on the south side of 3715 West Stevens Way NE, Seattle, Washington 98195. The Americans with Disabilities Act (ADA) Parking Lot Improvements Project is located in multiple areas, including Lot C17, near the Wilson Annex and the the Materials Science and Engineering building, and Lot C15, located near the Bill and Melinda Gates Center for Computer Science and the Department of Mechanical Engineering building (see Figure 1). Both projects will hereby be known as the "Project." Our scope of services includes completing this summary letter, which will include recommended surveys during the 2024 nesting season, specifically for great blue heron (*Ardea Herodias*) and bald eagle (*Haliaeetus leucocephalus*) throughout the survey area, and all bird species within the Project footprint. The survey area boundaries will encompass a minimum 800-foot buffer to include both potential great blue heron and bald eagle management zones. The great blue heron is a designated species of local importance within the City of Seattle's (City's) environmentally critical areas regulations (Seattle Municipal Code [SMC] 25.09.200.C.5). The bald eagle was removed from the federal Endangered Species Act list in 2007 and from the Washington State list of special status species in 2017, and therefore no longer has explicit protection under the City's regulations. However, the species is still protected under the federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA).

The background discussion and future surveys will help evaluate actions the UW will need to take to comply with the City's regulations and other federal laws.

BACKGROUND

Project Description

The Project is made up of several discrete actions and includes renovation work at the Anderson Hall building and ADA parking lot improvements at four separate locations (see Figure 1). All the work being conducted is within the great blue heron management area designated by the City's Department of Construction & Inspections. Work at the Anderson Hall building will include mostly interior renovations; however, some exterior work will be conducted, which includes exterior building cleaning, windowpane replacement, work on the roof, paving of sidewalks and associated parking lot, and removal of trees that are too close to the building foundation. The ADA parking lot improvements at Lot C15 will include paving for two ADA stalls, paving of an ADA sidewalk ramp, and the removal and replacement of one small tree (under 3 inches in diameter at breast height); work at Lot C17 will include the paving of up to four ADA parking stalls, and no tree removal will be required. Construction is slated to begin in the Summer 2024.

Species of Consideration

In western Washington, the breeding season for the great blue heron spans a six-month period starting in early February, with courtship behavior and culminating around August when successful offspring have fledged and dispersed. Nesting colonies can range from 5 to 500 nests and are typically located in areas with large mature stands of mixed coniferous and deciduous trees in close proximity to large bodies of water. On the UW campus, there is one great blue heron management area designated by the City's Department of Planning and Community Development in conjunction with the Washington Department of Fish and Wildlife (WDFW). The management area includes two documented nesting sites and their associated year-round buffers as shown in Figure 1. The Project is located in a year-round buffer directly adjacent to a historic great blue heron nesting site.

Bald eagles create large nests in large trees, which they reuse year after year. In western Washington, they begin laying eggs from late February to early March. Eggs are then incubated for approximately 35 days until they hatch. Chicks will stay in the nest for 10 to 12 weeks, after which they will fledge. Bald eagle management areas are documented on both the north and south sides of Union Bay. There are no documented management areas within a half-mile of the Project site; however, habitat in the forested areas just north of the the Project could support nesting activity.

The general nesting season for all bird species in Washington State occurs from late January to mid-August. The length of time from nest building to fledging and the number of clutches per year varies from species to species. Many bird species create new nests each year, so it is possible to observe new nests during any given nesting season; therefore, areas where tree removal could occur should be surveyed.

Previous Avian Surveys

Shannon & Wilson biologists have conducted several avian surveys of the historic great blue heron nesting colonies on the UW campus over the last several years, the most recent of which was in 2022. Visits were conducted during the nesting season (between February and August) and observations of the nesting trees were made using both the naked eye and binoculars. All nests of appropriate size were observed for signs of activity, which included listening for sounds of adults and chicks, visual observations of the nest for any sign of movement, watching for adult movement to and from the nest, and studying areas below the nest for any sign of use (droppings, feathers, etc.). No nesting activity was ever observed or reported during these 2022 surveys.

FIELD METHODS FOR 2024 SURVEYS

The UW anticipates construction to begin in the Summer 2024. To comply with the City's critical area code, a Shannon & Wilson biologist will conduct avian surveys during the 2024 nesting season prior to the commencement of work. During the survey, areas with mature trees within approximately 800 feet of the Project area (with an emphasis on the historic great blue heron nesting colonies) will be visually observed using both the naked eye and binoculars (see Figure 1 for survey area). Any nests of appropriate size for eagle or heron will be observed for signs of activity. Observations will include listening for sounds of adults and chicks, visual observations of the nest for any sign of movement, watching for adult ingress and egress from any nests, and studying areas below any nest for any sign of use (droppings, feathers, etc.). Trees slated for removal will be observed for any sign of current or past nesting activity by any species covered under the MBTA. The locations of observed nests will be collected using a hand-held global positioning system unit and mapped. Following the survey, observations and recommendations as well as the updated survey map will be provided to the UW Project Manager.

APPLICABLE REGULATIONS

The City regulates fish and wildlife habitat conservation areas under SMC 25.09.200. Under City code, "*Development on parcels containing fish and wildlife habitat conservation areas shall*

comply with any species habitat management plan set out in a Director's Rule. The Director may establish by rule a habitat management plan to protect any species listed as endangered or threatened under the federal Endangered Species Act, any priority habitat or species identified by WDFW or any species of local importance" (SMC 25.09.200.B.2). Species of local importance currently include the great blue heron. Other species, including the bald eagle, have been covered under critical areas ordinances in the past and could be included again if they become relisted under state law as threatened or endangered.

The U.S. Fish and Wildlife Service (USFWS) is responsible for implementing and enforcing the MBTA, which makes it illegal "to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid Federal permit" (USFWS, 1918[1]). "Take" can include the knowing destruction of a nest or activities that would cause a nest to fail. Great blue herons and bald eagles are both migratory birds, as are all species of bird native to the United States.

The USFWS is also responsible for implementing the Bald and Golden Eagle Protection Act of 1940. This act is enforceable regardless of the species listing status and "provides for the protection of the bald eagle and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit" (USFWS, 1940[2]).

DISCUSSION

The results of the 2024 avian survey will be used to determine if additional requirements are necessary to comply with the applicable regulations stated above. If great blue heron activity is observed at the nesting colony or anywhere else within the survey area, the Project may have to comply with timing restrictions and mitigation sequencing outlined in SMC 25.09.065, which will require the development of a mitigation plan and maintenance and monitoring plan. Similar provisions may be required for other avian species if they become listed under state law and are included as species of local importance prior to the completion of the construction related to the Project.

[1] U.S. Fish and Wildlife Service (USFWS), 1918, The Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703 et seq.), 50 CFR 10.13.
[2] U.S. Fish and Wildlife Service (USFWS), 1940, Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), 50 CFR 22.6.

To comply with the MBTA, no trees with active nests (those with eggs or young) should be removed until those nests have been deemed inactive. However, inactive nests (unused or abandoned nests or nests currently being built but that do not have eggs or young in them) can legally be removed under the MBTA. Removing inactive nests that may become active would aid in minimizing the potential for "take" under the MBTA.

CLOSURE

The findings and conclusions documented in this letter have been prepared for specific application to this Project, and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our agreement. The conclusions presented in this letter are professional opinions based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this Project. No warranty, express or implied, is made.

If you have any questions, please contact me at merci.clinton@shanwil.com or 206-695-6715.

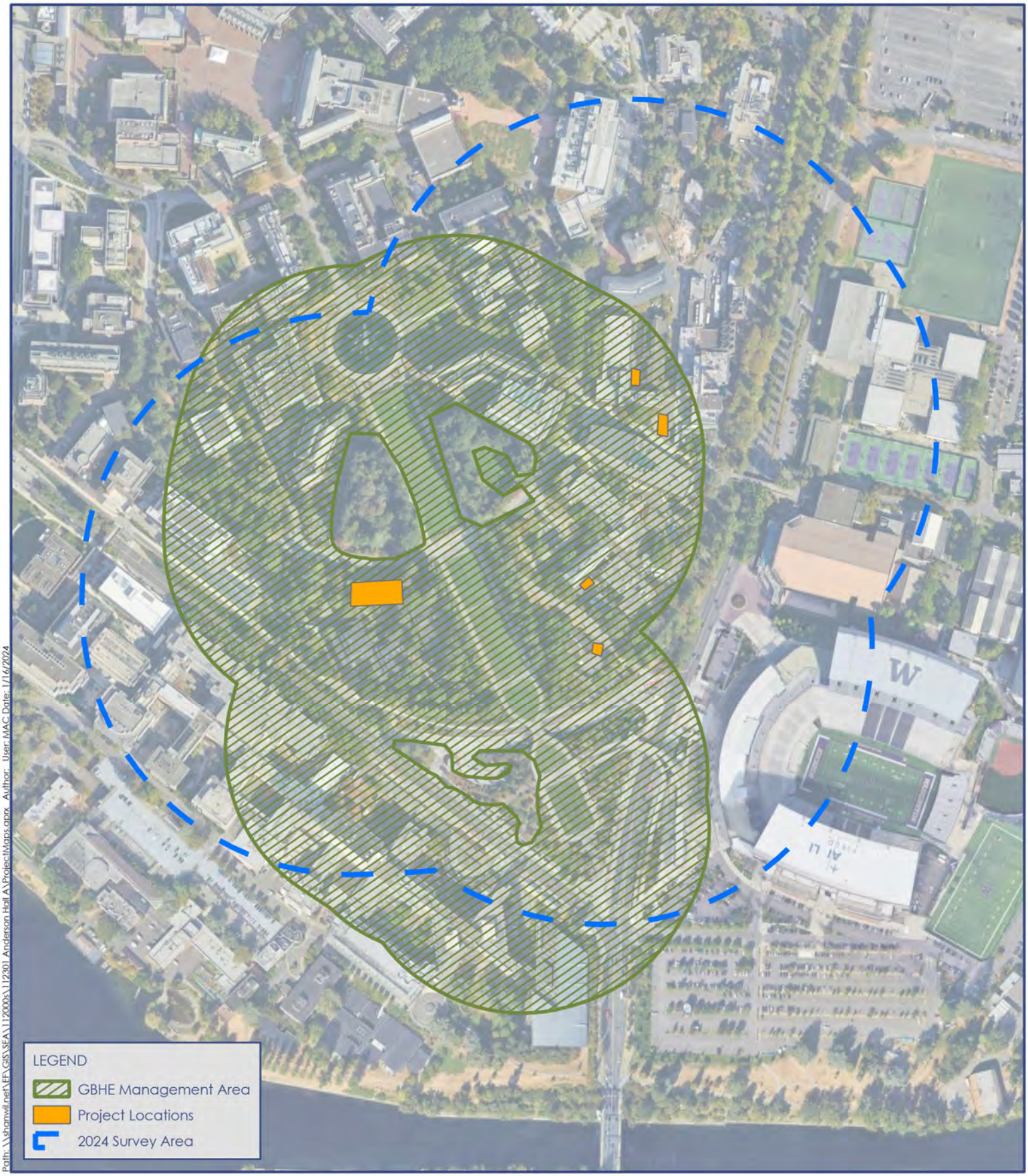
Sincerely,

SHANNON & WILSON

Merci Clinton, MSEM, PWS
Senior Biologist

MAC:KLW/mac

Enc. Figure 1 – 2024 Survey Map



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0 400 Feet

112301

Notes:
1. Great blue heron management area designated by the City of Seattle Department of Planning and Community Development in conjunction with Washington State Department of Fish and Wildlife (WDFW)
2. Surveys will be conducted during the 2024 nesting season.

N

January 2024

2024 SURVEY MAP

Figure 1

Appendix C

Hazardous Materials Report

Preliminary
Hazardous Materials Survey Report

UW Anderson Hall

UW 203203
Seattle, Washington

Prepared for:
University of Washington
Facilities - Project Delivery Group
1107 NE 45th Street
Seattle, Washington 98105

February 28, 2023
PBS Project No. 40035.968

PBS
214 EAST GALER STREET
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TABLE OF CONTENTS

1 PROJECT BACKGROUND

At Anderson Hall PBS Engineering and Environmental Inc. performed a good faith inspection of regulated materials covering asbestos-containing materials (ACMs), lead-containing paint/materials (LCP and LCM), regulated RCRA Metals, PCB-containing materials, and Silica according to the requirements of the UW Procurement Services Master Agreement for Regulated and Hazardous Materials Professional Services dated 7-20-2021.

Areas inspected were determined through communication with the UW PDG and the preliminary scope design write. It is the intent of this investigation to comply with applicable regulatory requirements for the identification of ACMs prior to renovation activities, and to identify selected other regulated materials as indicated that may exist in areas of the project to be impacted.

At the request of the UW Facilities Project Delivery Group, all accessible areas of the building in the project scope were inspected for the presence of asbestos-containing materials (ACM), lead-containing paint (LCP), polychlorinated biphenyls (PCBs), and RCRA-containing components.

Anderson Hall is a 35,900 gross square feet (GSF) four-story concrete building clad in brick and cast stone finish and the structure was constructed in 1925. Anderson Hall houses the College of the Environment and School of Forestry. Interior spaces that will be impacted by the renovation projection generally consists of office spaces, classrooms, lab spaces, lecture halls, staff break room/kitchen, and student study spaces. Interior finishes generally consist of 12" vinyl tile flooring, concrete flooring or speckled aggregate flooring. Interior wall systems generally consists of plaster walls or gypsum wallboard with lay-in ceiling tiles. The roof consists of a pitched roof/sloped gray slate roofing and a center area consisting of flat built-up roofing. The mechanical system consists of air handling units located on the top-level penthouse mechanical spaces and basement level (forced air heating system).

2 SURVEY PROCESS

Accessible areas included in the project scope were inspected by AHERA-Certified Building Inspector Mae Reilly (Cert #IN-22-0591C) and Willem Mager (Cert #IRO-23-536B) in January 2023. The survey involved non-destructive sampling. Inaccessible spaces are defined as those requiring selective demolition (such as chases), fall protection, or confined-space entry protocols to gain access. When observed, suspect asbestos-containing materials were sampled, assigned a unique identification number, and transmitted for analysis to Seattle Asbestos Test (NVLAP # 201057-0) or NVL (NVLAP #102063-0) under chain-of-custody protocols. Samples were analyzed according to EPA Method 600R-93/116 using Polarized Light Microscopy (PLM), which has a reliable limit of quantification of 1% asbestos by volume. PBS endeavors to determine the presence and estimate the condition of suspect materials in all accessible areas included in the scope of work.

Representative coatings, grout and ceramic tile from the project areas were collected by PBS and analyzed for Lead/Metals content. The samples were assigned unique identification numbers and transmitted to NVL Laboratories, Inc. (AIHA IH #101861) in Seattle, Washington under chain-of-custody protocols for analysis using Flame Atomic Absorption (FAA).

PBS collected bulk samples of caulking at representative locations of the building for PCB analysis. All samples were assigned a unique identification number and transmitted for analysis to NVL Labs in Seattle, Washington under chain-of-custody protocols. Samples were analyzed for PCB content by NVL Labs according to EPA Method 8082.

Masonry mortar is known to contain regulated metals to help prevent degradation by fungi and bacteria. PBS sampled representative masonry mortar for presence of regulated metals.

PBS reviewed limited previous inspection surveys and data obtained from the project areas as available, and pertinent information is incorporated into this report and attached. Reviewed prior surveys include:

- UW Regulated Materials Office Sampling Summary Data
- PBS Previous (completed) Project Sampling Data

3 FINDINGS

3.1 Asbestos Containing Materials

Federal and state regulations define an asbestos-containing material (ACM) per PLM analysis as any material that contains greater than 1% asbestos. ACMs are identified and summarized below table.

ACM	General Location	Quantity
Black mastic associated with 12" beige and 12" white vinyl floor tile	Rooms: 029,029A, 030A, 030, 004, 005, 006, 006A, 001M, 001Z, 010, 008, 014A 123, 123A-H, 123J, 128, 128A, 128B, 130A, 130, 116,116A,115,114,115A,107H, 107, 107B-G, 107X, 107Y, 223, 216, 216A, 214, 200K, 207A Assumed – 027,016, 123, 100A, 200A.	Approximately 26,000 SF
Brown Glue associated with 1'x1' glued on acoustic ceiling tile	Above dropped ceiling: 023, 004, 005, 006A, 006, 001M, 001Z, 123, 123A-J, 107, 107A-G, 107X, 107Y Walls: 002, 014A/B, 116	Approx. 12,800 SF
Grey sink undercoat	Room 207A	1
Off-white sink undercoat	Room 107H	1
Silver/Black Exhaust Sealants	Roof HVAC units at exhaust base pads	Approx. 100 SF
Black sealants	Center roof at roof vent unit	Approx. 100 SF
Black Built-Up Roofing	Center flat roof	Approx. 4,500 SF
	Roof gutter area and around parapet wall	Approx. 2,000 SF
Assumed Underlayment & Insulation	Under Slate roofing system of sloped/pitched roofing system	Approx. 5,000 SF
Pipe Valve Gasket	Mechanical Room & South Exterior mechanical room below ground floor	Assumed 200 gaskets
ACM Pipe fitting insulation	Throughout the building above dropped ceiling, in mechanical rooms, in the south exterior mechanical room below ground floor and in wall/ceiling cavities and chase	Approx. 800 LF of hard fitting elbows in mechanical spaces and above dropped ceiling. From 3" to 12" exterior diameter Approx. 300 LF of hard straight run pipes in mechanical spaces and

ACM	General Location	Quantity
		above dropped ceiling. From 3" to 12" diameter.
Assumed asbestos-containing mastic	Under fiberglass insulated air-handling equipment in mechanical rooms	Assumed. 800SF
Assumed asbestos containing caulking in Air Handling Units	Air Handling Units	Approx 100 SF
Assumed asbestos containing wall mastic	Throughout building behind chalk boards, mirrors, and display boards	Approx 500 SF
Assumed asbestos-containing fire doors	Exterior doors	8 doors

Advisory Notice - ACM Caution (Hidden Materials):
The possibility exists that suspect ACM may be present at concealed locations in wall and ceiling cavities, within HVAC equipment and potentially in other concealed areas and the space below and above. These may include, but are not limited to wall mastics, caulking, and sealants on HVAC equipment, construction adhesives, wiring and electrical insulators, pipe covering and insulation and vapor barriers. Stop work immediately and promptly inform the UW if suspect materials are noted.

Less Than 1% Asbestos
Historical sampling identified joint compound as a composite with gypsum wallboard assemblies containing asbestos in low concentrations (less than 1% of asbestos). PBS sampling lab results were all non-detect for asbestos. Based on previous survey data, wallboard/joint compound mud as a composite is considered less than 1% of asbestos.

Non-ACMs: The following materials were sampled by PBS and **do not contain** asbestos in detectible concentrations:

- Yellow carpet mastic
- Tan carpet mastic
- Black carpet mastic
- Gray carpet mastic
- Carpet pad
- Clear carpet mastic
- Brown sheet vinyl flooring
- 2" Yellow Ceramic Floor Tile + Grout
- 4" Yellow Ceramic Wall Tile + Grout
- 4" Black cove base and associated mastic
- 2" and 4" brown cove base and associated mastic
- 6" Tan cove base and associated mastic
- 2" and 3" grey cove base and associated mastic
- 4" Cream cove base and cream mastic
- Cementitious concrete covebase (stairs)
- Joint compound and gypsum wallboard (refer to less than1% paragraph)
- Wall Plaster
- 2'x4' fissure and pinhole lay-in ceiling tile
- 4'x1'2 splined ceiling tile
- 2'x4' random dot lay-in ceiling tile
- 2'x'4 pinhole lay-in ceiling tile
- 2'x1' fissured wall tile
- Black sink undercoat
- White sink caulk
- White toilet caulk
- White caulk at countertop
- Mortar associated with wall.

- Fireplace mortar – forest club room
- Yellow mastic is associated with polyethylene duct insulation.
- Canvas on fiberglass ductwork
- Canvas on duct work
- White cementitious fire stop (plaster)
- Gray cementitious fire stop (plaster)
- Red fire stop
- Interior window frame caulk
- Gray window glazing
- Speckled aggregate flooring.
- 1"x1" white/speckled ceramic floor tile
- Concrete flooring
- Black door caulk
- Gray rough opening caulk
- Black window glaze
- Brick and mortar
- Red clay tile
- Terracotta mortar
- Roof gray slate

For materials sampled, locations and laboratory results, refer to Appendix A.

3.2 Lead-Containing Paint (LCP) and Lead-Containing Material (LCM)

Representative painted coatings and suspect lead containing materials were sampled. The samples were assigned unique identification numbers and transmitted to NVL Laboratories, Inc. (AIHA lH #101861) in Seattle, Washington under chain-of-custody protocols for analysis using Flame Atomic Absorption (FAA).

Lead-Containing Paint/Coating: The following painted coatings were sampled and were analyzed to be lead-containing:

- Gray paint on 4" cove base – throughout building
- Yellow paint on plaster – throughout building
- Gray paint on plaster – throughout building
- White paint on plaster/concrete balcony – room 207
- Brown paint on plaster- throughout building
- Brown paint on ceiling level wood - room 207 loft
- White paint on plaster – throughout building
- Blue paint on plaster – throughout building
- Gray paint on plaster – throughout building
- Off-white/gray paint on plaster – throughout building
- Gray paint on metal – air duct units
- Brown paint on metal – stair 3 railings
- White on wood cove base – throughout building
- Gray/brown paint on metal railing – south side exterior window frame paint
- Gray paint on exterior wood shed
- Brown paint on metal railing – south side exterior railing

The following painted coatings were sampled and determined **not** to contain detectable lead:

- White paint on gypsum wallboard
- Gray paint on gypsum wallboard

Based on test results, all paint contained lead.

For locations and results of paint sampling see Appendix B.

3.3 Mercury-Containing Components

Compact fluorescent light tubes and compact fluorescent lights (CFL) are present throughout the building. All light tubes and CFL within the areas of work are presumed to contain mercury vapors in small concentrations.

PBS observed approximately 6 suspect mercury containing thermostats per floor level.

3.4 RCRA Metals Containing Materials

Masonry mortar is known to contain regulated metals to help prevent degradation by fungi and bacteria. PBS sampled representative masonry mortar for presence of regulated metals as part of managing the solid waste and personnel exposure during construction work. PBS tested suspect representative masonry components for the presence of Arsenic, Barium, Chromium, and Lead. Suspect materials were sampled, assigned unique identification numbers, and delivered to NVL Labs for analysis. The samples were analyzed by NVL Labs per EPA 6010.

Sample Number	Material	Location	Result
40035.968-RCRA01	Mortar associated with terracotta wall	Stair 1 Level 3	Barium 3,500 Parts Per Million (PPM)
40035.968-RCRA02	Mortar	Fourth floor mechanical space	Barium 20 PPM
40035.968-RCRA 03	Exterior terracotta mortar	Exterior north building side	Barium 56 PPM
40035.968-RCRA04	Exterior brick mortar	Exterior Southwest building side	Barium 550 PPM Lead 94 PPM

- **Barium and Lead** were detected in the exterior and interior mortar/grout samples collected. All regulated metals-related construction activities must be performed in accordance with airborne contaminants WAC 296-841.

3.5 PCB-Containing Components

PBS inspected representative fluorescent light fixture ballasts that are to be removed to facilitate the remodel. Representative Fluorescent light fixtures throughout the building were inspected and found to contain electronic ballasts. Electronic ballasts do not contain suspect PCB oils. Based on completed remodel projects at the UW, PBS assumes the presence of older magnetic ballasts with PCB containing compounds at Anderson Hall.

PCB Caulking/Sealants: PBS collected bulk samples of caulking at representative locations of the building. All samples were assigned a unique identification number and transmitted for analysis to NVL Labs in Seattle, Washington under chain-of-custody protocols. Samples were analyzed for PCB content by NVL Labs according to EPA Method 8082. See attached sample inventory, laboratory data, and chain of custody documentation for sample locations and results.

Sample Number	Material	Location	Result
40035.968-Pcb01	Window Frame Caulk	Room 304 South Window	<4.0 mg/Kg
40035.968-Pcb02	Exterior black door caulk	Exterior South Side – West elevation	64,000 mg/Kg
40035.968-Pcb03	Grey rough opening caulk	West Exterior	7.5 mg/Kg
40035.968-Pcb04	Black window glaze/gasket	West Exterior	18000 mg/Kg

Sample Number	Material	Location	Result
40035.968-Pcb05	White/grey rough opening window caulk	South exterior	13 mg/Kg
40035.968-Pcb06	Black door caulk	Exterior south side – east elevation	38,000 mg/Kg

3.6 Silica-Containing Materials

Certain building materials, including but not limited to concrete panels, plaster walls/ceilings, wall blocks, mortar, ceiling tiles and gypsum walls may contain silica. PBS performed visual observations for silica-containing materials. Based on the field observations and the scope of work, the following materials are assumed to contain silica:

- Exterior clay and terracotta blocks
- Mortar and grout associated with exterior clay and terracotta blocks
- Concrete ceiling, floor deck and CMU walls
- Wallboard system (with joint compound mud/tape)
- Plaster walls

4 RECOMMENDATIONS

4.1 Asbestos-Containing Materials (ACM)

ACM and presumed ACM were identified at Anderson Hall.

PBS recommends that ACMs and presumed ACMs that may be impacted by the planned upgrades and be removed prior to construction activities, or impacted, only by a qualified Washington State licensed asbestos abatement contractor according to applicable local, state and federal regulations (not limited to WAC 296-62-077). A qualified Washington State licensed asbestos abatement contractor should be employed to manage, handle, and remove all such ACMs according to applicable local, state and federal regulations.

These state and federal regulations include, but not limited to Washington State Labor and Industries' WAC 296-62, 296-65, Puget Sound Clean Air Agency rules, AHERA 40 CFR 763, OSHA 29 CFR and US EPA NESHAP 40- CFR Part 61.

Advisory Notice - ACM Caution (Hidden Materials). In the event that suspect ACMs is uncovered during construction, contractors should stop work immediately and inform the Owner promptly for confirmation testing. All untested materials should be presumed asbestos-containing or tested for asbestos content prior to impact. As well precautionary measures should always be exercised during selective demolition to prevent impact of suspect-ACMs. Any suspect ACMs that may be encountered should be considered asbestos-containing until properly sampled by an AHERA-Certified Building Inspector.

If ACMs are found or identified during construction, PBS recommends that ACMs that may be impacted by the planned upgrades and be removed prior to construction activities, or impacted, only by a qualified Washington State licensed asbestos abatement contractor according to applicable local, state and federal regulations (not limited to WAC 296-62-077). A qualified Washington State licensed asbestos abatement contractor should be employed to manage, handle, and remove all such ACMs according to applicable local, state and federal regulations. These state and federal regulations include, but not limited to Washington State Labor and Industries' WAC 296-62, 296-65, local clean Air Pollution Agency rules, AHERA 40 CFR 763, OSHA 29 CFR and US EPA NESHAP 40- CFR Part 61.

Less than 1% of Asbestos per WRD 23.30: Gypsum wallboard and joint compound analyzed as a composite at less 1% asbestos. Current regulations do not consider these materials to be regulated materials (<1% asbestos content). However, current asbestos regulations require various employee/worker compliance (for all trades) during impact of less <1% asbestos materials, which include and not limited to asbestos training, initial worker exposure monitoring, worker personal protective equipment and respirator (PPE), engineering controls (such as the use of wet methods and HEPA vacuums for debris cleanup) and supervision by an asbestos "competent person".

4.2 Lead-Containing Paint (LCP)

Representative painted coatings and mortar from the project locations were found to contain lead by laboratory analysis.

Painted coatings may exist in inaccessible areas of the work area or in secondary coatings. Any previously unidentified painted coatings should be considered lead-containing until sampled and proven otherwise. Dust control and housekeeping is crucial in preventing worker and occupant exposure.

Impact of painted surfaces with detectable concentrations of Lead requires construction activities to be performed according to Washington Labor and Industries regulations for Lead in Construction (WAC 296-155-176). Workers impacting LCP should be Lead/Metals-trained, provided the proper personal protective equipment and use proper work methods to limit occupational and environmental exposure to lead until an initial exposure assessment has been conducted.

Disposal of components that contain lead and other regulated metals must be performed in accordance with 40 CFR Part 261 and WAC 173-303 (example, debris profile test such as Toxicity Characteristic Leaching Procedure for classifying materials for disposal options).

4.3 Regulated Metals in Masonry Components

Representative masonry mortar from the project site was found to contain regulated metals (Barium and Lead) by laboratory analysis.

Impact of mortar with detectable concentrations of regulated metals requires construction activities to be performed according to Washington Labor and Industries regulations (WAC 296-155).

Workers impacting regulated metals should be Lead/Metals trained, provided the proper personal protective equipment and use proper work methods to limit occupational and environmental exposures until an initial exposure assessment has been conducted. Additionally, this may include development and implementation of a metals-compliance plan, control of wastewater discharge/capture, and waste stream characterization. Disposal of components that contain lead and other regulated metals must be performed in accordance with 40 CFR Part 261 and WAC 173-303 (debris profile test such as Toxicity Characteristic Leaching Procedure for classifying materials for disposal options).

4.4 Mercury-Containing Components

All compact fluorescent lights (bulbs and tubes) and thermostats (liquid-filled) are presumed to be mercury-containing.

Mercury is known to be toxic and requires special handling and proper disposal, ideally through recycling and per Metals regulations (refer to above Metals section) for disposal. PBS recommends that thermostats,

fluorescent light tubes and compact lights be properly handled, managed, and recycled in accordance with applicable regulations and the Owner's policy during demolition/renovation activities.

4.5 PCB-Containing Components

PBS recommends all light ballasts be inspected prior to disposal. Magnetic ballasts should be presumed to contain PCBs and properly removed, stored, transported and disposed of in accordance with Washington Administrative Code (WAC) 173-303 Dangerous Waste Regulations and 40 CFR Part 761 Subpart D.

Electronic ballasts do not contain PCB's and can be disposed of as general debris in compliance with applicable codes and endpoint facility requirements.

PCB Caulking/Sealants:
PBS recommends the contractor address worker protection and provide proper handling, management, removal including selective removal of wall assemblies of rough opening (typically 3/8 inches), including waste segregation, and disposal of PCB-containing products. Caulking/sealants containing above 10 ppm of PCBs per regulation must be treated as hazardous/dangerous waste and be managed and disposed of in accordance with applicable regulations and Owner's disposal protocols and work practices. The removal and disposal of PCB-containing caulking or PCB bulk waste should be completed in accordance with federal, state and local regulations including WAC 173-303 and 40 CFR Part 761 Subpart D.

4.6 Silica-Containing Materials

Suspect silica-containing materials are assumed in Anderson Hall.

Construction activities including, but not limited to, chipping, sawing and jack hammering require control of potentially airborne silica dust. Impact of these building materials with detectable concentrations of silica should be performed according to Washington Labor and Industries regulations for Silica in Construction (WAC 296-840 and 296-841 - Airborne Contaminants). Workers impacting these building materials should be crystalline Silica trained, provided the proper personal protective equipment and use proper work methods and engineering controls to limit occupational and environmental exposure to silica until an initial exposure assessment has been conducted.

5 LIMITATIONS

Suspect materials (regulated lead-containing paint or asbestos) may exist in inaccessible areas at the project site, such as in ceiling/wall cavities and in interstitial spaces. PBS endeavors to determine the presence and estimate the condition of suspect materials in all accessible areas included in the scope of work. In the event suspect materials are uncovered during construction, contractor should contact immediately the UW and PBS for associated asbestos or other regulated hazardous materials confirmation testing.

Report prepared by:
PBS Engineering and Environmental Inc.

Prepared by:
Mae Reilly
AHERA Building Inspector
Cert. No. IN-22-0591C Exp. 7/13/2023

Reviewed By:
Willem Mager
Sr. Project Manager, AHERA Building Inspector
Cert. #IR-23-0536B, Exp. 1/19/2024

APPENDIX A

Photo Documentation & Sample Location Figures

Photo 1: 12”x12” beige floor tile with ACM black mastic in room 223. Beige 12” tile and black ACM mastic throughout the ground, first and second floor.

Photo 2: 12”x12” white/off-white and beige floor tile with ACM black mastic in ground floor hallway. Beige and white/off-white 12” tile and black ACM mastic throughout the ground, first and second floor. Assumed less than 1% of asbestos (wallboard/drywall and joint compound composite)

Photo 3: 12” tile with black ACM mastic underneath carpet. Beige and white/off-white 12” tile and black ACM mastic throughout the ground, first and second floor.

Photo 4: ACM glue dots above dropped ceiling in room 023 associated with 12”x12” glued on ACT.

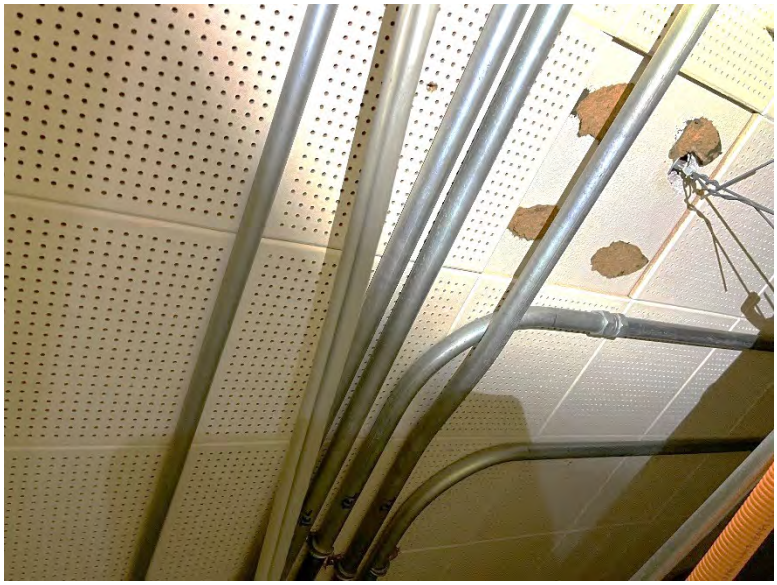


Photo 5: Non ACM 12”x12” glued on ACT above dropped ceiling in room 123. ACM glue dots.

Photo 6: ACM hard fittings and elbows above dropped ceiling throughout bulding.

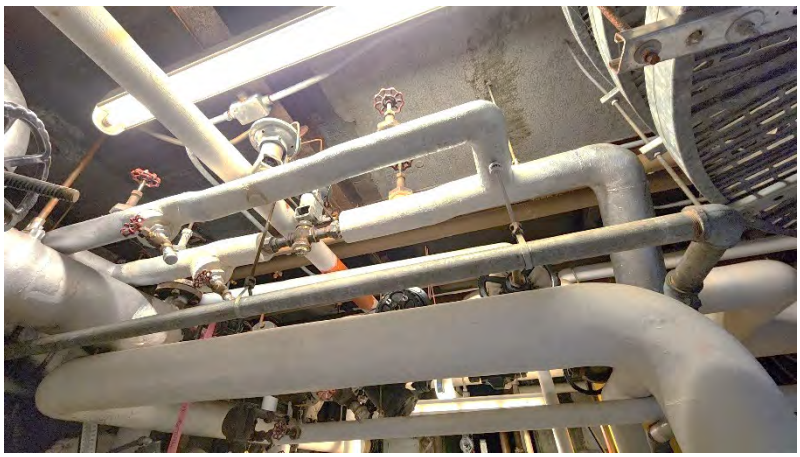


Photo 7: ACM hard fittings and straigh runs present in basement mechanical room accessed from south exterior side of building.

Photo 8: Off-white ACM sink undercoat room 107H.

Photo 9: PCB containing grey rough opening caulk at windows. Barium and lead containing brick and mortar.

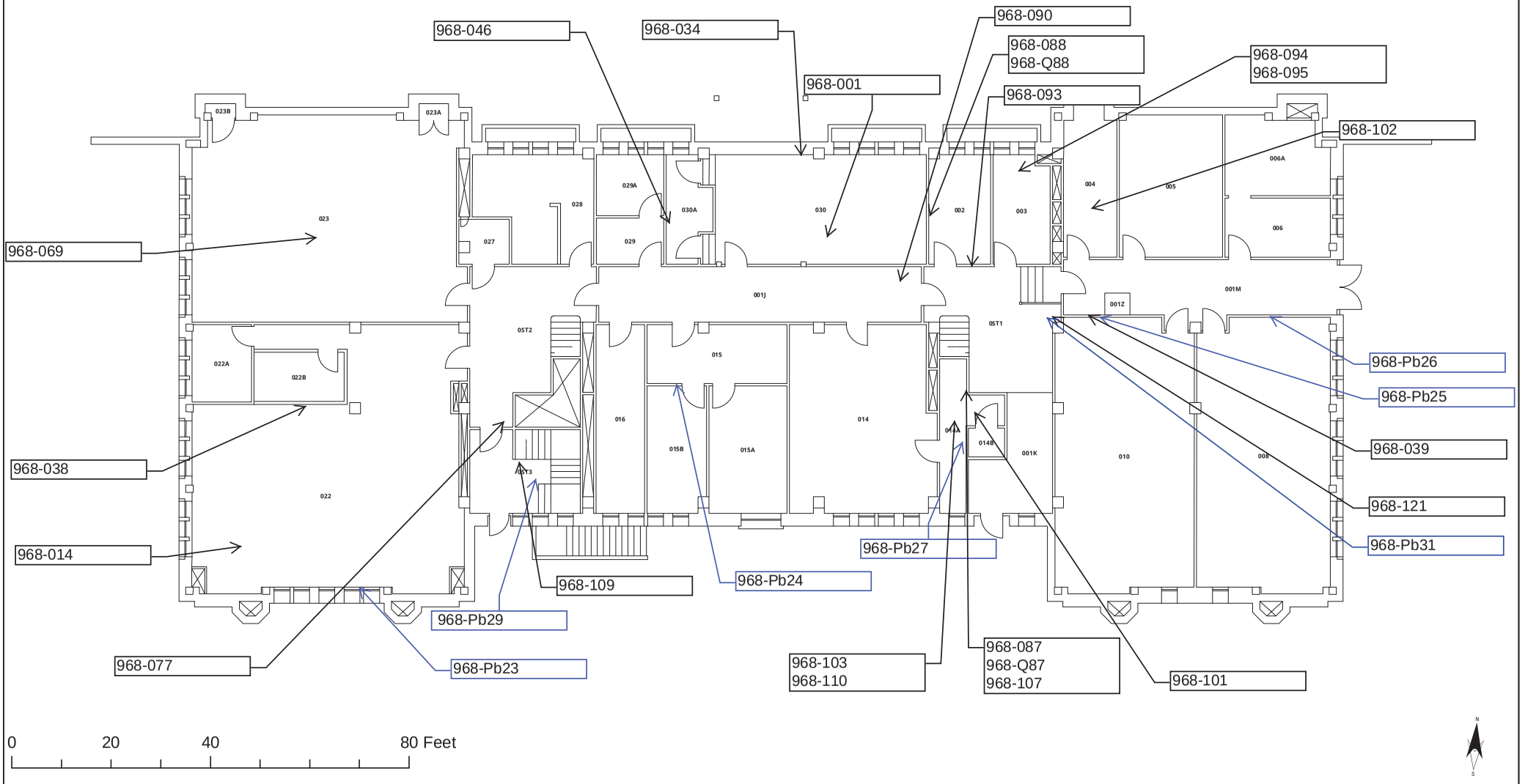
Photo 10: ACM containing silver and black exhaust sealant. ACM bulit up roofing.

Photo 11: ACM black roof patch, ACM built up roofing.

Photo 12: ACM built up roofing around the roof gutter area and parapet wall.

Assumed ACM underlayment underneath Slate roof tiles.

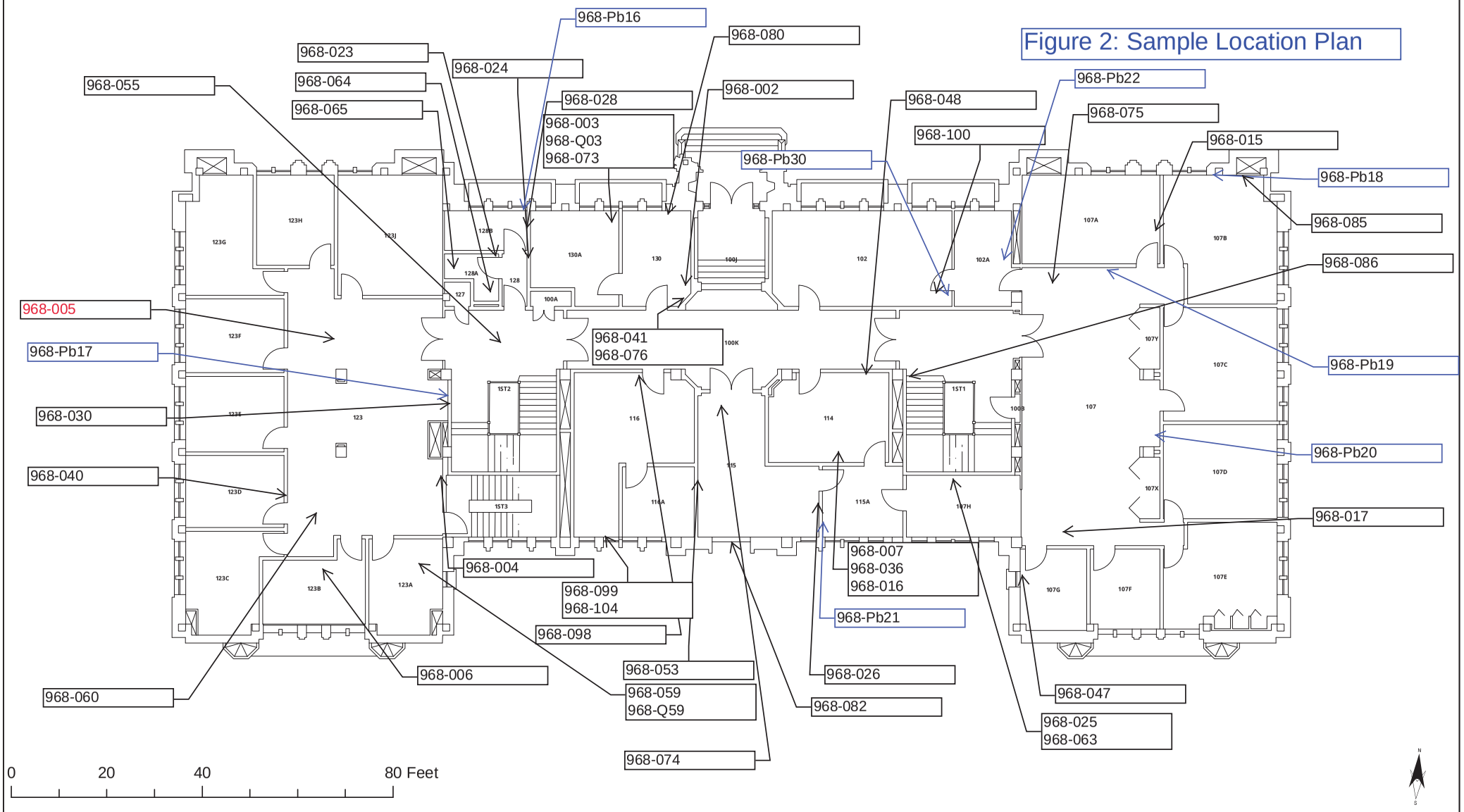
Figure 1: Sample Location Plan



UNIVERSITY of WASHINGTON

Basic Architectural Floorplans

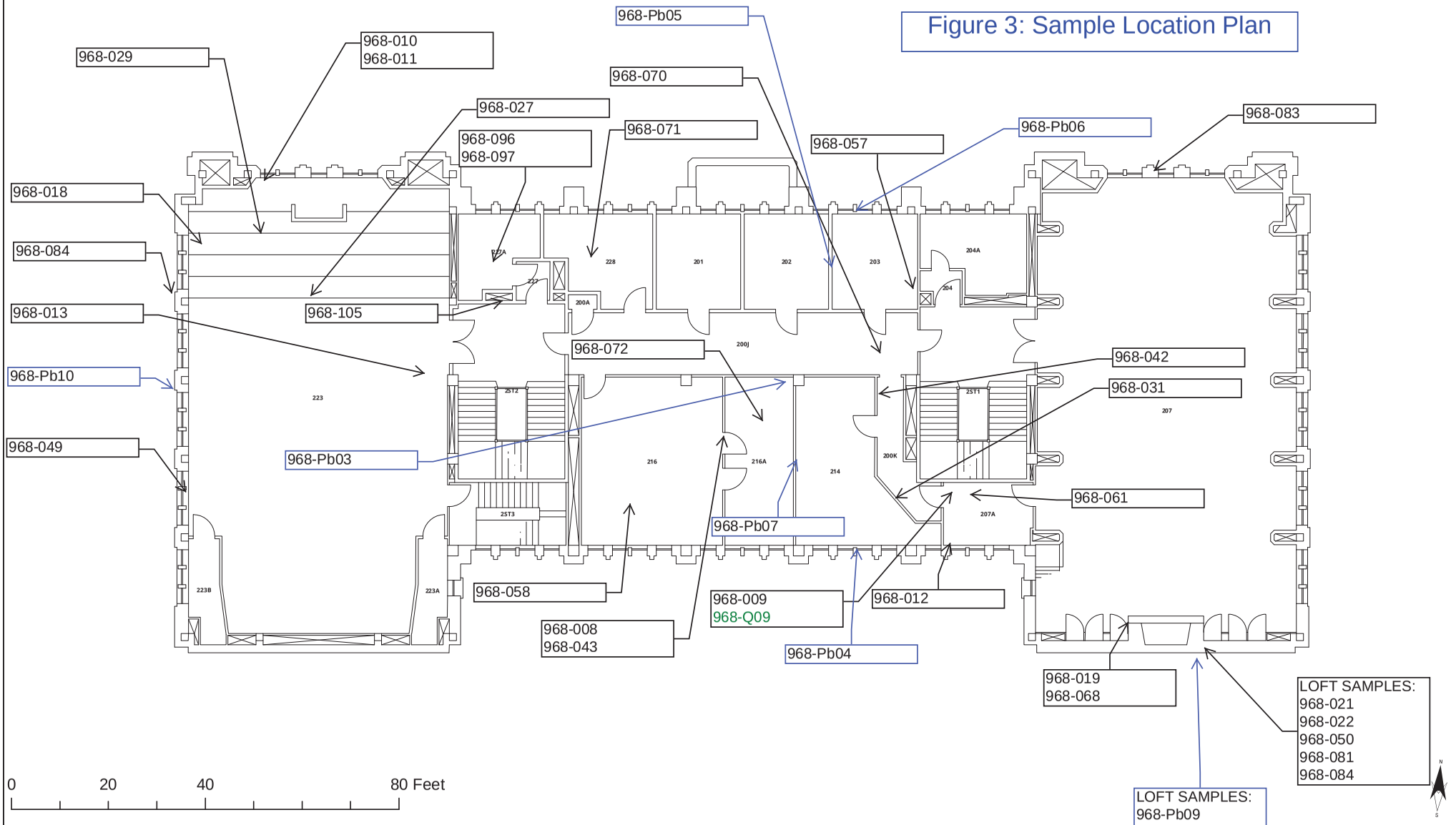
Figure 2: Sample Location Plan



MAPS
Mapping Assets, Properties, and Spaces

Anderson Hall
1st Floor
FloorID: 1351_01
Printed On: 12/8/2022

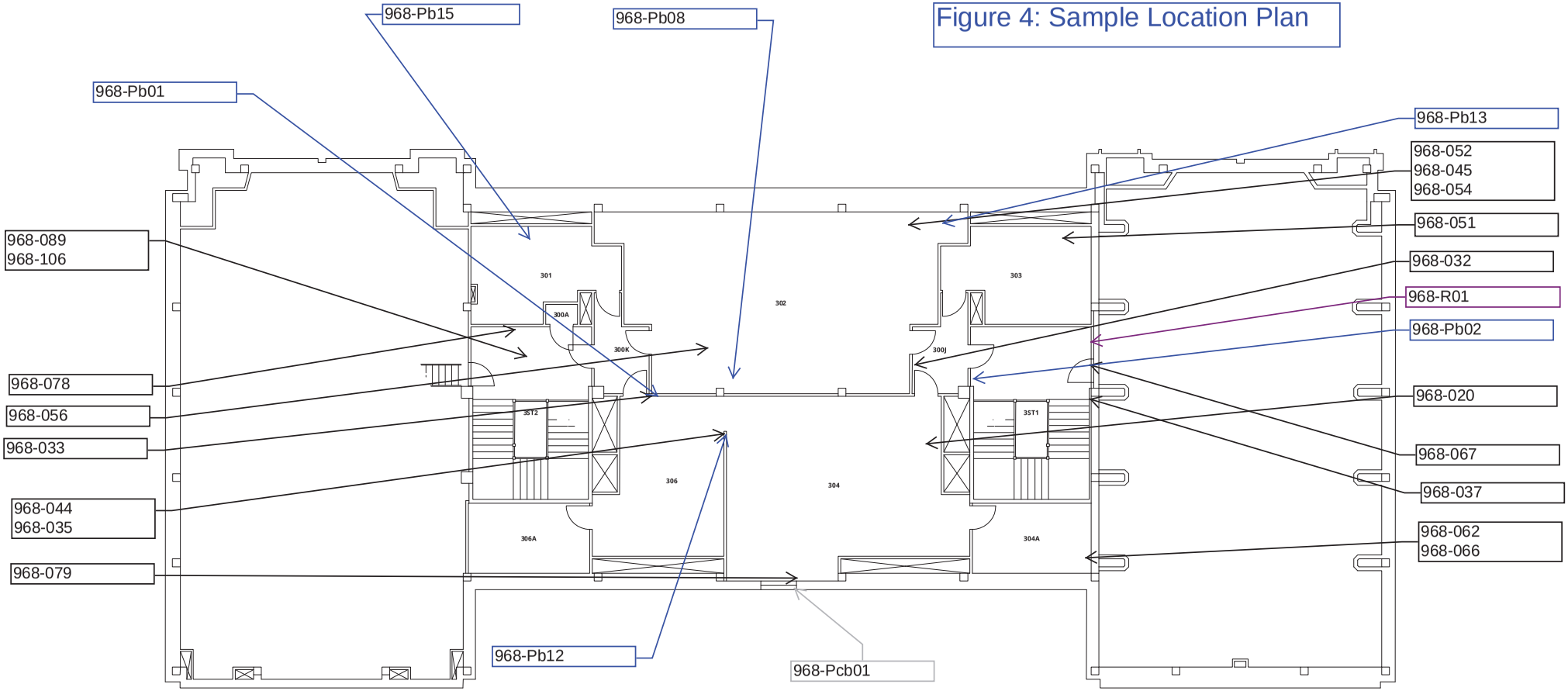
Figure 3: Sample Location Plan



MAPS
Mapping Assets, Properties, and Spaces

Anderson Hall
2nd Floor
FloorID: 1351_02
Printed On: 12/8/2022

Figure 4: Sample Location Plan

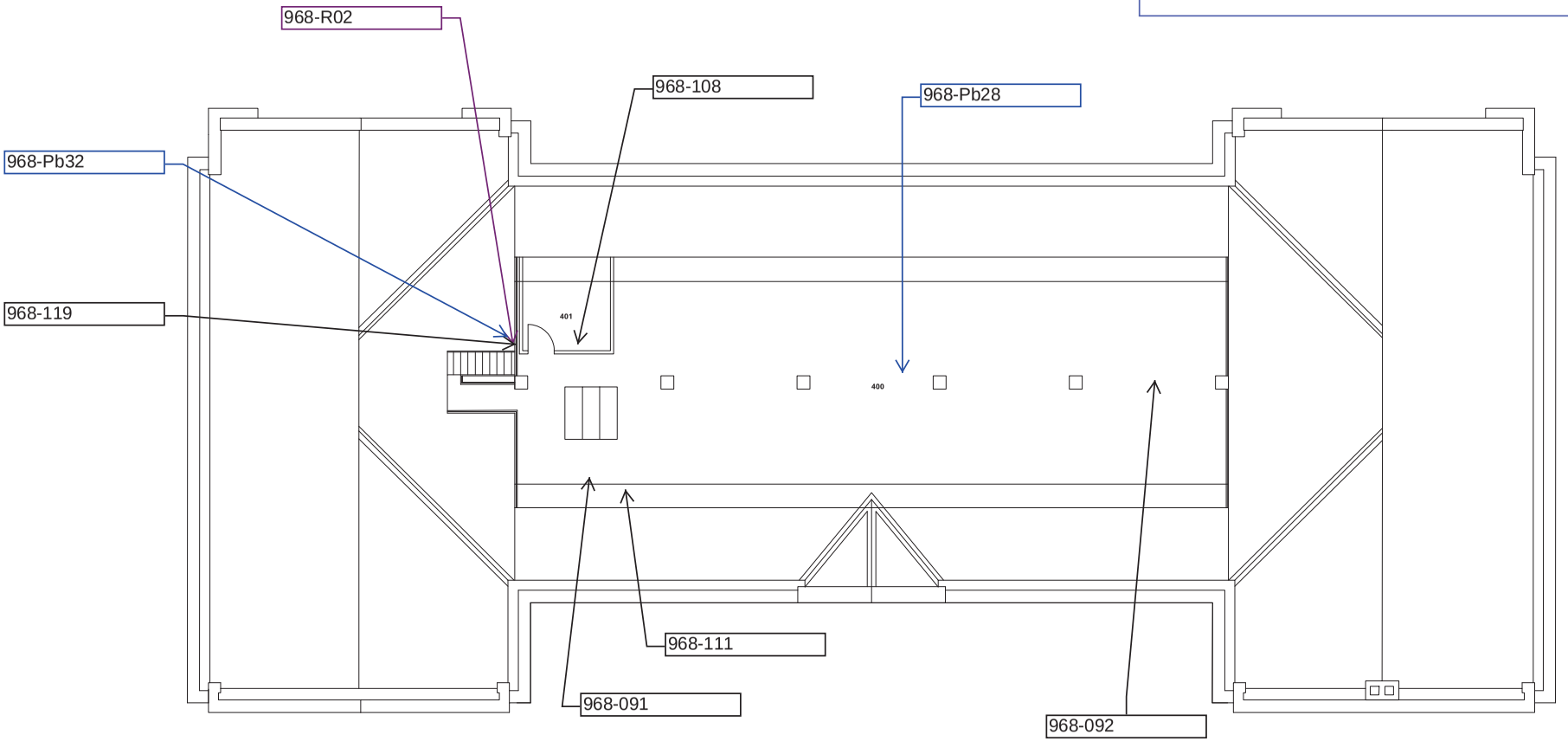


0 20 40 80 Feet

MAPS
Mapping Assets, Properties, and Spaces

Anderson Hall
3rd Floor
FloorID: 1351_03
Printed On: 12/8/2022

Figure 5: Sample Location Plan

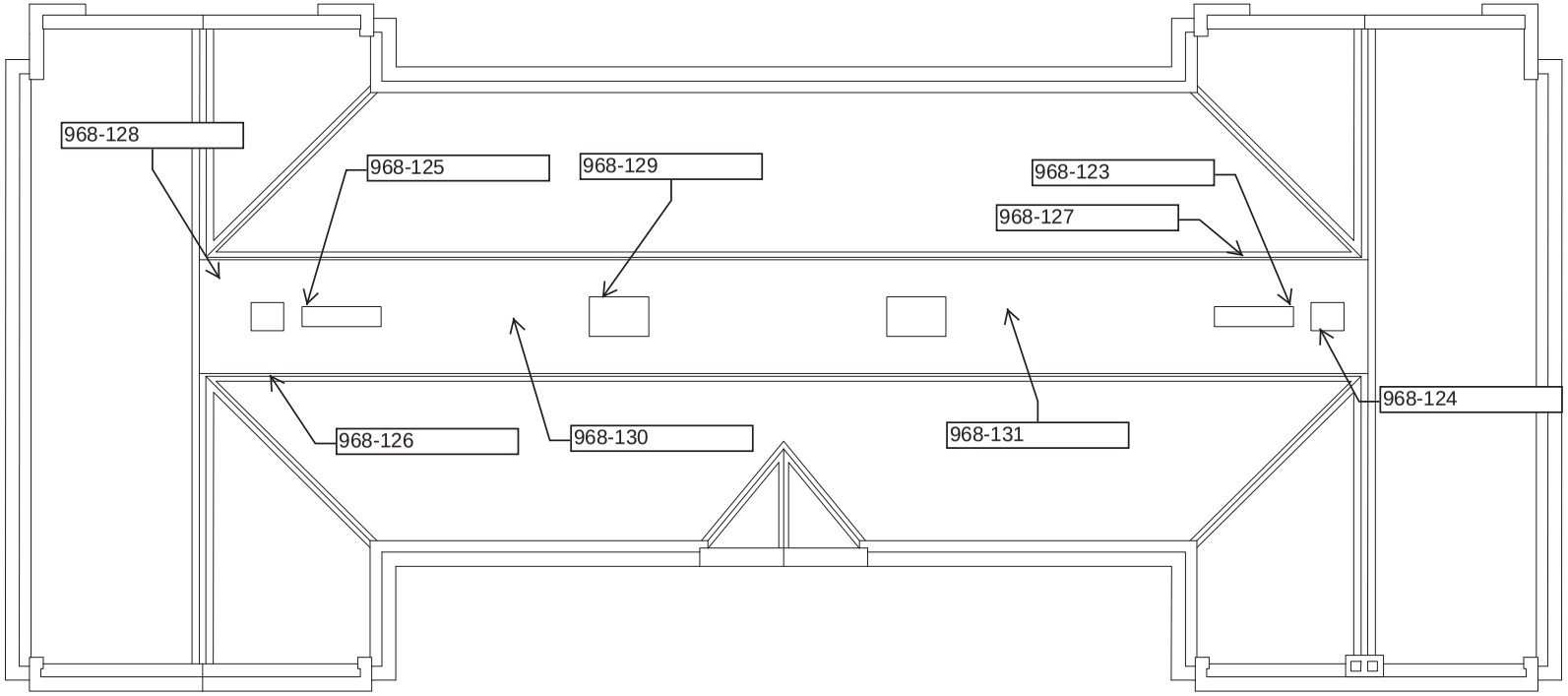


0 20 40 80 Feet

MAPS
Mapping Assets, Properties, and Spaces

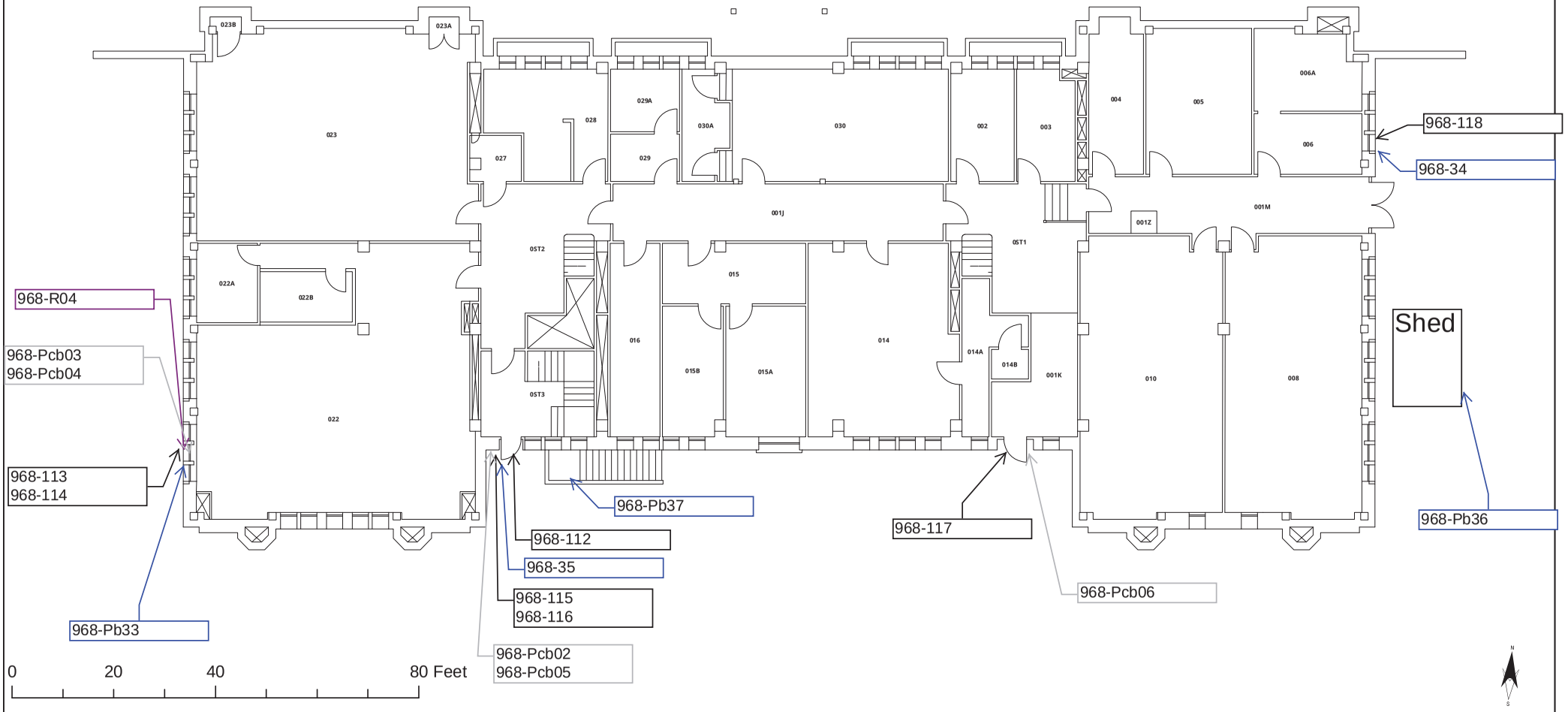
Anderson Hall
4th Floor
FloorID: 1351_04
Printed On: 12/8/2022

Figure 6: Sample Location Plan



0 20 40 80 Feet

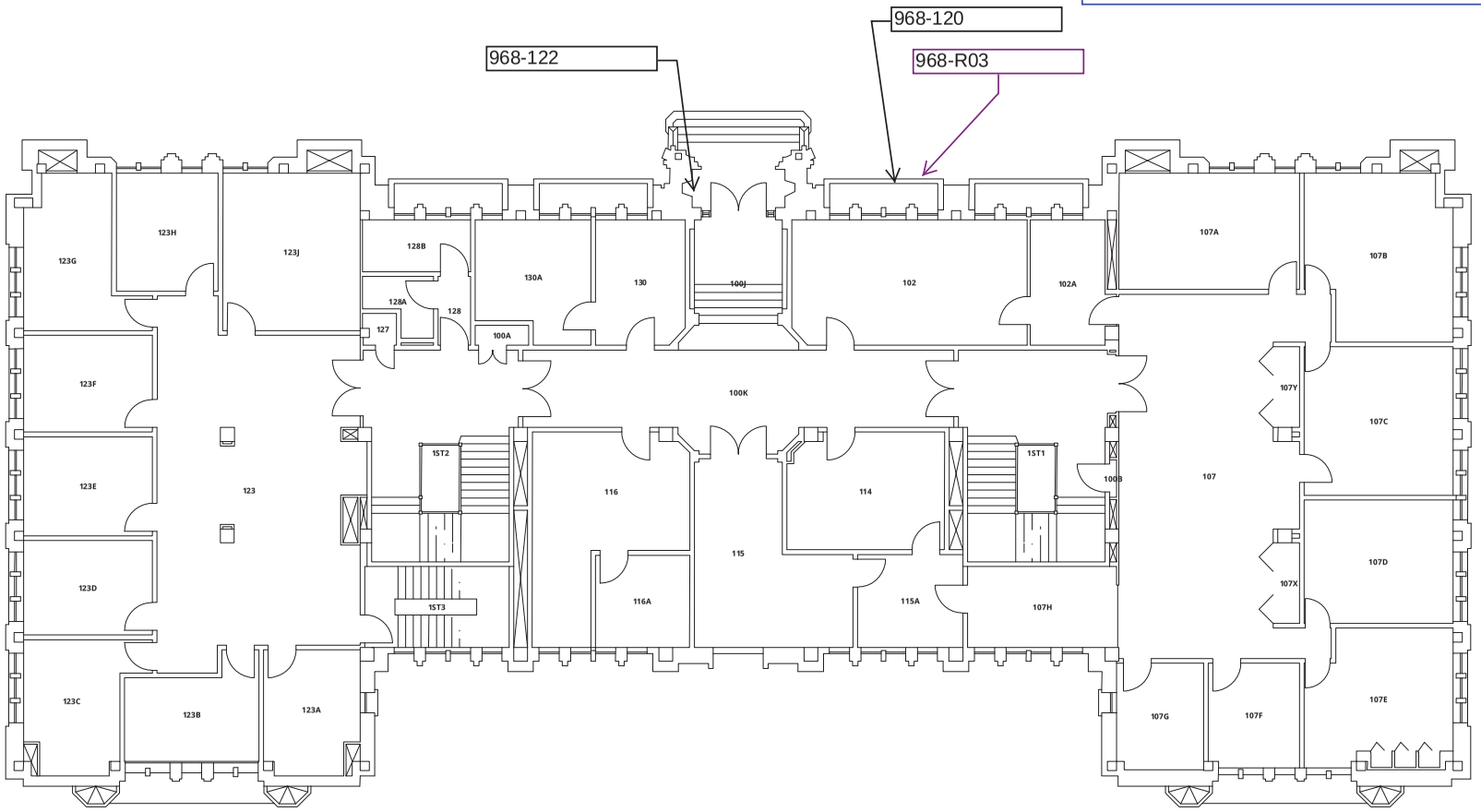
Figure 7: Exterior Sample Plan



MAPS
Mapping Assets, Properties, and Spaces

Anderson Hall
Ground Floor
FloorID: 1351_0G
Printed On: 12/8/2022

Figure 8: Exterior Sample Plan



MAPS
Mapping Assets, Properties, and Spaces

Anderson Hall
1st Floor
FloorID: 1351_01
Printed On: 12/8/2022

APPENDIX B

Bulk Sampling Information
PLM Asbestos Sample Inventory
PLM Asbestos Laboratory Analysis
PLM Asbestos Sample Chain of Custody

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-001	12" Beige floor tile Black mastic Under carpet	Room 030	Layer 1: Beige tile Layer 2: Black mastic Layer 3: Yellow mastic	NAD **3% Chrysotile** NAD	SAT
40035.968-002	Beige floor tile Yellow and black mastic Under carpet	Room 130 SE area	Layer 1: Beige tile Layer 2: Black/Yellow mastic Layer 3: Yellow mastic	NAD **3% Chrysotile** NAD	SAT
40035.968-003	Beige floor tile Yellow and black mastic Under carpet	Room 130A NE area	Layer 1: Beige tile Layer 2: Black/Yellow mastic Layer 3: Yellow mastic	NAD **3% Chrysotile** NAD	SAT
40035.968-Q03	Beige floor tile Yellow and black mastic Under carpet	Room 130A NE area	Layer 1: Tan brittle mastic Layer 2: White vinyl tile Layer 3: Black asphaltic mastic	NAD NAD **4% Chrysotile**	NVL
40035.968-004	Beige tile Black mastic	Room 123 SE area	Layer 1: Beige tile Layer 2: Black mastic	NAD **2% Chrysotile**	SAT
40035.968-005	12" White tile Tan and black mastic	Room 123	Layer 1: White tile Layer 2: Black/tan mastic	NAD **2% Chrysotile**	SAT
40035.968-006	12" Tile with orange streaks Black mastic	Room 123B	Layer 1: Orange tile Layer 2: Black/tan mastic	NAD **2% Chrysotile**	SAT
40035.968-007	White floor tile Black mastic Under carpet	Room 114	Layer 1: White tile Layer 2: Black/tan mastic	NAD **2% Chrysotile**	SAT
40035.968-008	12" White floor tile Black mastic	Room 216	Layer 1: White tile Layer 2: Black/tan mastic	NAD **2% Chrysotile**	SAT
40035.968-009	12" White floor tile Black mastic	Room 207A	Layer 1: White tile Layer 2: Black/tan mastic	NAD **2% Chrysotile**	SAT
40035.968-Q09	12" White floor tile Black mastic	Room 207A	Layer 1: White vinyl tile Layer 2: Black asphaltic mastic	NAD **6% Chrysotile**	NVL
40035.968-010	12" White floor tile	Room 223	Layer 1: White tile	NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
	Cream and black mastic		Layer 2: Trace black/cream mastic	NAD	
40035.968-011	12" Gray/beige tile Black mastic	Room 223	Layer 1: Beige tile Layer 2: Trace black mastic	NAD NAD	SAT
40035.968-012	12" Beige tile Yellow mastic	Room 207A	Layer 1: Beige tile Layer 2: Yellow mastic	NAD NAD	SAT
40035.968-013	12" Beige tile Black mastic	Room 223 east area	Layer 1: Beige tile Layer 2: Black/tan mastic	NAD **3% Chrysotile**	SAT
40035.968-014	Yellow carpet mastic - carpet on concrete	Room 022 SW	Layer 1: Yellow mastic	NAD	SAT
40035.968-015	Black carpet mastic- carpet on concrete	Room 107A E wall	Layer 1: Black mastic	NAD	SAT
40035.968-016	Tan carpet mastic on tile	Room 114	Layer 1: Tan mastic	NAD	SAT
40035.968-017	Tan carpet mastic on tile	Room 107 S area	Layer 1: Tan mastic	NAD	SAT
40035.968-018	Tan carpet mastic on concrete	Room 223 W area	Layer 1: Tan mastic	NAD	SAT
40035.968-019	Clear carpet mastic	Room 207	Layer 1: Clear mastic	NAD	SAT
40035.968-020	Yellow carpet mastic on concrete	Room 304	Layer 1: Yellow mastic	NAD	SAT
40035.968-021	Carpet pad	Room 207 loft	Layer 1: Yellow foamy material	NAD	SAT
40035.968-022	Brown sheet vinyl flooring Jute backing	Room 207 loft	Layer 1: Yellow sheet vinyl Layer 2: Yellow woven fibrous material Layer 3: Yellow mastic	NAD NAD NAD	SAT
40035.968-023	2" Yellow ceramic floor tile Grout	Room 128	Layer 1: Yellow ceramic Layer 2: Gray brittle/sandy material Layer 3: Clear mastic	NAD NAD NAD	SAT
40035.968-024	4" Yellow ceramic wall tile Grout	Room 128	Layer 1: Yellow ceramic Layer 2: White brittle/sandy material	NAD NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
			Layer 3: Clear mastic	NAD	
40035.968-025	4" Black covebase Cream mastic	Room 107H	Layer 1: Black rubbery material Layer 2: Cream mastic	NAD NAD	SAT
40035.968-026	4" Black covebase Brown mastic	Room 115	Layer 1: Black rubbery material Layer 2: Brown mastic	NAD NAD	SAT
40035.968-027	4" Black covebase Tan and yellow mastic	Room 223	Layer 1: Black rubbery material Layer 2: Tan/yellow mastic	NAD NAD	SAT
40035.968-028	2" Brown covebase Brown mastic Over white wood covebase	Room 128B	Layer 1: Brown rubbery material Layer 2: Brown mastic	NAD NAD	SAT
40035.968-029	4" Brown covebase Tan mastic	Room 223 - in between raised/ levels of seating	Layer 1: Brown rubbery material Layer 2: Tan mastic	NAD NAD	SAT
40035.968-030	4" Tan covebase Cream mastic	Room 123 at cabinets	Layer 1: Tan rubbery material Layer 2: Cream mastic	NAD NAD	SAT
40035.968-031	6" Tan covebase Cream mastic	Room 214	Layer 1: Tan rubbery material Layer 2: Cream mastic	NAD NAD	SAT
40035.968-032	6" Tan covebase White backing	Room 302 by east door	Layer 1: Tan rubbery material Layer 2: White mastic	NAD NAD	SAT
40035.968-033	2" Gray covebase Cream mastic on wood covebase	Room 302	Layer 1: Gray rubbery material Layer 2: Cream mastic	NAD NAD	SAT
40035.968-034	2" Gray covebase Cream mastic on wood covebase	Room 030	Layer 1: Gray rubbery material Layer 2: Cream mastic	NAD NAD	SAT
40035.968-035	3" Gray covebase Cream and brown mastic	Room 306 wall divider	Layer 1: Gray rubbery material Layer 2: Cream/brown mastic	NAD NAD	SAT
40035.968-036	4" Cream covebase Cream mastic	Room 114 SE wall	Layer 1: Gray rubbery material Layer 2: Cream mastic	NAD NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-037	Cementitious/concrete covebase	Top of stair 1 at level 3	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-038	Joint compound Gypsum wallboard	Room 022 N wall	Layer 1: White powdery material with paint and paper Layer 2: White chalky material with paper	NAD NAD	SAT
40035.968-039	Joint compound Gypsum wallboard	Room 010 N wall	Layer 1: White powdery material with paint Layer 2: White chalky material with paper	NAD NAD	SAT
40035.968-040	Joint compound Gypsum wallboard	Room 123 by door to 123D	Layer 1: White powdery material with paint Layer 2: White chalky material with paper	NAD NAD	SAT
40035.968-041	Joint compound Gypsum wallboard	Room 130A	Layer 1: White powdery material with paint Layer 2: White chalky material with paper	NAD NAD	SAT
40035.968-042	Joint compound Gypsum wallboard	Level 2 corridor - Room 200K	Layer 1: White powdery material with paint Layer 2: White chalky material with paper	NAD NAD	SAT
40035.968-043	Joint compound Gypsum wallboard	Room 216	Layer 1: White powdery material with paint Layer 2: White chalky material with paper	NAD NAD	SAT
40035.968-044	Joint compound Gypsum wallboard	Room 304/306 - Room divider wall	Layer 1: White powdery material with paint	NAD	SAT
40035.968-045	Joint compound Gypsum wallboard	Room 302 S wall	Layer 1: White chalky material with paper	NAD	SAT
40035.968-046	Wall plaster	Room 031A Projector Room	Layer 1: White brittle material Layer 2: Gray sandy/brittle material	NAD NAD	SAT
40035.968-047	Wall plaster	Room 107G W wall	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-048	Wall plaster	Room 114	Layer 1: Gray sandy/brittle material with paint	NAD	SAT
40035.968-049	Wall plaster	Room 223 W wall	Layer 1: White brittle material Layer 2: Gray sandy/brittle material	NAD NAD	SAT
40035.968-050	Wall plaster	Room 207 Loft	Layer 1: Gray sandy/brittle material	NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-051	Wall plaster	Ceiling level Room 303 NE wall	Layer 1: Gray sandy/brittle material with paint	NAD	SAT
40035.968-052	Wall plaster	Ceiling level S wall Room 302	Layer 1: Gray sandy/brittle material with paint	NAD	SAT
40035.968-053	1'x1' Wall acoustic ceiling tile Brown glue	Room 115 W wall	Layer 1: Gray fibrous material with paint Layer 2: Brown mastic	NAD NAD	SAT
40035.968-054	2'x4' Fissure and pinhole lay-in ceiling tile	Room 302	Layer 1: Gray fibrous material with paint	NAD	SAT
40035.968-055	4'x1' Splined ceiling tile	Level 1 corridor by Room 128	Layer 1: Gray fibrous material with paint	NAD	SAT
40035.968-056	2'x4' Random dot lay-in ceiling tile	Room 302	Layer 1: Gray fibrous material with paint Layer 2: Brown mastic	NAD NAD	SAT
40035.968-057	1'x1' acoustic ceiling tile on wall Brown glue	Room 203 E wall	Layer 1: Brown fibrous material with paint Layer 2: Brown mastic	NAD NAD	SAT
40035.968-058	2'x4' Pinhole lay-in ceiling tile	Room 216	Layer 1: Gray fibrous material with paint	NAD	SAT
40035.968-059	1'x1' Glued on acoustic ceiling tile Brown glue	Room 123A above dropped ceiling	Layer 1: Gray fibrous material with paint	NAD	SAT
40035.968-Q59	1'x1' Glued on acoustic ceiling tile Brown glue	Room 123A above dropped ceiling	Layer 1: Tan compressed fibrous material with paint Layer 2: Brown brittle mastic	NAD **3% Chrysotile**	NVL
40035.968-060	1'x4' Spline ceiling tile	Room 123	Layer 1: Gray fibrous material with paint	NAD	SAT
40035.968-061	Gray sink undercoat	Room 207A	Layer 1: Gray soft/loose material	**3% Chrysotile**	SAT
40035.968-062	Black sink undercoat	Kitchen room 304A	Layer 1: Black soft/loose material	NAD	SAT
40035.968-063	Off-white sink undercoat	Room 107H	Layer 1: Off-white soft/loose material	**3% Chrysotile**	SAT
40035.968-064	White sink caulk	Room 128A	Layer 1: White soft/elastic material	NAD	SAT
40035.968-065	White toilet caulk	Room 126A	Layer 1: White soft/elastic material	NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-066	White caulk at stainless countertop	Room 304A	Layer 1: White soft/elastic material	NAD	SAT
40035.968-067	Mortar associated with terracotta wall	Stair 1 level 3	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-068	Fireplace mortar	Room 207 forest club	Layer 1: Tan sandy/brittle material	NAD	SAT
40035.968-069	Brown glue dots	Above ceiling tile Room 203	Layer 1: Brown mastic	NAD	SAT
40035.968-070	Yellow mastic associated with polyethylene duct insulation	Level 2 corridor	Layer 1: Yellow mastic	NAD	SAT
40035.968-071	Canvas/insulation on fiberglass ductwork	Room 228	Layer 1: White soft/elastic material with woven fibrous material Layer 2: Yellow mastic	NAD NAD	SAT
40035.968-072	Canvas/insulation on duct work	Room 216A	Layer 1: Silver foil Layer 2: Tan paper with mastic and woven fibrous material Layer 3: Yellow fibrous material	NAD NAD NAD	SAT
40035.968-073	Canvas wrap associated with fiberglass pipe insulation	Office 130	Layer 1: White soft/elastic material with woven fibrous material Layer 2: Yellow fibrous material	NAD NAD	SAT
40035.968-074	White cementitious fire stop Plaster like material	Room 115 - ceiling level	Layer 1: White sandy/brittle material Layer 2: Gray fibrous material	NAD NAD	SAT
40035.968-075	Gray cementitious fire stop Plaster like material	Corridor level 1 by Room 107 - ceiling level	Layer 1: Gray cementitious material	NAD	SAT
40035.968-076	White cementitious fire stop Plaster like material	Room 130 - ceiling level	Layer 1: White cementitious material	NAD	SAT
40035.968-077	Red fire stop	Ceiling level hall by Room 022	Layer 1: Red soft/elastic material	NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-078	White cementitious fire stop Plaster like material	Stair 2 level 3	Layer 1: White cementitious material	NAD	SAT
40035.968-079	Interior window frame caulk	Room 304 S window	Layer 1: White soft/elastic material	NAD	SAT
40035.968-080	Interior window frame caulk	Room 130	Layer 1: White soft/elastic material	NAD	SAT
40035.968-081	Interior window frame caulk	Room 207 loft	Layer 1: White soft/elastic material	NAD	SAT
40035.968-082	Interior window frame caulk	Room 115A	Layer 1: White soft/elastic material	NAD	SAT
40035.968-083	Gray window glazing	Room 207 N window	Layer 1: Gray brittle material with paint	NAD	SAT
40035.968-084	Gray window glazing	Room 223 W window	Layer 1: Gray brittle material with paint	NAD	SAT
40035.968-085	Gray window glazing	Room 107B	Layer 1: Gray brittle material with paint	NAD	SAT
40035.968-086	Speckled aggregate flooring	Level 1 staircase 1	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-087	1'x1' wall acoustic ceiling tile with tan mastic	Room 014A wall	Layer 1: Brown fibrous material with paint Layer 2: Tan mastic	NAD NAD	SAT
40035.968-Q87	1'x1' wall acoustic ceiling tile with tan mastic	Room 014A wall	Layer 1: Tan compressed fibrous material	NAD	SAT
40035.968-088	1'x1' wall acoustic ceiling tile with brown mastic	Room 002	Layer 1: Brown fibrous material with paint Layer 2: Brown mastic	NAD NAD	SAT
40035.968-Q88	1'x1' wall acoustic ceiling tile with brown mastic	Room 002	Layer 1: Tan compressed fibrous material with paint Layer 2: Brown brittle mastic	NAD NAD	SAT
40035.968-089	2'x4' fistured and pinhole lay-in ceiling tile	Level 3 stair 2	Layer 1: Gray fibrous material with paint	NAD	SAT
40035.968-090	Elbow hard mudded fitting	Ground floor hallway	Layer 1: White powdery material with fibrous material	**5% Chrysotile**	SAT
40035.968-091	Black wall patch	Fourth floor mechanical space	Layer 1: Black asphaltic material	NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-092	Flex connector	East fourth floor mechanical space	Layer 1: Black soft/elastic material Layer 2: Gray fibrous material	NAD NAD	SAT
40035.968-093	Plaster - wall	South wall - Room 002	Layer 1: White sandy/brittle material	NAD	SAT
40035.968-094	4" Yellow ceramic wall tile Grout	Women's restroom ground floor	Layer 1: Yellow ceramic Layer 2: White brittle/sandy material Layer 3: Cream mastic	NAD NAD NAD	SAT
40035.968-095	2" Yellow ceramic floor tile Yellow mastic	Women's restroom ground floor	Layer 1: Yellow ceramic Layer 2: Yellow brittle/sandy material	NAD NAD	SAT
40035.968-096	6" White ceramic covebase Grout /Tan mastic	2nd Floor women's restroom	Layer 1: White ceramic Layer 2: White brittle/sandy material Layer 3: Tan mastic	NAD NAD NAD	SAT
40035.968-097	1"x1" White/speckled ceramic floor tile Black mastic	2nd Floor women's restroom	Layer 1: White ceramic Layer 2: White brittle/sandy material Layer 3: Trace black mastic	NAD NAD NAD	SAT
40035.968-098	3" Gray covebase Cream mastic	Room 116	Layer 1: Gray rubbery material Layer 2: Cream mastic	NAD NAD	SAT
40035.968-099	12" Floor tile, yellow mastic Black mastic	Room 116	Layer 1: Yellow mastic Layer 2: Beige tile Layer 3: Black mastic	NAD NAD **2% Chrysotile**	SAT
40035.968-100	Gray and tan carpet glue Concrete	SW Room 102	Layer 1: Tan mastic Layer 2: Gray sandy/brittle material	NAD NAD	SAT
40035.968-101	Carpet Off-white mastic	Room 014A	Layer 1: Green woven fibrous material Layer 2: Off-white mastic	NAD NAD	SAT
40035.968-102	Residual floor tile Black mastic	Room 004	Layer 1: Gray tile Layer 2: Trace black mastic	NAD NAD	SAT
40035.968-103	Residual brown mastic	Room 014A	Layer 1: Brown mastic	NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-104	Window glaze gray	Room 116	Layer 1: Gray soft/elastic material	NAD	SAT
40035.968-105	Pipe straight run	2nd level women's restroom chase - Fiberglass	Layer 1: Off-white woven fibrous material Layer 2: Yellow fibrous material	NAD NAD	SAT
40035.968-106	Duct insulation	Ceiling level - Level 3 stair 2	Layer 1: Silver foil Layer 2: Tan paper with mastic and woven fibrous material Layer 3: Yellow fibrous material	NAD NAD NAD	SAT
40035.968-107	2'x1' fistured wall ceiling tile	Room 014A	Layer 1: Gray fibrous material with paint	NAD	SAT
40035.968-108	Joint compound Gypsum wallboard	Room 401	Layer 1: White powdery material with paint Layer 2: White chalky material with paper	NAD NAD	SAT
40035.968-109	Concrete floor	Base of stair 3 at ground level	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-110	Concrete floor	014A	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-111	Concrete sloped wall	West mechanical space	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-112	Exterior black door caulk	Exterior south side - west elevation	Layer 1: Black soft/elastic material	NAD	SAT
40035.968-113	Gray rough opening caulk	West exterior	Layer 1: Gray soft/elastic material	NAD	SAT
40035.968-114	Black window glaze/gasket	West exterior	Layer 1: Black soft/elastic material	NAD	SAT
40035.968-115	White/gray rough opening window caulk	South exterior	Layer 1: White/gray soft/elastic material	NAD	SAT
40035.968-116	Exterior window glaze	South side	Layer 1: Gray soft/elastic material	NAD	SAT
40035.968-117	Black door caulk	Exterior south side - east elevation	Layer 1: Black soft/elastic material	NAD	SAT
40035.968-118	Brick and mortar	Exterior east side	Layer 1: Gray sandy/brittle material Layer 2: Red sandy/brittle material	NAD NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-119	Mortar	Fourth floor mechanical space	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-120	Terracotta mortar	Exterior north side	Layer 1: Red brittle material	NAD	SAT
40035.968-121	Red clay tile	Ceiling level - ground floor hallway	Layer 1: Red sandy/brittle material	NAD	SAT
40035.968-122	Plaster wall	Entrance exterior	Layer 1: Beige brittle material	NAD	SAT
40035.968-123	Concrete	Exterior front entry	Layer 1: Gray sandy/brittle material	NAD	SAT
40035.968-123	Silver/black exhaust sealant	Anderson roof east HVAC exhaust base	Layer 1: Silver paint Layer 2: Black asphaltic material	**3% Chrysotile** **3% Chrysotile**	SAT
40035.968-124	Beige vent sealant	Anderson roof east side vents	Layer 1: Beige soft/elastic material	NAD	SAT
40035.968-125	Silver/black exhaust sealant	Anderson roof west HVAC exhaust vent base	Layer 1: Silver paint Layer 2: Black asphaltic material	**3% Chrysotile** **3% Chrysotile**	SAT
40035.968-126	Gray slate	Anderson west roof	Layer 1: Gray hard brittle material	NAD	SAT
40035.968-127	Gray slate	Anderson east roof	Layer 1: Gray hard brittle material	NAD	SAT
40035.968-128	Black roof patch	Anderson roof railing post	Layer 1: Gray hard brittle material Layer 2: Black soft/elastic material	NAD NAD	SAT
40035.968-129	Black middle sealant	Anderson roof vent unit	Layer 1: Black asphaltic material Layer 2: Gray fibrous material	NAD **50% Chrysotile**	SAT
40035.968-130	Black built-up roofing - 2" thick	Anderson west roof	Layer 1: Black asphaltic material with fibrous material Layer 2: Black asphaltic material with fibrous material Layer 3: Black asphaltic material Layer 4: Black asphaltic fibrous material Layer 5: Black asphaltic material	**6% Chrysotile** **7% Chrysotile** NAD **12% Chrysotile** NAD	SAT

PLM ASBESTOS SAMPLE INVENTORY

PBS Sample #	Material Type	Sample Location	Lab Description	Lab Result	Lab
40035.968-131	Black built-up roofing - 2" thick	Anderson east roof	Layer 1: Black asphaltic fibrous material	**7% Chrysotile**	SAT
			Layer 2: Black asphaltic material	NAD	
			Layer 3: Black asphaltic material with fibrous material	**8% Chrysotile**	
			Layer 4: Black asphaltic material with fibrous material	**6% Chrysotile**	
			Layer 5: Black asphaltic material	NAD	

SEATTLE ASBESTOS TEST, LLC

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

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Project Manager:	Willem Mager	Date Analyzed:	1/17/2023
Client:	PBS Engineering and Environmental, Seattle	Client Job#:	40035.968
Address:	214 E Galer Street, Suite 300, Seattle, WA 98102	Project Location:	UW Anderson Hall
Tel:	206.233.9639	Laboratory batch#:	202211794
Date Report Issued:	11/30/1899	Samples Received:	85

Enclosed please find the test results for the bulk samples submitted to our laboratory for asbestos analysis. Analysis was performed using polarized light microscopy (PLM) in accordance with Test Method US EPA - 40 CFR Appendix E of Part 763, Interim Method of Determination of Asbestos in Bulk Insulation Samples and Test Method US EPA/600/R-93/116.

Percentages for this report are done by visual estimate and relate to the suggested acceptable error ranges by the method. Since variation in data increases as the quantity of asbestos decreases toward the limit of detection, the EPA recommends point counting for samples containing between <1% and 10% asbestos (NESHAP, 40 CFR Part 61). Statistically, point counting is a more accurate method. If you feel a point count might be beneficial, please feel free to call and request one.

The test results refer only to the samples or items submitted and tested. The accuracy with which these samples represent the actual materials is totally dependent on the acuity of the person who took the samples. This report must not be used by the client to claim product certification, approval, or endorsement by Seattle Asbestos Test, LLC, NVLAP, NIST, or any agency of the Federal government. The test report or calibration certificate shall not be reproduced except in full, without written approval of the laboratory. If the sample is inhomogeneous the sub-samples of the components are analyzed separately as layers.This report in its entirety consists of this cover leter, the customer sampling COC or data sheet, and the analytical report which is page numbered.

This report is highly confidential and will not be released without your consent. Samples are archived for 30 days after the analysis, and disposed of as hazardous waste thereafter.

Thank you for using our service and let us know if we can further assist you.

Sincerely

SZhang

Steve (Fanyao) Zhang
Approved Signatory

20221794

LABORATORY CHAIN OF CUSTODY

Project: UW Anderson Hall **Project #:** 40035.968 Page 1 of 4

Analysis requested: PLM **Date:** 1/16/2023

Relinq'd by/Signature: **Date/Time:** 1/16/23

Received by/Signature: **Date/Time:** 1/16/23 16:15

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☐ Nick San
- ☒ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☒ 48 Hours
- ☐ 3-5 Days
- ☐ Other_____

***Composite analysis if positive

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-001	12" beige floor tile with black mastic under carpet	Room 030	SAT
40035.968-002	Beige floor tile with yellow and black mastic under carpet	Room 130 SE area	SAT
40035.968-003	Beige floor tile with yellow and black mastic under carpet	Room 130A NE area	SAT
40035.968-004	Beige tile with black mastic	Room 123 SE area	SAT
40035.968-005	12" white tile with tan and black mastic	Room 123	SAT
40035.968-006	12" tile with orange steaks and black mastic	Room 123B	SAT
40035.968-007	White floor tile with black mastic under carpet	Room 114	SAT
40035.968-008	12" white floor tile with black mastic	Room 216	SAT
40035.968-009	12" white floor tile with black mastic	Room 207A	SAT
40035.968-010	12" white floor tile with cream and black mastic	Room 223	SAT
40035.968-011	12" gray/beige tile with black mastic	Room 223	SAT
40035.968-012	12" beige tile with yellow mastic	Room 207A	SAT
40035.968-013	12" beige tile with black mastic	Room 223 east area	SAT
40035.968-014	Yellow carpet mastic - carpet on concrete	Room 022 SW	SAT
40035.968-015	Black carpet mastic- carpet on concrete	Room 107A E Wall	SAT
40035.968-016	Tan carpet mastic on tile	Room 114	SAT

20224794

PBS

LABORATORY CHAIN OF CUSTODY

Project: UW Anderson Hall Project #:40035.968

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-017	Tan carpet mastic on tile	Room 107 S area	SAT
40035.968-018	Tan carpet mastic on concrete	Room 223 W area	SAT
40035.968-019	Clear carpet mastic	Room 207	SAT
40035.968-020	Yellow carpet mastic on concrete	Room 304	SAT
40035.968-021	Carpet pad	Room 207 loft	SAT
40035.968-022	Brown sheet vinyl flooring with jute backing	Room 207 loft	SAT
40035.968-023	2" Yellow ceramic floor tile and grout	Room 128	SAT
40035.968-024	4" Yellow ceramic wall tile and grout	Room 128	SAT
40035.968-025	4" Black cove base with cream mastic	Room 107H	SAT
40035.968-026	4" Black cove base with brown mastic	Room 115	SAT
40035.968-027	4" Black cove base with tan and yellow mastic	Room 223	SAT
40035.968-028	2" Brown cover base with brown mastic over white wood cove base	Room 128B	SAT
40035.968-029	4" Brown cove base with tan mastic	Room 223 – in between raised/levels of seating	SAT
40035.968-030	4" Tan cove base with cream mastic	Room 123 at cabinets	SAT
40035.968-031	6" Tan cove base with cream mastic	Room 214	SAT
40035.968-032	6" Tan cove base with white backing	Room 302 by east door	SAT
40035.968-033	2" Grey cove base with cream mastic on wood cove base	Room 302	SAT
40035.968-034	2" Grey cove base with cream mastic on wood cove base	Room 030	SAT
40035.968-035	3" Grey cove base with cream and brown mastic	Room 306 wall divider	SAT
40035.968-036	4" Grey cove base with cream mastic	Room 114 SE wall	SAT
40035.968-037	Magnesite – at cove base level	Top of stair 1 at level 3	SAT
40035.968-038	Joint compound and gypsum wallboard ***Composite analysis if positive	Room 022 N wall	SAT
40035.968-039	Joint compound and gypsum wallboard***	Room 010 N wall	SAT
40035.968-040	Joint compound and gypsum wallboard***	Room 123 by door to 123D	SAT
40035.968-041	Joint compound and gypsum wallboard***	Room 130A	SAT
40035.968-042	Joint compound and gypsum wallboard***	Level 2 corridor – Room 200K	SAT
40035.968-043	Joint compound and gypsum wallboard***	Room 216	SAT
40035.968-044	Joint compound and gypsum wallboard***	Room 304/306 – Room divider wall	SAT
40035.968-045	Joint compound and gypsum wallboard***	Room 302 South Wall	SAT
40035.968-046	Wall plaster	Room 030A Projector Room	SAT

20224794

PBS

LABORATORY CHAIN OF CUSTODY

Project: UW Anderson Hall Project #:40035.968

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-047	Wall plaster	Room 107G W Wall	SAT
40035.968-048	Wall plaster	Room 114	SAT
40035.968-049	Wall plaster	Room 223 W Wall	SAT
40035.968-050	Wall plaster	Room 207 Loft	SAT
40035.968-051	Wall plaster	Ceiling level room 303 NE wall	SAT
40035.968-052	Wall plaster	Ceiling level S wall room 302	SAT
40035.968-053	1'x1' Wall acoustic ceiling tile with brown glue	Room 115 W Wall	SAT
40035.968-054	2'x4' Fissure and pinhole lay-in-ceiling tile	Room 302	SAT
40035.968-055	4'x1' Splined ceiling tile	Level 1 corridor by room 128	SAT
40035.968-056	2'x4' Random dot lay-in-ceiling tile	Room 302	SAT
40035.968-057	1'x1' acoustic ceiling tile on wall with brown glue	Room 203 east wall	SAT
40035.968-058	2'x4' Pinhole lay-in-ceiling tile	Room 216	SAT
40035.968-059	1'x'1 glued on pinhole acoustic ceiling tile with brown glue above dropped ceiling	Room 123A	SAT
40035.968-060	1'x4' spline ceiling tile	Room 123	SAT
40035.968-061	Gray sink undercoat	Room 207A	SAT
40035.968-062	Black sink undercoat	Kitchen room 304A	SAT
40035.968-063	Off white sink undercoat	Room 107H	SAT
40035.968-064	White sink caulk	Room 128A	SAT
40035.968-065	White toilet caulk	Room 128A	SAT
40035.968-066	White caulk at stainless countertop	Room 304A	SAT
40035.968-067	Mortar associated with terracotta wall	Stair 1 level 3	SAT
40035.968-068	Fireplace mortar	Room 207 forest club	SAT
40035.968-069	Brown glue dots	Above ceiling tile room 023	SAT
40035.968-070	Yellow mastic associated with polyethylene duct insulation	Level 2 corridor	SAT
40035.968-071	Canvas on fiberglass on duct work	Room 228	SAT
40035.968-072	Canvas on duct work	Room 216 A	SAT
40035.968-073	Canvas wrap associated with fiberglass pipe insulation	Office 130	SAT
40035.968-074	White cementitious fire stop	Room 115- ceiling level	SAT
40035.968-075	Grey cementitious fire stop	Corridor level 1 by room 107 – ceiling level	SAT
40035.968-076	White cementitious fire stop	Room 130 – ceiling level	SAT
40035.968-077	Red fire stop	Ceiling level hall by room 022	SAT

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PBS

LABORATORY CHAIN OF CUSTODY

Project: UW Anderson Hall **Project #:**40035.968

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-078	White cementitious fire stop	Stair 2 level 3	SAT
40035.968-079	Interior window frame caulk	Room 304 S Window	SAT
40035.968-080	Interior window frame caulk	Room 130	SAT
40035.968-081	Interior window frame caulk	Room 207 Loft	SAT
40035.968-082	Interior window frame caulk	Room 115A	SAT
40035.968-083	Grey window glazing	Room 207 N window	SAT
40035.968-084	Grey window glazing	Room 223 West window	SAT
40035.968-085	Grey window glazing	Room 107B	SAT

SEATTLE ASBESTOS TEST

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager **Client:** PBS Engineering and Environmental, Seattle **Address:** 214 E Galer Street, Suite 300, Seattle, WA 98102

Job#: 40035.968 **Batch#:** 202211794 **Date Received:** 1/16/2023

Samples Rec'd: 85 **Date Analyzed:** 1/17/2023 **Samples Analyzed:** 85

Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
1	40035.968-001	1	Beige tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		2	Black mastic	3	Chrysotile	Mastic/binder	4	Cellulose
		3	Yellow mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
2	40035.968-002	1	Beige tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		2	Black/yellow mastic	3	Chrysotile	Mastic/binder	4	Cellulose
		3	Yellow mastic		None detected	Mastic/binder	6	Synthetic fibers, Cellulose
3	40035.968-003	1	Beige tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		2	Black/yellow mastic	3	Chrysotile	Mastic/binder	3	Cellulose
		3	Yellow mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
4	40035.968-004	1	Beige tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		2	Black mastic	2	Chrysotile	Mastic/binder	3	Cellulose
5	40035.968-005	1	White tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		2	Black/tan mastic	2	Chrysotile	Mastic/binder	4	Cellulose
6	40035.968-006	1	Orange tile		None detected	Vinyl/binder, Mineral grains	3	Cellulose
		2	Black/tan mastic	2	Chrysotile	Mastic/binder	4	Cellulose
7	40035.968-007	1	White tile		None detected	Vinyl/binder, Mineral grains	3	Cellulose
		2	Black/tan mastic	2	Chrysotile	Mastic/binder	3	Cellulose
8	40035.968-008	1	White tile		None detected	Vinyl/binder, Mineral grains	3	Cellulose
		2	Black/tan mastic	2	Chrysotile	Mastic/binder	4	Cellulose
9	40035.968-009	1	White tile		None detected	Vinyl/binder, Mineral grains	3	Cellulose
		2	Black/tan mastic	2	Chrysotile	Mastic/binder	3	Cellulose
10	40035.968-010	1	White tile		None detected	Vinyl/binder, Mineral grains	3	Cellulose
		2	Trace black/cream mastic		None detected	Mastic/binder	4	Cellulose
11	40035.968-011	1	Beige tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		2	Trace black mastic		None detected	Mastic/binder	3	Cellulose
12	40035.968-012	1	Beige tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose

SEATTLE ASBESTOS TEST

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ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.:	Willem Mager	**Client:**	PBS Engineering and Environmental, Seattle	**Address:**	214 E Galer Street, Suite 300, Seattle, WA 98102
Job#:	40035.968	**Batch#:**	202211794	**Date Received:**	1/16/2023
Samples Rec'd:	85	**Date Analyzed:**	1/17/2023	**Samples Analyzed:**	85
Project Loc.:	UW Anderson Hall				

Analyzed by: Steve (Fanyao) Zhang

Approved Signatory: SZhang — Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
12	40035.968-012	2	Yellow mastic		None detected	Mastic/binder	4	Cellulose
13	40035.968-013	1	Beige tile		None detected	Vinyl/binder, Mineral grains	3	Cellulose
		2	Black/tan mastic	3	Chrysotile	Mastic/binder	3	Cellulose
14	40035.968-014	1	Yellow mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
15	40035.968-015	1	Black mastic		None detected	Mastic/binder	4	Synthetic fibers, Cellulose
16	40035.968-016	1	Tan mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
17	40035.968-017	1	Tan mastic		None detected	Mastic/binder	6	Synthetic fibers, Cellulose
18	40035.968-018	1	Tan mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
19	40035.968-019	1	Clear mastic		None detected	Mastic/binder	4	Synthetic fibers, Cellulose
20	40035.968-020	1	Yellow mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
21	40035.968-021	1	Yellow foamy material		None detected	Synthetic foam		None detected
22	40035.968-022	1	Yellow sheet vinyl		None detected	Vinyl/binder		None detected
		2	Yellow woven fibrous material		None detected	Filler, Binder	83	Synthetic fibers
		3	Yellow mastic		None detected	Mastic/binder	3	Cellulose
23	40035.968-023	1	Yellow ceramic		None detected	Ceramic/binder		None detected
		2	Gray brittle/sandy material		None detected	Binder, Sand	2	Cellulose
		3	Clear mastic		None detected	Mastic/binder	2	Cellulose
24	40035.968-024	1	Yellow ceramic		None detected	Ceramic/binder		None detected
		2	White brittle/sandy material		None detected	Binder, Sand	2	Cellulose
		3	Clear mastic		None detected	Mastic/binder	3	Cellulose
25	40035.968-025	1	Black rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream mastic		None detected	Mastic/binder	2	Cellulose
26	40035.968-026	1	Black rubbery material		None detected	Rubber/binder	2	Cellulose

SEATTLE ASBESTOS TEST

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ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager **Client:** PBS Engineering and Environmental, Seattle **Address:** 214 E Galer Street, Suite 300, Seattle, WA 98102

Job#: 40035.968 **Batch#:** 202211794 **Date Received:** 1/16/2023

Samples Rec'd: 85 **Date Analyzed:** 1/17/2023 **Samples Analyzed:** 85

Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
26	40035.968-026	2	Brown mastic		None detected	Mastic/binder	3	Cellulose
27	40035.968-027	1	Black rubbery material		None detected	Rubber/binder	3	Cellulose
		2	Tan/yellow mastic		None detected	Mastic/binder	4	Cellulose
28	40035.968-028	1	Brown rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Brown mastic		None detected	Mastic/binder	2	Cellulose
29	40035.968-029	1	Brown rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Tan mastic		None detected	Mastic/binder	3	Cellulose
30	40035.968-030	1	Tan rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream mastic		None detected	Mastic/binder	4	Cellulose
31	40035.968-031	1	Tan rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream mastic		None detected	Mastic/binder	3	Cellulose
32	40035.968-032	1	Tan rubbery material		None detected	Rubber/binder	3	Cellulose
		2	White mastic		None detected	Mastic/binder	4	Cellulose
33	40035.968-033	1	Gray rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream mastic		None detected	Mastic/binder	3	Cellulose
34	40035.968-034	1	Gray rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream mastic		None detected	Mastic/binder	2	Cellulose
35	40035.968-035	1	Gray rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream/brown mastic		None detected	Mastic/binder	3	Cellulose
36	40035.968-036	1	Gray rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream mastic		None detected	Mastic/binder	2	Cellulose
37	40035.968-037	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose

SEATTLE ASBESTOS TEST

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ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager | Client: PBS Engineering and Environmental, Seattle | Address: 214 E Galer Street, Suite 300, Seattle, WA 98102

Job#: 40035.968 | Batch#: 202211794 | Date Received: 1/16/2023

Samples Rec'd: 85 | Date Analyzed: 1/17/2023 | Samples Analyzed: 85

Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang | Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
38	40035.968-038	1	White powdery material with paint and paper		None detected	Binder/filler, Paint	35	Cellulose
		2	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	25	Cellulose
39	40035.968-039	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
		2	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	25	Cellulose
40	40035.968-040	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
		2	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	24	Cellulose
41	40035.968-041	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
		2	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	26	Cellulose
42	40035.968-042	1	White powdery material with paint		None detected	Binder/filler, Paint	4	Cellulose
		2	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	24	Cellulose
43	40035.968-043	1	White powdery material with paint		None detected	Binder/filler, Paint	4	Cellulose
		2	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	25	Cellulose
44	40035.968-044	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
45	40035.968-045	1	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	25	Cellulose
46	40035.968-046	1	White brittle material		None detected	Filler, Binder	2	Cellulose
		2	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
47	40035.968-047	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
48	40035.968-048	1	Gray sandy/brittle material with paint		None detected	Sand, Filler, Binder, Paint	2	Cellulose
49	40035.968-049	1	White brittle material		None detected	Filler, Binder	2	Cellulose
		2	Gray sandy/brittle material		None detected	Sand, Filler, Binder	4	Cellulose
50	40035.968-050	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	4	Cellulose
51	40035.968-051	1	Gray sandy/brittle material with paint		None detected	Sand, Filler, Binder, Paint	2	Cellulose

SEATTLE ASBESTOS TEST

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ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager **Client:** PBS Engineering and Environmental, Seattle **Address:** 214 E Galer Street, Suite 300, Seattle, WA 98102

Job#: 40035.968 **Batch#:** 202211794 **Date Received:** 1/16/2023

Samples Rec'd: 85 **Date Analyzed:** 1/17/2023 **Samples Analyzed:** 85

Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
52	40035.968-052	1	Gray sandy/brittle material with paint		None detected	Sand, Filler, Binder, Paint	3	Cellulose
53	40035.968-053	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	65	Cellulose
		2	Brown mastic		None detected	Mastic/binder	3	Cellulose
54	40035.968-054	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	65	Cellulose
55	40035.968-055	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	64	Cellulose
56	40035.968-056	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	65	Cellulose
		2	Brown mastic		None detected	Mastic/binder	3	Cellulose
57	40035.968-057	1	Brown fibrous material with paint		None detected	Filler, Paint	90	Cellulose
		2	Brown mastic		None detected	Mastic/binder	3	Cellulose
58	40035.968-058	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	64	Cellulose
59	40035.968-059	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	63	Cellulose
60	40035.968-060	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	63	Cellulose
61	40035.968-061	1	Gray soft/loose material	3	Chrysotile	Filler, Fine particles	5	Cellulose
62	40035.968-062	1	Black soft/loose material		None detected	Filler, Fine particles	5	Cellulose
63	40035.968-063	1	Off-white soft/loose material	3	Chrysotile	Filler, Fine particles	5	Cellulose
64	40035.968-064	1	White soft/elastic material		None detected	Binder, Filler	4	Cellulose
65	40035.968-065	1	White soft/elastic material		None detected	Binder, Filler	3	Cellulose
66	40035.968-066	1	White soft/elastic material		None detected	Binder, Filler	4	Cellulose
67	40035.968-067	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
68	40035.968-068	1	Tan sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
69	40035.968-069	1	Brown mastic		None detected	Mastic/binder	3	Cellulose
70	40035.968-070	1	Yellow mastic		None detected	Mastic/binder	4	Cellulose

SEATTLE ASBESTOS TEST

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ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager | Client: PBS Engineering and Environmental, Seattle | Address: 214 E Galer Street, Suite 300, Seattle, WA 98102

Job#: 40035.968 | Batch#: 202211794 | Date Received: 1/16/2023

Samples Rec'd: 85 | Date Analyzed: 1/17/2023 | Samples Analyzed: 85

Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang | Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
71	40035.968-071	1	White soft/elastic material with woven fibrous material		None detected	Binder, Filler	35	Cellulose, Glass fibers
		2	Yellow mastic		None detected	Mastic/binder	3	Cellulose
72	40035.968-072	1	Silver foil		None detected	Foil/binder		None detected
		2	Tan paper with mastic and woven fibrous material		None detected	Filler, Mastic/binder	68	Cellulose, Glass fibers
		3	Yellow fibrous material		None detected	Filler	90	Glass fibers
73	40035.968-073	1	White soft/elastic material with woven fibrous material		None detected	Binder, Filler	35	Cellulose, Glass fibers
		2	Yellow fibrous material		None detected	Filler	90	Glass fibers
74	40035.968-074	1	White sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
		2	Gray fibrous material		None detected	Filler	90	Glass fibers
75	40035.968-075	1	Gray cementitious material		None detected	Cement/binder	5	Cellulose
76	40035.968-076	1	White cementitious material		None detected	Cement/binder	5	Cellulose
77	40035.968-077	1	Red soft/elastic material		None detected	Binder, Filler	4	Cellulose
78	40035.968-078	1	White cementitious material		None detected	Cement/binder	5	Cellulose
79	40035.968-079	1	White soft/elastic material		None detected	Binder, Filler	4	Cellulose
80	40035.968-080	1	White soft/elastic material		None detected	Binder, Filler	3	Cellulose
81	40035.968-081	1	White soft/elastic material		None detected	Binder, Filler	4	Cellulose
82	40035.968-082	1	White soft/elastic material		None detected	Binder, Filler	4	Cellulose
83	40035.968-083	1	Gray brittle material with paint		None detected	Filler, Binder, Paint	2	Cellulose
84	40035.968-084	1	Gray brittle material with paint		None detected	Filler, Binder, Paint	3	Cellulose
85	40035.968-085	1	Gray brittle material with paint		None detected	Filler, Binder, Paint	2	Cellulose

SEATTLE ASBESTOS TEST, LLC

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www.seattleasbestostest.com, admin@seattleasbestostest.com

Project Manager:	Willem Mager	Date Analyzed:	1/19/2023
Client:	PBS Engineering and Environmental, Seattle	Client Job#:	40035.968
Address:	214 E Galer Street, Suite 300, Seattle, WA 98102	Project Location:	UW Anderson Hall
Tel:	206.233.9639	Laboratory batch#:	202211810
Date Report Issued:	1/19/2023	Samples Received:	38

Enclosed please find the test results for the bulk samples submitted to our laboratory for asbestos analysis. Analysis was performed using polarized light microscopy (PLM) in accordance with Test Method US EPA - 40 CFR Appendix E of Part 763, Interim Method of Determination of Asbestos in Bulk Insulation Samples and Test Method US EPA/600/R-93/116.

Percentages for this report are done by visual estimate and relate to the suggested acceptable error ranges by the method. Since variation in data increases as the quantity of asbestos decreases toward the limit of detection, the EPA recommends point counting for samples containing between <1% and 10% asbestos (NESHAP, 40 CFR Part 61). Statistically, point counting is a more accurate method. If you feel a point count might be beneficial, please feel free to call and request one.

The test results refer only to the samples or items submitted and tested. The accuracy with which these samples represent the actual materials is totally dependent on the acuity of the person who took the samples. This report must not be used by the client to claim product certification, approval, or endorsement by Seattle Asbestos Test, LLC, NVLAP, NIST, or any agency of the Federal government. The test report or calibration certificate shall not be reproduced except in full, without written approval of the laboratory. If the sample is inhomogeneous the sub-samples of the components are analyzed separately as layers.This report in its entirety consists of this cover leter, the customer sampling COC or data sheet, and the analytical report which is page numbered.

This report is highly confidential and will not be released without your consent. Samples are archived for 30 days after the analysis, and disposed of as hazardous waste thereafter.

Thank you for using our service and let us know if we can further assist you.

Sincerely

SZhang

Steve (Fanyao) Zhang
Approved Signatory

20221890

LABORATORY CHAIN OF CUSTODY

Project: UW Anderson Hall

Project #: 40035.968 Page 1 of 4

Analysis requested: PLM

Date: 1/18/2023

Relinq'd by/Signature:

Date/Time: 1/19/23

Received by/Signature:

Date/Time: 1/19/23 9:20

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☐ Nick San
- ☒ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☒ 48 Hours
- ☐ 3-5 Days
- ☐ Other_____

***Composite analysis if positive

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-086	Speckled aggregate flooring	Level 1 staircase 1	SAT
40035.968-087	1'x1' wall acoustic ceiling tile with tan mastic	Room 014A wall	SAT
40035.968-088	1'x1' wall acoustic ceiling tile with brown mastic	Room 002	SAT
40035.968-089	2'x4' fisher and pinhole lay in ceiling tile	Level 3 Stair 2	SAT
40035.968-090	Elbow hard fitting	Ground floor hallway	SAT
40035.968-091	Black wall patch	Fourth floor mechanical space	SAT
40035.968-092	Flex connector	East fourth floor mechanical space	SAT
40035.968-093	Plaster	South wall – Room 002	SAT
40035.968-094	4" Yellow ceramic wall tile and grout	Women's restroom ground floor	SAT
40035.968-095	2" yellow ceramic floor tile	Women's restroom ground floor	SAT
40035.968-096	6" White ceramic cove base with tan mastic	2nd Floor women's restroom	SAT
40035.968-097	1'x'1 white ceramic floor tile with black mastic	2nd floor women's restroom	SAT
40035.968-098	3" Grey cove base with cream mastic	Room 116	SAT
40035.968-099	12" floor tile with black mastic	Room 116	SAT
40035.968-100	Gray and tan carpet glue on concrete	SW room 102	SAT
40035.968-101	Carpet and off-white mastic	Room 014A	SAT
40035.968-102	Residual floor tile and mastic black	Room 004	SAT

PBS

20221810

LABORATORY CHAIN OF CUSTODY

Project: UW Anderson Hall

Project #:40035.968

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-103	Residual brown mastic	Room 014A	SAT
40035.968-104	Window glaze grey	Room 116	SAT
40035.968-105	Pipe straight run	2nd level women's restroom chase	SAT
40035.968-106	Duct insulation	Ceiling level – level 3 stair 2	SAT
40035.968-107	2'x1' fisher wall ceiling tile	Room 014A	SAT
40035.968-108	Joint compound and gypsum wallboard	Room 401	SAT
40035.968-109	Concrete floor	Base of stair 3 at ground level	SAT
40035.968-110	Concrete floor	014A	SAT
40035.968-111	Concrete pitched wall	West mechanical space	SAT
40035.968-112	Exterior black door caulk	Exterior South Side – West elevation	SAT
40035.968-113	Grey rough opening caulk	West Exterior	SAT
40035.968-114	Black window glaze/gasket	West Exterior	SAT
40035.968-115	White/grey rough opening window caulk	South exterior	SAT
40035.968-116	Exterior window glaze	South side	SAT
40035.968-117	Black door caulk	Exterior south side – east elevation	SAT
40035.968-118	Brick and mortar	Exterior east side	SAT
40035.968-119	Mortar	Fourth floor mechanical space	SAT
40035.968-120	Terracotta Mortar	Exterior north side	SAT
40035.968-121	Red clay tile	ceiling level – ground floor hallway	SAT
-122	Plaster Wall	Entrance Exterior	SAT
-123	Concrete	Exterior front entry	SAT

SEATTLE ASBESTOS TEST

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager
Client: PBS Engineering and Environmental, Seattle
Address: 214 E Galer Street, Suite 300, Seattle, WA 98102
Job#: 40035.968
Batch#: 202211810
Date Received: 1/19/2023
Samples Rec'd: 38
Date Analyzed: 1/19/2023
Samples Analyzed: 38
Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang
Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
1	40035.968-086	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
2	40035.968-087	1	Brown fibrous material with paint		None detected	Filler, Paint	90	Cellulose
		2	Tan mastic		None detected	Mastic/binder	3	Cellulose
3	40035.968-088	1	Brown fibrous material with paint		None detected	Filler, Paint	89	Cellulose
		2	Brown mastic		None detected	Mastic/binder	4	Cellulose
4	40035.968-089	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	65	Cellulose
5	40035.968-090	1	White powdery material with fibrous material	5	Chrysotile	Filler, Fine particles	15	Cellulose
6	40035.968-091	1	Black asphaltic material		None detected	Asphalt/binder	5	Cellulose
7	40035.968-092	1	Black soft/elastic material		None detected	Binder, Filler	4	Cellulose
		2	Gray fibrous material		None detected	Filler	90	Glass fibers
8	40035.968-093	1	White sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
9	40035.968-094	1	Yellow ceramic		None detected	Ceramic/binder		None detected
		2	White brittle/sandy material		None detected	Binder, Sand	2	Cellulose
		3	Cream mastic		None detected	Mastic/binder	2	Cellulose
10	40035.968-095	1	Yellow ceramic		None detected	Ceramic/binder		None detected
		2	Yellow brittle/sandy material		None detected	Binder, Sand	3	Cellulose
11	40035.968-096	1	White ceramic		None detected	Ceramic/binder		None detected
		2	White brittle/sandy material		None detected	Binder, Sand	2	Cellulose
		3	Tan mastic		None detected	Mastic/binder	2	Cellulose
12	40035.968-097	1	White ceramic		None detected	Ceramic/binder		None detected
		2	White brittle/sandy material		None detected	Binder, Sand	2	Cellulose
		3	Trace black mastic		None detected	Mastic/binder	3	Cellulose

SEATTLE ASBESTOS TEST

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager
Client: PBS Engineering and Environmental, Seattle
Address: 214 E Galer Street, Suite 300, Seattle, WA 98102
Job#: 40035.968
Batch#: 202211810
Date Received: 1/19/2023
Samples Rec'd: 38
Date Analyzed: 1/19/2023
Samples Analyzed: 38
Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang
Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
13	40035.968-098	1	Gray rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Cream mastic		None detected	Mastic/binder	2	Cellulose
14	40035.968-099	1	Yellow mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
		2	Beige tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		3	Black mastic	2	Chrysotile	Mastic/binder	4	Cellulose
15	40035.968-100	1	Tan mastic		None detected	Mastic/binder	5	Synthetic fibers, Cellulose
		2	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
16	40035.968-101	1	Green woven fibrous material		None detected	Filler, Binder	85	Synthetic fibers
		2	Off-white mastic		None detected	Mastic/binder	3	Cellulose
17	40035.968-102	1	Gray tile		None detected	Vinyl/binder, Mineral grains	2	Cellulose
		2	Trace black mastic		None detected	Mastic/binder	4	Cellulose
18	40035.968-103	1	Brown mastic		None detected	Mastic/binder	2	Cellulose
19	40035.968-104	1	Gray soft/elastic material		None detected	Binder, Filler	4	Cellulose
20	40035.968-105	1	Off-white woven fibrous material		None detected	Filler, Binder	85	Synthetic fibers
		2	Yellow fibrous material		None detected	Filler	90	Glass fibers
21	40035.968-106	1	Silver foil		None detected	Foil/binder		None detected
		2	Tan paper with mastic and woven fibrous material		None detected	Filler, Mastic/binder	68	Cellulose, Glass fibers
		3	Yellow fibrous material		None detected	Filler	90	Glass fibers
22	40035.968-107	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	65	Cellulose
23	40035.968-108	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
		2	White chalky material with paper		None detected	Binder/filler, Gypsum/binder	25	Cellulose
24	40035.968-109	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose

SEATTLE ASBESTOS TEST

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager
Client: PBS Engineering and Environmental, Seattle
Address: 214 E Galer Street, Suite 300, Seattle, WA 98102

Job#: 40035.968
Batch#: 202211810
Date Received: 1/19/2023

Samples Rec'd: 38
Date Analyzed: 1/19/2023
Samples Analyzed: 38

Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang

Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
25	40035.968-110	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	2	Cellulose
26	40035.968-111	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
27	40035.968-112	1	Black soft/elastic material		None detected	Binder, Filler	4	Cellulose
28	40035.968-113	1	Gray soft/elastic material		None detected	Binder, Filler	3	Cellulose
29	40035.968-114	1	Black soft/elastic material		None detected	Binder, Filler	5	Cellulose
30	40035.968-115	1	White/gray soft/elastic material		None detected	Binder, Filler	4	Cellulose
31	40035.968-116	1	Gray soft/elastic material		None detected	Binder, Filler	3	Cellulose
32	40035.968-117	1	Black soft/elastic material		None detected	Binder, Filler	4	Cellulose
33	40035.968-118	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
		2	Red sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
34	40035.968-119	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
35	40035.968-120	1	Red brittle material		None detected	Filler, Binder	2	Cellulose
36	40035.968-121	1	Red sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose
37	40035.968-122	1	Beige brittle material		None detected	Filler, Binder	2	Cellulose
38	40035.968-123	1	Gray sandy/brittle material		None detected	Sand, Filler, Binder	3	Cellulose

SEATTLE ASBESTOS TEST, LLC

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

www.seattleasbestostest.com, admin@seattleasbestostest.com

Project Manager:	Willem Mager	Date Analyzed:	1/23/2023
Client:	PBS Engineering and Environmental, Seattle	Client Job#:	40035.968
Address:	214 E Galer Street, Suite 300, Seattle, WA 98102	Project Location:	UW Anderson Hall
Tel:	206.233.9639	Laboratory batch#:	202211834
Date Report Issued:	1/23/2023	Samples Received:	9

Enclosed please find the test results for the bulk samples submitted to our laboratory for asbestos analysis. Analysis was performed using polarized light microscopy (PLM) in accordance with Test Method US EPA - 40 CFR Appendix E of Part 763, Interim Method of Determination of Asbestos in Bulk Insulation Samples and Test Method US EPA/600/R-93/116.

Percentages for this report are done by visual estimate and relate to the suggested acceptable error ranges by the method. Since variation in data increases as the quantity of asbestos decreases toward the limit of detection, the EPA recommends point counting for samples containing between <1% and 10% asbestos (NESHAP, 40 CFR Part 61). Statistically, point counting is a more accurate method. If you feel a point count might be beneficial, please feel free to call and request one.

The test results refer only to the samples or items submitted and tested. The accuracy with which these samples represent the actual materials is totally dependent on the acuity of the person who took the samples. This report must not be used by the client to claim product certification, approval, or endorsement by Seattle Asbestos Test, LLC, NVLAP, NIST, or any agency of the Federal government. The test report or calibration certificate shall not be reproduced except in full, without written approval of the laboratory. If the sample is inhomogeneous the sub-samples of the components are analyzed separately as layers.This report in its entirety consists of this cover leter, the customer sampling COC or data sheet, and the analytical report which is page numbered.

This report is highly confidential and will not be released without your consent. Samples are archived for 30 days after the analysis, and disposed of as hazardous waste thereafter.

Thank you for using our service and let us know if we can further assist you.

Sincerely

SZhang

Steve (Fanyao) Zhang
Approved Signatory

20221834

LABORATORY CHAIN OF CUSTODY

Project: UW Anderson Hall **Project #:** 40035.968

Analysis requested: PLM **Date:** 1/23/2023

Relinq'd by/Signature: Nicholas **Date/Time:** 1/23/23, 10:00AM

Received by/Signature: **Date/Time:** 1/23/23 15:50

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☒ Nick San
- ☒ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☒ 48 Hours
- ☐ 3-5 Days
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-123	Silver/black exhaust sealant	Anderson roof E. HVAC exhaust base	SAT
40035.968-124	Beige vent sealant	Anderson roof E. side vents	
40035.968-125	Silver/black exhaust sealant	Anderson Roof W. HVAC exhaust vent base	
40035.968-126	Gray slate	Anderson west roof	
40035.968-127	Gray slate	Anderson east roof	
40035.968-128	Black roof patch	Anderson roof railing post	
40035.968-129	Black middle sealant	Anderson roof vent unit	
40035.968-130	Black built-up roofing - 1"/2"	Anderson west roof	
40035.968-131	Black built-up roofing - 1"/2"	Anderson east roof	

SEATTLE ASBESTOS TEST

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

ANALYTICAL LABORATORY REPORT

[PLM] EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples; [PLM] EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Attn.: Willem Mager | Client: PBS Engineering and Environmental, Seattle | Address: 214 E Galer Street, Suite 300, Seattle, WA 98102

Job#: 40035.968 | Batch#: 202211834 | Date Received: 1/23/2023

Samples Rec'd: 9 | Date Analyzed: 1/23/2023 | Samples Analyzed: 9

Project Loc.: UW Anderson Hall

Analyzed by: Steve (Fanyao) Zhang | Approved Signatory: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
1	40035.968-123	1	Silver paint	3	Chrysotile	Paint, Filler	4	Cellulose
		2	Black asphaltic material	3	Chrysotile	Asphalt/binder	3	Cellulose
2	40035.968-124	1	Beige soft/elastic material		None detected	Binder, Filler	4	Cellulose
3	40035.968-125	1	Silver paint	3	Chrysotile	Paint, Filler	2	Cellulose
		2	Black asphaltic material	3	Chrysotile	Asphalt/binder	4	Cellulose
4	40035.968-126	1	Gray hard brittle material		None detected	Filler, Binder	2	Cellulose
5	40035.968-127	1	Gray hard brittle material		None detected	Filler, Binder	3	Cellulose
6	40035.968-128	1	Gray hard brittle material		None detected	Filler, Binder	2	Cellulose
		2	Black soft/elastic material		None detected	Binder, Filler	4	Cellulose
7	40035.968-129	1	Black asphaltic material		None detected	Asphalt/binder	3	Cellulose
		2	Gray fibrous material	50	Chrysotile	Binder/filler	25	Cellulose
8	40035.968-130	1	Black asphaltic material with fibrous material	6	Chrysotile	Asphalt/binder, Filler	26	Synthetic fibers, Cellulose
		2	Black asphaltic material with fibrous material	7	Chrysotile	Asphalt/binder, Filler	25	Synthetic fibers, Cellulose
		2	Black asphaltic material		None detected	Asphalt/binder	3	Cellulose
		4	Black asphaltic fibrous material	12	Chrysotile	Filler, Asphalt, Binder	23	Cellulose
		5	Black asphaltic material		None detected	Asphalt/binder	3	Cellulose
9	40035.968-131	1	Black asphaltic fibrous material	7	Chrysotile	Filler, Asphalt, Binder	24	Cellulose
		2	Black asphaltic material		None detected	Asphalt/binder	3	Cellulose
		3	Black asphaltic material with fibrous material	8	Chrysotile	Asphalt/binder, Filler	25	Cellulose
		3	Black asphaltic material with fibrous material	6	Chrysotile	Asphalt/binder, Filler	18	Cellulose
		5	Black asphaltic material		None detected	Asphalt/binder	3	Cellulose

January 20, 2023

Willem Mager
PBS Environmental - Seattle
214 E Galer St. Suite. 300
Seattle, WA 98102

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 2300834.00

Client Project: 40035.968
Location: UW Anderson Hall

Dear Mr. Mager,

Enclosed please find test results for the 3 sample(s) submitted to our laboratory for analysis on 1/16/2023.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with **U. S. EPA 40 CFR Appendix E to Subpart E of Part 763**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116**, Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Munaf Khan, Laboratory Director

NVLAP Testing
Lab Code: 102063-0

Enc.: Sample Results

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: Mr. Willem Mager
Project Location: UW Anderson Hall

Batch #: 2300834.00
Client Project #: 40035.968
Date Received: 1/16/2023
Samples Received: 3
Samples Analyzed: 3
Method: EPA/600/R-93/116

Lab ID: 23005928 **Client Sample #: 40035.968-Q03**

Location: UW Anderson Hall

Layer 1 of 3	**Description:** Tan brittle mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose 2%	**None Detected ND**
Layer 2 of 3	**Description:** White vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Mineral grains	Cellulose <1%	**None Detected ND**
Layer 3 of 3	**Description:** Black asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Asphaltic Particles, Mastic/Binder	Cellulose 1%	**Chrysotile 4%**

Lab ID: 23005929 **Client Sample #: 40035.968-Q09**

Location: UW Anderson Hall

Layer 1 of 2	**Description:** White vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Mineral grains	Cellulose <1%	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Asphaltic Particles, Mastic/Binder	Cellulose 2%	**Chrysotile 6%**

Lab ID: 23005930 **Client Sample #: 40035.968-Q59**

Location: UW Anderson Hall

Layer 1 of 2	**Description:** Tan compressed fibrous material with paint		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Binder/Filler, Paint, Fine particles	Cellulose 91%	**None Detected ND**

Sampled by: Client
Analyzed by: Alex Shea **Date:** 01/18/2023
Reviewed by: Munaf Khan **Date:** 01/20/2023

Munaf Khan, Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: Mr. Willem Mager
Project Location: UW Anderson Hall

Batch #: 2300834.00
Client Project #: 40035.968
Date Received: 1/16/2023
Samples Received: 3
Samples Analyzed: 3
Method: EPA/600/R-93/116

Layer 2 of 2 **Description:** Brown brittle mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	Cellulose 2%	**Chrysotile 3%**

Sampled by: Client
Analyzed by: Alex Shea **Date:** 01/18/2023
Reviewed by: Munaf Khan **Date:** 01/20/2023

Munaf Khan, Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

ASBESTOS LABORATORY SERVICES

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2300834.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Willem Mager	**Due Date** 1/23/2023 **Time** 3:45 PM	
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 3 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23005928	40035.968-Q03		A
2	23005929	40035.968-Q09		A
3	23005930	40035.968-Q59		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Fatima Khan		NVL	1/16/23	1545
Analyzed by	Alex Shea		NVL	1/18/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 1/16/2023
Time: 4:02 PM
Entered By: Fatima Khan

PBS

LABORATORY 2300834

Project: UW Anderson Hall **Project #:** 40035.968 Page **1** of **1**

Analysis requested: PLM **Date:** 1/16/23

Relinq'd by/Signature: **Date/Time:** 1/16/23

Received by/Signature: **Date/Time:** 1/16/23 3:45pm Courier

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☐ Nick San
- ☐ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 48 Hours
- ☒ **5 Days**
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-Q03	Beige floor tile with yellow and black mastic under carpet	Room 130A NE area	NVL
40035.968-Q09	12" white floor tile with black mastic	Room 207A	
40035.968-Q59	1'x'1 glued on pinhole acoustic ceiling tile with brown glue above dropped ceiling	Room 123A	

pinhole acoustic ceiling tile with brown glue

January 20, 2023

Willem Mager
PBS Environmental - Seattle
214 E Galer St. Suite. 300
Seattle, WA 98102

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 2300993.00

Client Project: 40035.968
Location: UW Anderson Hall

Dear Mr. Mager,

Enclosed please find test results for the 2 sample(s) submitted to our laboratory for analysis on 1/18/2023.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with **U. S. EPA 40 CFR Appendix E to Subpart E of Part 763**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116**, Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Munaf Khan, Laboratory Director

NVLAP Testing
Lab Code: 102063-0

Enc.: Sample Results

Phone: 206 547.0100 | Fax: 206 634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103-6516

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: Mr. Willem Mager
Project Location: UW Anderson Hall

Batch #: 2300993.00
Client Project #: 40035.968
Date Received: 1/18/2023
Samples Received: 2
Samples Analyzed: 2
Method: EPA/600/R-93/116

Lab ID: 23006789 **Client Sample #: 40035.968-Q087**

Location: UW Anderson Hall

Layer 1 of 1 **Description:** Tan compressed fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine grains	Cellulose 93%	**None Detected ND**

Lab ID: 23006790 **Client Sample #: 40035.968-Q088**

Location: UW Anderson Hall

Layer 1 of 2 **Description:** Tan compressed fibrous material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Paint, Fine particles	Cellulose 89%	**None Detected ND**

Layer 2 of 2 **Description:** Brown brittle mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	Cellulose <1%	**None Detected ND**

Sampled by: Client
Analyzed by: Alex Shea **Date:** 01/19/2023
Reviewed by: Munaf Khan **Date:** 01/20/2023

Munaf Khan, Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

ASBESTOS LABORATORY SERVICES

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2300993.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT** 3 Days **AH** No **Rush TAT**	
Project Manager	Mr. Willem Mager	**Due Date** 1/23/2023 **Time** 4:05 PM	
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 2 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23006789	40035.968-Q087		A
2	23006790	40035.968-Q088		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	1/18/23	1605
Analyzed by	Alex Shea		NVL	1/19/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 1/18/2023
Time: 4:21 PM
Entered By: Kelly AuVu

PBS

LABORATORY C 2300993

Project: UW Anderson Hall **Project #:** 40035.968 Page 1 of 1

Analysis requested: PLM **Date:** 1/18/23

Relinq'd by/Signature: [signature] **Date/Time:** 1/19/23

Received by/Signature: [signature] **Date/Time:** 1/18/23 1605 courier

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☐ Nick San
- ☐ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 48 Hours
- ☒ **3 Days**
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-Q087	1'x1' wall acoustic ceiling tile with tan mastic	Room 014A wall	NVL
40035.968-Q088	1'x1' wall acoustic ceiling tile with brown mastic	Room 002	

pinhole acoustic ceiling tile with brown glue

214 EAST GALER STREET, SUITE 300, SEATTLE, WA 98102 ▪ 206.233.9639 MAIN ▪ 866.727.0140 FAX ▪ PBSUSA.COM

APPENDIX C

FAA Lead Paint Chip Sample Inventory
FAA Lead Paint Chip Laboratory Analysis
FAA Lead Paint Chip Sample Chain of Custody
PCB Laboratory Analysis

AA LEAD PAINT CHIP SAMPLE INVENTORY

PBS Sample #	Paint Color / Component or Substrate	Sample Location	Results (mg/kg)	Results (%)	Lab
40035.968-Pb01	Gray paint on 4" covebase	Room 306	**120**	**0.012**	NVL
40035.968-Pb02	Gray and red paint on metal door	Room 300 Hall top of stairs	<320	<0.032	NVL
40035.968-Pb03	Yellow paint on plaster	Room 216A	**5300**	**0.53**	NVL
40035.968-Pb04	Gray paint on plaster	Room 214 South wall	**43000**	**4.3**	NVL
40035.968-Pb05	Gray paint on gypsum wallboard	Room 203 West wall	<190	<0.019	NVL
40035.968-Pb06	Gray paint on plaster	Room 203 North wall	<110	<0.011	NVL
40035.968-Pb07	Gray paint on gypsum wallboard	Room 214 West Wall	<220	<0.022	NVL
40035.968-Pb08	White paint on plaster	Room 302 SW area	<130	<0.013	NVL
40035.968-Pb09	White paint on wood	Room 207 balcony	**2700**	**0.27**	NVL
40035.968-Pb10	Brown paint on plaster	Room 223 West wall	**4000**	**0.40**	NVL
40035.968-Pb11	Off-white paint on plaster	Room 207 Loft	<59	<0.0059	NVL
40035.968-Pb12	White paint on gypsum wallboard	Room 302 SW wall divider	<55	<0.0055	NVL
40035.968-Pb13	White paint on gypsum wallboard	Room 302 NE corner	<170	<0.017	NVL
40035.968-Pb14	Brown paint on ceiling level wood	Room 207 Loft	**1400**	**0.14**	NVL
40035.968-Pb15	Brown paint on plaster	Room 301 drop ceiling	**3300**	**0.33**	NVL
40035.968-Pb16	Off-white and gray paint on plaster	Room 128	<140	<0.014	NVL
40035.968-Pb17	Brown paint on covebase	Rom 123	<850	<0.085	NVL
40035.968-Pb18	White paint on gypsum wallboard	Room 107B	<170	<0.017	NVL
40035.968-Pb19	Red paint on gypsum wallboard	Room 107 North wall	<260	<0.026	NVL
40035.968-Pb20	Yellow paint on plaster	Room 107 East wall	<160	<0.016	NVL

mg/kg = Milligrams per kilogram
< = Less than the Limit of Detection

AA LEAD PAINT CHIP SAMPLE INVENTORY

PBS Sample #	Paint Color / Component or Substrate	Sample Location	Results (mg/kg)	Results (%)	Lab
40035.968-Pb21	White paint on plaster	Room 115A West wall	**270**	**0.027**	NVL
40035.968-Pb22	Blue paint on plaster	Room 102A	**6500**	**0.65**	NVL
40035.968-Pb23	Gray paint on plaster	Room 022	**13000**	**1.3**	NVL
40035.968-Pb24	White paint on gypsum wallboard	Room 015	<200	<0.020	NVL
40035.968-Pb25	Gray paint on covebase	Room 010	<78	<0.0078	NVL
40035.968-Pb26	Off-white and gray paint on plaster	Room 008	**980**	**0.098**	NVL
40035.968-Pb27	Green paint on gypsum wallboard	014A	<200	<0.020	NVL
40035.968-Pb28	Gray paint on metal	Air duct - fourth floor mechanical	**2600**	**0.26**	NVL
40035.968-Pb29	Brown paint on metal	Stair 3 - ground level railing	**920**	**0.092**	NVL
40035.968-Pb30	White on wood covebase	102 by Room 102A	**250**	**0.025**	NVL
40035.968-Pb31	Red clay tile	Ceiling level - ground floor hallway	<34	<0.0034	NVL
40035.968-Pb32	Red clay tile	Fourth floor mechanical space	<33	<0.0033	NVL
40035.968-Pb33	Exterior brick	Exterior SW building side	<32	<0.0032	NVL
40035.968-Pb34	Exterior terracotta	Exterior - east building	<31	<0.0031	NVL
40035.968-Pb35	Gray/brown paint on metal	Exterior window frame paint - SW side of building	**16000**	**1.6**	NVL
40035.968-Pb36	Gray paint on wood	Exterior shed paint - east side	**270**	**0.027**	NVL
40035.968-Pb37	Brown paint on metal railing	Metal railing on exterior south side	**3300**	**0.33**	NVL

mg/kg = Milligrams per kilogram
< = Less than the Limit of Detection

January 17, 2023

Willem Mager
PBS Environmental - Seattle
214 E Galer St. Suite. 300
Seattle, WA 98102

NVL Batch # 2300832.00

RE: Total Metal Analysis
Method: EPA 7000B Lead by FAA <paint>
Item Code: FAA-02

Client Project: 40035.968
Location: UW Anderson Hall

Dear Mr. Mager,

NVL Labs received 17 sample(s) for the said project on 1/16/2023. Preparation of these samples was conducted following protocol outlined in EPA 3051/7000B , unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 7000B Lead by FAA <paint>. The results are usually expressed in mg/Kg and percentage (%). Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely,

Shalini Patel, Manager Metals Lab

Enc.: Sample results

Analysis Report

Total Lead (Pb)

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: **Mr. Willem Mager**
Project Location: UW Anderson Hall

Batch #: 2300832.00
Matrix: Paint
Method: EPA 3051/7000B
Client Project #: 40035.968
Date Received: 1/16/2023
Samples Received: 17
Samples Analyzed: 17

Lab ID	Client Sample #	Sample Weight (g)	RL in mg/Kg	Results in mg/Kg	Results in percent
23005900	40035.968-Pb01	0.1289	78	120	0.012
23005901	40035.968-Pb02	0.0158	320	< 320	< 0.032
23005902	40035.968-Pb03	0.0687	150	5300	0.53
23005903	40035.968-Pb04	0.0743	130	43000	4.3
23005904	40035.968-Pb05	0.0264	190	< 190	< 0.019
23005905	40035.968-Pb06	0.0908	110	< 110	< 0.011
23005906	40035.968-Pb07	0.0229	220	< 220	< 0.022
23005907	40035.968-Pb08	0.0761	130	< 130	< 0.013
23005908	40035.968-Pb09	0.0270	190	2700	0.27
23005909	40035.968-Pb10	0.2006	50	4000	0.40
23005910	40035.968-Pb11	0.1703	59	< 59	< 0.0059
23005911	40035.968-Pb12	0.1830	55	< 55	< 0.0055
23005912	40035.968-Pb13	0.0287	170	< 170	< 0.017
23005913	40035.968-Pb14	0.0240	210	1400	0.14
23005914	40035.968-Pb15	0.2073	48	3300	0.33
23005915	40035.968-Pb16	0.0348	140	< 140	< 0.014
23005916	40035.968-Pb17	0.0059	850	< 850	< 0.085

Comments: Small sample size (<0.05g) for some of the samples.

Sampled by: Client
Analyzed by: Yasuyuki Hida
Reviewed by: Shalini Patel

Date Analyzed: 01/17/2023
Date Issued: 01/17/2023

Shalini Patel, Manager Metals Lab

mg/ Kg =Milligrams per kilogram
Percent = Milligrams per kilogram / 10000
Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

RL = Reporting Limit
'<' = Below the reporting Limit

Bench Run No: 2023-0117-05
FAA-02

LEAD LABORATORY SERVICES

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2300832.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT** 2 Days **Rush TAT**	**AH** No
Project Manager	Mr. Willem Mager	**Due Date** 1/18/2023	**Time** 3:45 PM
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory Flame AA (FAA)

Item Code FAA-02 EPA 7000B Lead by FAA <paint>

Total Number of Samples 17 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23005900	40035.968-Pb01		A
2	23005901	40035.968-Pb02		A
3	23005902	40035.968-Pb03		A
4	23005903	40035.968-Pb04		A
5	23005904	40035.968-Pb05		A
6	23005905	40035.968-Pb06		A
7	23005906	40035.968-Pb07		A
8	23005907	40035.968-Pb08		A
9	23005908	40035.968-Pb09		A
10	23005909	40035.968-Pb10		A
11	23005910	40035.968-Pb11		A
12	23005911	40035.968-Pb12		A
13	23005912	40035.968-Pb13		A
14	23005913	40035.968-Pb14		A
15	23005914	40035.968-Pb15		A
16	23005915	40035.968-Pb16		A
17	23005916	40035.968-Pb17		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Fatima Khan		NVL	1/16/23	1545
Analyzed by	Yasuyuki Hida		NVL	1/17/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 1/16/2023
Time: 3:55 PM
Entered By: Fatima Khan

PBS

LABORAT(2300832)DY

Project: UW Anderson Hall **Project #:** 40035.968 Page **1** of **2**

Analysis requested: FAA - Lead **Date:** 1/16/23

Relinq'd by/Signature: COURIER **Date/Time:**

Received by/Signature: [signature] **Date/Time:** 1/16/23 3:45pm carla

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☐ Nick San
- ☒ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☒ 48 Hours
- ☐ 3-5 Days
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-Pb01	Gray paint on 4" cove base	Room 306	NVL
-Pb 02	Gray and red paint on metal door	Room 300 Hall top of stairs	
-Pb 03	Yellow paint on plaster	Room 216A	
-Pb 04	Gray paint on plaster	Room 219 South Wall	
-Pb 05	Gray paint on gypsum wallboard	Room 203 West Wall	
-Pb 06	Gray paint on plaster	Room 203 North Wall	
-Pb 07	Gray paint on gypsum wallboard	Room 219 West Wall	
-Pb 08	White paint on plaster	Room 302 SW area	
-Pb 09	White paint on wood	Room 207 balcony	
-Pb 10	Brown paint on plaster	Room 223 West wall	
-Pb 11	Off white paint on plaster	Room 207 Loft	
-Pb 12	White paint on gypsum wallboard	Room 302 SW wall divider	
-Pb 13	White paint on gypsum wallboard	Room 302 NE corner	
-Pb 14	Brown paint on ceiling level wood	Room 207 Loft	
-Pb 15	Brown paint on plaster	Room 301 drop ceiling	
-Pb 16	Off white and gray paint on plaster	Room 128	
-Pb 17	Brown paint on cove base	Room 123	

January 17, 2023

Willem Mager
PBS Environmental - Seattle
214 E Galer St. Suite. 300
Seattle, WA 98102

NVL Batch # 2300833.00

RE: Total Metal Analysis
Method: EPA 7000B Lead by FAA <paint>
Item Code: FAA-02

Client Project: 40035.968
Location: UW Anderson Hall

Dear Mr. Mager,

NVL Labs received 9 sample(s) for the said project on 1/16/2023. Preparation of these samples was conducted following protocol outlined in EPA 3051/7000B , unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 7000B Lead by FAA <paint>. The results are usually expressed in mg/Kg and percentage (%). Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely,

Shalini Patel, Manager Metals Lab

Enc.: Sample results

Analysis Report

Total Lead (Pb)

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: **Mr. Willem Mager**
Project Location: UW Anderson Hall

Batch #: 2300833.00
Matrix: Paint
Method: EPA 3051/7000B
Client Project #: 40035.968
Date Received: 1/16/2023
Samples Received: 9
Samples Analyzed: 9

Lab ID	Client Sample #	Sample Weight (g)	RL in mg/Kg	Results in mg/Kg	Results in percent
23005917	40035.968-Pb18	0.0302	170	< 170	< 0.017
23005918	40035.968-Pb19	0.0190	260	< 260	< 0.026
23005919	40035.968-Pb20	0.0639	160	< 160	< 0.016
23005920	40035.968-Pb21	0.1909	52	270	0.027
23005921	40035.968-Pb22	0.0517	190	6500	0.65
23005922	40035.968-Pb23	0.0995	100	13000	1.3
23005923	40035.968-Pb24	0.0503	200	< 200	< 0.020
23005924	40035.968-Pb25	0.1290	78	< 78	< 0.0078
23005925	40035.968-Pb26	0.0776	130	980	0.098

Comments: Small sample size (<0.05g) for 40035.968-Pb18 and -Pb19.

Sampled by: Client
Analyzed by: Yasuyuki Hida
Reviewed by: Shalini Patel

Date Analyzed: 01/17/2023
Date Issued: 01/17/2023

Shalini Patel, Manager Metals Lab

mg/ Kg =Milligrams per kilogram
Percent = Milligrams per kilogram / 10000
Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

RL = Reporting Limit
'<' = Below the reporting Limit

Bench Run No: 2023-0117-02
FAA-02

LEAD LABORATORY SERVICES

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2300833.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT** 2 Days **AH** No **Rush TAT**	
Project Manager	Mr. Willem Mager	**Due Date** 1/18/2023 **Time** 3:45 PM	
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory Flame AA (FAA)

Item Code FAA-02 EPA 7000B Lead by FAA <paint>

Total Number of Samples 9 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23005917	40035.968-Pb18		A
2	23005918	40035.968-Pb19		A
3	23005919	40035.968-Pb20		A
4	23005920	40035.968-Pb21		A
5	23005921	40035.968-Pb22		A
6	23005922	40035.968-Pb23		A
7	23005923	40035.968-Pb24		A
8	23005924	40035.968-Pb25		A
9	23005925	40035.968-Pb26		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Fatima Khan		NVL	1/16/23	1545
Analyzed by	Yasuyuki Hida		NVL	1/17/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 1/16/2023
Time: 4:00 PM
Entered By: Fatima Khan

PBS 2Days Pb LABORATORY 2300833

Project: 40035.968 UW Anderson Hall Project #:_____ Page 2 of 2

SAMPLE DATA FORM			
Sample #	**Material**	**Location**	**Lab**
-Pb18	White paint on gypsum wallboard	Room 107B	
-Pb19	Red paint on gypsum wallboard	Room 107 North wall	
-Pb20	Yellow paint on plaster	Room 107 East Wall	
-Pb21	White paint on plaster	Room 115A West wall	
-Pb22	Blue paint on plaster	Room 102A	
-Pb23	Grey paint on plaster	Room 022	
-Pb24	White paint on gypsum wallboard	Room 015	
-Pb25	Grey paint on cove base	Room 010	
-Pb26	Off white and grey paint on plaster	Room 080	
NVLAP	Rudy Fahnestock 11/16/23	3:45pm Courier	

January 20, 2023

Willem Mager
PBS Environmental - Seattle
214 E Galer St. Suite. 300
Seattle, WA 98102

NVL Batch # 2301092.00

RE: Total Metal Analysis
Method: EPA 7000B Lead by FAA <paint>
Item Code: FAA-02

Client Project: 40035.968
Location: UW Anderson Hall

Dear Mr. Mager,

NVL Labs received 11 sample(s) for the said project on 1/19/2023. Preparation of these samples was conducted following protocol outlined in EPA 3051/7000B , unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 7000B Lead by FAA <paint>. The results are usually expressed in mg/Kg and percentage (%). Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely,

Shalini Patel, Manager Metals Lab

Enc.: Sample results

Analysis Report

Total Lead (Pb)

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: **Mr. Willem Mager**
Project Location: UW Anderson Hall

Batch #: 2301092.00
Matrix: Paint
Method: EPA 3051/7000B
Client Project #: 40035.968
Date Received: 1/19/2023
Samples Received: 11
Samples Analyzed: 11

Lab ID	Client Sample #	Sample Weight (g)	RL in mg/Kg	Results in mg/Kg	Results in percent
23007376	40035.968-Pb27	0.0506	200	< 200	< 0.020
23007377	40035.968-Pb28	0.0167	300	2600	0.26
23007378	40035.968-Pb29	0.0353	140	920	0.092
23007379	40035.968-Pb30	0.0413	120	250	0.025
23007380	40035.968-Pb31	0.2912	34	< 34	< 0.0034
23007381	40035.968-Pb32	0.3070	33	< 33	< 0.0033
23007382	40035.968-Pb33	0.3164	32	< 32	< 0.0032
23007383	40035.968-Pb34	0.3225	31	< 31	< 0.0031
23007384	40035.968-Pb35	0.1291	77	16000	1.6
23007385	40035.968-Pb36	0.0262	190	270	0.027
23007386	40035.968-Pb37	0.0422	120	3300	0.33

Comments: Small sample size (<0.05g) for some of the samples.

Sampled by: Client
Analyzed by: Yasuyuki Hida
Reviewed by: Shalini Patel
Date Analyzed: 01/20/2023
Date Issued: 01/20/2023

Shalini Patel, Manager Metals Lab

mg/ Kg =Milligrams per kilogram
Percent = Milligrams per kilogram / 10000
RL = Reporting Limit
'<' = Below the reporting Limit
Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

Bench Run No: 2023-0120-03
FAA-02

LEAD LABORATORY SERVICES

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2301092.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT** 2 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Willem Mager	**Due Date** 1/23/2023	**Time** 4:00 PM
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory Flame AA (FAA)

Item Code FAA-02 EPA 7000B Lead by FAA <paint>

Total Number of Samples 11 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23007376	40035.968-Pb27		A
2	23007377	40035.968-Pb28		A
3	23007378	40035.968-Pb29		A
4	23007379	40035.968-Pb30		A
5	23007380	40035.968-Pb31		A
6	23007381	40035.968-Pb32		A
7	23007382	40035.968-Pb33		A
8	23007383	40035.968-Pb34		A
9	23007384	40035.968-Pb35		A
10	23007385	40035.968-Pb36		A
11	23007386	40035.968-Pb37		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Fatima Khan		NVL	1/19/23	1600
Analyzed by	Yasuyuki Hida		NVL	1/20/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 1/19/2023
Time: 4:18 PM
Entered By: Fatima Khan

PBS

LABORATORY C 2301092

Project: UW Anderson Hall **Project #:** 40035.968 Page 1 of 2

Analysis requested: FAA - Lead **Date:** 1/18/2023

Relinq'd by/Signature: [signature] **Date/Time:**

Received by/Signature: [signature] **Date/Time:** 1/19/23 4pm courier

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☐ Nick San
- ☒ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☒ 48 Hours
- ☐ 3-5 Days
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-Pb27	Green Paint on gypsum wallboard	014A	NVL
-Pb 28	Grey paint on metal	Air duct – fourth floor mechanical	
-Pb 29	Brown paint on metal	Stair 3 – ground level railing	
-Pb 30	White on wood cove base	102 by room 102A	
-Pb 31	Red clay tile	Ceiling level – ground floor hallway	
-Pb 32	Red clay tile	Fourth floor mechanical space	
-Pb 33	Exterior brick	Exterior SW building side	
-Pb 34	Exterior Terracotta	Exterior – east building	
-Pb 35	Gray/brown paint on metal	Exterior window frame paint – SW side of building	
-Pb 36	Gray paint on wood	Exterior shed paint – east side	
-Pb 37	Brown paint on metal railing	Metal railing on exterior south side	

214 EAST GALER STREET, SUITE 300, SEATTLE, WA 98102 ▪ 206.233.9639 MAIN ▪ 866.727.0140 FAX ▪ PBSUSA.COM

APPENDIX D

PCB Lab Results & RCRA Metals Sampling Information
PCB/Metals Sample Inventory, Laboratory Data Sheets
Chain of Custody Documentation

January 20, 2023

Mr. Willem Mager

PBS Environmental
214 E Galer St. Suite. 300
Seattle, WA 98102

Re: **NVL Batch 2301001.00**

Project Name/Number: 40035.968

Project location: UW Anderson Hall

Dear Mr. Mager,

Enclosed please find test results for samples submitted to our laboratory for analysis. Preparation and analysis of these samples were conducted in accordance with published industry standards and methods specified on the attached analytical report.

The content of this package consists of the following:

-Case Narrative & Definition of Data Qualifiers
-Analytical Test Results
-Applicable QC Summary
-Client Chain-of-Custody (CoC)
-NVL Receiving Record

The report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client will be discarded after two weeks.

Thank you for using our laboratory services. If you need further assistance, please contact us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

Nick Ly, Technical Director

Enclosure: Sample Results

Case Narrative:

The following summarizes samples received on date as shown on the accompanied Chain of custody by NVL Laboratories, Inc. from PBS Environmental- Seattle for Project Number 40035.968. Samples were logged in for PCB analysis per client request using both customer sample ID's and laboratory assigned ID's as listed on the Chain-of-Custody (CoC). All samples as received were processed and analyzed within specified turnaround time without any abnormalities and deviations that may affect the analytical results. All quality control requirements were acceptable unless stated otherwise. The conditions of all samples were acceptable at time of receipt and all samples submitted with this batch were analyzed unless stated otherwise on the CoC.

Test Results are reported in Milligram per Kilogram (Mg/Kg) for PCB samples as shown on the analytical reports.

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Definition Appendix

Terms

% Rec	Percent recovery.
<	Below Reporting Limit(RL) or Limit of Quantitation(LoQ) of the instrument.
B	Blank contamination. The recorded results is associated with a contaminated blank.
DF	Dilution Factor
J	The reported concentration is an estimated value because something may be present in the sample that interfered with the analysis.
J1	The reported concentration is an estimated value because the laboratory control sample (LCS) is out of control limits.
J2	The reported concentration is an estimated value because the percent recovery for matrix spike is out of control limits.
J3	The reported concentration is an estimated value because the relative percent difference(RPD) for duplicate analysis is out of control limits.
J4	Percent recovery is outside of established control limits.
LCS	Laboratory Control Sample.
LFS	Laboratory Fortified Spike
Limits	The upper and lower control limits for spike recoveries.
LN	Quality control sample is outside of control limits. This analyte was not detected in the sample.
LOQ	Limit of quantitation(same as RL)
mg/kg	Milligrams per kilogram.
ND	Analyte not detected or below the reporting limit of the instrument or methodology

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Definition Appendix

Terms

PPM	Parts per Million.
QC Batch Group	Quality Control Batch Group. The entity that links analytical results and supporting quality control results.
R	The data are not reliable due to possible contamination or loss of material during preparation or analysis. Re-sampling and reanalysis are necessary for verification.
RL	Reporting Limit. The minimum concentration that can be quantified under routine operating conditions.
RPD	Relative Percent Difference. The relative difference between duplicate results(matrix spike, blank spike, or samples duplicate) expressed as a percentage.
RPD Limit	The maximum RPD allowed for a set of duplicate measurements(see RPD).
SMI	Surrogate has matrix interference.
Spike Conc.	The measured concentration, in sample basis units, of a spiked sample.
SURR-ND	Surrogate was not detected due to matrix interference or dilution.
ug/m3	Micrograms per cubic meter.
ug/mL	Micrograms per milliliter
mg/Kg	milligram per kilogram

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ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography

Client	**PBS Environmental**	Samples Received*	**5**
SDG Number	**2301001.00**	Analyzed By	**Evelyn Ahulu**
Date Reported	**01/20/2023**	Samples Analyzed*	**5**
Project Number	**40035.968**	Analysis Method	**8082A**
Location	**UW Anderson Hall**	Preparation Method	**3546PR (PCB)**

* for this test only

Sample Number	**40035.968-PCB-02**	Received	01/18/2023
Lab Sample ID	23006928	Matrix	Material
Initial Sample Size	0.4988 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	4000	< 4000	01/19/2023
Aroclor-1221	4000	< 4000	01/19/2023
Aroclor-1232	4000	< 4000	01/19/2023
Aroclor-1242	4000	< 4000	01/19/2023
Aroclor-1248	4000	< 4000	01/19/2023
Aroclor-1254	4000	64000	01/19/2023
Aroclor-1260	4000	< 4000	01/19/2023
PCBs, Total	**4000**	**64000**	

Comments: Reporting limit raised due to small sample size and dilution.

Sample Number	**40035.968-PCB-03**	Received	01/18/2023
Lab Sample ID	23006929	Matrix	Material
Initial Sample Size	0.1603 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	6.2	< 6.2	01/19/2023
Aroclor-1221	6.2	< 6.2	01/19/2023
Aroclor-1232	6.2	< 6.2	01/19/2023
Aroclor-1242	6.2	< 6.2	01/19/2023
Aroclor-1248	6.2	< 6.2	01/19/2023
Aroclor-1254	6.2	7.5	01/19/2023
Aroclor-1260	6.2	< 6.2	01/19/2023
PCBs, Total	**6.2**	**7.5**	

Comments: Reporting limit raised due to small sample size.

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ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography

Sample Number	**40035.968-PCB-04**	Received	01/18/2023
Lab Sample ID	23006930	Matrix	Material
Initial Sample Size	0.1689 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	1200	< 1200	01/19/2023
Aroclor-1221	1200	< 1200	01/19/2023
Aroclor-1232	1200	< 1200	01/19/2023
Aroclor-1242	1200	< 1200	01/19/2023
Aroclor-1248	1200	< 1200	01/19/2023
Aroclor-1254	1200	18000	01/19/2023
Aroclor-1260	1200	< 1200	01/19/2023
PCBs, Total	**1200**	**18000**	

Comments: Reporting limit raised due to small sample size and dilution.

Sample Number	**40035.968-PCB-05**	Received	01/18/2023
Lab Sample ID	23006931	Matrix	Material
Initial Sample Size	0.3516 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	5.7	< 5.7	01/19/2023
Aroclor-1221	5.7	< 5.7	01/19/2023
Aroclor-1232	5.7	< 5.7	01/19/2023
Aroclor-1242	5.7	< 5.7	01/19/2023
Aroclor-1248	5.7	< 5.7	01/19/2023
Aroclor-1254	5.7	13	01/19/2023
Aroclor-1260	5.7	< 5.7	01/19/2023
PCBs, Total	**5.7**	**13**	

Comments: Reporting limit raised due to small sample size.

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ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography

Sample Number	**40035.968-PCB-06**	Received	01/18/2023
Lab Sample ID	23006932	Matrix	Material
Initial Sample Size	0.7347 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	2700	< 2700	01/19/2023
Aroclor-1221	2700	< 2700	01/19/2023
Aroclor-1232	2700	< 2700	01/19/2023
Aroclor-1242	2700	< 2700	01/19/2023
Aroclor-1248	2700	< 2700	01/19/2023
Aroclor-1254	2700	38000	01/19/2023
Aroclor-1260	2700	< 2700	01/19/2023
PCBs, Total	**2700**	**38000**	

Comments: Reporting limit raised due to small sample size and dilution.

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Quality Control Results

Project Number:	**40035.968**	**SDG Number:**	**2301001**
		Project Manager:	**Willem Mager**
QC Batch(es):	**Q1832**	Analysis Method:	**8082A**
QC Batch Method:	3546PR (PCB)	Analysis Description:	Polychlorinated Biphenyls by Gas Chromatography
Preparation Date:	01/19/2023		

Blank: MBLK-2301001

Analyte	Blank Result	Units	DF	RL		Control Limit	Qualifiers
Aroclor-1016	ND	mg/Kg	1	1		1.0	
Aroclor-1221	ND	mg/Kg	1	1		1.0	
Aroclor-1232	ND	mg/Kg	1	1		1.0	
Aroclor-1242	ND	mg/Kg	1	1		1.0	
Aroclor-1248	ND	mg/Kg	1	1		1.0	
Aroclor-1254	ND	mg/Kg	1	1		1.0	
Aroclor-1260	ND	mg/Kg	1	1		1.0	
PCBs, Total	ND	mg/Kg	1	1		1.0	
Surrogates:					% Rec		
Tetrachloro-m-xylene			1		97	40-140	
Decachlorobiphenyl			1		100	40-140	

Lab Control Sample: LCS 1254-2301001

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	% Rec Limits	Qualifiers
Aroclor-1254	16.6	mg/Kg	1	20.0	83	40-140	
Surrogates:							
Tetrachloro-m-xylene			1		99	40-140	
Decachlorobiphenyl			1		120	40-140	

Lab Control Sample: LCS 1016+1260-2301001
Lab Control Sample Duplicate: LCS Dup 1016+1260

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	Limits	RPD	RPD Limit	Qualifiers
Aroclor-1016	16.6	mg/Kg	1	20.0	83	40-140			
	17.5			20.0	87	40-140	5	50	
Aroclor-1260	17.3	mg/Kg	1	20.0	87	40-140			
	18.1			20.0	91	40-140	4.5	50	
Surrogates:									
Tetrachloro-m-xylene			1		92	40-140			
					86	40-140			
Decachlorobiphenyl			1		103	40-140			
					108	40-140			

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Surrogate Recovery Summary Report

Client PBS Environmental **SDG Number** 2301001

Project 40035.968

Customer Sample ID	Lab Sample ID	Analyte	Recovery	Limits
40035.968-PCB-02	23006928	Decachlorobiphenyl	117%	40-140
40035.968-PCB-02	23006928	Tetrachloro-m-xylene	105%	40-140
40035.968-PCB-03	23006929	Decachlorobiphenyl	108%	40-140
40035.968-PCB-03	23006929	Tetrachloro-m-xylene	91%	40-140
40035.968-PCB-04	23006930	Decachlorobiphenyl	124%	40-140
40035.968-PCB-04	23006930	Tetrachloro-m-xylene	94%	40-140
40035.968-PCB-05	23006931	Decachlorobiphenyl	107%	40-140
40035.968-PCB-05	23006931	Tetrachloro-m-xylene	91%	40-140
40035.968-PCB-06	23006932	Decachlorobiphenyl	121%	40-140
40035.968-PCB-06	23006932	Tetrachloro-m-xylene	103%	40-140
LCS 1016+1260-2301001	LCS 1016+1260-2301001	Decachlorobiphenyl	103%	40-140
LCS 1016+1260-2301001	LCS 1016+1260-2301001	Tetrachloro-m-xylene	92%	40-140
LCS 1254-2301001	LCS 1254-2301001	Decachlorobiphenyl	120%	40-140
LCS 1254-2301001	LCS 1254-2301001	Tetrachloro-m-xylene	99%	40-140
LCS Dup 1016+1260	LCS Dup 1016+1260	Decachlorobiphenyl	108%	40-140
LCS Dup 1016+1260	LCS Dup 1016+1260	Tetrachloro-m-xylene	86%	40-140
MBLK-2301001	MBLK-2301001	Decachlorobiphenyl	100%	40-140
MBLK-2301001	MBLK-2301001	Tetrachloro-m-xylene	97%	40-140

* Recovery outside limits

NVL Laboratories, Inc.
4708 Aurora Ave N, Seattle, WA 98103
p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

INITIAL AND CONTINUING CALIBRATION VERIFICATION

SDG No: **2301001** Contract: **N/A**

Determination: **8082 PCB Aroclors <Material>**

Run	Sample	Source	Analyzed	Analyte	True	Found	Unit	% Rec	Limits
R001825	CCV1- 1016 -1260	PCB_2022-1-2	01/19/2023	Aroclor-1016	5	5.081	ug/mL	102	80-120
		PCB_2022-1-2	01/19/2023	Aroclor-1260	5	5.318	ug/mL	106	80-120
	CCV1- 1254	PCB_2022-1-3	01/19/2023	Aroclor-1254	5	5.154	ug/mL	103	80-120
	ICV 1016-1254-1260	PCB_2022-1-4	01/19/2023	Aroclor-1016	5	5.155	ug/mL	103	85-115
		PCB_2022-1-4	01/19/2023	Aroclor-1254	5	5.159	ug/mL	103	85-115
		PCB_2022-1-4	01/19/2023	Aroclor-1260	5	5.222	ug/mL	104	85-115
	CCV2- 1016 - 1260	PCB_2022-1-2	01/19/2023	Aroclor-1016	5	5.593	ug/mL	112	80-120
		PCB_2022-1-2	01/19/2023	Aroclor-1260	5	5.763	ug/mL	115	80-120
	CCV2-1254	PCB_2022-1-3	01/19/2023	Aroclor-1254	5	5.446	ug/mL	109	80-120

% Rec = Percent recovery

* = Percent recovery not within control limits

ORGANICS LABORATORY SERVICES

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2301001.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT**	5 Days **AH** No
		Rush TAT	
Project Manager	Mr. Willem Mager	**Due Date**	1/25/2023 **Time** 4:05 PM
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory Quantitative analysis

Item Code ORG-05 **Method** 8082 PCB Aroclors <Bulk>

Total Number of Samples 5 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23006928	40035.968-PCB-02		A
2	23006929	40035.968-PCB-03		A
3	23006930	40035.968-PCB-04		A
4	23006931	40035.968-PCB-05		A
5	23006932	40035.968-PCB-06		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	1/18/23	1605
Analyzed by	Evelyn Ahulu		NVL	1/19/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Entered By: Kelly AuVu Date: 1/18/2023 Time: 4:39 PM 1 of 1

4708 Aurora Ave North, Seattle, WA 98103 | p 206.547.0100 | f 206.634.1936 | www.nvllabs.com

PBS

LABORATORY CI 2301001

Project: UW Anderson Hall **Project #:** 40035.968 Page 1 of 1

Analysis requested: PCB EPA 8082 **Date:**

Relinq'd by/Signature: **Date/Time:** 1/18/23

Received by/Signature: **Date/Time:** 1/18/23 1605 Courier

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☐ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☐ Mae Reilly
- ☐ Nick San
- ☐ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 48 Hours
- ☒ **5 Days**
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-Pcb02	Exterior black door caulk	Exterior South Side – West elevation	NVL
40035.968-Pcb03	Grey rough opening caulk	West Exterior	NVL
40035.968-Pcb04	Black window glaze/gasket	West Exterior	NVL
40035.968-Pcb05	White/grey rough opening window caulk	South exterior	NVL
40035.968-Pcb06	Black door caulk	Exterior south side – east elevation	NVL

January 20, 2023

Mr. Willem Mager

PBS Environmental
214 E Galer St. Suite. 300
Seattle, WA 98102

Re: **NVL Batch 2301001.00**

Project Name/Number: 40035.968

Project location: UW Anderson Hall

Dear Mr. Mager,

Enclosed please find test results for samples submitted to our laboratory for analysis. Preparation and analysis of these samples were conducted in accordance with published industry standards and methods specified on the attached analytical report.

The content of this package consists of the following:

-Case Narrative & Definition of Data Qualifiers
-Analytical Test Results
-Applicable QC Summary
-Client Chain-of-Custody (CoC)
-NVL Receiving Record

The report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client will be discarded after two weeks.

Thank you for using our laboratory services. If you need further assistance, please contact us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

Nick Ly, Technical Director

Enclosure: Sample Results

Case Narrative:

The following summarizes samples received on date as shown on the accompanied Chain of custody by NVL Laboratories, Inc. from PBS Environmental- Seattle for Project Number 40035.968. Samples were logged in for PCB analysis per client request using both customer sample ID's and laboratory assigned ID's as listed on the Chain-of-Custody (CoC). All samples as received were processed and analyzed within specified turnaround time without any abnormalities and deviations that may affect the analytical results. All quality control requirements were acceptable unless stated otherwise. The conditions of all samples were acceptable at time of receipt and all samples submitted with this batch were analyzed unless stated otherwise on the CoC.

Test Results are reported in Milligram per Kilogram (Mg/Kg) for PCB samples as shown on the analytical reports.

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Definition Appendix

Terms

% Rec	Percent recovery.
<	Below Reporting Limit(RL) or Limit of Quantitation(LoQ) of the instrument.
B	Blank contamination. The recorded results is associated with a contaminated blank.
DF	Dilution Factor
J	The reported concentration is an estimated value because something may be present in the sample that interfered with the analysis.
J1	The reported concentration is an estimated value because the laboratory control sample (LCS) is out of control limits.
J2	The reported concentration is an estimated value because the percent recovery for matrix spike is out of control limits.
J3	The reported concentration is an estimated value because the relative percent difference(RPD) for duplicate analysis is out of control limits.
J4	Percent recovery is outside of established control limits.
LCS	Laboratory Control Sample.
LFS	Laboratory Fortified Spike
Limits	The upper and lower control limits for spike recoveries.
LN	Quality control sample is outside of control limits. This analyte was not detected in the sample.
LOQ	Limit of quantitation(same as RL)
mg/kg	Milligrams per kilogram.
ND	Analyte not detected or below the reporting limit of the instrument or methodology

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Definition Appendix

Terms

PPM	Parts per Million.
QC Batch Group	Quality Control Batch Group. The entity that links analytical results and supporting quality control results.
R	The data are not reliable due to possible contamination or loss of material during preparation or analysis. Re-sampling and reanalysis are necessary for verification.
RL	Reporting Limit. The minimum concentration that can be quantified under routine operating conditions.
RPD	Relative Percent Difference. The relative difference between duplicate results(matrix spike, blank spike, or samples duplicate) expressed as a percentage.
RPD Limit	The maximum RPD allowed for a set of duplicate measurements(see RPD).
SMI	Surrogate has matrix interference.
Spike Conc.	The measured concentration, in sample basis units, of a spiked sample.
SURR-ND	Surrogate was not detected due to matrix interference or dilution.
ug/m3	Micrograms per cubic meter.
ug/mL	Micrograms per milliliter
mg/Kg	milligram per kilogram

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ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography

Client	**PBS Environmental**	Samples Received*	**5**
SDG Number	**2301001.00**	Analyzed By	**Evelyn Ahulu**
Date Reported	**01/20/2023**	Samples Analyzed*	**5**
Project Number	**40035.968**	Analysis Method	**8082A**
Location	**UW Anderson Hall**	Preparation Method	**3546PR (PCB)**

* for this test only

Sample Number	**40035.968-PCB-02**	Received	01/18/2023
Lab Sample ID	23006928	Matrix	Material
Initial Sample Size	0.4988 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	4000	< 4000	01/19/2023
Aroclor-1221	4000	< 4000	01/19/2023
Aroclor-1232	4000	< 4000	01/19/2023
Aroclor-1242	4000	< 4000	01/19/2023
Aroclor-1248	4000	< 4000	01/19/2023
Aroclor-1254	4000	64000	01/19/2023
Aroclor-1260	4000	< 4000	01/19/2023
PCBs, Total	**4000**	**64000**	

Comments: Reporting limit raised due to small sample size and dilution.

Sample Number	**40035.968-PCB-03**	Received	01/18/2023
Lab Sample ID	23006929	Matrix	Material
Initial Sample Size	0.1603 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	6.2	< 6.2	01/19/2023
Aroclor-1221	6.2	< 6.2	01/19/2023
Aroclor-1232	6.2	< 6.2	01/19/2023
Aroclor-1242	6.2	< 6.2	01/19/2023
Aroclor-1248	6.2	< 6.2	01/19/2023
Aroclor-1254	6.2	7.5	01/19/2023
Aroclor-1260	6.2	< 6.2	01/19/2023
PCBs, Total	**6.2**	**7.5**	

Comments: Reporting limit raised due to small sample size.

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ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography

Sample Number	**40035.968-PCB-04**	Received	01/18/2023
Lab Sample ID	23006930	Matrix	Material
Initial Sample Size	0.1689 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	1200	< 1200	01/19/2023
Aroclor-1221	1200	< 1200	01/19/2023
Aroclor-1232	1200	< 1200	01/19/2023
Aroclor-1242	1200	< 1200	01/19/2023
Aroclor-1248	1200	< 1200	01/19/2023
Aroclor-1254	1200	18000	01/19/2023
Aroclor-1260	1200	< 1200	01/19/2023
PCBs, Total	**1200**	**18000**	

Comments: Reporting limit raised due to small sample size and dilution.

Sample Number	**40035.968-PCB-05**	Received	01/18/2023
Lab Sample ID	23006931	Matrix	Material
Initial Sample Size	0.3516 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	5.7	< 5.7	01/19/2023
Aroclor-1221	5.7	< 5.7	01/19/2023
Aroclor-1232	5.7	< 5.7	01/19/2023
Aroclor-1242	5.7	< 5.7	01/19/2023
Aroclor-1248	5.7	< 5.7	01/19/2023
Aroclor-1254	5.7	13	01/19/2023
Aroclor-1260	5.7	< 5.7	01/19/2023
PCBs, Total	**5.7**	**13**	

Comments: Reporting limit raised due to small sample size.

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ANALYSIS REPORT

Polychlorinated Biphenyls by Gas Chromatography

Sample Number	**40035.968-PCB-06**	Received	01/18/2023
Lab Sample ID	23006932	Matrix	Material
Initial Sample Size	0.7347 gm	Units of Result	mg/Kg, as received

Analyte	RL	Final Result	Analysis Date
Aroclor-1016	2700	< 2700	01/19/2023
Aroclor-1221	2700	< 2700	01/19/2023
Aroclor-1232	2700	< 2700	01/19/2023
Aroclor-1242	2700	< 2700	01/19/2023
Aroclor-1248	2700	< 2700	01/19/2023
Aroclor-1254	2700	38000	01/19/2023
Aroclor-1260	2700	< 2700	01/19/2023
PCBs, Total	**2700**	**38000**	

Comments: Reporting limit raised due to small sample size and dilution.

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Quality Control Results

Project Number:	**40035.968**	**SDG Number:**	**2301001**
		Project Manager:	**Willem Mager**
QC Batch(es):	**Q1832**	Analysis Method:	**8082A**
QC Batch Method:	3546PR (PCB)	Analysis Description:	Polychlorinated Biphenyls by Gas Chromatography
Preparation Date:	01/19/2023		

Blank: MBLK-2301001

Analyte	Blank Result	Units	DF	RL		Control Limit	Qualifiers
Aroclor-1016	ND	mg/Kg	1	1		1.0	
Aroclor-1221	ND	mg/Kg	1	1		1.0	
Aroclor-1232	ND	mg/Kg	1	1		1.0	
Aroclor-1242	ND	mg/Kg	1	1		1.0	
Aroclor-1248	ND	mg/Kg	1	1		1.0	
Aroclor-1254	ND	mg/Kg	1	1		1.0	
Aroclor-1260	ND	mg/Kg	1	1		1.0	
PCBs, Total	ND	mg/Kg	1	1		1.0	
Surrogates:					% Rec		
Tetrachloro-m-xylene			1		97	40-140	
Decachlorobiphenyl			1		100	40-140	

Lab Control Sample: LCS 1254-2301001

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	% Rec Limits	Qualifiers
Aroclor-1254	16.6	mg/Kg	1	20.0	83	40-140	
Surrogates:							
Tetrachloro-m-xylene			1		99	40-140	
Decachlorobiphenyl			1		120	40-140	

Lab Control Sample: LCS 1016+1260-2301001
Lab Control Sample Duplicate: LCS Dup 1016+1260

Analyte	Blank Spike Result	Units	DF	Spike Conc.	% Rec	Limits	RPD	RPD Limit	Qualifiers
Aroclor-1016	16.6	mg/Kg	1	20.0	83	40-140			
	17.5			20.0	87	40-140	5	50	
Aroclor-1260	17.3	mg/Kg	1	20.0	87	40-140			
	18.1			20.0	91	40-140	4.5	50	
Surrogates:									
Tetrachloro-m-xylene			1		92	40-140			
					86	40-140			
Decachlorobiphenyl			1		103	40-140			
					108	40-140			

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Surrogate Recovery Summary Report

Client PBS Environmental **SDG Number** 2301001

Project 40035.968

Customer Sample ID	Lab Sample ID	Analyte	Recovery	Limits
40035.968-PCB-02	23006928	Decachlorobiphenyl	117%	40-140
40035.968-PCB-02	23006928	Tetrachloro-m-xylene	105%	40-140
40035.968-PCB-03	23006929	Decachlorobiphenyl	108%	40-140
40035.968-PCB-03	23006929	Tetrachloro-m-xylene	91%	40-140
40035.968-PCB-04	23006930	Decachlorobiphenyl	124%	40-140
40035.968-PCB-04	23006930	Tetrachloro-m-xylene	94%	40-140
40035.968-PCB-05	23006931	Decachlorobiphenyl	107%	40-140
40035.968-PCB-05	23006931	Tetrachloro-m-xylene	91%	40-140
40035.968-PCB-06	23006932	Decachlorobiphenyl	121%	40-140
40035.968-PCB-06	23006932	Tetrachloro-m-xylene	103%	40-140
LCS 1016+1260-2301001	LCS 1016+1260-2301001	Decachlorobiphenyl	103%	40-140
LCS 1016+1260-2301001	LCS 1016+1260-2301001	Tetrachloro-m-xylene	92%	40-140
LCS 1254-2301001	LCS 1254-2301001	Decachlorobiphenyl	120%	40-140
LCS 1254-2301001	LCS 1254-2301001	Tetrachloro-m-xylene	99%	40-140
LCS Dup 1016+1260	LCS Dup 1016+1260	Decachlorobiphenyl	108%	40-140
LCS Dup 1016+1260	LCS Dup 1016+1260	Tetrachloro-m-xylene	86%	40-140
MBLK-2301001	MBLK-2301001	Decachlorobiphenyl	100%	40-140
MBLK-2301001	MBLK-2301001	Tetrachloro-m-xylene	97%	40-140

* Recovery outside limits

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

SDG No: **2301001** Contract: **N/A**

Determination: **8082 PCB Aroclors <Material>**

Run	Sample	Source	Analyzed	Analyte	True	Found	Unit	% Rec	Limits
R001825	CCV1- 1016 -1260	PCB_2022-1-2	01/19/2023	Aroclor-1016	5	5.081	ug/mL	102	80-120
		PCB_2022-1-2	01/19/2023	Aroclor-1260	5	5.318	ug/mL	106	80-120
	CCV1- 1254	PCB_2022-1-3	01/19/2023	Aroclor-1254	5	5.154	ug/mL	103	80-120
	ICV 1016-1254-1260	PCB_2022-1-4	01/19/2023	Aroclor-1016	5	5.155	ug/mL	103	85-115
		PCB_2022-1-4	01/19/2023	Aroclor-1254	5	5.159	ug/mL	103	85-115
		PCB_2022-1-4	01/19/2023	Aroclor-1260	5	5.222	ug/mL	104	85-115
	CCV2- 1016 - 1260	PCB_2022-1-2	01/19/2023	Aroclor-1016	5	5.593	ug/mL	112	80-120
		PCB_2022-1-2	01/19/2023	Aroclor-1260	5	5.763	ug/mL	115	80-120
	CCV2-1254	PCB_2022-1-3	01/19/2023	Aroclor-1254	5	5.446	ug/mL	109	80-120

% Rec = Percent recovery

* = Percent recovery not within control limits

ORGANICS LABORATORY SERVICES

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2301001.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT**	5 Days **AH** No
		Rush TAT	
Project Manager	Mr. Willem Mager	**Due Date**	1/25/2023 **Time** 4:05 PM
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory Quantitative analysis

Item Code ORG-05 **Method** 8082 PCB Aroclors <Bulk>

Total Number of Samples 5 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23006928	40035.968-PCB-02		A
2	23006929	40035.968-PCB-03		A
3	23006930	40035.968-PCB-04		A
4	23006931	40035.968-PCB-05		A
5	23006932	40035.968-PCB-06		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	1/18/23	1605
Analyzed by	Evelyn Ahulu		NVL	1/19/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Entered By: Kelly AuVu Date: 1/18/2023 Time: 4:39 PM 1 of 1

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PBS

LABORATORY CI 2301001

Project: UW Anderson Hall **Project #:** 40035.968 Page 1 of 1

Analysis requested: PCB EPA 8082 **Date:**

Relinq'd by/Signature: **Date/Time:** 1/18/23

Received by/Signature: **Date/Time:** 1/18/23 1605 Courier

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☐ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
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- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☐ Mae Reilly
- ☐ Nick San
- ☐ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 48 Hours
- ☒ **5 Days**
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-Pcb02	Exterior black door caulk	Exterior South Side – West elevation	NVL
40035.968-Pcb03	Grey rough opening caulk	West Exterior	NVL
40035.968-Pcb04	Black window glaze/gasket	West Exterior	NVL
40035.968-Pcb05	White/grey rough opening window caulk	South exterior	NVL
40035.968-Pcb06	Black door caulk	Exterior south side – east elevation	NVL

RCRA SAMPLE INVENTORY

PBS Sample #	Material	Sample Location	Analyte	Lab Results (mg/kg)	Lab
40035.968-R01	Mortar associated with terracotta wall	Stair 1 Level 3	Silver (Ag)	<18.0	NVL
			Arsenic (As)	<18.0	
			Barium (Ba)	3500.00	
			Cadmium (Cd)	<18.0	
			Chromium (Cr)	<18.0	
			Mercury (Hg)	<0.9	
			Lead (Pb)	<18.0	
			Selenium (Se)	<18.0	
40035.968-RCRA 02	Mortar associated with terracotta walls	4th Floor Mechanical Penthouse walls	Arsenic (As)	<13.0	NVL
			Barium (Ba)	20.00	
			Chromium (Cr)	<13.0	
			Lead (Pb)	<13.0	
40035.968-RCRA 03	Exterior terracotta wall mortar	Exterior north side of building	Arsenic (As)	<13.0	NVL
			Barium (Ba)	56.00	
			Chromium (Cr)	<13.0	
			Lead (Pb)	<13.0	
40035.968-RCRA 04	Exterior terracotta wall mortar	Exterior southwest side of building	Arsenic (As)	<14.0	NVL
			Barium (Ba)	550.00	
			Chromium (Cr)	<14.0	
			Lead (Pb)	94.00	

mg/kg = Milligrams per kilogram
< = Less than the Limit of Detection

January 18, 2023

Willem Mager
PBS Environmental - Seattle
214 E Galer St. Suite. 300
Seattle, WA 98102

NVL Batch # 2300837.00

RE: Total Metal Analysis
Method: EPA 6010/7471B (RCRA 8) <paint>
Item Code: ICP-G2

Client Project: 40035.968
Location: UW Anderson Hall

Dear Mr. Mager,

NVL Labs received 1 sample(s) for the said project on 1/16/2023. Preparation of these samples was conducted following protocol outlined in EPA 3051/6010D/7471B, unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 6010/7471B (RCRA 8) <paint> . The results are usually expressed in mg/kg and ppm. Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely,

Nick Ly, Technical Director

Enc.: Sample results

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
WWW.AIHAACCREDITEDLABS.ORG
LAB # 101861

Analysis Report

Total Metals

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: **Mr. Willem Mager**
Project Location: UW Anderson Hall

Batch #: 2300837.00
Matrix: Bulk
Method: EPA 3051/6010D/7471B
Client Project #: 40035.968
Date Received: 1/16/2023
Samples Received: 1
Samples Analyzed: 1

Lab ID	Client Sample #	Elements	Sample wt (g)	RL mg / kg	Results in mg / kg	Results in ppm
23005932	40035.968-R01	Silver (Ag)	0.2266	18.0	< 18.0	< 18.0
		Arsenic (As)	0.2266	18.0	< 18.0	< 18.0
		Barium (Ba)	0.2266	18.0	3500.0	3500.0
		Cadmium (Cd)	0.2266	18.0	< 18.0	< 18.0
		Chromium (Cr)	0.2266	18.0	< 18.0	< 18.0
		Mercury (Hg)	0.2266	0.9	< 0.9	< 0.9
		Lead (Pb)	0.2266	18.0	< 18.0	< 18.0
		Selenium (Se)	0.2266	18.0	< 18.0	< 18.0

Sampled by: Client
Analyzed by: Shalini Patel
Reviewed by: Nick Ly

Date Analyzed: 01/17/2023
Date Issued: 01/18/2023

Nick Ly, Technical Director

mg/ kg = Milligrams per kilogram
ppm = Parts per million

RL = Reporting Limit
'<' = Below the reporting Limit

Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

METALS LABORATORY SERVICES - GROUP TEST

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2300837.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT** 2 Days **AH** No **Rush TAT**	
Project Manager	Mr. Willem Mager	**Due Date** 1/18/2023 **Time** 3:45 PM	
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory Inductively Coupled Plasma (ICP) - Group Tests

Item Code ICP-G2 EPA 6010/7471B (RCRA 8) <paint>

Total Number of Samples 1 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23005932	40035.968-R01		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Fatima Khan		NVL	1/16/23	1545
Analyzed by	Shalini Patel		NVL	1/17/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 1/16/2023
Time: 4:06 PM
Entered By: Fatima Khan

PBS

LABORATO 2300837 **DY**

Project: UW Anderson Hall

Project #: 40035.968 Page **1** of **1**

Analysis requested: RCRA 8 Metals

Date: 1/16/23

Relinq'd by/Signature:

Date/Time: 1/16/23

Received by/Signature:

Date/Time: 1/16/23 3:45p - Courier

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- [x] Willem Mager
- [ ] Gregg Middaugh
- [ ] Mark Hiley
- [ ] Tim Ogden
- [ ] Ryan Hunter
- [ ] Prudy Stoudt-McRae
- [ ] Janet Murphy
- [ ] Allison Welch
- [ ] Toan Nguyen
- [ ] Peter Stensland
- [ ] Claire Tsai
- [ ] Holly Tuttle
- [ ] Mike Smith
- [ ] Ferman Fletcher
- [ ] Cameron Budnick
- [x] Mae Reilly
- [ ] Nick San
- [x] Kameron DeMonnin
- [ ] _____

TURN AROUND TIME:

- [ ] 1 Hour
- [ ] 2 Hours
- [ ] 4 Hours
- [ ] 24 Hours
- [ ] 48 Hours
- [x] **5 Days**
- [ ] Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-R01	Mortar associated with terracotta wall	Stair 1 Level 3	NVL

January 24, 2023

Willem Mager
PBS Environmental - Seattle
214 E Galer St. Suite. 300
Seattle, WA 98102

NVL Batch # 2300999.00

RE: Total Metal Analysis
Method: EPA 6010 (price per analyte) <paint>
Item Code: ICP-M2

Client Project: 40035.968
Location: UW Anderson Hall

Dear Mr. Mager,

NVL Labs received 3 sample(s) for the said project on 1/18/2023. Preparation of these samples was conducted following protocol outlined in EPA 3051/6010D, unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 6010 (price per analyte) <paint> . The results are usually expressed in mg/kg and ppm. Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely,

Nick Ly, Technical Director

Enc.: Sample results

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
WWW.AIHAACCREDITEDLABS.ORG
LAB # 101861

Analysis Report

Total Metals

Client: PBS Environmental - Seattle
Address: 214 E Galer St. Suite. 300
Seattle, WA 98102

Attention: **Mr. Willem Mager**
Project Location: UW Anderson Hall

Batch #: 2300999.00
Matrix: Bulk
Method: EPA 3051/6010D
Client Project #: 40035.968
Date Received: 1/18/2023
Samples Received: 3
Samples Analyzed: 3

Lab ID	Client Sample #	Elements	Sample wt (g)	RL mg / kg	Results in mg / kg	Results in ppm
23006923	40035.968-RCRA02	Arsenic (As)	0.3084	13.0	< 13.0	< 13.0
		Barium (Ba)	0.3084	13.0	20.0	20.0
		Chromium (Cr)	0.3084	13.0	< 13.0	< 13.0
		Lead (Pb)	0.3084	13.0	< 13.0	< 13.0
23006924	40035.968-RCRA03	Arsenic (As)	0.3104	13.0	< 13.0	< 13.0
		Barium (Ba)	0.3104	13.0	56.0	56.0
		Chromium (Cr)	0.3104	13.0	< 13.0	< 13.0
		Lead (Pb)	0.3104	13.0	< 13.0	< 13.0
23006925	40035.968-RCRA04	Arsenic (As)	0.2921	14.0	< 14.0	< 14.0
		Barium (Ba)	0.2921	14.0	550.0	550.0
		Chromium (Cr)	0.2921	14.0	< 14.0	< 14.0
		Lead (Pb)	0.2921	14.0	94.0	94.0

Sampled by: Client
Analyzed by: Shalini Patel
Reviewed by: Nick Ly

Date Analyzed: 01/20/2023
Date Issued: 01/24/2023

Nick Ly, Technical Director

mg/ kg = Milligrams per kilogram
ppm = Parts per million

RL = Reporting Limit
'<' = Below the reporting Limit

Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

METALS LABORATORY SERVICES - PER ANALYTE TEST

Company	PBS Environmental - Seattle	**NVL Batch Number**	**2300999.00**
Address	214 E Galer St. Suite. 300 Seattle, WA 98102	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Willem Mager	**Due Date** 1/25/2023 **Time** 4:05 PM	
Phone	(206) 233-9639	**Email**	willem.mager@pbsusa.com
Office:	(800) 628-9639	**Fax**	(866) 727-0140

Project Name/Number: 40035.968 **Project Location:** UW Anderson Hall

Subcategory Inductively Coupled Plasma (ICP) - Group Tests

Item Code ICP-M2 EPA 6010 (price per analyte) <paint>

Metals Barium (Ba), Chromium (Cr), Arsenic (As), Lead (Pb)

Total Number of Samples 3 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	23006923	40035.968-RCRA02		A
2	23006924	40035.968-RCRA03		A
3	23006925	40035.968-RCRA04		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Courier				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	1/18/23	1605
Analyzed by	Shalini Patel		NVL	1/20/23	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 1/18/2023
Time: 4:35 PM
Entered By: Kelly AuVu

PBS

L 2300999 OF CUSTODY

Project: UW Anderson Hall **Project #:** 40035.968 Page 1 of 1

Analysis requested: Metals (Chromium, Barium, Lead, Arsenic) **Date:** 1/18/23

Relinq'd by/Signature: _____ **Date/Time:** _____

Received by/Signature: Kelly Azlen e mail **Date/Time:** 1/18/23 1605 courier

Email ALL INVOICES to: seattleap@pbsusa.com

E-mail results to:

- ☒ Willem Mager
- ☐ Gregg Middaugh
- ☐ Mark Hiley
- ☐ Tim Ogden
- ☐ Ryan Hunter
- ☐ Prudy Stoudt-McRae
- ☐ Janet Murphy
- ☐ Allison Welch
- ☐ Toan Nguyen
- ☐ Peter Stensland
- ☐ Claire Tsai
- ☐ Holly Tuttle
- ☐ Mike Smith
- ☐ Ferman Fletcher
- ☐ Cameron Budnick
- ☒ Mae Reilly
- ☐ Nick San
- ☐ Kameron DeMonnin
- ☐ _____

TURN AROUND TIME:

- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 48 Hours
- ☒ 5 Days
- ☐ Other_____

SAMPLE DATA FORM

Sample #	Material	Location	Lab
40035.968-RCRA02	Mortar	Fourth floor mechanical space	NVL
40035.968-RCRA03	Exterior terracotta mortar	Exterior north building side	NVL
40035.968-RCRA04	Exterior brick mortar	Exterior Southwest building	NVL

APPENDIX E

Prior Survey Data
Regulated Materials Office – Summary

Data for Specific Ceiling Materials from Building-Wide Inspection Delivered by Prezant and Associates 1/1994

Material Type	Total Samples	Total >1%	Total No ACM	Total <1%	Highest % of ACM in all samples	Material Number	Throughout (T) Localized (L)
2' x 4' white lay-in ceiling tiles with a worm and pinhole pattern	3	0	3	0	N/A	9	L Floor -1, 2 & 3
1' x 4' white lay-in ceiling tiles with a worm and pinhole pattern	3	0	3	0	N/A	12	T
12" x 12" white pressed wood glued-on ceiling tiles with uniform hole pattern	Not sampled	N/A	N/A	N/A	N/A	16	T
Mastic for 12" x 12" white pressed wood glued-on ceiling tiles with uniform hole pattern	2	2	0	0	35	17	T

Ceiling Material Summary for Ground Floor of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
1' x 1' glued-on ceiling tile with a hole on grid pattern and brown mastic	No ACM	Room 05	PBS 2008
1' x 4' ceiling tile	No ACM	Room 05	PBS 2008
2' x 4' T-grid type ceiling tile with a worm hole pattern	No ACM	Room 23	PBS 2008
Ceiling tile glue dots and ceiling plaster	**2% ACM – glue 0.8% Point Count**	**Room 23**	PBS 2008
1' x 1' glued-on ceiling tile and brown mastic	**<1% ACM in mastic**	**Room 14A**	PBS 2008

Ceiling Material Summary for Floor 1 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
1' x 1' glued-on ceiling tile with a hole on grid pattern and brown mastic	No ACM	Room 102	PBS 2008

Ceiling Material Summary for Floor 2 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
2' x 4' T-grid type ceiling tile with worm hole pattern	No ACM	Room 214	PBS 2008

Data for Specific TSI and Surfacing Materials from Building-Wide Inspection Delivered by Prezant and Associates 1/1994

Material Type	Total Samples	Total >1%	Total No ACM	Total <1%	Highest % of ACM in all samples	Material Number	Throughout (T) Localized (L)
Hard mudded (hand formed) pipe fitting insulation on fiberglass insulated runs and risers	**8**	**8**	**0**	**0**	**45%**	**1**	**T**
Water/steam tank insulation	**2**	**2**	**0**	**0**	**45%**	**3**	**L – Mechanical Room 001**
Hard block (magnesite-type) pipe insulation on pipe runs and risers	**1**	**1**	**0**	**0**	**55%**	**4**	**L – Mechanical Room 001**
Valve blanket and filling material	**1**	**1**	**0**	**0**	**75%**	**5**	**L – Mechanical Room 001**

TSI and Surfacing Material Summary for Basement Floor of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Pipe Insulation	**15% ACM**	**Mechanical room south wall**	WO#8829
Pipe Insulation	**5% ACM**	**Mechanical room north wall**	WO#8829
Pipe Insulation	**15% ACM**	**Sub Tunnel, 10 ft. East of Entrance (Short Tunnel**	WO#8829
Pipe Insulation	**12% ACM**	**Sub Tunnel, Short Tunnel**	WO#8829
Mastic	No ACM	Sub Tunnel, Short Tunnel from wall	WO#8829
Paper	No ACM	Sub Tunnel, Short Tunnel floor	WO#8829
Debris	**10% ACM**	**Sub Tunnel #2, Long Tunnel**	WO#8829
Pipe Insulation	**20% ACM**	**Sub Tunnel #2, Long Tunnel**	WO#8829
Thread	No ACM	Sub Tunnel #2, Long Tunnel from floor	WO#8829
Debris	**15% ACM**	**Sub Tunnel #2, Long Tunnel**	WO#8829
Paper	**40% ACM**	**Sub Tunnel #2, Long Tunnel**	WO#8829
Paper	No ACM	Sub Tunnel #2, Long Tunnel	WO#8829
Pipe Insulation	**7% ACM**	**Sub Tunnel #2, Long Tunnel from damaged pipe**	WO#8829

TSI and Surfacing Material Summary for Ground Floor of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Possible pipe fitting insulation debris	No ACM	Above the suspended ceiling of the Ground Floor at Room 005 near the center of the corridor	WO#20410

TSI and Surfacing Material Summary for Floor 1 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
White debris directly below pipe fitting insulation on top of ceiling tiles	No ACM	Above the suspended ceiling of Room 123	WO#20410

TSI and Surfacing Material Summary for Floor 2 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
White suspected pipe fitting insulation debris	**8% ACM**	**Above suspended ceiling of Floor 2 at Door to Room 228 near the center of the hallway directly under pipe fittings**	WO#20410

Data for Specific Flooring Materials from Building-Wide Inspection Delivered by Prezant and Associates 1/1994

Note* - Only flooring materials reported to contain asbestos in Prezant inspection are included in this table due to conflicting data.

Material Type	Total Samples	Total >1%	Total No ACM	Total <1%	Highest % of ACM in all samples	Material Number	Throughout (T) Localized (L)
12" x 12" beige floor tile with rust colored streaks	**1**	**1**	**0**	**0**	**3%**	**14**	**T**
Mastic for 12" x 12" beige floor tile with rust colored streaks	**1**	**1**	**0**	**0**	**3%**	**15**	**T**
Black floor tile mastic	**1**	**1**	**0**	**0**	**N/A**	**18**	**L – Room 004**

Flooring Material Summary for Ground Floor of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
12' x 12' beige floor tile with black mastic	**2% ACM**	**Room 05**	PBS 2008
Gold carpet mastic and concrete	No ACM	Room 23	PBS 2008
Brown carpet mastic	<1% ACM	Room 14A	PBS 2008
White and gray carpet mastic and white floor leveler	No ACM	Room 22	PBS 2008

Flooring Material Summary for Floor 1 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
12" x 12" off-white floor tile with brown streaks and mastic	**2% ACM – Tile 3% ACM - Mastic**	**Room 107A**	WO#11535
Unidentified floor tile under light brown carpet	**20% ACM**	**Room 102/107**	WO#15932
Mastic for unidentified tile under light brown carpet	**2% ACM**	**Room 102/107**	WO#15932
Mastic for brown carpet	No ACM	Room 107	WO#15932
Carpet mastic	No ACM	Room 102	PBS 2008

Flooring Material Summary for Floor 2 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Tan-tint carpet with tan mastic	No ACM	SE corner of Room 223	WO#19032
Brown resilient flooring and mastic	No ACM	From carpeted area near door at SE corner of Room 223	WO#19032
Mastic for tan-tint carpet and thin, brown, semi-transparent mastic for carpet edging strips	No ACM	Near the top of the upper seating area near the NW corner of Room 223	WO#19032
12 inch by 12 inch tan floor tile with white speckles and black mastic	**2% ACM - Mastic**	**At front of Room 223 near SE corner**	WO#19032
Carpet pad and mastic, brown linoleum and backing	No ACM	Room 207	PBS 2008
12 inch by 12 inch beige floor tile with black and white mastics	**2% ACM – Black Mastic and tile**	**Room 223**	PBS 2008
Green carpet with a black cross-hatched pattern with tan padding and tan mastic	No ACM	Room 207 near main entrance to the room	WO#21311
Brown linoleum with jute backing	No ACM	Room 207 near the main entrance to the room under the existing carpet	WO#21311
Brown linoleum with jute backing	No ACM	Room 207 near NW corner of the room	WO#21311
Brown carpet with black and green highlights with tan padding and tan mastic	No ACM	Room 207 near NW corner of the room	WO#21311
Black mastic on concrete floor	No ACM	From four areas of the concrete floor in Room 207 – Composite sample	WO# 21660

Flooring Material Summary for Floor 3 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Carpet mastic	No ACM	Room 306	PBS 2008

Data for Specific Wall Materials from Building-Wide Inspection Delivered by Prezant and Associates 1/1994

Material Type	Total Samples	Total >1%	Total No ACM	Total <1%	Highest % of ACM in all samples	Material Number	Throughout (T) Localized (L)
Gypsum wallboard	**7**	**0**	**7**	**0**	**N/A**	**6**	**T**
Joint compound for gypsum wallboard	**7**	**1**	**6**	**0**	**2%**	**7**	**T**
Wall and ceiling plaster	**7**	**0**	**7**	**0**	**N/A**	**10**	**T**
White wall penetration compound (mostly in ceiling mechanical spaces)	**3**	**0**	**3**	**0**	**N/A**	**11**	**T**
Gray vinyl coving	**Not sampled**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**L – Room 022 & 022A**
Mastic for gray vinyl coving	**1**	**0**	**1**	**0**	**N/A**	**22**	**L – Room 022 & 022A**
White cove base mastic	**3**	**0**	**3**	**0**	**N/A**	**24**	**T – Cove base not sampled**

Wall Material Summary for Ground Floor of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Gypsum Wallboard with joint compound	**2% ACM – Joint compound**	Room 30	WO#14497
Wall Plaster	No ACM	Room 028	WO#16872
4 " x 4" yellow ceramic wall tiles with tiny brown speckles, white grout and gray mortar bed	No ACM	Room 028	WO#16872
Glazing for 4 " x 4" yellow ceramic wall tiles with tiny brown speckles, white grout and gray mortar bed	No detectable lead	Room 028	WO#16872
Tan sealant	**2% ACM**	**Room 028 at junction of urinals and ceramic wall tile**	WO#16872
Debris from wall penetration sealant materials	No ACM	Above the suspended ceiling on the Ground Floor at Room 16	WO#20410
Debris from wall penetration sealant materials	No ACM	Above suspended ceiling 6 feet east of the door to Room 014	WO#20410
Gypsum Wallboard with joint compound	No ACM	Room 14A	PBS 2008
Gypsum Wallboard with joint compound	No ACM – wallboard **<1% ACM – Joint compound**	Room 14A	PBS 2008

Wall Material Summary for Floor 1 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Debris from wall penetration sealant materials	No ACM	Above suspended ceiling of Floor 1 at Room 114	WO#20410
Debris from wall penetration sealant materials	No ACM	Above suspended ceiling of Floor 1 at Room 102	WO#20410
4" gray cove base and beige mastic	No ACM	Room 102	PBS 2008

Wall Material Summary for Floor 2 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Wall Plaster	No ACM	Room 202	WO#14970
Wall Plaster	No ACM	Vestibule to Stair 1 on Floor 2 at the doorway to the Main Hallway	WO#17550
Wall Plaster	No ACM	From the south wall of the Main Hallway across the Hall from Room 203.	WO#17550
White wall penetration compound	No ACM	Ceiling mechanical area of the vestibule to	WO#17550

		Stair 1 on Floor 2	
Red clay wall blocks	No ACM	From south wall of Floor 2 men's Restroom accessed through the ceiling hatch	WO#17550
Debris from wall penetration sealant materials	No ACM	Above suspended ceiling of Floor 2 at Room 200A	WO#20410
Residual paper and joint compound for gypsum wallboard	**5% ACM**	**Above the suspended ceiling of Floor 2 at the Door to Room 228**	WO#20410
Debris from wall penetration sealant materials	No ACM	Above suspended ceiling of Floor 2 at Room 204	WO#20410
Wall plaster	No ACM	Room 207	PBS 2008
Gypsum Wallboard with joint compound	No ACM – wallboard **<1% ACM – Joint compound**	**Corridor 200J**	PBS 2008
1' x 1'' glued-on wall tile with fissures and brown mastic	No ACM – tiles **<1% ACM – Mastic**	**Room 203**	PBS 2008
4" brown cove base and brown mastic	No ACM	Room 223	PBS 2008

Wall Material Summary for Floor 3 of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
6" beige cove base and white mastic	No ACM	300K Corridor	PBS 2008

Wall Material Summary for Exterior of Anderson Hall

Material Type	Sample Result	Location of Sample	Notes
Granular sealant between joints in stone	No ACM	Floor 2 south exterior near window	PBS 2008
Granular sealant between joints in stone	No ACM	Floor 2 NE exterior near window	PBS 2008

APPENDIX F

AHERA Certifications

THIS IS TO CERTIFY THAT

MAE REILLY

HAS SUCCESSFULLY COMPLETED THE TRAINING COURSE

for

ASBESTOS INSPECTOR INITIAL COURSE

In accordance with TSCA Title II, Part 763, Subpart E, Appendix C of 40 CFR

Course Date: 7/11/2022 - 7/13/2022

Course Location: Portland, OR

Certificate: IN-22-0591C

For verification of the authenticity of this certificate contact:
PBS Engineering and Environmental Inc.

CCB #SRA0614 24-Hr Training

24-Hour AHERA Inspector Training; AHERA is the Asbestos Hazard Emergency Response Act enacting Title II of Toxic Substance Control Act (TSCA)

Expiration Date: 07/13/2023

Andy Fridley, Instructor

THIS IS TO CERTIFY THAT

WILLEM MAGER

HAS SUCCESSFULLY COMPLETED THE TRAINING COURSE

for

ASBESTOS INSPECTOR REFRESHER

In accordance with TSCA Title II, Part 763, Subpart E, Appendix C of 40 CFR

Course Date: 01/19/2023

Course Location: Online

Certificate: IRO-23-0536B

CCB #SRA0615 4-Hr Training

4-Hour AHERA Inspector Refresher Training; AHERA is the Asbestos Hazard Emergency Response Act enacting Title II of Toxic Substance Control Act (TSCA)

Expiration Date: 01/19/2024

For verification of the authenticity of this certificate contact:
PBS Engineering and Environmental Inc.
4412 S Corbett Avenue
Portland, OR 97239
503.248.1939

Andy Fridley, Instructor