Montlake Elementary School Modernization and Addition Project

Draft SEPA Checklist

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Paul Wight
Project Manager
pdwight@seattleschools.org

While the Montlake Elementary School Modernization and Addition Project Draft State Environmental Policy Act (SEPA) Checklist is accessible and ADA compliant, the attached figures and appendices which support the checklist contain complex material that are not accessible. The following is a description of what is contained in the figures and appendices:

- Figure 1 – Montlake Elementary School Site Vicinity Map
  Figure 1 is a vicinity map that shows the Montlake Elementary School campus and the surrounding neighborhood in the site vicinity. The school campus site is outlined in red on the map.

- Figure 2 – Montlake Elementary School Aerial Map
  Figure 2 is an aerial map of the Montlake Elementary School campus and the surrounding neighborhood in the site vicinity. The school campus site is outlined in red on the map.

- Figure 3 – Proposed Site Plan
  Figure 3 is a site plan of the proposed project. The entire school campus is shown on the plan. The proposed new building addition and other proposed project site features are labeled on the site.

- Appendix A – Geotechnical Engineering Report
  Appendix A consists of the Geotechnical Report that was prepared by Associated Earth Sciences, Inc. The report presents the results of the subsurface information review, subsurface explorations, summarizes groundwater conditions and potential geologic hazards, and provides geotechnical conclusions and design recommendations. Field exploration logs and laboratory testing results are included as appendices to this report.

- Appendix B – Construction Best Management Practices
  Appendix B consists of construction best management practices that could be implemented during the construction of the project.

- Appendix C – SEPA Greenhouse Gas Emissions Worksheet
  Appendix C consists of the Greenhouse Gas Emissions Worksheet for the project. This worksheet provides a calculation of the greenhouse gas emissions that would be anticipated to be generated with the development of the proposed project.

- Appendix D – Arborist Report
  Appendix D consists of the Arborist Report and Tree Inventory that was prepared for the project by Tree Solutions, Inc. The report provides an inventory of the existing trees on the site and adjacent rights-of-way. Recommendations and tree protection measures are provided. A Table of Trees is included as part of the report which describes the characteristics and measurements for each tree. A map documenting the location of each tree is also provided.

- Appendix E – DAHP Governor's Executive Order 21-02 Letter and Cultural Resources Assessment Report
  Appendix E consists of the DAHP Governor's Executive Order 21-02 Letter and the Cultural Resources Assessment Report for the project that was prepared by Perteet. The DAHP Governor's Executive Order 21-02 Letter summarizes DAHP's review and determination for the project. The Cultural Resources Assessment Report details the background research and onsite investigations that were completed as part of the assessment and provides recommendations for the project. Due to the confidential nature of archaeological materials discussed in the report, a full copy of the report is not included in this electronic version. However, a non-confidential version of the report is available upon request from Seattle Public Schools.

- Appendix F – Transportation Technical Report
  Appendix F consists of the Transportation Technical Report for the project that was prepared by Heffron Transportation, Inc. The report provides a description and analysis of background transportation conditions for the area surrounding the site, including traffic volumes, traffic operations (level of service), parking, transit, and non-motorized facilities. The report analyzes and addresses potential impacts with the proposed project on those same transportation conditions and provides recommendations and mitigation measures. The document includes level of service definitions and parking utilization study data as appendices to the report.

This concludes the description of the Draft SEPA Checklist figures and appendices for the Montlake Elementary School Modernization and Addition Project.

DRAFT ENVIRONMENTAL CHECKLIST

for the proposed

Montlake Elementary School Modernization and Addition Project

prepared by

SEATTLE PUBLIC SCHOOLS

June 2022

EA Engineering, Science, and Technology, Inc., PBC
AESI
Tree Solutions, Inc.
Perteet
Heffron Transportation, Inc.

PREFACE

The purpose of this Draft Environmental Checklist is to identify and evaluate probable environmental impacts that could result from the ***Montlake Elementary School Modernization and Addition Project*** and to identify measures to mitigate those impacts. The proposed ***Montlake Elementary School Modernization and Addition Project*** is intended to expand the capacity of the school and upgrade the quality of the student learning environment of the school. The proposed project would construct a multi-story, approximately 65,000 sq. ft. addition to the west of the existing building and would also include modernization of the existing main school building, which is designated as a City of Seattle Landmark. The modernized and expanded school would have capacity for up to approximately 500 students in grades K through 5th grade, as well as space for 30 students in a before- and after-school childcare classroom. Although not anticipated at this time, the childcare classroom could be utilized to accommodate preschool students in the future which would result in a potential future capacity of approximately 530 students in grades Pre-K through 5th grade.

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 Draft 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); and the Seattle City Code (25.05), 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 ***Montlake Elementary School Modernization and Addition Project.*** Analysis associated with the proposed project contained in this Environmental Checklist is based on plans for the project, which are on-file with Seattle Public Schools. While not construction-level detail, the plans accurately represent the eventual size, location and configuration 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 (starting 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 6) 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 39) contains the signature of the proponent, confirming the completeness of this Environmental Checklist.

Appendices to this Environmental Checklist include: the *Geotechnical Report for Montlake Elementary* (AESI, 2022), *Summary of Construction Best Management Practices*, the *Greenhouse Gas Emissions Worksheet* (EA Engineering, 2022), *Tree Inventory and Arborist Report* (Tree Solutions, Inc., 2022), *DAHP Governor's Executive Order 21-02 Letter (*DAHP, 2022), the *Cultural Resources Assessment* (Perteet, 2022), and the *Transportation Technical Report* (Heffron Transportation, Inc., 2022).

[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 Seattle Public Schools to make a SEPA threshold determination.

A. BACKGROUND

1. Name of Proposed Project:

Montlake Elementary School Modernization and Addition Project

2. Name of Applicant:

Seattle School District No. 1 (Seattle Public Schools)

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

Paul Wight
Project Manager
Seattle Public Schools
2445 3rd Avenue S
Seattle, WA 98134
206-252-0648

4. Date Checklist Prepared

June 1, 2022

5. Agency Requesting Checklist

Seattle School District No. 1
2445 – 3rd Avenue South
MS 22-332, P.O. Box 34165
Seattle, WA 98124-1165

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

The ***Montlake Elementary School Modernization and Addition Project*** that is analyzed in this Draft Environmental Checklist involves site preparation work, construction, and operation of the project. Site preparation and construction could begin in approximately July 2023 with building occupancy in approximately September 2025. During the construction process, students and staff would be temporarily housed at the John Marshall site (520 NE Ravenna Boulevard).

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 at this time.

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

The following environmental information has been prepared for the project and is included as appendices to this Checklist:

- *Geotechnical Report for Montlake Elementary* (AESI, February 2022);
- *Greenhouse Gas Emission Worksheet* (EA Engineering, April 2022);
- *Tree Inventory and Arborist Report* (Tree Solutions, May 2022);
- *DAHP Governor's Executive Order 21-02 Letter* (DAHP, May 2022);
- *Cultural Resources Assessment* (Perteet, May 2022)[2];
- *Transportation Technical Report* (Heffron Transportation, May 24, 2022);

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 ***Montlake Elementary School Modernization and Addition Project*** site.

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

City of Seattle

- *Seattle Department of Construction and Inspections (SDCI)*

  Permits/approvals associated with the proposed project, including:
  - Demolition Permit
  - Master Use Permit
  - Building Permit
  - Mechanical Permits
  - Electrical and Fire Alarm Permits
  - Drainage and Side Sewer Permit
  - Comprehensive Drainage Control Plan Approval
  - Drainage Control Plan with Construction Best Management Practices, Erosion and Sediment Control Approval
  - Land Use Code Departure Approval (lot coverage, building height, setbacks, onsite parking, bicycle parking, onsite bus loading, truck loading/unloading, changing-image reader board sign)

[2] The Cultural Resources Assessment is on-file with SPS and available upon request.

- *Seattle Department of Transportation (SDOT)*
  - Street Use and Construction Use Permit (temporary – construction related)
  - Street Use and Utility Permit
  - Street Improvement Permit

- *Seattle Department of Neighborhoods*
  - Certificate of Approval (Landmarks Preservation Board)

King County
- Plumbing Permit
- Sewer Treatment Capacity Charge Approval
- Health Department Approval

Puget Sound Clean Air Agency
- Air Quality Permit – Demolition

Washington State Department of Ecology
- NPDES Construction Stormwater General Permit

Washington State Department of Archaeology and Historic Preservation
- Governor's Executive Order 21-02 Review

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 ***Montlake Elementary School Modernization and Addition Project*** site is located within Seattle's Montlake neighborhood (see **Figures 1** and **2**). The school campus is generally bounded by E Calhoun Street to the north, 22nd Avenue E to the east, E McGraw Street to the south, and 20th Avenue E to the west.

The existing Montlake Elementary building is located on the eastern portion of the site and is designated as a City of Seattle Landmark. The eastern half of the building is two-stories tall and contains classrooms, offices, restrooms, supply rooms and other school spaces. The western half of the building is one-story tall and generally contains boiler rooms, fuel rooms and other space; a covered play area is also located at the northwest portion of the building. In total, the Montlake Elementary building contains approximately 21,400 sq. ft. of building space. A separate, one-story cafeteria building is located to the west of the main building, beyond an access driveway, and contains approximately 1,400 sq. ft. of building space. An approximately 450-sq. ft. greenhouse structure is located to the south of the main building. Six portable classroom buildings are also located in the northwest portion of the site.

A hard surface play area and playground equipment are located to the south of the existing portable buildings and west of the existing cafeteria building. The southeast corner of the play area includes a back stop to allow for baseball or softball use. A covered play area is also located at the northwest corner of the existing building.

A paved area with unstriped parking for two vehicles is located to the northwest of the existing main building and is accessed from a driveway on E Calhoun Street; there is also a curb cut on E McGraw Street on the south side of the site. While vehicle access to the site and the hard surface play area is possible from these areas, both of these locations are gated and generally remain closed.

The school has an existing capacity for approximately 251 students (including the existing portable buildings). The current enrollment based on data from February 2022 was approximately 187 students. The school also currently has approximately 35 employees (*Seattle Public Schools, 2022*).

Proposed Project

The proposed ***Montlake Elementary School Modernization and Addition Project*** is intended to expand the capacity of the school and upgrade the quality of the student learning environment. Development of the project would require the selective demolition of portions of the existing main school building to allow for connections with the new proposed addition, demolition of five existing portable buildings, demolition of the existing cafeteria building, and demolition of the existing greenhouse structure; one existing portable building would also be relocated to a new off-site location. During the construction process, students and staff would be temporarily housed at the John Marshall site (520 NE Ravenna Boulevard).

The proposed project would construct a three-story, approximately 65,000 sq. ft. addition to the west of the existing building (see **Figure 3**). Portions of the existing main building, which is designated as a City of Seattle Landmark, would also be renovated and modernized as part of the project. The existing building would be modernized to reconfigure the existing administration area as classrooms, upgrade the educational facilities and materials, replace outdated mechanical and electrical systems, and provide energy efficiency upgrades. Due to the City Landmark status of the existing building, the proposed ***Montlake Elementary School Modernization and Addition Project*** would be required to obtain a Certificate of Approval from the City of Seattle Landmarks Preservation Board as part of the permit process.

When complete, the addition and modernized building would include building space with approximately 26 classrooms (including two special education classrooms), a childcare classroom, learning commons areas, a music room, an art room, a library and media center, a kitchen and dining area, a gymnasium, office/administrative uses, and other support spaces. In total, the modernized and expanded school would have capacity for up to approximately 500 students in grades Pre-K through 5th grade. The childcare classroom would also provide space for 30 students in before- and after-school care by a program such as Launch (which currently operates at the school). Although not anticipated at this time, the childcare classroom could be utilized to accommodate preschool students in the future which would result in a potential future capacity of approximately 530 students in grades Pre-K through 5th grade.

Development of the project would displace a portion of the existing hard surface play area to accommodate the proposed addition. The retained hard surface play area space would be updated and enhanced, recently installed play equipment would be reused, and additional recreation features would be added to create more usable and modernized recreation space for students. Approximately 12,500 sq. ft. of recreation space would be provided on the site (compared with approximately 25,600 sq. ft. under existing conditions). New landscaping would also be provided surrounding the existing building and proposed addition.

The two existing unstriped parking spaces to the northwest of the existing building would be eliminated with the project and no onsite parking would be provided. The two existing access curb cuts (E McGraw Street and E Calhoun Street) would also be eliminated, and delivery/service access would be provided for the proposed addition from a new mid-block driveway on 20th Avenue E.

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 ***Montlake Elementary School Modernization and Addition Project*** site is located at 2409 22nd Avenue E (a portion of the NW Quarter of Section 21, Township 25, and Range 4) within Seattle's Montlake neighborhood. The school campus is generally bounded by E Calhoun Street to the north, 22nd Avenue E to the east, E McGraw Street to the south, and 20th Avenue E to the west (see **Figures 1** and **2**).

B. ENVIRONMENTAL ELEMENTS

1. Earth

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

The Montlake Elementary campus is generally flat within the interior of the site with a gentle topographic change from southeast to northwest. More substantial slopes are located on the perimeter of the site, including the western edge which slopes downwards toward 20th Avenue E and the eastern edge which slopes towards 22nd Avenue E and includes sections of retaining walls. Overall, the site slopes from an elevation of approximately 118 feet at the southeast portion of the campus to an elevation of approximately 98 feet at the northwest portion of the campus.

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

According to the City of Seattle's Environmentally Critical Areas (ECA) GIS Maps, there are no steep slope areas located on or adjacent to the Montlake Elementary site (*City of Seattle, 2022*). Previous studies from 2017 for the site indicated that the City's GIS maps identified areas on the west end of the site as steep slope areas; however, these areas are no longer identified in the City's GIS as ECA steep slopes. It is anticipated that since 2017, topographic mapping or the slope assessment algorithm used by the City's GIS has been updated which resulted in the previously identified steep slopes being removed (see **Appendix A**).

During recent site investigations for the Geotechnical Report (*AESI, 2022*), the onsite slopes on the west end of the site were observed to range from 5 to 8 feet and while the slopes did appear to approach 40 percent in some places, the slopes do not meet the criteria for an ECA steep slope since they do not exceed 10 feet in height. These slopes also appear to be the result of previous grading on the site, which was supported by excavation borings in the area that identified fill at depths of approximately 6 feet below ground surface (see **Appendix A** for details).

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.

Geotechnical investigations were completed for the project site by AESI and included six site exploration borings as part of onsite investigations. Borings were completed to a depth of 20 to 50 feet deep below ground

surface in various locations of the site. The soils encountered on the site generally consisted of dense to very dense Vashon lodgement till at or near ground surface with thin areas of fill and recessional outwash overlying the till. In all locations, lodgement till extended below the maximum depth of exploration (see **Appendix A**).

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 and no evidence of landslide activity or unstable soils was observed during the geotechnical investigations (see **Appendix A**). In addition, the City of Seattle ECA GIS maps do not indicate the presence of any potential or known slide areas on or adjacent to the site (*City of Seattle, 2022*).

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

Approximately 17,000 cubic yards of material would be excavated from the site during construction activities and approximately 700 cubic yards of fill would be imported to the site for vault backfill and site grading. The specific source of fill material is not known at this time but would be obtained from a source approved by the City of Seattle.

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

Once the project is operational, no erosion is anticipated.

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

Approximately 82 percent of the Montlake Elementary campus is currently covered with impervious surfaces, including buildings, hard surface play areas, walkways, and other impervious surfaces.

With the completion of the proposed building addition project, approximately 88 percent of the campus would be covered with impervious surfaces. Impervious surfaces would primarily consist of the existing building and proposed building addition, hard surface play areas, walkways, and other impervious surfaces.

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

The proposed project would comply with City of Seattle regulations, including providing a Temporary Erosion and Sedimentation Control (TESC) Plan and Best Management Practices (BMPs). **Appendix B** also provides a summary of Construction BMPs that are typically utilized by Seattle Public Schools during the construction process. The following measures would be implemented during construction to control erosion:

- Design and construction of the proposed project shall comply with the recommendations of the Geotechnical Engineer (see **Appendix A**);
- Provide storm drain inlet protection;
- Route surface water away from work areas;
- Keep staging areas and travel areas clean and free of track-out;
- Cover work areas and stockpiled soils when not in use; and,
- Complete earthwork during dry weather and site conditions, if possible.

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.

Construction of the ***Montlake Elementary School Modernization and Addition Project*** could result in temporary increases in localized air emissions associated with particulates and construction-related vehicles. It is anticipated that the primary source of temporary, localized increases in air quality emissions would result from particulates associated with demolition, on-site excavation and site preparation. While the potential for increased air quality emissions could occur throughout the construction process, the timeframe of greatest potential impact would be at the outset of the project in conjunction with the site preparation and excavation/grading activities. However, with the implementation of a TESC plan and construction BMPs, air quality emission impacts are not anticipated to be significant.

Temporary, localized emissions associated with carbon monoxide and hydrocarbons would result from diesel and gasoline-powered

construction equipment operating on-site, construction traffic accessing the project site, and construction worker traffic. However, emissions from these vehicles and equipment would be small and temporary and are not anticipated to result in a significant impact.

Upon completion of the project, the primary source of emissions would continue to be from vehicles travelling to and from the site, including buses and commuter vehicles. Seattle Public Schools maintains an anti-idling policy for buses which minimizes potential emissions. 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). In order to evaluate climate change impacts of the proposed project relative to the requirements of the City of Seattle, a Greenhouse Gas Emissions Worksheet has been prepared (see **Appendix C** of this Environmental Checklist). This Worksheet estimates the emissions from the following sources: embodied emissions; energy-related emissions; and, transportation-related emissions. In total, the estimated lifespan emissions for the proposed new building addition would be approximately 67,960 $MTCO_2e$[3]. Based on an assumed building life of 62.5 years[4], the proposed building addition project would be estimated to generate approximately 1,090 $MTCO_2e$ annually. For reference, the Washington State Department of Ecology threshold for potential significant GHG emissions is 25,000 $MTCO_2e$ annually. Therefore, the proposed project would not be anticipated to generate a significant amount of GHG emissions.

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 E Calhoun Street, E McGraw Street and 24th Avenue E. SR-520 is also located approximately 0.2 miles to the north and vehicle traffic on the highway is a source of emissions in the area. Emissions and odors are not anticipated to affect the proposed project.

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

The following measure would be provided to reduce/control air quality impacts during construction:

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[3] $MTCO_2e$ is defined as Metric Ton Carbon Dioxide Equivalent and is a standard measure of amount of CO_2 emissions reduced or sequestered.

[4] According to the Greenhouse Gas Emissions Worksheet, 62.5 years is the assumed building life for educational buildings.

- Construction activities would be required to comply with Puget Sound Clean Air Agency (PSCAA) regulations, including Regulation I, Section 9.11 (prohibiting the emission of air contaminants that would be injurious to human health) and Regulation I, Section 9.15 (prohibiting the emission of fugitive dust, unless reasonable precautions are employed). Additional mitigation measures to minimize air quality impacts during construction are identified in **Appendix B**.

3. Water

a. Surface:

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

There is no surface water body on or in the immediate vicinity of the ***Montlake Elementary School Modernization and Addition Project*** site. The nearest surface water body is Portage Bay, which is located approximately 0.2 miles to the northwest 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 would not require any work over, in, or adjacent (within 200 feet) to any water body.

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, 2022)*.

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.**

No groundwater would be withdrawn or water discharged to ground water as part of the proposed project. Geotechnical investigations that were conducted in January/February 2022 encountered an isolated shallow seepage zone in one area of the site, but no other evidence of groundwater was observed within the onsite investigations (see **Appendix A**).

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.**

Approximately 82 percent of the existing Montlake Elementary campus is comprised of impervious surfaces, including existing buildings and paved surfaces (parking areas, play areas, walkways, etc.). The existing stormwater system for the school building is comprised of downspouts that route water to an 8-inch combined

sewer main in the E Calhoun Street right-of-way; water is then directed to the existing 90-inch King County main within the 24th Avenue E right-of-way. Stormwater for the existing portables and hard surface play area is routed to the 8-inch combined sewer main in E Calhoun Street and then to a 60-inch main in 19th Avenue E. Water from the 60-inch main combines with the 90-inch King County main to the north of the site near the intersection of SR-520 and Montlake Boulevard E.

With completion of the ***Montlake Elementary School Modernization and Addition Project***, approximately 88 percent of the campus would be comprised of impervious surfaces. The site stormwater design for the project would be consistent with the City of Seattle's 2021 stormwater manual. Existing stormwater discharge for the existing building would not be modified. Stormwater from the proposed building addition and new impervious surfaces would be directed to either the 8-inch combined sewer main headed west on E Calhoun Street or the 8-inch combined main headed west on E McGraw Street. Onsite stormwater management would include bioretention planters and a detention vault would be required for flow control. Other onsite stormwater management BMPs would also be evaluated for the project. Water quality treatment would not be required since the project is within a combined sewer area. With the implementation of the proposed stormwater improvements and measures, no significant stormwater runoff impacts would be anticipated.

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

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

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

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 following measures would be implemented to control surface, ground and runoff water impacts:

- A Temporary Erosion and Sedimentation Control (TESC) Plan and Construction Best Management Practices (BMPs) would be implemented during construction to reduce erosion and minimize impacts to water resources.

- Stormwater management for the proposed project would comply with applicable City requirements, including the City's Stormwater Code (*SMC 22.800*).

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

A draft tree inventory and assessment was completed for the project by Tree Solutions, Inc. (see **Appendix D**). A total of 31 existing trees on the ***Montlake Elementary School Modernization and Addition Project*** site were inventoried and assessed[5]. The majority of the existing trees on the site were planted as part of ornamental landscaping, including Flowering cherry, Strawberry tree, Kousa dogwood, Crepe myrtle, Magnolia, Boxleaf azara, Domestic apple, Rocky Mountain juniper, American sweetgum, Rhodedendron, Fraser photinia, Chinese juniper, Beaked hazelnut, European pear, Bigleaf maple, Common hawthorn, Oregon ash, and European white birch. Two of the trees on the school campus meet the City of Seattle's criteria for an exceptional tree as individual trees (*City of Seattle Director's Rule 16-2008),* including a Boxleaf azara and a Chinese juniper.

In addition, 29 existing street trees in the adjacent rights-of-way were also reviewed as part of the tree inventory and assessment. Existing street trees that are located in the public rights-of-way adjacent to the site are regulated by the City of Seattle Department of Transportation (SDOT).

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

Existing trees on the east side of the existing building would be retained as part of the project. However, per the arborist report, it is anticipated that a majority of the other onsite trees would likely require removal for the proposed project, including the existing exceptional Boxleaf azara which would be removed due to its proximity to the existing building and proposed improvements. It is anticipated that street trees would also likely be removed as part of the revised access for the site and to

[5] It should be noted that seven of the onsite trees and one street tree did not qualify as regulated trees due to size but were included in the assessment due to location or other contributions to the site.

provide access during the construction process. Until the access requirements are determined by SDOT, the specific number of street trees that would be removed is unknown. As design of the project progresses, the specific number of trees to be removed will be determined and all tree removal and replacement for the project would comply with the City's Tree Ordinance and replacement requirements, as well as SDOT requirements.

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:

New plantings would be provided on the site as part of the ***Montlake Elementary School Modernization and Addition Project***, including small trees, shrubs and ground covers that are adapted to the area. Most of the new plantings would be located in small, raised planters within the site. In the southeast portion of the site, plantings would be located within an existing garden area; additional native plantings would also be provided near the east façade of the existing building. Any trees removed from the site during the construction process would be replaced in accordance with the City's Tree Ordinance and replacement requirements. Larger trees would be provided to replace any street trees that would be removed in accordance with SDOT requirements.

All retained trees would be protected during construction by following tree protection measures that are outlined in **Appendix D**. The draft tree inventory and assessment (**Appendix D**) will also be finalized upon the completion of the construction plans for 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 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: crows, pigeons,**
mammals: deer, bear, elk, beaver**, other: squirrels, raccoons, rats, mice, opossum**
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 ***Montlake Elementary School Modernization and Addition 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.

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

The following are listed threatened species that could be 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, and bull trout; there are no endangered species known to be in the site vicinity[6]. 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 proposed project site is not located within a specific migration route. However, in general, 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:

New landscaping would be provided as part of the project within planters, garden areas and areas surrounding the building. New street trees would also be planted to replace those trees that would be removed during construction. The project is not anticipated to have a substantial impact on wildlife located in the vicinity of the site.

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

There are no known invasive animal species on or adjacent to the project site; however, invasive species known to be located in King

[6] U.S. Fish and Wildlife Service. IPaC. https://ecos.fws.gov/ipac/location/index. Accessed April 2022.

County include European starling, house sparrow and eastern gray squirrel.

6. Energy and Natural Resources

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

Electricity is currently utilized by the existing school buildings and would continue to be the primary source of energy that would serve the existing building and proposed addition. The proposed ***Montlake Elementary School Modernization and Addition Project*** would utilize electricity for heating, lighting and electronics. Geothermal wells and a ground source heat pump system would also provide heating and cooling for the project and a small photovoltaic solar panel system would be installed on site.

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 proposed project would be required to meet or exceed the requirements of the City of Seattle Energy Code, as well as the Washington Sustainable Schools Protocol. Retention of the existing building provides some limitations to the level of improvements that can occur in that building but the proposed addition is intended to utilize a high-performance design to maximize energy efficiency and conservation. The proposed addition is targeting very low energy usage which would be achieved through various design features, including optimized building envelope to maximize daylight and reduce lighting energy use, daylight controls to reduce lighting energy use, a small photovoltaic solar panel system, energy efficient HVAC system with heat recovery, geothermal wells and a ground source heat pump system, and metered energy use to allow staff and students to understand their energy use.

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.

The Washington State Department of Ecology (Ecology) website was reviewed to identify any potential contaminated soils on or in the vicinity of the site, as well as potential issues related to the former Tacoma Asarco Smelter Plume. There are no records of any contaminated soils on the project site and the site is located in an area where levels of arsenic and lead associated with the smelter plume are anticipated to be below state cleanup levels.

Two sites are located approximately one block east of the school campus (along 24th Avenue E) and are listed on the Ecology cleanup website, including a former dry cleaning operation and a former gas station uses. Both of these sites are currently undergoing cleanup of the associated hazardous materials on their respective sites under the review of Ecology. Two additional sites that contained former gas station operations are located further to south along 24th Avenue E and are undergoing cleanup actions as well (*Washington State Department of Ecology, 2022*).

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

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

Due to the age of the existing building, hazardous building materials such as lead based paint and/or asbestos could be present within the building. Construction activities associated with the existing building could result in exposure to hazardous materials. A hazardous materials survey would be completed for the project prior to any demolition and construction associated with the existing building. If such materials are located within the building, appropriate provisions for removal, disposal and worker safety would be followed during redevelopment.

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 described above, the existing building could contain hazardous building materials such as lead-based paint and/or asbestos. If these materials are present on the site, all construction activities would comply with applicable regulations for removal and disposal of hazardous materials.

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 of the school, chemicals that would be used on the site would generally 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.

5) Proposed measures to reduce or control environmental health hazards, if any:

A spill prevention plan would be developed and implemented during construction to minimize the potential for an accidental release of hazardous materials into the environment.

If any hazardous materials are located within the existing building, the construction contractor would comply with applicable regulations and standards for removal and disposal of such material.

b. Noise

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

Noise associated with vehicle traffic on nearby roadways (E Calhoun Street, E McGraw Street, 22nd Avenue E, 24th Avenue E and SR-520) are the primary sources of noise in the vicinity of the project site. Existing noise in the site vicinity is not anticipated to adversely affect the proposed ***Montlake Elementary School Modernization and Addition 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. Construction activities including, excavation/grading, demolition of the existing building, construction of the new building, and construction/drilling for the associated geothermal wells would be the primary sources of construction noise during the development process. Construction of the geothermal wells would be anticipated to occur over an approximately three-month duration. The primary source of noise during construction of the wells would be from the operation of the diesel engine during the installation process. Similar to other construction-related activities on the site, noise from construction of the geothermal wells would be temporary and is not anticipated to result in a significant impact.

Existing residential land uses surrounding the school would be the most sensitive noise receptors and could experience occasional noise-related impacts during the construction process. Pursuant to Seattle's Noise Code (SMC, Chapter 25.08), maximum sound levels in residential communities shall not exceed 55 dBA. However, per SMC 25.08 and based on the SF 5000 zoning for the site, construction activities are allowed to exceed the maximum noise levels between 7 AM and 10 PM on weekdays and 9 AM to 10 PM on weekends. Construction equipment may exceed the sound level limits during construction periods by 25 dB(A) and portable powered equipment may exceed the limits by 20 dB(A).

The proposed project would comply with the provisions of Seattle's Noise Code (*SMC, Chapter 25.08*) as it relates to construction-related noise to reduce noise impacts during construction. Contractors are aware of the City of Seattle Noise Ordinance requirements and are contractually required by Seattle Public Schools to abide by them.

Long-Term Noise

The proposed ***Montlake Elementary School Modernization and Addition Project*** and associated increase in student capacity would likely result in a potential minor increase in noise from human voices and vehicles travelling to and from the site, particularly during the school day and during student drop-off and pickup. The potential increase in noise is anticipated to be minor and would not extend beyond 10 PM. As a result, no significant noise impacts would be anticipated.

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

The following measures would be provided to reduce noise impacts:

- As noted, the project would comply with provisions of the City's Noise Ordinance (*SMC 25.08*); specifically: construction hours would be limited to standard construction hours (non-holiday) from 7 AM to 10 PM and Saturdays and Sundays from 9 AM to 10 PM.

- To reduce noise impacts during construction, contractors would comply with all local and state noise regulations. Contractors may also implement the following measures to further reduce or control noise impacts during construction:
  - Construction would likely occur between 7 AM and 5 PM on weekdays, although, per SMC 25.08, construction is allowed to occur between 7 AM and 10 PM on weekdays and 9 AM to 10 PM on weekends and holidays.
  - Minimize idling time of equipment and vehicle operation.
  - Operate equipment only during hours approved by the City of Seattle.
  - Use well-maintained and properly functioning equipment and vehicles.
  - Locate stationary equipment away from receiving properties.

The project would also include the installation of geothermal wells. The duration of work to install the wells is estimated to be approximately three months, depending on weather. The noise associated with the drilling of the wells would be within local and state regulations. The contractor would provide updates to nearby residents on the progress and duration of activities during the construction of the project. After construction, the site would continue to serve as a school and no significant changes in noise levels are anticipated over existing conditions. No additional mitigation would be required.

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 is currently utilized for the existing Montlake Elementary School and would continue to be utilized as a school. The proposed project would not be anticipated to affect current land uses on adjacent properties.

The Montlake Elementary campus is comprised of the existing one- and two-story building (constructed in 1924) which is located on the east side of the campus. The main, two-story portion of the building is located on the easternmost portion of the site, adjacent to 22nd Avenue E. The one-story portion of the building is located on the west side of the building. A separate cafeteria building is located immediately west of the main building, beyond an existing access driveway. Six portable classroom buildings are also located along the north and northwest portion of the site. Existing recreation areas including hard surface play areas and playground equipment comprise the majority of the remainder of the south and central portions of the site.

The site of the proposed ***Montlake Elementary School Modernization and Addition Project*** is located to the west of the existing main building and along the north and west portions of the site. The site of the proposed building addition is generally currently comprised of the existing portable buildings and hard surface play areas (see **Figure 2** for an aerial photo of the existing site and **Figure 3** for the proposed site plan of the project).

Adjacent land uses to the north, south, east and west of the school campus are comprised of single family residences.

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 existing Montlake Elementary building is located in the eastern portion of the site and is primarily constructed of reinforced concrete and brick. The eastern portion of the building is two-stories in height while the western portion of the building is one-story. A one-story cafeteria building is located to the west of the main building, beyond an

existing access driveway. A small greenhouse structure is located to the south of the main school building. Six portable classroom building are also located in the north and northwest portion of the site.

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

The existing one-story cafeteria building would be demolished as part of the project along with five of the existing portable classroom buildings; one existing portable building would be relocated to a new site. An existing greenhouse structure would also be demolished.

Modifications to the western portion of the existing main building would be provided to allow for internal connections between the existing building and the proposed addition. The existing building would also be modernized to reconfigure the existing administration area as classrooms, upgrade the educational facilities and materials, replace outdated mechanical and electrical systems, and provide energy efficiency upgrades. All construction activities would be in compliance with the City of Seattle Landmarks Preservation Board's Certificate of Approval process.

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

The site is currently zoned as Single Family 5000 (SF 5000). The SF 5000 zone is generally intended for single family residential uses. Public schools are also a permitted use in the SF 5000 zone (City of Seattle, 2022).

The surrounding areas to the immediate north, south, and west of the campus are also currently zoned as SF 5000. Areas further to the southeast of the site (adjacent to 24th Avenue E) are zoned as Neighborhood Commercial 1 (NC1-40) which is a mixed-use zone that allows for residential and commercial uses.

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

The current comprehensive plan designation for the site and immediately adjacent area is Single Family Residential (*City of Seattle, 2022*).

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

The project site is not located within the City's designated shoreline boundary.

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

According to the City of Seattle ECA GIS maps, there are no environmentally critical areas located on or immediately adjacent to the site (*City of Seattle, 2022*).

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

The proposed ***Montlake Elementary School Modernization and Addition Project*** would not provide any residential opportunities. Upon completion, the proposed project would create new building space for additional classrooms, a gymnasium, a cafeteria and other associated school uses. The proposed project would increase the student capacity for the school to approximately 500 students, as well as a 30-student childcare classroom for before- and after-school child care. Although not anticipated at this time, the childcare classroom could be utilized to accommodate preschool students in the future which would result in a potential future capacity of approximately 530 students in grades Pre-K through 5th grade (current capacity is approximately 251 students, including the existing portables).

Currently, Montlake Elementary includes approximately 35 full-time and part-time employees. It is anticipated that with the proposed addition project that the school would have space for approximately 65 to 75 employees at the school.

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 proposed project would modernize the existing school building and construct an addition to the existing building, and as with most Seattle Public School facilities, it is located within a residential neighborhood. The proposed project would be compatible with existing land uses and plans.

The Seattle Municipal Code includes development standards for public schools in residential zones (SMC 23.51B.002) and includes procedures through which departures from the required development standards of the code can be granted for public school structures (SMC 23.79). Due to the existing site characteristics and project design goals, the project is requesting land use departures for the following: lot coverage, building height, setbacks, onsite parking, bicycle parking, onsite bus loading/unloading, truck loading/unloading, and signage (changing-image reader board)[7]. Seattle Public Schools is continuing to coordinate with the City of Seattle regarding the departures for the project and would comply with the requirements of the City's departures process.

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 ***Montlake Elementary School Modernization and Addition 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:

No housing impacts would occur and no mitigation would be necessary.

10. Aesthetics

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

The two-story portion of the existing building is the tallest on the campus and is approximately 33 feet tall at its highest point of the building (not including the existing chimney). The proposed three-story

[7] A potential message board sign would be electronically lit but would have limited night time operation and would not include flashing or scrolling messages.

building addition would be approximately 46 feet tall at its highest point. While the building height of the proposed addition would be taller than the existing building, proposed grading for the project would allow for the addition to closely match the overall height of the existing building and allow for internal connections between the addition and the existing building.

The exterior building materials for the proposed ***Montlake Elementary School Modernization and Addition Project*** would primarily include brick with accents of metal panel. The exterior design of the proposed addition would be intended to complement the existing building.

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

Views of the site would generally continue to be reflective of the existing school uses on the site. The proposed addition would increase the amount of building area on the site and views of the proposed addition would primarily be available from areas that are proximate to the boundaries of the school campus (see **Figure 3** for the proposed site plan). Due the topography of the site and surrounding area, existing views across the site are primarily available from areas to the north and south of the site. These views from areas to the south and north would change to reflect the proposed building addition on the site. Existing, mature street trees and proposed new landscaping and trees would provide a partial buffer/screen that would obscure some of the proposed building addition from areas adjacent to the site.

The City's public view protection policies are intended to "protect public views of significant natural and human-made features: Mount Rainier, the Olympic and Cascade Mountains, the downtown skyline, and major bodies of water including Puget Sound, Lake Washington, Lake Union and the Ship Canal, from public places consisting of specified viewpoints, parks, scenic routes, and view corridors identified in Attachment 1 to the SEPA code[8]. The closest SEPA protected view location is Montlake Playfield which is located approximately 0.2 miles to the northwest of the site and contains SEPA protected views of Portage Bay and the Lake Washington Ship Canal to the north. Development of the ***Montlake Elementary School Modernization and Addition Project*** would not be anticipated to affect views from that location.

View protection from City-designated Scenic Routes is encouraged[9]. According to documentation from the City of Seattle, 24th Avenue E (located one block east of the site) is designated as a scenic route by the City. Building development from the proposed ***Montlake***

[8] Seattle Municipal Code Chap. 25.05.675 P.2.a.i. and the accompanying *Seattle Views: An Inventory of 86 Public View Sites Protected under SEPA (May 2002)* document.

[9] Ord. #97025 (Scenic Routes Identified by the Seattle Engineering Department's Traffic Division) and Ord. #114057 (Seattle Mayor's Recommended Open Space Policies).

Elementary School Modernization and Addition Project and would not impact the north/south views that are available along this scenic route.

Views of designated historic structures are also a consideration[10] and the existing Montlake Elementary building is designated as a Landmark by the City of Seattle. The proposed ***Montlake Elementary School Modernization and Addition Project*** would be required to obtain a Certificate of Approval from the City of Seattle (Department of Neighborhoods) as part of the permitting process. The Certificate of Approval requires review and approval by the City of Seattle Landmarks Preservation Board (see section B.13 for further details). There are no other designated historic structures adjacent to the site that could be affected by the project.

There are no designated views of the Space Needle on or adjacent to the project site[11].

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

No significant impacts are anticipated with regard to aesthetic impacts and no measures are proposed.

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 job 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 ***Montlake Elementary School Modernization and Addition Project***, there would be an increase in light and glare with the proposed building addition which would be proximate to the north and west property lines and adjacent residential uses. Light and glare sources would primarily consist of interior and exterior building lighting, as well as lights from vehicles travelling to and from the site. Exterior building lighting and other proposed outdoor lighting would be designed to focus light on the site and minimize impacts to adjacent properties. The presence of existing street trees and landscaping also

[10] Seattle Municipal Code Chapter 25.05.675 P.2.b.i.

[11] Seattle Municipal Code Chap. 25.05.675 P. and Seattle DCLU, 2001

would help to provide a buffer between the proposed addition and existing off-site uses and minimize light and glare toward adjacent properties. Measures to further minimize light spillage on adjacent properties are also identified below and significant light and glare impacts would not be anticipated.

Glare from building materials (e.g., window glazing or other building materials) could also occur during certain times of day but would not be anticipated to create a significant impact.

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:

Interior and exterior building lighting would be programmed as part of the building facilities system to limit the amount of light utilized when the building is not in use and all exterior lighting would be shielded and directed toward the site to minimize light spillage. The proposed design for the new addition is also intended to minimize lighting energy use through lighting controls and other design features which would also minimize the amount of the light from the new building addition. Evening activities/events currently occur periodically during the school year and increase light during the evening on those days; however, the number of evening events is not anticipated to substantially change with the proposed addition and the amount of light would not be anticipated to result in a significant impact. Existing street trees and proposed new landscaping would also provide a partial buffer and screen to reduce light spillage from the proposed building addition.

12. Recreation

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

The Montlake Elementary campus includes recreation areas that are located to the west of the existing building and south of the existing portable buildings. This area generally includes hard surface play areas, and playground equipment; the southwest corner of the site also includes a backstop area that would allow for it to be utilized for

baseball or softball. In total, approximately 25,600 sq. ft. of recreation space is currently located on the campus.

There are also several parks and recreation areas in the vicinity of the project site (approximately 1.0 mile), including:

- Montlake Playfield Park is located approximately 0.2 miles to the northwest of the site.
- Interlaken Park is located approximately 0.3 miles to the southwest of the site.
- The Washington Park Arboretum is located approximately 0.3 miles to the east.
- East Montlake Park is located approximately 0.4 miles to the northeast.
- West Montlake Park is located approximately 0.4 miles to the north.
- Louisa Boren Lookout Park is located approximately 0.5 miles to the southwest.
- Bagley Viewpoint and Roanoke Park are located approximately 0.6 miles to the west.
- Volunteer Park is located approximately 0.7 miles to the southwest.
- Open Space and Recreation Areas on the University of Washington campus are located approximately 0.8 miles to the north.
- Washington Park Playfield is located approximately 1.0 miles to the southeast.

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

The proposed project would displace a portion of the hard surface play area to accommodate the development of the proposed building addition. With the completion of the project, approximately 12,500 sq. ft. of recreation space would be provided on the site (compared with approximately 25,600 sq. ft. under existing conditions).

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

The proposed project would result in a reduction in overall outdoor recreation space on the campus when compared to the existing conditions, due to the development of the proposed building addition and associated displacement of a portion of the existing hard surface play area. However, the retained hard surface play area space would be updated and enhanced, recently installed play equipment would be reused, and additional recreation features would be added to create a more usable and modernized recreation space for students. New and updated landscaped areas would be provided on the campus that

would enhance gathering areas for students, staff, and the community. The proposed project would also include a new gymnasium as part of the building addition which would provide enhanced indoor recreation space for students.

No additional impacts to recreation would occur and no additional mitigation is necessary.

13. Historic and Cultural Preservation

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

The Montlake Elementary building was constructed in 1924 and is located in the east portion of the campus. This building was designated as a City of Seattle Landmark in June 2013 and features of the landmark that were identified to be preserved included the exterior of the main school building, features or characteristics within the interior of the main school building classrooms (including original wood entry doors, built-in wardrobes, built-in storage, chalkboards, wood trim and wood floors), and the site on which the main school building is located. The site is also located within the Montlake Historic District (a roughly 50-block area generally bounded by the Lake Washington Ship Canal, Interlaken Park, 15th Avenue E, and the Washington Park Arboretum) and is considered a contributing structure to the district. There are several buildings that are over 45 years of age in the vicinity of the project site and are also considered contributing structures to the historic district; however, none of the structures adjacent to the site have been determined to be eligible for listing in a national, state or local register (*Washington State Department of Archaeology and Historic Preservation, 2022*). Due to the City Landmark status of the existing building, the proposed ***Montlake Elementary School Modernization and Addition Project*** would be required to obtain a Certificate of Approval from the City of Seattle Landmarks Preservation Board as part of the permit process.

According to the City of Seattle Landmarks Database and GIS (*City of Seattle, 2022*), the closest listed City of Seattle Landmarks are the Montlake Community Center (located approximately 0.2 miles to the northwest of the project site), the Arboretum Aqueduct (located approximately 0.3 miles to the east of the project site), the Hebrew Academy/Old Forest Ridge Convent Site (located approximately 0.4 miles to the south), the Seattle Yacht Club (located approximately 0.4 miles to the northwest), the Boyer/Lambert House (located approximately 0.5 miles to the southeast of the project site), and the Montlake Bridge/Montlake Cut (located approximately 0.5 miles to the north of the project site).

According to the Washington State Department Archaeology and Historic Preservation's (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD), the closest national and/or state-listed structures are the Arboretum Sewer Trestle and Lake Washington Boulevard (located approximately 0.3 miles to the east and listed on the National Register of Historic Places [NRHP] and Washington Heritage Register [WHR]), the 1926 Model Brick Home (located approximately 0.3 miles to the north and listed on the NRHP and WHR), and the Seattle Yacht Club (located approximately 0.4 miles to the northwest and listed on the NRHP and WHR).

SPS is also currently participating in consultation and review with DAHP as part of the separate Governor's Executive Order 21-02 process for the project, which also includes consultation with local Tribes. SPS met with DAHP on May 4, 2022 to discuss the project and provided Executive Order 21-02 documentation to DAHP on May 6, 2022. Consultation letters requesting comments from local Tribes were sent on May 9, 2022 via email and certified mail; additional follow up consultation emails were sent on May 23, 2022. To date, SPS has received responses to its consultation outreach from the Duwamish and Snoqualmie Tribes. On May 12, 2022, DAHP sent a letter to SPS indicating that they had determined that the proposed project was not likely to have an adverse impact on the existing historic property (see **Appendix E** for details).

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.

A cultural resources assessment was completed for the project site (*Perteet, 2022*) and included an analysis of the natural and cultural setting, a discussion of previous cultural resource investigations in the site vicinity, review of geotechnical investigations on the site, and an on-site investigation. Prior to conducting onsite field work, letters were sent on April 21, 2022 to local Tribes (including the Duwamish Tribe, Muckleshoot Tribe, Snoqualmie Tribe, Suquamish Tribe, and Tulalip Tribe) to inform the Tribes of the upcoming onsite cultural resource investigation and solicit comments. The Tulalip Tribe requested to be included on future correspondence related to the project and Perteet provided them an update on their field investigations following their site visit.

The onsite investigations were conducted on the project site, including a pedestrian survey of the site. Because the site area is comprised almost entirely of artificial terrain, buildings, impervious surfaces, and site amenities (e.g., fencing, decorative plantings, buried utilities, etc.),

there were no suitable locations for subsurface archaeological probes or test pits on the site. The comprehensive pedestrian survey of the site encountered no archaeological materials or context and indicated that such contexts are not likely to exist within the near-surface project area soils or sediments due to 20th century construction activities which have greatly altered the project area terrain and are likely to have removed/altered native soils and near-surface sediments.

Based on the review of prior documentation and field investigations conducted as part of the cultural resource assessment, it is anticipated that there would be a very low likelihood for ground disturbance from the ***Montlake Elementary School Modernization and Addition Project*** to negatively impact archaeological resources due to the fact that 20th century construction activities on the site have greatly altered the site terrain and are likely to have obliterated native soils and near-surface sediments. Therefore, no further cultural resource investigations are recommended for the site. Although the likelihood to encounter buried archaeological resources on the site is low, an inadvertent discovery plan (IDP) has been prepared for the project as part of the cultural resources assessment which outlines policies and procedures that would be followed in the event that an inadvertent discovery is encountered during the construction process (*Perteet, 2022*). See **Appendix E** for details[12].

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 City of Seattle GIS and Landmarks website were consulted to identify any potential historic or cultural sites in the surrounding area.

In addition, a cultural resources assessment was completed for the school site (*Perteet, 2022*). The assessment included a review of existing documentation on the natural, cultural and historic setting of the site and surrounding area; a review of previous studies that were conducted in the project area; and an on-site pedestrian survey investigation.

SPS is also in the process of consultation and review with DAHP as part of the process for Governor's Executive Order 21-02, which also includes consultation with local Tribes. On May 12, 2022, DAHP sent a letter to SPS indicating that they had determined that the proposed project was not likely to have an adverse impact on the existing historic property (see **Appendix E** for details).

[12] The Cultural Resources Assessment is on-file with SPS and available upon request.

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.

Due to the City Landmark status of the existing main school building, the proposed ***Montlake Elementary School Modernization and Addition Project*** would be required to obtain a Certificate of Approval from the City of Seattle Landmarks Preservation Board as part of the permit process.

The cultural resources assessment (*Perteet, 2022*) included the preparation of an inadvertent discovery plan which identifies policies and procedures that would be followed in the event of an inadvertent discovery, including contacts with local Tribes. The cultural resources assessment also recommended that local Tribes be notified in advance of ground disturbance activities for the project in order to allow them the opportunity to observe ground disturbance construction activities.

In addition, as noted in Section 13a, DAHP indicated that they determined that the proposed project is not likely to have an adverse impact. SPS will continue conducting consultation and review as part of the Executive Order 21-02 process, including continuing consultation with local Tribes.

14. Transportation

A Transportation Technical Report for the ***Montlake Elementary School Modernization and Addition Project*** was prepared by Heffron Transportation, Inc. (*Heffron Transportation, 2022)*. Information from the technical report is summarized in this section. See **Appendix F** for the full technical report.

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 existing Montlake Elementary site is bounded by 22nd Avenue E on the east, E Calhoun Street on the north, 20th Avenue E on the west, and E McGraw Street on the south. A paved surface with space for two parked vehicles is located at the northwest corner of the school building and is accessed from a driveway on E Calhoun Street. This area is also used for trash and recycling container storage and pick up. There is also a curb cut on E McGraw Street on the south side of the site. Although vehicular access to the hard surface paly area is possible, both access locations are gated and generally remain closed.

A portion of the curb-side frontage on the north side of E McGraw Street (west end) adjacent to the school site is signed for School Bus Only (7-10 a.m. and 1-4 p.m.); similarly, a small segment of curb-side frontage on 22nd Avenue E south end is also signed for school buses during the same times.

The proposed addition project would reconfigure the site and change site access. The two existing on-site parking spaces would be eliminated, and no on-site parking is proposed with the addition project. The two existing curb cuts (on E McGraw Street and E Calhoun Street) would be eliminated; delivery/service would be provided from a new mid-block driveway on 20th Avenue E located opposite an existing alley. On-street school-bus load/unload would be retained along the north side of E McGraw Street; the existing on-street school-bus load/unload zone on the west side of 22nd Avenue E would be eliminated. Curb-side passenger-vehicle load/unload zones may be established along the south side of E Calhoun Street and the west side of 22nd Avenue E through coordination with the Seattle Department of Transportation (SDOT). See **Appendix F** (Figure 2) for further details which show the proposed site elements, including the new service access on 20th Avenue E.

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

King County Metro Transit (Metro) provides bus service in the area. The closest bus stops are located about 550 feet east of the site on 24th Avenue E. The stop (with shelter) for northbound buses is located immediately south of E McGraw Street; the stop (with shelter) for southbound buses is located about 120 feet north of E McGraw Street. These stops are served by Metro Routes 43, 48, and 988, which are described below.

- **Route 43** provides daily service to and from the University District, Montlake, Capitol Hill, and Downtown Seattle with weekday headways (time between consecutive buses) ranging from 10 minutes during peak commute periods to 60 minutes during off-peak hours.

- **Route 48** provides daily service to and from the University District, Montlake, Capitol Hill, and Central District with weekday headways of 15 minutes from 5:45 a.m. to 9:00 p.m., and 30 minutes after 9:00 p.m.

- **Route 988** provides weekday morning and afternoon service between Madrona, Capitol Hill, University Prep Academy, and the Lakeside School. This route only provides service when those schools are in session.

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

The existing school has a small, unstriped paved area near the mid-block just off E Calhoun Street that is used to store trash and recycling dumpsters and currently also has space to park two vehicles.

The ***Montlake Elementary School Modernization and Addition Project*** would eliminate the two on-site unstriped parking spaces and the vehicles that currently park there would be displaced to on-street parking in the site vicinity. The school would continue to have less off-street parking than would be required by the City of Seattle land use code, which would necessitate a City of Seattle Departure process approval.

The school's frontage along E McGraw Street that currently prohibits parking during peak periods on school days, would not substantially change with project; the bus load zone on 22nd Avenue E is planned to be eliminated, which could make available curb-side spaces for parking. A portion of the school frontages along E Calhoun Street and E 22nd Street may be designated for passenger-vehicle load/unload on school days during peak times (e.g., 7:00 to 10:00 a.m. and 1:00 to 4:00 p.m.). If so, these areas could continue to be used for on-street parking outside of these restricted times and on non-school days.

A detailed study of parking conditions was prepared and is presented in the referenced *Transportation Technical Report* (**Appendix F**). As presented in that report, the proposed project with the enrollment capacity and staffing increase, the expanded school could generate an additional parking demand of 30 to 57 vehicles. As detailed previously, on-street parking within the site vicinity averages between 56% and 64% occupied on school days with between 201 and 266 unused spaces during the observation periods, and the majority of the unused spaces are within RPZ 1 that restricts parking durations to two hours or less for those without a permit. City-code allows employees of Montlake Elementary School to obtain RPZ 1 permits to park on-street in the vicinity. Therefore, both the increase in short-term parking associated with school visitors as well as increased staff parking could be accommodated by unused supply, and typical utilization is estimated to remain between 65% and 71%.

The school is expected to continue hosting evening events periodically throughout the school year. In general, evening events are held between about 5:30 or 6:00 p.m. and 8:00 p.m. Evening events typically occur about once per month or once every other month with attendance that can range from 50 to over 300 people. For larger events, there are usually between 3.0 and 3.5 persons attending for each parked vehicle (the higher rate is more common for larger events). This rate accounts for higher levels of carpooling (parents and children in a single vehicle)

as well as drop-off activity that does not generate parked vehicles. At these rates, the larger events (those other than Curriculum Night) could generate parking demand between 45 and 120 vehicles. Based on the on-street parking utilization analysis presented previously, there were over 260 on-street spaces available on a non-event night, which could accommodate those events. Due to the relative infrequency of those events (one per month or every other month), the increase in demand associated with the addition would not represent a significant adverse impact.

With the expanded school at its planned capacity of 530 students, the largest event—Curriculum Night—is likely to cause on-street parking within the study area to be full or to have demand that extends beyond the 800-foot study area. Because this condition is expected to occur on only one or two evenings per year, it would not be considered a significant adverse impact. However, to minimize the parking impacts associated with the largest event(s), two measures were recommended and incorporated into the proposal—development of a large-event plan to reduce impacts and neighborhood event communications to inform surrounding community members of large events. The two key elements of the large-event plan—identifying additional off-street parking and/or splitting the event—can be employed to maintain on-street parking utilization below 85 percent.

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).

Frontage improvements for the project would consist of improving existing curb ramps to meet current City code, sidewalk maintenance, a new curb cut for the proposed service access and improvements required for school bus loading and unloading areas. The existing curb cuts on E McGraw Street and E Calhoun Street would be removed and the curb line reinstalled, according to SDOT standards. The on-street school-bus load/unload zone would be retained along E McGraw Street; the existing school bus load zone on 22nd Avenue E is not expected to be retained.

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, rail, or air transportation.

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?

The traffic analysis conducted for this SEPA Checklist reflected conditions with the school addition and increased enrollment capacity up to 530 students (a net increase of 343 students compared to the school's 2021-22 enrollment level). Based on daily trip generation rates published for elementary schools by the Institute of Transportation Engineers, the expanded Montlake Elementary could generate a net increase of about 780 trips over the entire day (390 in, 390 out). The peak traffic volumes would continue to occur in the morning before school begins (with 134 in and 104 out added between 7:30 and 8:30 a.m.) and in the afternoon around dismissal (with 71 in and 81 out added between 2:15 and 3:15 p.m.). The added vehicular traffic as well as increases in pedestrian activity around the school during peak hours due to the larger enrollment capacity is expected to add some delay to study-area intersections. However, all of the study-area intersections are forecast to remain operating at LOS D or better overall in 2025 with the proposed project. As is typical in school areas during peak conditions—some congestion around the school would likely occur for about 20 minutes before and after school. However, the project would not result in significant adverse impacts to study area traffic operating conditions.

The existing school is served by two full-size school buses and two smaller Special Education (SPED) buses; no change to the number of buses is anticipated with the project. Other truck trips expected to continue serving the site include deliveries of food and supplies, trash and recycling pick-up, and occasional maintenance. Overall, school buses and small trucks likely represent about 2% to 3% of the total daily traffic.

For more information about school traffic generation, refer to **Appendix F**.

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.

Although the proposed ***Montlake Elementary School Modernization and Addition Project*** would not adversely affect the transportation system in the site vicinity, the following measures have been incorporated into the proposal to reduce the traffic and parking impacts with the project.

A. **Construction Transportation Management Plan (CTMP):** The District will require the selected contractor to develop a Construction Transportation Management Plan (CTMP) that addresses traffic and pedestrian control during construction of the new facility. It would define truck routes, lane closures, walkway closures, and parking or load/unload area disruptions, as necessary. To the extent possible, the CTMP would direct trucks along the shortest route to arterials and away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity. The CTMP may also include measures to keep adjacent streets clean on a daily basis at the truck exit points (such as street sweeping or on-site truck wheel cleaning) to reduce tracking dirt offsite.

B. **Develop Plan for Large-Events:** When the school enrollment reaches 300 students, for the one or two largest events each year (such as Curriculum Night), the school will develop a large-event plan that either identifies additional parking supply (such as parking at a nearby church and/or the Montlake Community Center to the northwest) and/or modifies the event to reduce total peak demand by separating it into two sessions or into two nights based on grade levels (as occurs at some other Seattle elementary schools).

C. **Develop Neighborhood Communication Plan for School Events:** The District and school administration will develop a neighborhood communication plan to inform nearby neighbors of large events (those expected to draw 500 people or more) each year. The plan will be updated annually (or as events are scheduled) and will provide information about the dates, times, and rough magnitude of attendance. The communication would be intended to allow neighbors to plan for the occasional increase in on-street parking demand that would occur with large events.

D. **Update right-of-way and curb-side signage:** The District will work with SDOT to confirm the locations, extents, and signage (such as times of restrictions) of the school-bus and/or school load zones that may be established or eliminated along adjacent streets.

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.

While the ***Montlake Elementary School Modernization and Addition Project*** would add student capacity to the school site, it 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 increase in capacity of the school and number of students and staff on the site may result in incrementally greater demand for emergency services; however, it is anticipated that adequate service capacity is available within the Montlake area to preclude the need for additional public facilities/services.

16. Utilities

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

The Montlake Elementary site is served by water (Seattle Public Utilities), sewer (Seattle Public Utilities), electricity (Seattle City Light), refuse service (Seattle Public Utilities in partnership with Recology and Waste Management), and telecommunications (various providers).

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.

Water and sewer services for the proposed project would continue to be provided by Seattle Public Utilities and the project would reuse the existing connections at the site to provide service for the proposed addition. Electricity for the proposed project would continue to be provided by Seattle City Light and would require a revised service connection for the proposed addition. Telephone, cable and internet services would also continue to be provided to the new building and SPS would work with its providers to coordinate the service needs 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:

Paul Wight

Name of Signee:

Paul Wight

Position and Agency/Organization:

Project Manager, Seattle Public Schools

Date:

June 1, 2022

REFERENCES

AESI. *Geotechnical Report: Montlake Elementary School*. February 25, 2022.

City of Seattle. *City of Seattle Comprehensive Plan*. Accessed April 2022.

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 April 2022.

City of Seattle. *City of Seattle GIS website: http://web1.seattle.gov/dpd/maps/dpdgis.aspx*. Accessed April 2022.

City of Seattle. *City of Seattle Municipal Code*. Accessed April 2022.

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.

Heffron Transportation, Inc. *Transportation Technical Report for the Montlake Elementary School Modernization and Addition Project*. May 24, 2022.

Perteet. *Cultural Resources Assessment for the Montlake Elementary School Modernization and Addition Project. May 9*, 2022.

Tree Solutions, Inc., *Tree Inventory and Assessment – Montlake Elementary School*. May 26, 2022.

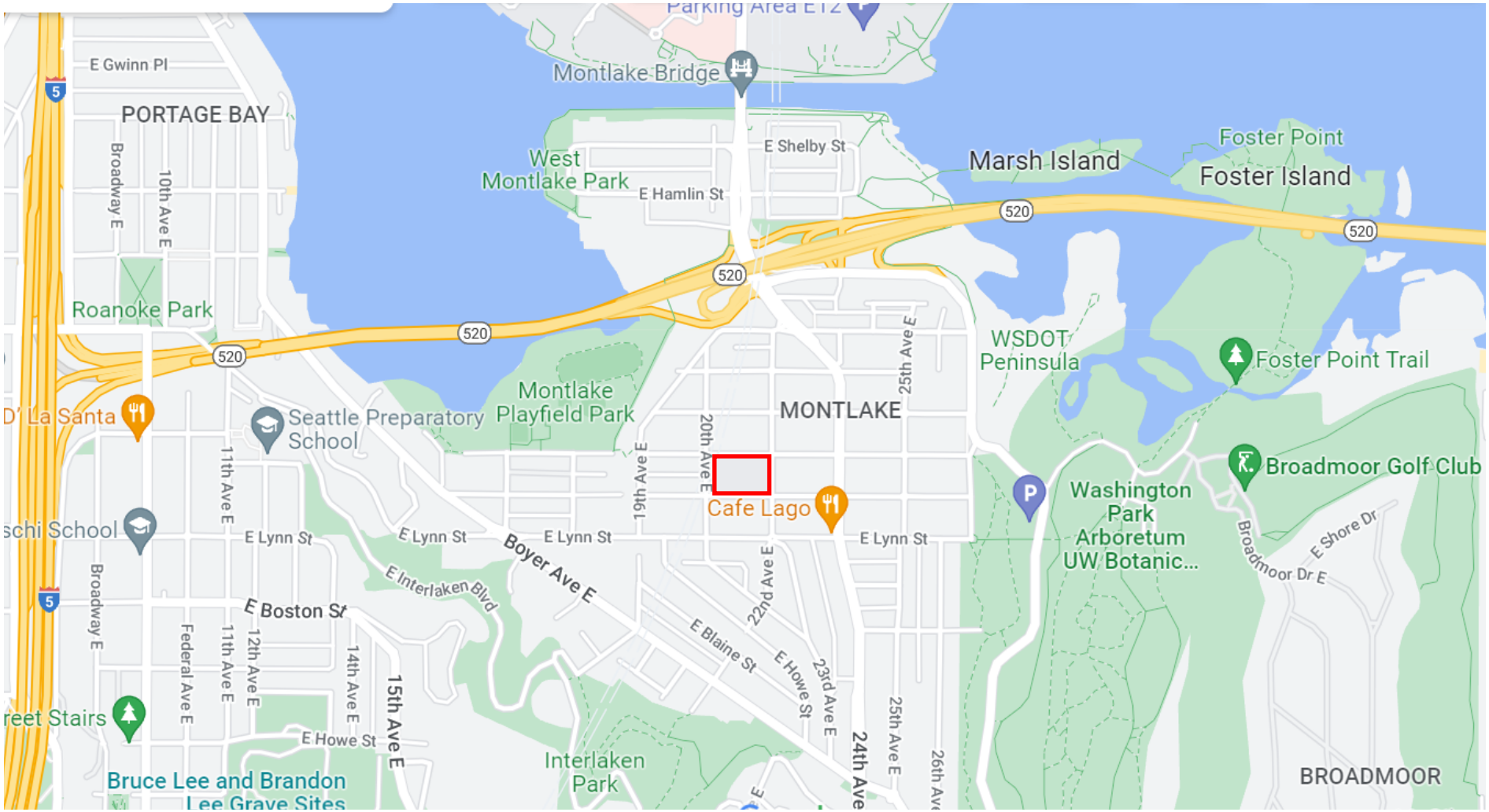
U.S. Fish and Wildlife Service. *IPaC. https://ecos.fws.gov/ipac/location/index*. Accessed April 2022.

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

Washington State Department of Ecology. *Washington State Department of Ecology Website: https://ecology.wa.gov/*. Accessed April 2022.

Figures

Montlake Elementary School Modernization and Addition Project
Environmental Checklist



Project Site

Note: This figure is not to scale.

North

Source: Google Maps and EA Engineering, 2022

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

Figure 1

Vicinity Map

Montlake Elementary School Modernization and Addition Project
Environmental Checklist

Project Site

Note: This figure is not to scale.

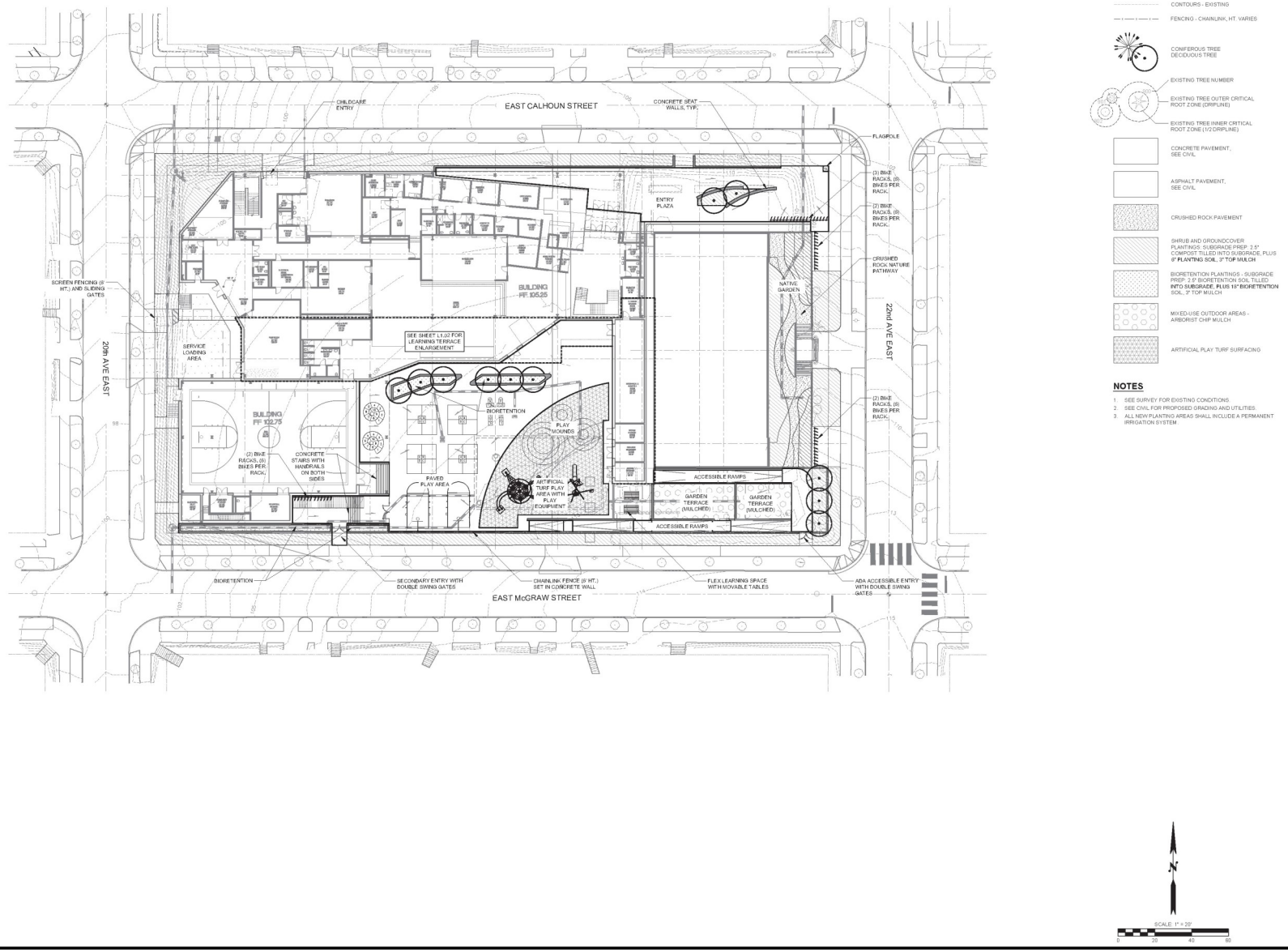
North

Source: Google Earth and EA Engineering, 2022

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

Figure 2

Aerial Map



Source: DLR Group and Osborn Consulting, 2022

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

Figure 3

Site Plan

Appendix A

GEOTECHNICAL REPORT

associated
earth sciences
incorporated

Subsurface Exploration, Geologic Hazard, Infiltration Feasibility, and Preliminary Geotechnical Engineering Report

MONTLAKE ELEMENTARY SCHOOL

Seattle, Washington

Prepared For:

SEATTLE PUBLIC SCHOOLS

Project No. 20210309E001
February 25, 2022

Associated Earth Sciences, Inc.
911 5th Avenue
Kirkland, WA 98033
P (425) 827 7701

associated earth sciences incorporated

February 25, 2022
Project No. 20210309E001

Seattle Public Schools
MS 22-334
2445 3rd Avenue South
Seattle, Washington 98134

Attention: Mr. Paul Wight

Subject: Subsurface Exploration, Geologic Hazard, Infiltration Feasibility, and Preliminary Geotechnical Engineering Report
Montlake Elementary School
2409 22nd Avenue East
Seattle, Washington

Dear Mr. Wight:

We are pleased to present the enclosed copy of our preliminary geotechnical report. This report summarizes the results of our subsurface exploration, geologic hazard, infiltration feasibility, and geotechnical engineering studies and offers preliminary geotechnical recommendations for the design of the proposed building renovation and addition project.

We have enjoyed working with you on this study and are confident that the preliminary recommendations presented in this report will aid in the successful completion of your project. Please contact me if you have any questions or if we can be of additional help to you.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

Kurt D. Merriman, P.E.
Senior Principal Engineer

KDM/ld - 20210309E001-002

SUBSURFACE EXPLORATION, GEOLOGIC HAZARD, INFILTRATION FEASIBILITY, AND PRELIMINARY GEOTECHNICAL ENGINEERING REPORT

MONTLAKE ELEMENTARY SCHOOL

Seattle, Washington

Prepared for:
Seattle Public Schools
MS 22-334
2445 3rd Avenue South
Seattle, Washington 98134

Prepared by:
Associated Earth Sciences, Inc.
911 5th Avenue
Kirkland, Washington 98033
425-827-7701

February 25, 2022
Project No. 20210309E001

I. PROJECT AND SITE CONDITIONS

1.0 INTRODUCTION

This report presents the results of Associated Earth Sciences, Inc.'s (AESI's) subsurface exploration, geologic hazard, preliminary geotechnical engineering, and stormwater infiltration feasibility study for the proposed renovation of and addition to Montlake Elementary School in Seattle, Washington. Our understanding of the project is based on a project concept narrative that was provided to us; our previous work for the project site including the preparation of a report titled "Limited Geotechnical Engineering Feasibility Analysis," for the Building Excellence (BEX) V Group 5 Site Evaluations Project dated January 31, 2017; and our experience working in the project area. Our recommendations are preliminary since the project is still in the conceptual design phase. We will provide a final design report that addresses the project details once the type, size, and location of the renovation and addition project are established. The site location is shown on the "Vicinity Map," Figure 1. The approximate locations of explorations completed for this study are shown on the "Existing Site and Exploration Plan," Figure 2. Interpretive exploration logs of the subsurface explorations completed for this study and results of geotechnical laboratory tests are included in the Appendix.

1.1 Purpose and Scope

The purpose of this study was to provide subsurface soil and groundwater data to be utilized in the preliminary design of the above-referenced project. Our study included reviewing available geologic literature, advancing six exploration borings, and performing a geologic study to assess the type, thickness, distribution, and physical properties of the subsurface sediments and shallow groundwater. Geotechnical engineering studies were completed to determine the type of suitable foundations, allowable foundation soil bearing pressures, anticipated foundation settlements, erosion considerations, and drainage considerations, and to provide infiltration feasibility recommendations. This report summarizes our current fieldwork and offers preliminary development recommendations based on our present understanding of the project.

1.2 Authorization

Written authorization to proceed with this study was granted by Seattle Public Schools by way of contract #P1916 executed on November 3, 2021. Our study was accomplished in general accordance with our proposal, dated August 5, 2021. This report has been prepared for the exclusive use of Seattle Public Schools and their agents, for specific application to this project. Within the limitations of scope, schedule, and budget, our services have been performed in accordance with generally accepted geotechnical engineering and engineering geology practices in effect in this area at the time our report was prepared. No other warranty, express or implied, is made.

2.0 PROJECT AND SITE DESCRIPTION

The project site is that of the existing Montlake Elementary School located at 2409 22nd Avenue East in Seattle, Washington. The project site is rectangular in plan view, with a total area of approximately 1.65 acres. The existing school building was reportedly constructed in 1924 and contains a basement level and two levels of classrooms. The building is situated above street grade and the areas surrounding the main building step down to street grades by means of concrete retaining walls to the north and east, ranging from approximately 3 to 10 feet in height. The majority of the site is a relatively flat pad that slopes down slightly from east to west, with slopes grading down from the edges of the pad to adjacent streets on the western portion of the site. It appears likely that fill was placed above original grades to establish the building pad. Current site development includes an existing school building on the east part of the site, portable classrooms on the north-central part of the site, and asphalt play areas, a play structure, and landscaping surrounding the buildings. No parking areas are located on the property. The site is bordered to the north by East Calhoun Street, to the south by East McGraw Street, to the west by 20th Avenue East, and to the east by 22nd Avenue East. Adjacent properties are occupied by single-family residences.

The proposed project calls for redevelopment of the site. Three preliminary project concepts were under review at the time of the preparation of this preliminary report. All three concepts include a paved play area near the center of the site, surrounded by new school buildings. The existing building may be retained and renovated as part of the redevelopment. We assume that the new additions will be established at or close to existing grades. New footings adjacent to the existing building are assumed to bear on similar soils at similar elevations as the existing footings. Once project plans have been finalized, AESI should review the plans and update or revise the recommendations in this report.

3.0 SITE EXPLORATION

Our field studies were conducted in February 2022 and included advancing six exploration borings. The site, topography surrounding the site, and the approximate locations of the subsurface explorations referenced in this study are presented on the "Existing Site and Exploration Plan" on Figure 2. The various types of sediments, as well as the depths where the characteristics of the sediments changed, are indicated on the exploration logs presented in the Appendix. The depths indicated on the logs where conditions changed may represent gradational variations between sediment types. If changes occurred between sample intervals in our exploration borings, they were interpreted. Our explorations were approximately located in the field by measuring from known site features depicted on the air photo used as a basis for Figure 2.

The conclusions and recommendations presented in this report are based, in part, on the exploration borings completed for this study. The number, locations, and depths of the

explorations were completed within site and budgetary constraints. Because of the nature of exploratory work below ground, extrapolation of subsurface conditions between field explorations is necessary. It should be noted that differing subsurface conditions may sometimes be present due to the random nature of deposition and the alteration of topography by past grading and/or filling. The nature and extent of variations between the field explorations may not become fully evident until construction. If variations are observed at that time, it may be necessary to re-evaluate specific recommendations in this report and make appropriate changes.

3.1 Exploration Borings

For this study, six hollow-stem exploration borings were performed by Boretec Inc., an independent firm working under subcontract to AESI, at the approximate locations shown on Figure 2. The explorations borings were completed by advancing an 8-inch, outside-diameter, hollow-stem auger using a truck-mounted drill. During the drilling process, samples were generally obtained at 2½- to 5-foot-depth intervals. After completion of drilling, each borehole was backfilled with bentonite chips, and the surface was patched with sod or cold mix asphalt.

Disturbed but representative samples were obtained by using the Standard Penetration Test (SPT) procedure. This test and sampling method consists of driving a 2-inch outside-diameter, split-barrel sampler a distance of 18 inches into the soil with a 140-pound hammer free-falling a distance of 30 inches. The number of blows for each 6-inch interval is recorded, and the number of blows required to drive the sampler the final 12 inches is known as the Standard Penetration Resistance (“N”) or blow count. If a total of 50 is recorded within one 6-inch interval, the blow count is recorded as the number of blows for the corresponding number of inches of penetration. The resistance, or N-value, provides a measure of the relative density of granular soils or the relative consistency of cohesive soils; these values are plotted on the attached exploration boring logs.

The exploration borings were continuously observed and logged by a geologist from our firm. The samples obtained from the split-barrel sampler were classified in the field and representative portions placed in watertight containers. The samples were then transported to our laboratory for further visual classification and laboratory testing, as necessary. The exploration logs presented in the Appendix are based on the N-values, field observations, drilling action, and laboratory test results.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the project site were inferred from the field explorations accomplished for this study, visual reconnaissance of the site, and review of applicable geologic literature. The native sediments encountered in our explorations consisted primarily of very dense lodgement till, with a surficial layer of existing fill in one boring and a surficial layer of recessional outwash

in one boring. The following section presents more detailed subsurface information organized from the shallowest (youngest) to the deepest (oldest) sediment types.

4.1 Stratigraphy

Fill

Fill soils were encountered in EB-2 to a depth of 6 feet below the existing ground surface. The fill generally consisted of loose to medium dense, moist, reddish brown to brown, silty fine sand ranging to fine sand some silt, and minor organics. Existing fill is not considered suitable for foundation support and may require mitigation for pavement or slab-on-grade floor support. Excavated existing fill material is suitable for reuse in structural fill applications if such reuse is specifically allowed by project plans and specifications, if excessively organic and any other deleterious materials are removed, and if moisture content is adjusted to allow compaction to the specified level and to a firm and unyielding condition. Fill soils are also likely present in unexplored areas of the site near the existing buildings, in existing utility trench areas, landscaped or yard areas, and at previously graded/backfilled areas. Existing fill is not considered suitable for infiltration of stormwater runoff.

Vashon Recessional Outwash

Sediments encountered just below the surficial topsoil and sod in EB-6 generally consisted of medium dense, brown, fine sand with some silt and silty interbeds, interpreted as Vashon recessional outwash sediments. These sediments were encountered to depths of 6.5 feet below the surface in EB-6. Recessional outwash was deposited from meltwater streams from a retreating ice sheet and has not been glacially overridden. Some of the Vashon recessional outwash sediments onsite contain a significant fine-grained fraction and are sensitive to excess moisture during placement in structural fill applications. Reuse of excavated Vashon recessional outwash sediments in structural fill applications may require drying to achieve moisture contents within 1 to 2 percent of optimum for compaction purposes. Recessional outwash at this site is not suitable for use as a stormwater infiltration receptor due to the fact that it is not present in adequate thickness or areal extent for that purpose. Vashon recessional outwash sediments are suitable to support light to moderate foundation loads when in a medium dense condition or when prepared as recommended in this report.

Vashon Lodgement Till

Sediments encountered below the fill in EB-2, the recessional sediments in EB-6, and at or near ground surface in the remaining borings, generally consisted of dense to very dense, unsorted, brownish gray and gray, silty fine sand with some to trace gravel. We interpret these sediments to be representative of Vashon lodgement till. In each of the borings, the Vashon lodgement till extended to beyond the maximum depth explored. The Vashon lodgement till was deposited

directly from basal, debris-laden glacial ice during the Vashon Stade of the Fraser Glaciation, approximately 12,500 to 15,000 years ago. The high relative density characteristic of the Vashon lodgement till is due to its consolidation by the massive weight of the glacial ice from which it was deposited. Lodgement till is suitable for support of building foundations and other site improvements with proper preparation as recommended in this report. Lodgement till typically contains a significant fine-grained fraction and is highly sensitive to moisture during placement in structural fill applications. Reuse of excavated lodgement till in compacted fill applications is feasible if allowed by project specifications and if it is free of organic and demolition materials, and adjusted to a moisture content between approximately +1 and -2 percent of the optimum moisture determined in accordance with test procedure ASTM D-1557.

4.2 Regional Geologic and Soils Mapping

Review of the published geologic map titled *Geologic Map of Northeast Seattle,* by D.B. Booth, K.G. Troost, and S.A. Shimel, 2009, U.S. Geological Survey (USGS), Scientific Investigations Map SIM-3065, indicates that the site is expected to be underlain by Vashon lodgement till with Vashon recessional outwash and pre-Fraser fine-grained deposits mapped in the vicinity. Our interpretation of the sediments encountered in subsurface explorations onsite is in general agreement with the regional geologic map.

A review of regional soils mapping (U.S. Department of Agriculture [USDA] *Web Soil Survey*) indicates that the subject site is underlain by Urban land-Alderwood complex. The urbanized Alderwood material consists of Alderwood soils that have been so disturbed through urbanization that they no longer can be classified with the Alderwood series; however, these soils have many similar features. The Alderwood series includes soils formed from basal till and consisting of grayish brown gravelly sandy loam that is consolidated and relatively impervious. The natural soils encountered beneath the fill within our exploration borings are consistent with Alderwood soil series mapping in that we encountered Vashon lodgement till.

4.3 Hydrology

Groundwater was encountered within the Vashon recessional outwash deposits in EB-6 at a depth of 1.5 feet below ground surface extending to a depth of 6 feet, and in a confined seepage zone within the Vashon lodgement till in EB-4 at a depth of about 10 feet. Groundwater was not encountered within the other explorations completed during this study.

The shallow groundwater seepage in EB-6 is interpreted to be perched groundwater in the recessional outwash sediments. Perched seepage will likely be encountered at the interface between recessional outwash and the underlying lodgement till anywhere onsite that recessional outwash is present. Recessional outwash was observed in one of the six exploration borings completed for this study.

The groundwater seepage in EB-4 is interpreted to represent a confined seepage zone in a less silty seam in the lodgement till. Localized seepage zones in lodgement till can be expected to be encountered during construction.

Groundwater seepage zones that may be encountered during construction at this site can be addressed by normal construction site management practices such as ditches and pumped sumps, in our opinion. More extensive temporary construction dewatering measures are not expected to be needed.

Explorations for this study were completed in February when seasonal groundwater levels are typically elevated. Groundwater conditions, including depth, duration, and quantity of seepage should be expected to vary seasonally, and in response to changes in precipitation, soil grain-size distribution, topography, on- and off-site land usage, and other factors.

4.4 Laboratory Testing

Grain-Size Analysis

AESI performed six grain-size analyses (sieves) on representative samples of existing fill, Vashon recessional outwash, and Vashon lodgement till. The grain-size analyses test results are included in the Appendix. The grain-size analyses test results are presented below in Table 1 with soil descriptions based on ASTM D-2487 Unified Soil Classification System (USCS). The respective fine-grained content for each sample was measured on the No. 200 sieve and is presented in Table 1.

Table 1
Summary of Grain-Size Analyses

Exploration Number	Depth (feet)	Geologic Unit	USCS Soil Description	Fines Content (%)
EB-2	2.5	Fill	Silty SAND, Trace Gravel (SM) Fine Sand is major constituent.	24.8
EB-4	5	Vashon Lodgement Till	Very Silty SAND, Some Gravel (SM) Fine Sand is major constituent.	30.1
EB-4	20	Vashon Lodgement Till	Gravelly, Silty SAND (SM) Fine Sand is major constituent.	22.6
EB-4	40	Vashon Lodgement Till	Very Silty SAND, Some Gravel (SM) Fine Sand is major constituent.	44.0
EB-6	2.5	Vashon Recessional Outwash	Silty SAND, Trace Gravel (SM) Fine Sand is major constituent.	16.1
EB-6	5	Vashon Recessional Outwash	Silty SAND, Trace Gravel (SM) Fine Sand is major constituent.	19.8

USCS = Unified Soil Classification System
% = percent of total weight passing the U.S. No. 200 Sieve

II. GEOLOGIC HAZARDS AND MITIGATIONS

The following discussion of potential geologic hazards is based on the geologic, slope, and ground and surface water conditions, as observed and discussed herein.

5.0 LANDSLIDE HAZARDS AND MITIGATIONS

The *Seattle Municipal Code* (SMC) 25.09.021.A. designates steep slope and landslide hazard areas as Environmentally Critical Areas (ECAs), which are defined as areas containing "slopes with an inclination of 40 percent or more within a vertical elevation change of at least 10 feet." Upon review of topographic imagery available on Seattle Department of Construction and Inspections (SDCI's) online Geographic Information Systems (GIS) mapping tool, the project site does not contain slopes that meet SDCI's definition of ECAs for steep slope or landslide hazard areas. In our previous limited study of the site for BEX V titled "Limited Geotechnical Engineering Feasibility Analysis," dated January 31, 2017, we discussed a steep slope hazard area on the west end of the site which was flagged in the City GIS system at that time but which is no longer flagged as a critical area. The critical areas flagging in the City GIS system is done by an automated analysis of slope geometry based on aerial Light Detection and Ranging (LIDAR) topographic mapping. It is likely, in our opinion, that since January 2017 either the LIDAR base map or the slope assessment algorithm used by the City GIS system has been updated resulting in the previous critical areas flagging on the subject site being removed.

During our recent site exploration and reconnaissance, we observed the on-site slopes, predominately on the west end of the subject site, which generally consist of slopes ranging from 5 to 8 feet in height. These slopes did appear to exceed inclinations of 40 percent in places but, consistent with topographic data provided by SDCI, the slopes do not meet the criteria to be designated an ECA as the slopes do not exceed 10 feet in height. In addition, the slopes appear to be the result of previous grading, which is supported by the adjacent exploration boring EB-2 where fill soils were encountered to a depth of approximately 6 feet. The slopes did not exhibit indications of previous slope failures or instability and are not mapped as past or potential landslide areas. In our opinion, the existing topography in the project area does not meet the definition for steep slope or landslide hazard ECAs as contained in the SMC. No quantitative assessment of slope stability was completed for this study, and none is warranted, in our opinion.

6.0 SEISMIC HAZARDS AND MITIGATIONS

The following discussion is a general assessment of seismic hazards that is intended to be useful to the project design team in terms of understanding seismic issues, and to the structural engineer for design.

All of Western Washington is at risk of strong seismic events resulting from movement of the tectonic plates associated with the Cascadia Subduction Zone (CSZ), where the offshore Juan de Fuca plate subducts beneath the continental North American plate. The site lies within a zone of strong potential shaking from subduction zone earthquakes associated with the CSZ. The CSZ can produce earthquakes up to magnitude 9.0, and the recurrence interval is estimated to be on the order of 500 years. Geologists infer the most recent subduction zone earthquake occurred in 1700 (Goldfinger et al., 2012[1]). Three main types of earthquakes are typically associated with subduction zone environments: crustal, intraplate, and interplate earthquakes. Seismic records in the Puget Sound region document a distinct zone of shallow crustal seismicity (e.g., the Seattle Fault Zone [SFZ]). These shallow fault zones may include surficial expressions of previous seismic events, such as fault scarps, displaced shorelines, and shallow bedrock exposures. The shallow fault zones typically extend from the surface to depths ranging from 16 to 19 miles. A deeper zone of seismicity is associated with the subducting Juan de Fuca plate. Subduction zone seismic events produce intraplate earthquakes at depths ranging from 25 to 45 miles beneath the Puget Lowland including the 1949, 7.2-magnitude event; the 1965, 6.5-magnitude event; and the 2001, 6.8-magnitude event and interplate earthquakes at shallow depths near the Washington coast including the 1700 earthquake, which had a magnitude of approximately 9.0. The 1949 earthquake appears to have been the largest in this region during recorded history and was centered in the Olympia area. Evaluation of earthquake return rates indicates that an earthquake of the magnitude between 5.5 and 6.0 is likely within a given 20-year period.

Generally, there are four types of potential geologic hazards associated with large seismic events: 1) surficial ground rupture, 2) seismically induced landslides or lateral spreading, 3) liquefaction, 4) ground motion. The potential for each of these hazards to adversely impact the proposed project is discussed below.

6.1 Surficial Ground Rupture

Seattle Fault

The site is located approximately 3 miles north of the mapped limits of the SFZ, the closest mapped fault zone to the project. The SFZ is a broad east-west-oriented zone that extends from approximately Issaquah to Alki Beach, and is approximately 2.5 to 4 miles in width from north to south. The SFZ is speculated to contain multiple distinct fault "strands," some of which are well understood and some of which may be poorly understood or unknown. Mapping of individual fault strands is imprecise as a result of pervasive modification of the land surface by development, which has obscured possible surficial expression of past seismic events. Studies by the USGS and others have provided evidence of surficial ground rupture along strands of the

[1] Goldfinger, C., Nelson, C.H., Morey, A.E., Johnson, J.E., Patton, J.R., Karabanov, E., Gutierrez-Pastor, J., Eriksson, A.T., Gracia, E., Dunhill, G., Enkin, R.J, Dallimore, A., and Vallier, T., 2012, *Turbidite Event History—Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone*: U.S. Geological Survey Professional Paper 1661–F, 170.

Seattle Fault (USGS, 2010[2]; Pratt et al., 2015[3]; Haugerud, 2005[4]; Liberty et al., 2008[5]). According to USGS studies the latest movement of this fault was about 1,100 years ago when about 20 feet of surficial displacement took place. This displacement can presently be seen in the form of raised, wave-cut beach terraces along Alki Point in West Seattle and Restoration Point at the south end of Bainbridge Island. Due to the suspected long recurrence interval, and the distance from the site to mapped fault traces, the potential for surficial ground rupture to adversely affect the project during its design life is interpreted to be low.

6.2 Seismically Induced Landslides

As mentioned above in the "Landslide Hazards and Mitigations" section, the site is relatively flat and does not classify as a landslide hazard area under the SMC. In our opinion the risk of seismically induced landslides resulting from a design level seismic event is low. No quantitative seismic slope stability assessment was completed as part of this study and none is warranted based on the current design concept, in our opinion.

6.3 Liquefaction

Liquefaction is a process through which unconsolidated soil loses strength as a result of vibrations, such as those which occur during a seismic event. During normal conditions, the weight of the soil is supported by both grain-to-grain contacts and by the fluid pressure within the pore spaces of the soil below the water table. Extreme vibratory shaking can disrupt the grain-to-grain contact, increase the pore pressure, and result in a temporary decrease in soil shear strength. The soil is said to be liquefied when nearly all of the weight of the soil is supported by pore pressure alone. Liquefaction can result in deformation of the sediment and settlement of overlying structures. Areas most susceptible to liquefaction include those areas underlain by non-cohesive silt and sand with low relative densities, accompanied by a shallow water table.

The perched groundwater zone in EB-6 is expected to be of limited lateral and vertical extent, and does not warrant a detailed assessment of liquefaction potential of the site, in our opinion. The other exploration borings generally encountered dense, silty, unsaturated soils at shallow depths that are not expected to be susceptible to liquefaction during a design-level seismic event. No quantitative liquefaction hazard analysis was completed as part of this study and none is warranted based on observed subsurface conditions, in our opinion.

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[2] U.S. Geological Survey, 2010, *Quaternary Fault and Fold Database for the United States*, accessed November 10, 2010, from USGS web site: http://earthquake.usgs.gov/hazards/qfaults/.

[3] Pratt et al., 2015, *Kinematics of Shallow Backthrusts in the Seattle Fault Zone, Washington State*: Geosphere, v. 11, no. 6, p. 1-27.

[4] Haugerud, R.A., 2005, *Preliminary Geologic Map of Bainbridge Island, Washington*: U.S. Geological Survey Open-File Report 2005-1387, version 1.0, 1 sheet, scale 1:24,000.

[5] Liberty, Lee M.; Pratt, Thomas L., 2008, *Structure of the Eastern Seattle Fault Zone, Washington State - New Insights from Seismic Reflection Data*: Bulletin of the Seismological Society of America, v. 98, no. 4, p. 1681-1695.

6.4 Ground Motion/Seismic Site Class (2018 *International Building Code*)

Structural design should follow 2018 *International Building Code* (IBC) standards using Site Class "C" as defined in Table 20.3-1 of American Society of Civil Engineers (ASCE) *7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*.

7.0 EROSION CONTROL

The area of the proposed site improvements is relatively flat and does not qualify as a steep slope erosion hazard area as defined by SMC 25.09.012.A.4. While the site does not meet the criteria to be designated an ECA, the exploration borings completed for this study encountered sediments which contain substantial quantities of silt and fine sand and will be sensitive to disturbance when wet. Project plans should include implementation of temporary erosion controls in accordance with local standards of practice. We recommend the following best management practices (BMPs) to mitigate erosion hazards and potential for off-site sediment transport:

1. Construction activity should be scheduled or phased as much as possible to avoid earthwork activity during the wet season.

2. The winter performance of a site is dependent on a well-conceived plan for control of site erosion and stormwater runoff. The site plan should include ground-cover measures and staging areas. The contractor should be prepared to implement and maintain the required measures to reduce the amount of exposed ground.

3. Temporary erosion and sedimentation control (TESC) elements and perimeter flow control should be established prior to the start of grading.

4. During the wetter months of the year, or when significant storm events are predicted during the summer months, the work area should be stabilized so that if showers occur, it can receive the rainfall without excessive erosion or sediment transport. The required measures for an area to be "buttoned-up" will depend on the time of year and the duration that the area will be left unworked. During the winter months, areas that are to be left unworked for more than 2 days should be mulched or covered with plastic. During the summer months, stabilization will usually consist of seal-rolling the subgrade. Such measures will aid in the contractor's ability to get back into a work area after a storm event. The stabilization process also includes establishing temporary stormwater conveyance channels through work areas to route runoff to the approved treatment/discharge facilities.

5. All disturbed areas should be revegetated as soon as possible. If it is outside of the growing season, the disturbed areas should be covered with mulch. Straw mulch provides a cost-effective cover measure and can be made wind-resistant with the application of a tackifier after it is placed.

6. Surface runoff and discharge should be controlled during and following development. Uncontrolled discharge may promote erosion and sediment transport.

7. Soils that are to be reused around the site should be stored in such a manner as to reduce erosion from the stockpile. Protective measures may include, but are not limited to, covering stockpiles with plastic sheeting or the use of silt fences around pile perimeters.

It is our opinion that with the proper implementation of the TESC plans and by field-adjusting appropriate erosion mitigation (BMPs) throughout construction, the potential adverse impacts from erosion hazards on the project should be mitigated.

III. PRELIMINARY DESIGN RECOMMENDATIONS

8.0 INTRODUCTION

Our exploration indicates that, from a geotechnical engineering standpoint, the proposed project is feasible provided the recommendations contained herein are properly followed. The site is underlain by very dense glacial sediments and the bearing stratum was generally observed at shallow depth with two exceptions. Exploration boring EB-2 contained existing fill to a depth of 6 feet which should be removed and replaced with compacted structural fill below new structures. Existing fill is also likely to exist around existing structures and buried utilities may require removal and recompaction at the time of construction. EB-6 was observed to be underlain by approximately 6 feet of existing recessional outwash which should be compacted in place or replaced with structural fill below new structures. Conventional foundations should perform well with the proper subgrade preparations detailed in this report. Since this report is preliminary, AESI should be allowed to review the final project plans, once they have been developed, to revise our recommendations, as necessary.

9.0 SITE PREPARATION

Erosion and surface water control should be established around the perimeter of the excavation to satisfy City of Seattle requirements. Site preparation should include removal of all existing pavement, structures, buried utilities, and any other deleterious material from new building pads. After demolition is complete, disturbed soils below finished grade should be removed. The resulting surface should be proof-rolled and compacted, then structural fill should be placed to reach planned grades. During demolition, excavation, and foundation construction support for existing building foundations to remain should be maintained. Excavation into the support soils for the existing foundations should not be attempted unless underpinning or other risk management strategies are used. Support soils for existing foundations should be considered to include those soils below a line projected down and away from all foundations at an angle of 1H:1V (Horizontal:Vertical). AESI should be allowed to offer situation-specific recommendations anywhere that disturbance of existing foundation support soils is necessary.

9.1 Temporary Cut Slopes

In our opinion, stable construction slopes should be the responsibility of the contractor and should be determined during construction based on the conditions encountered at that time. For estimating purposes, however, we anticipate that temporary, unsupported cut slopes in unsaturated loose to medium dense fill and recessional outwash sediments can be planned at a maximum slope of 1.5H:1V and 1H:1V may be used for dense to very dense lodgement till. As is typical with earthwork operations, some sloughing and raveling may occur, and cut slopes may

have to be adjusted in the field. In addition, WISHA/OSHA regulations should be followed at all times. If steeper or deeper cuts are required, then temporary shoring may be necessary.

9.2 Site Disturbance

Most of the on-site soils contain a high percentage of fine-grained material, which makes them moisture-sensitive and subject to disturbance when wet. Some of the soils encountered in our explorations appear to be above their optimum moisture content for compaction at the time of our study. The contractor must use care during site preparation and excavation operations so that the underlying soils are not softened, particularly during wet weather conditions. If disturbance occurs in areas of conventional footings, the softened soils should be removed and the area brought to grade with clean crushed rock fill. Because of the moisture-sensitive nature of the soils, we anticipate that wet weather construction would significantly increase the earthwork costs over dry weather construction.

9.3 Winter Construction

Earthwork or foundation construction during the City of Seattle-defined wet season will require a City-issued Wet Season Grading Exemption. The existing fill and native soils contain substantial quantities of silt and fine sand and are considered highly moisture-sensitive. Soils excavated onsite will likely require drying during favorable dry weather conditions to allow their reuse in structural fill applications. Care should be taken to seal all earthwork areas during mass grading at the end of each workday by grading all surfaces to drain and sealing them with a smooth-drum roller. Stockpiled soils that will be reused in structural fill applications should be covered whenever rain is possible.

If winter construction is expected, crushed rock fill should be used to provide construction staging areas where exposed soil is present. The stripped subgrade should be observed by the geotechnical engineer, and should then be covered with a geotextile fabric, such as Mirafi 500X or equivalent. Once the fabric is placed, we recommend using a crushed rock fill layer at least 10 inches thick in areas where construction equipment will be used. Soil-cement treatment is another approach to providing a workable site during the winter. We are available to provide more detailed cement-treatment recommendations on request.

9.4 Frozen Subgrades

If earthwork takes place during freezing conditions, all exposed subgrades should be allowed to thaw, and then be recompacted prior to placing subsequent lifts of structural fill. Alternatively, the frozen material could be stripped from the subgrade to reveal unfrozen soil prior to placing subsequent lifts of fill. The frozen soil should not be reused as structural fill until allowed to thaw and adjusted to the proper moisture content, which may not be possible during winter months.

10.0 STRUCTURAL FILL

Should structural fill be necessary, it should be placed and compacted according to the recommendations presented in this section. All references to structural fill in this report refer to subgrade preparation, fill type, placement, and compaction of materials, as discussed in this section. If a percentage of compaction is specified under another section of this report, the value given in that section should be used.

Structural fill is defined as non-organic soil, acceptable to the geotechnical engineer, placed in maximum 8-inch loose lifts, with each lift being compacted to at least 95 percent of the modified Proctor maximum dry density using ASTM D-1557 as the standard. In the case of roadway and utility trench filling, the backfill should be placed and compacted in accordance with City of Seattle standards. For planning purposes, we recommend the use of a well-graded sand and gravel for road and utility trench backfill. Controlled density fill can also be used for backfill.

The contractor should note that AESI should evaluate any proposed fill soils prior to their use in fills. This would require that we have a sample of the material at least 3 business days in advance of filling activities to perform a Proctor test and determine its field compaction standard. Soils in which the amount of fine-grained material (smaller than the No. 200 sieve) is greater than approximately 5 percent (measured on the minus No. 4 sieve size) should be considered moisture-sensitive. Use of moisture-sensitive soil in structural fills is not recommended during the winter months or under wet site and weather conditions. Most of the on-site soils are moisture-sensitive and have natural moisture contents over optimum for compaction and will likely require moisture-conditioning before use as structural fill. In addition, construction equipment traversing the site when the soils are wet can cause considerable disturbance. For all fills, a select import material consisting of a clean, free-draining gravel and/or sand should be used. Free-draining fill consists of non-organic soil with the amount of fine-grained material limited to 5 percent by weight when measured on the minus No. 4 sieve fraction and at least 30 percent retained on the No. 4 sieve.

A representative from our firm should observe the subgrades and be present during placement of structural fill to observe the work and perform a representative number of in-place density tests. In this way, the adequacy of the earthwork may be evaluated as filling progresses and any problem areas may be corrected at that time. It is important to understand that taking random compaction tests on a part-time basis will not assure uniformity or acceptable performance of a fill. As such, we are available to aid the owner in developing a suitable monitoring and testing frequency.

11.0 FOUNDATIONS

Spread footings may be used for building support when founded either directly on competent native sediments which have been properly prepared as described in this report, or on structural fill placed over these materials. Where loose recessional outwash sediments underlie foundation areas, we recommend that the upper 12 inches of the recessional outwash be recompacted to a firm and unyielding condition prior to structural fill placement. For footings founded either directly upon recompacted recessional outwash, or on structural fill placed over native sediments, we recommend that an allowable bearing pressure of 3,500 pounds per square foot (psf) be used for design purposes, including both dead and live loads. For foundations bearing directly upon dense to very dense lodgement till sediments, an allowable bearing pressure of 5,000 psf may be used for design purposes, including both dead and live loads. An increase in the allowable bearing pressure of one-third may be used for short-term wind or seismic loading. If structural fill is placed below footing areas, the structural fill should extend horizontally beyond the footing by at least 1 foot.

Perimeter footings should be buried at least 18 inches into the surrounding soil for frost protection. However, all foundations must penetrate to the prescribed bearing strata, and no foundations should be constructed in or above loose, organic, or existing fill soils. Anticipated settlement of footings founded as recommended should be less than ¾ inch with differential settlement one-half of the anticipated total settlement. Most of this movement should occur during initial dead load applications. However, disturbed material not removed from footing trenches prior to footing placement could result in increased settlements. All footing areas should be inspected by AESI prior to placing concrete to verify that the foundation subgrades are undisturbed and construction conforms to the recommendations contained in this report. Foundation bearing verification will likely also be required by SDCI. Perimeter footing drains should be provided as discussed under the “Drainage Considerations” section of this report.

It should be noted that the area bounded by lines extending downward at 1H:1V from any footing must not intersect another footing or intersect a filled area that has not been compacted to at least 95 percent of ASTM D-1557. If new foundations are to be installed near existing buildings or structures, the footings should be the same depth to avoid surcharge on the existing foundations. In addition, a 1.5H:1V line extending down and away from any footing must not daylight because sloughing or raveling may eventually undermine the footing. Thus, footings should not be placed near the edges of steps or cuts in the bearing soils.

The contractor must use care during site preparation and excavation operations so that the underlying soils are not softened. If disturbance occurs, the softened soils should be removed and foundations extended down to competent natural soil. If foundation excavation will occur during the wet season, consideration should be given to “armoring” the exposed subgrade with a thin layer of rock to provide a working surface during foundation construction. We recommend a 6-inch layer of crushed rock for this purpose.

12.0 DRAINAGE CONSIDERATIONS

Traffic across the on-site soils when they are damp or wet will result in disturbance of the otherwise firm stratum. Therefore, during site work and construction, the contractor should provide surface drainage and subgrade protection, as necessary.

Any retaining walls and all perimeter foundation walls should be provided with a drain at the footing elevation. Drains should consist of rigid, perforated, PVC pipe surrounded by washed gravel. The level of the perforations in the pipe should be set at the bottom of the footing, and the drains should be constructed with sufficient gradient to allow gravity discharge away from the buildings. The perforations should be located on the lower portion of the pipe. In addition, retaining walls or basement walls should be lined with a minimum 12-inch-thick layer of washed rock or equivalent free-draining material that communicates with the footing drain. Roof and surface runoff should not discharge into the footing drain system, but should be handled by a separate, rigid, tightline drain.

To minimize erosion, stormwater discharge or concentrated runoff should not be allowed to flow down any steep excavation cuts. Exterior grades should be sloped downward away from buildings and retaining walls to achieve surface drainage. Runoff water from impervious surfaces should be collected by a storm drain system that discharges into the site stormwater system.

13.0 FLOOR SUPPORT

Floor slabs can be supported directly by dense to very dense lodgement till, by recessional outwash that has been recompacted to a firm and unyielding condition, or by new structural fill placed above suitably prepared native soils. Where loose recessional outwash soils are to be recompacted, we recommend that the upper 12 inches be recompacted to a firm and unyielding condition. All fill placed beneath the slab must be compacted to at least 95 percent of ASTM D-1557. The floors should be cast atop a minimum of 4 inches of washed pea gravel or washed crushed rock to act as a capillary break where moisture migration through the slabs is to be controlled. The capillary break material should be overlain by a 10-mil-thick vapor barrier material prior to concrete placement. American Concrete Institute (ACI) recommendations should be followed for all concrete placement.

14.0 FOUNDATION WALLS

The following preliminary recommendations may be applied to conventional walls up to 12 feet tall. We should be allowed to offer situation-specific input for taller walls. All backfill behind foundation walls or around foundation units should be placed as per our recommendations for structural fill and as described in this section of the report. Horizontally backfilled walls, which

are free to yield laterally at least 0.1 percent of their height, may be designed to resist lateral earth pressure represented by an equivalent fluid equal to 35 pounds per cubic foot (pcf). Fully restrained, horizontally backfilled, rigid walls that cannot yield should be designed for an equivalent fluid of 50 pcf. Walls with sloping backfill up to a maximum gradient of 2H:1V should be designed using an equivalent fluid of 55 pcf for yielding conditions or 75 pcf for fully restrained conditions. If parking areas are adjacent to walls, a surcharge equivalent to 2 feet of soil should be added to the wall height in determining lateral design forces.

As required by the 2018 IBC, retaining wall design should include a seismic surcharge pressure in addition to the equivalent fluid pressures presented above. Considering the site soils and the recommended wall backfill materials, we recommend a seismic surcharge pressure of 5H and 10H psf, where H is the wall height in feet for the "active" and "at-rest" loading conditions, respectively. The seismic surcharge should be modeled as a rectangular distribution with the resultant applied at the midpoint of the walls.

The lateral pressures presented above are based on the conditions of a uniform backfill consisting of excavated on-site soils, or imported structural fill compacted to 90 percent of ASTM D-1557. A higher degree of compaction is not recommended, as this will increase the pressure acting on the walls. A lower compaction may result in settlement of the slab-on-grade or other structures supported above the walls. Thus, the compaction level is critical and must be tested by our firm during placement. Surcharges from adjacent footings or heavy construction equipment must be added to the above values. Perimeter footing drains should be provided for all retaining walls, as discussed under the "Drainage Considerations" section of this report.

It is imperative that proper drainage be provided so that hydrostatic pressures do not develop against the walls. This would involve installation of a minimum 1-foot-wide blanket drain to within 1 foot of finish grade for the full wall height using imported, washed gravel against the walls.

14.1 Passive Resistance and Friction Factors

Lateral loads can be resisted by friction between the foundation and the natural soils or supporting structural fill soils, and by passive earth pressure acting on the buried portions of the foundations. The foundations must be backfilled with structural fill and compacted to at least 95 percent of the maximum dry density to achieve the passive resistance design values recommended below. We recommend the following allowable design parameters which include a factor of safety of 1.5:

- Passive equivalent fluid = 250 pcf
- Coefficient of friction = 0.35

15.0 SHALLOW INFILTRATION FEASIBILITY

The City of Seattle requires a Subsurface Investigation as described in the 2017 *City of Seattle Stormwater Manual* (2017 Seattle Manual), Volume 3, Chapter 3, Step 3 to assess the feasibility of infiltration. Generally, our explorations encountered existing fill soils underlain by Vashon lodgement till which extended beyond the maximum depth explored in each boring. Vashon recessional outwash deposits were observed in EB-6 at ground surface and extending to approximately 6 feet below existing grade. During exploration, perched groundwater was observed within the Vashon recessional outwash deposits in EB-6 at a depth of 1.5 feet and extending to the contact with the underlying Vashon lodgement till at 6 feet. An isolated seepage zone within the lodgement till was observed in exploration boring EB-4 at a depth of 10 feet. Existing fill soils are not considered to be a suitable receptor soil for stormwater infiltration due to their high variability and high percentage of fine-grained particles. In addition, Vashon lodgement till is not a suitable receptor for stormwater infiltration due to its high percentage of fine-grained particles. Shallow infiltration opportunities within the Vashon recessional outwash deposits are constrained by limited lateral and vertical extents as well as the presence of shallow, perched groundwater, relatively high fines content, and the underlying low-permeability Vashon lodgement till.

In our opinion, subsurface conditions do not warrant additional consideration of stormwater infiltration due to the lack of a suitable stormwater infiltration receptor.

15.1 Recommendations For Future Study

Though infiltration of surface water is not recommended and is not anticipated to be feasible, the City of Seattle may require completion of a small Pilot Infiltration Test (PIT) to demonstrate that infiltration is not feasible. We recommend that AESI work with the project civil engineer to coordinate surface water management aspects of the geotechnical study and civil engineering permit documents. If it is determined that a PIT is required, we will prepare a scope of work and cost proposal for that additional task.

16.0 PAVEMENT AND SIDEWALK RECOMMENDATIONS

The pavement sections included in this report section are for driveway and parking areas onsite, and are not applicable to right-of-way improvements. At this time, we are not aware of any planned right-of-way improvements; however, if any new paving of public streets is required, we should be allowed to offer situation-specific recommendations.

Pavement and sidewalk areas should be prepared in accordance with the “Site Preparation” section of this report. If the stripped native soil or existing fill pavement subgrade can be compacted to 95 percent of ASTM D-1557 and is firm and unyielding, no additional

overexcavation is required. Soft or yielding areas should be overexcavated to provide a suitable subgrade and backfilled with structural fill. The upper 2 feet of pavement subgrade should be recompacted to 95 percent of ASTM D-1557. If required, structural fill may then be placed to achieve desired subbase grades.

We anticipate the light vehicle loads from passenger vehicles as well as areas of paving subject to heavier loading from buses, fire trucks, and garbage trucks. In light traffic load areas, we recommend a pavement section consisting of 3 inches of hot mix asphalt (HMA) underlain by 4 inches of crushed surfacing base course, such as City of Seattle mineral aggregate Type 2, as the recommended minimum in areas of planned passenger car lanes and parking. In heavy traffic areas, a minimum pavement section consisting of 4 inches of HMA underlain by 2 inches of crushed surfacing top course, such as City of Seattle mineral aggregate Type 1, and 4 inches of crushed surfacing base course, such as City of Seattle mineral aggregate Type 2, is recommended. The crushed rock will provide improved and consistent drainage, which will extend the service life of paved areas. The crushed rock courses must be compacted to 95 percent of the maximum density, as determined by ASTM D-1557. All paving materials should meet gradation criteria contained in the current Washington State Department of Transportation (WSDOT) Standard Specifications.

Depending on construction staging and desired performance, the crushed base course material may be substituted with asphalt treated base (ATB) beneath the final asphalt surfacing. The substitution of ATB should be as follows: 4 inches of crushed rock can be substituted with 3 inches of ATB, and 6 inches of crushed rock may be substituted with 4 inches of ATB. ATB should be placed over a native or structural fill subgrade compacted to a minimum of 95 percent relative density, and a 1½- to 2-inch thickness of crushed rock to act as a working surface. If ATB is used for construction access and staging areas, some rutting and disturbance of the ATB surface should be expected. The general contractor should remove affected areas and replace them with properly compacted ATB prior to final surfacing.

17.0 PROJECT DESIGN AND CONSTRUCTION MONITORING

We recommend that AESI perform a geotechnical review of the plans prior to final design completion. In this way, our recommendations may be properly interpreted and implemented in the design. SDCI will require a plan review by the geotechnical engineer.

SDCI will also require geotechnical special inspections during construction and preparation of a final summary letter when construction is complete. We are available to provide construction phase geotechnical engineering and testing services during construction. The integrity of the earthwork and foundations depends on proper site preparation and construction procedures. In addition, engineering decisions may have to be made in the field in the event that variations in

subsurface conditions become apparent. Construction monitoring services are not part of our currently approved design phase scope of work.

We have enjoyed working with you on this study and are confident these recommendations will aid in the successful completion of your project. If you should have any questions or require further assistance, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

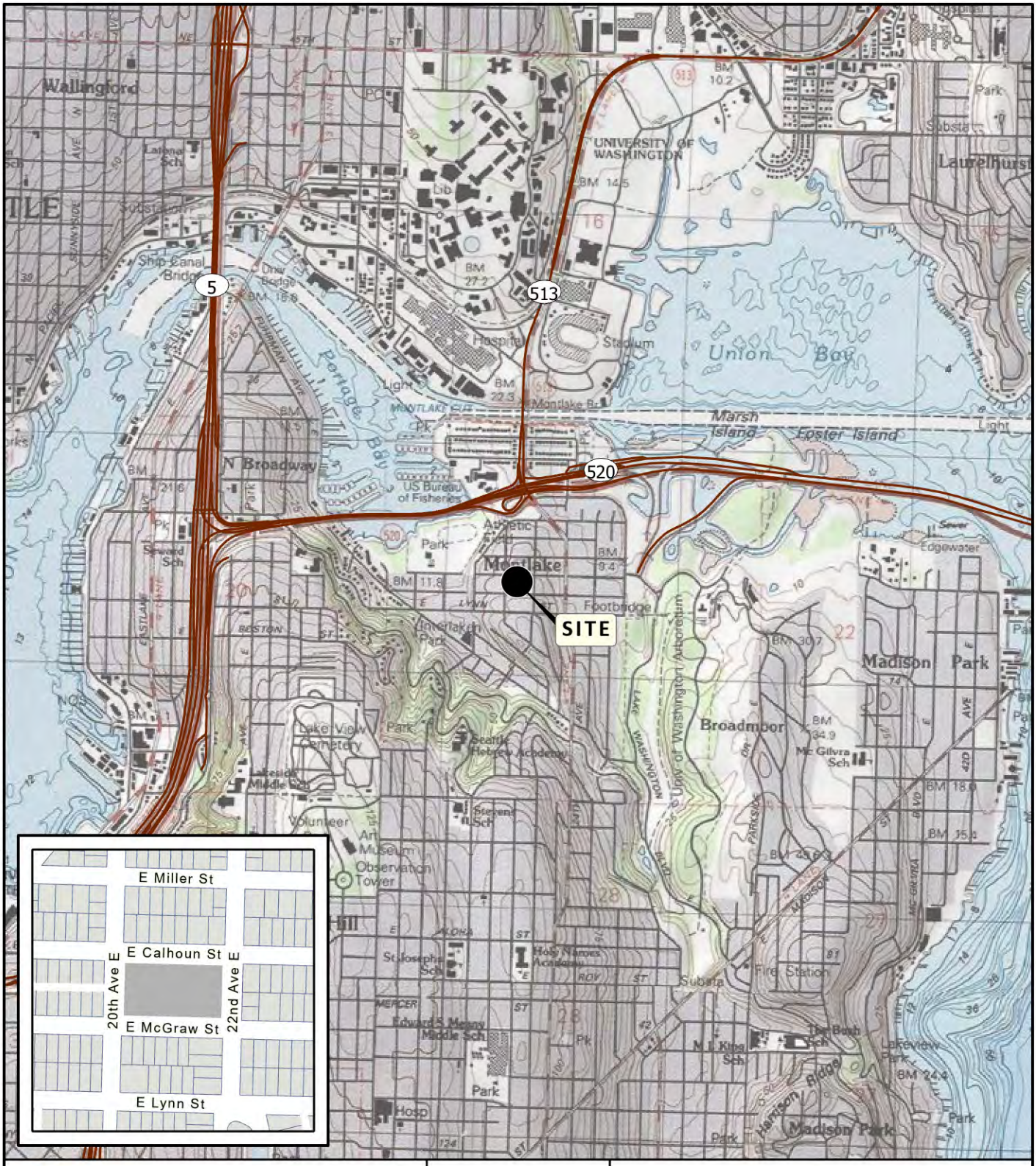
Peter E. Linton, L.G.
Senior Staff Geologist

Bruce W. Guenzler, L.E.G.
Senior Associate Geologist

03/01/2022

Kurt D. Merriman, P.E.
Senior Principal Engineer

Attachments:
Figure 1: Vicinity Map
Figure 2: Existing Site and Exploration Plan
Appendix: Exploration Logs
Lab Test Results



DATA SOURCES / REFERENCES:
USGS: 7.5' SERIES TOPOGRAPHIC MAPS, ESRI/I-CUBED/NGS 2013
KING CO: STREETS, CITY LIMITS, PARCELS, PARKS 9/21
LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION

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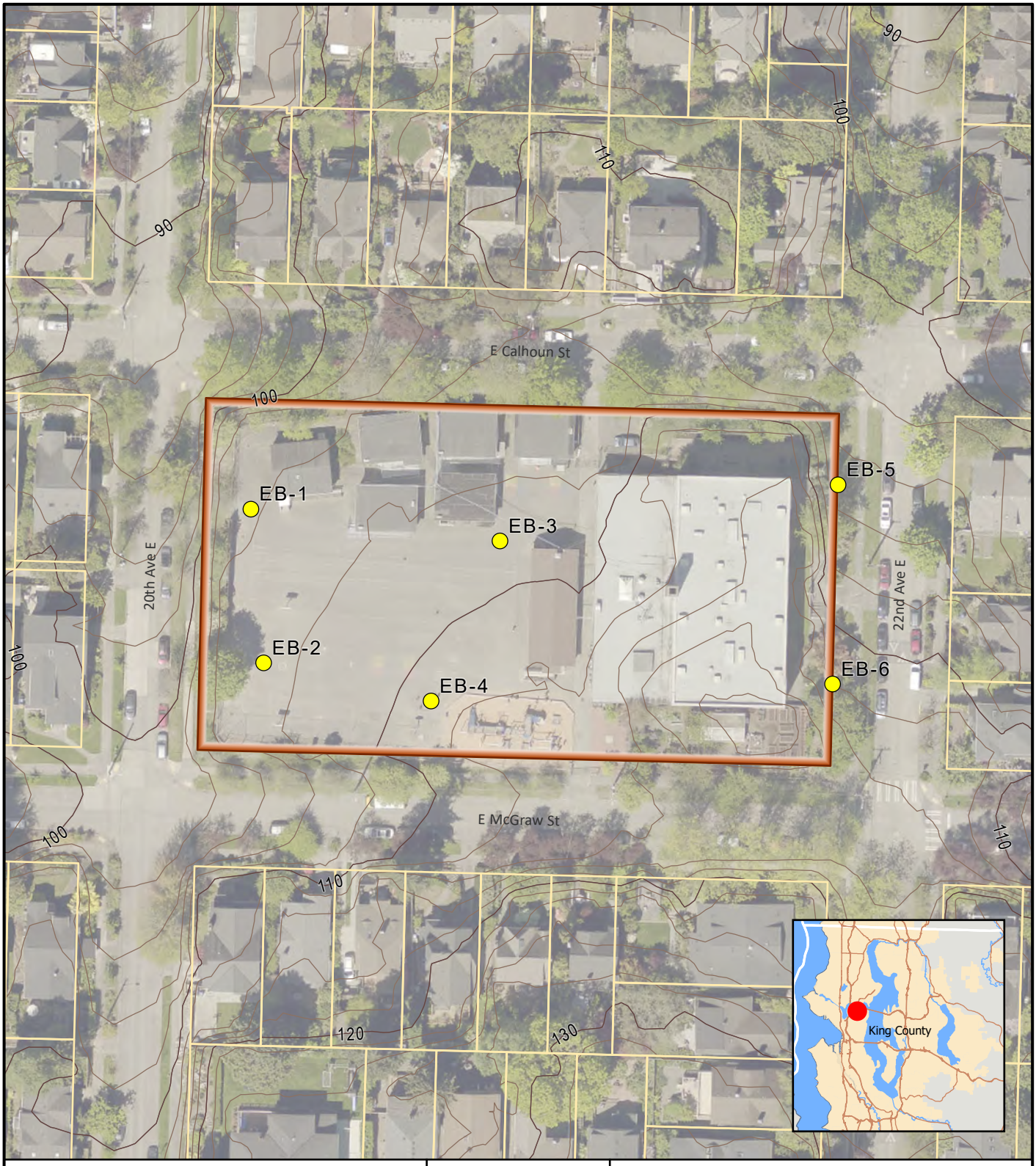
VICINITY MAP

MONTLAKE ELEMENTARY SCHOOL
SEATTLE, WASHINGTON

PROJ NO.	DATE:	FIGURE:
20210309E001	2/22	1

\\kirkfile2\GIS\GIS_Projects\aaY2021\210309 Montlake ES\APRX\20210309E001 F1 VM_MontlakeES.aprx | 20210309E001 F1 VM_MontlakeES | 2/4/2022 12:23 PM



LEGEND

- SITE
- EXPLORATION BORING
- PARCEL
- CONTOUR 10 FT
- CONTOUR 2 FT

N

0 80

FEET

DATA SOURCES / REFERENCES:
PSLC: KING COUNTY 2016, GRID CELL SIZE IS 3'.
DELIVERY 1 FLOWN 2/24/16 - 3/28/16, CONTOURS FROM LIDAR
KING CO: STREETS, PARCELS, 9/21
AERIAL: PICTOMETRY INT. 2019
LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION

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EXISTING SITE AND EXPLORATION PLAN

MONTLAKE ELEMENTARY SCHOOL
SEATTLE, WASHINGTON

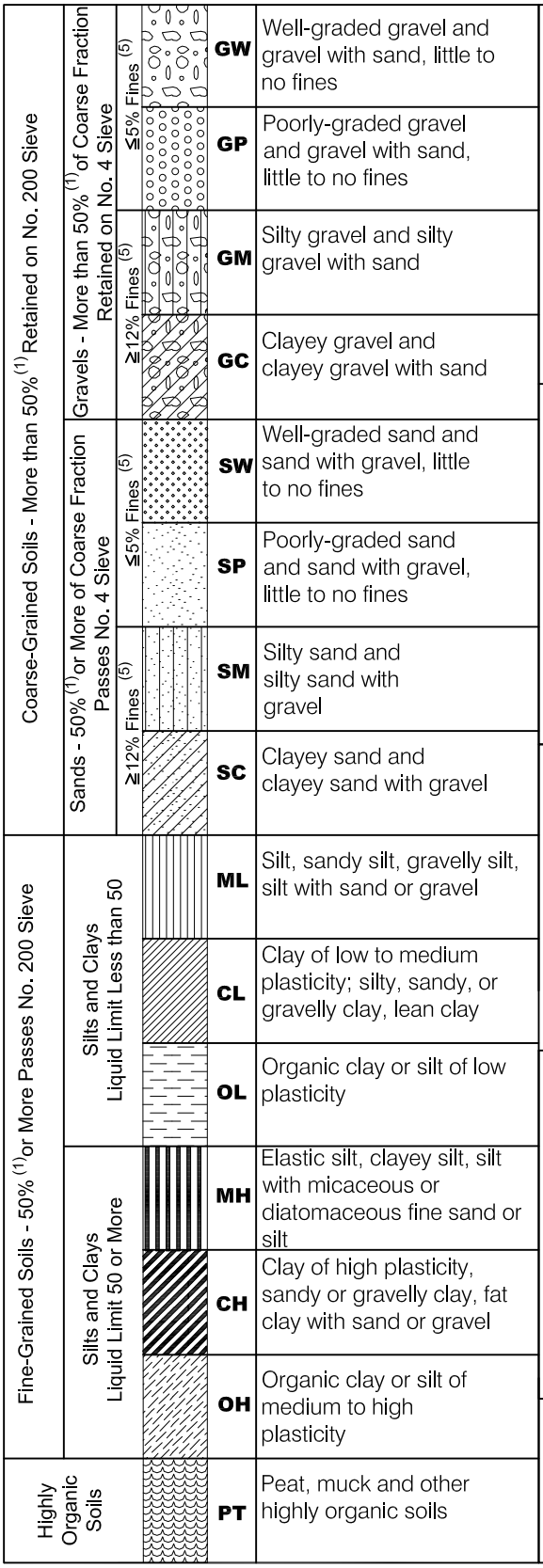
PROJ NO.	DATE:	FIGURE:
20210309E001	2/22	2

\\kirkfile2\GIS\GIS_Projects\aaY2021\210309 Montlake ES\APRX\20210309E001 F2 ES_MontlakeES.aprx | 20210309E001 F2 ES_MontlakeES | 2/4/2022 12:14 PM

APPENDIX

Exploration Logs

Lab Test Results



Terms Describing Relative Density and Consistency

Coarse-Grained Soils	Density	SPT (2) blows/foot
	Very Loose	0 to 4
	Loose	4 to 10
	Medium Dense	10 to 30
	Dense	30 to 50
	Very Dense	>50

Fine-Grained Soils	Consistency	SPT (2) blows/foot
	Very Soft	0 to 2
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	>30

Test Symbols

G = Grain Size
M = Moisture Content
A = Atterberg Limits
C = Chemical
DD = Dry Density
K = Permeability

Component Definitions

Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

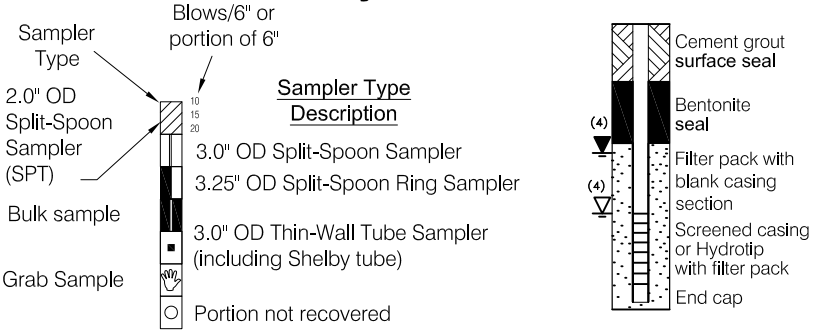
(3) Estimated Percentage

Component	Percentage by Weight
Trace	<5
Some	5 to <12
Modifier (silty, sandy, gravelly)	12 to <30
Very *modifier* (silty, sandy, gravelly)	30 to <50

Moisture Content

Dry - Absence of moisture, dusty, dry to the touch
Slightly Moist - Perceptible moisture
Moist - Damp but no visible water
Very Moist - Water visible but not free draining
Wet - Visible free water, usually from below water table

Symbols



(1) Percentage by dry weight
(2) (SPT) Standard Penetration Test (ASTM D-1586)
(3) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)
(4) Depth of ground water
▼ ATD = At time of drilling
▽ Static water level (date)
(5) Combined USCS symbols used for fines between 5% and 12%

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.

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Exploration Boring

Project Number	Exploration Number	Sheet
20210309E001	EB-1	1 of 1

Project Name	Montlake Elementary School	Ground Surface Elevation (ft)	105
Location	Seattle, WA	Datum	NAVD 88
Driller/Equipment	Boretec Inc. / EC 5 Track Drill - HSA	Date Start/Finish	1/31/22,1/31/22
Hammer Weight/Drop	140# / 30	Hole Diameter (in)	8

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Asphalt - 2 to 3 inches					
				Vashon Lodgement Till					
		S-1		Moist, brownish gray, silty, fine SAND, some gravel; unsorted (SM).			25 40 42	▲82	
5		S-2		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			50/5"	▲50/5"	
		S-3		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"	▲50/4"	
10		S-4		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/2"	▲50/2"	
15		S-5		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/2"	▲50/2"	
20		S-6		Moist, gray, silty, fine SAND, trace gravel; unsorted; no reaction with hydrochloric acid (SM).			50/4"	▲50/4"	
				Bottom of exploration boring at 20.5 feet No groundwater encountered.					
25									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: PL

Approved by: JHS

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Exploration Boring

Project Number	Exploration Number	Sheet
20210309E001	EB-2	1 of 1

Project Name	Montlake Elementary School	Ground Surface Elevation (ft)	105
Location	Seattle, WA	Datum	NAVD 88
Driller/Equipment	Boretec Inc. / EC 5 Track Drill - HSA	Date Start/Finish	1/31/22,1/31/22
Hammer Weight/Drop	140# / 30	Hole Diameter (in)	8

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Fill					
		S-1		Very moist, reddish brown to brown, silty, fine SAND, trace gravel (SM).			6 4 9	▲13	
5		S-2		Moist, brownish gray, silty, fine SAND, some gravel; unsorted (SM).			10 15 50/6"		▲50/6"
				Vashon Lodgement Till Gravelly drilling.					
		S-3		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"		▲50/4"
10		S-4		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"		▲50/4"
15		S-5		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/5"		▲50/5"
20		S-6		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/5"		▲50/5"
				Bottom of exploration boring at 20.5 feet No groundwater encountered.					
25									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

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Exploration Boring

Project Number	Exploration Number	Sheet
20210309E001	EB-3	1 of 1

Project Name	Montlake Elementary School	Ground Surface Elevation (ft)	108
Location	Seattle, WA	Datum	NAVD 88
Driller/Equipment	Boretec Inc. / EC 5 Track Drill - HSA	Date Start/Finish	1/31/22,1/31/22
Hammer Weight/Drop	140# / 30	Hole Diameter (in)	8

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Asphalt - 4 inches					
				Vashon Lodgement Till					
		S-1		Moist, brownish gray, silty, fine SAND, some gravel; unsorted (SM).			50/4"		50/4"
5		S-2					50/2"		50/2"
		S-3		Moist, brownish gray, silty, fine SAND, trace gravel (SM).			50/2"		50/2"
10		S-4		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"		50/4"
15		S-5		Moist, gray, silty, fine SAND, trace gravel (SM).			50/2"		50/2"
20		S-6		Moist, gray, silty, fine SAND, trace gravel (SM).			50/3"		50/3"
				Bottom of exploration boring at 20.5 feet No groundwater encountered.					
25									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: PL

Approved by: JHS

AESIBOR 20210309E001.GPJ February 17, 2022

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Exploration Boring

Project Number	Exploration Number	Sheet
20210309E001	EB-4	1 of 2

Project Name	Montlake Elementary School	Ground Surface Elevation (ft)	109
Location	Seattle, WA	Datum	NAVD 88
Driller/Equipment	Boretec Inc. / EC 5 Track Drill - HSA	Date Start/Finish	2/1/22,2/1/22
Hammer Weight/Drop	140# / 30	Hole Diameter (in)	8

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot 10 20 30 40	Other Tests
				Asphalt - 3 inches					
				Vashon Lodgement Till					
				Firm drilling 1.5 to 2 feet.					
		S-1		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			50/6"	▲50/6"	
5		S-2		Moist, brownish gray, very silty, fine SAND, trace gravel; unsorted (SM).			50/6"	▲50/6"	
		S-3		Moist, brownish gray, silty, fine SAND, some gravel; unsorted (SM).			50/5"	▲50/5"	
10		S-4		Moist, brownish gray to gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"	▲50/4"	
				Water on outside of sampler.					
15		S-5		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/5"	▲50/5"	
20		S-6		Moist, gray, silty, fine SAND, some gravel; unsorted (SM).			50/4"	▲50/4"	
25		S-7		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/6"	▲50/6"	

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

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Exploration Boring

Project Number	Exploration Number	Sheet
20210309E001	EB-4	2 of 2

Project Name	Montlake Elementary School	Ground Surface Elevation (ft)	109
Location	Seattle, WA	Datum	NAVD 88
Driller/Equipment	Boretec Inc. / EC 5 Track Drill - HSA	Date Start/Finish	2/1/22,2/1/22
Hammer Weight/Drop	140# / 30	Hole Diameter (in)	8

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
		S-8		Moist, gray, gravelly, silty, fine SAND; unsorted (SM).			50/6"		50/6"
35		S-9		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"		50/4"
40		S-10		Moist, gray, very silty, fine SAND to sandy, SILT, some gravel; unsorted (SM/ML).			20 50/6"		50/6"
45		S-11		Moist, gray, sandy, SILT, trace gravel; unsorted; faint reaction with hydrochloric acid (ML).			16 25 40		65
50		S-12		Moist, gray, silty, fine SAND, trace gravel; unsorted; no reaction with hydrochloric acid (SM).			50/5"		50/5"
				Bottom of exploration boring at 50.5 feet No groundwater encountered.					
55									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

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Exploration Boring

Project Number	Exploration Number	Sheet
20210309E001	EB-5	1 of 1

Project Name	Montlake Elementary School	Ground Surface Elevation (ft)	105
Location	Seattle, WA	Datum	NAVD 88
Driller/Equipment	Boretec Inc. / EC 5 Track Drill - HSA	Date Start/Finish	2/1/22,2/1/22
Hammer Weight/Drop	140# / 30	Hole Diameter (in)	8

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Sod / Topsoil - 4 inches					
				Vashon Lodgement Till					
				Firm drilling 1 to 2 feet.					
		S-1		Moist, brownish gray, silty, fine SAND, some gravel; unsorted (SM).			50/5"		50/5"
5		S-2		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			24 50/6"		50/6"
		S-3		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			50/6"		50/6"
10		S-4		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).		▼	50/2"		50/2"
15		S-5		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"		50/4"
20		S-6		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/2"		50/2"
				Bottom of exploration boring at 20.5 feet Perched groundwater at 10 feet.					
25									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

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Exploration Boring

Project Number	Exploration Number	Sheet
20210309E001	EB-6	1 of 1

Project Name	Montlake Elementary School	Ground Surface Elevation (ft)	110
Location	Seattle, WA	Datum	NAVD 88
Driller/Equipment	Boretec Inc. / EC 5 Track Drill - HSA	Date Start/Finish	1/31/22,1/31/22
Hammer Weight/Drop	140# / 30	Hole Diameter (in)	8

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Vashon Recessional Outwash		▼			
				Water seepage at 1.5 feet.					
		S-1		Very moist to wet, brown, silty, fine SAND, trace gravel; occasional silty laminations; stratified (SP-SM).			6 4 7	▲11	
5		S-2		Wet, brown, silty, fine SAND, trace gravel; contains beds of sandy silt; stratified (SM).			7 7 14	▲21	
				Vashon Lodgement Till					
		S-3		Moist, brownish gray, silty, fine SAND, trace gravel; unsorted (SM).			50/5"		▲50/5"
10		S-4		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"		▲50/4"
15		S-5		Moist, gray, silty, fine SAND, trace to some gravel; unsorted (SM).			50/5"		▲50/5"
20		S-6		Moist, gray, silty, fine SAND, trace gravel; unsorted (SM).			50/4"		▲50/4"
25		S-7		Moist, gray, silty, fine SAND, some gravel; unsorted (SM).			50/2"		▲50/2"
				Bottom of exploration boring at 25.5 feet Perched groundwater within recessional outwash 1 to 6.5 feet.					

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

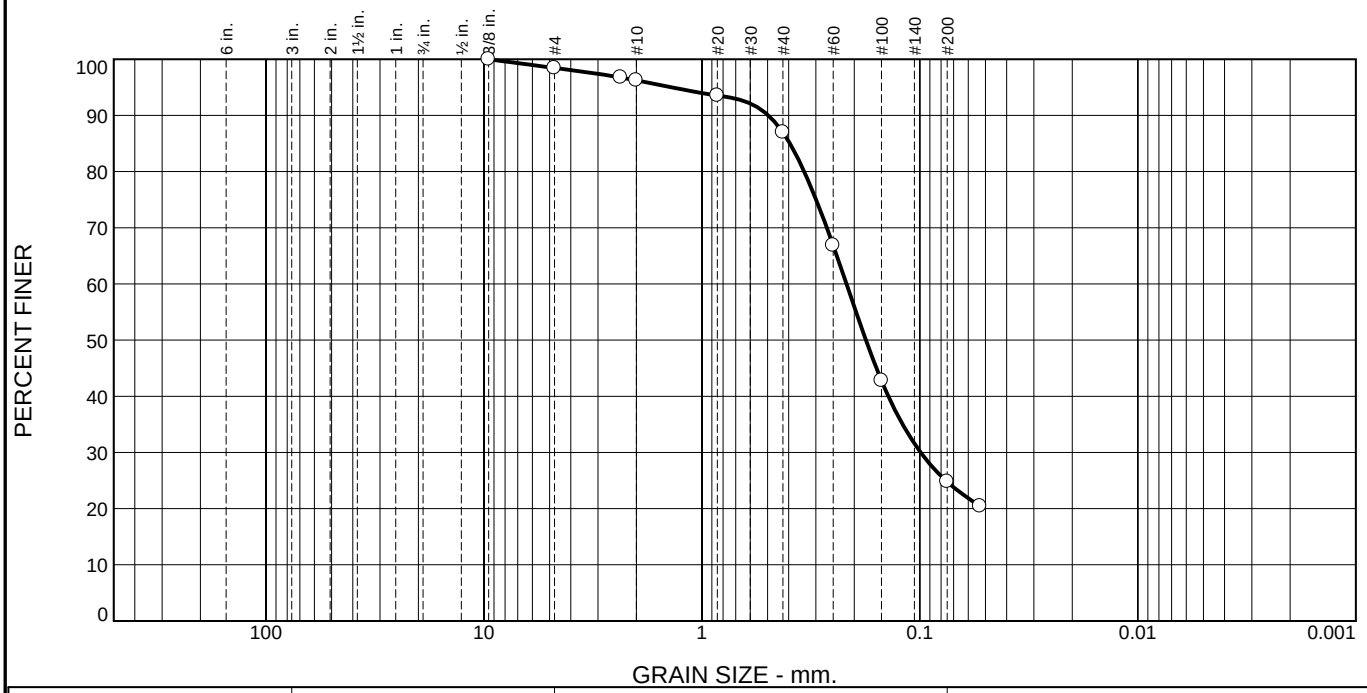
- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: PL

Approved by: JHS

AESIBOR 20210309E001.GPJ February 17, 2022

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.5	2.3	9.2	62.2	24.8	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/8"	100.0		
#4	98.5		
#8	96.8		
#10	96.2		
#20	93.5		
#40	87.0		
#60	66.9		
#100	42.8		
#200	24.8		
#270	20.4		

* (no specification provided)

Material Description

silty SAND, trace gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 0.4958 D_{85}= 0.3947 D_{60}= 0.2172
D_{50}= 0.1769 D_{30}= 0.0992 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 2/7/2022 **Date Tested:** 2/9/2022

Tested By: CI

Checked By: PL/BG

Title:

Location: Onsite - Fill
Sample Number: EB-2 **Depth:** 2.5'

Date Sampled: 1/31/2022

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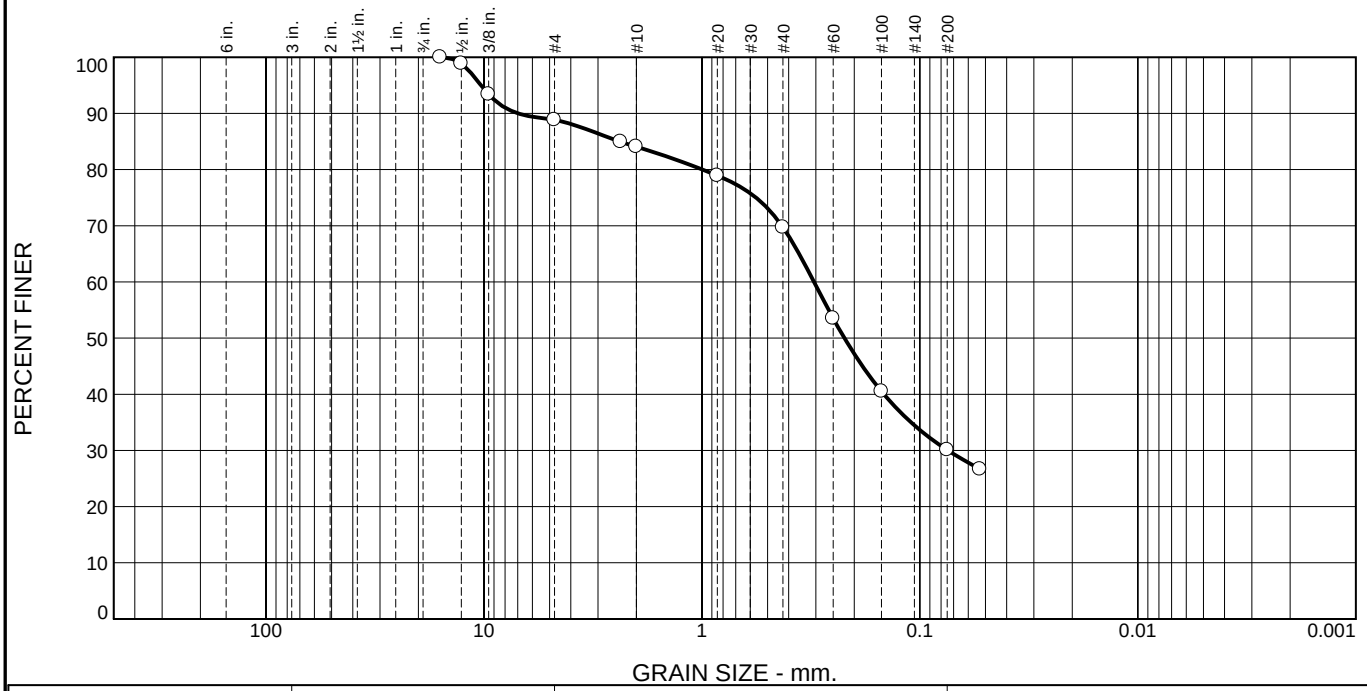
Client: Seattle Public Schools
Project: Montlake ES

Project No: 20210309 E001 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	11.2	4.7	14.4	39.6	30.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
5/8"	100.0		
1/2"	98.9		
3/8"	93.4		
#4	88.8		
#8	84.9		
#10	84.1		
#20	78.9		
#40	69.7		
#60	53.5		
#100	40.5		
#200	30.1		
#270	26.6		

* (no specification provided)

Material Description

very silty SAND, some gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 6.9863 D_{85}= 2.3822 D_{60}= 0.3060
D_{50}= 0.2219 D_{30}= 0.0744 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 2/7/2022 **Date Tested:** 2/9/2022

Tested By: CI

Checked By: PL/BG

Title:

Location: Onsite - Till
Sample Number: EB-4 **Depth:** 5'

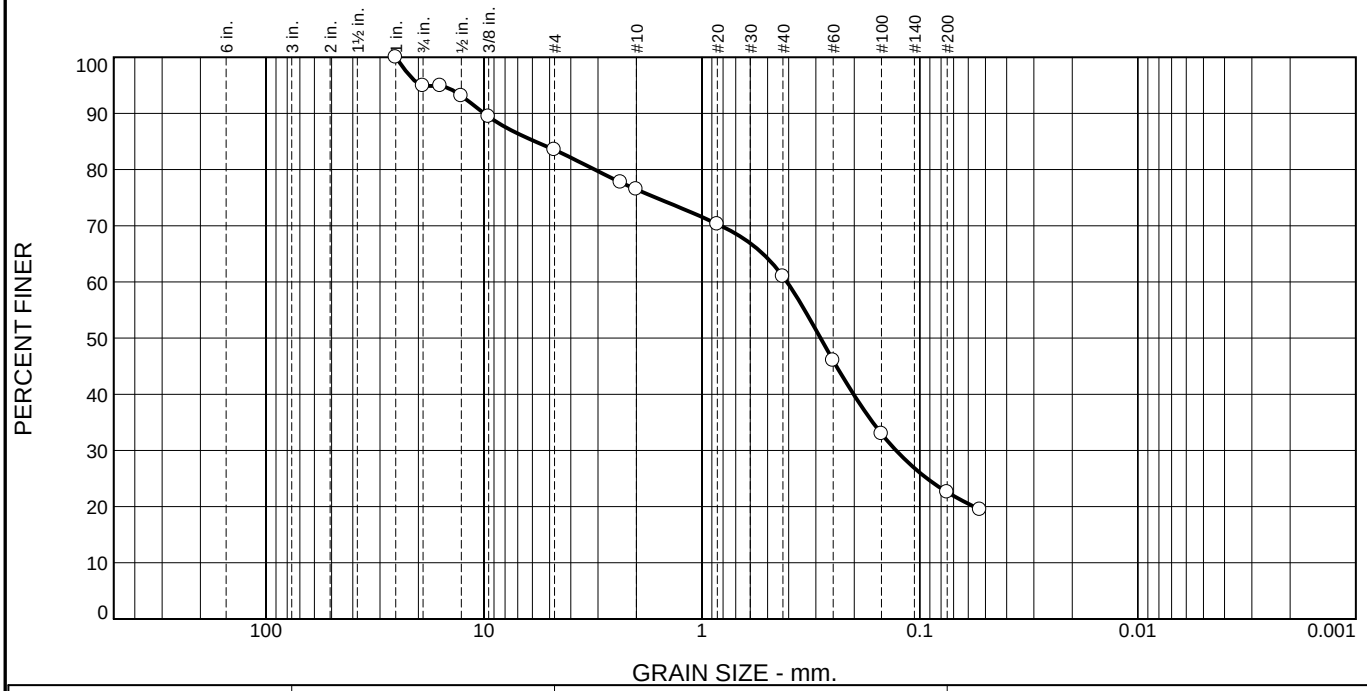
Date Sampled: 1/31/2022

associated earth sciences incorporated

Client: Seattle Public Schools
Project: Montlake ES

Project No: 20210309 E001 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.1	11.4	7.0	15.5	38.4	22.6	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
3/4"	94.9		
5/8"	94.9		
1/2"	93.1		
3/8"	89.4		
#4	83.5		
#8	77.7		
#10	76.5		
#20	70.3		
#40	61.0		
#60	46.0		
#100	33.0		
#200	22.6		
#270	19.5		

* (no specification provided)

Material Description

gravelly, silty SAND

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 9.9728 D_{85}= 5.8178 D_{60}= 0.4074
D_{50}= 0.2857 D_{30}= 0.1287 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 2/7/2022 **Date Tested:** 2/9/2022

Tested By: CI

Checked By: PL/BG

Title:

Location: Onsite - Till
Sample Number: EB-4 **Depth:** 20'

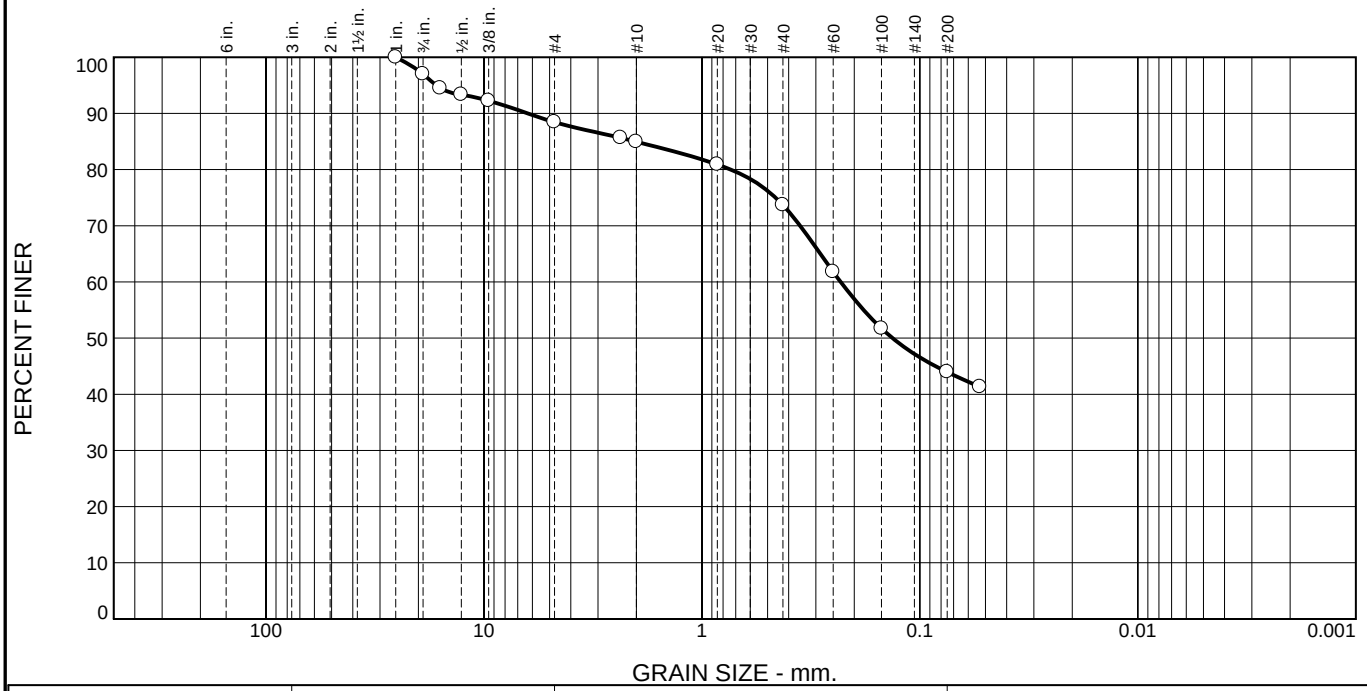
Date Sampled: 1/31/2022

associated earth sciences incorporated

Client: Seattle Public Schools
Project: Montlake ES

Project No: 20210309 E001 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.0	8.5	3.5	11.3	29.7	44.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
3/4"	97.0		
5/8"	94.5		
1/2"	93.3		
3/8"	92.3		
#4	88.5		
#8	85.7		
#10	85.0		
#20	80.9		
#40	73.7		
#60	61.8		
#100	51.7		
#200	44.0		
#270	41.3		

* (no specification provided)

Material Description

very silty SAND, some gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-4(0)

Coefficients

D_{90}= 6.3019 D_{85}= 2.0220 D_{60}= 0.2309
D_{50}= 0.1336 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 2/7/2022 **Date Tested:** 2/9/2022

Tested By: CI

Checked By: PL/BG

Title:

Location: Onsite - Till
Sample Number: EB-4 **Depth:** 40'

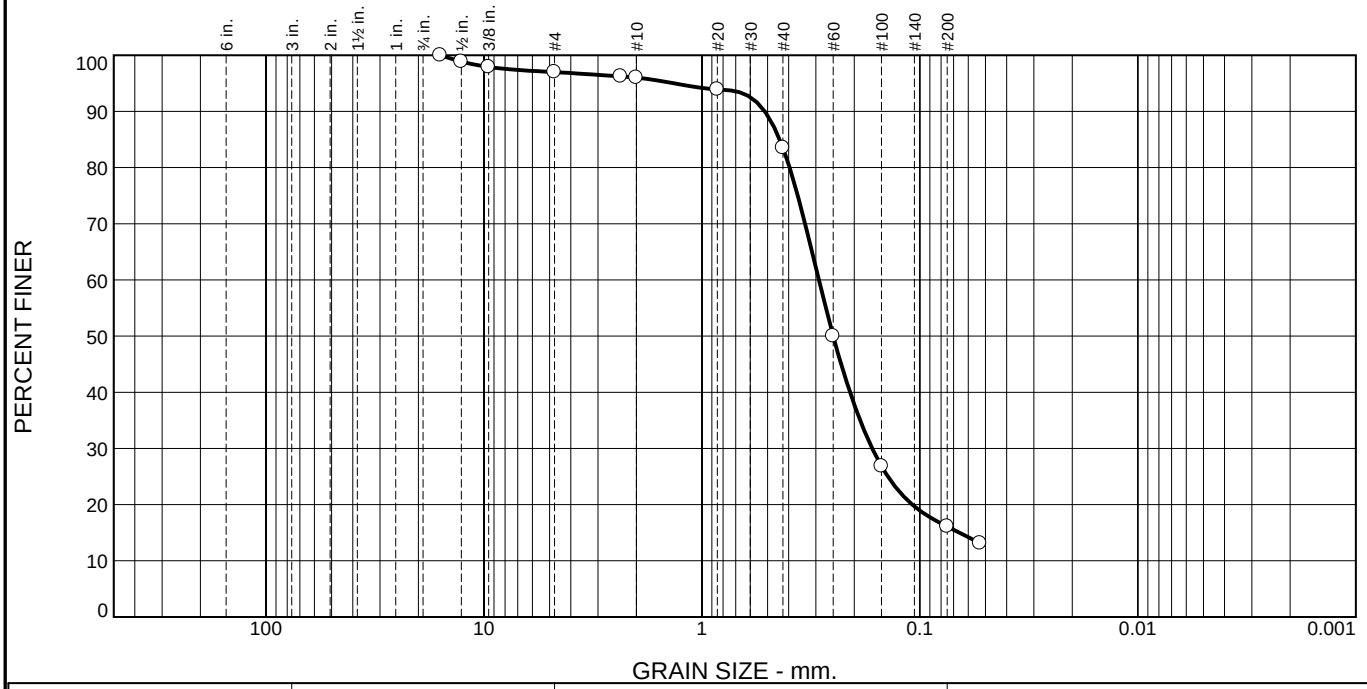
Date Sampled: 1/31/2022

associated earth sciences incorporated

Client: Seattle Public Schools
Project: Montlake ES

Project No: 20210309 E001 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.0	1.0	12.5	67.4	16.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
5/8"	100.0		
1/2"	98.9		
3/8"	97.9		
#4	97.0		
#8	96.2		
#10	96.0		
#20	93.9		
#40	83.5		
#60	50.0		
#100	26.8		
#200	16.1		
#270	13.1		

* (no specification provided)

Material Description

silty SAND, trace gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 0.5149 D_{85}= 0.4396 D_{60}= 0.2905
D_{50}= 0.2499 D_{30}= 0.1655 D_{15}= 0.0659
D_{10}= C_u= C_c=

Remarks

Date Received: 2/7/2022 **Date Tested:** 2/9/2022

Tested By: CI

Checked By: PL/BG

Title:

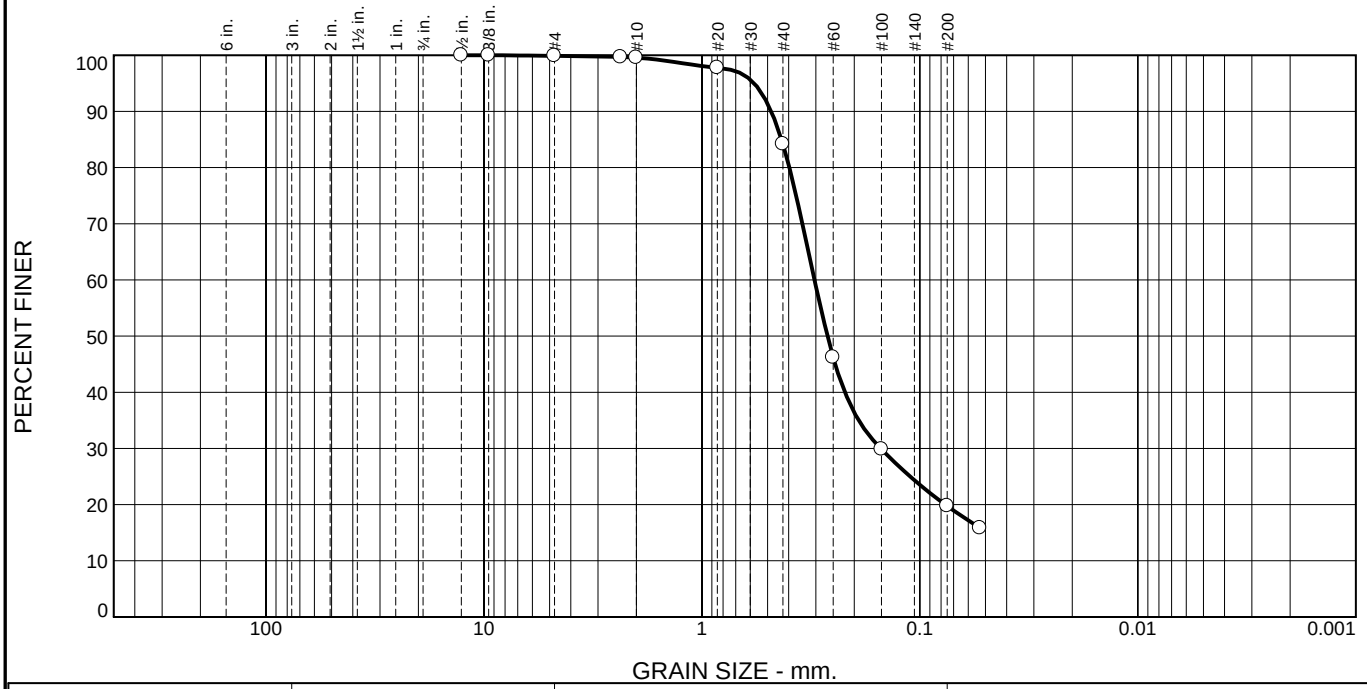
Location: Onsite - Vashon Recessional Outwash **Date Sampled:** 1/31/2022
Sample Number: EB-6 **Depth:** 2.5'

associated earth sciences incorporated

Client: Seattle Public Schools
Project: Montlake ES

Project No: 20210309 E001 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.3	15.4	64.4	19.8	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1/2"	100.0		
3/8"	100.0		
#4	99.9		
#8	99.7		
#10	99.6		
#20	97.7		
#40	84.2		
#60	46.2		
#100	29.9		
#200	19.8		
#270	15.8		

* (no specification provided)

Material Description

silty SAND, trace gravel

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 0.4809 D_{85}= 0.4313 D_{60}= 0.3044
D_{50}= 0.2655 D_{30}= 0.1512 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 2/7/2022 **Date Tested:** 2/9/2022

Tested By: CI

Checked By: PL/BG

Title:

Location: Onsite - Qvr
Sample Number: EB-6 **Depth:** 5'

Date Sampled: 1/31/2022

associated earth sciences incorporated

Client: Seattle Public Schools
Project: Montlake ES

Project No: 20210309 E001 **Figure**

Appendix B

CONSTRUCTION BEST MANAGEMENT PRACTICES

APPENDIX B

CONSTRUCTION BEST MANAGEMENT PRACTICES

The contractor will be required to implement measures to ensure the minimal environmental impacts throughout the construction process, which could include the following:

- The contractor will submit a written earthwork plan to the Project Engineer for approval prior to the commencing with any mass excavation or filling. The earthwork plan will also include:
  - Sequencing of the earthwork and grading activities;
  - Proposed equipment to be utilized;
  - Surface water diversion and control (description of how existing catch basins at the project site would remain intact and measures used to protect them from sediment during construction);
  - Proposed protection methods for excavated stockpiled fill materials and trenches;
  - Soil drying procedures; and,
  - Any other information pertinent to the manner in which the earthwork and grading will be performed.

- The contractor will obtain the City of Seattle's Department of Construction and Inspection approval that erosion control measures are in place and functioning, and will maintain erosion control measures as earthwork and utility construction commences in accordance with City of Seattle Standards.

- Surface water controls (i.e., temporary interceptor swales, check dams, silt fences, etc.) will be constructed simultaneously with clearing and grading for project development.

- Surface water and erosion control measures will be relocated or new measures will be installed so as site conditions change, erosion control measures remain in accordance with City of Seattle Best Management Practice (BMP) requirements during the construction period.

- All construction areas inactive for more than seven days during the dry season (April 1st to October 31st) or two days during the wet season (November 1st to March 31st) will be covered.

- Mitigation measures to reduce and/or control impacts to air will include:
  - Watering surfaces to control dust, the use of temporary ground covers, sprinkling the project site with approved dust palliatives, or use of temporary stabilizations practices upon the completion of grading.
  - Wheel-cleaning stations will be provided to ensure construction vehicle wheels and undercarriages do not carry excess dirt from the site onto adjacent roadways.

  - Streets will be regularly cleaned to ensure excess dust and debris is not transported from the construction site onto adjacent roads.
  - Construction activities will be planned to minimize exposing areas of earth for extended periods.
  - The contractor will be required to comply with the Puget Sound Clean Air Agency's (PSCAA) Regulation I, Section 9.15, requiring reasonable precautions to avoid dust emissions and Regulation I, Section 9.11, requiring the best available measures to control emissions of odor-bearing contaminants. The contractor will be required to comply with recommendations in the Washington Associated General Contractor brochure "Guide to Handling Fugitive Dust from Construction Projects."

- During construction, BMPs would be implemented to ensure that sediment originating from disturbed soils would be retained within the limits of disturbance. BMP measures may include installation of filter fabric between grate and rings of all catch basin inlets, fabric fencing, barriers, check dams, etc.

- Construction activities will be restricted to hours designated by the City of Seattle Noise Control Ordinance (SMC 25.08.425). If construction activities exceed permitted noise levels, the District would instruct the contractor to implement measures to reduce noise impacts to comply with the Noise Ordinance, which may include additional muffling of equipment.

- Construction vehicle traffic to and from the site will be minimized during peak traffic hours.

- Construction vehicles will not be parked in traffic lanes.

- Flaggers will be provided as required.

- Barriers, flashing lights, walkways, guardrails, and night lighting will be provided as required for safety and control.

- Fire lanes and roadways to existing buildings will be retained, as required by the fire department.

- Walkways leading past the site will remain clear of construction vehicles and debris and will remain safe at all times.

Appendix C

GREENHOUSE GAS EMISSIONS WORKSHEET

City of Seattle Department of Planning and Development
SEPA GHG Emissions Worksheet
Version 1.7 12/26/07

Introduction

The Washington State Environmental Policy Act (SEPA) requires environmental review of development proposals that may have a significant adverse impact on the environment. If a proposed development is subject to SEPA, the project proponent is required to complete the SEPA Checklist. The Checklist includes questions relating to the development's air emissions. The emissions that have traditionally been considered cover smoke, dust, and industrial and automobile emissions. With our understanding of the climate change impacts of GHG emissions, the City of Seattle requires the applicant to also estimate these emissions.

Emissions created by Development

GHG emissions associated with development come from multiple sources:

- The extraction, processing, transportation, construction and disposal of materials and landscape disturbance (Embodied Emissions)
- Energy demands created by the development after it is completed (Energy Emissions)
- Transportation demands created by the development after it is completed (Transportation Emissions)

GHG Emissions Worksheet

This GHG Emissions Worksheet has been developed to assist applicants in answering the SEPA Checklist question relating to GHG emissions. The worksheet was originally developed by King County, but the City of Seattle and King County are working together on future updates to maintain consistency of methodologies across jurisdictions.

The SEPA GHG Emissions worksheet estimates all GHG emissions that will be created over the life span of a project. This includes emissions associated with obtaining construction materials, fuel used during construction, energy consumed during a buildings operation, and transportation by building occupants.

Using the Worksheet

1. Descriptions of the different residential and commercial building types can be found on the second tabbed worksheet ("Definition of Building Types"). If a development proposal consists of multiple projects, e.g. both single family and multi-family residential structures or a commercial development that consists of more than on type of commercial activity, the appropriate information should be estimated for each type of building or activity.

2. For paving, estimate the total amount of paving (in thousands of square feet) of the project.

3. The Worksheet will calculate the amount of GHG emissions associated with the project and display the amount in the "Total Emissions" column on the worksheet. The applicant should use this information when completing the SEPA checklist.

4. The last three worksheets in the Excel file provide the background information that is used to calculate the total GHG emissions.

5. The methodology of creating the estimates is transparent; if there is reason to believe that a better estimate can be obtained by changing specific values, this can and should be done. Changes to the values should be documented with an explanation of why and the sources relied upon.

6. Print out the “Total Emissions” worksheet and attach it to the SEPA checklist. If the applicant has made changes to the calculations or the values, the documentation supporting those changes should also be attached to the SEPA checklist.

Montlake Elementary School Modernization and Addition Project

Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Emissions Per Unit or Per Thousand Square Feet (MTCO2e) Embodied	Energy	Transportation	Lifespan Emissions (MTCO2e)
Single-Family Home	0		98	672	792	**0**
Multi-Family Unit in Large Building	0		33	357	766	**0**
Multi-Family Unit in Small Building	0		54	681	766	**0**
Mobile Home	0		41	475	709	**0**
Education		65.0	39	646	361	**67956**
Food Sales		0.0	39	1,541	282	**0**
Food Service		0.0	39	1,994	561	**0**
Health Care Inpatient		0.0	39	1,938	582	**0**
Health Care Outpatient		0.0	39	737	571	**0**
Lodging		0.0	39	777	117	**0**
Retail (Other Than Mall)		0.0	39	577	247	**0**
Office		0.0	39	723	588	**0**
Public Assembly		0.0	39	733	150	**0**
Public Order and Safety		0.0	39	899	374	**0**
Religious Worship		0.0	39	339	129	**0**
Service		0.0	39	599	266	**0**
Warehouse and Storage		0.0	39	352	181	**0**
Other		0.0	39	1,278	257	**0**
Vacant		0.0	39	162	47	**0**

Section II: Pavement

Pavement		0.00				**0**

Total Project Emissions: **67956**

Version 1.7 12/26/07

Definition of Building Types

Type (Residential) or Principal Activity (Commercial)	Description
Single-Family Home.....	Unless otherwise specified, this includes both attached and detached buildings
Multi-Family Unit in Large Building	Apartments in buildings with more than 5 units
Multi-Family Unit in Small Building	Apartments in building with 2-4 units
Mobile Home.....	
Education	Buildings used for academic or technical classroom instruction, such as elementary, middle, or high schools, and classroom buildings on college or university campuses. Buildings on education campuses for which the main use is not classroom are included in the category relating to their use. For example, administration buildings are part of "Office," dormitories are "Lodging," and libraries are "Public Assembly."
Food Sales	Buildings used for retail or wholesale of food.
Food Service	Buildings used for preparation and sale of food and beverages for consumption.
Health Care Inpatient	Buildings used as diagnostic and treatment facilities for inpatient care.
Health Care Outpatient	Buildings used as diagnostic and treatment facilities for outpatient care. Doctor's or dentist's office are included here if they use any type of diagnostic medical equipment (if they do not, they are categorized as an office building).
Lodging	Buildings used to offer multiple accommodations for short-term or long-term residents, including skilled nursing and other residential care buildings.
Retail (Other Than Mall).....	Buildings used for the sale and display of goods other than food.
Office	Buildings used for general office space, professional office, or administrative offices. Doctor's or dentist's office are included here if they do not use any type of diagnostic medical equipment (if they do, they are categorized as an outpatient health care building).
Public Assembly	Buildings in which people gather for social or recreational activities, whether in private or non-private meeting halls.
Public Order and Safety	Buildings used for the preservation of law and order or public safety.
Religious Worship	Buildings in which people gather for religious activities, (such as chapels, churches, mosques, synagogues, and temples).
Service	Buildings in which some type of service is provided, other than food service or retail sales of goods
Warehouse and Storage	Buildings used to store goods, manufactured products, merchandise, raw materials, or personal belongings (such as self-storage).
Other	Buildings that are industrial or agricultural with some retail space; buildings having several different commercial activities that, together, comprise 50 percent or more of the floorspace, but whose largest single activity is agricultural, industrial/ manufacturing, or residential; and all other miscellaneous buildings that do not fit into any other category.
Vacant	Buildings in which more floorspace was vacant than was used for any single commercial activity at the time of interview. Therefore, a vacant building may have some occupied floorspace.

Sources: .....

Residential — 2001 Residential Energy Consumption Survey
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

Commercial — Commercial Buildings Energy Consumption Survey (CBECS),
Description of CBECS Building Types
http://www.eia.doe.gov/emeu/cbecs/pba99/bldgtypes.html

Embodied Emissions Worksheet

Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# thousand sq feet/ unit or building	Life span related embodied GHG missions (MTCO2e/ unit)	Life span related embodied GHG missions (MTCO2e/ thousand square feet) - See calculations in table below
Single-Family Home.....	2.53	98	39
Multi-Family Unit in Large Building	0.85	33	39
Multi-Family Unit in Small Building	1.39	54	39
Mobile Home.....	1.06	41	39
Education	25.6	991	39
Food Sales	5.6	217	39
Food Service	5.6	217	39
Health Care Inpatient	241.4	9,346	39
Health Care Outpatient	10.4	403	39
Lodging	35.8	1,386	39
Retail (Other Than Mall).....	9.7	376	39
Office	14.8	573	39
Public Assembly	14.2	550	39
Public Order and Safety	15.5	600	39
Religious Worship	10.1	391	39
Service	6.5	252	39
Warehouse and Storage	16.9	654	39
Other	21.9	848	39
Vacant	14.1	546	39

Section II: Pavement.....

All Types of Pavement.....			50

	Columns and Beams	Intermediate Floors	Exterior Walls	Windows	Interior Walls	Roofs		
Average GWP (lbs CO2e/sq ft): Vancouver, Low Rise Building	5.3	7.8	19.1	51.2	5.7	21.3		
Average Materials in a 2,272-square foot single family home	0.0	2269.0	3206.0	285.0	6050.0	3103.0	Total Embodied Emissions (MTCO2e)	Total Embodied Emissions (MTCO2e/ thousand sq feet)
MTCO2e	0.0	8.0	27.8	6.6	15.6	30.0	88.0	38.7

Sources

All data in black text — King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

Residential floorspace per unit

2001 Residential Energy Consumption Survey (National Average, 2001)
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

Floorspace per building

EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Average GWP (lbs CO2e/sq ft): Vancouver, Low Rise Building

Athena EcoCalculator
Athena Assembly Evaluation Tool v2.3- Vancouver Low Rise Building
Assembly Average GWP (kg) per square meter
http://www.athenasmi.ca/tools/ecoCalculator/index.html
Lbs per kg 2.20
Square feet per square meter 10.76

Average Materials in a 2,272-square foot single family home

Buildings Energy Data Book: 7.3 Typical/Average Household
Materials Used in the Construction of a 2,272-Square-Foot Single-Family Home, 2000
http://buildingsdatabook.eren.doe.gov/?id=view_book_table&TableID=2036&t=xls
See also: NAHB, 2004 Housing Facts, Figures and Trends, Feb. 2004, p. 7.

Average window size

Energy Information Administration/Housing Characteristics 1993
Appendix B, Quality of the Data. Pg. 5.
ftp://ftp.eia.doe.gov/pub/consumption/residential/rx93hcf.pdf

Pavement Emissions Factors
MTCO2e/thousand square feet of asphalt
or concrete pavement 50 (see below)

Embodied GHG Emissions……Worksheet Background Information

Buildings
Embodied GHG emissions are emissions that are created through the extraction, processing, transportation, construction and disposal of building materials as well as emissions created through landscape disturbance (by both soil disturbance and changes in above ground biomass).

Estimating embodied GHG emissions is new field of analysis; the estimates are rapidly improving and becoming more inclusive of all elements of construction and development.

The estimate included in this worksheet is calculated using average values for the main construction materials that are used to create a typical family home. In 2004, the National Association of Home Builders calculated the average materials that are used in a typical 2,272 square foot single-family household. The quantity of materials used is then multiplied by the average GHG emissions associated with the life-cycle GHG emissions for each material.

This estimate is a rough and conservative estimate; the actual embodied emissions for a project are likely to be higher. For example, at this stage, due to a lack of comprehensive data, the estimate does not include important factors such as landscape disturbance or the emissions associated with the interior components of a building (such as furniture).

King County realizes that the calculations for embodied emissions in this worksheet are rough. For example, the emissions associated with building 1,000 square feet of a residential building will not be the same as 1,000 square feet of a commercial building. However, discussions with the construction community indicate that while there are significant differences between the different types of structures, this method of estimation is reasonable; it will be improved as more data become available.

Additionally, if more specific information about the project is known, King County recommends two online embodied emissions calculators that can be used to obtain a more tailored estimate for embodied emissions: www.buildcarbonneutral.org and www.athenasmi.ca/tools/ecoCalculator/.

Pavement
Four recent life cycle assessments of the environmental impacts of roads form the basis for the per unit embodied emissions of pavement. Each study is constructed in slightly different ways; however, the aggregate results of the reports represent a reasonable estimate of the GHG emissions that are created from the manufacture of paving materials, construction related emissions, and maintenance of the pavement over its expected life cycle. For specifics, see the worksheet.

Special Section: Estimating the Embodied Emissions for Pavement

Four recent life cycle assessments of the environmental impacts of roads form the basis for the per unit embodied emissions of pavement. Each study is constructed in slightly different ways; however, the aggregate results of the reports represent a reasonable estimate of the GHG emissions that are created from the manufacture of paving materials, construction related emissions, and maintenance of the pavement over its expected life cycle.

The results of the studies are presented in different units and measures; considerable effort was undertaken to be able to compare the results of the studies in a reasonable way. For more details about the below methodology, contact matt.kuharic@kingcounty.gov.

The four studies, Meil (2001), Park (2003), Stripple (2001) and Treolar (2001) produced total GHG emissions of 4-34 MTCO2e per thousand square feet of finished paving (for similar asphalt and concrete based pavements). This estimate does not including downstream maintenance and repair of the highway. The average (for all concrete and asphalt pavements in the studies, assuming each study gets one data point) is ~17 MTCO2e/thousand square feet.

Three of the studies attempted to thoroughly account for the emissions associated with long term maintenance (40 years) of the roads. Stripple (2001), Park et al. (2003) and Treolar (2001) report 17, 81, and 68 MTCO2e/thousand square feet, respectively, after accounting for maintenance of the roads.

Based on the above discussion, King County makes the conservative estimate that 50 MTCO2e/thousand square feet of pavement (over the development's life cycle) will be used as the embodied emission factor for pavement until better estimates can be obtained. This is roughly equivalent to 3,500 MTCO2e per lane mile of road (assuming the lane is 13 feet wide).

It is important to note that these studies estimate the embodied emissions for roads. Paving that does not need to stand up to the rigors of heavy use (such as parking lots or driveways) would likely use less materials and hence have lower embodied emissions.

Sources:

Meil, J. A Life Cycle Perspective on Concrete and Asphalt Roadways: Embodied Primary Energy and Global Warming Potential. 2006. Available: http://www.cement.ca/cement.nsf/eee9ec7bbd630126852566c40052107b/6ec79dc8ae03a782852572b90061b914/$FILE/ATTK0WE3/athena%20report%20Feb.%202%202007.pdf

Park, K, Hwang, Y., Seo, S., M.ASCE, and Seo, H. , "Quantitative Assessment of Environmental Impacts on Life Cycle of Highways," Journal of Construction Engineering and Management , Vol 129, January/February 2003, pp 25-31, (DOI: 10.1061/(ASCE)0733-9364(2003)129:1(25)).

Stripple, H. Life Cycle Assessment of Road. A Pilot Study for Inventory Analysis. Second Revised Edition. IVL Swedish Environmental Research Institute Ltd. 2001. Available: http://www.ivl.se/rapporter/pdf/B1210E.pdf

Treloar, G., Love, P.E.D., and Crawford, R.H. Hybrid Life-Cycle Inventory for Road Construction and Use. Journal of Construction Engineering and Management. P. 43-49. January/February 2004.

Energy Emissions Worksheet

Type (Residential) or Principal Activity (Commercial)	Energy consumption per building per year (million Btu)	Carbon Coefficient for Buildings	MTCO2e per building per year	Floorspace per Building (thousand square feet)	MTCE per thousand square feet per year	MTCO2e per thousand square feet per year	Average Building Life Span	Lifespan Energy Related MTCO2e emissions per unit	Lifespan Energy Related MTCO2e emissions per thousand square feet
Single-Family Home	107.3	0.108	11.61	2.53	4.6	16.8	57.9	672	266
Multi-Family Unit in Large Building	41.0	0.108	4.44	0.85	5.2	19.2	80.5	357	422
Multi-Family Unit in Small Building	78.1	0.108	8.45	1.39	6.1	22.2	80.5	681	489
Mobile Home	75.9	0.108	8.21	1.06	7.7	28.4	57.9	475	448
Education	2,125.0	0.124	264.2	25.6	10.3	37.8	62.5	16,526	646
Food Sales	1,110.0	0.124	138.0	5.6	24.6	90.4	62.5	8,632	1,541
Food Service	1,436.0	0.124	178.5	5.6	31.9	116.9	62.5	11,168	1,994
Health Care Inpatient	60,152.0	0.124	7,479.1	241.4	31.0	113.6	62.5	467,794	1,938
Health Care Outpatient	985.0	0.124	122.5	10.4	11.8	43.2	62.5	7,660	737
Lodging	3,578.0	0.124	444.9	35.8	12.4	45.6	62.5	27,826	777
Retail (Other Than Mall)	720.0	0.124	89.5	9.7	9.2	33.8	62.5	5,599	577
Office	1,376.0	0.124	171.1	14.8	11.6	42.4	62.5	10,701	723
Public Assembly	1,338.0	0.124	166.4	14.2	11.7	43.0	62.5	10,405	733
Public Order and Safety	1,791.0	0.124	222.7	15.5	14.4	52.7	62.5	13,928	899
Religious Worship	440.0	0.124	54.7	10.1	5.4	19.9	62.5	3,422	339
Service	501.0	0.124	62.3	6.5	9.6	35.1	62.5	3,896	599
Warehouse and Storage	764.0	0.124	95.0	16.9	5.6	20.6	62.5	5,942	352
Other	3,600.0	0.124	447.6	21.9	20.4	74.9	62.5	27,997	1,278
Vacant	294.0	0.124	36.6	14.1	2.6	9.5	62.5	2,286	162

Sources

All data in black text — King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

Energy consumption for residential buildings

2007 Buildings Energy Data Book: 6.1 Quad Definitions and Comparisons (National Average, 2001)
Table 6.1.4: Average Annual Carbon Dioxide Emissions for Various Functions
http://buildingsdatabook.eren.doe.gov/
Data also at: http://www.eia.doe.gov/emeu/recs/recs2001_ce/ce1-4c_housingunits2001.html

Energy consumption for commercial buildings
and
Floorspace per building

EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Note: Data in plum color is found in both of the above sources (buildings energy data book and commercial buildings energy consumption survey).

Carbon Coefficient for Buildings

Buildings Energy Data Book (National average, 2005)
Table 3.1.7. 2005 Carbon Dioxide Emission Coefficients for Buildings (MMTCE per Quadrillion Btu)
http://buildingsdatabook.eere.energy.gov/?id=view_book_table&TableID=2057
Note: Carbon coefficient in the Energy Data book is in MTCE per Quadrillion Btu.
To convert to MTCO2e per million Btu, this factor was divided by 1000 and multiplied by 44/12.

Residential floorspace per unit

2001 Residential Energy Consumption Survey (National Average, 2001)
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

average lief span of buildings,
estimated by replacement time method

	Single Family Homes	Multi-Family Units in Large and Small Buildings	All Residential Buildings
New Housing Construction, 2001	1,273,000	329,000	1,602,000
Existing Housing Stock, 2001	73,700,000	26,500,000	100,200,000
Replacement time:	57.9	80.5	62.5

(national average, 2001)

Note: Single family homes calculation is used for mobile homes as a best estimate life span.
Note: At this time, KC staff could find no reliable data for the average life span of commercial buildings.
Therefore, the average life span of residential buildings is being used until a better approximation can be ascertained.

Sources:

New Housing Construction, 2001
Quarterly Starts and Completions by Purpose and Design - US and Regions (Excel)
http://www.census.gov/const/quarterly_starts_completions_cust.xls
See also: http://www.census.gov/const/www/newresconstindex.html

Existing Housing Stock, 2001
Residential Energy Consumption Survey (RECS) 2001
Tables HC1:Housing Unit Characteristics, Million U.S. Households 2001
Table HC1-4a. Housing Unit Characteristics by Type of Housing Unit, Million U.S. Households, 2001
Million U.S. Households, 2001
http://www.eia.doe.gov/emeu/recs/recs2001/hc_pdf/housunits/hc1-4a_housingunits2001.pdf

Transportation Emissions Worksheet

Type (Residential) or Principal Activity (Commercial)	# people/ unit or building	# thousand sq feet/ unit or building	# people or employees/ thousand square feet	vehicle related GHG emissions (metric tonnes CO2e per person per year)	MTCO2e/ year/ unit	MTCO2e/ year/ thousand square feet	Average Building Life Span	Life span transportation related GHG emissions (MTCO2e/ per unit)	Life span transportation related GHG emissions (MTCO2e/ thousand sq feet)
Single-Family Home	2.8	2.53	1.1	4.9	13.7	5.4	57.9	792	313
Multi-Family Unit in Large Building	1.9	0.85	2.3	4.9	9.5	11.2	80.5	766	904
Multi-Family Unit in Small Building	1.9	1.39	1.4	4.9	9.5	6.8	80.5	766	550
Mobile Home	2.5	1.06	2.3	4.9	12.2	11.5	57.9	709	668
Education	30.0	25.6	1.2	4.9	147.8	5.8	62.5	9247	361
Food Sales	5.1	5.6	0.9	4.9	25.2	4.5	62.5	1579	282
Food Service	10.2	5.6	1.8	4.9	50.2	9.0	62.5	3141	561
Health Care Inpatient	455.5	241.4	1.9	4.9	2246.4	9.3	62.5	140506	582
Health Care Outpatient	19.3	10.4	1.9	4.9	95.0	9.1	62.5	5941	571
Lodging	13.6	35.8	0.4	4.9	67.1	1.9	62.5	4194	117
Retail (Other Than Mall)	7.8	9.7	0.8	4.9	38.3	3.9	62.5	2394	247
Office	28.2	14.8	1.9	4.9	139.0	9.4	62.5	8696	588
Public Assembly	6.9	14.2	0.5	4.9	34.2	2.4	62.5	2137	150
Public Order and Safety	18.8	15.5	1.2	4.9	92.7	6.0	62.5	5796	374
Religious Worship	4.2	10.1	0.4	4.9	20.8	2.1	62.5	1298	129
Service	5.6	6.5	0.9	4.9	27.6	4.3	62.5	1729	266
Warehouse and Storage	9.9	16.9	0.6	4.9	49.0	2.9	62.5	3067	181
Other	18.3	21.9	0.8	4.9	90.0	4.1	62.5	5630	257
Vacant	2.1	14.1	0.2	4.9	10.5	0.7	62.5	657	47

Sources

All data in black text — King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

people/ unit

Estimating Household Size for Use in Population Estimates (WA state, 2000 average)
Washington State Office of Financial Management
Kimpel, T. and Lowe, T. Research Brief No. 47. August 2007
http://www.ofm.wa.gov/researchbriefs/brief047.pdf
Note: This analysis combines Multi Unit Structures in both large and small units into one category;
the average is used in this case although there is likely a difference

Residential floorspace per unit

2001 Residential Energy Consumption Survey (National Average, 2001)
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

employees/thousand square feet

Commercial Buildings Energy Consumption Survey commercial energy uses and costs (National Median, 2003)
Table B2 Totals and Medians of Floorspace, Number of Workers, and Hours of Operation for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set1/2003excel/b2.xls

Note: Data for # employees/thousand square feet is presented by CBECS as square feet/employee.
In this analysis employees/thousand square feet is calculated by taking the inverse of the CBECS number and multiplying by 1000.

vehicle related GHG emissions

Estimate calculated as follows (Washington state, 2006)_

56,531,930,000	2006 Annual WA State Vehicle Miles Traveled
	Data was daily VMT. Annual VMT was 365*daily VMT.
	http://www.wsdot.wa.gov/mapsdata/tdo/annualmileage.htm
6,395,798	2006 WA state population
	http://quickfacts.census.gov/qfd/states/53000.html
8839	vehicle miles per person per year
0.0506	gallon gasoline/mile
	This is the weighted national average fuel efficiency for all cars and 2 axle, 4 wheel light trucks in 2005. This includes pickup trucks, vans and SUVs. The 0.051 gallons/mile used here is the inverse of the more commonly known term “miles/per gallon” (which is 19.75 for these cars and light trucks).
	Transportation Energy Data Book. 26th Edition. 2006. Chapter 4: Light Vehicles and Characteristics. Calculations based on weighted average MPG efficiency of cars and light trucks.
	http://cta.ornl.gov/data/tedb26/Edition26_Chapter04.pdf
	Note: This report states that in 2005, 92.3% of all highway VMT were driven by the above described vehicles.
	http://cta.ornl.gov/data/tedb26/Spreadsheets/Table3_04.xls
24.3	lbs CO2e/gallon gasoline
	The CO2 emissions estimates for gasoline and diesel include the extraction, transport, and refinement of petroleum as well as their combustion.
	Life-Cycle CO2 Emissions for Various New Vehicles. RENew Northfield.
	Available: http://renewnorthfield.org/wpcontent/uploads/2006/04/CO2%20emissions.pdf
	Note: This is a conservative estimate of emissions by fuel consumption because diesel fuel,
2205	with a emissions factor of 26.55 lbs CO2e/gallon was not estimated.
4.93	lbs/metric tonne
	vehicle related GHG emissions (metric tonnes CO2e per person per year)

average lief span of buildings, estimated by replacement time method — See Energy Emissions Worksheet for Calculations

Commercial floorspace per unit — EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Appendix D

TREE INVENTORY AND ARBORIST REPORT

Tree Solutions Inc
Consulting Arborists

Project No. TS-8384

Arborist Report

To:	Seattle Public Schools c/o Paul Wight
Site:	Montlake Elementary School – 2409 22nd Ave E
Re:	Tree Inventory and Assessment
Date:	May 26, 2022
Project Arborist:	Haley Galbraith, ISA Board Certified Master Arborist PN-7512BM ISA Qualified Tree Risk Assessor
Reviewed by:	Sean Dugan, ASCA Registered Consulting Arborist #457 ISA Board Certified Master Arborist PN-5459B ISA Qualified Tree Risk Assessor
Referenced Documents:	Site Plan L1.01, dated May 4, 2022 TESC and Demolition Plan C1.0, dated May 11, 2022
Attached:	Table of Trees Topographic Survey (Sheet 2 of 2) showing Tree IDs, prepared by AHBL

Summary

I inventoried and assessed a total of 60 trees; 31 trees were located on site and 29 were located in the adjacent right-of-way (ROW). Based on Seattle Municipal Code (SMC 25.11), trees measuring six inches or greater in diameter at standard height (DSH) are considered significant trees and are required to be assessed for development projects. Seven of the on-site trees and one ROW tree included in my inventory did not qualify as significant trees due to size but were included due to location or other benefits to the site.

I tagged each on-site tree I assessed with an aluminum tree tag. Tree identifiers correspond to the number on each tag for on-site trees, and the Seattle Department of Transportation (SDOT) tree inventory tree ID number for street trees.

Of the trees I assessed, two met the exceptional tree criteria outlined by Seattle Director's Rule 16-2008. No exceptional tree groves exist on site.

Based on my review of the plan pages provided to me, noted above, it appears that the majority of trees on site will require removal to accommodate the proposed Montlake Elementary School Modernization project. Seven (7) significant trees and one non-significant tree (#1240), all located at the front (22nd Ave E side) of the existing building on site, are proposed to be retained and protected, as well as 27 out of 29 of the ROW trees adjacent to the site. One of the ROW trees to be removed is dead, and the other is in poor structural condition.

In addition to the Seattle Public Schools Tree Protection Specifications, Appendix E contains Tree Protection Specifications developed by our office. Wherever possible, the more restrictive measures should apply.

Assignment and Scope of Work

This report documents the site visit by Haley Galbraith of Tree Solutions Inc. on March 15, 2022, to Montlake Elementary School. Included are observations and data collected at the site, located at 2409 22nd Ave E, Seattle. Paul Wight, of Seattle Public Schools, requested these services to acquire information for project planning and as part of necessary permitting requirements.

I was asked to evaluate all regulated trees on the site and identify any exceptional trees, as defined by Seattle Director's Rule 16-2008. I was asked to produce an Arborist Report outlining my findings and recommendations, with reference to plan pages provided to me by Ryan Luthman and Ariel Mieling, of DLR Group.

Observations

Site

The 72,000 square-foot site fronts 22nd Ave E in the Montlake neighborhood of Seattle. One large school building and multiple portable structures currently exist on site. There are no environmentally critical areas (ECA) on site.

Trees

I have attached a Table of Trees containing detailed information on each tree I assessed, and a topographic survey of the site prepared by AHBL showing Tree IDs.

Most of the trees on site were planted as ornamental landscaping. I assessed seven trees that do not meet the definition of significant trees because they measured less than six inches DSH. These included two flowering trees south of the school building and two fruit trees in garden area at the north end of the school building, as well as two beaked hazelnut (*Corylus cornuta*) clumps on the sloped portion of the site at the western edge of the property. Only one of the non-significant trees, a Fraser photinia (*Photinia* x *fraseri*) #1240, is proposed for retention.

Following my inventory, I cross-referenced my street tree data with the SDOT street tree inventory and found that some of the trees shown on the SDOT inventory no longer exist. I assessed street trees south, west, and north of the site; as well as one small (approximately two-inch DSH) tree in the ROW at the southeast corner of the site. This tree is not included in the SDOT street tree inventory. All but two of the ROW trees included in my inventory are proposed for retention.

Discussion—Construction Impacts

Based on my review of the site plan (L1.01) and demo plan (C1.0), it appears that the majority of trees on site will require removal to accommodate the proposed project. Seven significant trees and one non-significant tree, all located at the front (22nd Ave E side) of the existing building on site, are proposed to be retained and protected, as well as 27 out of 29 of the ROW trees adjacent to the site. One of the ROW trees to be removed is dead, and the other is in poor structural condition.

In addition to the Seattle Public Schools Tree Protection Specifications, Appendix E contains Tree Protection Specifications developed by our office. Wherever possible, the more restrictive measures should apply.

Recommendations

- Site planning around exceptional trees must follow the guidelines outlined in SMC 25.11.050. [1]
- All pruning should be conducted by an ISA certified arborist and following current ANSI A300 specifications.[2]

Respectfully submitted,

Haley Galbraith
Consulting Arborist

[1] Seattle Municipal Code 25.11.050. General Provisions for Exceptional Trees

[2] Accredited Standards Committee A300 (ASC 300). ANSI A300 (Part 1) – 2017 Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Londonderry: Tree Care Industry Association, 2017.

Appendix A **References**

Accredited Standards Committee A300 (ASC 300). ANSI A300 (Part 1) Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Londonderry: Tree Care Industry Association, 2017.

Seattle Municipal Code 25.11.050. General Provisions for Exceptional Trees.

Sugimura, D.W. "DPD Director's Rule 16-2008". Seattle, WA, 2009

Appendix B **Photographs**

Photo 1. Exceptional tree 1231, located at the north end of the school building, is proposed for removal.

Photo 2. Exceptional tree 1239, located at the base of the east side retaining wall, is to be retained.

Appendix C **Assumptions & Limiting Conditions**

1 Consultant assumes that the site and its use do not violate, and is in compliance with, all applicable codes, ordinances, statutes, or regulations.

2 The consultant may provide a report or recommendation based on published municipal regulations. The consultant assumes that the municipal regulations published on the date of the report are current municipal regulations and assumes no obligation related to unpublished city regulation information.

3 Any report by the consultant and any values expressed therein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.

4 All photographs included in this report were taken by Tree Solutions, Inc. during the documented site visit, unless otherwise noted. Sketches, drawings, and photographs (included in, and attached to, this report) are intended as visual aids and are not necessarily to scale. They should not be construed as engineering drawings, architectural reports, or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by the consultant as to the sufficiency or accuracy of the information.

5 Unless otherwise agreed, (1) information contained in any report by consultant covers only the items examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring.

6 These findings are based on the observations and opinions of the authoring arborist, and do not provide guarantees regarding the future performance, health, vigor, structural stability, or safety of the plants described and assessed.

7 Measurements are subject to typical margins of error, considering the oval or asymmetrical cross-section of most trunks and canopies.

8 Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.

9 Our assessments are made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

Appendix D **Methods**

Measuring

I measured the diameter of each tree at 54 inches above grade, diameter at standard height (DSH). If a tree had multiple stems, I measured each stem individually at standard height and determined a single-stem equivalent diameter by using the method outlined in the city of Seattle Director's Rule 16-2008 or the Guide for Plant Appraisal, 10th Edition Second Printing published by the Council of Tree and Landscape Appraisers. A tree is regulated based on this single-stem equivalent diameter value.

Tagging

I tagged each on-site tree with a circular aluminum tag at eye level. I assigned each tree a numerical identifier on our map and in our tree table, corresponding to this tree tag. I used Seattle Department of Transportation (SDOT) tree identifiers for trees located in the Right-of-Way (ROW).

Evaluating

I evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which trees produce in reaction to weak spots or areas of mechanical stress. Trees react to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts. Understanding uniform stress allows me to make informed judgments about the condition of a tree.

Rating

When rating tree health, I took into consideration crown indicators such as foliar density, size, color, stem and shoot extensions. When rating tree structure, I evaluated the tree for form and structural defects, including past damage and decay. Tree Solutions has adapted our ratings based on the Purdue University Extension formula values for health condition (*Purdue University Extension bulletin FNR-473-W - Tree Appraisal*). These values are a general representation used to assist arborists in assigning ratings.

Health

Excellent - Perfect specimen with excellent form and vigor, well-balanced crown. Normal to exceeding shoot length on new growth. Leaf size and color normal. Trunk is sound and solid. Root zone undisturbed. No apparent pest problems. Long safe useful life expectancy for the species.

Good - Imperfect canopy density in few parts of the tree, up to 10% of the canopy. Normal to less than ¾ typical growth rate of shoots and minor deficiency in typical leaf development. Few pest issues or damage, and if they exist, they are controllable, or tree is reacting appropriately. Normal branch and stem development with healthy growth. Safe useful life expectancy typical for the species.

Fair - Crown decline and dieback up to 30% of the canopy. Leaf color is somewhat chlorotic/necrotic with smaller leaves and "off" coloration. Shoot extensions indicate some stunting and stressed growing conditions. Stress cone crop clearly visible. Obvious signs of pest problems contributing to lesser condition, control might be possible. Some decay areas found in main stem and branches. Below average safe useful life expectancy

Poor - Lacking full crown, more than 50% decline and dieback, especially affecting larger branches. Stunting of shoots is obvious with little evidence of growth on smaller stems. Leaf size and color reveals overall stress in the plant. Insect or disease infestation may be severe and uncontrollable. Extensive decay or hollows in branches and trunk. Short safe useful life expectancy.

Structure

Excellent - Root plate undisturbed and clear of any obstructions. Trunk flare has normal development. No visible trunk defects or cavities. Branch spacing/structure and attachments are free of any defects.

Good - Root plate appears normal, with only minor damage. Possible signs of root dysfunction around trunk flare. Minor trunk defects from previous injury, with good closure and less than 25% of bark section missing. Good branch habit; minor dieback with some signs of previous pruning. Codominant stem formation may be present, requiring minor corrections.

Fair - Root plate reveals previous damage or disturbance. Dysfunctional roots may be visible around the main stem. Evidence of trunk damage or cavities, with decay or defects present and less than 30% of bark sections missing on trunk. Co-dominant stems are present. Branching habit and attachments indicate poor pruning or damage, which requires moderate corrections.

Poor - Root plate disturbance and defects indicate major damage, with girdling roots around the trunk flare. Trunk reveals more than 50% of bark section missing. Branch structure has poor attachments, with several structurally important branches dead or broken. Canopy reveals signs of damage or previous topping or lion-tailing, with major corrective action required.

Appendix E **Tree Protection Specifications**

The following is a list of protection measures that must be employed before, during and after construction to ensure the long-term viability of retained trees.

1. **Project Arborist:** The project arborists shall at minimum have an International Society of Arboriculture (ISA) Certification and ISA Tree Risk Assessment Qualification.
2. **Tree Protection Area (TPA):** TPA is the area within the dripline of all retained trees. The TPA for non-exceptional trees may be reduced to within the dripline based on the recommendation of the project arborist. The TPA for exceptional trees may be reduced to within the dripline based on the recommendation of the project arborist and approval by the City of Seattle.
3. **Tree Protection Fencing:** Tree protection fencing shall consist of 6-foot-tall chain-link fencing installed at the edge of the TPA as approved by the project arborist. Fence posts shall be anchored into the ground or bolted to existing hardscape surfaces.
    a. Where trees are being retained as a group the fencing shall encompass the entire area including all landscape beds or lawn areas associated with the group.
    b. Per arborist approval, TPA fencing may be placed at the edge of existing hardscape within the TPA to allow for staging and traffic.
    c. Where work is planned within the TPA, install fencing at edge of TPA and move to limits of disturbance at the time that the work within the TPA is planned to occur. This ensures that work within the TPA is completed to specification.
    d. Where trees are protected at the edge of the project boundary, construction limits fencing shall be incorporated as the boundary of tree protection fencing.
4. **Access Beyond Tree Protection Fencing:** In areas where work such as installation of utilities is required within the TPA, a locking gate will be installed in the fencing to facilitate access. The project manager or project arborist shall be present when tree protection areas are accessed.
5. **Tree Protection Signage:** Tree protection signage shall be affixed to fencing every 20 feet. Signage shall be fluorescent, at least 2’ x 2’ in size. Signage must include all information in the PDF located here: http://www.seattle.gov/Documents/Departments/SDCI/Codes/TreeProtectionAreaSign.pdf in addition to the contact information for the project manager and instructions for gaining access to the area.
6. **Filter / Silt Fencing:** Filter / silt fencing within, or at the edge of the TPA of retained trees shall be installed in a manner that does not sever roots. Install so that filter / silt fencing sits on the ground and is weighed in place by sandbags or gravel. Do not trench to insert filter / silt fencing into the ground.
7. **Monitoring:** The project arborist shall monitor all ground disturbance at the edge of or within the TPA.
8. **Soil Protection:** Retain existing paved surfaces within or at the edge of the TPA for as long as possible. No parking, foot traffic, materials storage, or dumping (including excavated soils) are allowed within the TPA. Heavy machinery shall remain outside of the TPA. Access to the tree protection area will be granted under the supervision of the project arborist. If project arborist allows, heavy machinery can enter the area if soils are protected from the load. Acceptable methods of soil protection include placing 3/4-inch plywood over 4 to 6 inches of wood chip mulch, or use of AlturnaMats® (or equivalent product approved by the project arborist). Compaction of soils within the TPA must not occur.
9. **Soil Remediation:** Soil compacted within the TPA of retained trees shall be remediated using pneumatic air excavation according to a specification produced by the project arborist.

10. **Canopy Protection**: Where fencing is installed at the limits of disturbance within the TPA, canopy management (pruning or tying back) shall be conducted to ensure that vehicular traffic does not damage canopy parts. Exhaust from machinery shall be located 5 feet outside the dripline of retained trees. No exhaust shall come in contact with foliage for prolonged periods of time.
11. **Duff/Mulch:** Apply 6 inches of arborist wood chip mulch or hog fuel over bare soil within the TPA to prevent compaction and evaporation. TPA shall be free of invasive weeds to facilitate mulch application. Keep mulch 1 foot away from the base of trees and 6 inches from retained understory vegetation. Retain and protect as much of the existing duff and understory vegetation as possible.
12. **Excavation:** Excavation done within the TPA shall use alternative methods such as pneumatic air excavation or hand digging. If heavy machinery is used, use flat front buckets with the project arborist spotting for roots. When roots are encountered, stop excavation, and cleanly sever roots. The project arborist shall monitor all excavation done within the TPA.
13. **Fill:** Limit fill to 1 foot of uncompacted well-draining soil, within the TPA of retained trees. In areas where additional fill is required, consult with the project arborist. Fill must be kept at least 1 foot from the trunks of trees.
14. **Root Pruning:** Limit root pruning to the extent possible. All roots shall be pruned with a sharp saw making clean cuts. Do not fracture or break roots with excavation equipment.
15. **Root Moisture:** Root cuts and exposed roots shall be immediately covered with soil, mulch, or clear polyethylene sheeting and kept moist. Water to maintain moist condition until the area is back filled. Do not allow exposed roots to dry out before replacing permanent back fill.
16. **Hardscape Removal:** Retain hardscape surfaces for as long as practical. Remove hardscape in a manner that does not require machinery to traverse newly exposed soil within the TPA. Where equipment must traverse the newly exposed soil, apply soil protection as described in section 8. Replace fencing at edge of TPA if soil exposed by hardscape removal will remain for any period of time.
17. **Tree Removal:** All trees to be removed that are located within the TPA of retained trees shall not be ripped, pulled, or pushed over. The tree should be cut to the base and the stump either left or ground out. A flat front bucket can also be used to sever roots around all sides of the stump, or the roots can be exposed using hydro or air excavation and then cut before removing the stump.
18. **Irrigation:** Retained trees with soil disturbance within the TPA will require supplemental water from June through September. Acceptable methods of irrigation include drip, sprinkler, or watering truck. Trees shall be watered three times per month during this time.
19. **Pruning:** Pruning required for construction and safety clearance shall be done with a pruning specification provided by the project arborist in accordance with American National Standards Institute ANSI-A300 2017 Standard Practices for Pruning. Pruning shall be conducted or monitored by an arborist with an ISA Certification.
20. **Plan Updates:** All plan updates or field modification that result in impacts within the TPA or change the retained status of trees shall be reviewed by the senior project manager and project arborist prior to conducting the work.
21. **Materials:** Contractor shall have the following materials on-site and available for use during work in the TPA:
    - **Sharp and clean bypass hand pruners**
    - **Sharp and clean bypass loppers**
    - **Sharp hand-held root saw**
    - **Reciprocating saw with new blades**
    - **Shovels**
    - **Trowels**
    - **Clear polyethylene sheeting**
    - **Burlap**
    - **Water**

Tree Solutions Inc
Consulting Arborists

Table of Trees

Seattle Public Schools
Montlake Elementary

Arborist: HG
Date of Inventory: 03.15.2022
Table Revised: 05.26.2022

DSH (Diameter at Standard Height) was measured 4.5 feet above average grade, unless noted otherwise. DSH highlighted red for trees included in inventory that were not significant.
DSH for multi-stem trees are noted as a single stem equivalent, which is calculated using the method defined in Director's Rule 16-2008 .
Dripline was measured from the center of the tree to the outermost extent of the canopy; where only one dripline measurement is shown, this was average dripline radius.

Site Trees

							Dripline Radius Input							
Tree ID	**Scientific Name**	**Common Name**	**DSH** (inches)	**DSH Multistem**	**Health Condition**	**Structural Condition**	**N**	**E**	**S**	**W**	**Exceptional Threshold**	**Exceptional by Size**	**Proposed Action**	**Notes**
1224	*Prunus serrulata*	Flowering cherry	10.8		Good	Fair	9.5				*23.0*	-	Remove	DSH taken at narrowest point below union.
1225	*Arbutus unedo*	Strawberry tree	9.0	5.8, 3.2, 5, 3.5	Good	Fair	10.0				*10.2*	-	Remove	Several old trunk wounds, good response.
1226	*Arbutus unedo*	Strawberry tree	6.1	3.3, 3.9, 3.3	Good	Fair	9.5				*10.2*	-	Remove	Similar condition as tree 1225; dead/coppiced one in between this tree and 1227 not included.
1227	*Arbutus unedo*	Strawberry tree	6.8	4.5, 5.1	Good	Fair	11.0			11.0	*10.2*	-	Remove	Low clearance over pathway to garden. Canopy asymmetrical to N/NW.
1228	*Cornus kousa*	Kousa dogwood	5.5		Fair	Fair	9.5				*12.0*	-	Remove	DSH taken at narrowest point below union - not significant but in prominent location at end of planting on raised bed.
1229	*Lagerstroemia indica*	Crepe myrtle	7.2		Fair	Fair	10.5				*30.0*	-	Remove	DSH taken at narrowest point below union; interior parts pruned out.
1230	*Magnolia sp.*	Magnolia	5.1		Good	Poor	6.5				-	-	Remove	Not significant, but included due to location in patio area planting square; severe vertical trunk wounds from base all the way up central leader.
1231	*Azara microphylla*	Boxleaf azara	8.1	3.8, 3.4, 3.4, 4.3, 3	Good	Good	11.0		3.0		*6.9*	Exceptional	Remove	A bit of past pruning damage but otherwise good tree to retain; located just under 3 feet from school building. Canopy asymmetrical to N/E/W.
1232	*Malus* sp.	Domestic apple	5.5		Good	Good	8.0				*12.0*	-	Remove	Non-significant fruit tree; included due to prominence in garden area north of school building.
1233	*Malus* sp.	Domestic apple	4.1		Good	Good	7.0				*12.0*	-	Remove	Non-significant fruit tree; included due to prominence in garden area north of school building.
1234	*Juniperus scopulorum*	Rocky Mountain juniper	9.6	2.5, 4.7, 8	Good	Good	6.5				*30.0*	-	Retain and Protect	Basal/below union diameter is 13.1. Phototropic lean to E, corrected.
1235	*Liquidambar styraciflua*	American sweetgum	17.2		Good	Good	16.5				*27.0*	-	Retain and Protect	
1236	*Juniperus scopulorum*	Rocky Mountain juniper	11.4		Good	Good	6.0				*30.0*	-	Retain and Protect	DSH shown is basal diameter, due to form.
1237	*Rhododendron* sp.	Rhododendron	7.1		Good	Good	6.0				*11.3*	-	Retain and Protect	Nice rhody; less than 3 feet from school building on E side.
1238	*Photinia x fraseri*	Fraser photinia	7.5	5.1, 3.4, 3.3, 2.9	Good	Good	11.5				*12.0*	-	Retain and Protect	At base of front retaining wall; canopy asymmetrical to E.
1239	*Juniperus chinensis*	Chinese juniper	10.2	7.2, 5.4, 4.8	Good	Good	7.5				*7.4*	Exceptional	Retain and Protect	At base of front retaining wall; canopy asymmetrical to E.

Table of Trees

Seattle Public Schools
Montlake Elementary

Arborist: HG
Date of Inventory: 03.15.2022
Table Revised: 05.26.2022

Tree ID	Scientific Name	Common Name	DSH (inches)	DSH Multistem	Health Condition	Structural Condition	N	E	S	W	Exceptional Threshold	Exceptional by Size	Proposed Action	Notes
1240	*Photinia x fraseri*	Fraser photinia	4.6	2.9, 3.6	Good	Good	7.5				*12.0*	-	Retain and Protect	Not significant, but included due to prominence; located at base of front retaining wall; canopy asymmetrical to E.
1241	*Photinia x fraseri*	Fraser photinia	9.7	4.4, 3.5, 3.5, 4.1, 3.4, 2.9, 3.6	Good	Good	15.0				*12.0*	-	Retain and Protect	At base of front retaining wall; canopy asymmetrical to E; shared canopy with 1240; soils very wet along wall, possibly some drainage issues.
1242	*Prunus serrulata*	Flowering cherry	14.8	10.5, 10.5	Fair	Fair	19.5				*23.0*	-	Remove	Co-dominant (2) from base with crack; previously topped with small diameter cuts for power line clearance.
1243	*Corylus cornuta*	Beaked hazelnut	13.5	5, 4.8, 4.3, 3.8, 2.9, 4.3, 3.5, 3.7, 4.5, 2.5	Good	Fair	14.5				*30.0*	-	Remove	Typical form for species, some internal stem dieback, sprouting at base, poor past pruning for power line clearance.
1244	*Pyrus communis*	European pear	6.5		Good	Fair	10.0				*27.2*	-	Remove	Appears to have had a partial soil failure in the past, but corrected and appears stable; three non-significant malus trees that were not included surround this tree at the corner of 22nd and McGraw.
1245	*Acer macrophyllum*	Bigleaf maple	23.3		Good	Fair	17.0				*30.0*	-	Remove	DSH taken at narrowest point below union of 3 co-dominant trunks that are fused at SH; nearly in contact with chainlink fence; at top of slope, some soil erosion with structural roots exposed at surface.
1246	*Corylus cornuta*	Beaked hazelnut	7.7	3.5, 3.5, 2.5, 2.5, 2.5, 2, 2, 2, 2	Good	Good	12.0				*30.0*	-	Remove	
1247	*Acer macrophyllum*	Bigleaf maple	6.1		Good	Fair	5.0				*30.0*	-	Remove	
1248	*Corylus cornuta*	Beaked hazelnut	<6	10x1.5, 12x 1 or less	Good	Good	11.0				*30.0*	-	Remove	Not significant, but included as it looked too close to determine in the field; typical form for species; good slope stabilization function.
1249	*Corylus cornuta*	Beaked hazelnut	5.3	2.5, 2, 2, 2, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	Good	Good	13.0				*30.0*	-	Remove	Not significant, but included as it looked too close to determine in the field; typical form for species; good slope stabilization function; ivy and cotoneaster growing up throughout.
1250	*Crataegus monogyna*	Common hawthorn	10.8	7.2, 8	Fair	Fair	12.5				*16.2*	-	Remove	DSH adjusted slightly for ivy.
1251	*Acer macrophyllum*	Bigleaf maple	19.8	10.3, 9.5, 11.6, 7.9	Fair	Fair	11.5				*30.0*	-	Remove	S stem nearly dead; ivy climbing up between trunks; dieback on W stem.
1252	*Fraxinus latifolia*	Oregon ash	7.3		Fair	Fair	15.5				*24.0*	-	Remove	Canopy asymmetrical to S.
1253	*Betula pendula*	European white birch	9.7		Poor	Poor	10.0				*24.0*	-	Remove	Approximately 50% dead due to BBB; ivy climbing up base.

Tree ID	Scientific Name	Common Name	DSH (inches)	DSH Multistem	Health Condition	Structural Condition	N	E	S	W	Exceptional Threshold	Exceptional by Size	Proposed Action	Notes
1254	*Corylus cornuta*	Beaked hazelnut	6.5	3, 2.5, 2.5, 2.5, 2.5, 2, 2	Fair	Fair	10.0				*30.0*	-	Remove	Typical form for species; some stems dead; additional non-significant clumps in vicinity.
Street Trees														
TRE-38859	*Prunus serrulata*	Flowering cherry	11.4		Fair	Fair	11.5				N/A	N/A	Retain and Protect	
TRE-38861	*Prunus serrulata*	Flowering cherry	10.8		Fair	Fair	8.5				N/A	N/A	Retain and Protect	
TRE-38862	*Crataegus phaenopyrum*	Washington hawthorn	13.2	10.6, 7.8	Fair	Fair	16.0				N/A	N/A	Retain and Protect	Pruned for line clearance (poorly), will need sidewalk clearance pruning.
TRE-38864	*Crataegus phaenopyrum*	Washington hawthorn	12.2	9.7, 7.4	Fair	Fair	10.5				N/A	N/A	Retain and Protect	Cars have driven over root system, minor damage and significant compaction observed; non-significant tree to east is likely replacement planting for TRE-38863, which no longer exists.
TRE-38865	*Crataegus phaenopyrum*	Washington hawthorn	6.5		Fair	Fair	7.0				N/A	N/A	Retain and Protect	
TRE-38866	*Crataegus phaenopyrum*	Washington hawthorn	6.2		Fair	Fair	10.0				N/A	N/A	Retain and Protect	
TRE-38867	*Crataegus phaenopyrum*	Washington hawthorn	9.3		Fair	Fair	11.0				N/A	N/A	Retain and Protect	
TRE-38868	*Crataegus phaenopyrum*	Washington hawthorn	13.6		Fair	Fair	15.5				N/A	N/A	Retain and Protect	Large burl with wound area at base on W side.
TRE-38869	*Crataegus phaenopyrum*	Washington hawthorn	7.0		Fair	Fair	10.0				N/A	N/A	Retain and Protect	
TRE-38870	*Crataegus phaenopyrum*	Washington hawthorn	8.4	5.8, 6.1	Fair	Fair	9.5				N/A	N/A	Retain and Protect	
TRE-38871	*Crataegus phaenopyrum*	Washington hawthorn	8.0		Fair	Fair	8.5				N/A	N/A	Retain and Protect	
TRE-38860	*Crataegus phaenopyrum*	Washington hawthorn	7.8		Fair	Fair	9.0				N/A	N/A	Retain and Protect	
TRE-38854	*Acer rubrum*	Red maple	11.7		Good	Good	11.0				N/A	N/A	Retain and Protect	Red maple trees TRE-38839 to south and TRE-38855 and TRE-38856 to north in SDOT inventory no longer exist.
TRE-38857	*Acer rubrum*	Red maple	11.6	8.9, 7.5	Fair	Poor	14.5				N/A	N/A	Remove	Significant basal trunk wound with visible decay resulting from past removal of branch.
TRE-38858	*Acer rubrum*	Red maple	11.6		DEAD	Poor	11.5				N/A	N/A	Remove	Tree is dead with conk emergence at base.
TRE-38840	*Acer rubrum*	Red maple	13.6	10, 9.2	Fair	Fair	12.0				N/A	N/A	Retain and Protect	
TRE-38841	*Tilia cordata*	Littleleaf linden	18.9		Good	Good	19.0				N/A	N/A	Retain and protect	Large girdling root mass on S side with sidewalk lifting; significant pruning cuts made recently.

Table of Trees

Seattle Public Schools
Montlake Elementary

Arborist: HG
Date of Inventory: 03.15.2022
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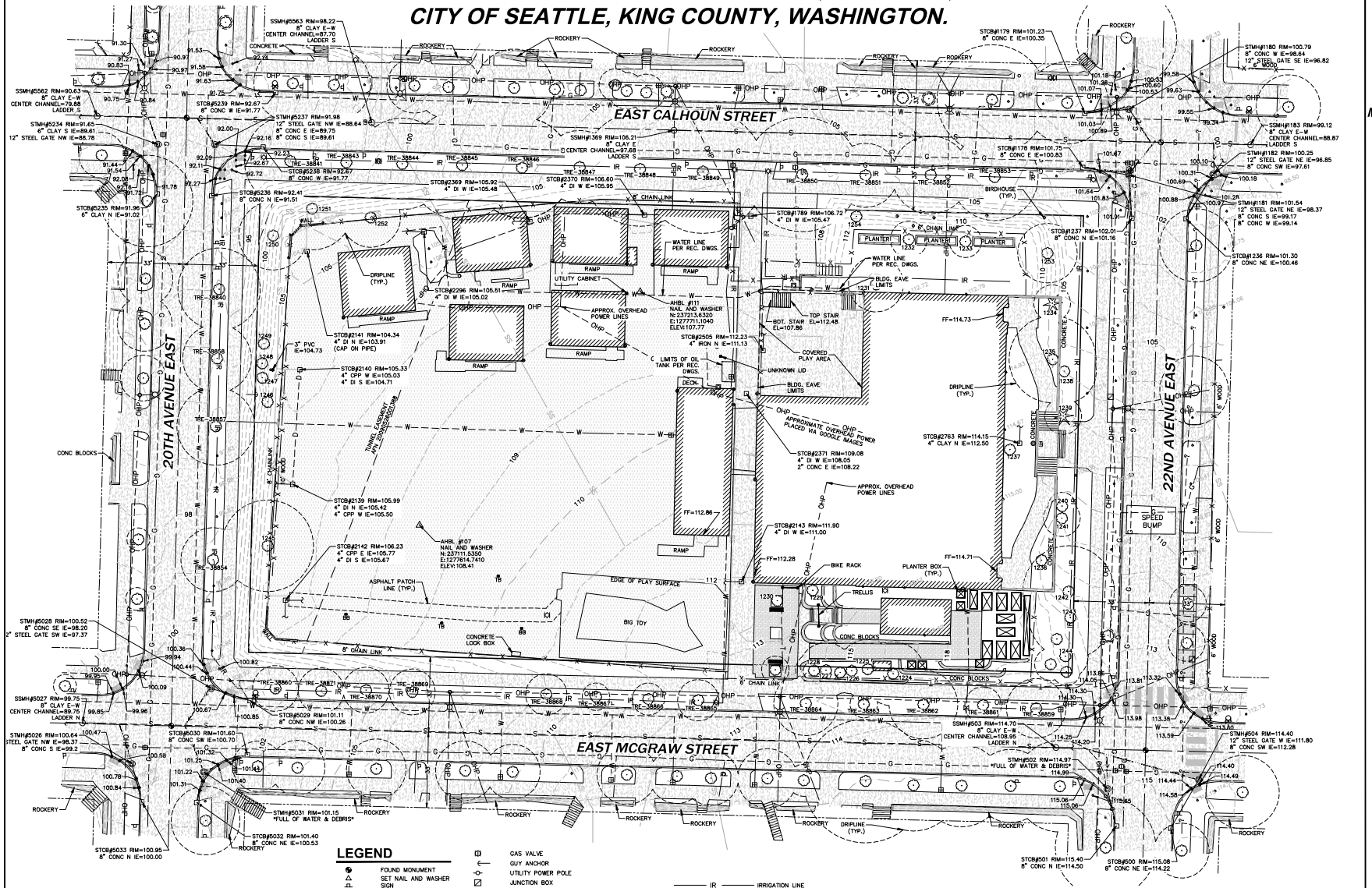
Tree ID	Scientific Name	Common Name	DSH (inches)	DSH Multistem	Health Condition	Structural Condition	N	E	S	W	Exceptional Threshold	Exceptional by Size	Proposed Action	Notes
TRE-38843	*Tilia cordata*	Littleleaf linden	17.1		Good	Fair	17.5				N/A	N/A	Retain and protect	Sidewalk lifting; central stems narrowly attached with included bark; significant pruning cuts made recently.
TRE-38844	*Tilia cordata*	Littleleaf linden	15.4		Good	Fair	19.0				N/A	N/A	Retain and protect	Sidewalk lifting; central stems narrowly attached with included bark; significant pruning cuts made recently.
TRE-38845	*Tilia cordata*	Littleleaf linden	18.5		Good	Fair	19.0				N/A	N/A	Retain and protect	Sidewalk lifting; central stems narrowly attached with included bark; significant pruning cuts made recently.
TRE-38846	*Tilia cordata*	Littleleaf linden	17.7		Good	Fair	18.0				N/A	N/A	Retain and protect	Sidewalk lifting; central stems narrowly attached with included bark; significant pruning cuts made recently.
TRE-38847	*Tilia cordata*	Littleleaf linden	9.5		Fair	Fair	12.0				N/A	N/A	Retain and protect	Suppressed; minor sidewalk lifting; recently pruned.
TRE-38848	*Tilia cordata*	Littleleaf linden	22.0		Good	Fair	15.5				N/A	N/A	Retain and protect	Sidewalk lifting; central stems narrowly attached with included bark; significant pruning cuts made recently.
TRE-38849	*Tilia cordata*	Littleleaf linden	17.3		Good	Fair	17.0				N/A	N/A	Retain and protect	Sidewalk lifting; significant pruning cuts made recently.
TRE-38850	*Tilia cordata*	Littleleaf linden	17.1		Good	Fair	18.5				N/A	N/A	Retain and protect	Girdling roots; sidewalk lifting; recently pruned.
TRE-38851	*Tilia cordata*	Littleleaf linden	8.9		Fair	Fair	11.0				N/A	N/A	Retain and protect	Minor sidewalk lifting; recently pruned.
TRE-38852	*Tilia cordata*	Littleleaf linden	12.8		Fair	Fair	16.5				N/A	N/A	Retain and protect	Significant pruning recently.
TRE-38853	*Tilia cordata*	Littleleaf linden	17.7		Good	Fair	16.5				N/A	N/A	Retain and protect	DSH taken at narrowest point below union; sidewalk lifting; significant pruning recently; linden tree TRE-38842 to east in SDOT inventory no longer exists.
No ID	*Fraxinus* spp.	Ash	2.0		Good	Fair	4.0				N/A	N/A	Retain and Protect	Not shown in SDOT inventory; significant wound at base.

MONTLAKE ELEMENTARY SCHOOL

A PORTION OF THE SE 1/4 OF THE NW 1/4 OF SEC. 21, TWN. 25 N., RGE. 4 E. W.M.

CITY OF SEATTLE, KING COUNTY, WASHINGTON.



LEGEND

- FOUND MONUMENT
- SET NAIL AND WASHER
- SIGN
- FLAG POLE
- SANITARY SEWER MANHOLE
- STORM CATCH BASIN
- STORM MANHOLE
- YARD DRAIN
- ROOF DRAIN
- GAS METER
- BB BASKETBALL HOOP
- TB TETHERBALL POST
- UTILITY POLE WITH STREET LIGHT
- GAS VALVE
- GUY ANCHOR
- UTILITY POWER POLE
- JUNCTION BOX
- FIRE DEPARTMENT CONNECTION
- FIRE HYDRANT
- IRRIGATION CONTROL VALVE
- WATER METER
- WATER VALVE
- CONIFEROUS TREE C=CEDAR
- DECIDUOUS TREE B=BIRCH MAD=MADRONA M=MAPLE U=UNKNOWN CH=CHERRY

- IR — IRRIGATION LINE
- D — STORM LINE
- S — SEWER LINE
- W — WATER LINE
- G — GAS LINE
- P — ELECTRICAL LINE
- T — COMMUNICATION LINE
- OHP — OVERHEAD UTILITIES
- DRAINAGE LINE PER DSO WATER AND SEWER MAP
- SS — SS — SIDE SEWER LINE PER DSO WATER AND SEWER MAP

- ASPHALT
- CONCRETE
- PAVERS/BRICK
- RETAINING WALL

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Project Title:
MONTLAKE ELEMENTARY SCHOOL BOUNDARY AND TOPOGRAPHIC SURVEY

Client:
SEATTLE PUBLIC SCHOOLS

PO BOX 34165
SEATTLE, WA 98124
PAUL WIGHT

Job No.
2210930.50

Issue Set & Date:
JANUARY 12, 2022

DAVID A. POLLENSKE — STATE OF WASHINGTON — 18981 — REGISTERED PROFESSIONAL LAND SURVEYOR

NOTICE
ALTERATION OF THIS DOCUMENT SHALL INVALIDATE THE PROFESSIONAL SEAL AND ENGINEER / SURVEYOR'S CERTIFICATION AS SHOWN HEREON. THE INFORMATION CONTAINED ON THIS PLAN SHALL BE USED ONLY FOR THE PROJECT DESCRIBED IN THE TITLE BLOCK AND SHALL NOT BE USED FOR ANY OTHER PURPOSE, NOR SHALL IT BE USED BY ANY OTHER PERSON OR ENTITY FOR ANY OTHER PROJECT.

Revisions:

Sheet Title:
TOPOGRAPHIC SURVEY

Designed by:	Drawn by:	Checked by:
	GD	DF

Sheet No.
2
2 of 2 Sheets

Appendix E

DAHP GOVERNOR'S EXECUTIVE ORDER 21-02 LETTER AND CULTURAL RESOURCES ASSESSMENT (On-File with SPS)

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

May 12, 2022

Paul Wight
Project Manager
Seattle School District #1
Department of Capital and Planning

In future correspondence please refer to:
Project Tracking Code: 2022-05-03074
Property: Montlake Modernization and Addition
Re: NO Adverse Impact

Dear Paul Wight:

Thank you for contacting the State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) regarding the above referenced proposal. This action has been reviewed on behalf of the SHPO under provisions of Governor's Executive Order 21-02. Our review is based upon documentation contained in your communication.

Based upon the design currently presented to DAHP, we believe the project as currently proposed and designed is likely not to have an adverse impact Property ID: 45722, the Montlake Elementary School, which is listed in the National Register of Historic Places as a contributing resource of the Montlake Historic District. As currently proposed, the new addition with be located behind the existing historic property and will not exceed its existing height. Both of these considerations are critical to ensuring that the existing historic property is able to maintain its historic façade unobstructed, and therefore minimizes the most common adverse impacts for building addition project such this.

We look forward to further consultation as the design progresses. However, if new information about affected resources becomes available and/or the project scope of work changes significantly, please resume consultation as our assessment may be revised. Also, if any archaeological resources are uncovered during construction, please halt work immediately in the area of discovery and contact the appropriate Native American Tribes and DAHP for further consultation.

Thank you for the opportunity to review and comment. Please ensure that the DAHP Project Number (a.k.a. Project Tracking Code) is shared with any hired cultural resource consultants and is attached to any communications or submitted reports. If you have any questions, please feel free to contact me.

Sincerely,

Holly Borth
Preservation Design Reviewer
(360) 890-0174
Holly.Borth@dahp.wa.gov

Appendix F

TRANSPORTATION TECHNICAL REPORT

TRANSPORTATION TECHNICAL REPORT

for the

Montlake Elementary School Modernization and Addition

PREPARED FOR:

Seattle Public Schools

PREPARED BY:

heffron transportation inc
6544 NE 61st Street, Seattle, WA 98115
ph: (206) 523-3939 ◆ www.hefftrans.com

May 24, 2022

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1. INTRODUCTION

This report presents the transportation impact analyses for the Seattle Public Schools' (SPS) proposed addition to Montlake Elementary School. The scope of analysis and approach were based on extensive past experience performing transportation impact analyses for projects throughout the City of Seattle, including numerous analyses prepared for Seattle Public Schools projects. This report documents the existing conditions in the site vicinity, presents estimates of project-related traffic, and evaluates the anticipated impacts to the surrounding transportation system including transit, parking, safety, and non-motorized facilities. These analyses were prepared to support the SEPA Checklist for this project.

At the time of data collection for this analysis in March 2022, Seattle Schools had returned to five-day, in-person learning after the disruption and school closures caused by the COVID-19 pandemic in 2020-21, which affected traffic volumes and travel patterns throughout Seattle and near the site. Some transportation patterns in the City overall, at the school, and within the local site vicinity have not returned to pre-pandemic conditions. Therefore, the analyses were prepared using a combination of traffic data collected for this project in February 2022 and other data collected in the area in 2017 and 2019. The volumes were adjusted to reflect representative normalized (non-pandemic) conditions according to standards and practices recommended by the Institute of Transportation Engineers (ITE)[1] and other industry professionals.[2]

1.1. Project Description

Seattle Public Schools is proposing a new multi-story addition to the existing Seattle Landmark school building on the same site, which is located at 2409 – 22nd Avenue E in Seattle's Montlake Neighborhood. The following sections describe the existing school site and the proposed project.

1.1.1. Existing School Site

The 1.65-acre school site is bounded by 22nd Avenue E on the east, E Calhoun Street on the north, 20th Avenue E on the west, and E McGraw Street on the south. Main school building is located on the eastern portion of the site and most of the western portion of the site is paved with hard-surface play areas and play equipment. There are seven portable buildings with eight classrooms (one double and six single) located west of the main building on the northern part of the paved surface. The existing main school building has about 21,400 square feet (sf) of floor area.[3]

An unstriped paved surface with space for two parked vehicles is located at the northwest corner of the school building and is accessed from a driveway on E Calhoun Street. This area is also used for trash and recycling container storage and pick up. There is also a curb cut on E McGraw Street on the south side of the site. Although vehicular access to the hard surface paly area is possible, both access locations are gated and generally remain closed. A portion of the curb-side frontage on the north side of E McGraw Street (west end) adjacent to the school site is signed for School Bus Only (7-10 A.M. and 1-4 P.M.); similarly, a small segment of curb-side frontage on 22nd Avenue E south end is also signed for school buses during the same times. The project site location and vicinity are shown in Figure 1.

1 ITE, *What a Transportation Professional Needs to Know About Counts and Studies during a Pandemic*, July 2020.
2 Kittelson & Associates, *Estimating Traffic Volumes Under COVID-19 Pandemic Conditions*, April 2, 2020.
3 Source: DLR Group, Existing Building Program Area, April 22, 2022.

SEATTLE PUBLIC SCHOOLS
Montlake Elementary School
Modernization and Addition

Figure 1

Site Location and Vicinity

heffron transportation inc

According to information published in *Building for Learning, Seattle Public Schools Histories, 1862-2000*,[4] the site was first home to Portage School (all portables), which opened with 25 students in 1914. After enrollment growth and a name change to Montlake School, a permanent school building was built and opened on the site in 1924. The building was constructed and arranged so that additions could be constructed later on the north and south. Enrollment peaked in 1935–36 at 487 students. In 1941, Montlake School was changed to a K-6 configuration (7th and 8th grade students were moved to an intermediate center at Meany). Enrollment climbed to 439 in 1956-57 and changed to serve grades K-5 by 1978.

In February 2022, at the time traffic data were collected for this analysis, enrollment was 187 students,[5] which is below the school's reported capacity of 251 students[6] and below its recent peak enrollment of 269 students in 2017. The school currently has 35 employees.[7]

1.1.2. Proposed Site Changes

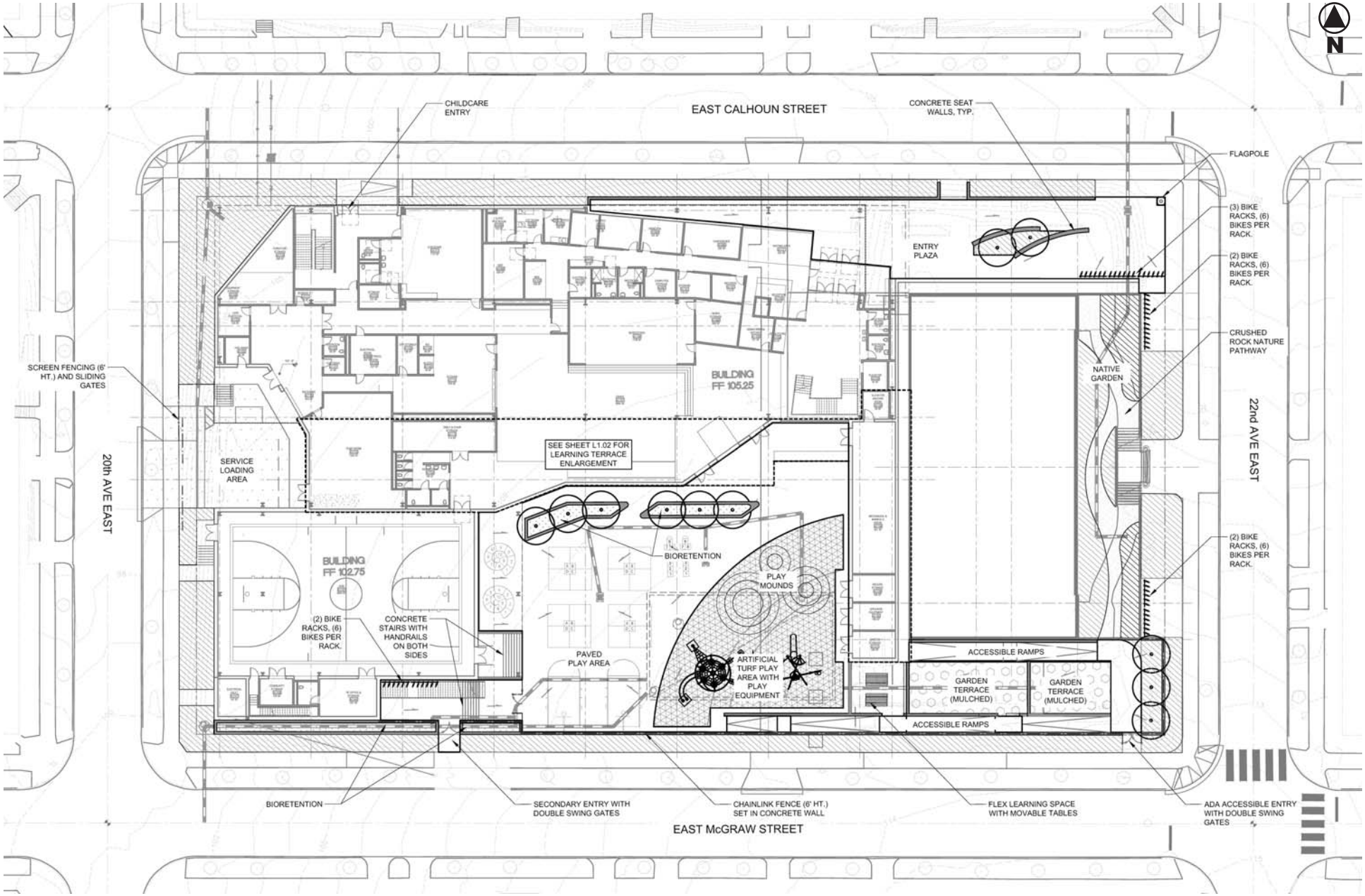
The proposed project would consist of selective demolition to the existing building to accommodate a new multi-story addition, as well as demolition of five existing portable structures, relocation of one existing portable structure off-site, demolition of one existing lunchroom/cafeteria structure, and demolition of one existing greenhouse structure. The project would construct a multi-story school addition with about 65,000 sf on the east side of the existing building. The existing historic building would be modernized to reconfigure the administration area as classrooms, upgrade the educational facilities and materials, replace outdated mechanical and electrical systems, and provide energy efficiency upgrades. The modernized and expanded school would have capacity for up to 500 students in grades Pre-K through 5. In addition, the project would provide a 30-student licensable childcare classroom anticipated to be used for before- and after-school care by a program such as Launch (which is already operating on the site), which is typically for students enrolled at the school. Although not anticipated at this time, that classroom could instead accommodate additional pre-school students. Therefore, this analysis evaluates the school with potential future capacity of up to 530 students in grades Pre-K through 5. With the addition, the project would result in a net increase in capacity of 279 students and an increase of 343 students compared to the enrollment in spring 2022. SPS estimates that total staffing at the school could increase to between 65 and 75 employees[8]—an increase of 30 to 40 compared to current conditions.

The two existing unstriped on-site parking spaces would be eliminated and no on-site parking is proposed with the addition project. The two existing curb cuts (on E McGraw Street and E Calhoun Street) would also be eliminated; delivery/service would be provided from a new mid-block driveway on 20th Avenue E located opposite an existing alley.

On-street school-bus load/unload would be retained along the north side of E McGraw Street; the existing on-street school-bus load/unload zone on the west side of 22nd Avenue E would be eliminated. Curb-side passenger-vehicle load/unload zones may be established along the south side of E Calhoun Street and the west side of 22nd Avenue E through coordination with the Seattle Department of Transportation (SDOT). The proposed site plan is shown in Figure 2.

Construction is planned to begin in summer 2023 with the school re-opening in fall 2025. During construction; the students and staff would be temporarily housed at the John Marshall site. Future analyses (without and with the project) presented in this report reflect year 2025 conditions.

4 Nile Thompson and Carolyn J. Marr; *Building for Learning, Seattle Public Schools Histories, 1862-2000;* 2002.
5 Seattle Public Schools, P223 Enrollment Report, February 2022.
6 Seattle Public Schools, School Capacity Summary, Updated October 16, 2019.
7 Email communication, T. Wang, Feb. 23, 2022.
8 Email communication from T. Wang, Seattle Public Schools, February 23, 2022.



Source: DLR Group, May 5, 2022.

SEATTLE PUBLIC SCHOOLS
Montlake Elementary School
Modernization and Addition

Figure 2

Proposed Site Plan

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2. BACKGROUND CONDITIONS

This section presents the existing and future conditions without the proposed project. The impacts of the proposed project were evaluated against these base conditions. For comparison, and to provide an analysis of potential new traffic and parking impacts, year 2025-without-project conditions assume the existing Montlake Elementary School would continue to operate at its existing enrollment level. The following sections describe the existing roadway network, traffic volumes, traffic operations (in terms of levels of service), traffic safety, transit facilities, non-motorized facilities, and parking (both on- and off-street).

Eight intersections were selected for study based on the site location, attendance area, and travel routes typically used by family drivers, buses, and staff to access and egress the site area. The following study area intersections, listed by type of traffic control, were identified for analysis for both the morning and afternoon peak hours.

Signalized Intersection

- E McGraw Street / 24th Avenue E

Two-Way Stop Controlled Intersections

- E McGraw Street / 22nd Avenue E
- E Calhoun Street / 22nd Avenue E
- E Calhoun Street / 24th Avenue E

Uncontrolled Intersection

- E McGraw Street / 20th Avenue E
- E Calhoun Street / 20th Avenue E

Traffic Circle Controlled Intersection

- E Lynn Street / Boyer Avenue E / 16th Avenue E
- E Lynn Street / 22nd Avenue E

2.1. Roadway Network

The following describes key roadways in the site vicinity. Roadway classifications are based on the City's Street Classification Map.[9] Speed limits are 25 miles per hour (mph) on arterials (unless otherwise signed) and 20 mph on local access streets.

24th Avenue E is a north-south Principal Arterial extending south from the E Louisa Street / East Montlake Place E intersection to E Helen Street where it bends west as Turner Way E to 23rd Avenue E. It is also classified as a Major Transit Route. Near the school, the street has two travel lanes in each direction. There are sidewalks and curbs on both sides. Parallel parking is permitted intermittently on both sides of the roadway south of E McGraw Street. A photo-radar-enforced school zone speed limit of 20 miles per hour (mph) in the vicinity of the school is in effect when the speed zone beacon is flashing.

E Lynn Street is an east-west roadway that extends from 14th Avenue E on the west to 26th Avenue E on the east. The segment west of 19th Avenue E is designated as a Minor Arterial to 14th Avenue E where it bends northwest as Delmar Drive E. That segment is also classified as a Minor Transit Route. East of 19th Avenue E, it is a non-arterial local access street. Near the school, the unstriped roadway accommodates two-way travel with parallel parking on both sides. There are curbs, gutters, and sidewalks on both sides. Its intersection with 19th Avenue E is controlled as an all-way-stop; its intersection at Boyer Avenue E / 16th Avenue E is controlled by a traffic circle with stops on all approaches; and its intersection at 22nd Avenue E is traffic-circle controlled. Its approaches to 24th Avenue E are stop-sign controlled.

22nd Avenue E is a north-south non-arterial local access street that connects from E Roanoke Street on the north to E Howe Street on the south. This unstriped roadway accommodates two-way travel with parallel parking on both sides. There are curbs, gutters, and sidewalks on both sides. Near the school, there is a 20-mph school zone speed limit in effect when children are present.

[9] Seattle Department of Transportation (SDOT), Interactive Street Classification Maps, accessed November 2021.

20th Avenue E is a north-south non-arterial local access street that connects from E Roanoke Street on the north to E Howe Street on the south. This unstriped roadway accommodates two-way travel with parallel parking permitted on both sides. There are curbs, gutters, and sidewalks on both sides. There is a 20-mph school zone speed limit in effect when children are present.

E Calhoun Street is an east-west non-arterial local access street that connects from 19th Avenue E on the west to 26th Avenue E on the east. This unstriped roadway accommodates two-way travel with parallel parking on both sides. There are curbs, gutters, and sidewalks on both sides. Its approaches to 19th, 22nd, and 24th Avenues E are stop-sign controlled. Near the school, there is a 20-mph school zone speed limit in effect when children are present.

E McGraw Street is an east-west non-arterial local access street that connects from 19th Avenue E on the west to 26th Avenue E on the east. This unstriped roadway accommodates two-way travel with parallel parking on both sides. There are curbs, gutters, and sidewalks on both sides. Its approaches to 19th, 22nd, and 24th Avenues E are stop-sign controlled. Near the school, there is a 20-mph school zone speed limit in effect when children are present.

Boyer Avenue E is a northwest/southeast oriented arterial that connects from E Shelby Street on the northwest (where it bends west as Fuhrman Avenue E) to Lake Washington Boulevard E on the southeast. The segment between E Lynn Street and 24th Avenue E is designated as a Minor Arterial; the segments to the northwest and southeast are designated as Collector Arterials. In the vicinity of the school site, the roadway has one travel lane in each direction with parallel parking on both sides. An elongated traffic circle controls its intersection with E Lynn Street / 16th Avenue E with stops on all approaches.

Several documents were reviewed to determine if any planned transportation improvements could affect the roadways and intersections near Montlake Elementary School by 2025 when the school addition would be completed and occupied. These documents are listed below.

City of Seattle's Adopted 2021-2026 and Proposed 2022-2027 Capital Improvement Programs (CIP) [10] – The plans list the ongoing 23rd Avenue Corridor and 23rd Avenue E Vision Zero projects. Phases 1 and 2 of the 23rd Avenue Corridor project were completed in 2020. Phase 3 of that project, which will complete the improvements between John Street and State Route 520 (SR 520), remains on indefinite hold due to funding constraints. The interim Vision Zero project will construct new traffic signals, parking modifications, new curb ramps, traffic calming, speed reduction, pedestrian safety, and transit stop improvements in the Phase 3 project area.

City of Seattle's Pedestrian Master Plan Update [11] ***and Pedestrian Master Plan 5-Year Implementation Plan and Progress Report***[12] – The plans include the area around the school as part of the East Sector's Priority Investment Network identifying missing sidewalks north of the school on E Lake Washington Boulevard and East Montlake Boulevard E. As part of the *Safe Routes to Schools 5-Year Action Plan*[13] (and *Vision Zero*), school safety improvement needs are ranked: Montlake Elementary School is noted for its school zone speed cameras.[14]

Adopted Seattle Bicycle Master Plan (BMP)[15] – The plan proposed improvements along roadways within the site vicinity. Neighborhood greenways were recommended along 22nd/23rd Avenue E and E

[10] City of Seattle, online access April 2020. https://www.seattle.gov/city-budget-office/capital-improvement-program-archives
[11] City of Seattle June 2017.
[12] City of Seattle, December 2019.
[13] Seattle Department of Transportation; *Safe Streets, Healthy Schools and Communities*; Fall 2015.
[14] City of Seattle, online access April 2020. https://www.seattle.gov/transportation/projects-and-programs/safety-first/safe-routes-to-school/5-year-action-plan
[15]. City of Seattle, April 2014.

Calhoun Street adjacent to the school site. An off-street facility is recommended along Montlake Place E connecting from E Calhoun Street to facilities on SR 520. It also lists recommended neighborhood greenways along several other roadways in the vicinity. The ***Seattle Bicycle Master Plan – 2021-2024 Proposed Implementation Plan***,[16] which defines the BMP priorities, was also reviewed. The greenway along 22nd Avenue E was completed in spring 2016 as part of Phase 3 of Central Area North-South greenway project.

The ***Neighborhood Greenways***[17] website (updated February 25, 2021) does not identify any new or upcoming greenway projects near the school site.

Levy to Move Seattle – Workplan Report[18] – This document outlines the Seattle Department of Transportation's (SDOT's) workplan to deliver citywide transportation projects and services funded in part or in full by the *Levy to Move Seattle* (approved by voters in 2015). The nine-year workplan (2016-2024) documents achievements and challenges and sets the agency's plan for future years. Phases 1 and 2 of the 23rd Avenue Corridor Improvements project were completed in 2020.

The 23rd Avenue E Vision Zero Project will make improvements between E Madison Street and E Roanoke Street. It began construction in October 2021 to install skid-resistant surface treatments, enhance transit stops, install a new walk/bike signal at E Lynn Street, modify parking, repair sidewalks, and add new curb ramps and marked crosswalks within the project area. All other roadway and intersection configurations were assumed to remain unchanged for the 2025 analysis in this report.

2.2. Traffic Volumes

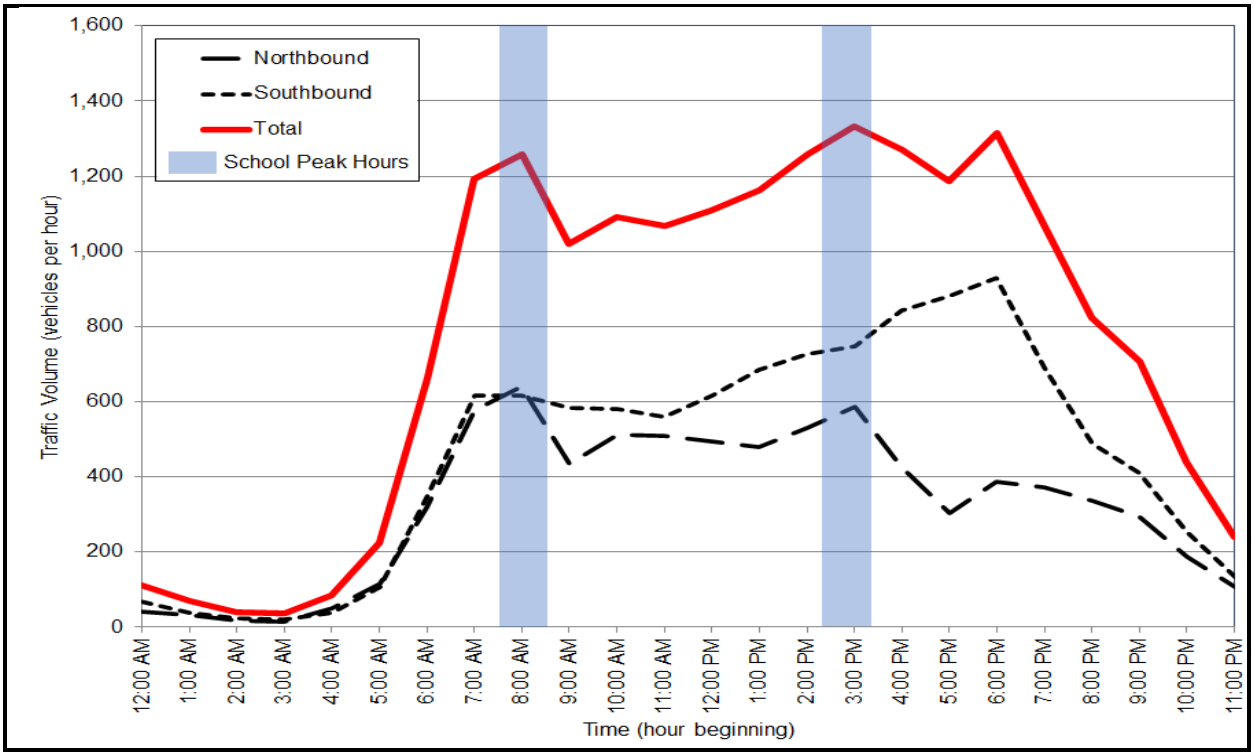
2.2.1. Existing Conditions

At the time of this analysis, the school day at Montlake Elementary School started at 7:55 A.M. and ended at 2:25 P.M. To capture the existing traffic conditions during the current arrival and dismissal peak periods, traffic counts were performed from 7:00 to 9:00 A.M. and from 1:30 to 3:30 P.M. on Tuesday, March 1, 2022 at the eight study-area intersections. The counts indicated that the morning and afternoon peak hours for school traffic occurred from 7:30 to 8:30 A.M. and from 2:15 to 3:15 P.M., respectively.

Data from the 2019 seven-day machine count were compiled to show how volumes in the site vicinity change by time of day. Figure 3 shows the average weekday volumes by hour of the day; the school peak hours are highlighted for reference.

16 SDOT, June 13, 2019.
17 https://www.seattle.gov/transportation/projects-and-programs/programs/greenways-program, April 2020.
18 SDOT, February 2020.

Figure 3. Hourly Traffic Volumes on 24th Avenue E – September 2019



Source: Average weekday volumes from machine counts performed by Idax Data Solutions on 24th Avenue E between E McGraw and E Calhoun Streets, Thursday, September 19 through Wednesday, September 25, 2019.

2.2.2. Historical Traffic Volumes and Effect of COVID-19 Pandemic

Historic traffic data from the City of Seattle Department of Transportation (SDOT) and from Idax Data Solutions were obtained and compiled to document traffic volume patterns prior to the COVID-19 pandemic. Turning movement counts at the E McGraw Street / 24th Avenue E intersection from January 2017 were compared to volumes from a seven-day machine count performed in late September 2019 on 24th Avenue E between E McGraw and E Calhoun Streets. The 2019 data indicated an AM peak hour decline of about 0.8% and a PM peak hour decline of 10.2% compared to the 2017 volume (about 0.3% per year and about 4.2% per year, respectively). The counts performed in March 2022 for this analysis also reflected declines with morning peak hour volumes down by just under 2% (-0.72% per year) and by 6.6% (about -2.6% per year) compared to the pre-pandemic 2019 data.

To reflect normalized (pre-pandemic) existing 2022 conditions, the non-school traffic at study-area intersections was increased by 2% during the morning peak hour and by 6.6% during the afternoon peak hour. Figure 4 shows the normalized existing (2022) traffic volumes for the school peak hours.

2.2.3. Future Without-Project Conditions

Forecasts 2025-without-project traffic volumes were developed using a compound annual growth rate. As described in the previous section, historical traffic data on 24th Avenue E near the site from 2017, 2019, and 2022 indicate volumes have decreased. However, to reflect the possibility of traffic growth in non-school traffic that could occur by 2025, a 1.0% compound annual growth rate was applied to the adjusted 2022 traffic volumes. This rate is within the range of rates used for traffic analyses of other developments in the vicinity and throughout Seattle. Based on a review of Seattle Department of Construction & Inspection's (SDCI's) Property and Building Activity permit map, no development projects permitted in the area that are estimated to contribute noticeable increases in traffic at study intersections by year 2025. Figure 5 shows the 2025-without-project morning and afternoon peak hour traffic volumes.

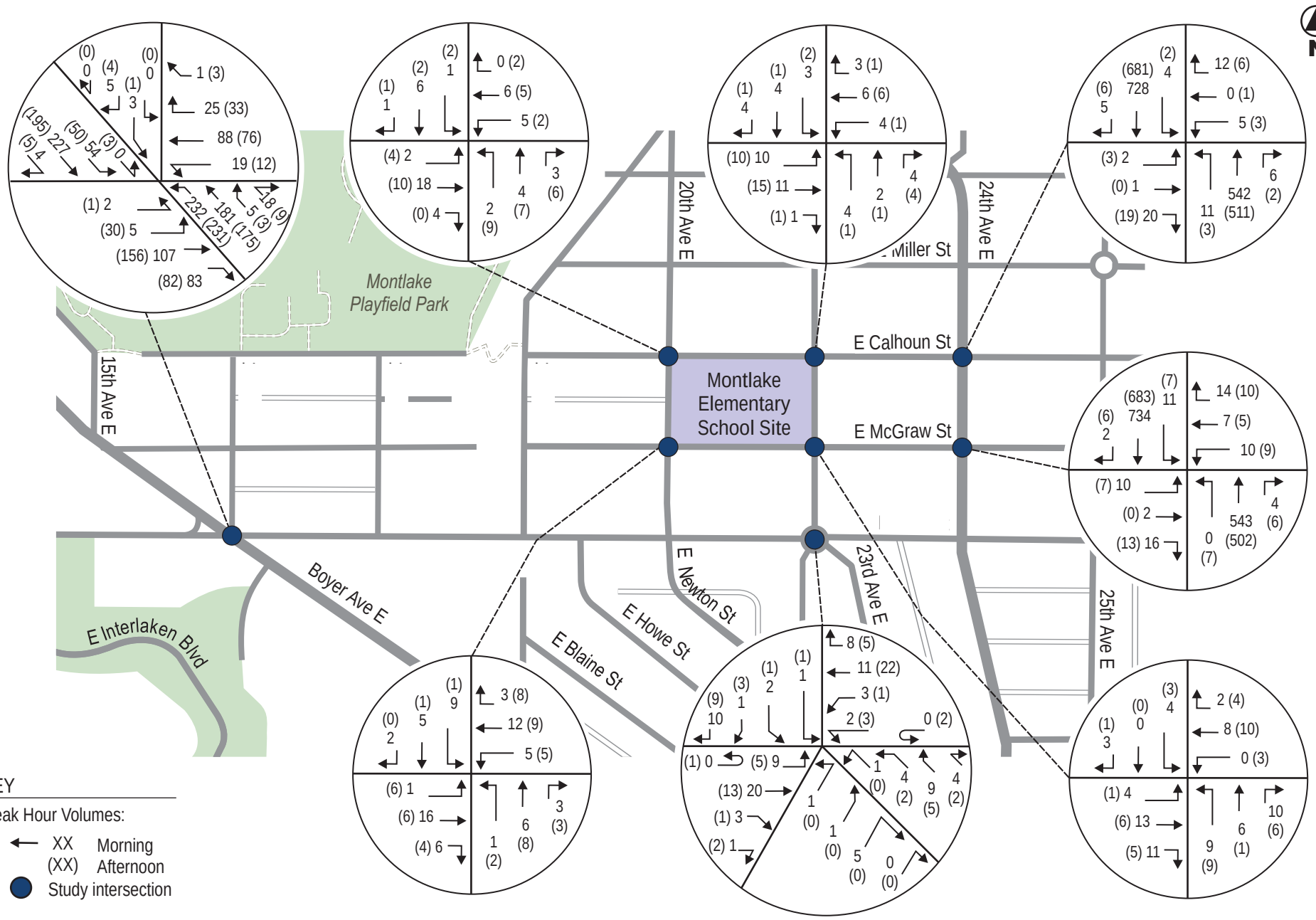


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Figure 4
Normalized Existing (2022) Traffic Volumes
Morning and Afternoon Peak Hours

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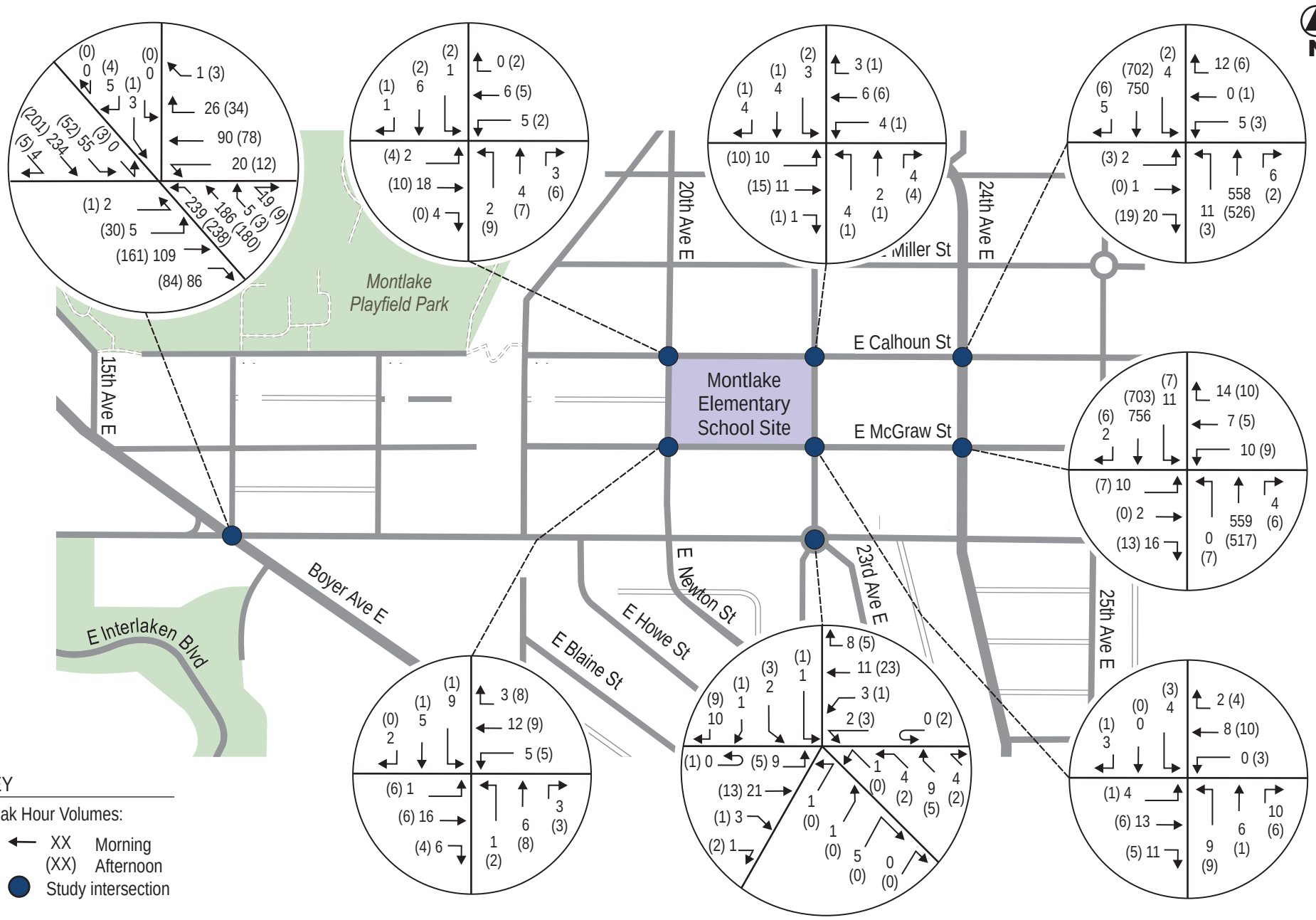

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Figure 5
Forecast 2025-Without-Project Traffic Volumes
Morning and Afternoon Peak Hours

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2.4. Traffic Operations

2.4.1. Off-Site Study Area Intersections

Traffic operations are evaluated based on level-of-service (LOS), which is a qualitative measure used to characterize intersection operating conditions. Six letter designations, "A" through "F," are used to define level of service. LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays. The City of Seattle does not have adopted intersection level of service standards; however, project-related intersection delay that causes a signalized intersection to operate at LOS E or F, or increases delay at a signalized intersection that is projected to operate at LOS E or F without the project, may be considered a significant adverse impact, if increases are greater than 5 seconds. The City may tolerate LOS E/F conditions at unsignalized locations where traffic control measures (such as conversion to all-way-stop-control or signalization) are not warranted or desirable.

Levels of service for the study area intersections were determined using methodologies established in the *Highway Capacity Manual (HCM), 6th Edition.*[19] Appendix A summarizes HCM level of service thresholds and definitions for signalized and unsignalized intersections. The modeling assumptions for existing conditions, including signal timing and phase splits for the signalized intersection, were provided by SDOT.[20] The modeling assumptions for 2025-without-project conditions were modified to ensure compliance with SDOT's new policy for signal timing, which codifies support for mobility while minimizing delay to pedestrians[21] and recent/ongoing implementation of Leading Pedestrian Intervals (LPIs). Levels of service for the study area intersections were determined using the *Synchro 10.3* analysis software. The models reflect existing intersection geometries and channelization; these characteristics were assumed to remain unchanged for future 2025 conditions.

Table 1 summarizes existing and forecast 2025 levels of service without the proposed project for both the morning and afternoon peak hours. These analyses account for school bus trips and pedestrian activity at intersections, as well as the peaking characteristics of school traffic (school drop-off and pick-up primarily occurs during about 20 minutes in the peak hour). As shown, all study-area intersections currently operate at LOS B or better overall during both peak hours. All movements at the unsignalized intersections currently operate at LOS D or better during both periods. The assumed growth in background traffic is estimated to add small amounts of delay (less than two seconds per vehicle) to two of the unsignalized intersections by 2025. Because existing volumes are very low at the remaining unsignalized intersections, the assumed growth rate did not result in noticeable changes to volume forecasts nor any increases in delay by 2025-without the project. The anticipated changes to signal timing to implement LPIs and pedestrian recall for all phases are forecast to result in more noticeable increases in vehicular delay (about 24 seconds in the morning and 13 seconds in the afternoon) at the signalized E McGraw Street / 24th Avenue NE intersection. It is possible that SDOT will not implement pedestrian recall on all phases at this location because of its possible impacts on transit delays, but this assumption reflects worst-case conditions for evaluating potential traffic delays. All intersections are forecast to remain operating at LOS D or better overall during both peak hours in 2025.

[19] Transportation Research Board 2016.
[20] L. Wojcicki, SDOT, March 21, 2022.
[21] SDOT, *Policy for Traffic Signal Cycle Time, and Pedestrian Signal Timing and Actuation*, January 27, 2021. The policy reduces walk speed calculations, and establishes criteria for pedestrian recall phases.

Table 1. Level of Service Summary – Existing and 2025-Without-Project Conditions

Control Type / Intersections	Morning Peak Hour				Afternoon Peak Hour			
	Existing		Without-Project		Existing		Without-Project	
Signalized	LOS [1]	Delay [2]	LOS	Delay	LOS	Delay	LOS	Delay
E McGraw Street / 24th Avenue E	B	11.5	D	35.1	A	9.0	C	22.2
Traffic Circle Controlled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
E Lynn St / Boyer Ave E / 16th Ave E	A	7.5	A	7.8	A	8.5	A	8.9
E Lynne St / 22nd Ave E / 23rd Ave E	A	4.1	A	4.1	A	4.3	A	4.3
Two-Way Stop Controlled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
E Calhoun St / 24th Ave E (overall)	A	1.2	A	1.2	A	0.9	A	0.9
Northbound Left-Turn Movement	A	9.6	A	9.7	A	9.3	A	9.4
Southbound Left-Turn Movement	A	8.9	A	9.0	A	8.8	A	8.8
Eastbound Approach	C	21.3	C	22.3	C	19.0	C	19.7
Westbound Approach	D	27.8	D	29.6	C	23.7	C	24.7
E Calhoun St / 22nd Ave E (overall)	A	7.5	A	7.5	A	7.4	A	7.4
Northbound Left-Turn Movement	A	7.4	A	7.4	A	7.3	A	7.3
Southbound Left-Turn Movement	A	7.3	A	7.3	A	7.3	A	7.3
Eastbound Approach	A	10.0	A	10.0	A	9.7	A	9.7
Westbound Approach	A	9.6	A	9.6	A	9.6	A	9.6
E McGraw St / 22nd Ave E (overall)	A	7.7	A	7.7	A	7.9	A	7.9
Northbound Left-Turn Movement	A	7.9	A	7.9	A	7.5	A	7.5
Southbound Left-Turn Movement	A	7.4	A	7.4	A	7.3	A	7.3
Eastbound Approach	B	10.4	B	10.4	A	9.7	A	9.7
Westbound Approach	B	10.3	B	10.3	A	10.0	A	10.0
Uncontrolled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
E Calhoun St / 20th Ave E (overall)	A	3.3	A	3.3	A	5.5	A	5.5
Northbound Left Turns	A	7.2	A	7.2	A	7.2	A	7.2
Southbound Left Turns	A	7.4	A	7.4	A	7.4	A	7.4
Eastbound Movements	A	9.3	A	9.3	A	9.4	A	9.4
Westbound Movements	A	9.5	A	9.5	A	9.5	A	9.5
E McGraw St / 20th Ave E (overall)	A	3.8	A	3.8	A	4.4	A	4.4
Northbound Left Turns	A	7.4	A	7.4	A	7.4	A	7.4
Southbound Left Turns	A	7.8	A	7.8	A	7.9	A	7.9
Eastbound Movements	A	9.8	A	9.8	A	9.6	A	9.6
Westbound Movements	A	9.9	A	9.9	A	9.8	A	9.8

Source: Heffron Transportation, Inc., April 2022.

1. *LOS = Level of service.*
2. *Delay = Average seconds of delay per vehicle.*

2.4.2. Site Access

The site has two curb-cut driveways—one on E McGraw Street and one on E Calhoun Street. The access on E McGraw Street is gated just behind the sidewalk and typically remains closed. The access on E Calhoun Street provides vehicular access to the small paved area that is used to store trash and recycling dumpsters and currently also has space to park two vehicles. Prior to a fence relocation, three vehicles could be parked in that area. Just beyond this area, the access is gated.

2.5. Parking Supply and Occupancy

On-street parking at and around the Montlake Elementary School site was surveyed to determine the existing parking supply and parking occupancy. The results of those surveys were used to estimate how parking occupancy could be affected by the school addition project (which is presented later in Section 3.4). The following sections describe the parking supply as well as the current parking occupancy and utilization rates.

2.5.1. Methodology and Study Area

Detailed on-street parking studies were performed and supply was documented according to the methodology outlined in the City's Tip #117. Although Tip #117 was created for another purpose, it outlines the City's preferred methodology to determine the number and type of on-street parking spaces that may exist within a defined study area, and how much of that supply is currently utilized at different times of the day.

The study area for the on-street parking analysis included all roadways within an 800-foot *walking* distance from the school site, as is typically required by the City of Seattle. The 800-foot walking distance results in a study area that extends just west of 18th Avenue, south of E Roanoke Street, just west of 25th Avenue E to the east and north of E Howe Street to the south. The study area consists primarily of single-family houses, the majority of which have garages, driveways and/or off-street parking accessed via alleys; however, some residents use on-street parking. Details about parking supply and occupancy are provided in the following sections.

2.5.2. Existing On-Street Parking Supply

The study area was separated into individual block faces, each consisting of one side of a street between two cross-streets. For example, the north side of E McGraw Street, between 20th Avenue E and 22nd Avenue E is one block face (identified as block face 'CM' for this study). The study area and block face designations are shown on Figure 6. Each block face was measured and analyzed to determine the number of on-street parking spaces. First, common street features—such as driveways, fire hydrants, and special parking zones—were noted. No on-street parking capacity was assumed within 30 feet of a signalized or marked intersection, within 20 feet of an uncontrolled intersection, within 15 feet on either side of a fire hydrant, or within 5 feet on either side of a driveway or alley. The remaining unobstructed lengths between street features were converted to legal on-street parking spaces using values in the City's Tip #117. Based on extensive past experience, Heffron Transportation has been observed that the increased popularity of smaller cars and the tendency for drivers to park closer together in areas with higher utilization can result in more available supply than would be suggested by the Tip #117 guidance. Detailed parking supply by block face is provided in Appendix B.

The parking supply survey determined that there are 598 on-street parking spaces within the existing study area. Most of the study-area block faces are within Restricted Parking Zone (RPZ) 1 and limit parking to two hours for those without a Zone 1 permit. Block faces adjacent to the school and others in the study area also have restrictions that prohibit parking on University of Washington football game days (RPZ A). After accounting for school bus restrictions along 22nd Avenue E and E McGraw Street (14 spaces), and peak hour restrictions along 24th Avenue E (9 spaces), the total on-street parking supply is 575 spaces in the early morning period and 598 spaces across all other survey periods. However, nearly 450 of these spaces have time limit restrictions of two-hours or less in the RPZ on school days. Seattle Municipal Code (SMC) *§ 11.16.315 (H) Employee Permits*, allows the City to issue RPZ 1 parking permits to employees of Montlake Elementary School.[22]

[22] Email communication, R Harper, Senior Transportation Planner, Transit and Mobility, SDOT, April 22, 2022.

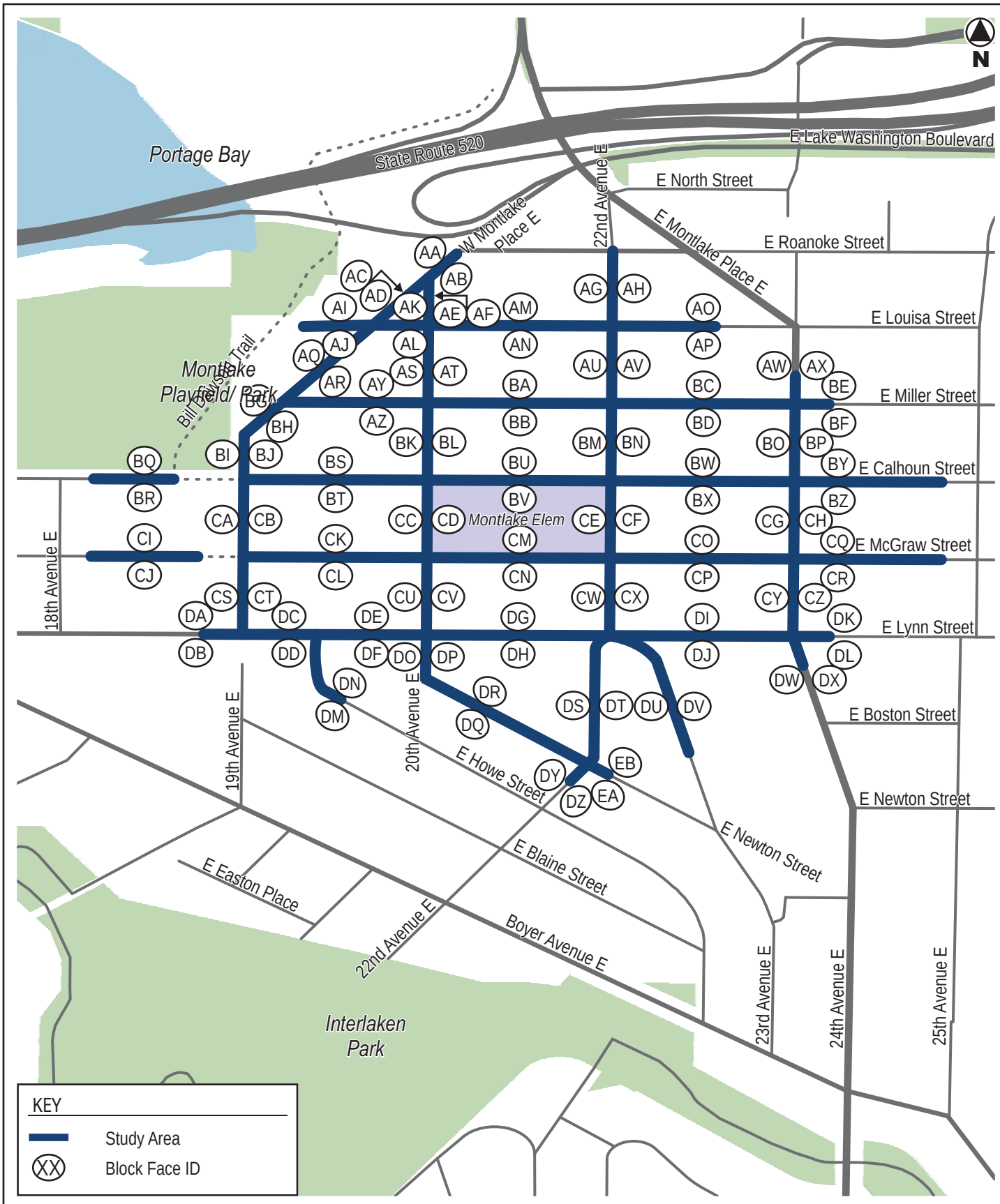

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Figure 6
Study Area for On-Street Parking Utilization Surveys

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2.5.3. On-Street Parking Occupancy

At the time of this study, Seattle Public Schools had returned to in-person learning despite the lingering effects of the COVID-19 pandemic. While some employees were beginning to return to offices in the greater Seattle region, many were still working from home, which likely resulted in higher levels of resident-generated parking demand at and near homes during weekdays.

Parking occupancy counts were performed in late February 2022 to reflect study area conditions at a time when school was not in session (during mid-winter break); counts were performed in March 2022 to reflect conditions with school in session. Occupancy counts were performed at three times each day—during early morning (between 7:00 and 7:45 A.M.) to reflect the time when staff would typically begin to arrive at the school, mid-morning between 10:30 and 11:15 A.M.) when school-day parking demand is typically highest and evening (between 7:30 and 8:15 P.M.) when some school events would typically occur. The mid-winter-break counts were performed Thursday, February 24, 2022; the school-day counts were performed Tuesday, March 8 and Thursday, March 10, 2022. The counts for each day were compiled and averaged for each school day and time period. The results of the parking occupancy surveys are summarized in Table 2. On-street parking utilization was calculated using the methodology described in Tip #117 and is the number of vehicles parked on-street divided by the number of legal on-street parking spaces within the study area or on a specific block face. The study area utilization totals are also summarized in Table 2. For the purpose of evaluating the potential on-street parking impacts associated with the new developments, the City considers utilization rates of 85% or higher to be effectively full.

Table 2. Parking Occupancy Survey Results – February and March 2022

Time Period Surveyed	Parking Supply	Total Vehicles Parked	% Utilization
Weekday Early Morning (7:00 to 7:45 A.M.)			
Tuesday, March 8, 2022	575 [a]	374	65%
Thursday, March 10, 2022	575 [a]	360	63%
Average	575 [a]	*367*	*64%*
Mid-Winter Break, Thursday, February 24, 2022	575 [a]	339	59%
Weekdays Mid-Morning (10:30 to 11:15 A.M.)			
Tuesday, March 8, 2022	598	358	60%
Thursday, March 10, 2022	598	356	60%
Average	598	*357*	*60%*
Mid-Winter Break, Thursday, February 24, 2022	598	305	51%
Weekday Evenings (7:30 to 8:15 P.M.)			
Tuesday, March 8, 2022	598	342	57%
Thursday, March 10, 2022	598	332	56%
Average	598	*337*	*56%*
Mid-Winter Break, Thursday, February 24, 2022	598	326	55%

Source: Heffron Transportation, Inc., March 2022.

a. Parking supply values exclude 14 spaces signed for School Bus Only (7–10 am, 1–4 pm), and 9 spaces signed with peak hour restrictions (7–9 am, and 4–6 pm).

As shown, the surveys determined that parking utilization and ranged between 56% and 64% during all time periods when school was in session. Over mid-winter break, utilization was lower during the early morning and mid-morning time periods reflecting on-street demand generated by the school. Based on the

change in occupancy between the mid-winter break counts and the average of school-day counts along block faces closest to the school, 33 vehicles are estimated to be school-generated demand. On school days, unused parking ranged from 201 and 266 spaces across the three observation periods; however, only 45 unused spaces had no limits on parking duration. Detailed summaries of the on-street parking occupancy by block face for all counts are provided in Appendix B.

2.5.4. On-Site Parking

The two on-site parking spaces located just behind the sidewalk and accessed from E Calhoun Street were both occupied during the early-morning and mid-morning observations, but unused in the evening counts.

2.5.5. Combined School-Day Parking Demand

Most school-related parking demand appears to occur on-street (estimated at 33 vehicles) with two vehicles parked on-site for a total observed demand of 35 vehicles. This is consistent with parking rates from other schools as described later in Section 3.4.

2.6. Traffic Safety

Collision data for the study-area intersections and roadway segments were obtained from SDOT's Open Data Portal for the period between January 1, 2018 and the most recent records available as of December 1, 2021 (3.9 years). The data were examined to determine if there are any unusual traffic safety conditions that could impact or be impacted by the proposed project. Unsignalized intersections with five or more collisions per year and signalized intersections with 10 or more collisions per year are considered high collision locations by the City. Table 3 summarizes the collision data.

Table 3. Collision Summary (January 1, 2018 through December 1, 2021)

Intersection	Rear-End	Side-Swipe	Left Turn	Right Angle	Ped / Cycle	Other [a]	Total for 4 Years	Average/ Year
E Lynn Street / Boyer Avenue E	0	0	1	0	1	3	5	1.3
E McGraw Street / 20th Avenue E	0	0	0	3	0	0	3	0.8
E Calhoun Street / 24th Avenue E	0	0	0	1	0	0	1	0.3
E McGraw Street / 24th Avenue E	0	0	0	1	0	0	1	0.3
E Calhoun Street / 22nd Avenue E	0	0	0	0	0	0	0	0.0
E Calhoun Street / 20th Avenue E	0	0	0	0	0	0	0	0.0
E McGraw Street / 22nd Avenue E	0	0	0	0	0	0	0	0.0
E Lynn Street / 22nd Avenue E	0	0	0	0	0	0	0	0.0
Roadway Segment	**Rear-End**	**Side-Swipe**	**Left Turn**	**Right Angle**	**Ped / Cycle**	**Other**	**Total for 4 Years**	**Average/ Year**
E Calhoun Street between 20th and 22nd Avenues E	0	0	0	0	0	0	0	0.0
E McGraw Street between 20th and 22nd Avenues E	0	0	0	0	0	0	0	0.0
20th Avenue E between E McGraw and E Calhoun Streets	0	0	0	0	0	0	0	0.0
22nd Avenue E between E McGraw and E Calhoun Streets	0	0	0	0	0	0	0	0.0

Source: City of Seattle Department of Transportation, https://data-seattlecitygis.opendata.arcgis.com/datasets/collisions, December 1, 2021.

a. *'Other' collisions included two vehicles striking fixed objects off the roadway and, one vehicle struck an object in the roadway.*

As shown, all of the study area intersections had fewer than two collisions per year. There was one reported collision involving a moving vehicle and a pedalcyclist. None of the studied locations meet the criteria for a high-collision location, and none of the reported collisions resulted in fatalities. Overall, these data do not indicate any unusual traffic safety conditions.

2.7. Transit Facilities and Service

King County Metro Transit (Metro) provides bus service in the area. The closest bus stops are located about 550 feet east of the site on 24th Avenue E. The stop (with shelter) for northbound buses is located immediately south of E McGraw Street; the stop (with shelter) for southbound buses is located about 120 feet north of E McGraw Street. These stops are served by Metro Routes 43, 48, and 988, which are described below.

> **Route 43** provides daily service to and from the University District, Montlake, Capitol Hill, and Downtown Seattle with weekday headways (time between consecutive buses) ranging from 10 minutes during peak commute periods to 60 minutes during off-peak hours.
>
> **Route 48** provides daily service to and from the University District, Montlake, Capitol Hill, and Central District with weekday headways of 15 minutes from 5:45 A.M. to 9:00 P.M., and 30 minutes after 9:00 P.M.

In January 2017, King County Metro adopted *Metro Connects*,[23] the 25-year vision plan that will serve as the guiding policy framework for future improvements to the transit network. The plan identifies some changes to routes serving the study area, but none are expected to be in place by 2025 when the school addition project is complete.

School bus transportation is made available to Montlake Elementary School students who qualify for transportation. The existing school is served by two full-size school buses and two smaller Special Education (SPED) buses.[24]

2.8. Non-Motorized Transportation Facilities

As described in the *Roadway Network* section, all roadway segments immediately near the school have sidewalks. Four of the eight study area intersections have marked crosswalks as listed below.

- E McGraw Street / 24th Avenue E (signalized): *crosswalks on all legs*
- E McGraw Street / 22nd Avenue E (unsignalized): *crosswalks on east and north legs*
- E Lynn Street / 22nd Avenue E (traffic circle): *crosswalk on west leg*
- E Lynn Street / Boyer Avenue E / 16th Avenue E: *crosswalks on all legs*

The count data indicated relatively high levels of pedestrian activity at intersections around the school during the analysis hours. The E McGraw Street / 22nd Avenue E intersection experienced the highest pedestrian volume with 149 pedestrian crossings at this location during the morning peak hour and 126 in the afternoon peak hour. The highest volume of bicycles occurred along 24th Avenue E with 14 in the morning (all northbound over two-hours) and 9 in the afternoon (4 northbound, 1 eastbound, 2

[23] King County Metro, adopted January 2017.
[24] Email communication, T. Wang, February 23, 2022.

southbound, and 2 westbound at E McGraw Street). A total of 7 bicycles used 22nd Avenue E over the two-hour morning peak period and 4 during the afternoon period. It is noted that the counts were conducted in March when weather on the count day had intermittent light rain and above average temperatures. The school Principal indicated that three to five students consistently ride bikes to and from school and that increases to about eight on peak days.[25]

The City of Seattle's current *CIP* and the *Safe Routes to School 5-Year Action Plan for Seattle* were reviewed to determine if any pedestrian facility improvements are planned in the area. The proposed *2022-2027 CIP* includes funding over the next five years to advance the *Pedestrian Master Plan*[26] recommendations. However, no specific planned non-motorized facility improvements are listed for the study area roadways or intersections in the *CIP*. *Seattle Pedestrian Master Plan 2022-2024 Implementation Plan Report*[27] does not list any planned improvements within the study area. The 23rd Avenue E Vision Zero Project will make improvements between E Madison Street and E Roanoke Street, including: installation of a new walk/bike signal at E Lynn Street, sidewalk repairs, new curb ramps, and marked crosswalks within the project area.

The *BMP* identifies planned bicycle infrastructure improvements with neighborhood greenways recommended along 22nd/23rd Avenue E and E Calhoun Street adjacent to the school site. An off-street facility is recommended along Montlake Place E connecting from E Calhoun Street to facilities on SR 520. The ***Seattle Bicycle Master Plan – 2021-2024 Proposed Implementation Plan***, noted that the greenway along 22nd Avenue E was completed in spring 2016 as part of Phase 3 of Central Area North-South greenway project.

25 Email communication, J. Pearson – Principal and I. Auty – Teacher, Montlake Elementary School, April 19, 2022.
26 SDOT, June 2017.
27 SDOT, 2021.

3. PROJECT IMPACTS

This section describes the conditions that would exist with the Montlake Elementary School Addition project complete and the school operating with up to 530 students. Vehicle trip estimates associated with the school addition were added to the 2025-without-project traffic volume forecasts. Level of service analyses were performed to determine the proposed project's impact on traffic operations in the study area. Parking demand and the potential change to on-street parking utilization was also estimated.

3.1. Roadway Network

The existing unstriped parking area with room for two vehicles that is accessed from E Calhoun Street would be eliminated. A delivery / service access is proposed mid-block on 20th Avenue E opposite the existing alley. Frontage improvements would consist of improving existing curb ramps to meet current City code, sidewalk maintenance, a new curb cut for the proposed service access and improvements required for school bus loading and unloading areas. The existing curb cuts on E McGraw Street and E Calhoun Street would be removed and the curb line reinstalled, according to SDOT standards. The on-street school-bus load/unload zone would be retained along E McGraw Street; the existing school bus load zone on 22nd Avenue E is not expected to be retained. It is anticipated that SPS will pursue a code departure renewal for off-site school-bus loading.

Curb-side passenger-vehicle drop-off/pick-up may be established along the south side of E Calhoun Street and the west side of 22nd Avenue E and family-vehicle load/unload would continue to occur with the use of on-street parking in the surrounding residential neighborhood. However, it is acknowledged that as part of the City's *Seattle Transportation Plan* process (launched in March 2022), SDOT is reviewing and may in the longer-term expand its school-streets program that closes neighborhood streets around some schools to pass-through traffic, including parents. This program has a goal of reducing traffic congestion in front of schools, encouraging families to walk or bike to school, and/or park a few blocks away and walk, dispersing the vehicular traffic impacts of the school and added enrollment. To reflect worst-case conditions for evaluating potential impacts, this analysis reflects the current patterns with vehicular activity more concentrated adjacent to and near the school site.

3.2. Traffic Volumes

The proposed project could generate new vehicular, pedestrian, and bicycle activity on the surrounding transportation network. The school is expected to have an enrollment capacity of up to 530 students, and is expected to generate an increase in daily and peak hour traffic compared to existing conditions. The following describes the method used to estimate project-generated traffic.

3.2.1. School Trip Generation

Trip generation estimates for school projects are generally developed using one of two methods. For new schools, rates published in the ITE's *Trip Generation Manual*[28] can be applied. For modernizations, replacement, and/or expansions of existing schools, actual counts of the existing school can be used. Trip generation estimates were derived from the video traffic counts performed at surrounding intersections and along the roadways adjacent to the school. The resulting estimates were compared to published trip generation rates.

Based on the data collected, the school currently generates an estimated 0.70 trips per student in the morning peak hour and 0.44 trips per student in the afternoon peak hour. The rates are similar to average rates published for Elementary Schools (Land Use 520) in the *Trip Generation Manual* (0.75 trips per student in the morning peak hour and 0.45 trips per student in the afternoon peak hour), and are generally comparable to rates derived from counts at other Seattle elementary schools. Since these rates were

[28] ITE, 11th Edition, September 2021.

derived specifically for the existing school, they are most appropriate for use in evaluating future conditions with the Montlake Elementary School Addition and added enrollment capacity.

The derived rates were applied to estimate trip generation by the expanded Montlake Elementary School at its proposed new enrollment capacity (530 students including the proposed new pre-school component). Table 4 presents the resulting trip generation estimates, which include school bus trips, employee trips, and family-vehicle trips. No change to the number of school buses serving the site is expected.[29] These estimates account for trips associated with the pre-school and before- and after-school care components, although many of those trips may occur outside of the peak hours for the school. The net change in trips was derived by comparing the trips with the proposed expansion to those that existed with the enrollment level in February 2022. This is a worst-case condition since the current enrollment is lower than the school's capacity as well as historic enrollment.

Table 4. Montlake Elementary School Addition Project – Trip Generation Estimates

Site Condition	Enrollment	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Montlake ES with Addition	530 students [a]	207	161	368	110	125	235
Existing Montlake ES	187 students [b]	73	57	130	39	44	83
Net Change	343 students	134	104	238	71	81	152

Source: Heffron Transportation, Inc., April 2022.

a. Potential future capacity of school with Pre-K addition.

b. Enrollment of the existing school at the time of site traffic counts; SPS P223 Enrollment Report, Feb. 2022.

3.2.2. Trip Distribution & Assignment

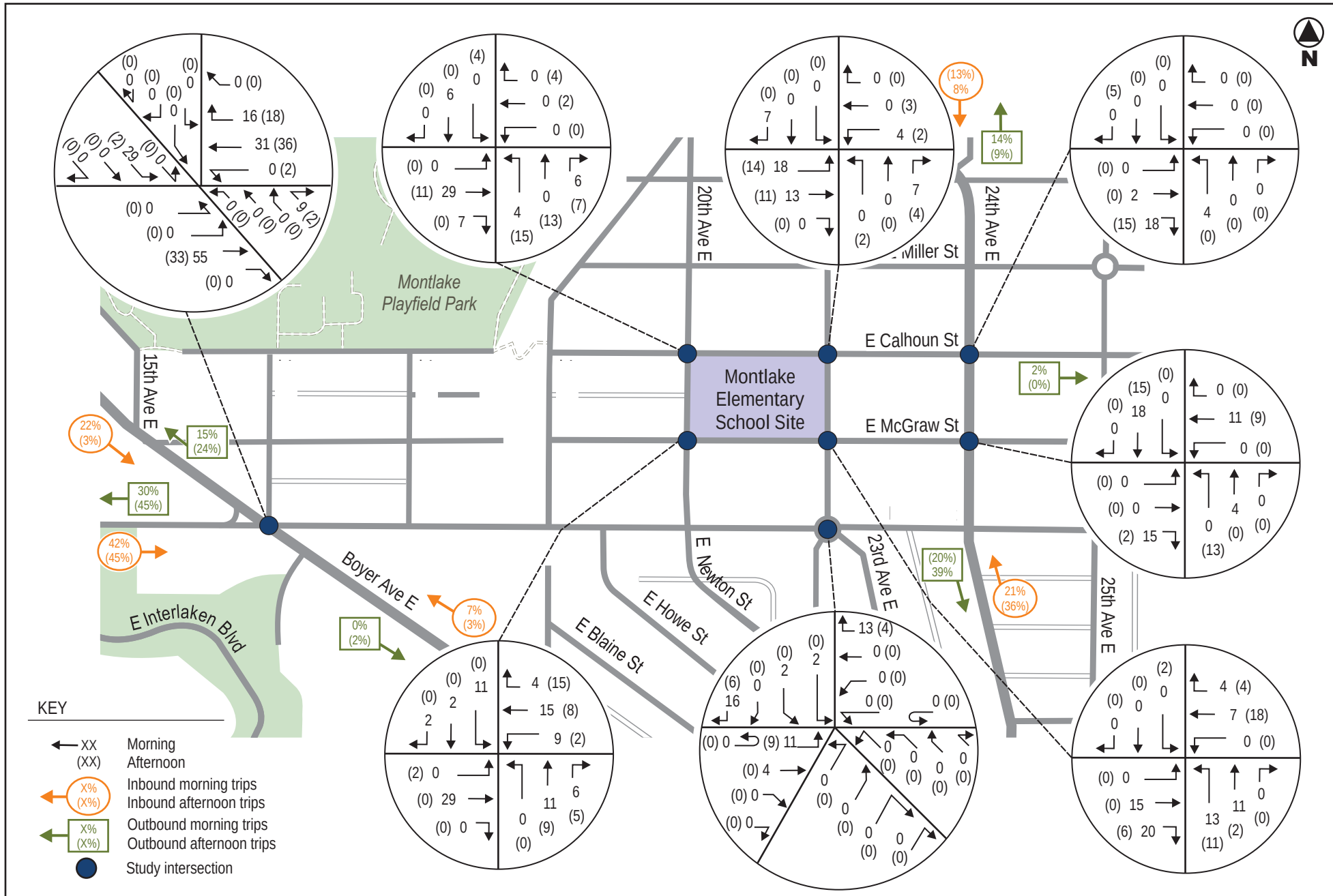
The expanded Montlake Elementary School is expected to accommodate growth largely within the existing enrollment area for the school. Trip distribution patterns for the added elementary school trips within the project study area were developed based on a combination of resources including: 1) the school's attendance area; 2) population density data in census tracks within the subsectors of school's attendance area; 3) employment location of residents living within the school's attendance area from *OnTheMap*,[30] 4) Google Maps predictive travel-route and travel-time mapping resource; and 5) traffic counts and directional patterns at intersections adjacent to the site. The resulting trip patterns reflect typical habits of some family drivers linking student drop-off and pick-up trips with trips to and from work or other destinations. For existing, without-, and with-project conditions, most of the morning and afternoon peak hour trips consist of passenger vehicles (for student drop off and pick up) and school buses with some trips generated by teachers and staff.

School buses would use westbound E McGraw Street to access the bus loading area adjacent to the school. Family-vehicle drivers are expected to use curb-side areas adjacent to the school along E Calhoun Street, 22nd Avenue E, and on-street parking within the surrounding neighborhood.

Figure 7 shows the estimated net changes in traffic at the study intersections along with the project trip distribution percentages for both the morning and afternoon peak hours. The net changes in peak hour trips were combined with the forecast 2025-without-project traffic volumes to reflect future conditions with the expanded school. Figure 8 shows the forecast 2025-with-project morning and afternoon peak hour traffic volumes.

[29] Email communication, T. Yang, February 23, 2022.

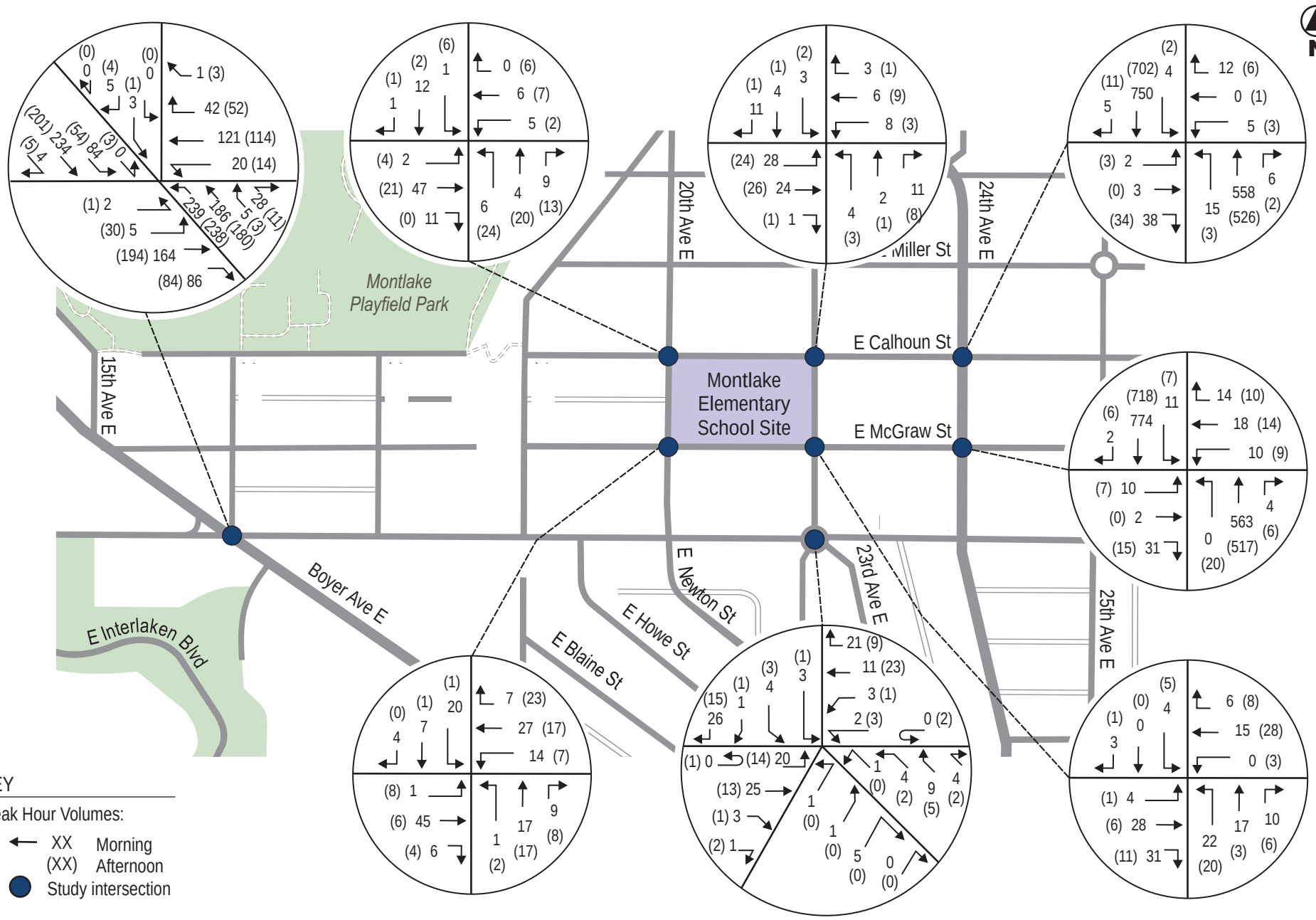
[30] Version 6, United States Census Bureau, web-based mapping and reporting application, https://onthemap.ces.census.gov/, accessed March 2021.



SEATTLE PUBLIC SCHOOLS
Montlake Elementary School
Modernization and Addition

Figure 7
Trip Distribution and Net New Project Trips
Morning and Afternoon Peak Hours

heffron transportation inc



SEATTLE PUBLIC SCHOOLS
Montlake Elementary School
Modernization and Addition

Figure 8
Forecast 2025-With-Project Traffic Volumes
Morning and Afternoon Peak Hours

heffron transportation inc

3.3. Traffic Operations

Intersection levels of service for forecast 2025-with-project conditions were evaluated using the same methodology described previously. The additional enrollment capacity could result in increased pedestrian trips, crossings, and bicycle activity at the nearby study intersections. The operational analyses accounted for these potential increases. Table 5 shows the results of the analysis; levels of service for the without-project conditions are provided for comparison.

Table 5. Level of Service Summary – Forecast 2025-Without- and With-Project Conditions

Control Type / Intersections	Morning Peak Hour				Afternoon Peak Hour			
	Without-Project		With-Project		Without-Project		With-Project	
Signalized	LOS [1]	Delay [2]	LOS	Delay	LOS	Delay	LOS	Delay
E McGraw Street / 24th Avenue E	D	35.1	D	38.1	C	22.2	C	22.9
Traffic Circle Controlled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
E Lynn St / Boyer Ave E / 16th Ave E	A	7.8	A	9.2	A	8.9	A	10.0
E Lynne St / 22nd Ave E / 23rd Ave E	A	4.1	A	4.5	A	4.3	A	4.3
Two-Way Stop Controlled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
E Calhoun St / 24th Ave E (overall)	A	1.2	A	2.1	A	0.9	A	1.3
Northbound Left-Turn Movement	A	9.7	A	9.7	A	9.4	A	9.4
Southbound Left-Turn Movement	A	9.0	A	9.0	A	8.8	A	8.8
Eastbound Approach	C	22.3	D	25.6	C	19.7	C	19.6
Westbound Approach	D	29.6	E	35.5	C	24.7	D	26.3
E Calhoun St / 22nd Ave E (overall)	A	7.5	A	9.5	A	7.4	A	9.0
Northbound Left-Turn Movement	A	7.4	A	7.7	A	7.3	A	7.6
Southbound Left-Turn Movement	A	7.3	A	7.5	A	7.3	A	7.5
Eastbound Approach	A	10.0	B	12.7	A	9.7	B	11.4
Westbound Approach	A	9.6	B	11.3	A	9.6	B	10.9
E McGraw St / 22nd Ave E (overall)	A	7.7	B	11.7	A	7.9	B	10.5
Northbound Left-Turn Movement	A	7.9	A	8.7	A	7.5	A	8.0
Southbound Left-Turn Movement	A	7.4	A	7.7	A	7.3	A	7.5
Eastbound Approach	B	10.4	C	15.7	A	9.7	B	11.3
Westbound Approach	B	10.3	B	13.8	A	10.0	B	13.5
Uncontrolled	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
E Calhoun St / 20th Ave E (overall)	A	3.3	A	2.8	A	5.5	A	5.5
Northbound Left Turns	A	7.2	A	7.2	A	7.2	A	7.2
Southbound Left Turns	A	7.4	A	7.7	A	7.4	A	7.4
Eastbound Movements	A	9.3	B	10.1	A	9.4	A	9.4
Westbound Movements	A	9.5	B	10.6	A	9.5	A	9.5
E McGraw St / 20th Ave E (overall)	A	3.8	A	4.7	A	4.4	A	4.4
Northbound Left Turns	A	7.4	A	7.6	A	7.4	A	7.4
Southbound Left Turns	A	7.8	A	8.3	A	7.9	A	7.9
Eastbound Movements	A	9.8	B	12.3	A	9.6	A	9.6
Westbound Movements	A	9.9	B	13.3	A	9.8	A	9.8

Source: Heffron Transportation, Inc., April 2022.

1. *LOS = Level of service.*
2. *Delay = Average seconds of delay per vehicle.*

As shown, all of the study-area intersections are forecast to remain operating at LOS D or better overall in 2025 with the proposed school addition project. The added vehicular traffic as well as increases in pedestrian activity around the school during peak hours due to the larger enrollment capacity is expected to add some delay to all study-area intersections. However, the project-related increases in delay are forecast to be less than 8 seconds per vehicle and all movements at the unsignalized intersections would continue to operate at LOS E or better. As is typical in school areas during peak conditions—some congestion around the school would likely occur for about 20 minutes before and after school. However, the project would not result in significant adverse impacts to study area traffic operating conditions.

3.4. Parking Supply and Demand

The project would eliminate two unstriped on-site parking spaces and the vehicles that currently park there would be displaced to on-street parking in the site vicinity. The school would continue to have less off-street parking than would be required by Seattle land use code. As part of the building permit approval process for the project, SDCI is anticipated to initiate a Development Standard Departure process with the Seattle Department of Neighborhoods to review this and any other code departures requested.

The school's frontage along E McGraw Street that currently prohibits parking during peak periods on school days, would not substantially change with project; the bus load zone on 22nd Avenue E is planned to be eliminated, which could make available curb-side spaces for parking. A portion of the school frontages along E Calhoun Street and E 22nd Street may be designated for passenger-vehicle load/unload on school days during peak times (e.g., 7:00 to 10:00 A.M. and 1:00 to 4:00 P.M.). If so, these areas could continue to be used for on-street parking outside of these restricted times and on non-school days.

3.4.1. School Day Parking

School-day parking at elementary schools is primarily influenced by staffing levels and family-volunteer activity. With the expanded school at its increased enrollment capacity (530 students), the school could have up 65 to 75 total employees (30 to 40 additional compared to existing staffing). Future parking demand estimates were developed based on studies at similar elementary schools in the area and rates published by ITE. Observations performed by Heffron Transportation at numerous Seattle elementary schools indicate school-day parking demand rates ranging from 1.06 to 1.23 vehicles parked per employee. ITE's *Parking Generation*[31] includes rates of 0.13-vehicles-per-student and 0.95-vehicles-per-employee. Based on the range of rates available, the proposed project with the enrollment capacity and staffing increase, the expanded school could generate an additional parking demand of 30 to 57 vehicles. As detailed previously, on-street parking within the site vicinity averages between 56% and 64% occupied on school days with between 201 and 266 unused spaces across the three observation periods, and the majority of the unused spaces are within the RPZ that restricts parking duration to two hours or less for those who do not have a permit. City-code allows employees of Montlake Elementary School to obtain RPZ 1 permits to park on-street in the vicinity. Therefore, both the increase in short-term parking associated with school visitors as well as increased staff parking could be accommodated by unused supply, and typical utilization is estimated to remain between 65% and 71%.

3.4.2. Evening Event Parking

The school is expected to continue hosting evening events periodically throughout the school year. In general, evening events are held between about 5:30 or 6:00 P.M. and 8:00 P.M. Evening events typically occur about once per month or once every other month with attendance that can range from 50 to over 300 people. The types of events typically held at elementary schools are listed below.

[31] ITE, 5th Edition, January 2019.

- **Large School Events** – Curriculum Night (Open House) is held once per year in the fall and can have the highest attendance. Other occasional events could consist of concerts or performances, Literacy Night, Math Night, Art Walk, and Movie Nights that each may draw about 100 attendees. Some of the larger events have staggered arrivals and not all attendees are on site at once, while others have fixed start and end times and all attendees are on site simultaneously.
- **PTA Meetings** – PTA meetings may occur once per quarter with about 50 attendees.
- **Community Use** – The site may be scheduled for use by community groups (e.g., Cub Scouts, Boy Scouts, Brownies, etc.) or recreational sports that may occur in classrooms, the lunchroom, gymnasium, or other areas of the school. These typically have relatively small attendance of 10 to 50, but may occur more frequently.

For larger events, there are usually between 3.0 and 3.5 persons attending for each parked vehicle (the higher rate is more common for larger events). This rate accounts for higher levels of carpooling (parents and children in a single vehicle) as well as drop-off activity that does not generate parked vehicles. At these rates, the larger events (those other than Curriculum Night) could generate parking demand between 45 and 120 vehicles. Based on the on-street parking utilization analysis presented previously, there were over 260 on-street spaces available on a non-event night, which could accommodate those events. Due to the relative infrequency of those events (one per month or every other month), the increase in demand associated with the addition would not represent a significant adverse impact.

With the expanded school at its planned capacity and with no measures to reduce demand, the largest event—Curriculum Night—is likely to cause on-street parking within the study area to be full or to have demand that extends beyond the 800-foot study area. To mitigate this potential impact, when the school reaches an enrollment level of 300 or more, it should identify additional parking supply (such as parking at a nearby church and/or the Montlake Community Center to the northwest) and/or modify the event to reduce total peak demand by separating it into two sessions or into two nights based on grade levels (as occurs at some other Seattle elementary schools). These two key elements of the large-event plan—identifying additional off-street parking and/or splitting the event—can be employed to maintain on-street parking utilization below 85%. The school should also develop a neighborhood communication plan to inform nearby neighbors of large events each year—those expected to draw attendance of 500 or more.

3.5. Traffic Safety

The collision data provided for the study area did not indicate any unusual collision patterns that would impact or be impacted by the proposed project. The school expansion is expected to increase traffic and pedestrian traffic activity around the school site. However, the existing measures implemented around the school, including school-zone speed limits, speed enforcement cameras, are expected to continue. The project is not expected to result in significant adverse safety impacts.

3.6. Transit

School bus service would continue with the proposed project, and as noted previously, no change to the number of school buses is anticipated with the project. On-street school-bus load/unload would be retained along the north side of E McGraw Street; the existing on-street school-bus load/unload zone on the west side of 22nd Avenue E is planned to be eliminated.

Some transit trips may be generated by the teachers or staff at the site; however, the traffic estimates do not rely on reductions in auto trips to account for any staff transit usage. The closest bus stops are located on 24th Avenue E, one block east of the site. The project is not expected to result in adverse impacts to transit facilities or service.

3.7. Non-Motorized Transportation Facilities

Montlake Elementary School, with increased enrollment capacity, is expected to generate some additional pedestrian trips within the site vicinity. It is anticipated that the largest increases in pedestrian activity would occur along 22nd Avenue E, E Calhoun Street, and E McGraw Street adjacent to the school. There may also be increases in bicycle trips within the site vicinity due to the proposed project. The project proposes parking for up to 54 bicycle (30 long-term spaces and 24 short-term spaces). The project design team anticipates that a code departure for less-than-required bicycle parking may be pursued.

3.8. Short-term Impacts from Construction

The school would be closed during construction, which is planned to start in summer 2023, and end in August 2025 when the school is planned to be ready for occupancy and reopen in fall 2025. During construction, students would be temporarily accommodated in the John Marshall School building located at 520 NE Ravenna Boulevard east of Green Lake.

The construction effort would include demolition and earthwork that would generate truck traffic to and from the site. It is estimated that the proposed project would require removal of approximately 17,000 cubic yards (cy) of material associated with demolition, stripping, grading and excavation for buildings and a detention vault. Approximately 700 cy of fill material would be required for vault backfill and finish site grading.[32] Assuming an average of 20-cubic yards per truck (truck/trailer combination), the export could generate about 885 truckloads over the duration of the project. The construction effort is anticipated to start in summer 2023 with hazardous material abatement; demolition of existing portables, cafeteria, greenhouse; hardscape demolition; excavation; shoring; and geothermal well installation. These activities are anticipated to occur over 16 to 20 weeks. If the transport of removed materials (demolition and excavated earth) is assumed to occur over six to eight weeks during that period, it would generate about 25 truckloads per day and an average of about 3 truckloads per hour (3 trucks in and 3 trucks out) on a typical eight-hour construction work day. This volume of truck traffic would be noticeable to residents living adjacent to the site, but is not expected to result in adverse impacts to traffic operations in the site vicinity. Construction access for trucks is expected to occur from E McGraw Street. Overall site-generated traffic during construction is expected to be lower than conditions with the school operating normally when students are on campus.

The construction of the project would also generate employee, equipment, and material delivery trips to and from the site. It is anticipated that construction workers would arrive at the construction site before the AM peak traffic period on local area streets and depart the site prior to the PM peak period; construction work shifts for schools are usually from 7:00 A.M. to 3:30 P.M., with workers arriving between 6:30 and 6:45 A.M., but not starting work until 7:00 A.M. The number of workers at the project site at any one time would vary depending upon the construction element being implemented. Parking is expected to occur on site during the first phase of construction (abatement, demolition, site clearing, and geo-thermal well installation). During the second phase, (building renovation and new construction), parking is expected to occur in a combination of locations including in some limited on-site parking, street parking adjacent to the site, and possibly leasing remote parking (e.g., at the Greek Orthodox Church located to the southwest).

[32] Email communication, DLR Group, April 8, 2022.

4. FINDINGS AND RECOMMENDATIONS

The following sections summarize the findings and recommendations of the analysis.

4.1. Short-Term Conditions – Construction

- The school-addition project is proposed to begin construction during summer 2023 with occupancy of the expanded school in fall 2025. During the construction effort, Montlake Elementary School would be temporarily relocated to the John Marshall School building.
- Earthwork export is estimated to generate about 25 truckloads per day and an average of about 3 truckloads per hour (3 trucks in and 3 trucks out) on a typical eight-hour construction work day. This volume of truck traffic would be noticeable to residents living adjacent to the site, but is not expected to result in adverse impacts to traffic operations in the site vicinity. Construction access for trucks is expected to occur from E McGraw Street. Since students would be located off-site for the duration of the construction effort, overall site-generated traffic is expected to be lower than conditions with the school operating normally.
- Construction employee parking is expected to occur on site during the first phase of construction; and in a combination of locations (on-site parking, street parking, and possibly leasing remote parking) during the second phase.

It is recommended that the contractor and SPS develop a Construction Transportation Management Plan. Details to be included in this plan are described in Section 4.3.

4.2. Long-Term Conditions – Operations

- The proposed addition project is expected to increase the student capacity to 530 students (up from its current enrollment of 187 students) and could have up to 65 to 75 employees (up from the current 35 employees).
- At the proposed capacity and compared to the site's current enrollment, the expanded school is projected to generate a net increase of 238 trips (134 in, 104 out) during the morning peak hour (from 7:30 to 8:30 A.M.) and 152 trips (71 in, 81 out) during the afternoon peak hour (from 2:15 to 3:15 P.M.).
- Frontage improvements would consist of improving existing curb ramps to meet current code compliance, sidewalk maintenance, a new curb cut for service access and improvements required for school bus loading and unloading. Existing curb cuts on E McGraw Street and E Calhoun Street would be removed and the curb line reinstalled, as required by SDOT.
- The two existing unstriped staff parking spaces accessed from E Calhoun Street would be eliminated. A delivery/service access is proposed mid-block on 20th Avenue E opposite the alley.
- Curb-side passenger-vehicle drop-off/pick-up may be established along the south side of E Calhoun Street and the west side of 22nd Avenue E. Family-vehicle load/unload would also continue to occur with the use of on-street parking in the surrounding residential neighborhood. The on-street school-bus load/unload zone would be retained along E McGraw Street; the existing school bus load zone on 22nd Avenue E would be eliminated, which could make available curb-side spaces for parking.
- The additional traffic and pedestrian activity generated by the school with a larger enrollment capacity is expected to add small amounts of delay to several of the study area intersections and turning movements during morning and afternoon peak hours; however, all of the study-area intersections are forecast to continue operating at LOS D or better overall during both peak hours.

As is typical in school areas during peak conditions—some congestion around the school would likely occur for about 20 minutes before and after school.

- At the proposed enrollment capacity, on-street school-day parking demand may increase by about 30 to 57 vehicles. Demand is likely to vary somewhat depending on the number of part-time staff and volunteers on site at any time.
- Demand for on-street parking in the area would increase due to higher numbers of staff, visitors, and volunteers. The increase in school-day on-street parking demand could be accommodated by unused supply and typical utilization is estimated to remain between 65% and 71%.
- Larger events (those other than Curriculum Night) could generate parking demand between 45 and 120 vehicles, which could be accommodated by unused on-street parking near the site. The largest event—Curriculum Night—is likely to cause on-street parking within the study area to be full or to have demand that extends beyond the 800-foot study area.

Based the above findings, the school addition project would not result in significant adverse impacts to traffic operations or parking. However, because the site would be reconfigured to accommodate a larger enrollment capacity, several measures are recommended (see Section 4.3) to minimize traffic and parking-effects on the surrounding neighborhood.

4.3. Recommendations

Based on the findings presented above, the following measures are recommended to reduce the traffic and parking impacts associated with construction and operations of the Montlake Elementary School Addition.

A. **Construction Transportation Management Plan (CTMP):** The District should require the selected contractor to develop a Construction Transportation Management Plan (CTMP) that addresses traffic and pedestrian control during construction of the new facility. It would define truck routes, lane closures, walkway closures, and parking or load/unload area disruptions, as necessary. To the extent possible, the CTMP would direct trucks along the shortest route to arterials and away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity. The CTMP may also include measures to keep adjacent streets clean on a daily basis at the truck exit points (such as street sweeping or on-site truck wheel cleaning) to reduce tracking dirt offsite.

B. **Develop Plan for Large-Events:** When the school enrollment reaches 300 students, for the one or two largest events each year (such as Curriculum Night), the school should develop a large-event plan that either identifies additional parking supply (such as parking at the Montlake Community Center to the northwest) and/or modifies the event to reduce total peak demand by separating it into two sessions or into two nights based on grade levels (as occurs at some other Seattle elementary schools).

C. **Develop Neighborhood Communication Plan for School Events:** The District and school administration should develop a neighborhood communication plan to inform nearby neighbors of large events (those expected to draw 500 people or more) each year. The plan should be updated annually (or as events are scheduled) and should provide information about the dates, times, and rough magnitude of attendance. The communication would be intended to allow neighbors to plan for the occasional increase in on-street parking demand that would occur with large events.

D. **Update right-of-way and curb-side signage:** The District should work with SDOT to confirm the locations, extents, and signage (such as times of restrictions) of the school-bus and/or school load zones that may be established or eliminated along adjacent streets.

APPENDIX A
Level of Service Definitions

Levels of service (LOS) are qualitative descriptions of traffic operating conditions. These levels of service are designated with letters ranging from LOS A, which is indicative of good operating conditions with little or no delay, to LOS F, which is indicative of stop-and-go conditions with frequent and lengthy delays. Levels of service for this analysis were developed using procedures presented in the *Highway Capacity Manual, Sixth Edition* (Transportation Research Board, 2016).

Signalized Intersections

Level of service for signalized intersections is defined in terms of average delay for all vehicles that travel through the intersection. Delay can be a cause of driver discomfort, frustration, inefficient fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average delay per vehicle in seconds. Delay is a complex measure and is dependent on a number of variables including: number and type of vehicles by movement, intersection lane geometry, signal phasing, the amount of green time allocated to each phase, transit stops and parking maneuvers. Table A-1 shows the level of service criteria for signalized intersections from the *Highway Capacity Manual, Sixth Edition.*

Table A-1. Level of Service for Signalized Intersections

Level of Service	Average Control Delay Per Vehicle
A	≤ 10 seconds
B	> 10 – 20 seconds
C	> 20 – 35 seconds
D	> 35 – 55 seconds
E	> 55 – 80 seconds
F	> 80 seconds

Source: Transportation Research Board, Highway Capacity Manual, Exhibit 19.8, 2016.

Unsignalized Intersections

For unsignalized intersections, level of service is based on the average delay per vehicle for each turning movement. The level of service for all-way stop or roundabout-controlled intersections is based upon the average delay for all vehicles that travel through the intersection. The level of service for a one- or two-way, stop-controlled intersection, delay is related to the availability of gaps in the main street's traffic flow, and the ability of a driver to enter or pass through those gaps. Table A-2 shows the level of service criteria for unsignalized intersections from the *Highway Capacity Manual, Sixth Edition*.

Table A-2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle
A	0 – 10 seconds
B	> 10 – 15 seconds
C	> 15 – 25 seconds
D	> 25 – 35 seconds
E	> 35 – 50 seconds
F	> 50 seconds

Source: Transportation Research Board, Highway Capacity Manual, Exhibit 20.2, 2016.

APPENDIX B
Parking Utilization Study Data

				Parking Supply															
Block Face ID	Street Name	Street Segment	Side of Street	Unrestricted	2hr 7a-6p Exc Sun/ Hol/ Zone 1/ No Event Parking (Exc Zone 1)	2hr 8a-5p Exc Sun/ Hol/ Zone 1/ No Event Parking (Exc Zone 1)	2hr 7a-6p Exc Sun/ Hol/ Zone 1/ No Parking 6p-12a (Exc Zone 1)	1hr 7a-6p Exc Sun/ Hol	30min L/U 7a-6p Exc Sun/Hol/Zone 1, No Event Parking (Exc Zone 1)	15min L/U 7a-6p Exc Sat/Sun/Hol	3 Min PLZ 7a-6p Exc Sat/Sun/Hol	School Bus Only 7-10a, 1-4p, No Event Parking (Exc Zone 1)	No Event Parking (Exc Zone 1)	No Stops 7-9a, 4-6p exc Sat/Sun/Hol, No Event Parking (Exc Zone 1)	Disabled	Total Parking	Total Parking		
																	Morning	Mid Morning	Evening
AA	WEST MONTLAKE PL E	20TH AVE E AND E ROANOKE ST	NW	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
AB	WEST MONTLAKE PL E	20TH AVE E AND E ROANOKE ST	SE	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
AC	WEST MONTLAKE PL E	E LOUISA ST AND 20TH AVE E	NW	0	4	0	0	0	0	1	0	0	0	0	**5**	**5**	**5**	**5**
AD	WEST MONTLAKE PL E	E LOUISA ST AND 20TH AVE E	SE	0	0	0	3	0	0	0	0	0	0	0	**3**	**3**	**3**	**3**
AE	20TH AVE E	E LOUISA ST AND WEST MONTLAKE PL E	W	0	0	1	0	0	0	0	0	0	0	0	**1**	**1**	**1**	**1**
AF	20TH AVE E	E LOUISA ST AND WEST MONTLAKE PL E	E	0	0	3	0	0	0	0	0	0	0	0	**3**	**3**	**3**	**3**
AG	22ND AVE E	E LOUISA ST AND E ROANOKE ST	W	0	0	6	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**
AH	22ND AVE E	E LOUISA ST AND E ROANOKE ST	E	0	0	5	0	0	0	0	0	0	0	0	**5**	**5**	**5**	**5**
AI	E LOUISA ST	DEAD END 2 AND WEST MONTLAKE PL E	N	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
AJ	E LOUISA ST	DEAD END 2 AND WEST MONTLAKE PL E	S	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
AK	E LOUISA ST	WEST MONTLAKE PL E AND 20TH AVE E	N	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
AL	E LOUISA ST	WEST MONTLAKE PL E AND 20TH AVE E	S	0	0	2	0	0	0	0	0	0	0	0	**2**	**2**	**2**	**2**
AM	E LOUISA ST	20TH AVE E AND 22ND AVE E	N	0	0	11	0	0	0	0	0	0	0	0	**11**	**11**	**11**	**11**
AN	E LOUISA ST	20TH AVE E AND 22ND AVE E	S	0	0	9	0	0	0	0	0	0	0	1	**10**	**10**	**10**	**10**
AO	E LOUISA ST	22ND AVE E AND 800' BOUNDARY	N	0	0	6	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**
AP	E LOUISA ST	22ND AVE E AND 800' BOUNDARY	S	0	0	4	0	0	0	0	0	0	0	0	**4**	**4**	**4**	**4**
AQ	WEST MONTLAKE PL E	E MILLER ST AND E LOUISA ST	NW	0	12	0	0	0	0	0	0	0	0	0	**12**	**12**	**12**	**12**
AR	WEST MONTLAKE PL E	E MILLER ST AND E LOUISA ST	SE	0	8	0	0	0	0	0	0	0	0	0	**8**	**8**	**8**	**8**
AS	20TH AVE E	E MILLER ST AND E LOUISA ST	W	0	0	3	0	0	0	0	0	0	0	0	**3**	**3**	**3**	**3**
AT	20TH AVE E	E MILLER ST AND E LOUISA ST	E	0	0	8	0	0	0	0	0	0	0	0	**8**	**8**	**8**	**8**
AU	22ND AVE E	E MILLER ST AND E LOUISA ST	W	0	0	6	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**
AV	22ND AVE E	E MILLER ST AND E LOUISA ST	E	0	0	6	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**
AW	24TH AVE E	E MILLER ST AND 800' BOUNDARY	W	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
AX	24TH AVE E	E MILLER ST AND 800' BOUNDARY	E	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
AY	E MILLER ST	WEST MONTLAKE PL E AND 20TH AVE E	N	0	10	0	0	0	0	0	0	0	0	0	**10**	**10**	**10**	**10**
AZ	E MILLER ST	WEST MONTLAKE PL E AND 20TH AVE E	S	0	6	0	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**
BA	E MILLER ST	20TH AVE E AND 22ND AVE E	N	0	10	0	0	0	0	0	0	0	0	0	**10**	**10**	**10**	**10**
BB	E MILLER ST	20TH AVE E AND 22ND AVE E	S	0	10	0	0	0	0	0	0	0	0	0	**10**	**10**	**10**	**10**
BC	E MILLER ST	22ND AVE E AND 24TH AVE E	N	0	5	0	0	0	0	0	0	0	0	0	**5**	**5**	**5**	**5**
BD	E MILLER ST	22ND AVE E AND 24TH AVE E	S	0	11	0	0	0	0	0	0	0	0	0	**11**	**11**	**11**	**11**
BE	E MILLER ST	24TH AVE E AND 800' BOUNDARY	N	0	1	0	0	0	0	0	0	0	0	0	**1**	**1**	**1**	**1**
BF	E MILLER ST	24TH AVE E AND 800' BOUNDARY	S	0	2	0	0	0	0	0	0	0	0	0	**2**	**2**	**2**	**2**
BG	WEST MONTLAKE PL E	19TH AVE E AND E MILLER ST	NW	0	2	0	0	0	0	0	0	0	0	0	**2**	**2**	**2**	**2**
BH	WEST MONTLAKE PL E	19TH AVE E AND E MILLER ST	SE	0	4	0	0	0	0	0	0	0	0	0	**4**	**4**	**4**	**4**
BI	19TH AVE E	E CALHOUN ST AND WEST MONTLAKE PL E	W	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
BJ	19TH AVE E	E CALHOUN ST AND WEST MONTLAKE PL E	E	0	3	0	0	0	0	0	0	0	0	0	**3**	**3**	**3**	**3**
BK	20TH AVE E	E CALHOUN ST AND E MILLER ST	W	0	7	0	0	0	0	0	0	0	0	0	**7**	**7**	**7**	**7**
BL	20TH AVE E	E CALHOUN ST AND E MILLER ST	E	0	6	0	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**

				Parking Supply															
Block Face ID	Street Name	Street Segment	Side of Street	Unrestricted	2hr 7a-6p Exc Sun/ Hol/ Zone 1/ No Event Parking (Exc Zone 1)	2hr 8a-5p Exc Sun/ Hol/ Zone 1/ No Event Parking (Exc Zone 1)	2hr 7a-6p Exc Sun/ Hol/ Zone 1/ No Parking 6p-12a (Exc Zone 1)	1hr 7a-6p Exc Sun/ Hol	30min L/U 7a-6p Exc Sun/Hol/Zone 1, No Event Parking (Exc Zone 1)	15min L/U 7a-6p Exc Sat/Sun/Hol	3 Min PLZ 7a-6p Exc Sat/Sun/Hol	School Bus Only 7-10a, 1-4p, No Event Parking (Exc Zone 1)	No Event Parking (Exc Zone 1)	No Stops 7-9a, 4-6p exc Sat/Sun/Hol, No Event Parking (Exc Zone 1)	Disabled	Total Parking	Total Parking		
																	Morning	Mid Morning	Evening
BM	22ND AVE E	E CALHOUN ST AND E MILLER ST	W	0	6	0	0	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**
BN	22ND AVE E	E CALHOUN ST AND E MILLER ST	E	0	7	0	0	0	0	0	0	0	0	0	0	**7**	**7**	**7**	**7**
BO	24TH AVE E	E CALHOUN ST AND E MILLER ST	W	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
BP	24TH AVE E	E CALHOUN ST AND E MILLER ST	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
BQ	E CALHOUN ST	800' BOUNDARY AND MONTLAKE CUT CONNCTR TRL	N	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
BR	E CALHOUN ST	800' BOUNDARY AND MONTLAKE CUT CONNCTR TRL	S	0	8	0	0	0	0	0	0	0	0	0	0	**8**	**8**	**8**	**8**
BS	E CALHOUN ST	19TH AVE E AND 20TH AVE E	N	0	9	0	0	0	0	0	0	0	0	0	0	**9**	**9**	**9**	**9**
BT	E CALHOUN ST	19TH AVE E AND 20TH AVE E	S	0	12	0	0	0	0	0	0	0	0	0	0	**12**	**12**	**12**	**12**
BU	E CALHOUN ST	20TH AVE E AND 22ND AVE E	N	0	9	0	0	0	0	0	0	0	0	0	0	**9**	**9**	**9**	**9**
BV	E CALHOUN ST	20TH AVE E AND 22ND AVE E	S	0	0	0	0	0	0	0	1	0	14	0	0	**15**	**15**	**15**	**15**
BW	E CALHOUN ST	22ND AVE E AND 24TH AVE E	N	0	9	0	0	0	0	0	0	0	0	0	0	**9**	**9**	**9**	**9**
BX	E CALHOUN ST	22ND AVE E AND 24TH AVE E	S	0	11	0	0	0	0	0	0	0	0	0	0	**11**	**11**	**11**	**11**
BY	E CALHOUN ST	24TH AVE E AND 800' BOUNDARY	N	0	10	0	0	0	0	0	0	0	0	0	0	**10**	**10**	**10**	**10**
BZ	E CALHOUN ST	24TH AVE E AND 800' BOUNDARY	S	0	8	0	0	0	0	0	0	0	0	0	0	**8**	**8**	**8**	**8**
CA	19TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CB	19TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CC	20TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	0	5	0	0	0	0	0	0	0	0	0	0	**5**	**5**	**5**	**5**
CD	20TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	0	0	0	0	0	0	0	0	0	9	0	0	**9**	**9**	**9**	**9**
CE	22ND AVE E	E MCGRAW ST AND E CALHOUN ST	W	0	0	0	0	0	0	0	0	4	4	0	0	**8**	**4**	**8**	**8**
CF	22ND AVE E	E MCGRAW ST AND E CALHOUN ST	E	0	7	0	0	0	0	0	0	0	0	0	0	**7**	**7**	**7**	**7**
CG	24TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CH	24TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CI	E MCGRAW ST	800' BOUNDARY AND DEAD END	N	0	0	0	0	0	0	0	0	0	11	0	0	**11**	**11**	**11**	**11**
CJ	E MCGRAW ST	800' BOUNDARY AND DEAD END	S	0	0	0	0	0	0	0	0	0	6	0	0	**6**	**6**	**6**	**6**
CK	E MCGRAW ST	19TH AVE E AND 20TH AVE E	N	0	17	0	0	0	0	0	0	0	0	0	0	**17**	**17**	**17**	**17**
CL	E MCGRAW ST	19TH AVE E AND 20TH AVE E	S	0	13	0	0	0	0	0	0	0	0	0	0	**13**	**13**	**13**	**13**
CM	E MCGRAW ST	20TH AVE E AND 22ND AVE E	N	0	0	0	0	0	0	0	0	10	0	0	0	**10**	**0**	**10**	**10**
CN	E MCGRAW ST	20TH AVE E AND 22ND AVE E	S	0	9	0	0	0	0	0	0	0	0	0	0	**9**	**9**	**9**	**9**
CO	E MCGRAW ST	22ND AVE E AND 24TH AVE E	N	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CP	E MCGRAW ST	22ND AVE E AND 24TH AVE E	S	3	8	0	0	0	0	0	0	0	0	0	0	**11**	**11**	**11**	**11**
CQ	E MCGRAW ST	24TH AVE E AND 800' BOUNDARY	N	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CR	E MCGRAW ST	24TH AVE E AND 800' BOUNDARY	S	0	7	0	0	0	0	0	0	0	0	0	0	**7**	**7**	**7**	**7**
CS	19TH AVE E	E LYNN ST AND E MCGRAW ST	W	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CT	19TH AVE E	E LYNN ST AND E MCGRAW ST	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
CU	20TH AVE E	E LYNN ST AND E MCGRAW ST	W	0	5	0	0	0	0	0	0	0	0	0	0	**5**	**5**	**5**	**5**
CV	20TH AVE E	E LYNN ST AND E MCGRAW ST	E	0	8	0	0	0	0	0	0	0	0	0	0	**8**	**8**	**8**	**8**
CW	22ND AVE E	E LYNN ST AND E MCGRAW ST	W	0	9	0	0	0	0	0	0	0	0	0	0	**9**	**9**	**9**	**9**
CX	22ND AVE E	E LYNN ST AND E MCGRAW ST	E	0	6	0	0	0	0	0	0	0	0	0	0	**6**	**6**	**6**	**6**

				Parking Supply															
																		Total Parking	
Block Face ID	Street Name	Street Segment	Side of Street	Unrestricted	2hr 7a-6p Exc Sun/ Hol/ Zone 1/ No Event Parking (Exc Zone 1)	2hr 8a-5p Exc Sun/ Hol/ Zone 1/ No Event Parking (Exc Zone 1)	2hr 7a-6p Exc Sun/ Hol/ Zone 1/ No Parking 6p-12a (Exc Zone 1)	1hr 7a-6p Exc Sun/ Hol	30min L/U 7a-6p Exc Sun/Hol/Zone 1, No Event Parking (Exc Zone 1)	15min L/U 7a-6p Exc Sat/Sun/Hol	3 Min PLZ 7a-6p Exc Sat/Sun/Hol	School Bus Only 7-10a, 1-4p, No Event Parking (Exc Zone 1)	No Event Parking (Exc Zone 1)	No Stops 7-9a, 4-6p exc Sat/Sun/Hol, No Event Parking (Exc Zone 1)	Disabled	Total Parking	Morning	Mid Morning	Evening
CY	24TH AVE E	E LYNN ST AND E MCGRAW ST	W	0	0	0	0	0	0	0	0	0	0	8	0	**8**	**0**	**8**	**8**
CZ	24TH AVE E	E LYNN ST AND E MCGRAW ST	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DA	E LYNN ST	800' BOUNDARY AND 19TH AVE E	N	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DB	E LYNN ST	800' BOUNDARY AND 19TH AVE E	S	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DC	E LYNN ST	19TH AVE E AND E HOWE ST	N	0	0	0	0	0	0	0	0	0	5	0	0	**5**	**5**	**5**	**5**
DD	E LYNN ST	19TH AVE E AND E HOWE ST	S	0	0	0	0	0	0	0	0	0	3	0	0	**3**	**3**	**3**	**3**
DE	E LYNN ST	E HOWE ST AND 20TH AVE E	N	0	0	0	0	0	0	0	0	0	9	0	0	**9**	**9**	**9**	**9**
DF	E LYNN ST	E HOWE ST AND 20TH AVE E	S	0	0	0	0	0	0	0	0	0	10	0	0	**10**	**10**	**10**	**10**
DG	E LYNN ST	20TH AVE E AND 22ND AVE E	N	0	11	0	0	0	0	0	0	0	0	0	0	**11**	**11**	**11**	**11**
DH	E LYNN ST	20TH AVE E AND 22ND AVE E	S	0	14	0	0	0	0	0	0	0	0	0	0	**14**	**14**	**14**	**14**
DI	E LYNN ST	22ND AVE E AND 24TH AVE E	N	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DJ	E LYNN ST	22ND AVE E AND 24TH AVE E	S	0	9	0	0	6	0	0	0	0	0	0	0	**15**	**15**	**15**	**15**
DK	E LYNN ST	24TH AVE E AND 800' BOUNDARY	N	0	3	0	0	0	1	0	0	0	0	0	0	**4**	**4**	**4**	**4**
DL	E LYNN ST	24TH AVE E AND 800' BOUNDARY	S	0	1	0	0	0	0	0	0	0	0	0	0	**1**	**1**	**1**	**1**
DM	E HOWE ST	E LYNN ST AND 800' BOUNDARY	SW	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DN	E HOWE ST	E LYNN ST AND 800' BOUNDARY	NE	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DO	20TH AVE E	E NEWTON ST AND E LYNN ST	W	0	0	0	0	0	0	0	0	0	5	0	0	**5**	**5**	**5**	**5**
DP	20TH AVE E	E NEWTON ST AND E LYNN ST	E	0	0	0	0	0	0	0	0	0	6	0	0	**6**	**6**	**6**	**6**
DQ	E NEWTON ST	20TH AVE E AND 22ND AVE E	SW	0	0	0	0	0	0	0	0	0	21	0	0	**21**	**21**	**21**	**21**
DR	E NEWTON ST	20TH AVE E AND 22ND AVE E	NE	0	0	0	0	0	0	0	0	0	15	0	0	**15**	**15**	**15**	**15**
DS	22ND AVE E	E NEWTON ST AND E LYNN ST	W	0	15	0	0	0	0	0	0	0	0	0	0	**15**	**15**	**15**	**15**
DT	22ND AVE E	E NEWTON ST AND E LYNN ST	E	0	11	0	0	0	0	0	0	0	0	0	0	**11**	**11**	**11**	**11**
DU	23RD AVE E	800' BOUNDARY AND E LYNN ST	W	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DV	23RD AVE E	800' BOUNDARY AND E LYNN ST	E	0	19	0	0	0	0	0	0	0	0	0	0	**19**	**19**	**19**	**19**
DW	24TH AVE E	800' BOUNDARY AND E LYNN ST	W	0	0	0	0	0	0	0	0	0	0	1	0	**1**	**0**	**1**	**1**
DX	24TH AVE E	800' BOUNDARY AND E LYNN ST	E	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DY	22ND AVE E	800' BOUNDARY AND E NEWTON ST	NW	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	**0**
DZ	22ND AVE E	800' BOUNDARY AND E NEWTON ST	SE	0	0	0	0	0	0	0	0	0	1	0	0	**1**	**1**	**1**	**1**
EA	E NEWTON ST	22ND AVE E AND 800' BOUNDARY	SW	0	0	0	0	0	0	0	0	0	2	0	0	**2**	**2**	**2**	**2**
EB	E NEWTON ST	22ND AVE E AND 800' BOUNDARY	NE	0	0	0	0	0	0	0	0	0	1	0	0	**1**	**1**	**1**	**1**
			TOTAL	**3**	**367**	**70**	**3**	**6**	**1**	**1**	**1**	**14**	**122**	**9**	**1**	**598**	**575**	**598**	**598**

				Parking Supply			Parking Occupancy											
				Total Parking			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
Block Face ID	Street Name	Street Segment	Side of Street	Morning	Mid Morning	Evening	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22
AA	WEST MONTLAKE PL E	20TH AVE E AND E ROANOKE ST	NW	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
AB	WEST MONTLAKE PL E	20TH AVE E AND E ROANOKE ST	SE	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
AC	WEST MONTLAKE PL E	E LOUISA ST AND 20TH AVE E	NW	**5**	**5**	**5**	1	2	**2**	**2**	2	3	**3**	**2**	1	2	**2**	**2**
AD	WEST MONTLAKE PL E	E LOUISA ST AND 20TH AVE E	SE	**3**	**3**	**3**	1	1	**1**	**0**	0	0	**0**	**1**	0	0	**0**	**1**
AE	20TH AVE E	E LOUISA ST AND WEST MONTLAKE PL E	W	**1**	**1**	**1**	2	1	**2**	**1**	2	2	**2**	**2**	1	1	**1**	**2**
AF	20TH AVE E	E LOUISA ST AND WEST MONTLAKE PL E	E	**3**	**3**	**3**	2	4	**3**	**1**	3	4	**4**	**1**	3	2	**3**	**2**
AG	22ND AVE E	E LOUISA ST AND E ROANOKE ST	W	**6**	**6**	**6**	4	3	**4**	**3**	4	4	**4**	**1**	2	3	**3**	**3**
AH	22ND AVE E	E LOUISA ST AND E ROANOKE ST	E	**5**	**5**	**5**	4	4	**4**	**3**	3	2	**3**	**2**	4	3	**4**	**3**
AI	E LOUISA ST	DEAD END 2 AND WEST MONTLAKE PL E	N	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
AJ	E LOUISA ST	DEAD END 2 AND WEST MONTLAKE PL E	S	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
AK	E LOUISA ST	WEST MONTLAKE PL E AND 20TH AVE E	N	**0**	**0**	**0**	0	1	**1**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
AL	E LOUISA ST	WEST MONTLAKE PL E AND 20TH AVE E	S	**2**	**2**	**2**	2	3	**3**	**2**	2	3	**3**	**2**	1	3	**2**	**2**
AM	E LOUISA ST	20TH AVE E AND 22ND AVE E	N	**11**	**11**	**11**	9	9	**9**	**8**	4	7	**6**	**5**	5	6	**6**	**7**
AN	E LOUISA ST	20TH AVE E AND 22ND AVE E	S	**10**	**10**	**10**	8	6	**7**	**7**	7	5	**6**	**4**	8	5	**7**	**8**
AO	E LOUISA ST	22ND AVE E AND 800' BOUNDARY	N	**6**	**6**	**6**	5	3	**4**	**1**	2	2	**2**	**2**	4	3	**4**	**2**
AP	E LOUISA ST	22ND AVE E AND 800' BOUNDARY	S	**4**	**4**	**4**	8	3	**6**	**5**	6	5	**6**	**6**	5	4	**5**	**4**
AQ	WEST MONTLAKE PL E	E MILLER ST AND E LOUISA ST	NW	**12**	**12**	**12**	3	4	**4**	**2**	4	6	**5**	**4**	3	2	**3**	**2**
AR	WEST MONTLAKE PL E	E MILLER ST AND E LOUISA ST	SE	**8**	**8**	**8**	3	4	**4**	**4**	3	4	**4**	**2**	1	3	**2**	**4**
AS	20TH AVE E	E MILLER ST AND E LOUISA ST	W	**3**	**3**	**3**	3	4	**4**	**3**	3	4	**4**	**3**	3	3	**3**	**1**
AT	20TH AVE E	E MILLER ST AND E LOUISA ST	E	**8**	**8**	**8**	4	2	**3**	**3**	3	3	**3**	**3**	3	1	**2**	**4**
AU	22ND AVE E	E MILLER ST AND E LOUISA ST	W	**6**	**6**	**6**	3	2	**3**	**1**	3	3	**3**	**1**	2	3	**3**	**2**
AV	22ND AVE E	E MILLER ST AND E LOUISA ST	E	**6**	**6**	**6**	5	4	**5**	**4**	5	4	**5**	**4**	4	4	**4**	**3**
AW	24TH AVE E	E MILLER ST AND 800' BOUNDARY	W	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
AX	24TH AVE E	E MILLER ST AND 800' BOUNDARY	E	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
AY	E MILLER ST	WEST MONTLAKE PL E AND 20TH AVE E	N	**10**	**10**	**10**	7	7	**7**	**6**	2	4	**3**	**3**	7	5	**6**	**6**
AZ	E MILLER ST	WEST MONTLAKE PL E AND 20TH AVE E	S	**6**	**6**	**6**	2	3	**3**	**2**	2	3	**3**	**3**	2	3	**3**	**3**
BA	E MILLER ST	20TH AVE E AND 22ND AVE E	N	**10**	**10**	**10**	9	7	**8**	**8**	8	5	**7**	**6**	8	7	**8**	**9**
BB	E MILLER ST	20TH AVE E AND 22ND AVE E	S	**10**	**10**	**10**	7	6	**7**	**8**	5	5	**5**	**7**	7	9	**8**	**8**
BC	E MILLER ST	22ND AVE E AND 24TH AVE E	N	**5**	**5**	**5**	8	7	**8**	**7**	4	5	**5**	**5**	8	7	**8**	**6**
BD	E MILLER ST	22ND AVE E AND 24TH AVE E	S	**11**	**11**	**11**	7	11	**9**	**9**	7	9	**8**	**6**	8	8	**8**	**8**
BE	E MILLER ST	24TH AVE E AND 800' BOUNDARY	N	**1**	**1**	**1**	0	0	**0**	**1**	1	1	**1**	**1**	1	1	**1**	**0**
BF	E MILLER ST	24TH AVE E AND 800' BOUNDARY	S	**2**	**2**	**2**	2	2	**2**	**2**	2	2	**2**	**2**	3	2	**3**	**2**
BG	WEST MONTLAKE PL E	19TH AVE E AND E MILLER ST	NW	**2**	**2**	**2**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
BH	WEST MONTLAKE PL E	19TH AVE E AND E MILLER ST	SE	**4**	**4**	**4**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
BI	19TH AVE E	E CALHOUN ST AND WEST MONTLAKE PL E	W	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
BJ	19TH AVE E	E CALHOUN ST AND WEST MONTLAKE PL E	E	**3**	**3**	**3**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
BK	20TH AVE E	E CALHOUN ST AND E MILLER ST	W	**7**	**7**	**7**	3	3	**3**	**3**	3	3	**3**	**2**	3	3	**3**	**2**
BL	20TH AVE E	E CALHOUN ST AND E MILLER ST	E	**6**	**6**	**6**	1	0	**1**	**1**	1	0	**1**	**1**	0	1	**1**	**1**

				Parking Supply			Parking Occupancy											
				Total Parking			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
Block Face ID	Street Name	Street Segment	Side of Street	Morning	Mid Morning	Evening	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22
BM	22ND AVE E	E CALHOUN ST AND E MILLER ST	W	**6**	**6**	**6**	2	1	**2**	**2**	3	3	**3**	**2**	1	1	**1**	**2**
BN	22ND AVE E	E CALHOUN ST AND E MILLER ST	E	**7**	**7**	**7**	3	2	**3**	**2**	3	4	**4**	**2**	2	2	**2**	**1**
BO	24TH AVE E	E CALHOUN ST AND E MILLER ST	W	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
BP	24TH AVE E	E CALHOUN ST AND E MILLER ST	E	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
BQ	E CALHOUN ST	800' BOUNDARY AND MONTLAKE CUT CONNCTR TRL	N	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**5**	0	0	**0**	**0**
BR	E CALHOUN ST	800' BOUNDARY AND MONTLAKE CUT CONNCTR TRL	S	**8**	**8**	**8**	4	4	**4**	**5**	4	5	**5**	**0**	3	4	**4**	**6**
BS	E CALHOUN ST	19TH AVE E AND 20TH AVE E	N	**9**	**9**	**9**	7	7	**7**	**7**	7	7	**7**	**7**	7	8	**8**	**9**
BT	E CALHOUN ST	19TH AVE E AND 20TH AVE E	S	**12**	**12**	**12**	7	12	**10**	**7**	8	8	**8**	**8**	8	9	**9**	**8**
BU	E CALHOUN ST	20TH AVE E AND 22ND AVE E	N	**9**	**9**	**9**	7	7	**7**	**7**	9	9	**9**	**5**	4	6	**5**	**7**
BV	E CALHOUN ST	20TH AVE E AND 22ND AVE E	S	**15**	**15**	**15**	13	11	**12**	**12**	14	13	**14**	**11**	1	1	**1**	**3**
BW	E CALHOUN ST	22ND AVE E AND 24TH AVE E	N	**9**	**9**	**9**	4	4	**4**	**3**	6	5	**6**	**3**	4	5	**5**	**3**
BX	E CALHOUN ST	22ND AVE E AND 24TH AVE E	S	**11**	**11**	**11**	8	7	**8**	**7**	8	7	**8**	**7**	7	6	**7**	**7**
BY	E CALHOUN ST	24TH AVE E AND 800' BOUNDARY	N	**10**	**10**	**10**	8	8	**8**	**6**	3	4	**4**	**6**	7	7	**7**	**4**
BZ	E CALHOUN ST	24TH AVE E AND 800' BOUNDARY	S	**8**	**8**	**8**	5	6	**6**	**5**	5	5	**5**	**4**	7	6	**7**	**3**
CA	19TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CB	19TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CC	20TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	**5**	**5**	**5**	4	4	**4**	**4**	4	3	**4**	**2**	4	3	**4**	**4**
CD	20TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	**9**	**9**	**9**	4	6	**5**	**2**	5	8	**7**	**2**	2	2	**2**	**0**
CE	22ND AVE E	E MCGRAW ST AND E CALHOUN ST	W	**4**	**8**	**8**	2	1	**2**	**1**	9	6	**8**	**1**	0	0	**0**	**1**
CF	22ND AVE E	E MCGRAW ST AND E CALHOUN ST	E	**7**	**7**	**7**	4	3	**4**	**4**	7	6	**7**	**3**	3	2	**3**	**3**
CG	24TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CH	24TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CI	E MCGRAW ST	800' BOUNDARY AND DEAD END	N	**11**	**11**	**11**	4	4	**4**	**4**	3	4	**4**	**3**	4	4	**4**	**4**
CJ	E MCGRAW ST	800' BOUNDARY AND DEAD END	S	**6**	**6**	**6**	1	1	**1**	**1**	2	0	**1**	**0**	2	2	**2**	**2**
CK	E MCGRAW ST	19TH AVE E AND 20TH AVE E	N	**17**	**17**	**17**	11	9	**10**	**10**	9	7	**8**	**8**	10	6	**8**	**9**
CL	E MCGRAW ST	19TH AVE E AND 20TH AVE E	S	**13**	**13**	**13**	11	9	**10**	**8**	7	7	**7**	**8**	10	8	**9**	**7**
CM	E MCGRAW ST	20TH AVE E AND 22ND AVE E	N	**0**	**10**	**10**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CN	E MCGRAW ST	20TH AVE E AND 22ND AVE E	S	**9**	**9**	**9**	7	7	**7**	**7**	8	9	**9**	**7**	7	6	**7**	**7**
CO	E MCGRAW ST	22ND AVE E AND 24TH AVE E	N	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CP	E MCGRAW ST	22ND AVE E AND 24TH AVE E	S	**11**	**11**	**11**	11	10	**11**	**8**	10	9	**10**	**9**	9	8	**9**	**7**
CQ	E MCGRAW ST	24TH AVE E AND 800' BOUNDARY	N	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CR	E MCGRAW ST	24TH AVE E AND 800' BOUNDARY	S	**7**	**7**	**7**	5	5	**5**	**6**	5	8	**7**	**5**	7	7	**7**	**6**
CS	19TH AVE E	E LYNN ST AND E MCGRAW ST	W	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CT	19TH AVE E	E LYNN ST AND E MCGRAW ST	E	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
CU	20TH AVE E	E LYNN ST AND E MCGRAW ST	W	**5**	**5**	**5**	3	3	**3**	**4**	2	3	**3**	**4**	3	3	**3**	**3**
CV	20TH AVE E	E LYNN ST AND E MCGRAW ST	E	**8**	**8**	**8**	3	5	**4**	**3**	1	3	**2**	**1**	1	4	**3**	**1**
CW	22ND AVE E	E LYNN ST AND E MCGRAW ST	W	**9**	**9**	**9**	6	7	**7**	**5**	7	7	**7**	**3**	6	6	**6**	**3**
CX	22ND AVE E	E LYNN ST AND E MCGRAW ST	E	**6**	**6**	**6**	3	3	**3**	**4**	6	3	**5**	**6**	3	4	**4**	**5**

				Parking Supply			Parking Occupancy											
				Total Parking			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
Block Face ID	Street Name	Street Segment	Side of Street	Morning	Mid Morning	Evening	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22
CY	24TH AVE E	E LYNN ST AND E MCGRAW ST	W	**0**	**8**	**8**	0	0	**0**	**0**	7	4	**6**	**6**	6	9	**8**	**5**
CZ	24TH AVE E	E LYNN ST AND E MCGRAW ST	E	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DA	E LYNN ST	800' BOUNDARY AND 19TH AVE E	N	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DB	E LYNN ST	800' BOUNDARY AND 19TH AVE E	S	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DC	E LYNN ST	19TH AVE E AND E HOWE ST	N	**5**	**5**	**5**	4	3	**4**	**3**	2	3	**3**	**4**	3	1	**2**	**2**
DD	E LYNN ST	19TH AVE E AND E HOWE ST	S	**3**	**3**	**3**	3	1	**2**	**2**	3	2	**3**	**2**	3	3	**3**	**2**
DE	E LYNN ST	E HOWE ST AND 20TH AVE E	N	**9**	**9**	**9**	6	6	**6**	**3**	4	6	**5**	**3**	6	5	**6**	**4**
DF	E LYNN ST	E HOWE ST AND 20TH AVE E	S	**10**	**10**	**10**	7	7	**7**	**6**	5	6	**6**	**5**	5	7	**6**	**4**
DG	E LYNN ST	20TH AVE E AND 22ND AVE E	N	**11**	**11**	**11**	6	7	**7**	**7**	7	6	**7**	**6**	6	7	**7**	**6**
DH	E LYNN ST	20TH AVE E AND 22ND AVE E	S	**14**	**14**	**14**	4	6	**5**	**6**	4	6	**5**	**6**	6	3	**5**	**7**
DI	E LYNN ST	22ND AVE E AND 24TH AVE E	N	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DJ	E LYNN ST	22ND AVE E AND 24TH AVE E	S	**15**	**15**	**15**	6	5	**6**	**8**	9	10	**10**	**11**	13	14	**14**	**15**
DK	E LYNN ST	24TH AVE E AND 800' BOUNDARY	N	**4**	**4**	**4**	4	3	**4**	**3**	4	3	**4**	**2**	3	3	**3**	**4**
DL	E LYNN ST	24TH AVE E AND 800' BOUNDARY	S	**1**	**1**	**1**	1	1	**1**	**1**	0	2	**1**	**1**	1	2	**2**	**1**
DM	E HOWE ST	E LYNN ST AND 800' BOUNDARY	SW	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DN	E HOWE ST	E LYNN ST AND 800' BOUNDARY	NE	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DO	20TH AVE E	E NEWTON ST AND E LYNN ST	W	**5**	**5**	**5**	3	3	**3**	**2**	3	2	**3**	**2**	3	3	**3**	**2**
DP	20TH AVE E	E NEWTON ST AND E LYNN ST	E	**6**	**6**	**6**	4	4	**4**	**3**	5	3	**4**	**2**	3	3	**3**	**2**
DQ	E NEWTON ST	20TH AVE E AND 22ND AVE E	SW	**21**	**21**	**21**	14	12	**13**	**15**	11	10	**11**	**10**	15	11	**13**	**13**
DR	E NEWTON ST	20TH AVE E AND 22ND AVE E	NE	**15**	**15**	**15**	10	10	**10**	**9**	7	7	**7**	**10**	10	9	**10**	**10**
DS	22ND AVE E	E NEWTON ST AND E LYNN ST	W	**15**	**15**	**15**	10	12	**11**	**11**	8	9	**9**	**8**	12	10	**11**	**11**
DT	22ND AVE E	E NEWTON ST AND E LYNN ST	E	**11**	**11**	**11**	10	7	**9**	**9**	11	9	**10**	**10**	10	9	**10**	**8**
DU	23RD AVE E	800' BOUNDARY AND E LYNN ST	W	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DV	23RD AVE E	800' BOUNDARY AND E LYNN ST	E	**19**	**19**	**19**	16	15	**16**	**14**	15	11	**13**	**10**	14	13	**14**	**14**
DW	24TH AVE E	800' BOUNDARY AND E LYNN ST	W	**0**	**1**	**1**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**2**
DX	24TH AVE E	800' BOUNDARY AND E LYNN ST	E	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DY	22ND AVE E	800' BOUNDARY AND E NEWTON ST	NW	**0**	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**
DZ	22ND AVE E	800' BOUNDARY AND E NEWTON ST	SE	**1**	**1**	**1**	2	2	**2**	**3**	3	1	**2**	**1**	2	3	**3**	**2**
EA	E NEWTON ST	22ND AVE E AND 800' BOUNDARY	SW	**2**	**2**	**2**	3	3	**3**	**2**	3	3	**3**	**2**	2	3	**3**	**0**
EB	E NEWTON ST	22ND AVE E AND 800' BOUNDARY	NE	**1**	**1**	**1**	1	1	**1**	**1**	1	2	**2**	**1**	0	0	**0**	**0**
			TOTAL	**575**	**598**	**598**	**374**	**360**	**367**	**339**	**358**	**356**	**357**	**305**	**342**	**332**	**337**	**326**

				Parking Supply			Parking Utilization											
				Total Parking			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
Block Face ID	Street Name	Street Segment	Side of Street	Morning	Mid Morning	Evening	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22
AA	WEST MONTLAKE PL E	20TH AVE E AND E ROANOKE ST	NW	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AB	WEST MONTLAKE PL E	20TH AVE E AND E ROANOKE ST	SE	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AC	WEST MONTLAKE PL E	E LOUISA ST AND 20TH AVE E	NW	5	5	5	20%	40%	30%	40%	40%	60%	50%	40%	20%	40%	30%	40%
AD	WEST MONTLAKE PL E	E LOUISA ST AND 20TH AVE E	SE	3	3	3	33%	33%	33%	0%	0%	0%	0%	33%	0%	0%	0%	33%
AE	20TH AVE E	E LOUISA ST AND WEST MONTLAKE PL E	W	1	1	1	200%	100%	150%	100%	200%	200%	200%	200%	100%	100%	100%	200%
AF	20TH AVE E	E LOUISA ST AND WEST MONTLAKE PL E	E	3	3	3	67%	133%	100%	33%	100%	133%	117%	33%	100%	67%	83%	67%
AG	22ND AVE E	E LOUISA ST AND E ROANOKE ST	W	6	6	6	67%	50%	58%	50%	67%	67%	67%	17%	33%	50%	42%	50%
AH	22ND AVE E	E LOUISA ST AND E ROANOKE ST	E	5	5	5	80%	80%	80%	60%	60%	40%	50%	40%	80%	60%	70%	60%
AI	E LOUISA ST	DEAD END 2 AND WEST MONTLAKE PL E	N	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AJ	E LOUISA ST	DEAD END 2 AND WEST MONTLAKE PL E	S	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AK	E LOUISA ST	WEST MONTLAKE PL E AND 20TH AVE E	N	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AL	E LOUISA ST	WEST MONTLAKE PL E AND 20TH AVE E	S	2	2	2	100%	150%	125%	100%	100%	150%	125%	100%	50%	150%	100%	100%
AM	E LOUISA ST	20TH AVE E AND 22ND AVE E	N	11	11	11	82%	82%	82%	73%	36%	64%	50%	45%	45%	55%	50%	64%
AN	E LOUISA ST	20TH AVE E AND 22ND AVE E	S	10	10	10	80%	60%	70%	70%	70%	50%	60%	40%	80%	50%	65%	80%
AO	E LOUISA ST	22ND AVE E AND 800' BOUNDARY	N	6	6	6	83%	50%	67%	17%	33%	33%	33%	33%	67%	50%	58%	33%
AP	E LOUISA ST	22ND AVE E AND 800' BOUNDARY	S	4	4	4	200%	75%	138%	125%	150%	125%	138%	150%	125%	100%	113%	100%
AQ	WEST MONTLAKE PL E	E MILLER ST AND E LOUISA ST	NW	12	12	12	25%	33%	29%	17%	33%	50%	42%	33%	25%	17%	21%	17%
AR	WEST MONTLAKE PL E	E MILLER ST AND E LOUISA ST	SE	8	8	8	38%	50%	44%	50%	38%	50%	44%	25%	13%	38%	25%	50%
AS	20TH AVE E	E MILLER ST AND E LOUISA ST	W	3	3	3	100%	133%	117%	100%	100%	133%	117%	100%	100%	100%	100%	33%
AT	20TH AVE E	E MILLER ST AND E LOUISA ST	E	8	8	8	50%	25%	38%	38%	38%	38%	38%	38%	38%	13%	25%	50%
AU	22ND AVE E	E MILLER ST AND E LOUISA ST	W	6	6	6	50%	33%	42%	17%	50%	50%	50%	17%	33%	50%	42%	33%
AV	22ND AVE E	E MILLER ST AND E LOUISA ST	E	6	6	6	83%	67%	75%	67%	83%	67%	75%	67%	67%	67%	67%	50%
AW	24TH AVE E	E MILLER ST AND 800' BOUNDARY	W	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AX	24TH AVE E	E MILLER ST AND 800' BOUNDARY	E	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AY	E MILLER ST	WEST MONTLAKE PL E AND 20TH AVE E	N	10	10	10	70%	70%	70%	60%	20%	40%	30%	30%	70%	50%	60%	60%
AZ	E MILLER ST	WEST MONTLAKE PL E AND 20TH AVE E	S	6	6	6	33%	50%	42%	33%	33%	50%	42%	50%	33%	50%	42%	50%
BA	E MILLER ST	20TH AVE E AND 22ND AVE E	N	10	10	10	90%	70%	80%	80%	80%	50%	65%	60%	80%	70%	75%	90%
BB	E MILLER ST	20TH AVE E AND 22ND AVE E	S	10	10	10	70%	60%	65%	80%	50%	50%	50%	70%	70%	90%	80%	80%
BC	E MILLER ST	22ND AVE E AND 24TH AVE E	N	5	5	5	160%	140%	150%	140%	80%	100%	90%	100%	160%	140%	150%	120%
BD	E MILLER ST	22ND AVE E AND 24TH AVE E	S	11	11	11	64%	100%	82%	82%	64%	82%	73%	55%	73%	73%	73%	73%
BE	E MILLER ST	24TH AVE E AND 800' BOUNDARY	N	1	1	1	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	0%
BF	E MILLER ST	24TH AVE E AND 800' BOUNDARY	S	2	2	2	100%	100%	100%	100%	100%	100%	100%	100%	150%	100%	125%	100%
BG	WEST MONTLAKE PL E	19TH AVE E AND E MILLER ST	NW	2	2	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BH	WEST MONTLAKE PL E	19TH AVE E AND E MILLER ST	SE	4	4	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BI	19TH AVE E	E CALHOUN ST AND WEST MONTLAKE PL E	W	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BJ	19TH AVE E	E CALHOUN ST AND WEST MONTLAKE PL E	E	3	3	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
BK	20TH AVE E	E CALHOUN ST AND E MILLER ST	W	7	7	7	43%	43%	43%	43%	43%	43%	43%	29%	43%	43%	43%	29%
BL	20TH AVE E	E CALHOUN ST AND E MILLER ST	E	6	6	6	17%	0%	8%	17%	17%	0%	8%	17%	0%	17%	8%	17%

				Parking Supply			Parking Utilization											
				Total Parking			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
Block Face ID	Street Name	Street Segment	Side of Street	Morning	Mid Morning	Evening	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22
BM	22ND AVE E	E CALHOUN ST AND E MILLER ST	W	**6**	**6**	**6**	33%	17%	**25%**	**33%**	50%	50%	**50%**	**33%**	17%	17%	**17%**	**33%**
BN	22ND AVE E	E CALHOUN ST AND E MILLER ST	E	**7**	**7**	**7**	43%	29%	**36%**	**29%**	43%	57%	**50%**	**29%**	29%	29%	**29%**	**14%**
BO	24TH AVE E	E CALHOUN ST AND E MILLER ST	W	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
BP	24TH AVE E	E CALHOUN ST AND E MILLER ST	E	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
BQ	E CALHOUN ST	800' BOUNDARY AND MONTLAKE CUT CONNCTR TRL	N	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
BR	E CALHOUN ST	800' BOUNDARY AND MONTLAKE CUT CONNCTR TRL	S	**8**	**8**	**8**	50%	50%	**50%**	**63%**	50%	63%	**56%**	**0%**	38%	50%	**44%**	**75%**
BS	E CALHOUN ST	19TH AVE E AND 20TH AVE E	N	**9**	**9**	**9**	78%	78%	**78%**	**78%**	78%	78%	**78%**	**78%**	78%	89%	**83%**	**100%**
BT	E CALHOUN ST	19TH AVE E AND 20TH AVE E	S	**12**	**12**	**12**	58%	100%	**79%**	**58%**	67%	67%	**67%**	**67%**	67%	75%	**71%**	**67%**
BU	E CALHOUN ST	20TH AVE E AND 22ND AVE E	N	**9**	**9**	**9**	78%	78%	**78%**	**78%**	100%	100%	**100%**	**56%**	44%	67%	**56%**	**78%**
BV	E CALHOUN ST	20TH AVE E AND 22ND AVE E	S	**15**	**15**	**15**	87%	73%	**80%**	**80%**	93%	87%	**90%**	**73%**	7%	7%	**7%**	**20%**
BW	E CALHOUN ST	22ND AVE E AND 24TH AVE E	N	**9**	**9**	**9**	44%	44%	**44%**	**33%**	67%	56%	**61%**	**33%**	44%	56%	**50%**	**33%**
BX	E CALHOUN ST	22ND AVE E AND 24TH AVE E	S	**11**	**11**	**11**	73%	64%	**68%**	**64%**	73%	64%	**68%**	**64%**	64%	55%	**59%**	**64%**
BY	E CALHOUN ST	24TH AVE E AND 800' BOUNDARY	N	**10**	**10**	**10**	80%	80%	**80%**	**60%**	30%	40%	**35%**	**60%**	70%	70%	**70%**	**40%**
BZ	E CALHOUN ST	24TH AVE E AND 800' BOUNDARY	S	**8**	**8**	**8**	63%	75%	**69%**	**63%**	63%	63%	**63%**	**50%**	88%	75%	**81%**	**38%**
CA	19TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CB	19TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CC	20TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	**5**	**5**	**5**	80%	80%	**80%**	**80%**	80%	60%	**70%**	**40%**	80%	60%	**70%**	**80%**
CD	20TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	**9**	**9**	**9**	44%	67%	**56%**	**22%**	56%	89%	**72%**	**22%**	22%	22%	**22%**	**0%**
CE	22ND AVE E	E MCGRAW ST AND E CALHOUN ST	W	**4**	**8**	**8**	50%	25%	**38%**	**25%**	113%	75%	**94%**	**13%**	0%	0%	**0%**	**13%**
CF	22ND AVE E	E MCGRAW ST AND E CALHOUN ST	E	**7**	**7**	**7**	57%	43%	**50%**	**57%**	100%	86%	**93%**	**43%**	43%	29%	**36%**	**43%**
CG	24TH AVE E	E MCGRAW ST AND E CALHOUN ST	W	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CH	24TH AVE E	E MCGRAW ST AND E CALHOUN ST	E	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CI	E MCGRAW ST	800' BOUNDARY AND DEAD END	N	**11**	**11**	**11**	36%	36%	**36%**	**36%**	27%	36%	**32%**	**27%**	36%	36%	**36%**	**36%**
CJ	E MCGRAW ST	800' BOUNDARY AND DEAD END	S	**6**	**6**	**6**	17%	17%	**17%**	**17%**	33%	0%	**17%**	**0%**	33%	33%	**33%**	**33%**
CK	E MCGRAW ST	19TH AVE E AND 20TH AVE E	N	**17**	**17**	**17**	65%	53%	**59%**	**59%**	53%	41%	**47%**	**47%**	59%	35%	**47%**	**53%**
CL	E MCGRAW ST	19TH AVE E AND 20TH AVE E	S	**13**	**13**	**13**	85%	69%	**77%**	**62%**	54%	54%	**54%**	**62%**	77%	62%	**69%**	**54%**
CM	E MCGRAW ST	20TH AVE E AND 22ND AVE E	N	**0**	**10**	**10**	NS	NS	**NS**	**NS**	0%	0%	**0%**	**0%**	0%	0%	**0%**	**0%**
CN	E MCGRAW ST	20TH AVE E AND 22ND AVE E	S	**9**	**9**	**9**	78%	78%	**78%**	**78%**	89%	100%	**94%**	**78%**	78%	67%	**72%**	**78%**
CO	E MCGRAW ST	22ND AVE E AND 24TH AVE E	N	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CP	E MCGRAW ST	22ND AVE E AND 24TH AVE E	S	**11**	**11**	**11**	100%	91%	**95%**	**73%**	91%	82%	**86%**	**82%**	82%	73%	**77%**	**64%**
CQ	E MCGRAW ST	24TH AVE E AND 800' BOUNDARY	N	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CR	E MCGRAW ST	24TH AVE E AND 800' BOUNDARY	S	**7**	**7**	**7**	71%	71%	**71%**	**86%**	71%	114%	**93%**	**71%**	100%	100%	**100%**	**86%**
CS	19TH AVE E	E LYNN ST AND E MCGRAW ST	W	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CT	19TH AVE E	E LYNN ST AND E MCGRAW ST	E	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
CU	20TH AVE E	E LYNN ST AND E MCGRAW ST	W	**5**	**5**	**5**	60%	60%	**60%**	**80%**	40%	60%	**50%**	**80%**	60%	60%	**60%**	**60%**
CV	20TH AVE E	E LYNN ST AND E MCGRAW ST	E	**8**	**8**	**8**	38%	63%	**50%**	**38%**	13%	38%	**25%**	**13%**	13%	50%	**31%**	**13%**
CW	22ND AVE E	E LYNN ST AND E MCGRAW ST	W	**9**	**9**	**9**	67%	78%	**72%**	**56%**	78%	78%	**78%**	**33%**	67%	67%	**67%**	**33%**
CX	22ND AVE E	E LYNN ST AND E MCGRAW ST	E	**6**	**6**	**6**	50%	50%	**50%**	**67%**	100%	50%	**75%**	**100%**	50%	67%	**58%**	**83%**

				Parking Supply			Parking Utilization											
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Block Face ID	Street Name	Street Segment	Side of Street	Morning	Mid Morning	Evening	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22	Tuesday 3.8.22	Thursday 3.10.22	School Day Average	Non School Day Sample Thursday 2.24.22
CY	24TH AVE E	E LYNN ST AND E MCGRAW ST	W	**0**	**8**	**8**	NS	NS	**NS**	**NS**	88%	50%	**69%**	**75%**	75%	113%	**94%**	**63%**
CZ	24TH AVE E	E LYNN ST AND E MCGRAW ST	E	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DA	E LYNN ST	800' BOUNDARY AND 19TH AVE E	N	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DB	E LYNN ST	800' BOUNDARY AND 19TH AVE E	S	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DC	E LYNN ST	19TH AVE E AND E HOWE ST	N	**5**	**5**	**5**	80%	60%	**70%**	**60%**	40%	60%	**50%**	**80%**	60%	20%	**40%**	**40%**
DD	E LYNN ST	19TH AVE E AND E HOWE ST	S	**3**	**3**	**3**	100%	33%	**67%**	**67%**	100%	67%	**83%**	**67%**	100%	100%	**100%**	**67%**
DE	E LYNN ST	E HOWE ST AND 20TH AVE E	N	**9**	**9**	**9**	67%	67%	**67%**	**33%**	44%	67%	**56%**	**33%**	67%	56%	**61%**	**44%**
DF	E LYNN ST	E HOWE ST AND 20TH AVE E	S	**10**	**10**	**10**	70%	70%	**70%**	**60%**	50%	60%	**55%**	**50%**	50%	70%	**60%**	**40%**
DG	E LYNN ST	20TH AVE E AND 22ND AVE E	N	**11**	**11**	**11**	55%	64%	**59%**	**64%**	64%	55%	**59%**	**55%**	55%	64%	**59%**	**55%**
DH	E LYNN ST	20TH AVE E AND 22ND AVE E	S	**14**	**14**	**14**	29%	43%	**36%**	**43%**	29%	43%	**36%**	**43%**	43%	21%	**32%**	**50%**
DI	E LYNN ST	22ND AVE E AND 24TH AVE E	N	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DJ	E LYNN ST	22ND AVE E AND 24TH AVE E	S	**15**	**15**	**15**	40%	33%	**37%**	**53%**	60%	67%	**63%**	**73%**	87%	93%	**90%**	**100%**
DK	E LYNN ST	24TH AVE E AND 800' BOUNDARY	N	**4**	**4**	**4**	100%	75%	**88%**	**75%**	100%	75%	**88%**	**50%**	75%	75%	**75%**	**100%**
DL	E LYNN ST	24TH AVE E AND 800' BOUNDARY	S	**1**	**1**	**1**	100%	100%	**100%**	**100%**	0%	200%	**100%**	**100%**	100%	200%	**150%**	**100%**
DM	E HOWE ST	E LYNN ST AND 800' BOUNDARY	SW	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DN	E HOWE ST	E LYNN ST AND 800' BOUNDARY	NE	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DO	20TH AVE E	E NEWTON ST AND E LYNN ST	W	**5**	**5**	**5**	60%	60%	**60%**	**40%**	60%	40%	**50%**	**40%**	60%	60%	**60%**	**40%**
DP	20TH AVE E	E NEWTON ST AND E LYNN ST	E	**6**	**6**	**6**	67%	67%	**67%**	**50%**	83%	50%	**67%**	**33%**	50%	50%	**50%**	**33%**
DQ	E NEWTON ST	20TH AVE E AND 22ND AVE E	SW	**21**	**21**	**21**	67%	57%	**62%**	**71%**	52%	48%	**50%**	**48%**	71%	52%	**62%**	**62%**
DR	E NEWTON ST	20TH AVE E AND 22ND AVE E	NE	**15**	**15**	**15**	67%	67%	**67%**	**60%**	47%	47%	**47%**	**67%**	67%	60%	**63%**	**67%**
DS	22ND AVE E	E NEWTON ST AND E LYNN ST	W	**15**	**15**	**15**	67%	80%	**73%**	**73%**	53%	60%	**57%**	**53%**	80%	67%	**73%**	**73%**
DT	22ND AVE E	E NEWTON ST AND E LYNN ST	E	**11**	**11**	**11**	91%	64%	**77%**	**82%**	100%	82%	**91%**	**91%**	91%	82%	**86%**	**73%**
DU	23RD AVE E	800' BOUNDARY AND E LYNN ST	W	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DV	23RD AVE E	800' BOUNDARY AND E LYNN ST	E	**19**	**19**	**19**	84%	79%	**82%**	**74%**	79%	58%	**68%**	**53%**	74%	68%	**71%**	**74%**
DW	24TH AVE E	800' BOUNDARY AND E LYNN ST	W	**0**	**1**	**1**	NS	NS	**NS**	**NS**	0%	0%	**0%**	**0%**	0%	0%	**0%**	**200%**
DX	24TH AVE E	800' BOUNDARY AND E LYNN ST	E	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DY	22ND AVE E	800' BOUNDARY AND E NEWTON ST	NW	**0**	**0**	**0**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**	NS	NS	**NS**	**NS**
DZ	22ND AVE E	800' BOUNDARY AND E NEWTON ST	SE	**1**	**1**	**1**	200%	200%	**200%**	**300%**	300%	100%	**200%**	**100%**	200%	300%	**250%**	**200%**
EA	E NEWTON ST	22ND AVE E AND 800' BOUNDARY	SW	**2**	**2**	**2**	150%	150%	**150%**	**100%**	150%	150%	**150%**	**100%**	100%	150%	**125%**	**0%**
EB	E NEWTON ST	22ND AVE E AND 800' BOUNDARY	NE	**1**	**1**	**1**	100%	100%	**100%**	**100%**	100%	200%	**150%**	**100%**	0%	0%	**0%**	**0%**
			TOTAL	**575**	**598**	**598**	**65%**	**63%**	**64%**	**59%**	**60%**	**60%**	**60%**	**51%**	**57%**	**56%**	**56%**	**55%**