ENVIRONMENTAL CHECKLIST

for the proposed

University of Washington
Haring Center Renovation Project

UNIVERSITY of WASHINGTON

January 2022

EA Engineering, Science, and Technology, Inc., PBC
Shannon and Wilson
PBS Engineering and Environmental, Inc.

PREFACE

The purpose of this Environmental Checklist is to identify and evaluate probable environmental impacts that could result from ***The University of Washington Haring Center Renovation Project*** and to identify measures to mitigate those impacts. ***The University of Washington Haring Center Renovation Project*** would include the renovation of the existing, approximately 41,200-square foot building, including interior improvements to existing classrooms and offices; improvements to building systems; and, improved ADA access, play surfaces, and courtyard areas.

The State Environmental Policy Act (SEPA)[1] requires that all governmental agencies consider the environmental impacts of a proposal before the proposal is decided upon. This Environmental Checklist has been prepared in compliance with the State Environmental Policy Act; the SEPA Rules, effective April 4, 1984, as amended (Chapter 197-11, Washington Administrative Code), which implements SEPA.

This document is intended to serve as SEPA review for, site preparation work, building construction, and operation of the proposed development comprising the ***University of Washington Haring Center Renovation Project***. Analysis associated with the proposed project contained in this Environmental Checklist is based on schematic plans for the project. While not construction-level detail, the schematic plans accurately represent the scope of the proposed project and are considered adequate for analysis and disclosure of environmental impacts.

This Environmental Checklist is organized into three major sections. *Section A* of the Checklist (beginning on page 1) provides background information concerning the *Proposed Action* (e.g., purpose, proponent/contact person, project description, project location, etc.). *Section B* (beginning on page 8) contains the analysis of environmental impacts that could result from implementation of the proposed project, based on review of major environmental parameters. This section also identifies possible mitigation measures. *Section C* (page 33) contains the signature of the proponent, confirming the completeness of this Environmental Checklist.

Project-relevant analyses that served as a basis for this Environmental Checklist include: *Geotechnical Engineering Report* (Shannon & Wilson, 2021), *Critical Areas Review Report* (Shannon & Wilson, 2022), and *Hazardous Materials Survey Report* (PBS Engineering and Environmental, Inc., 2021).

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[1] *Chapter 43.21C. RCW*

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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:

University of Washington Haring Center Renovation Project

2. Name of Applicant:

University of Washington

3. Address and Phone Number of Applicant and Contact Person:

Applicant
University of Washington
Facilities, Asset Management
Box 352205
Seattle, WA 98195-2205

Contact
Julie Blakeslee
Environmental and Land Use Planner
University of Washington
Facilities, Asset Management
Box 352205
Seattle, WA 98195-2205
206-543-5200

4. Date Checklist Prepared

The Checklist was prepared on January 25, 2022 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 352205
Seattle, WA 98195-2205

6. Proposed Timing or Schedule (including phasing, if applicable):

Construction of the proposed ***University of Washington Haring Center Renovation Project*** is anticipated to begin in late Summer/early Fall 2022 and is anticipated to occur for a duration of approximately 14 to 16 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:

- *Geotechnical Engineering Report* (Shannon & Wilson, 2021);
- *Critical Areas Review Report* (Shannon & Wilson, 2022); and,
- *Hazardous Materials Survey Report* (PBS Engineering and Environmental, Inc., 2021).

These reports are included as appendices to this Checklist.

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 the ***University of Washington Haring Center Renovation Project*** site.

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

University of Washington

- Project approval, design approval, authorization to prepare contract documents, and authorization to Call-for-Bids.

City of Seattle

- *Department of Construction and Inspections*

  Permits/approvals associated with the proposed project, including:
  - Building Permit
  - Mechanical Permits
  - Electrical and Fire Alarm Permits
  - Comprehensive Drainage Control Plan and Construction Stormwater Control Plan Approval
  - Environmental Critical Areas (ECA) Exemption Approval
  - Shoreline Exemption Approval

King County

- *Department of Public Health – Environmental Health Services*
  - Plumbing Permit

Puget Sound Clean Air Agency

- Construction Permit – Asbestos/Hazardous Materials Abatement

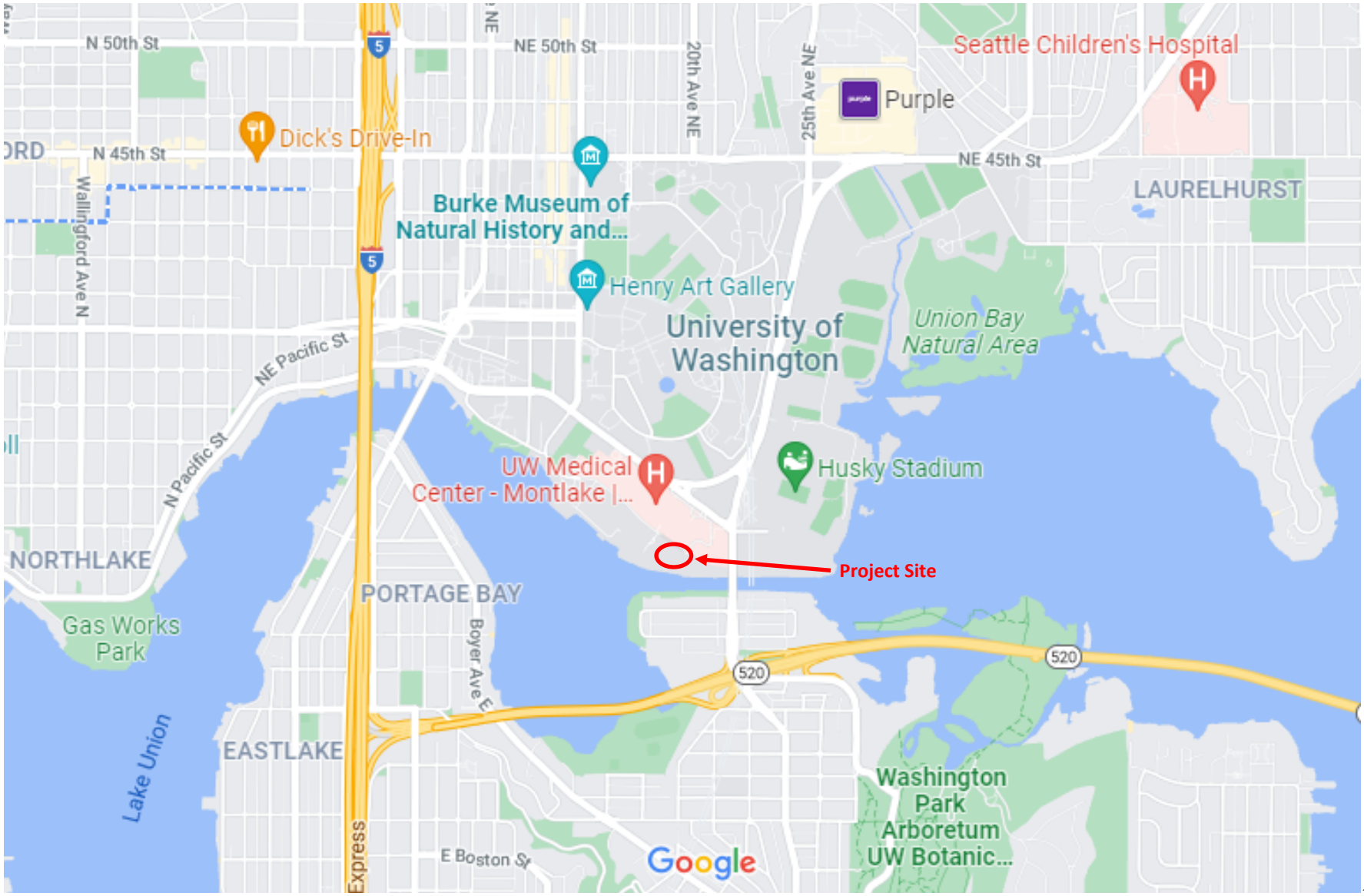
11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

Existing Site Conditions

The proposed ***University of Washington Haring Center Renovation Project*** site is located in the South Campus area which is generally the home of many of the University's medical center and health sciences facilities. The project site is located immediately south of NE Columbia Road and the University of Washington Medical Center – Montlake Tower, east of the existing CHDD building, and north of Portage Bay/Montlake Cut (see **Figure 1** for a vicinity map of the site). The existing site is generally comprised of an existing Haring Center building and associated courtyards, walkways and landscaping (see **Figure 2** for an aerial map of the project site).

The existing Haring Center building was originally built in 1969. The one-story building is approximately 21-feet tall at its highest point and contains approximately 41,205 square feet of building space. The building currently serves as the home of the University's Experimental Education Unit (EEU) which offers a comprehensive early childhood school community that provides inclusive education opportunities to children with and without disabilities. The EEU is one part of the University's Center on Human Development and Disability (CHDD) program, which is housed across multiple buildings, including the Haring Center. The existing Haring Center building contains classrooms, observation rooms, offices, a gymnasium, an auditorium, storage rooms, a small kitchen area, playground areas, and courtyards.

University of Washington Haring Center Renovation Project
Environmental Checklist



Note: This figure is not to scale.

Source: Google Maps and EA Engineering, 2021

EA Engineering, Science, and Technology, Inc., PBC

Figure 1

Vicinity Map

Note: This figure is not to scale.

Source: Google Earth and EA Engineering, 2022

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Figure 2

Aerial Map

Proposed Project

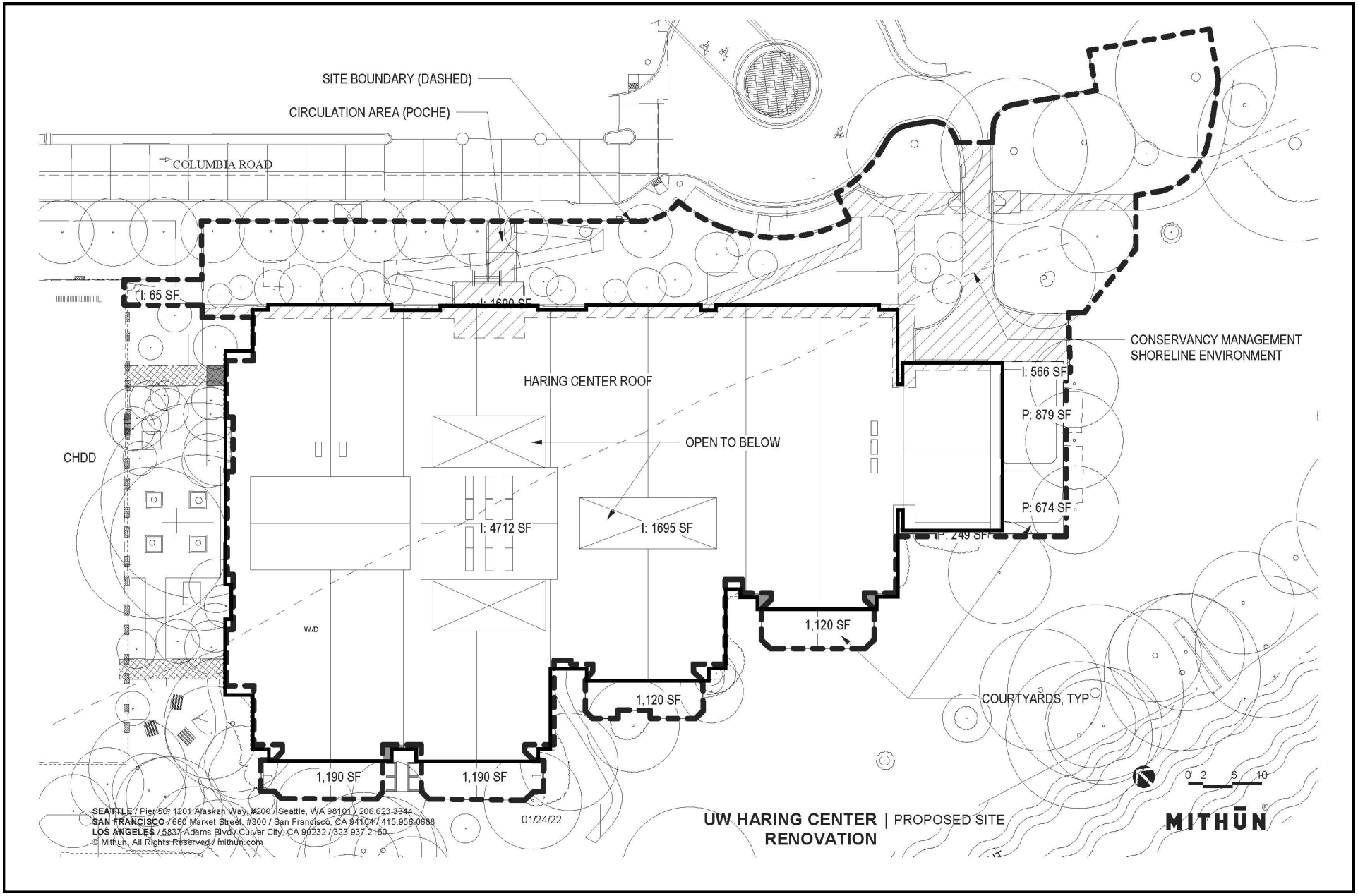
The proposed ***University of Washington Haring Center Renovation Project*** is intended to provide interior and exterior renovations to the existing, approximately 41,205 sq. ft. Haring Center building. The majority of the work under the project would be located within the existing building, including interior improvements to existing classrooms, offices and other programmatic spaces; improvements to building systems (mechanical, plumbing and electrical systems); and abatement of hazardous materials. Work on the exterior of the building would include replacement of the existing roof membrane; replacement or renovation of the exterior building envelope to improve thermal performance; and improved ADA access, walkway lighting, play surfaces, and courtyard areas. In addition, the existing covered entry to the building would be enclosed which would add approximately 250 sq. ft. to the total enclosed building footprint (proposal total of approximately 41,455 sq. ft.). See **Figure 3** for a site plan of the proposed project.

Based on the City of Seattle's ECA maps, the proposed project site contains or is located in the vicinity of several ECAs, including a Riparian Corridor, Fish and Wildlife Habitat Area, and steep slopes. The Riparian Corridor and Fish and Wildlife Habitat Areas associated with project site meet the provisions for exemption 25.09.045.F as the proposed building renovation activities would not impact or encroach on these environmental critical areas. Renovation activities would occur in the building and no ground disturbance is anticipated between the building and the Montlake Cut. In addition, existing steep slope areas are located near the CHDD clinic (to the west) and Montlake Cut (to the south) and would not be affected by construction activities associated with the proposed project. Therefore, since the proposed project is comprised of renovation work to the existing building that would not affect these ECAs, the University of Washington will apply for an ECA exemption from the City of Seattle for the project.

The approximate southern half of the existing Haring Center building is also located within the shoreline setback area. Because the project work would provide maintenance and upgrades/repairs to existing systems and the footprint of the building would not change within the shoreline setback area, the University of Washington will apply for a shoreline exemption (per SMC 23.60A.020) from the City of Seattle for the project.

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. If a proposal would occur over a range of area, provide the range or boundaries of the site(s).

The proposed ***University of Washington Haring Center Renovation Project*** site is located in the South Campus area. The site is immediately south of NE Columbia Road and the University of Washington Medical Center – Montlake Tower, east of the existing CHDD building, and north of Portage Bay/Montlake Cut (see **Figure 1** and **2**).



Source: Mithun, 2022.

EA Engineering, Science, and Technology, Inc., PBC

Figure 3

Site Plan

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one):
Flat, rolling, hilly, steep slopes, mountainous,
other:_____

The ***University of Washington Haring Center Renovation Project*** site is currently occupied by the existing building and associated courtyards, walkways and landscaping. The ground surface of this area is generally flat with a gradual slope to the south as the site area approaches Portage Bay and the Montlake Cut.

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

According to the City of Seattle's Environmentally Critical Areas (ECA) Maps, there are no steep slope hazard areas located on the site. The steepest slope on the site is approximately two percent. Steep slope areas are located approximately 40-50 feet or more to the south and east of the site, adjacent to the Montlake Cut, but these areas would not be affected by the proposed renovation project.

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.

As part of the geotechnical report for the project, one soil exploration boring was drilled within the site area near the northeast corner of the existing building. In addition, results from previous onsite soil boring explorations (14 prior boring explorations) were reviewed to supplement the information obtained from the recent exploration for this project. Soils encountered within the boring completed for this project included approximately five feet of fill, underlain by dense to very dense, silty sand with gravel to the bottom of the boring at approximately 50 feet below ground surface (bgs). Based on the review of previous explorations, soil conditions beneath the existing building consist of fill, underlain by soft, dark brown peaty clay and black, organic silt. The soft sediments were up to 10 feet thick and extended as deep as 18 feet bgs; very dense glacial till is located beneath the soft sediments. Based on the good condition of the building and the absence of settlement, it is anticipated that the construction phase for the existing building may have removed much of the compressible peat from the building footprint area (see **Appendix A** for details).

According to the City of Seattle's Environmentally Critical Areas (ECA) Maps, the site is listed as a peat-settlement prone area. However, there was no evidence of peat within the soil exploration that was completed for the project. See **Appendix A** for the Geotechnical Report.

The proposed project site does not contain agricultural land areas of commercial significance.

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

There are no indications or history of unstable soils on the site or adjacent to the site. According to the City of Seattle ECA Maps, there are no steep slope areas, potential slide areas or known slide areas on the site (*City of Seattle, 2021*). As noted above, steep slope areas are located approximately 40-50 feet or more to the south and east of the site, adjacent to the Montlake Cut, but these areas would not be affected by the proposed renovation project.

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

No grading is anticipated to be necessary for the proposed renovation project. Minimal ground disturbance would be necessary and would generally be limited to the installation of new fence posts adjacent to the building and potentially a small pot hole to access a drainage line if the manhole access is inadequate.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Temporary erosion is possible in conjunction with any construction activity. However, since the proposed project would renovate existing interior and exterior portions of the existing building and no grading would be required, it is anticipated that there would be little to no erosion associated with the proposed project.

Once the project is operational, no erosion is anticipated.

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

The majority of the site is currently covered with existing impervious surfaces, including the existing building footprint, circulation/walkway areas, and courtyards. With the proposed renovation project, the type and amount of hard surfaces would be the same as under the existing conditions.

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

The mitigation of erosion impacts are addressed in individual permit reviews under the *Grading and Drainage Control Codes* (*SMC 22.170*), and in critical area locations by the *Seattle Critical Areas ordinance* (*SMC 25.09*), which prescribed best management practices for excavation and grading on critical areas, including Temporary Erosion and Sedimentation Control (TESC) measures.

The 2018 Seattle Campus Master Plan EIS identifies the site areas as having a high potential for earth-related impacts. General methods to address impacts to earth are identified in Section 3.1.1 and Section 3.1.3 of the Final EIS, including the implementation of TESC measures. Given the nature of the renovation project and that no grading is required it is anticipated that erosion would not occur during the project.

The site is identified on the City of Seattle ECA maps as within a peat-settlement prone area. However, there was no evidence of peat within the soil exploration that was completed for the project. Based on the good condition of the existing building and the absence of settlement, it is anticipated that the construction of the existing building may have removed much of the compressible peat from the building footprint area (see **Appendix A** for the Geotechnical Report).

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

2. Air

a. What type of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

During construction, the ***University of Washington Haring Center Renovation Project*** could result in temporary increases in localized air emissions associated with particulates and construction-related vehicles. However, as described above under the Earth discussion, since the proposed project would renovate existing interior and exterior portions of the existing building and no grading would be required it is anticipated that air quality emission impacts would not 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, the primary source of emissions would be emissions from operation of the building and from vehicles travelling to and from the site. Operation of the project is not anticipated to generate new vehicle trips and as a result, significant adverse air quality impacts would not be anticipated.

Another consideration with regard to air quality and climate relates to Greenhouse Gas Emissions (GHG). However, since the proposed renovation project would result in no change to the footprint of the building, it is anticipated that any change in GHG emissions would be negligible.

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 NE Columbia Road, NE Pacific Street, and Montlake Boulevard NE. Emissions from existing buildings in the vicinity (UW Medical Center, Montlake Tower, Brotman Baty Pavilion, CHDD Clinic, Portage Bay Building, and the Magnuson Health Sciences Center) also contribute to emissions in the vicinity of the site. 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:

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for air quality impacts.

Short-term impacts to air quality arising for 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 the ***University of Washington Haring Center Renovation Project*** site. The nearest surface water body is Portage Bay which is located approximately 100 feet to the south of the project site (see **Figure 1**).

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.

The proposed project will not require any work over or in any water body. As described above, the project site is located approximately 100 feet from Portage Bay. Renovation activities from the project would occur within the existing building and no ground disturbance is anticipated in the area between the building and Portage Bay.

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.

No fill or dredge material would be placed in or removed from any surface water body as a result of the proposed project.

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

The proposed project would not require any surface water withdrawals or diversions.

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

The proposed project site does not lie within a 100-year floodplain and is not identified as a flood prone area on the City of Seattle Environmentally Critical Areas map (*City of Seattle, 2021)*.

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.**

There would be no discharge of waste materials to surface waters.

b. **Ground:**

1) **Will ground water be withdrawn, or will water be discharged to ground water? 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 general description, purpose, and approximate quantities if known.**

Groundwater was not detected during the boring excavation that was completed for the geotechnical report (**Appendix A**). Groundwater is typically perched above glacial till, although localized seepage zones may be present. Based on previous historical borings that were completed on the site, it is anticipated that the groundwater table lies above the glacial till unit. No groundwater would be withdrawn or water discharged to ground water as part of the proposed project.

2) **Describe waste material that will be discharged into the ground from septic tanks or other sources; 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.**

Waste material would not be discharged into the ground from septic tanks or other sources as a result of the proposed project.

c. **Water Runoff (including storm water):**

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.**

The ***University of Washington Haring Center Renovation Project*** site is currently occupied by the existing building and associated courtyards, walkways and landscaping, and these features are the primary source of stormwater within the site area. The existing building is served by a dedicated stormwater system that directly discharges to Portage Bay, which is a designated as a receiving water body per Seattle Drainage Code Chapter 2,

Section 2.3. Existing roof downspouts connect to this existing conveyance system.

With the proposed project, no routing revisions to the existing stormwater system are proposed and the amount of stormwater generated from the site is not anticipated to substantially change. The current system would continue to serve the site and discharge to Portage Bay.

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

The 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.

The proposed project would not alter or otherwise affect drainage patterns in the site vicinity.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for stormwater impacts. Stormwater for the proposed project site would discharge to the University of Washington's storm drainage system which ultimately drains to Portage Bay. The existing on-site system is estimated to have adequate capacity for the proposed project and no changes or routing revisions are proposed.

Additionally all existing local regulations under the *Stormwater and Drainage Code, SMC* Title 22, apply. Pursuant to the Overview Policy at SMC 25.05.665, no further mitigation is warranted.

4. Plants

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

X deciduous tree:
X evergreen tree:
X shrubs
X grass
__ pasture
__ crop or grain
__ 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?

No existing trees are proposed to be removed as part of the ***University of Washington Haring Center Renovation Project***. Certain shrubs located adjacent to the building may be removed if they are found to have caused damage to the building or if renovation activities would damage the shrub.

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

No known threatened or endangered species are located on or proximate to the project site.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for plant impacts. The proposed project design would be approved by the University of Washington Landscape Advisory Committee. This committee includes experts in planning, botany, landscape architecture, urban design, horticulture, art, architectural history and grounds maintenance. No existing trees would be removed as part of the project.

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

Noxious weeds or invasive species that could be present in the vicinity of the site include giant hogweed, English Ivy and Himalayan blackberry.

5. Animals

a. Circle (underlined) any birds and animals that have been observed on or near the site or are known to be on or near the site:

birds: **songbirds,** hawk, heron, eagle**, other:** **seagulls**, **pigeons,**
mammals: deer, bear, elk, beaver**, other:** **squirrels**, **raccoons**, **rats**, **mice**
fish: bass, **salmon**, **trout**, herring, shellfish**, other:** **None**.

Birds and small mammals tolerant of urban conditions may use and may be present on and near the ***University of Washington Haring Center Renovation Project*** site. Mammals likely to be present in the site vicinity include: raccoon, eastern gray squirrel, mouse, rat, and opossum.

Birds common to the area include: European starling, house sparrow, rock dove, American crow, seagull, western gull, Canada goose, American robin, and house finch. The site is also located approximately 450 feet to the south of an area identified as a great blue heron breeding colony (located between NE Pacific Street and NE Pacific Place). The Critical Areas Review Report that was prepared for the project indicated that no herons or heron nests were observed in the vicinity of the site and that there are no heron buffers that would be affected by the proposed project (see **Appendix B** for details).

The Portage Bay area to the south of the site is also identified by the Washington State Department of Fish and Wildlife (WDFW) for the presence of Priority Habitat and Species (PHS), including Coho, Sockeye, Resident Coastal Cutthroat, Chinook, Steelhead, and Dolly Vardon/Bull Trout. Wildlife is not anticipated to be affected by the project since the renovation activities would occur in the building and no ground disturbance would occur near Portage Bay.

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

The following are listed threatened or endangered species that could affected by development on the site or surrounding vicinity based on data from the U.S. Fish and Wildlife Service: marbled murrelet, streaked horned lark, yellow-billed cuckoo, bull trout, and grey wolf[2]. However, it should be noted that none of these species have been observed at the site and due to the urban location of the site, it is unlikely that these animals are present on or near the site.

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:

The proposed project is not anticipated to affect wildlife since the renovation activities would occur in the building and no ground disturbance is anticipated between the building and Portage Bay. The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for wildlife impacts. In addition, the 2018 Seattle Campus Master Plan contains an extensive open space element

[2] *U.S. Fish and Wildlife Service. IPaC. https://ecos.fws.gov/ipac/location/index. Accessed December 2021.*

(section 1V, p. 54) which was analyzed in the 2018 Seattle Campus Master Plan Final EIS (Section 3.11). These preserved open space areas provide mitigation for encroachment of development on campus into areas which may provide habitat for native wildlife. Pursuant to the Overview Policy at *SMC* 25.05.665, no further mitigation is warranted.

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, Eastern gray squirrel, and Nutria.

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 source of energy that currently serve and would continue to serve the proposed ***University of Washington Haring Center Renovation Project***. These energy sources are generally utilized for lighting, electronics, and heating.

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.

d. 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 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for energy impacts. The proposed development would conform to the applicable provisions of the State of Washington Energy Code and the City of the Seattle Energy Code which is an adopted and amended version of the International Energy Conservation Code. The proposed project would also be designed to meet the certification requirements for LEED Gold. Proposed sustainability measures that would be incorporated into the project include: upgrades of the roof and exterior envelope to improve thermal performance, upgrade of the mechanical system to a high-efficiency VAV system, replacement of existing light fixtures

with high-efficiency LED lighting, and replacement of existing plumbing fixtures with low-flow fixtures.

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

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 as a result 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 ***University of Washington Haring Center Renovation Project***. 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.

A hazardous materials survey was completed for the project and included inspections for asbestos-containing materials (ACM), lead-containing paint (LCP), PCB-containing components, regulated metals in masonry components (chromium), mercury-containing components, and silica-containing materials (*PBS, 2021*). ACM was identified within several areas of the building and would be affected by the proposed renovation. LCP was found in painted wallboard walls, wood beams, grout and ceramic tile, while chromium was found in exterior mortar/grout samples. PCB materials were identified caulking/sealants at wall/door frame and wall/window frame rough openings; any magnetic ballasts in fluorescent light fixtures are also assumed to have PCB containing components. Silica-containing materials are assumed to be present within concrete flooring, wallboard systems, ceramic tile/grout, and masonry brick walls/mortar. All thermostats, compact fluorescent lights, and high-intensity lamps within the building are also assumed to contain mercury-containing components (see **Appendix C** for further details).

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.

As noted in the hazardous materials survey, all affected ACM would be removed by a licensed asbestos abatement contractor in accordance with applicable regulations. Construction activities that would impact LCP, Chromium-containing materials and Silica-containing materials would be performed in accordance with Washington Labor and Industries (L&I) regulations for Lead/Metals in Construction and L&I regulations for Silica in Construction. The contractor would also address worker protection and proper handling, removal and disposal of PCB-containing products and mercury-containing components during demolition (see **Appendix C** for further details).

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, chemicals that would be used on the site would be limited to cleaning supplies and would be stored in an appropriate and safe location.

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 or UWPD.

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. In addition, as noted in the hazardous materials survey, all hazardous materials within the area of the proposed project would be removed as part of the construction process in accordance with applicable regulations (see **Appendix C** for details). Pursuant to the Overview Policy at *SMC* 25.05.665, no further mitigation is warranted.

b. Noise

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

Traffic noise associated with adjacent roadways and parking areas (NE Columbia Road, NE Pacific Street, Montlake Boulevard NE and the South Campus Parking Garage), as well as activity associated with surrounding facilities (UW Medical Center and Magnuson Health Sciences Center) are the primary source of noise in the vicinity of the project site. Existing noise in the site vicinity is not anticipated to adversely affect the proposed ***University of Washington Haring Center Renovation 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 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 ***University of Washington Haring Center Renovation Project*** would likely result no changes to existing noise levels. No significant noise impacts would be anticipated.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a medium potential for noise impacts. Short-term noise impacts deriving from construction projects are mitigated primarily through the adoption of construction noise control best practice, typically including limiting hours of construction. Measures such as the following are considered appropriate mitigation for this project:

- In accordance with City of Seattle regulations, construction activities would be limited to applicable noise levels per the City's noise regulations covering construction noise (*Seattle Municipal Code 25.08.425*).

- Given the level of existing environmental noise in the vicinity and the anticipated level of post-construction noise, no measures would be necessary to reduce or control post-construction noise impacts from the proposed project.

Permanent onsite operations at the UW Campus are regulated by *Seattle Municipal Code Chapter 25.08* regarding maximal noise levels. Pursuant to the Overview Policy at *SMC 25.05.665*, no further mitigation is warranted.

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 site of the proposed ***University of Washington Haring Center Renovation Project*** is located in the South Campus area and is located immediately to the south of NE Columbia Road (see **Figure 1** for a vicinity map of the site). The existing site is generally comprised of the existing Haring Center building and associated courtyards, walkways and landscaping (see **Figure 2** for an aerial map of the project site).

The area surrounding the existing building is generally characterized by UW Medical Center and Health Sciences uses. To the north of the building are NE Columbia Road and the UW Medical Center. Further to the north is NE Pacific Street, the Montlake Triangle (the Triangle Underground Parking Garage is located beneath the Montlake Triangle), the UW Link Light Rail Station and Husky Stadium. To the northwest are multiple buildings associated with the Magnuson Health Sciences Center.

The area to the east includes the Glade Sculpture and landscape area, the Brotman Baty Pavilion, and Montlake Boulevard NE/the Montlake Bridge. Further to the east is Parking Area E12 and E20.

Immediately south of the site is the Montlake Cut and Portage Bay. Further to the south, beyond the Montlake Cut, are residential uses in the Montlake neighborhood.

The area to the west includes the CHDD Clinic Building, the Portage Bay Building, the South Campus Center, the South Campus Parking Garage (Parking Area S1), and Parking S8.

With the proposed renovation project, the site would continue to be utilized for the EEU for early childhood education/ teaching and would not be anticipated to affect existing buildings and uses that are adjacent to the site.

Policies and standards under the 2019 Seattle Campus Master Plan related to minimizing potential impacts would be followed under the proposed project. Pursuant to the Overview Policy at *SMC* 25.05.665, no further mitigation is warranted.

b. Has the 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 as a result 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 nonforest use?

The project site has no recent history of use as a working farmland or forest land.

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:

The project site is located in an urban area and would not affect or be affected by working farm or forest land; no working farm or forest land is located in the vicinity of this urban site.

c. Describe any structures on the site.

The ***University of Washington Haring Center Renovation Project*** site includes the existing Haring Center building and associated courtyards, walkways and landscaping.

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

The proposed project would include renovations to the existing Haring Center building and no structures would be demolished as part of the project.

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

The site is currently zoned as Major Institution Overlay with a 37-foot height limit (MIO-37) 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, 2018*).

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

A portion of the project site located near the Montlake Cut and Portage Bay and is within the City's designated shoreline master program boundary. This area of the site is designated as part of the Conservancy Management (CM) shoreline environment. Land use and development within the CM environment is limited in accordance with SMC 23.60A. The Haring Center is considered an existing nonconforming use in this environment because it provides childcare and is a non-water-related use. Per SMC 23.60A.122, nonconforming uses can be maintained, repaired, improved or altered within the CM environment. In addition to this limitation, all other shoreline environment conditions of SMC 23.69A.150 through 170 shall be met during the proposed renovation project (see **Appendix B** for details).

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

Based on the City of Seattle's ECA maps, the proposed project site contains or is located in the vicinity of several ECAs, including a Riparian Corridor, Fish and Wildlife Habitat Area, and steep slopes (*City of Seattle, 2021*). A Critical Areas Review Report was prepared for the project by Shannon and Wilson (see **Appendix B**). The Riparian Corridor and Fish and Wildlife Habitat Areas associated with project site meet exemption 25.09.045.F as the proposed building renovation activities do not impact or encroach on these environmental critical areas. Renovation activities will occur in the building and no ground disturbance is anticipated between the building and the Montlake Cut. In addition, existing steep slope areas are located near the CHDD clinic (to the west) and Montlake Cut (to the south) and would not be affected by construction activities associated with the proposed project. Therefore, since the proposed project is comprised of renovation work to the existing building that would not affect these ECAs, the University of Washington will apply for an ECA exemption from the City of Seattle for the project.

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

The proposed ***University of Washington Haring Center Renovation Project*** would not provide any residential opportunities. Development of the project would renovate the existing building space but would not be anticipated to result in any new employees.

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

The proposed project would not displace any people.

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

No displacement impacts would occur and no mitigation measures are necessary.

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

The 2018 Seattle Campus Master Plan EIS identifies the site areas as having a low potential for land use impacts. The site is designated as "Major Institution" under the City of Seattle Comprehensive Plan. Under the *1998 City-University Agreement*, the City of Seattle required the University of Washington to develop a conceptual Master Plan for its Seattle campus. The 2019 Seattle Campus Master Plan, developed pursuant to the Agreement and adopted by the University and the Seattle City Council, governs future development within the Major Institution Overlay zone. Pursuant to the Overview Policy at *SMC* *25.05.665*, no further mitigation is warranted.

m. Proposed measures to ensure the proposal is compatible with nearby 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.

No housing units would be provided as part of the ***University of Washington Haring Center Renovation Project***.

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

No housing presently exists on the site and none would be eliminated.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for housing impacts. As noted above, the site is located with the Major Institution Overlay zone under the 2019 Seattle Campus Master Plan. Adherence to the 2019 Seattle Campus Master

Plan is de facto compliance with the Seattle Comprehensive Plan policies and Map. Pursuant to the Overview Policy at *SMC* *25.05.665*, no further mitigation is warranted.

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 tallest height of the existing Haring Center building is approximately 21 feet. No changes to the height of the building or exterior building materials are proposed with the project.

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

Views of the site are generally limited to the immediate area surrounding the building due to the presence of existing tall buildings surrounding the project site area, including the UW Medical Center, Magnuson Health Sciences Center and the Brotman Baty Pavilion; the presence of existing mature trees surrounding the site also limits views. The proposed ***University of Washington Haring Center Renovation Project*** would not alter the existing height or footprint of the building and would not alter or obstruct any existing views.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for aesthetics impacts. The 2019 Seattle Campus Master Plan contains adopted policies and development standards for the whole of the Campus. Pursuant to the Overview Policy at *SMC* *25.05.665*, no further mitigation is warranted.

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 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 Light and Glare

Under the proposed ***University of Washington Haring Center Project***, interior building lighting would remain similar to the existing conditions since the proposed building area would remain virtually the same. Exterior egress lighting would be replaced with new LED fixtures. Lighting for circulation pathways would be replaced with new pole-mounted or bollard-mounted LED fixtures to meet accessibility standards and would have cutoff shielding to meet applicable requirements. Light and glare on the site is anticipated to remain similar to the existing conditions and would not result in significant impacts to surrounding areas.

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?

No off-site sources of light or glare are anticipated to affect the proposed project.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for light and glare impacts. The proposed Haring Center Renovation is designed to be consistent with the University's existing internal design review process which considers the effect of architectural glazing, lighting, landscape designs to ensure that impacts from light and glare are adequately mitigated. Pursuant to the Overview Policy at *SMC 25.05.665*, no further mitigation is warranted.

12. Recreation

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

Recreational facilities in the vicinity (approximately 0.50 miles) of the ***University of Washington Haring Center Renovation Project*** site, include the following:

- The Glade is located immediately north of the existing building beyond NE Columbia Road;

- West Montlake Park is located approximately 0.10 miles to the south, beyond the Montlake Cut;
- The Portage Bay Vista is located approximately 0.30 miles to the west of the building;
- Rainier Vista is located approximately 0.30 miles to the north of the building;
- Husky Stadium is located approximately 0.30 miles to the northeast.
- The Sakuma Viewpoint is located approximately 0.40 miles to the west; and,
- Alaska Airlines Arena is located approximately 0.40 miles to the northeast.

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

The project would not displace any existing recreational uses.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for park and recreation impacts. The University Campus is open to the public during normal daylight hours and provides an extensive network of public trails and open space. The City of Seattle Comprehensive Plan relies upon the UW campus as an element of the City's public open space inventory. The 2019 Seattle Campus Master Plan identifies and categorizes open space areas on campus.

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

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 located on or near the site? If so, specifically describe.

There existing Haring Center building was originally constructed in 1969 and has undergone several renovations since that time including in 1994, 2004 and 2009. A Historic Property Inventory Report was completed for the building in 2017 and concluded that although the building retains many aspects of integrity, it does not contain sufficient distinctive characteristics to be considered a true representative of a particular type, period or method of construction. As a result, it is not

considered eligible for listing on the National Register of Historic Places (NRHP).

According to the Washington State Department Archaeology and Historic Preservation's (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD), there are no buildings in the immediate vicinity of the project site that are listed on national, state or local historic registers.

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.

There are no landmarks, features or other evidence of Indian or historic use or occupation at the site. A cultural resources sensitivity analysis was conducted for the 2018 Seattle Campus Master Plan EIS indicates that the site area has a low potential to encounter sensitive cultural resource conditions and standard best practices and code compliance would be adequate.

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 2018 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.

No grading is anticipated to be necessary for the proposed renovation project. Minimal ground disturbance would be necessary and would generally be limited to the installation of new fence posts adjacent to the building and potentially a small pot hole to access a drainage line if the manhole access is inadequate.

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for historic and cultural resources impacts.

Mitigation measures were identified in the 2018 Seattle Campus Master Plan Final EIS and would be applicable for this project, including:

- The University of Washington's existing site selection and internal design review processes (architectural, landscape, environmental review, and Board or Regents) would continue to review and authorize major building projects in terms of siting, scale, and the use of compatible materials relative to recognized historic structures.

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

14. Transportation

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

The ***University of Washington Haring Center Renovation Project*** site is located South Campus area and to the south of the UW Medical Center. NE Columbia Road is located immediately to the north and provides access to the existing building. A traffic circle is located near the northeast corner of the building which redirects eastbound vehicle traffic back to the west towards 15th Avenue NE.

No changes to site access or parking are proposed.

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

The University of Washington Link Light Rail station is located approximately 0.20 miles to the northeast of the ***University of Washington Haring Center Renovation Project*** site and provides service to Capitol Hill, Downtown Seattle and SeaTac Airport. King County Metro Transit (Metro) provides bus service in the vicinity of the site. Numerous transit routes have stops within the Montlake Triangle area and along NE Pacific Street and Montlake Boulevard NE (approximately 0.15 miles to the north of the site), including Route 20, 45, 65, 67, 75, 79, 372X, 513, 982, 986, and 988.

c. How many additional parking spaces would the completed project have? How many would the project or proposal eliminate?

The total number of parking spaces on campus is set by the 2019 Seattle Campus Master Plan. No individual project provides parking for itself. Pursuant to the Council Adopted 2019 Seattle Campus Master Plan, parking is provided on a campus-wide basis. Pursuant to the Overview Policy at SMC 25.05.665, no further mitigation is warranted.

Several existing parking areas are located within 0.50 miles of the project site, including the South Campus Garage (Parking Area S1) and Parking Areas S5, S6, S7, S8, S9, and S12; the Triangle Underground Garage is also located to the north, beyond NE Pacific Street. No additions or elimination of parking spaces is proposed. The proposed project is not anticipated to generate an increased demand for parking due to the fact that students and employees that would utilize the facility are already traveling to campus.

d. 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).

The proposed project would not require any new or improvements to existing roads or streets. Modifications to the existing pathway from NE Columbia Road would be provided to improve pedestrian accessibility to the building. The existing building entry area would also be modified to provided improved ADA access to the building. No other improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities are anticipated.

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

The project would not use or occur in the immediate vicinity of water or air transportation. As noted above, the University of Washington Link Light Rail Station is located to the northeast of the site and is utilized by University students, faculty, and employees.

f. 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 nonpassenger 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 students and employees that are already traveling to campus currently.

g. 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.

There are no agricultural or forest product uses in the immediate site vicinity and the project would not interfere with, affect or be affected by the movement of agricultural or forest products.

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

Pursuant to the 2019 Seattle Campus Master Plan, the UW operates the U-Pass program which is a comprehensive regional transportation mitigation and monitoring program with a goal of reducing SOV use. This program is outlined in Chapter 8 of the 2019 Seattle Campus Master Plan and serves as mitigation for traffic generated by the UW.

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.

This project would also fall under the University's Transportation Management Plan (TMP), including elements such as parking pricing and the U-Pass Program to help discourage single-occupancy vehicle trips and encourage transit use, carpooling and other alternative modes of transportation.

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

15. Public Services

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

The ***University of Washington Haring Center Renovation Project*** is not anticipated to generate a significant increase in the need for public services. To the extent that emergency service providers have planned for gradual increases in service demands, no significant impacts are anticipated.

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

The 2018 Seattle Campus Master Plan EIS identifies the site area as having a low potential for public service impacts. General methods to address impacts to public services are identified in Section 3.14.3 of the EIS, including all development constructed in accordance with applicable Seattle Fire Code requirements; review of development projects for life/safety and security issues; and, UWPD could increase its staff capacity and operations, if necessary, to meet security needs for the campus. Pursuant to the Overview Policy at *SMC* 25.05.665, no further mitigation is warranted.

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 at the ***University of Washington Haring Center Renovation Project*** site, including electricity, natural gas, water, sanitary sewer, telephone, cable/internet services, and refuse service.

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 immediate vicinity that might be needed.

Utilities for the existing building are anticipated to be acceptable and adequately sized and no improvements or upgrades are required for the proposed project.

C. SIGNATURES

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

Signature:

Name of Signee:

Julie Blakeslee

Position and Agency/Organization:

SEPA Responsible Official

Date:

January 25, 2022

REFERENCES

City of Seattle. *City of Seattle Comprehensive Plan*. Accessed December 2021.

City of Seattle. *City of Seattle Department of Neighborhoods Landmarks Website and Map: https://www.seattle.gov/neighborhoods/programs-and-services/historic-preservation/landmarks.* Accessed December 2021.

City of Seattle. *City of Seattle GIS website: http://web1.seattle.gov/dpd/maps/dpdgis.aspx*. Accessed December 2021.

City of Seattle. *City of Seattle Municipal Code*. Accessed December 2021.

City of Seattle. *Ordinance No. 97025*. August 26, 1958.

City of Seattle. *Ordinance No. 114057*. July 11, 1988.

City of Seattle. *Seattle Views: An Inventory of 86 Public View Sites Protected under SEPA.* May 2002.

PBS Engineering and Environmental, Inc. *Hazardous Materials Survey Report – Summary of Findings/Good Faith Survey*. December 27, 2021.

Shannon and Wilson. *Critical Areas Review and Wetland Investigation – Haring Center Renovation.* January 19, 2022.

Shannon and Wilson. *Geotechnical Engineering Report – Haring Center Renovation.* December 15, 2021.

U.S. Fish and Wildlife Service. *IPaC. https://ecos.fws.gov/ipac/location/index*. Accessed December 2021.

University of Washington. *2018 Seattle Campus Master Plan Draft EIS*. October 2016.

University of Washington. *2018 Seattle Campus Master Plan Final EIS*. July 2017.

University of Washington. *2019 Seattle Campus Master Plan*. February 2019.

Washington State Department of Archaeology and Historic Preservation. *Historic Property Report – UW Center on Human Development and Disability School*[3]. May 19, 2017.

Washington State Department of Archaeology and Historic Preservation. *Washington Information System for Architectural and Archaeological Records Data*. Accessed January 2022.

[3] *Currently known as the Haring Center.*

Appendix A

GEOTECHNICAL REPORT

SUBMITTED TO:
UW Capital and Space Management
3988 Jefferson Road NE
University Facilities Building
Box 352205
Seattle, WA 98195

BY:
Shannon & Wilson
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GEOTECHNICAL ENGINEERING REPORT

Haring Center Renovation

UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON

SHANNON & WILSON

December 15, 2021

Shannon & Wilson No: 105719-002

Submitted To: UW Capital and Space Management
3988 Jefferson Road NE
University Facilities Building Box 352205
Seattle, WA 98195
Attn: Ms. Lara Sirois

Subject: GEOTECHNICAL ENGINEERING REPORT, HARING CENTER RENOVATION, UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON

Shannon & Wilson prepared this report and participated in this project as a subconsultant to UW Capital and Space Management. Our scope of services was specified in Agreement Number 206962 with the University of Washington, dated September 21, 2021. This report presents geotechnical engineering recommendations for the Haring Center Renovation and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

Kristen D. McFarland
Geotechnical Staff

Martin W. Page, PE, LEG
Vice President
Geotechnical Engineer

KXM:RMV:MWP/kxm

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1 SITE AND PROJECT DESCRIPTION

This report presents the results of our geotechnical field exploration and engineering studies to aid in the design of the proposed renovations for the Haring Center on the University of Washington campus in Seattle, Washington (Figure 1). The Haring Center was constructed in 1967-1968 and consists of a one-story, wood-framed building with both spread footing foundations and timber piling foundations. Timber piling was used under interior columns where the depth of competent bearing soils was excessive. The floor slab is supported on concrete grade beams bearing on piles. A concrete utility tunnel (basement) extends under the building perimeter and serves as a foundation for the perimeter walls.

The building is bordered on the north by a strip of landscaping and a steep fill slope extending up about 10 feet to NE Columbia Road. The building is bordered on the west by a five-story building called the Center on Human Development and Disability. It is surrounded by landscaped areas on the south and east. The Montlake Ship Canal is located approximately 80 to 150 feet to the south. The ground surface surrounding the building slopes gently down to the south.

The proposed renovation includes reconfiguration of the interior layout, upgrades to building systems, and upgrades to exterior areas. We anticipate the proposed renovations will include seismic upgrades that will require brace frames and shear walls bearing on new foundations.

2 EXISTING SUBSURFACE INFORMATION

In 1966, Shannon & Wilson performed 14 soil borings and prepared a geotechnical engineering report, *Report on Foundation Investigation, Mental Retardation & Child Development Clinic Unit II, III & IV, University of Washington, dated May 1966,* to aid in design of the original Haring Center building. The borings are located throughout the Haring Center and adjacent tower building footprints. The borings within the building footprint were advanced to a maximum depth of 19 feet (B-12). The exploration plan and boring logs from our 1966 geotechnical report are included in Appendix A.

3 FIELD EXPLORATION

3.1 Existing Condition Reconnaissance

As part of our scope to characterize the existing site, we performed a site reconnaissance on Monday, September 20, 2021, as part of the Site Investigation meeting hosted by Lease Crutcher Lewis. We toured the perimeter of the exterior, the center courtyard, and the utility tunnel (basement) of the building. In general, around the exterior of the building, we did not observe evidence of long-term settlement. In the basement, concrete shrinkage cracks were observed in the floor. A crack in the concrete was observed along the wall of the Electrical Equipment room within the basement. In our opinion, this crack does not indicate chronic settlement of the building and likely occurred as the building was being constructed. In general, we did not observe evidence of long-term settlement.

Exhibit 3-1: Photo of Crack in Electrical Equipment Room Wall, View to the West

3.2 Subsurface Exploration

Shannon & Wilson performed one subsurface exploration at the project site to supplement existing explorations. Holt Services, under subcontract to Shannon & Wilson, advanced one boring, designated B-1-21, adjacent to the northeast corner of the existing building. The boring location is shown in Figure 2, Site and Exploration Plan. The boring was advanced to a depth of approximately 50 feet below ground surface (bgs). A Shannon & Wilson representative was onsite to observe the drilling and collect soil samples.

Appendix A, Subsurface Explorations, discusses the drilling and sampling methodology and procedures used for boring B-1-21. The boring log for B-1-21 is included as Figure A-2. The Soil Description and Log Key is included as Figure A-1.

3.3 Methane Testing

Field monitoring was conducted by a Shannon & Wilson representative and consisted of the collection of methane gas readings from available air beneath the floor slab at the Haring Center building. Methane readings were collected from two locations in the building: Toddler Classroom 103 and Child Bathroom 123.

On October 22, 2021, a Lease Crutcher Lewis representative drilled a ½-inch borehole at a single location in each room using a roto hammer and 12-inch drill bit through the carpet flooring (103) or tile flooring (123) and concrete floor slab. The drill bit was advanced approximately 6 inches beneath the bottom of the floor slab. Upon completion of the borehole, a piece of 14-inch tubing was placed into the borehole. Using bentonite grout, a seal was created on the carpet/tile floor at the surface of the borehole so that no ambient air would be introduced during the methane gas reading.

Monitoring was conducted using properly calibrated and intrinsically safe portable instruments including a Landtech GEM Gas Analyzer (GEM) and Photovac MicroFID (FID). Each instrument was calibrated using methane gas so that a direct reading could be made during the evaluation. The GEM was calibrated with a detection limit of 0.5% by volume and the FID was calibrated with a detection limit of 0.4 part per million.

To get a representative sample of the conditions beneath the floor slab, the GEM and FID were turned on outside of each room and allowed to run while Lease Crutcher Lewis drilled the ½-inch borehole. After placing the 14-inch tube into the borehole and sealing it with bentonite grout, the GEM was attached and sealed to the to the 14-inch tube. The initial reading was documented. The GEM ran for three minutes to purge the air from the tube and another reading was taken. The GEM ran for another two minutes and a third reading was taken. The GEM was then unsealed, removed from the tube, and immediately replaced by the FID. The FID was sealed to the tube and an initial reading from the was taken. The FID ran for three minutes and another reading was taken. The FID ran for two more minutes and a third reading was taken. The FID was removed along with the tube, which was discarded into a plastic Ziploc bag to be disposed of properly. The bentonite seal was also scooped from the surface of the borehole and placed into a Ziploc bag. Lease Crutcher Lewis then cleaned the surface of the borehole and sealed it with caulk.

The gas readings are presented in Exhibits 3-2 and 3-3 below.

Exhibit 3-2: GEM Results

Location	Time	Methane % Volume	Carbon Dioxide % Volume	Oxygen % Volume	Pressure Hg
Room 103	15:56	0	0	21.	29.62
Room 103	16:00	0	0	21.1	29.62
Room 103	16:02	0	0	21.2	29.62
Room 123	17:04	0	0	21.1	29.62
Room 123	17:07	0	0	21.1	29.62
Room 123	17:09	0	0	21.1	29.62

Exhibit 3-3: FID Results

Location	Time	FID (ppm)
Room 103	16:03	0.4
Room 103	16:06	0.5
Room 103	16:08	0.5
Room 123	17:10	0.4
Room 123	17:12	0.3
Room 123	17:15	0.4

Results of the field methane evaluation indicated that methane was not detected in either location and does not appear to be present under the building.

3.4 Pilot Infiltration Testing

Pilot Infiltration Testing to support stormwater management is to be determined at a later date.

4 GEOLOGY AND SUBSURFACE CONDITIONS

4.1 Site Geology

We interpreted the subsurface conditions at the project site based on our exploration at boring B-1-21 and historical soil boring explorations from our 1966 geotechnical report. At boring B-1-21, we encountered approximately 5 feet of fill, underlain by dense to very dense, silty sand with gravel to the bottom of the boring at approximately 50 feet bgs. We interpret the dense soil as weathered to unweathered glacial till.

Based on our 1966 geotechnical report, the subsurface conditions beneath the building consist of fill material placed to raise the grade at the site, underlain by soft, dark brown, peaty clay and black, organic silt. The soft sediments were up to 10 feet thick and extended as deep as 18 feet bgs under the middle of the eastern half of the building. Very dense glacial till is present beneath the soft sediments. Figure A-3 from our 1966 geotechnical report illustrates the variable depths to the very dense glacial till. Based on the good condition of the building and the absence of settlement, it appears that the construction phase in 1967-1968 may have removed much of the compressible peat from below the building footprint.

4.2 Site Groundwater Conditions

As noted in Appendix A, mud rotary drilling techniques were used to complete the boring. Due to the bentonite slurry used to advance the boring, the presence of groundwater was not detected at the time of drilling. Groundwater is typically perched above glacial till, although localized seepage zones may be present. Based on groundwater being encountered in the historical borings at the project site, we anticipate the groundwater table at the location of boring B-1-21 lies atop the glacial till unit.

5 EARTHQUAKE ENGINEERING

5.1 Seismic Considerations

The seismic design of the renovations should be in accordance with the International Building Code (IBC) 2018 (International Code Council, 2017). The IBC design criteria are based on a target risk of structural collapse from an earthquake that corresponds to a ground motion of 2% probability of exceedance in 50 years, or about a 2,500-year return period. The soil profile is assessed by assigning a site class definition. Based on the Standard Penetration Test values and soil classifications derived from the recent exploration we completed and previous explorations at the site, it is our opinion that the project site can be classified as Site Class D.

Seismic inputs for the IBC design criteria include the short-period maximum spectra acceleration, S_S, and spectral acceleration at a period of one second, S_1. The mapped values for S_S and S_1 in the IBC correspond to Site Class B sites. Using these factors, the site coefficients and design spectral accelerations for a Site Class D site are provided in Exhibit 5-1.

Exhibit 5-1: Parameters for Design of Seismic Structures

Spectral Response Acceleration (SRA) and Site Coefficients	Short Period	One-Second Period
Mapped SRA	S_s = 1.318	S_1 = 0.458
Site Coefficients	F_a = 1.2	F_v = N/A
Maximum Considered Earthquake SRA	S_{MS} = 1.581	S_{M1} = N/A
Design SRA	S_{DS} = 1.054	S_{D1} = N/A

NOTES:
Source: Structural Engineers Association of California and California's Office of Statewide Health Planning and Development , 2021.
N/A = not applicable

5.2 Settlement and Liquefaction

The project site is located about 4 miles from the nearest mapped Seattle Fault Zone. The discontinuous soft, blue clay and organic, peaty silt that are present beneath the building are not considered to be susceptible to liquefaction due to their plasticity. Additionally, the glacial soils underlaying the clay and silt are not considered to be susceptible to liquefaction due to their relative density. However, consolidation settlements are common with these soils. It is possible that consolidation settlements have occurred beneath the building, although we have seen no evidence of that. Settlements, if they occurred, could cause voids to form below the structural floor slab. We recommend that this be investigated during construction.

6 FOUNDATION RECOMMENDATIONS

6.1 Existing Timber Piles

Foundations for the Haring Center include deep driven timber piles that support interior columns. The timber piles may be in good condition and therefore reusable to support the renovated building; however, we have no information regarding their current condition other than the fact that the building has not experienced settlements since construction was completed in 1969. Timber piling can be susceptible to rot that normally occurs near the groundwater level; however, the extent of the rot depends on the ground conditions and the quality of the preservative that the piles were treated with. We understand that the piles used at Haring Center were creosote-treated.

We do not have as-built information about the pile embedment into glacial bearing soils except that we understand they were driven to "refusal" and have an ultimate capacity of 25 tons each, based on notes provided on the structural drawings. If the piles are in good condition, we recommend they be considered adequate for vertical loads up to 50 kips (25 tons). Access to the piles is currently not feasible due to the building being occupied.

We recommend that at least one pile be exposed and examined for rot during construction to confirm our assumptions.

We estimated a compression vs. settlement curve for the existing timber piles, which provided an average spring constant of 300 kips per inch. We assume the modulus of old timber piles is variable, and for the analysis we assumed a modulus of 1,500 kips per square inch.

The existing timber piles should not be counted on to resist lateral forces due to the soft material surrounding the piles.

6.2 Micropile Design

We anticipate the proposed renovations will include brace frames and shear walls that will require new foundations. New foundations should consist of deep foundations installed into very dense glacial soils. Working inside an existing structure limits the types of deep foundations that are feasible due to limited access and overhead clearance. We recommend deep foundations consisting of micropiles. Micropiles are small-diameter (7- to 8-inch), drilled and grouted piles composed of pressure-injected cement grout with steel reinforcement. Micropiles may be used to resist both compressive and uplift forces associated with static loads and dynamic loads.

Seven (7-) to 8-inch-diameter micropiles are recommended to be used in the native glacial till soils below the existing building with an ultimate side friction load transfer rate of 20 kips per lineal foot, provided the grout is injected under pressure. We recommend 75% of this transfer rate, or 15 kips per lineal foot, be used for seismic design. Minimum bond length of 15 feet is recommended but the actual bond length will depend on the structural loading requirements. Micropiles should be spaced 3 feet center-to-center at a minimum. The values given are based on our experience and load tests performed on micropiles installed in glacial till, including performance load testing on micropiles installed in the Montlake Parking Garage project (Shannon & Wilson, 2014) on the University of Washington campus, approximately 850 feet to the northeast.

The spring constant for micropiles would be affected, maybe significantly, by the loading/deflection curves. For now, we have assumed that they will be about 20 to 30 feet long, 7-inch-diameter, and loaded to about 100 kips. Settlements are about ¼ inch at that load, resulting in a spring constant of 450 kips per inch.

6.3 Allowable Bearing Pressure

The original footings bearing on glacial soils were designed for an allowable loading of 2 tons per square foot or 4 kips per square foot (ksf). Thus, we recommend considering an allowable bearing pressure of 4 ksf for the existing footings and any new footings that bear on native soils. Short retaining walls that may be required at the site would likely bear on fill materials. We recommend an allowable bearing pressure of 2 ksf for those walls. These bearing capacities could be increased by one-third for resistance to temporary dynamic loading.

6.4 Lateral Earth Pressures

We recommend an allowable active equivalent fluid pressure (EFP) of 35 pounds per cubic foot (pcf), at-rest EFP of 55 pcf, and passive EFP of 300 pcf be used to evaluate lateral earth pressures for walls where structural backfill adjacent to the wall and footing is present, including the utility tunnel walls. We recommend an allowable coefficient of friction between waterproofed walls and backfill of 0.2 be used with the resultant of at-rest pressure triangle as a normal force in conjunction with the coefficient. In accordance with the 2018 IBC, a seismic increment of 7H, rectangular distribution, is recommended for the design ground motion.

The lateral resistance of the building to earthquake loading should be resisted by the portion of the foundation, which is supported by spread footings. Micropiles are relatively slender and do not provide significant lateral resistance. We recommend an allowable coefficient of friction between concrete footings and native soils of 0.4. The existing timber piles should not be counted on to resist lateral forces, as noted in Section 6.1.

7 CONSTRUCTION CONSIDERATIONS

7.1 Micropile Construction

7.1.1 Observation

We recommend that an experienced and qualified geotechnical engineer familiar with the subsurface conditions of the project site observe the micropile construction to visually evaluate soil flushed from the excavation. These observations should confirm that the subsurface conditions assumed for design are actually present, especially the embedment into the bearing material and material changes to the depth of design.

In addition to a description of the subsurface conditions encountered, the excavation methods, steel reinforcing and concrete placement operations, and volumes with depth should be observed and documented.

7.1.2 Potential Obstructions

The Contractor should be prepared to encounter and remove cobbles and boulders during micropile installation. A down-the-hole hammer or other piece of suitable equipment may be required if cobbles and/or boulders are encountered and cannot be removed by standard drilling and flushing methods.

7.2 Environmentally Critical Areas Exemption

While the 1966 explorations did encounter peat under a portion of the building, it appears to have been an isolated and limited area. The peat encountered in 1966 explorations was mitigated with a pile foundation design in and/or by excavation and removal. There is no evidence of peat in our recent boring. Results of the field methane evaluation indicated that methane was not detected in either location and does not appear to be present under the building. In our opinion, the project should be granted an Environmentally Critical Area (ECA) Exemption for the presence of peat.

7.3 Wet Weather Earthwork

Wet weather generally begins about mid-October and continues through about May, although rainy periods may occur at any time of year. The soil at the site contains sufficient silts and fines to produce an unstable mixture when wet. Such soils are susceptible to changes in water content, and they tend to become unstable and difficult to compact if their moisture content significantly exceeds the optimum. If earthwork at the site continues into the wet season, or if wet conditions are encountered, we recommend the following:

- The ground surface in and surrounding the construction area should be sloped as much as possible to promote runoff of precipitation away from work areas and to prevent ponding of water.
- Earthwork should be accomplished in small sections to minimize exposure to wet conditions. That is, each section should be small enough so that the removal of unsuitable soils and placement and compaction of clean structural fill can be accomplished on the same day. The size of construction equipment may have to be limited to prevent soil disturbance. It may be necessary to excavate soils with a backhoe, or equivalent, located so that equipment does not traffic over the excavated area. Thus, subgrade disturbance caused by equipment traffic will be minimized.
- Fill material should consist of clean, well-graded, pit-run sand and gravel soils of with not more than 5% fines by dry weight passes the No. 200 mesh sieve, based on wet-

sieving the fraction passing the ¾-inch mesh sieve. The gravel content should range between 20 and 60% retained on a No. 4 mesh sieve. The fines should be nonplastic.

- No soil should be left uncompacted and exposed to moisture. A smooth-drum vibratory roller, or equivalent, should roll the surface to seal out as much water as possible.
- In-place soils or fill soils that become wet and unstable and/or too wet to suitably compact should be removed and replaced with clean, granular soil (see third bullet).
- Excavation and placement of structural fill material should be observed on a full-time basis by a geotechnical engineer (or representative) experienced in earthwork to determine that all work is being accomplished in accordance with the project specifications and our recommendations.
- Grading and earthwork should not be accomplished during periods of heavy, continuous rainfall.
- We suggest that these recommendations for wet weather earthwork be included in the contract specifications.

7.4 Plans and Specifications Review

We recommend that Shannon & Wilson be retained to review the geotechnical aspects of the plans and specifications to determine that they are consistent with our recommendations.

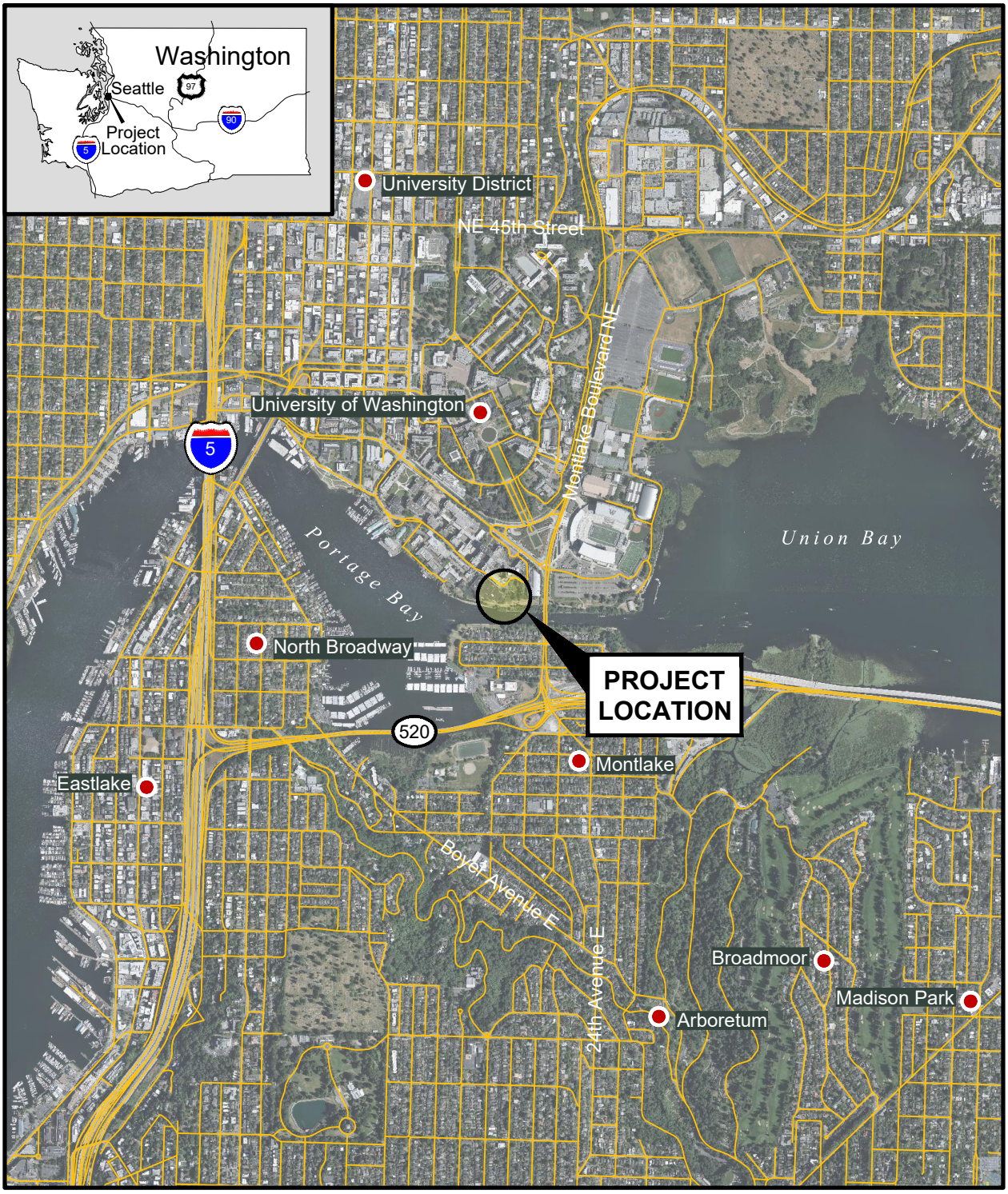
Shannon & Wilson has prepared the enclosed document, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

8 REFERENCES

International Code Council, Inc., 2017, International building code 2018: Country Club Hills, Ill., International Code Council, Inc., 726 p.

Shannon & Wilson, Inc., 2014, Final Report for Geotechnical Construction Observation Services, Triangle Parking Garage, geotechnical letter report: Report prepared by Shannon & Wilson, Inc., Seattle, Wash., 21-1-21613-010, for The University of Washington, 1 v.

Structural Engineers Association of California and California's Office of Statewide Health Planning and Development, 2021, U.S. Seismic Design Maps: Available: https://seismicmaps.org/, November, 2021.



0 2,000 4,000

Approximate Scale in Feet

Haring Center Renovation
University of Washington
Seattle, Washington

VICINITY MAP

December 2021 105719-002

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\105719\002\105719-002 Vicinity Map.dwg Date: 11-01-2021 Login: JRS

LEGEND

B-1-21 Boring Designation and Approximate Location

0 100 200

Scale in Feet

Haring Center Renovation
University of Washington
Seattle, Washington

SITE AND EXPLORATION PLAN

December 2021 105719-002

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FIG. 2

Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\105719\002\105719-002 Explorations.dwg Layout: Figure 2 Date: 11-01-2021 Login: JRS

APPENDIX A: SUBSURFACE EXPLORATIONS

Appendix A

Subsurface Explorations

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APPENDIX A: SUBSURFACE EXPLORATIONS

A.1 INTRODUCTION

The field exploration program consisted of drilling and sampling one boring. Holt Services, under subcontract to Shannon & Wilson, completed the boring on October 2, 2021. The boring is designated as B-1-21.

A representative from Shannon & Wilson was present throughout the field exploration period to observe the sampling operations, retrieve representative soil samples for laboratory testing, and prepare a descriptive field log of the boring. Figure A-1 presents a key to our classification of the materials encountered. Figure A-2 shows the completed boring log.

A.2 BORING LOCATION AND UTILITY CLEARANCE

The location of the boring is shown in Figure 2. The boring was advanced adjacent to the northeast corner of the Haring Center building, outside of the footprint due to access feasibility and to not disrupt existing operations within the building. Prior to drilling, the boring location was checked for underground utilities by submitting a utility locate ticket through the Washington Utility Notification Center.

Holt used a CME 85 truck-mounted drill rig and mud rotary techniques to complete the boring. Bentonite slurry and a 4-inch-outside-diameter drill bit were used to advance the hole.

A.3 SOIL SAMPLES

Disturbed samples in the soil were collected using 2-inch-outside-diameter (OD) split-spoon samplers. Split-spoon samples were attempted at 2.5-foot intervals to a depth of 20 feet below ground surface and at 5-foot intervals thereafter.

The Standard Penetration Test sampling method consists of driving the 2-inch OD split-spoon sampler a distance of 18 inches into the bottom of the borehole with a 140-pound hammer falling 30 inches. The number of blows required for the last 12 inches of penetration are termed the penetration resistance. When the resistance exceeded 50 blows for 6 inches or less penetration, the test was terminated and the number of blows and corresponding penetration were recorded. The penetration resistance is affected by the relative density, or compactness, of granular soils and the consistency, or stiffness, of cohesive soils.

The boring log for boring B-1-21 is presented in Figure A-2. The penetration resistance values are plotted on the boring log.

A.4 FIELD CLASSIFICATION

Soil samples were classified using the method described in ASTM Designation D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) (ASTM, 2017). Representative soil samples were placed in airtight containers and transported to our laboratory in Seattle, Washington, for analysis.

A.5 HISTORICAL SUBSURFACE EXPLORATIONS

Subsurface information from 14 historical borings was reviewed to supplement the geotechnical information derived from our recent exploration. The borings, B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-8, B-9, B-9A, B-10, B-11, B-12, and B-13, are located throughout the Haring Center and adjacent tower building footprints and were completed by Shannon & Wilson in 1966. The locations of borings are shown in Figure A-3 (Shannon & Wilson, 1966). The logs for the listed borings are shown in Figures A-4 through A-18 (Shannon & Wilson, 1966).

A.6 REFERENCES

ASTM International, 2017, Standard practice for description and identification of soils (visual/manual procedure), D2488-17e1: West Conshohocken, Pa., ASTM International, Annual book of standards, v. 04.08, soil and rock (I): D420 - D5876, 13 p., available: www.astm.org.

Shannon & Wilson, 1966, Report on foundation investigation, Mental Retardation & Child Development Clinic Unit II, III and I, University of Washington, May.

SHANNON & WILSON

SOIL DESCRIPTION AND LOG KEY

Haring Center Renovation
University of Washington, Seattle, WA

Shannon & Wilson uses a soil identification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following page. Soil descriptions are based on visual-manual procedures (ASTM D2488) and laboratory testing procedures (ASTM D2487), if performed.

Structure[1]

Interbedded	Alternating layers of varying material or color with layers at least 1/4-inch-thick; singular: bed.
Laminated	Alternating layers of varying material or color with layers less than 1/4-inch-thick; singular: lamination.
Fissured	Breaks along definite planes or fractures with little resistance.
Slickensided	Fracture planes appear polished or glossy; sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps that resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
Homogeneous	Same color and appearance throughout.

Angularity and Shape[1]

Angular	Sharp edges and unpolished planar surfaces.
Subangular	Similar to angular, but with rounded edges.
Subrounded	Nearly planar sides with well-rounded edges.
Rounded	Smoothly curved sides with no edges.
Flat	Width/thickness ratio > 3.
Elongated	Length/width ratio > 3.

Standard Penetration Test (SPT)[3]

Hammer	140 pounds with a 30-inch free fall. Rope on 6- to 10-inch-diameter cathead 2-1/4 rope turns, > 100 rpm. If automatic hammers are used, blow counts shown on boring logs should be adjusted to account for efficiency of hammer.
Sampler	10 to 30 inches long Shoe I.D. = 1.375 inches Barrel I.D. = 1.5 inches Barrel O.D. = 2 inches
N-Value	Sum blow counts for second and third 6-inch increments. Refusal: 50 blows for 6 inches or less or 10 blows for 0 inch.

Moisture Content

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

Gradation

Poorly Graded	Narrow range of grain sizes present or, within the range of grain sizes present, one or more sizes are missing (Gap Graded). Meets criteria in ASTM D2487, if tested.
Well-Graded	Full range and even distribution of grain sizes present. Meets criteria in ASTM D2487, if tested.

Cementation[1]

Weak	Crumbles/breaks with handling or slight finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

Plasticity[2]

Nonplastic	Cannot roll a 1/8-in. thread at any water content.	PI < 4
Low	A thread can barely be rolled and a lump cannot be formed when drier than the plastic limit.	4 < PI < 10
Medium	A thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. A lump crumbles when drier than the plastic limit.	10 < PI < 20
Hard	It takes considerable time rolling and kneading to reach the plastic limit. A thread can be rerolled several times after reaching the plastic limit. A lump can be formed without crumbling when drier than the plastic limit.	PI > 21

Additional Terms

Mottled	Irregular patches of different colors.
Bioturbated	Soil disturbance or mixing by plants or animals.
Diamict	Nonsorted sediment; sand and gravel in silt and/or clay matrix.
Cuttings	Material brought to surface by drilling.
Slough	Material that caved from sides of borehole.
Sheared	Disturbed texture, mix of strengths.

Notes:

[1]Reprinted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

[2]Adapted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

[3]Penetration resistances (N-values) shown on boring logs are as recorded in the field and have not been corrected for hammer efficiency, overburden, or other factors.

Unified Soil Classification System (USCS)
Modified From USACE Tech Memo 3-357, ASTM D2487, and ASTM D2488

Major Divisions			Symbol	Typical Identifications
Coarse-Grained Soils (more than 50% retained on No. 200 sieve)	Gravels (more than 50% of coarse fraction retained on No. 4 sieve)	Gravel (less than 5% fines)	GW	Well-graded Gravel; Well-graded Gravel with Sand
			GP	Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Silty or Clayey Gravel (more than 12% fines)	GM	Silty Gravel; Silty Gravel with Sand
			GC	Clayey Gravel; Clayey Gravel with Sand
	Sands (50% or more of coarse fraction passes the No. 4 sieve)	Sand (less than 5% fines)	SW	Well-graded Sand; Well-graded Sand with Gravel
			SP	Poorly Graded Sand; Poorly Graded Sand with Gravel
		Silty or Clayey Sand (more than 12% fines)	SM	Silty Sand; Silty Sand with Gravel
			SC	Clayey Sand; Clayey Sand with Gravel
Fine-Grained Soils (50% or more passes the No. 200 sieve)	Silts and Clays (liquid limit less than 50)	Inorganic	ML	Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
			CL	Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
		Organic	OL	Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
	Silts and Clays (liquid limit 50 or more)	Inorganic	MH	Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
			CH	Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
		Organic	OH	Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	Peat or other highly organic soils (see ASTM D4427)

Acronyms and Abbreviations

ATD	At Time of Drilling	MgO	Magnesium Oxide	psi	Pounds per Square Inch
Diam.	Diameter	mm	Millimeter	PVC	Polyvinyl Chloride
Elev.	Elevation	MnO	Manganese Oxide	rpm	Rotations per Minute
ft	Feet	NA	Not Applicable or Not Available	SPT	Standard Penetration Test
FeO	Iron Oxide	NP	Nonplastic	USCS	Unified Soil Classification System
gal	Gallons	O.D.	Outside Diameter	q_u	Unconfined Compressive Strength
Horiz.	Horizontal	OW	Observation Well	VWP	Vibrating Wire Piezometer
HSA	Hollow-Stem Auger	pcf	Pounds per Cubic Foot	Vert.	Vertical
I.D.	Inside Diameter	PID	Photoionization Detector	WOH	Weight of Hammer
in	Inches	PMT	Pressuremeter Test	WOR	Weight of Rods
lbs	Pounds	ppm	Parts per Million	Wt	Weight

Relative Density
Cohesionless Soils

N, SPT, Blows/ft	Relative Density
< 4	Very loose
4 - 10	Loose
10 - 30	Medium dense
30 - 50	Dense
> 50	Very dense

Relative Consistency
Cohesive Soils

N, SPT, Blows/ft	Relative Consistency
< 2	Very soft
2 - 4	Soft
4 - 8	Medium stiff
8 - 15	Stiff
15 - 30	Very stiff
> 30	Hard

Percentages[1, 2]

Trace	< 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

Well and Backfill Symbols

- Bentonite Cement Grout
- Bentonite Grout
- Bentonite Chips
- Silica Sand
- Perforated or Screened Casing
- Surface Cement Seal
- Asphalt or Cap
- Slough
- Inclinometer or Non-perforated Casing
- Instrumentation Riser or Electrical Lead
- Vibrating Wire Piezometer with Designation

Notes:

Dual symbols *(symbols separated by a hyphen, i.e., SP-SM, Sand with Silt)* are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart. Graphics shown on the logs for these soil types are a combination of the two graphic symbols (e.g., SP and SM).

Borderline symbols *(symbols separated by a slash, i.e., CL/ML, Lean Clay to Silt; SP-SM/SM, Sand with Silt to Silty Sand)* indicate that the soil properties are close to the defining boundary between two groups.

No. 4 size = 4.75 mm = 0.187 in.; No. 200 size = 0.075 mm = 0.003 in.

Total Depth:	*50.25 ft.*	Northing:	*~ 239,865 ft.*	Drilling Method:	*Mud Rotary*	Hole Diam.:	*4 in.*
Top Elevation:	*~ 38 ft.*	Easting:	*~ 1,277,236 ft.*	Drilling Company:	*Holt Services*	Rod Diam.:	*1.75"*
Vert. Datum:		Station:	~	Drill Rig Equipment:	*CME 85*	Hammer Type:	*Automatic*
Horiz. Datum:		Offset:	~	Other Comments:			

SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

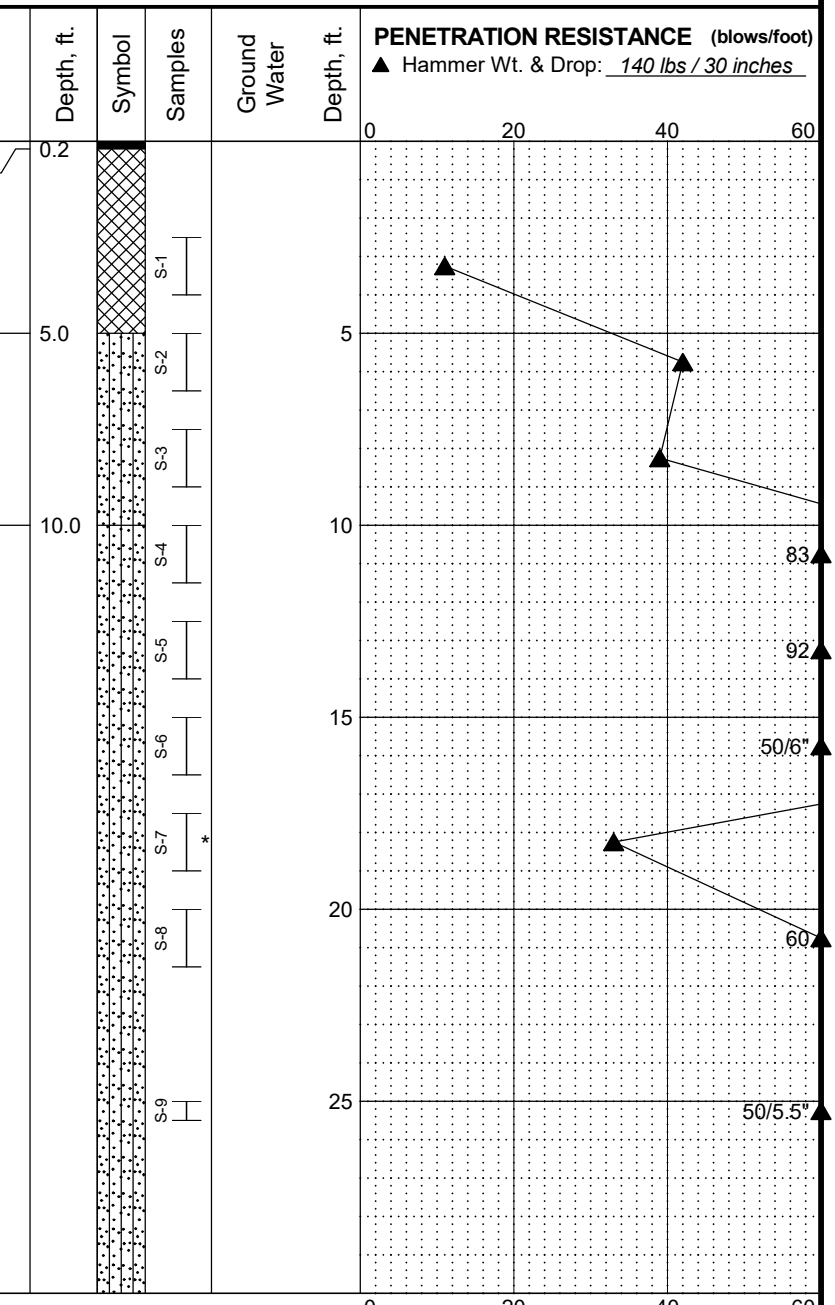
Asphalt

Medium dense, brown, *Silty Sand (SM)*; moist; with orange oxidation.
(Fill)

Dense, gray-brown, *Silty Sand with Gravel (SM)*; moist; with orange oxidation.
(Weathered Glacial Till)

Very dense, gray-brown to gray, *Silty Sand with Gravel (SM)*; moist; subrounded gravels.
(Unweathered Glacial Till)

- @ 12.5 to 20 feet higher gravel content



CONTINUED NEXT SHEET

LEGEND

* Sample Not Recovered

2.0" O.D. Split Spoon Sample

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
4. The hole location was measured from existing site features and should be considered approximate.

Haring Center Renovation
University of Washington, Seattle, WA

LOG OF BORING B-1-21

December 2021 105719-002

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-2
Sheet 1 of 2

MASTER LOG E 105719.GPJ SHAN_WIL.GDT 11/1/21 Log: KXM Rev: MWP Typ: KXM

Total Depth:	*50.25 ft.*	Northing:	*~ 239,865 ft.*	Drilling Method:	*Mud Rotary*	Hole Diam.:	*4 in.*
Top Elevation:	*~ 38 ft.*	Easting:	*~ 1,277,236 ft.*	Drilling Company:	*Holt Services*	Rod Diam.:	*1.75"*
Vert. Datum:		Station:	~	Drill Rig Equipment:	*CME 85*	Hammer Type:	*Automatic*
Horiz. Datum:		Offset:	~	Other Comments:			

SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

Depth, ft. | Symbol | Samples | Ground Water | Depth, ft.

PENETRATION RESISTANCE (blows/foot)

▲ Hammer Wt. & Drop: *140 lbs / 30 inches*

0 20 40 60

Very dense, gray-brown to gray, *Silty Sand with Gravel (SM)*; moist; subrounded gravels. (Unweathered Glacial Till)

S-10 — 77

S-11 — 50/3"

S-12 — 50/5"

S-13 — 50/6"

S-14 — 50/3"

35 40 45 50 55

50.3

BOTTOM OF BORING
COMPLETED 10/02/2021

0 20 40 60

◇ % Fines (<0.075mm)
● % Water Content

LEGEND

* Sample Not Recovered
⌶ 2.0" O.D. Split Spoon Sample

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
4. The hole location was measured from existing site features and should be considered approximate.

Haring Center Renovation
University of Washington, Seattle, WA

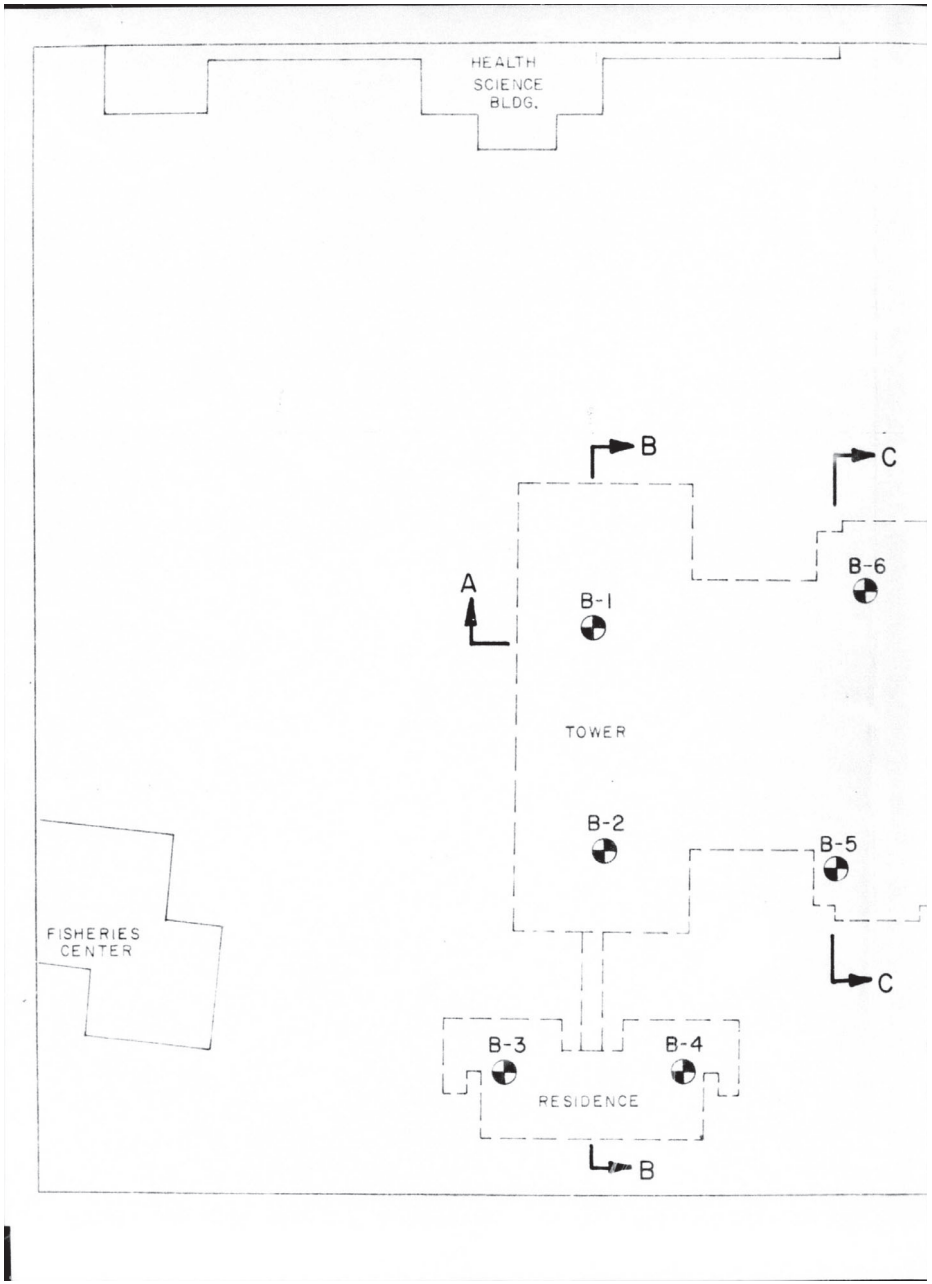
LOG OF BORING B-1-21

December 2021 105719-002

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-2
Sheet 2 of 2

MASTER LOG E 105719.GPJ SHAN_WIL.GDT 11/1/21 Log: KXM Rev: MWP Typ: KXM


HEALTH SCIENCE BLDG.
B
C
A
B-1
B-6
TOWER
B-2
B-5
C
FISHERIES CENTER
B-3
B-4
RESIDENCE
B

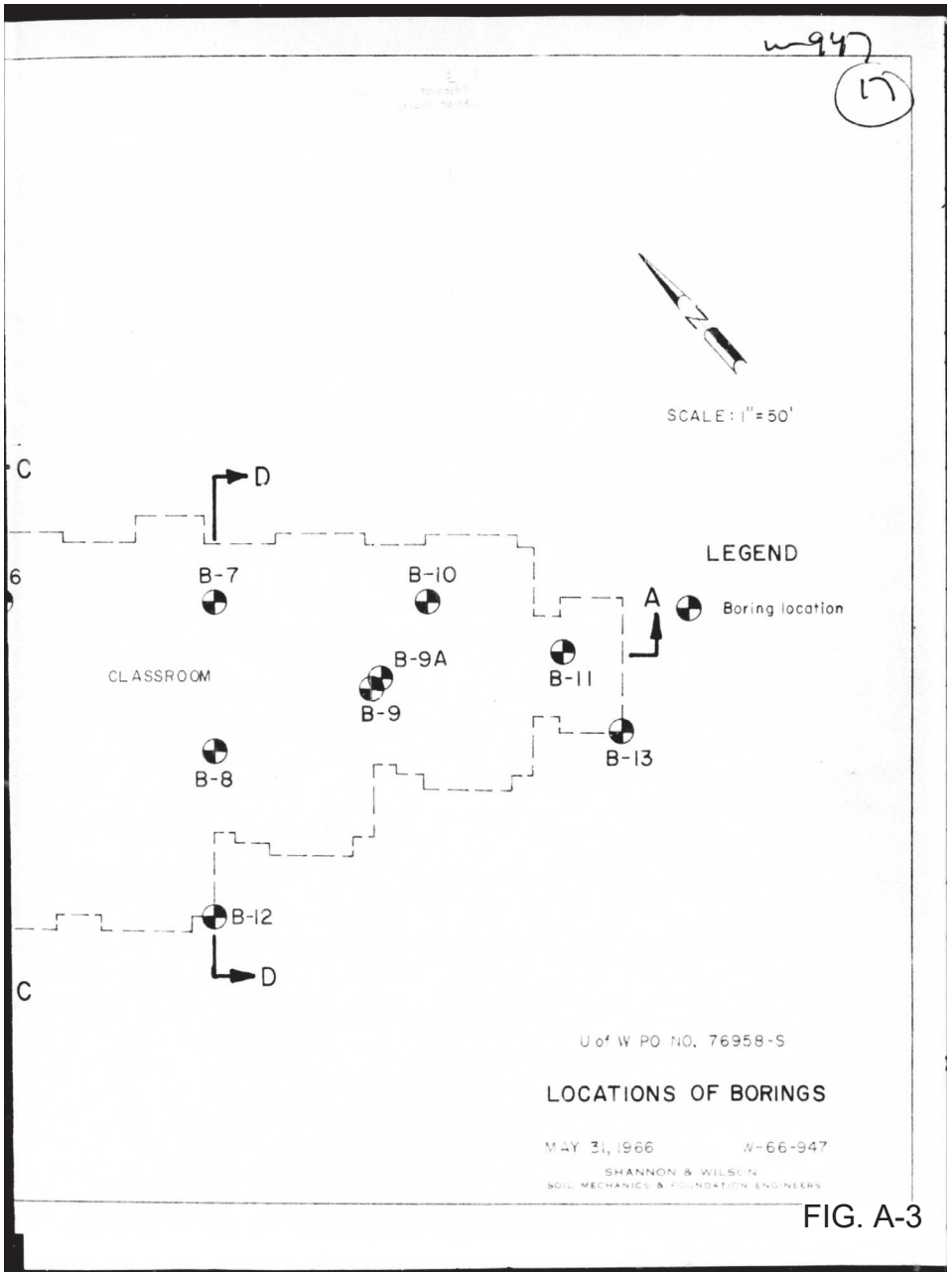
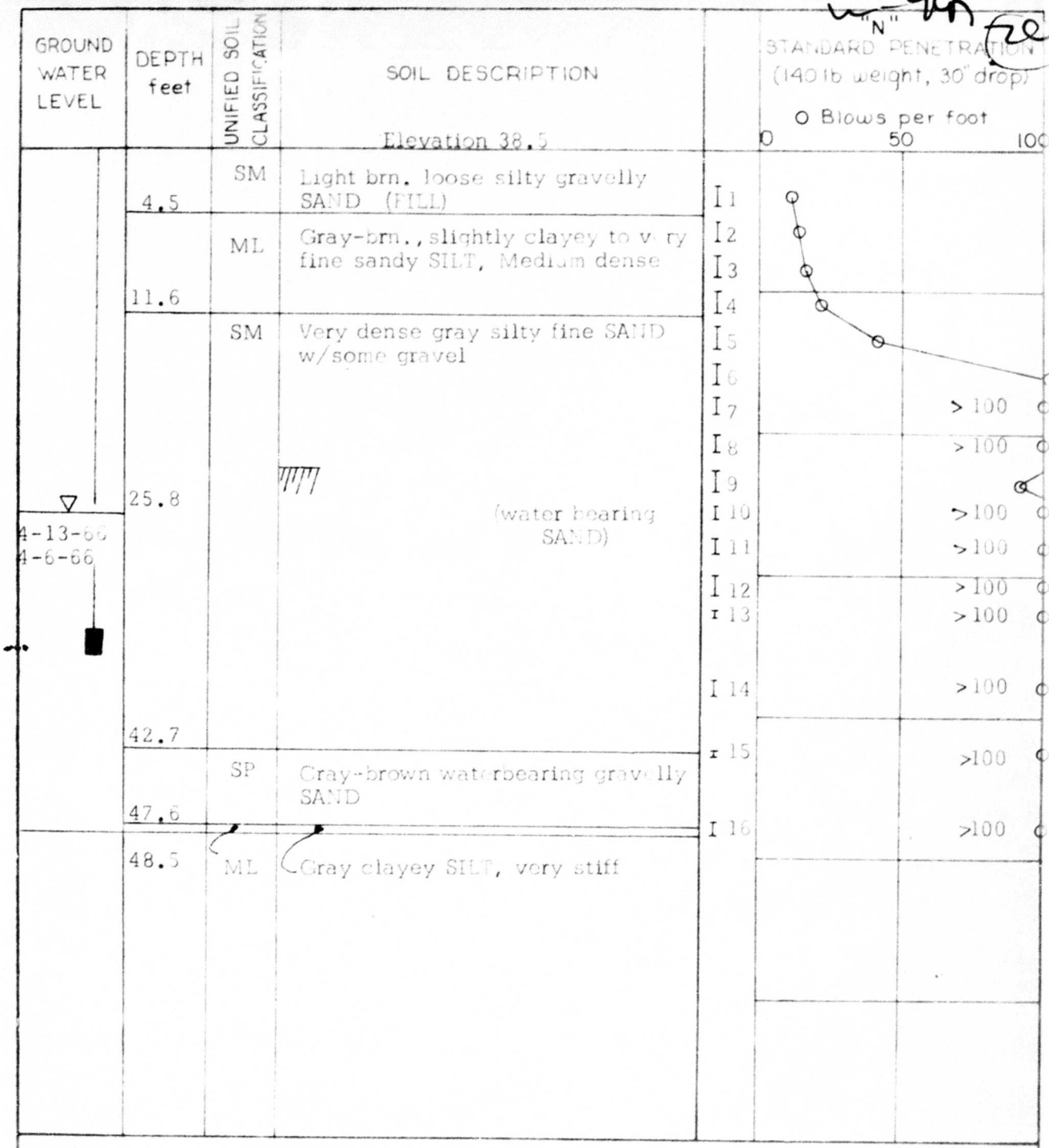

W-947
17
SCALE: 1"=50'
C
D
LEGEND
B-7
B-10
A
Boring location
B-9A
CLASSROOM
B-11
B-9
B-13
B-8
B-12
D
C
U of W PO NO. 76958-S
LOCATIONS OF BORINGS
MAY 31, 1966
W-66-947
SHANNON & WILSON
SOIL MECHANICS & FOUNDATION ENGINEERS

FIG. A-3



LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits

Liquid limit

Natural water content

Plastic limit

Impervious seal

Piezometer tip

Basement floor elev.

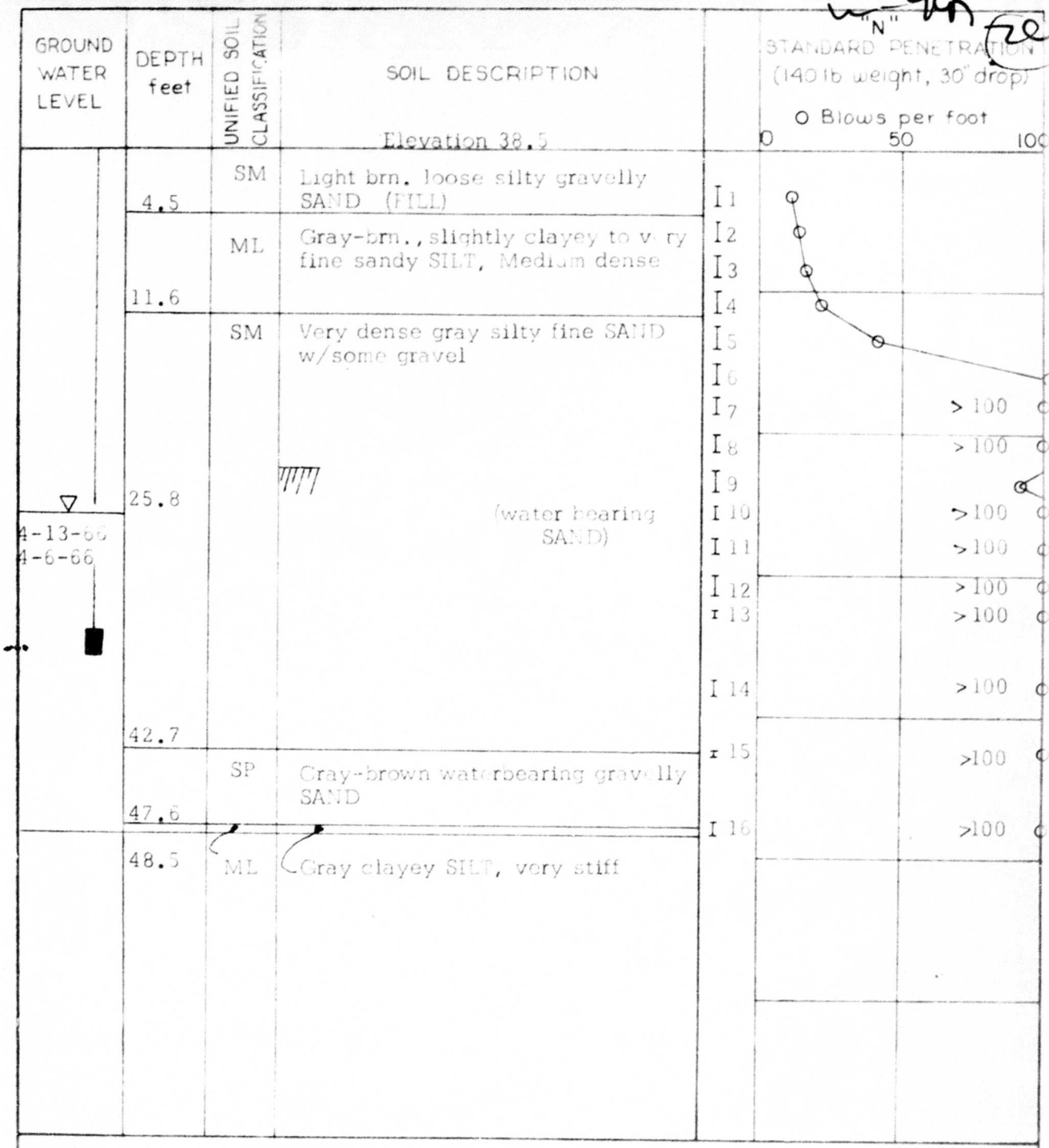
U of W PO NO. 76958-S

BORING B-1

MAY 31, 1966 W-66-947

SHANNON & WILSON
SOIL MECHANICS & FOUNDATION ENGINEERS

FIG 4



LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits

Liquid limit

Natural water content

Plastic limit

Impervious seal

Piezometer tip

Basement floor elev.

U of W PO NO. 76958-S

BORING B-1

MAY 31, 1966 W-66-947

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SOIL MECHANICS & FOUNDATION ENGINEERS

FIG 4

W-947
2

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	"N" STANDARD PENETRATION (140 lb weight, 30" drop) O Blows per foot
			Elevation 26.5	0 50 100
		ML	Tan to gray, medium dense very fine sandy SILT. (wet)	I 1, I 2, I 3
▽ 4-13-66	11.2			I 4
	14.5	SM ML	Very dense, gray, silty sand to sandy silt with trace of gravel (water bearing SAND)	I 5, I 6, I 7 >100, I 8 >100, I 9 >100
			(wet)	I 10 >100
	33.0	SM	V. dense, blue-gray silty gravelly SAND.	I 11 >100, I 12 >100
	44.0			I 13

0 % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample
II 3" O.D Shelby sample
III 2¼" O.D Shelby sample
P Sampler pushed
* Sample not recovered
▽ Water level

Atterberg limits:
Liquid limit
Natural water content
Plastic limit

Impervious seal
Piezometer tip

Basement floor elev.

U of W PO NO. 76958-S
BORING B-2
MAY 31, 1966 W-66-947

SHANNON & WILSON
SOIL MECHANICS & FOUNDATION ENGINEERS

FIG 5

W-947 (2)

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	"N" STANDARD PENETRATION (140 lb weight, 30" drop) O Blows per foot 0 50 100
			Elevation 26.5	
		ML	Tan to gray, medium dense very fine sandy SILT. (wet)	I 1, I 2, I 3
▽ 4-13-66	11.2			I 4
	14.5	SM ML	Very dense, gray, silty sand to sandy silt with trace of gravel (water bearing SAND)	I 5, I 6, I 7 >100, I 8 >100, I 9 >100
			(wet)	I 10 >100
	33.0	SM	V. dense, blue-gray silty gravelly SAND.	I 11 >100, I 12 >100
	44.0			I 13

0 % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample

II 3" O.D Shelby sample

III 2¼" O.D Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits: Liquid limit, Natural water content, Plastic limit

Impervious seal

Piezometer tip

Basement floor elev.

U of W PO NO. 76958-S

BORING B-2

MAY 31, 1966 W-66-947

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SOIL MECHANICS & FOUNDATION ENGINEERS

FIG 5

W-947

22

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	"N" STANDARD PENETRATION (140 lb weight, 30" drop) O Blows per foot 0 50 100
			Elevation 17.9	
▽ 4-13-66 4-6-66	2.2	SM	Medium brown-gray, silty fine SAND W/occ. gravel	
	4.0			
	6.5	SM	Gray, waterbearing, silty, gravelly fine SAND, very dense	
		SM	Very dense, gray, silty gravelly SAND	
			(wet)	
	18.5			
	20.5		Blue-gray, silty gravelly SAND	

"N"

>100

>100

>100

>100

>100

0 % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits

Liquid limit

Natural water content

Plastic limit

Impervious seal

Piezometer tip

1st Floor elev.

U of W PO NO. 76958-S

BORING B-3

MAY 31, 1966

W-66-947

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SOIL MECHANICS & FOUNDATION ENGINEERS

FIG. 6

W-947
23

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	
			Elevation 18.7	
	2.5	SM	Loose brown silty SAND w/organics (FILL)	1
▽ 4-13-66	6.1	CL & ML	Stiff blue silty CLAY and dense tan SILT w/fine SAND	2
	6.5	SM	Dense gray silty SAND with gravel	3
	9.0	SM	Very dense gray-brown to blue gravelly silty SAND (wet)	4 5 6 7
	21.0			8

"N" STANDARD PENETRATION (140 lb weight, 30" drop)

O Blows per foot

0 50 100

"N"

>100

>1000

0 % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

Water level

Atterberg limits

Liquid limit

Natural water content

Plastic limit

Impervious seal

Piezometer tip

1st Floor elev.

U of W PO NO. 76958-S

BORING B-4

MAY 31, 1966 W-66-947

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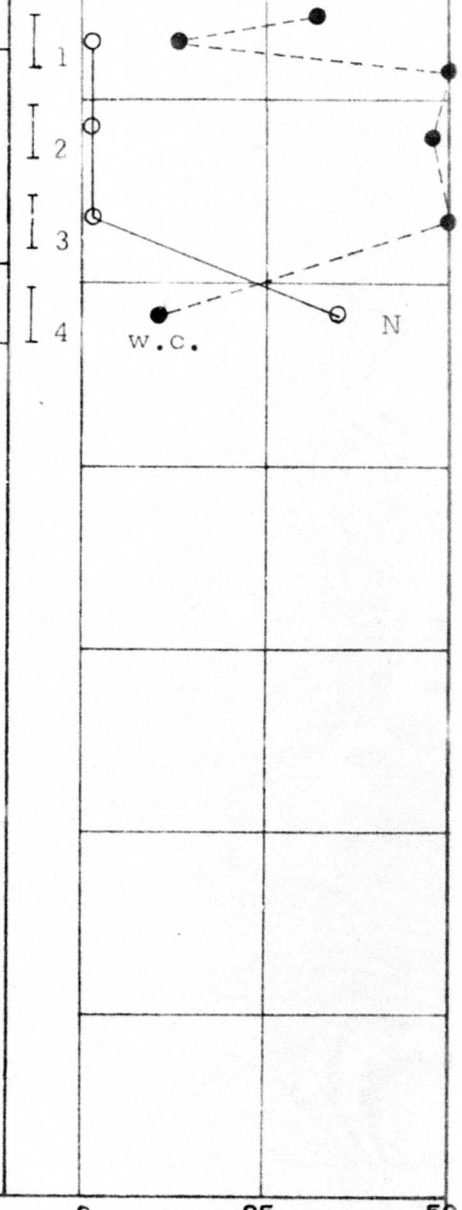
SOIL MECHANICS & FOUNDATION ENGINEERS

FIG. 7

W-947

24

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	"N" STANDARD PENETRATION (140 lb weight, 30" drop) O Blows per foot 0 50 100
			Elevation 19.7	
		SM	Loose brown silty SAND w/organics FILL	
	3.5'			
		PT OH	Soft dark gray peat, SILT and organic CLAY	
	9.5			
		SM	Dense, gray, wet silty fine SAND with occasional gravel.	
	11.5			



LEGEND

I 2" O.D. split spoon sample

II 3" O.D Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

Water level

Atterberg limits
- Liquid limit
- Natural water content
- Plastic limit

Impervious seal

Piezometer tip

U of W PO NO. 76958-S

BORING B-5

MAY 31, 1966 W-66-947

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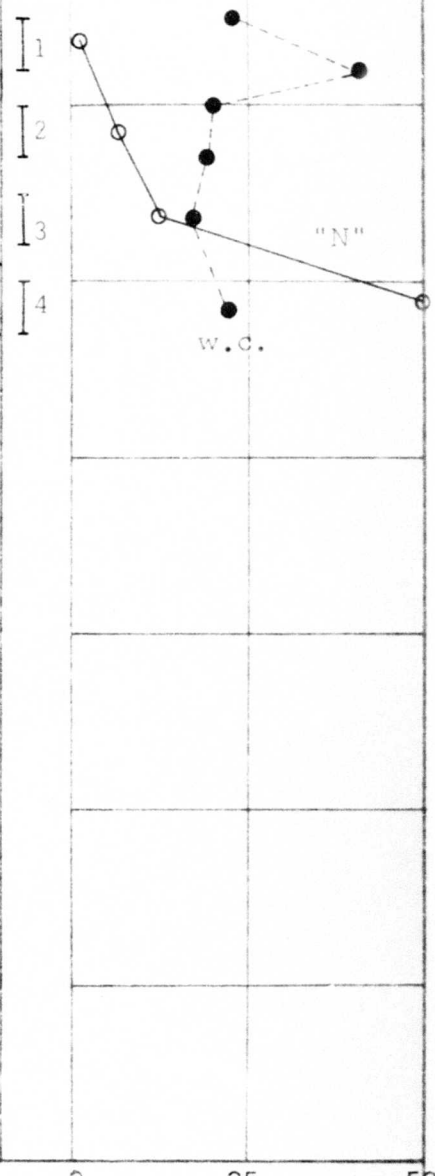
FIG. 8

w-947 25

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION
			Elev. 27.2
		SM	Loose brown silty SAND w/some organic - ash FILL
	9.5	OL & ML	SOFT dark brn organic SILT to Medium light gray to brown SILT
	11.5	SM	Gray, silty fine to med. SAND w/gravel (TILL)



LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits

Liquid limit

Natural water content

Plastic limit

Impervious seal

Piezometer tip

U of W PO NO. 76958-S

BORING B-6

MAY 31, 1966 W-66-947

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FIG. 9

W-947 "N" 26

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	"N"	STANDARD PENETRATION (140 lb. weight, 30" drop) O Blows per foot 0 50 100
			Elevation 24.0		
▽ 4-13-66	2.8	SP SM	Loose brown fine gravelly SAND (FILL)	1	
	4.0	PT & OL	Dark brn. soft silty PEAT, changing to organic clayey SILT	2	86% 59.8%
				3	56%
	11.0		Very dense Gray, gravelly f. to med. SAND	4	120+
	11.5	SM			W.C.

0 25 50 ● % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits:
- Liquid limit
- Natural water content
- Plastic limit

Impervious seal

Piezometer tip

U of W PO NO. 76958-S

BORING B-7

MAY 31, 1966 W-66-947

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SOIL MECHANICS & FOUNDATION ENGINEERS

FIG. 10

W-947

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	STANDARD PENETRATION "N" (140 lb weight, 30 inches) Blows per foot 0 50 100
			Elevation 22.3	
▽ 4-13-66	1.6	ML	Gray-brn. slightly clayey v. fine sandy SILT w/roots & wood. FILL	
	4.0	CL & ML	Soft Blue CLAY w/roots and Black sandy SILT	
▽ 1530 hr 4-6-66	7.4			"N"
▽ 1130 hr 4-6-66	9.7	SP	Gray clean water bearing SAND	>100
	13.0	SM	Very dense gray silty SAND with gravel	

0 % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits

Liquid limit

Natural water content

Plastic limit

Impervious seal

Piezometer tip

U of W PO NO. 76958 - S

BORING B-8

MAY 31, 1966 W-66-947

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FIG. 11

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION Elevation 25.0
▽ 8 Apr.	3.5	SM	Loose tan fine SAND, FILL
	5.8	OL & CL	Soft black organic SILT and blue CLAY
	11.5		

"N" STANDARD PENETRATION (140 lb weight, 30" drop)

O Blows per foot

0 50 100

1 2 3 4

74%

0 25 50

● % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits: Liquid limit, Natural water content, Plastic limit

Impervious seal

Piezometer tip

U of W PO NO. 76958-S

BORING B-9

MAY 31, 1966 W-66-947

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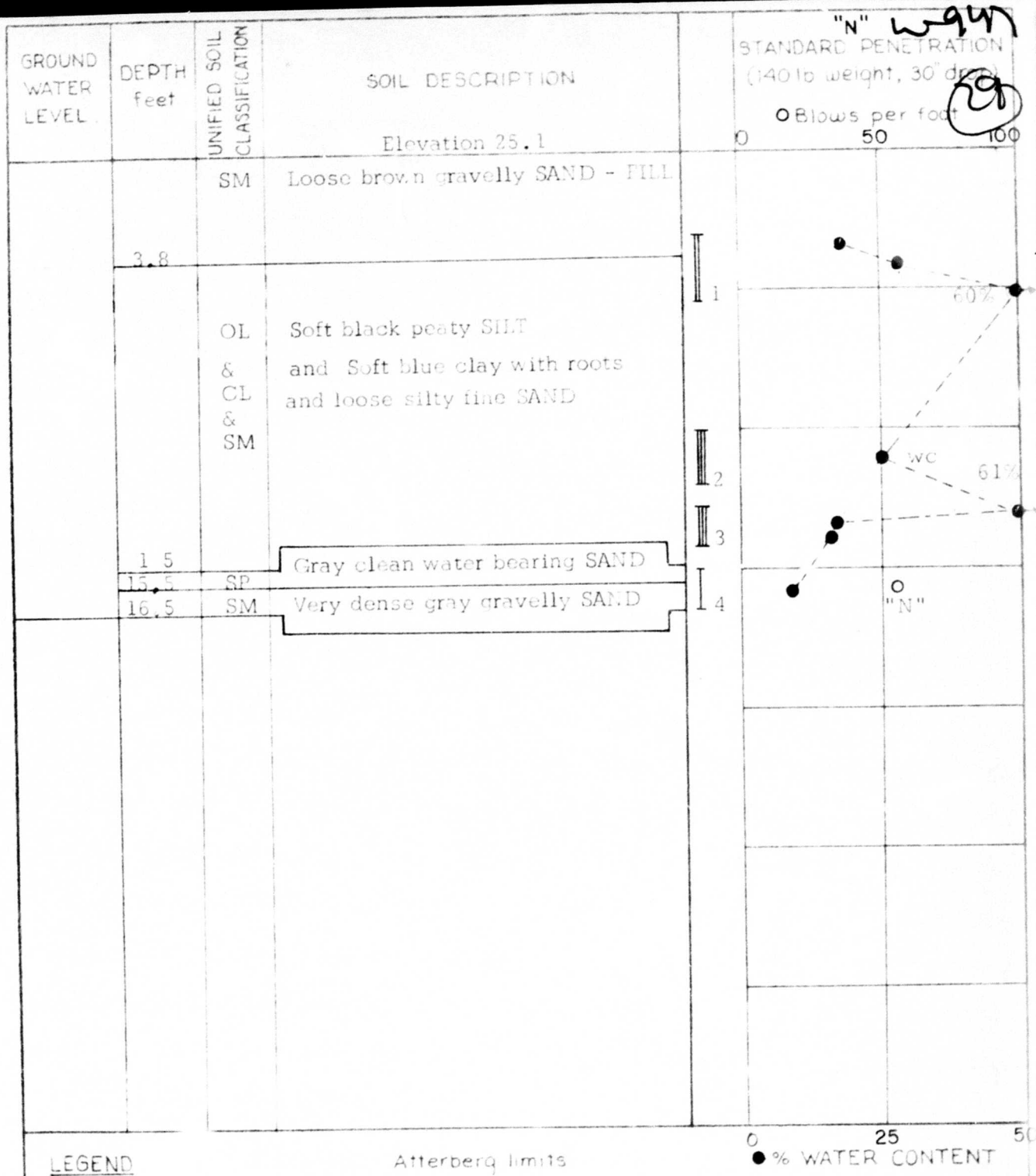
FIG. 12



LEGEND

I 2" O.D split spoon sample

II 3" O.D Shelby sample

III 2¼" O.D Shelby sample

P Sampler pushed

* Sample not recovered

Water level

Atterberg limits

Liquid limit

Natural water content

Plastic limit

Impervious seal

Piezometer tip

U of W PO NO. 76958-S

BORING B-9A

MAY 31, 1966 W-66-947

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FIG. 13

W-947

30

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION Elevation 27.1
▽	4.0	SM	Loose brown fine gravelly SAND (FILL)
4-7-66	9.5	OL & OH & ML	Soft dark brown peaty CLAY, black organic SILT and medium fine sandy SILT
	11.5	SM	Very dense gray silty SAND with gravel

"N" STANDARD PENETRATION
(140 lb. weight, 30" drop)
O Blows per foot
0 50 100

1 2 3 4

84%

W.C. "N"

0 25 50
● % WATER CONTENT

LEGEND

I 2" O.D. split spoon sample
II 3" O.D. Shelby sample
III 2¼" O.D. Shelby sample
P Sampler pushed
* Sample not recovered
▽ Water level

Atterberg limits
Liquid limit
Natural water content
Plastic limit

Impervious seal
Piezometer tip

U of W PO NO. 76958-S

BORING B-10

MAY 31, 1966 W-66-947

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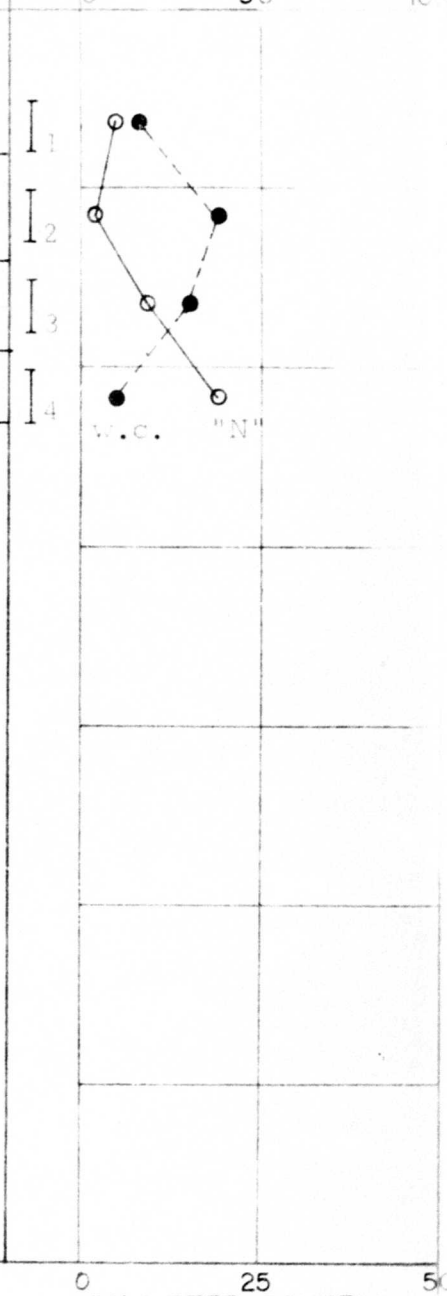
FIG 14

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION Elevation 27.8
		SM	Loose tan fine SAND with some gravel
	4.0	OH	Soft gray organic CLAY odor
	7.0	OL	Medium organic clayey fine SAND
	9.5	SM	Dense gray silty fine SAND with gravel
	11.5		



LEGEND

I 2" O.D. split spoon sample

II 3" O.D Shelby sample

III 2¼" O.D Shelby sample

P Sampler pushed

* Sample not recovered

Water level

Atterberg limits
Liquid limit
Natural water content
Plastic limit

Impervious seal
Piezometer tip

U of W PO NO. 76958-S

BORING B-11

MAY 31, 1966 W-66-947

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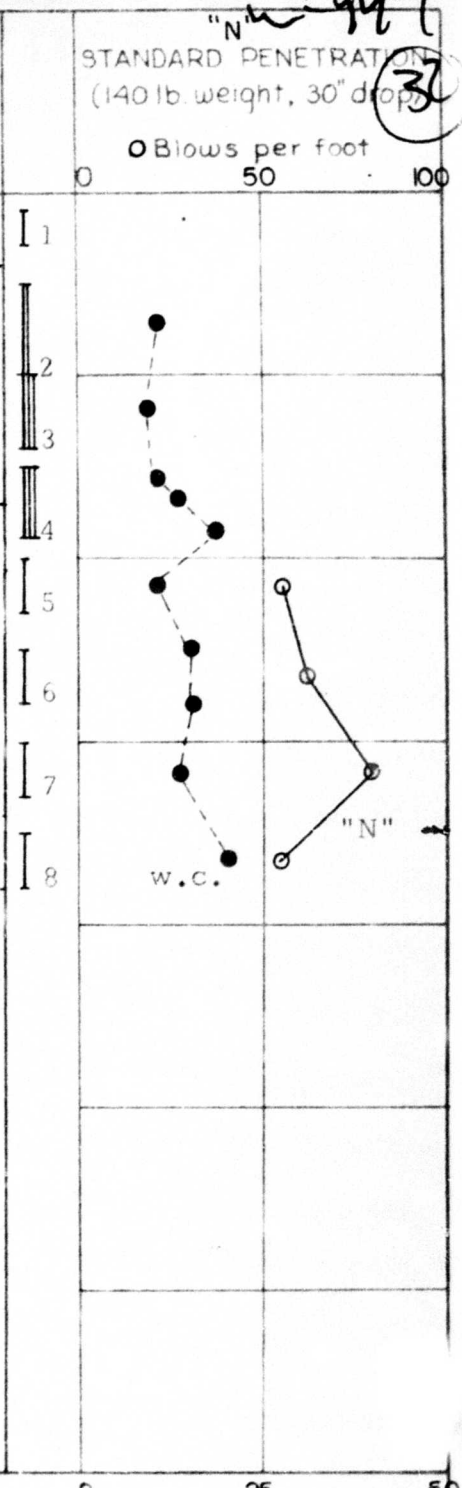
FIG 15

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION Elevation 212
	2.0	ML	Loose tan fine sandy SILT
	8.5	SM	Dense gray and brown silty SAND
▽ 4-8-66	11.0	SM & SP	Very dense gray silty SAND with gravel and zones of clean water bearing SAND (wet) (wet)
	19.0		(wet)



LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits
- Liquid limit
- Natural water content
- Plastic limit

Impervious seal

Piezometer tip

U of W PO NO 76958-S

BORING B-12

MAY 31, 1966 W-66-947

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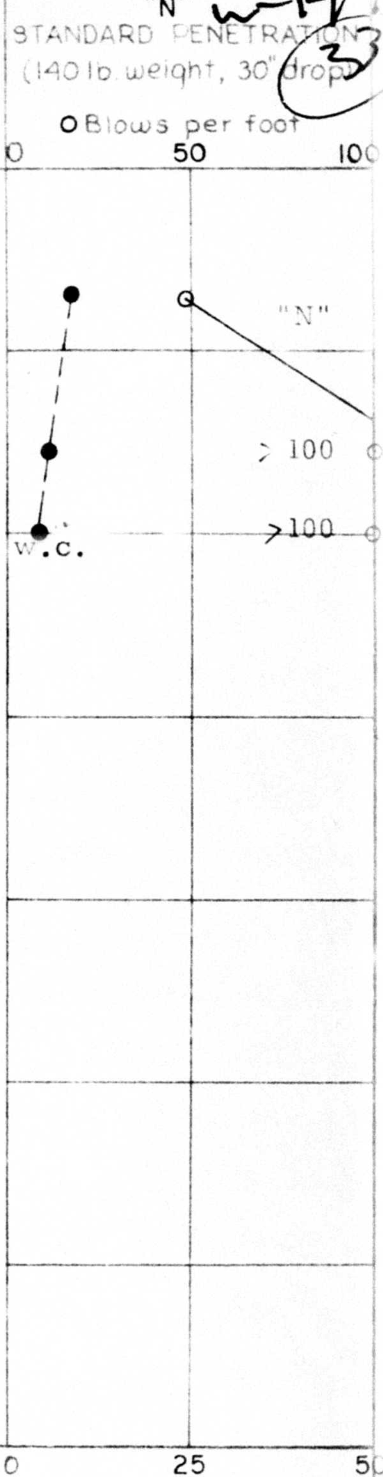
FIG 16

W-947 3

GROUND WATER LEVEL	DEPTH feet	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION Elevation 28.9	Sample
		SM	Dense brown silty SAND with gravel, ash, (FILL)	
	3.0			
		SM	Very dense brown silty SAND and GRAVEL	I 1
				I 2
	10.5			I 3



LEGEND

I 2" O.D. split spoon sample

II 3" O.D. Shelby sample

III 2¼" O.D. Shelby sample

P Sampler pushed

* Sample not recovered

▽ Water level

Atterberg limits:
- Liquid limit
- Natural water content
- Plastic limit

Impervious seal

Piezometer tip

U of W PO NO. 76958-S

BORING B-13

MAY 31, 1966 W-66-947

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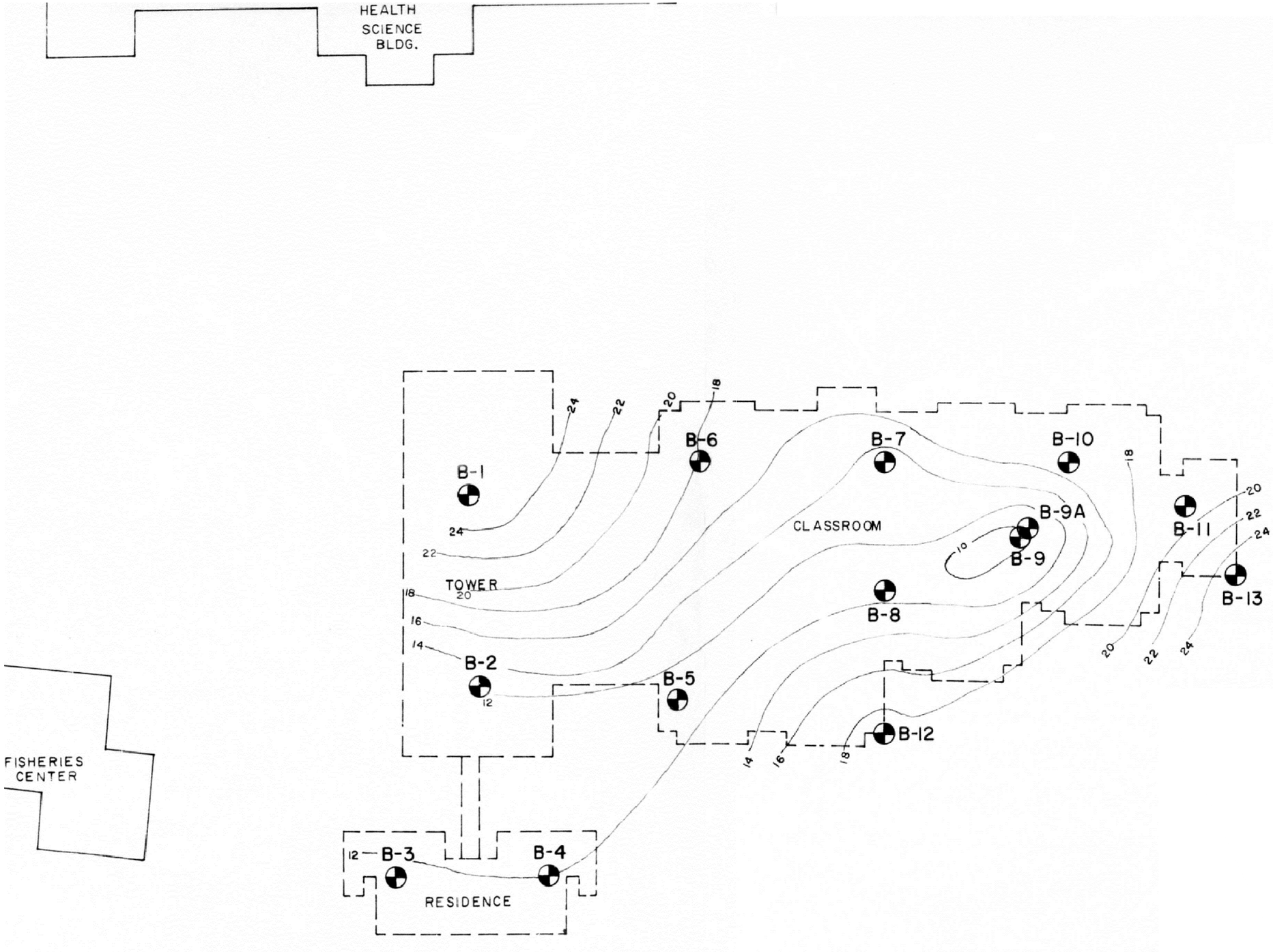
FIG. 17



LEGEND

- Boring location
- –22– Elevation in feet

NOTES

1. Vertical Control– City of Seattle Datum
2. The contour lines are estimated from the soils encountered in the borings.

University of Washington
Seattle, Washington

1966 CONTOUR LINES TO VERY DENSE SOILS

December 2021 105719-002

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. A-18

IMPORTANT INFORMATION

Important Information

About Your Geotechnical/Environmental Report

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining

IMPORTANT INFORMATION

your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims

being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the GBA, Silver Spring, Maryland

Appendix B

CRITICAL AREAS REVIEW AND WETLAND INVESTIGATION

SHANNON & WILSON
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

January 19, 2022

Ms. Lara Sirois
Campus Architecture and Planning
University Facilities Building Box
352205 3988 Jefferson Road NE
Seattle, WA 98195

RE: CRITICAL AREAS REVIEW AND WETLAND INVESTIGATION, HARING CENTER RENOVATION, UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON

Dear Ms. Sirois:

Shannon & Wilson conducted a critical areas review and wetland investigation to support the improvements proposed at the Haring Center on the University of Washington campus (Project). The Project is located at 1981 Northeast Columbia Road, within the City of Seattle (see Figure 1). This letter identifies and characterizes any critical areas within 200 feet of the Project limits (Study Area), in accordance with Seattle Municipal Code (SMC) (see Figure 2). This letter also addresses compliance with local, state, and federal regulations.

Within the Study Area, critical areas include a Type S waterbody (Montlake Cut), a peat settlement-prone area, 40% steep slopes, and a mapped 500-foot buffer associated with a great blue heron (*Ardea herodias*) management area. Approximately half of the Study Area is within the shoreline environment (Conservancy Management). There are no flood-prone areas, wetlands, riparian corridors, additional waterbodies/streams, additional geologic hazard areas, or historic landfills within the Study Area.

BACKGROUND REVIEW

Desktop research was conducted to help identify potential critical areas within the Study Area. These data sources included:

- Aerial imagery (Google Earth, 2021),
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Agriculture Applied Climate Information System (USDA NRCS, 2021a),
- USDA NRCS Web Soil Survey interactive map (USDA NRCS, 2021b),
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping system (USFWS, 2021),

- Washington State Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) on the Web map (WDFW, 2021), and
- City of Seattle Department of Construction & Inspections GIS interactive map (City of Seattle, 2021).

According to the NRCS's Web Soil Survey, soils within the Study Area are mapped as Urban land, 5 to 20% slopes (USDA NRCS, 2021b).

Review of Google aerial photography did not reveal any decipherable areas of inundation or saturation associated with wetlands within or near the Study Area (Google Earth, 2021). A review of the USFWS NWI did not show any mapped wetlands within the Study Area (USFWS, 2021). The closest wetland feature mapped by NWI is located approximately 300 feet west of the Study Area. This feature appears to be an engineered stormwater pond.

Within the Montlake Cut, the WDFW PHS on the Web map identifies the presence of Coho (*Oncorhynchus kisutch*), Sockeye (*Oncorhynchus nerka*), Resident Coastal Cutthroat (*Oncorhynchus clarki*), Chinook (*Oncorhynchus tshawytscha*), Steelhead (*Oncorhynchus mykiss*), and Dolly Varden/Bull Trout (*Salvelinus malma/S. confluentus*) (WDFW, 2021). Additionally, a great blue heron breeding colony is displayed approximately 450 feet north of the Study Area in an area between NE Pacific Street and NE Pacific Place.

Within the Study Area, the City of Seattle GIS map displays the Montlake Cut, a peat settlement-prone area, two 40% steep slope areas, and a 500-foot buffer associated with a great blue heron management area (City of Seattle, 2021). The 500-foot heron buffer is based upon the breeding colony mapped by WDFW PHS (2021) and described above. The entire Study Area and surrounding vicinity are mapped as a Category 2 peat settlement-prone area. Seattle does not show any wetlands or riparian corridors within the Study Area. The closest wetland feature shown is located approximately 300 feet west of the Study Area, as mentioned above.

Local Precipitation Conditions

Monthly totals and departure from normal precipitation data were collected from the Seattle Sand Point Weather Forecast Office (WFO) station (USDA NRCS, 2021a) for the three months preceding the November 2021 site visit. According to the Seattle Sand Point WFO data, monthly precipitation totals demonstrated wetter than normal conditions for the three-month period preceding the site visit (see Exhibit 1). In the seven-day period preceding the site visit, a total of 2.13 inches of precipitation was observed at the Seattle Sand Point WFO.

Month	Long-Term Rainfall (WETS) 30% Chance Will Have Less Than	More Than	Observed (2021) Precipitation	Condition (Dry, Normal, Wet)	Condition Value*	Weighted Value	Product (Condition Value x Weighted Value)
Oct	1.97	3.86	4.6	Wet	3	3	9
Sept	0.53	1.76	2.97	Wet	3	2	6
Aug	0.5	1.28	0.28	Dry	1	1	1
Weather Station: Sand Point WFO, Period of Record: 1981-2010						**Sum:**	16

Table methodology adapted from *NRCS Engineering Field Handbook, Chapter 19* (USDA NRCS, 1997)

*Condition Value:
Dry = 1
Normal = 2
Wet = 3

If Sum is:	Then:
6-9	Period Has Been Drier Than Normal
10-14	Period Has Been Normal
15-18	Period Has Been Wetter Than Normal

Exhibit 1: Precipitation Analysis for November 2021, Seattle Sand Point WFO

FIELD METHODS

Wetlands

The Study Area was evaluated for the potential of wetlands using methods described in the U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual (Corps, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (U.S. Army Engineer Research and Development Center, 2010). Ground visual surveys were used to describe the vegetation community (Federal Geographic Data Committee, 2013). The Munsell Soil Color Chart was used to describe soil colors (Munsell Color, 2000).

Potential wetland areas were identified using the triple-parameter approach, which considers vegetation types, soil conditions, and hydrologic conditions. For an area to be considered wetland, it must display each of the following: (1) dominant plant species that are considered hydrophytic by the accepted classification indicators, (2) soils that are considered hydric under federal definition, and (3) indications of wetland hydrology in accordance with federal definition. Appendix A includes a more detailed summary of the federal delineation methodology.

During the site investigation, one data point describing the three parameters outlined above was collected using a handheld global positioning system unit with an accuracy of approximately 5 feet.

Wildlife Habitat

During the site visit, the biologist observed potential wildlife habitat within the Study Area, focusing on large trees where potential great blue heron nesting could occur. All nests of appropriate size were observed for signs of activity.

RESULTS

Wetlands

Shannon & Wilson conducted fieldwork on November 11, 2021, to identify and confirm critical area conditions. The Study Area is represented by rolling topography, with an overall southern aspect. Ornamental trees, landscaping, and maintained lawn is present surrounding existing buildings, with a row of deciduous trees (*Populus sp*.) bordering the Montlake Cut shoreline. The Haring Center is surrounded by maintained lawn and landscaped areas to the south and east, a steep fill slope extending up to Northeast Columbia Road on the north side, and the Center on Human Development and Disability (CHDD) to the west. The Montlake Cut is located approximately 80 to 150 feet south of the Haring Center. A bulkhead defines the ordinary high water mark of the Montlake Cut.

Shannon & Wilson collected one data point where potential wetland conditions appeared most probable within the Study Area. The data point location is shown in Figure 2, and the corresponding Wetland Determination Data Form is included in Appendix B. Appendix C contains photographs of on-site conditions within the Study Area.

The ground surface at the data point location was the only location within the Study Area that appeared to have the potential of satisfying the wetland hydrology criterion at the time of the site visit. Existing vegetation at the data point location consists of common varieties of lawn grasses and creeping buttercup (*Ranunculus repens*; FAC).

Soil conditions observed at this data point location were examined to a depth of 7 inches due to a restrictive layer of large cobble and gravel. From 0 to 3 inches, soils are very dark grayish-brown (10YR 3/2), sandy clay loam with 2% redoximorphic (redox) concentrations (10YR 3/6) and 1% redox depletions (10YR 4/1). From 3 to 7 inches, soils are very dark grayish-brown (10YR 3/2), sandy clay loam with 2% redox concentrations (10YR 3/4). These soils do not meet the hydric soil criteria.

This soil profile at the data point location was saturated within the top 1 inch, but became gradually drier toward the restrictive layer. No surface water, water table, or other primary

or secondary wetland hydrology indicators were observed. As discussed in the Local Precipitation Conditions section above, heavy rainfall events in the seven-day period directly preceding the site visit likely contributed to the visually wet surface conditions at the data point location. Therefore, no primary or secondary wetland hydrology indicators were met during the site visit.

These soil and hydrology conditions are reflective of disturbed and compacted conditions where hydrology sources from precipitation alone and not from an associated water table. Furthermore, upon investigation of historic aerial photos, it appears that the data point location was recently converted from an asphalt driveway to lawn as recently as 2018 (Google Earth, 2021).

As a result of these conditions, the triple-parameter approach for identifying wetlands was not met anywhere within the Study Area and no wetlands are present within 200 feet of the Project.

Wildlife Habitat

Multiple ornamental mature trees are scattered throughout the Study Area, as well as a row of mature deciduous trees lining the shoreline of the Montlake Cut. These trees provide refuge and nesting opportunities for avian and other wildlife species within an otherwise highly developed urban area. Multiple songbirds, crows, and gulls were observed during the site visit. The northern portion of the Study Area is located within the 500-foot buffer of a historic great blue heron nesting colony. Visual observations of mature trees within the Study Area were conducted during the site visit. Several large stick nests were observed within the trees lining the Montlake Cut shoreline. All stick nests appeared to be inactive crow and/or squirrel nests. No herons or heron nests were observed within the Study Area. No species of local importance were observed.

REGULATORY COMPLIANCE

City of Seattle (Local)

Environmentally Critical Area Regulations

As previously stated, critical areas within the Study Area include a fish and wildlife habitat conservation areas (Type S waterbody [Montlake Cut] and a great blue heron nesting colony 500-foot buffer) as well as geologic hazard areas (a mapped peat settlement-prone area and 40% steep slopes). Environmentally critical areas within the City of Seattle are regulated

under SMC Chapter 25.09. Where environmentally critical areas overlap with the shoreline environment, the standards of SMC Chapter 25.09 are modified by the City's SMP (SMC 23.60A.156.C and 23.60A.156.E through 23.60A.156.O). If there are any conflicts between the regulations of SMC Chapter 25.09 and the SMP, the requirements most protective of ecological functions apply.

The Montlake Cut has a 50-foot shoreline setback and is designated as a fish and wildlife habitat conservation area, as it has a primary association with state and federal protected species. The Montlake Cut is a Shoreline of the State, and as such is also regulated under the City's SMP. Refer to the next section for further discussion of SMP compliance.

WDFW PHS (2021) maps a heron breeding colony, a fish and wildlife habitat conservation area, approximately 450 feet north of the Study Area. This is designated as a species of local importance by City of Seattle. In 2018, the City of Seattle issued a Director's Rule (13-2018) that ruled great blue heron nesting colonies shall receive a 197-foot year-round buffer, and 300- to 500-foot seasonal buffers depending on the location (City of Seattle, 2018). This 2018 rule supersedes an earlier Director's Rule (5-2007) that ruled all nesting colonies would receive 500-foot buffers (City of Seattle, 2007). There are no heron buffers that will impact the Project.

The entire Study Area and surrounding vicinity is mapped as a Category 2 peat settlement-prone area. Peat settlement-prone areas are regulated under SMC 25.09.110. For more discussion and characterization of this critical area, please refer to the Geotechnical Engineering Report prepared by Shannon & Wilson (2021).

Development standards for steep slopes outside the shoreline environment are regulated under SMC 25.09.090. Steep slopes within the shoreline environment are regulated under SMC 23.60A.156.I. Steep slopes typically have 15-foot buffers from the top and toe of slope. There is a large steep slope area located within the southeast portion of the Study Area, between Haring Center and the Montlake Cut. Another small steep slope area is located between NE Columbia Road and CHDD.

Shoreline Management Program

Due to the presence of the Montlake Cut, a Shoreline of the State, approximately half of the Study Area is within the shoreline environment (Conservancy Management). Over half of the Haring Center building is also within the Conservancy Management environment. Land use and development is limited within this shoreline designation, in accordance with SMC Chapter 23.60A. In particular, the Haring Center is considered a nonconforming use

within the Conservancy Management environment because it provides childcare and is a nonwater-related use. Per SMC 23.60A.122, nonconforming uses can only be maintained, repaired, improved, or altered within this shoreline designation. No expansion beyond the existing footprint is permitted outright. In addition to this limitation, all other shoreline development conditions of SMC 23.60A.150 through 170 shall be met during the Haring Center renovation.

State and Federal Regulations

No impacts to waters of the state and/or Waters of the U.S. are proposed as part of the Project. Therefore, there are no associated state or federal environmental regulations anticipated as part of the Project.

CLOSURE

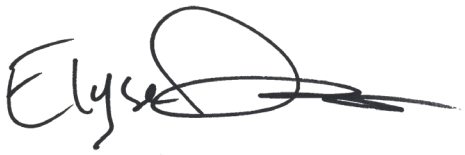
The findings and conclusions documented in this letter have been prepared for specific application to this project, and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar 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.

Shannon & Wilson has prepared the enclosed "Important Information About Your Wetland Delineation Mitigation and/or Stream Classification Proposal" to assist you and others in understanding the use and limitations of our proposals.

If you have any questions, please contact me at (206) 695-6927.

Sincerely,

SHANNON & WILSON



Elyse Denkers, PWS
Ecologist, Permitting Specialist

EBD:MAC:PCJ/ebd

Enc. References (2 pages)
Figure 1 – Vicinity Map
Figure 2 – Critical Area Map
Appendix A: Wetland Delineation Methodology
Appendix B: Wetland Determination Data Form
Appendix C: Site Photographs
Important Information About Your Wetland Delineation/Mitigation and/or Stream Classification Proposal

REFERENCES

City of Seattle, 2007, Seattle Department of Planning and Development, Directors Rule 13-2018, p. 6, available: https://www.seattle.gov/dpd/codes/dr/DR2018-13.pdf

City of Seattle, 2018, Seattle Department of Planning and Development, Directors Rule 5-2007, p. 3.

City of Seattle, 2021, Seattle Department of Construction & Inspections GIS interactive map, available: https://seattlecitygis.maps.arcgis.com/apps/webappviewer/index.html?id=f822b2c6498c4163b0cf908e2241e9c2, accessed December 2021.

Federal Geographic Data Committee, 2013, Classification of Wetlands and Deepwater Habitats of the United States, Adapted from Cowardin, Carter, Golet and LaRoe (1979), available: https://www.fgdc.gov/standards/projects/wetlands/nwcs-2013

Google Earth, 2021, available: https://earth.google.com/web/search/Seattle,+WA/, accessed December 2021.

Munsell Color, 2000, Munsell soil color charts: Revised Washable Edition, Newburgh, N.Y., Macbeth Division of Kollmorgen Instruments Corporation, 1 v.

Shannon & Wilson, 2021, Geotechnical Engineering Report for Haring Center Renovation, Seattle, WA, December.

U.S. Army Corps of Engineers (Corps), 1987, Corps of Engineers wetlands delineation manual: Vicksburg, MS, U.S. Army Corps of Engineers, Technical Report Y-87-1, 169 p., available: http://www.cpe.rutgers.edu/wetlands/1987-army-corps-wetlands-delineation-manual.pdf.

U.S. Army Engineer Research and Development Center, 2010, Regional supplement to the Corps of Engineers wetland delineation manual: western mountains, valleys, and coast region (v. 2.0): Vicksburg, Miss., U.S. Army Corps of Engineers U.S. Army Engineer Research and Development Center, Report ERDC/EL TR-10-3, 151 p.

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), 2021a, Agricultural Applied Climate Information System, available: http://agacis.rcc-acis.org, accessed December 2021.

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), 2021b, Web Soil Survey, available: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx, accessed December 2021.

U.S. Fish and Wildlife Service (USFWS), 2021, National Wetlands Inventory wetlands mapper, available: http://www.fws.gov/wetlands/Data/Mapper.html, accessed December 2021.

Washington State Department of Fish and Wildlife (WDFW), 2021, PHS on the Web interactive map, available: https://geodataservices.wdfw.wa.gov/hp/phs/, accessed December 2021.

Appendix C

PRELIMINARY HAZARDOUS MATERIALS REPORT

Hazardous Materials Survey Report
Summary of Findings/Good Faith Survey

Haring Center Upgrades
UW 206962
Seattle, Washington

Prepared for:
University of Washington
Facilities - Project Delivery Group
Facilities Services Admin. Bldg. (FSAB)
Box 352205
Seattle, WA 98195-2205

December 27, 2021
PBS Project No. 40035.915

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APPENDICES

1 PROJECT BACKGROUND

PBS Engineering and Environmental Inc. performed a limited hazardous materials survey as part of the planned remodel project at the Haring Center (formerly referred to as the CHDD School or the EEU.

Based on the primary plans provided by the UW, it is our understanding that the work will include a substantial interior renovation and new addition. 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. Areas inspected were determined through communication with the UW PDG.

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

The Haring Center one-story building was originally built in 1969 and has undergone various renovation and construction projects throughout the years. Interior spaces impacted by the renovation project generally consist of classrooms, office spaces, conference rooms, lecture hall, kitchen and a multi-purpose gymnasium. Interior finishes generally consist of vinyl floor tiles, sheet vinyl or carper, and wall system consist of gypsum wallboard walls with lay-in ceiling tiles. The roof is flat EPDM rubber roof membrane on wood decking. The mechanical system consists of air handling units located in the basement with a crawlspace utilidor. The exterior of the building consists of masonry brick facade.

2 SURVEY PROCESS

Accessible areas included in the project scope were inspected by AHERA-Certified Building Inspector Ryan Hunter (Cert. No. IRO-21-7254B Exp. 2/23/2022) and Willem Mager (Cert. IR-21-0536B Exp. 1/21/2022) on in July 2021. Supplemental wall sampling was completed on December 8, 2021. The survey was limited and 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 NVL Labs (NVLAP 102063-0) and Seattle Asbestos Test (NVLAP # 201057-0) 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. 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 below per location.

- ACM Pipe fitting insulation – throughout the building and in the basement level mechanical room and crawlspace (approx. 1,100 fittings). Straight runs pipes (plumbing and heating system) were fiberglass insulated and generally 3" to 4" outside diameter with the basement level pipes that are larger in dimensions (5" to 12" outside diameter).
- Assumed pipe valve gaskets (40 gaskets) in mechanical rooms.
- Assumed ACM insulation around roof drainage pipe base (50 SF).
- ACM 12" vinyl floor tiles (off-white with different colored specks) and associated ACM black mastic. Found throughout building in classrooms, office spaces, conference rooms, kitchen, storage rooms, utility rooms and corridors. In certain cases, this ACM black mastic noted under carpet in office spaces and under wood Gym floor (total approximately 38,000 SF).
- ACM glazing (gray or black) associated with all windows, window relites and store front windows.
- ACM Vinyl sheet flooring (brown) and ACM mastic - in in select areas found under newer non-ACM off-white sheet flooring in classrooms hand wash station (total approximately 2,500 SF).
- Cement asbestos panels (generally 3'x'3 or 3'x4') at base and top header of window walls and relite windows, perimeter window walls and in courtyard windows (total approximately 1,800 SF).
- Assumed asbestos-containing flex connectors associated with mechanical system and air handling equipment (assumed 15 flex-connectors).
- Assumed asbestos-containing mastic under fiberglass insulated air-handling equipment in basement mechanical rooms (assumed 800 SF).
- Assumed asbestos-containing caulking in Air Handling Units (assumed 100 LF).
- Assumed asbestos-containing mastic behind mirror and display boards (assumed 500 SF).
- Assumed asbestos-containing chalkboards in Gym (300 SF) and potential present in classrooms.
- Assumed asbestos-containing Fire-doors (exterior doors) – assumed 5 doors.
- Joint compound mud on wallboard walls and ceilings throughout tested less than 1% of asbestos, refer to below (additional sampling completed in December of 2021).

Less Than 1% Asbestos

Joint compound associated with gypsum wallboard assemblies containing asbestos in low concentrations is not considered by current regulations to be a regulated asbestos material (less than 1% of asbestos). As well for quality control joint compound was 400 Point Counted and analyzed below 1% of asbestos. However, current regulations require various employer/worker compliance activities during impact of less than 1% asbestos materials, which include but not limited to asbestos training, initial air monitoring, worker and environmental protection, engineering controls (such as use of wet methods and HEPA vacuums for debris cleanup), worker training and supervision by an asbestos "competent person."

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

- Gypsum wallboard
- White 2'x2' and 2'x4' lay-in ceiling tiles (cellulose)
- White 2'x2' and 2'x4' lay-in ceiling tiles (fiberglass)
- Pipe dope compound (sprinkler lines)
- 1'x1' ceiling tiles and associated brown mastic
- Vinyl wallcovering (wallpaper and mastic) – in corridors and select classrooms. Note joint compound is present under the wallpaper (less than 1% of asbestos).
- Caulking in kitchen countertop, wall panels and sink
- Covebase and brown mastic (note – ACM joint compound mud is present under mastic)
- Black or gray sealants and caulking associated with door frames and rough-opening of walls

- Black or gray sealants and caulking associated with window frames and rough-opening
- Window glazing compound (black and gray)
- Sink undercoating (kitchen)
- Ceramic wall tile and grout/mortar – restrooms
- Ceramic floor tile and grout/mortar – restrooms
- Grout/mortar – masonry brick walls in interior and exterior
- Cloth covers with fiberglass insulation on air handling units and associated duct work – Mechanical Room
- Carper mastic (brown or yellow) – in select classroom black ACM residual mastic was noted
- EPDM rubber roofs generally 4" in thickness with non-ACM insulation and vapor barrier (per UW Roof Shop – roof was replaced circa 1995).
- Rubber membrane at perimeter flashing
- Roofing sealant and calking around vents and HVAC units
- Rubber flooring and mastic associated with staircase (lecture hall)
- Rubber flooring mastic/glue associated with playground flooring mat (in 2 courtyards)

Refer to the attachments for sample location figures, photo sheets and sample inventory with description of materials sampled and their general location.

Advisory Notice - ACM Caution (Hidden Materials): The possibility exist 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, gaskets, construction adhesives, wiring and electrical insulators, pipe covering and insulation and vapor barriers and roofing. Stop work immediately and promptly inform the UW if suspect materials are noted.

3.2 Lead-Containing Paint (LCP)

Representative coatings, grout and ceramic tile from the project areas were collected by PBS and analyzed for lead 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).

Per analytical method via FAA, Lead was detected. The following is a list of samples collected and location:

- Off-white painted wallboard walls (0.058% to 0.043% lead) – all walls and on steel radiators
- Brown painted wood beams, decking and wood trim (0.016% to 0.023% lead) – all wood beams Brown Lead paint is also present on wood doors and door frames/casing. Note all doors and trim/case work (different colors) are assumed to be coated with Lead paint.
- Off-white and White painted wood overhangs and soffit ceilings (0.026% lead)
- Mortar and grout associated with ceramic flooring and wall tiles in all restrooms (0.004% lead)
- Ceramic tile wall and floor glazed tiles in all restrooms (0.0034% lead)
- In rubber playground flooring mats (34 ppm lead) – east and west play courts mats

For locations and results of paint sampling see Appendix B.

3.3 Regulated Metals in Masonry Components

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, Cadmium, 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 Methods 3051 and 6010C.

- **Chromium (16 ppm)** was detected in the exterior mortar/grout samples collected (and assumed Chromium present in interior brick mortar walls as well). All regulated metals-related construction activities must be performed in accordance with airborne contaminants WAC 296-841.

Refer to Appendix for location of samples and laboratory results.

3.4 PCB-Containing Components

PBS inspected representative fluorescent light fixture ballasts that are to be removed to facilitate the planned demolition. 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 the Haring Center.

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.

The following caulking/sealants were identified to contain PCBs.

- Black caulk/sealants (or dark gray) at wall and door frames rough openings (5,600 ppm PCBs) – all wall joints (assumed PCB has leached into wall assemblies of masonry brick or wood frames).

- Black caulk/sealants (or dark gray) at wall and window frames rough openings (2,300 ppm PCBs) – all window frames (assumed PCB has leached into wall assemblies of masonry brick or wood frames).

- Black window/glass glazing (or dark gray) compound (31 ppm PCBs) - all windows, relites and storefront windows.

3.5 Mercury-Containing Components

Thermostats and compact fluorescent light tubes and compact fluorescent light bulb are present throughout the building. As well all light tube/lamps associated with high intensity lamps (HID) in the Gym and Exit light within the areas of work are presumed to contain mercury vapors in small concentrations.

3.6 Silica-Containing Materials

Certain building materials, including but not limited to fireproofing, 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:

- Concrete floor
- Wallboard wall/ceiling system (with mud/tape)
- Ceramic tile and grout

- Masonry brick walls and mortar

4 RECOMMENDATIONS

4.1 Asbestos-Containing Materials (ACM)

ACMs are present at the subject site and will be impacted by the project.

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: 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 and environmental protection, engineering controls (such as the use of wet methods and HEPA vacuums for debris cleanup) and supervision by an asbestos "competent person".

Advisory Notice - ACM Caution (Hidden Materials). The possibility exist that suspect ACM may be present at concealed locations in wall and ceiling cavities, within HVAC equipment and potentially in other select concealed areas. These may include, but are not limited to waterproofing membrane, vapor barriers, internal gasketing, mastics, caulking, and sealants on HVAC equipment, construction adhesives, electrical insulators, below grade pipe covering and insulation. In the event that suspect ACMs not included in this report are encountered 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.

4.2 Lead-Containing Paint (LCP) and Metals (Chromium)

Representative painted coatings from the project locations were found to contain Lead by laboratory analysis. As well Chromium was identified in all masonry mortar of the building (interior and exterior brick mortar).

Impact of painted surfaces with detectable concentrations of Lead/Chromium requires construction activities to be performed according to Washington Labor and Industries regulations for Lead/Metals in Construction (not limited to WAC 296-155-176). Workers impacting LCP should be Lead/Metals trained, provided 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. Handling of painted coatings that contain lead content must be in accordance with 40 CFR Part 745 Lead/Metals. 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).

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.

4.3 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/shipped, 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), 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.

4.4 Mercury-Containing Components

All thermostats, HID lamps and compact fluorescent lights (bulbs and tubes) are presumed to be mercury-containing. Mercury is known to be toxic and requires special handling and proper disposal, ideally through recycling. PBS recommends that 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 Silica-Containing Materials

Suspect silica-containing materials are assumed to be in concrete walls, brick walls and mortar, and concrete floor and wallboard system.

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.

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